INNOVATION AND PATENT LAW REFORM

HEARINGS

BEFORE THE

SUBCOMMITTEE ON COURTS, CIVIL LIBERTIES, AND THE ADMINISTRATION OF JUSTICE

OF THE

COMMITTEE ON THE JUDICIARY HOUSE OF REPRESENTATIVES

NINETY-EIGHTH CONGRESS

SECOND SESSION

ON

H.R. 3285, H.R. 3286, and H.R. 3605

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MARCH 28, APRIL 26, AND JUNE 6, 27, 1984

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The Legacy WALL STREET JOURNAL 9/9/82

Inventors Are Seeking Bigger Share of Gains From Their Successes

They Win a Few Victories Over Their Employers; Japan's Reward System

What Is Super-Zip's Value?

By David Stipp
Staff Reporter of The Wall Street Journal

In the mid-1970s, Erwin Klingsberg, a chemist with American Cyanamid Co., co-invented a herbicide to knock out wild oats, a pesky farmland intruder. Last year, when Cyanamid's sales of the herbicide reached an estimated $30 million, a cost-cutting measure by the company knocked out Mr. Klingsberg's job.

"They just took my invention and gave me a kick in the pants," says the 61-year-old chemist, who spent 35 years with Cyanamid. The company refuses to comment on the matter.

Mr. Klingsberg is one of many inventors in the U.S. who complain of being short-changed by the companies that employ them. They feel that an inventor should share in the profits that his employer reaps from his work. Corporations argue that inventions these days are usually long-term projects and that it is almost impossible to reckon awards that accurately reflect individuals' contributions.

Typically, employed inventors don't get a piece of the action, although their work yields about 75% of all patented American inventions. Instead, they receive nominal awards ranging from a bonus of a few hundred dollars to pen sets and plaques. In fact, many companies require their inventor-employees to sign so-called pre-invention agreements, which give the corporation the rights to all the employee's future inventions.

Things Are Looking Up

At Gould Inc., for example, says a spokesman for the electrical-products concern, most employees must sign an agreement specifying, in effect, that "even if they invent something in their sleep, it belongs to the company."

But things are gradually looking up for employed inventors, primarily because they are taking their arguments from laboratories and board rooms into legislative chambers and courtrooms. Since 1977, five states -North Carolina, Minnesota, California, Washington and Illinois- have passed laws ensuring that employees retain rights to inventions made with their own resources outside their employers' line of business. Two bills pending in the U.S. House of Representatives also would enlarge the rights of employed inventors. And in a growing number of court battles, inventors have won sizable awards from their employers for profitable inventions.

"It's just a hell of a job to get any movement on the issues of employed inventors' rights in the United States," says John Stedman, a retired University of Wisconsin law professor whose specialties include patent law. "The fact that they're even holding hearings in Congress on this shows quite a change."

The Technology Race

To some, the issue of inventors' rights involves no less than America's future in the technology race. They argue that the minimal rewards for employed inventors are smothering innovation in the U.S. and permitting countries with more favorable laws to pull ahead. "You see all this hand wringing about the Japanese taking over world markets—the reason is that people with ideas there are better treated than they are here," says Brad McMillan, an official with the Institute of Electrical and Electronics Engineers.

According to U.S. Patent Office figures, the percentage of U.S. patents issued to foreigners has almost doubled to 39% since 1966. Neal Orkin, an engineer turned patent attorney who testified recently in Congress in favor of greater rights for employed inventors, says the number of patents per capita applied for in Japan surged after that country passed a law in 1959 tying employed inventors' compensation to the market value of their inventions. In 1967, Japan passed the United States in the number of patents applied for per citizen.

Not all inventors agree that increased monetary rewards for inventors would counteract lagging innovation in America. Edwin Vandenberg, a Hercules Inc. chemist, who holds more than 100 patents, says that though inventors should be better rewarded than they usually are, the real problem with innovation in America has been too much emphasis on short-term results rather than long-term research during the past decade. And William Shockley, who received a Nobel Prize in 1956 for inventing the transistor, says that laws mandating special compensation for employed inventors might even be counterproductive.

Delays Foreseen

Such laws, Mr. Shockley says, could encourage an inventor to "hold back ideas which might lead to inventions until he has had an opportunity to work them up to the point where his rights are preserved."

At Bell Laboratories, where Mr. Shockley worked, scientists and engineers are required to sign agreements covering all inventions. But the company says it generally lets the inventor keep the rights to inventions outside of Bell's line of business.

In the view of many corporations, inventors are adequately rewarded by salary and promotions, and any extra compensation would be unfair to other employees who help make a product commercially successful.

"And the truth is, inventive people are in such demand they should just look for another job if they feel they're inadequately paid," says Michael Blumner, executive director of the American Patent Law Associ-

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ation, many of whose 4,800 members are attorneys representing corporations in patent matters.

But Robert Shepherd, a retired American Cyanamid chemist who co-invented an anti-tuberculosis drug in the mid-'50s, says things often aren't so simple. Mr. Shepherd, whose invention is contributing an estimated $50 million annually to Cyanamid's sales, says he wanted early in his career to find a way to wipe out TB because one of his relatives and a friend had been stricken with the disease. Though he became increasingly displeased with Cyanamid's treatment of inventors during his 36 years there, he says he couldn't have walked away from the company without losing his chance to participate in the TB breakthrough and other research projects in which he had become deeply involved.

"By the time it was clear nothing was going to be done about rewarding me or other inventors at Cyanamid for our work, I was already 55 years old," says the 67-year-old chemist. "It's very difficult to switch jobs at that age."

There is another factor discouraging job-switching by inventors, Mr. Shepherd says: Employers are wary of inventors who have fought the system and who are looking for more than the traditional rewards for their creations. "Employers," Mr. Shepherd says, "don't look at somebody who's stirred things up and say to themselves, 'Gee, that guy's aggressive. Let's hire him.'"

A spokesman for American Cyanamid says that Mr. Shepherd was one of the many who made the TB drug a commercial success. The spokesman adds that Cyanamid's awards for inventors are "not generally cash" but are geared toward "peer recognition," such as the company's annual dinner honoring inventors.

Arguments about the whole subject were aired this summer when a House Judiciary subcommittee held hearings on two bills introduced by Rep. Robert Kastenmeier, Democrat of Wisconsin. One bill would limit the scope of pre-invention agreements along the lines of the five state laws on the subject. The second and more controversial bill is designed to give employed inventors compensation reflecting the value of their inventions. It would create an arbitration board to settle disputes and would also give inventors rights to their inventions not patented by their employers.

"Naturally many corporations are opposed to the compensation bill," says Bruce Lehman, chief counsel to the House subcommittee considering the bill. "But corporations are coming to Congress every day complaining about the innovative edge Japan and Europe have. Now that we've come up with something for the little guy modeled after Japan and West Germany, it seems ironic that corporations are opposing it so strongly."

'Wake Up and Look'

Mr. Lehman says that recent patent laws have been favorable to corporations, and that the Kastenmeier bills "represent a quid pro quo for individuals" that could stimulate innovation. "There's a desire here to make corporations wake up and look at the issues" concerning the connection between innovation and rewards for employed inventors, he says.

Many corporations, Mr. Lehman adds, have already introduced reward programs for their inventors that go beyond plaques and pen sets. International Business Machines Corp., for example, recently distributed awards totaling $225,000 among the nine inventors of Fortran, in commemoration of the computer language's 25th birthday. But even cash awards of thousands of dollars seem picayune to many inventors as they watch their creations reaping millions of dollars year after year.

Robert Beasley, for example, received awards totaling $20,000 after contracts worth about $50 million were awarded to Lockheed Corp. for one of his inventions, the high-temperature-resistant tiles used on the space shuttle. But Mr. Beasley feels that the value of his role in the development of the tiles far exceeds $20,000.

"When I was hired at Lockheed in the early '60s, the project they hired me for was canceled after I'd been there about a week," he recalls. "They asked me what I was going to do, so I started inventing things." Among the projects Mr. Beasley says he originated and pursued was the development of a reusable shield for space vehicles. But in the early '60s, he says, the notion was so novel that "I spent years making pitches to Lockheed before they even accepted the idea." Mr. Beasley, 56, adds that he developed the tiles using knowledge from research that he conducted before his employment at Lockheed and that he not only invented the tiles but also set up facilities for their production.

Mr. Beasley, who retired after a stroke in 1977, says his disability insurance will run out when he is 65, reducing his income by 40%. "It would be nice to have an awful lot of money from my invention," he says, "but I guess that won't happen now."

A Lockheed spokesman says, "When rewarding inventors, sometimes people aren't satisfied." Mr. Beasley was central to the development of the tiles, he adds. But many other people were involved as well. "We have one of the most liberal award programs for inventors, and I don't see how we can do any more than we have."

The Super-Zip Issue

Two other Lockheed inventors decided to fight the concern after receiving what they regarded as insufficient compensation for their work. Oscar Brandt and Joseph Harris in 1968 invented Super-Zip, a device that helps detach rockets' sections during ascent. The device was patented in 1972. In 1975, says the two men's attorney, they became aware of their invention's value to Lockheed, which the lawyer projects at $330 million in sales between 1975 and 1984.

"In the company magazine, we read that Beasley got $20,000 for his invention," Mr. Brandt says. "Joe Harris and I looked at each other and asked, 'When are we going to see our check?' After all, Lockheed had been championing its award program to stimulate creativity."

The engineers asked Lockheed for compensation reflecting Super-Zip's value, and in 1977 both received $1,250 awards. Unappeased, they sued. Last summer, a California trial court awarded them $2.6 million, ruling that Lockheed had administered its inventors' award program unfairly. Lockheed is appealing the decision, and a spokesman for the company contends that Super-Zip's value is overstated "by many orders of magnitude" by the inventors' attorney. But even if the lower court's ruling is overturned, it has paved the way for future suits by employed inventors, say patent attorneys following the case.

Though most employed inventors feel they should receive a percentage of the profits from their work ("Salesmen do, why don't we?" one says), many are just as concerned about being recognized for their creations. Merton Clevett, 63, who holds more than 80 patents from his work with General Electric Co., U.S. Steel Corp., Martin Marietta Corp. and others, contends that egos play a more important role in the world of research than money does.

The reason that many employed inventors are poorly rewarded for their work is that their managers hate being upstaged by their creative subordinates, says Mr. Clevett, who currently runs a "mom and pop think tank" out of his Denver home.

Even though laws and court decisions are becoming more favorable to employed inventors, Mr. Clevett says, the best recourse for dissatisfied inventors is still the traditional one: moving to the decision-making side of the company. "The smart people," he says, "quit innovating and become management types."

2/24/76

AWARD SCHEMES FOR EMPLOYEE-INVENTORS

by
E.J.Page

In the light of the Government's stated preparedness to give, in spite of the Banks Committee's recommendation to the contrary, further consideration to the introduction of a statutory award scheme, the experience of Westinghouse Brake & Signal Co. Ltd. in operating an awards scheme may be of interest.

British Companies' Experience of Awards Schemes

Not a few Companies in this country operate, as does Westinghouse, Company Suggestion Schemes of one sort or another. Such Schemes, however, conventionally differ in two major essentials from awards schemes such as are seemingly envisaged by the Government. Firstly, these Suggestion Schemes are in no way linked to patentable inventions which, although they may well not be excluded from the Scheme, are certainly not a prerequisite for the grant of an award. Secondly, the personnel to whom the benefits of a Suggestion Scheme are open, if not limited to staff below a certain grade, certainly exclude employee-inventors employed as such. It is the intention, therefore, of Suggestion Schemes (in contra-distinction to Patents Awards Schemes) to reward an employee over and above the conventional rewards of salary-increase and promotion-prospects, for exceeding those duties which can normally be expected of him.

A few Companies operate so-called Patents Awards Schemes which provide for the payment of an award, usually of a relatively small sum, either upon the submitting of an invention for consideration for patenting or in the event of the subsequent filing of a Patent Application. These schemes may better be considered as "Patent-Filing Incentive Schemes" rather than true Patents Awards Schemes.

So far as the author has presently been able to ascertain, Westinghouse is the only major British Company who has ever operated a true Patents Awards Scheme at all comparable with what the Government undoubtedly has in mind. That is to say, a scheme which is patent-related and which not only includes (if not specifically directed at) employee-inventors employed as such but also provides for the payment of substantial and exploitation-related awards.

The Westinghouse Scheme

The Westinghouse Scheme was introduced in 1958 "in order to stimulate and encourage the disclosure to the Company of inventions made by employees, which may contribute to the future success of the Company".

The essentials of the Westinghouse Scheme were as follows:—

A Patents Award Committee was set-up consisting of the then Managing Director as Chairman, the Director and Secretary, the then Patents Manager and, as the subject-matter of a Submission required, the respective ones of

the then various Executive Directors responsible for the various of the Company's Product Divisions. This Committee notionally determined the Awards to be made but, in practice, as it was entitled to do, delegated this determination to various appropriate senior personnel of the Company.

The Awards provided for by the Scheme were:—

Group (i) —for each Submission made under the Scheme, which was prima facie patentable or registerable as a Design —£10

Group (ii) —upon the filing of a Patent or Registered Design Application . . . . . an additional —£20

Group (iii) —for commercial exploitation of the patented invention or Registered Design . . . up to a further —£100

Group (iv) —for continuing successful commercial exploitation of the patented invention or Registered Design . . . . . up to an additional —£900

The Scheme thus provided for Awards ranging between £10 and £1,030. It has to be remembered that these Awards were in 1958 – 1962 values and were, therefore, substantial in relation to employee-inventors' salaries at that time.

In the practical operation of the Scheme, the Manager of the Division in which the Submission arose decided as to whether or not a Group (i) Award should be given. The Group (ii) Award was given automatically upon the Patent Department advising of the filing of a Patent Application. A Submission was considered for a Group (iii) Award upon the Grant of a Patent on the Patent Application. Group (iv) Awards were paid by nine annual payments of each of up to £100 for which each Submission was considered annually (subject to the Patent thereon continuing to be Renewed) after the year of its consideration for a Group (iii) Award. The Group (iii) and Group (iv) Awards were arrived at by the multiplication together of two factors of each between 0—10; The first, the Profitability Factor, being indicative of the profitability of the product in which the invention was incorporated, and the second, the Contribution Factor, being indicative of the contribution made to that profitability by the invention.

From early in the life of the Scheme, there was growing dissatisfaction with it not only from Management but also from employees and even from employee-inventors who were beneficiaries under the Scheme. This dissatisfaction had, by 1962, reached such a level that the author as then Patents Manager, was requested by the Director and Secretary of the Company to review the Scheme and its operation and to make

such recommendations as he felt desirable for the amendment or revision of the Scheme.

The Failure of the Award Scheme to meet its Objective

In the course of his review of the Scheme, the author carried out a survey of the Patent Applications filed by the Company for comparable 3-year periods before and during operation of the Scheme. The result of this survey was most enlightening. The survey revealed three very significant facts.

Firstly, that in the 3-year period under the Scheme a significantly higher number of domestic Patent Applications were filed by the Company than in the comparable pre-Scheme period.

Secondly, that in spite of this increase in Patent Applications filed there was, during the Scheme-period, no significant increase in the commercially-valuable inventions.

Thirdly, there had been as between the two periods, no significant widening of the relatively small circle of staff by whom those commercialy-valuable inventions were generated.

These facts suggest that inventors (or at least the most commercially-orientated and innovative of them) are such as to be neither stimulated nor discouraged by financial incentive or lack of it. To quote three of the Company's most prolific inventors of commercially-valuable inventions, all of whom are now Managers controlling employee-inventors, – the first: "My own feeling about awards made to me has been that satisfaction has been mainly achieved by the invention itself"; the second: "The whole question of creativity is complex, but I think it is generally true to say that those who are inclined to be creative will tend to be so regardless of direct financial incentives, whereas those who are not are not likely to have their mental attitudes transformed by money incentives. There may well be useful ways of fostering creative attitudes but I do not think [Awards Schemes] is one of them"; the third: "It is important to realise, however, that people who have a creative flair and will produce inventions, will tend to do so irrespective of financial reward". This third person also says: "The Scheme did, in fact, produce a considerable number of ideas but, on looking back at these, I can think of none that would not have been produced if the Scheme had not been in operation..... [The Scheme] did, however, produce for patenting a lot of ideas that would otherwise not have materialised and were of dubious value".

Employees Objections to the Awards Scheme

However, dissatisfaction with the Scheme was by no means the prerogative only of Management. Indeed, I believe that Management would have been prepared to have continued the Scheme had it not been for the strength of feeling against the Scheme amongst various

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categories of employees including employees who stood to be and even were beneficiaries under the Scheme. The objections raised with the author during his review of the Scheme can best be categorised in accordance with the categories of the employees.

The non-beneficiary employees – Whilst the Scheme was ostensibly open to all employees, the author cannot recall a single instance of a Submission being made by an employee other than an employee-inventor employed as such. Consequently, other employees considered that the Scheme set up a privileged class of employee entitled to reward over and above the conventional rewards of salary-increase and promotion-prospects open to all employees, merely for successfully undertaking that work for which they were employed. This injustice was recognised by even the beneficiaries under the Scheme. As one of the Company's employees above quoted says: "We don't need another regulation which singles out for award that particular breed of person who invents. If you do that, then in fairness you should think up all sorts of other awards schemes."

The other point generally raised by this category of employees was the inter-dependence of the employee-inventor and many other employees in the commercial success of an invention. The mere conceiving of an invention is by no means a guarantee of its commercial success. This point was most forcibly put by employees such as draughtsmen who, by virtue of their necessarily close working relationship with the employee-inventor, were well aware of the benefits to which this employee was open whilst the draughtsmen, to whom fell the work of converting a concept to a commercial reality, stood to receive no such benefits. To quote again one of the previously-quoted employees: "Taking now the case of an invention that has been patented. We now come to the enormous amount of work that can be involved in turning the invention into a practical reality. This can mean an exercise of considerable ingenuity by the people carrying out this development, but this would not necessarily result in further patents and we thus gave no reward by a patents awards scheme". It is this situation which can give rise to friction between just those employees whose full co-operation is required to effect the successful commercial exploitation of an invention.

The employee-inventors – It will and indeed, must be for management to assign to its potential employee-inventors that work most required by management. This being so, it is not, nor should it be, in the hands of those employees as to whether they are to be engaged on work likely to lead to a greater or lesser opportunity of benefitting from a patents awards scheme. Further, even given that management wishes for work to be undertaken which might lead to patentable inventions, it again is and must be the province of management as to which of its potential employee-inventors it assigns this particular work. In this event, management is clearly and properly

likely to give that work which is most likely to lead to patentable inventions, to the most innovative of its potential employee-inventors. Not only, therefore, have the potential employee-inventors no say as to the work they undertake but, by virtue of that work likely to lead to patentable inventions being assigned to the most innovative of the employee-inventors, there is likely to be set up from even within the general category of potential employee-inventors a cadre of the most innovative who will stand to benefit most from the Award: Scheme. Additionally, in so far as it is a failing of human nature, as a generality, for a person not to see his own weaknesses, it is unlikely that the less innovative employee-inventor will recognise or accept his limitations in this direction. The passing-over of such an employee in the assignment of that work most likely to lead to patentable inventions, is likely the greater to be a source of frustration and discontent by depriving the employee of the opportunity an award which he believes himself competent to achieve.

Another major problem, in the eyes of the employee-inventors, was the designation of the inventor. Many inventions result from "round table" discussions amongst potential employee-inventors after which it is frequently difficult to establish exactly who it was who first proposed the invention. Even if this can be established, it is not infrequently the case that it was some general discussion which isolated the problem and that the invention flowed from this. Is it fair, then, to reward only the maker of the last step in the process and not, instead of or additionally, the contributors to the isolation of the problem? Further, although no traceable basis for this feeling was discovered by the author in the course of his investigation, some junior employee-inventors believed firmly that their seniors had either adopted as their own or joined themselves as co-inventors of, inventions which the juniors believed they had made. This, again, becomes a matter of greater moment if the designation of inventor carries with it the entitlement to an Award; particularly as, in this circumstance, the Award or a part of it, goes to an employee who is higher-paid than himself. Two of the Westinghouse employees quoted above touch on this difficulty of designation of inventor when they state, firstly: "Direct financial rewards to engineers originating patent applications tend to lead to bad relationships between staff members when it comes to deciding who is to be included among the inventors named in a particular application. There is bound to be a tendency for credit to be disputed. . . . ."; again: "While one person takes the inventive step and is awarded the patent, many people may contribute in the run up. Is it therefore fair to award payment to the one only?"

Another inequality between employee-inventors to which the Award Scheme gave rise is the difficulty, experienced by the author himself, of trying to ensure comparability of the Awards made for inventions in totally different technical fields. How does one equate the value of an invention relating, say, to a step in a semiconductor process of manufacture with, say, a new railway-brake valve?

Employee-inventors also alleged, fairly or otherwise, that their salaries suffered as a consequence of their entitlement to consideration under the Scheme. To quote again one of the employees: "It might well be felt that a specific incentive scheme could be unfair to those who are apparently in a position to benefit from it, in that it may be regarded by management as a substitute for regular financial rewards. In other words, it may be felt that those who come within the scope of an award scheme are less in need of salary increases". To quote another: "It was because of this unfair distribution of reward [arising from some employees working on potentially-patentable work and others not] that we suggested the award scheme be dropped and replaced by a more effective assessment of the work carried out by people when a salary review was made."

Other objections raised by this category of employee arose from the dependence of awards on the granting of Patents.

There are many ideas generated by potential employee-inventors and, indeed by other employees, which are inherently unpatentable but nevertheless of substantial benefit to the Company. Indeed, the proof of this lies in the conventional Suggestion Schemes which seldom, if ever, give rise to patentable inventions. Are employees working in such excluded fields to be deprived of the benefits open to their colleagues who happen to be working in potentially-patentable fields?

Apart from the inherently-unpatentable ideas, there are the inherently-patentable "inventions" which subsequently transpire not, in fact, to be patentable by virtue of prior art. There is here, firstly, the problem of inequality between employee-inventors (particularly as between employees of differing Companies) arising from the extent of any investigations made prior to the filing of a Patent Application which differing Companies may make or which the urgency or otherwise of the filing of the Application may allow. Secondly, the revelation of pertinent prior art turns on the diligence and competence of Patent Office Examiners in the first instance and later on the diligence, competence and degree of interest in the Application by competitor-Companies. Is it right that the granting of an Award should turn on such matters well outside the control of the employee-inventor? In any case, surely any individual Company is primarily interested in what is new to it rather than what is new in the absolute sense. Is it not equally meritorious of an employee and of benefit to the Company, for the employee to "re-invent" some previously unknown to the Company or long-forgotten prior proposal as it is for the employee to have been the "true and first" inventor of the proposal?

There are, also, many reasons why even a highly-innovative invention may not be patented; the invention may be for a "one-off" sale; the invention may be applicable only to the employee's own Company's products; the market may be saturated before the Patent is likely to be granted; infringement of any Granted Patent may be impossible to detect; it may be commercially preferable to seek to keep the invention secret rather than to

patent it. These are but a few examples of why a Company may decide not to patent an invention, none of which necessarily question the value of the invention to the Company much less the ingenuity employed in the generating of the invention. As, again, one of the Westinghouse employees says: "Patents are applied for, for commercial reasons. A clever invention may be made but not proceeded with for commercial reasons. Is this fair?"

On this general point of the relationship of awards to patents, another of the employees says: "I do not think it is by any means fair to equate creativity with patentability. . . . . there are many patents which are commercially significant but which do not appear to reflect great technical ingenuity, while, at the same time, there are many creditable technical ideas which are, for one reason or another, not patentable".

Management-employees —It must not be overlooked that most of management are as much employees as are employee-inventors. It is, therefore, legitimate to consider the problems to which the Award Scheme gave rise to management as well as other employees. These problems are largely those of staff-relationships; of the inhibition on management as to the assignment of work and the settlement of disputes as between employee-inventors — the management side of the problems discussed above. Again to quote one of the Westinghouse employees quoted above and who is now a Chief Engineer: 'Embarrassment and difficulties in staff relationships tend to arise when the worth of suggestions for patent applications has to be evaluated. It is common for inexperienced engineers to make suggestions which are less valuable than they think them to be, either on technical grounds, or because of doubtful novelty, and it is embarrassing for senior staff to be presented with a choice between, on the one hand being honest and putting the suggestion in, what they believe to be its true perspective, and on the other hand fulfilling the expectations of the originator of the suggestion in regard to the financial rewards offered".

On the problem of the assignment of work, the immediately-above quoted employee later says: "The pursuit of patent applications as distinct from useful technical ideas is liable to distort the aims of individual engineers on the pursuit of particular programmes of work. It can be rather annoying for example for a supervisor to find that his staff are devoting their energies to soliciting patent awards, instead of directly seeking the best solutions to the most important problems."

Employees of Patent Department — The objections of the Patent Department of Westinghouse were largely two-fold; the inhibition on the Department in its exercising its legitimate judgement as to the desirability of filing and prosecuting Patent Applications and, consequent upon this inhibition, the wasting of the Department's efforts in the filing and prosecution of Patent Applications which it was convinced would transpire to be of little or no commercial value. The inhibition arose not only from the direct pressure applied to the Department by the inventors (who, normally, are consulted as to the commercial value and inventiveness of their alleged inventions) but also by the Department's knowledge that, by failure to file or prosecute

to the Grant of a Patent a Patent Application, they would thereby deprive the inventor of the opportunity of an Award.

The Abandonment of the Scheme

Resulting from the author's review of the operation of the Westinghouse Patent Awards Scheme, the author advised to the Board of Westinghouse that he could foresee no Scheme which would meet the various objections raised by employees and recommended that the Scheme be terminated without replacement.

This recommendation was accepted by the Board and the Scheme was terminated late in 1962 to the extent that no further Submissions were considered under the Scheme; those Submissions already made continued to be eligible for the Awards provided for by the Scheme. It is of interest that this termination of the Scheme drew no hostile reaction from employees; not even from those who had been beneficiaries (and, some, substantial beneficiaries) under the Scheme.

A REPORT OF THE COMMITTEE
ON PATENT MATTERS AND RELATED LEGISLATION

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COMPENSATION FOR EMPLOYED INVENTORS

AMERICAN CHEMICAL SOCIETY
1155 Sixteenth Street, N.W.
Washington, D.C. 20036
March 1976

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The American Chemical Society is a non-profit scientific and educational Society with a membership of approximately 110,000 chemists and chemical engineers. Founded in 1876, the Society has become the world's largest membership organization devoted to a single science. Because many of its members are employed inventors and because of the potential affect of any legislation requiring extra compensation for employed inventors on the discipline of chemistry, the Society during the past few years has been conducting a study on the general topic of compensation for employed inventors. The ACS, primarily through its Committee on Patent Matters and Related Legislation and its Committee on Economic Status, has gathered information on the present policies of U.S. corporations, sought the reaction of working chemists and chemical engineers through both symposia and public hearing forums, and has made limited evaluations of the history of the evolution of such legislative proposals in the United States and other countries.

Early in 1973, a Joint-Subcommittee on Compensation for Employed Inventors was established by the Committee on Patent Matters and Related Legislation and the Committee on Economic Status. The initial charge of the Joint-Subcommittee was to investigate possible actions by the Society in the area of compensation for employed inventors, by the recommendation of guidelines for employers and/or by the development of policy recommendations for consideration in any legislative proposals. After completing its survey of the present policies of U.S. corporations, the Committee felt it was important to survey the views of the ACS membership and also to learn what it could of the experiences of other nations under such existing statutes which serve to ensure extra compensation for employed inventors. To that effect, on August 27, 1973, it held a "Public Hearing on Compensation for Employed Inventors" at the 166th ACS National Meeting in Chicago, Illinois, and conducted a workshop on May 10, 1975, on the occasion of the Congress of the Association for the Protection of Industrial Property (AIPPI) in San Francisco, California.

This Committee Print is the product of the above mentioned hearing and workshop and respresents further progress in the Committee's efforts toward the development of recommendations for the Society's policy in the area of compensation for employed inventors.

Willard Marcy
Chairman
ACS Committee on
Patent Matters and Related Legislation

A REPORT OF THE COMMITTEE ON PATENT MATTERS AND RELATED LEGISLATION: COMPENSATION FOR EMPLOYED INVENTORS

PART I
A PUBLIC HEARING ON COMPENSATION FOR EMPLOYED INVENTORS

Chicago, Illinois, August 27, 1973

INTRODUCTORY REMARKS

Dr. John T. Maynard
Chairman of Committee on Patent Matters and Related Legislation

The facts relating to existing practices in the compensation of employed inventors for their contributions to the fund of public knowledge and to the commercial success of their employers, and the philosophical question of how employed inventors should be compensated for these contributions, have been the subject of many studies and articles and at least one major treatise during the last ten to fifteen years.

The problem has been brought to a head in this country in recent years by the initiative of Rep. Moss (D) of Calif., who introduced H.R.2370 in the 93rd Congress [H.R.5605 in the 94th Congress]. If enacted into law, this measure would require inventors to receive a defined percentage of profits resulting from their creative efforts. The Moss bill is in large measure modeled on German law in effect since 1958.

The American Chemical Society has been urged by many individual members and by the Coordinating Committee of the California Section to take two actions: Add a statement to the ACS Employment Guidelines recommending special compensation related to invention; and encourage Congress to pass legislation embodying the principles of the Moss bill. These are serious questions and serious proposals, and the ACS is duty bound to respond.

The easy, instant answers to the Moss bill proposals are: Chemists are employed to invent and should be satisfied with salary and existing opportunities for recognition and promotion; administration of such a system would be a nightmare; and such a system would be unfair to those who contribute to a commercial development in ways other than generating the inventive concept. Those of us who have absorbed all that has been said and written on the subject know that these answers are no longer adequate, and the question must be faced.

The Joint Board-Council Committee on Patent Matters and Related Legislation, of which I am chairman, and the Committee on Economic Status, under the chairmanship of Dr. Alan McClelland, have appointed a joint subcommittee to study this problem and recommend a position for the ACS. Dr. Willard Marcy, Vice President-Patents, of Research Corp., chairs this subcommittee. The other members are Dr. Alice Robertson, an independent chemist-patent attorney, and Dr. Donald Berets of American Cyanamid. They have arranged today's discussion to give Society members a public forum for exchanging views on this important matter.

Dr. Marcy is in an ideal position to take a neutral, informed view of the questions before us. He has worked as a chemical engineer in industry, and has been director of patent programs for Research Corp. for almost 10 years. Research Corp. is a unique, foundationlike organization that sponsors research at many institutions, primarily academic. The corporation also offers patent services to these institutions, but disclaims all rights to patents that result from its grants. Dr. Marcy has the experience needed to look at the question of compensation for employed inventors from all aspects, and to lead the effort to find an equitable position for the ACS on this important subject.

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Dr. Willard Marcy
Vice President-Patents
Research Corp.
Presiding

The subcommittee sponsoring the meeting today has been in existence about a year. It has gathered an enormous amount of information from this and other countries (particularly Europe and Japan) on the subject. Laws similar to the Moss bill have been passed in at least a dozen other countries around the world; some of these laws are much more elaborate than others. The prototype appears to be the German law mentioned in the introduction.

We found so much information—some of it quite contradictory—that we felt that the subcommittee itself is not competent to judge the material without having some further input from the ACS membership. Therefore, we proposed some sort of survey be made of the membership to determine its opinion of the Moss bill.

We recognized that it would be almost impossible to question each member without having an inordinate amount of time and money to spend on the survey. We also recognized that sending out questionnaires is not an adequate way to handle it. So we decided to try this format, which is quite different from other seminars and discussions that the ACS has held before:

Several people will give statements based on their experience and background, their knowledge of the Moss bill, and generally about compensation for the employed inventors. Following these statements, the meeting will be open to anybody in the audience who wishes to make a statement. Finally, there will be a question and answer period, or a discussion. Questions may be directed to the chair, to individuals on the panel, or to one another in the audience.

The subcommittee will subsequently consider the transcript of this meeting, along with the material available in the literature, and recommend to our parent committees what position the ACS should take regarding the Moss bill. We also intend, if possible, to come up with some recommendations concerning how this matter should be treated in the Guidelines for Employers, which is constantly being revised by the Society.

Statement of
John C. Stedman
Professor of Law
University of Wisconsin

In an article appearing this spring in the *APLA Quarterly Journal*, I posed nine questions concerning the employer-employee relationship as it applies to invention. I will merely list, but not discuss, these questions here, then focus the remainder of this statement on an elaboration of a few points in the context we are dealing with today.

The basic situation we start with is the one in which X, an employee of ABC Corporation—or, for that matter, work-

ng for the U.S. Government or as a researcher on the staff of Siwash College—makes an invention of a presumably useful nature. The question is, what are—and, more particularly, what should be—the respective rights of X and of ABC Corporation in this invention?

Against this backdrop, the nine questions I raised are:

- Why should we suddenly start exploring this issue, one that over the years has been typically treated with "benign neglect," to say the least?
- What are the alternative approaches to the issue? Specifically, should it be left to private negotiations between employer and employee, to detailed legislation, or to something in-between?
- What kinds of stimuli and rewards should be resorted to? While economic rewards understandably occupy center stage, various noneconomic stimuli can and do play a significant role.
- In terms of public interest in invention and innovation, what is it we really want? More innovation or less? Gadgets or scientific advances? Contributions to technological advance or a better environment? Or all of these, to a greater or lesser extent?
- Assuming we can decide what things we want, how do we get our inventors to provide us with them?
- How do we figure out just what role the individual inventor plays, or should play, *in getting an idea off the drawing board*?
- Assuming the inventor is entitled to some reward, what form should it take? Salary increase? Cash bonus? A share in the *patent rights*?
- Using the same assumption, who should pick up the tab, or provide the stimulus or reward in other respects? The employer? The employee himself? The *benefiting public*? The *public generally*, acting through its government?
- And on the assumption—a valid one—that we do not now have full answers to the preceding eight questions, how do we go about getting the answers? Looking at four aspects of these nine more general questions:

—Just who has interest in this relationship, and what is the nature of those interests?

—Just who, in the employee category, are we talking about, and what kinds of rewards and stimuli should we be concerned with?

—Who should do what, and how should they do it, to bring us farther along the road to solutions?

—What are some of the underlying attitudes and outlooks that are common to approaching these problems—approaches that, often as not, stand in the way of dealing with the issues that perennially plague us?

The first question, the nature of the interests involved, calls for little more than a reminder. There is the employer, whose primary concern in the area under discussion is the freedom to run his business as he sees fit and make such arrangements with employees as he can negotiate without interference from government or other public bodies. There is the employee who seeks, in most instances, an economic reward for his creative efforts, protection against being taken advantage of by his employer, and, if he is really creative and inventive, opportunity to give vent to that urge, maximize his achievement, and receive recognition for his achievements. All of this is elementary stuff and is fairly descriptive of a free-enterprise business arrangement.

But there is a public interest, and an important one, as well. From the very beginning, we have been concerned with promoting the progress of science and useful arts, even to the extent of writing it into the Constitution. The thrust of this general policy, designed to assure a productive, vigorous, and bountiful economy, is being somewhat redirected today because of:

- A concern to keep technology from contributing to environmental problems and, simultaneously, help solve the environmental problems that already plague us.
- A concern to reap the competitive benefits that can result domestically from inventive and innovative efforts and help us compete more adequately in international markets at the same time.
- A concern to get our money's worth—more bangs per buck—in a society in which taxpayers foot well over half the R&D bill.

And so, whatever the answer may be, it is clear that neither employer nor employee is in a position (if indeed either ever was) to say: "This is a private fight and the rest of you keep out of it." We are in it, for better or worse, and that is all there is to it.

The second question is: Who and what are we talking about? The "who" is the creative, inventive employee. The point I emphasize here is that this is not necessarily limited to the R&D staff technician or scientist. Granted that this is where most of the R&D expenditure goes, where most of the action is, and from whence most of today's patented inventions flow. It is not necessarily where the problems we are talking about arise exclusively or even predominantly.

To suggest that less than all inventive wisdom and achievement stems from highly trained, technologically sophisticated scientists, engineers, chemists, or what have you, may come as a shock to you who typically represent this stratum of society. But the fact remains that many actual and potential inventors are outside this group. And the number could well increase strikingly if these outsiders were adequately stimulated and encouraged.

In that nether world may be found drug detail men, sales engineers, typists, and even the cleaning staff. (It was a night watchman, after all, who made the great discovery that door latches do not retape themselves.) How many of these people may be potential creators who never got going because the inducement, the incentive, was lacking?

The two groups also provide a contrast, more often than not, in terms of bargaining power. Whatever may be said for the oft-asserted contention of R&D-oriented concerns that the freedom to change jobs and the self-interest of employers will assure a fair shake for the typical R&D technologist (and one may concede that the point is well taken in many instances), there is little to indicate that the same considerations operate in the other areas.

The other part of the issue relates to stimuli and incentives. Discussion has been usually directed to economic factors—cash compensation, either immediate or eventual. Granted, this is probably the most important singel aspect, but it is not the whole story. Man does not live by bread alone. (Even to one who thinks mainly in terms of bread, the credit, the prestige, the notoriety that properly should attend a genuine contribution often ultimately are translatable into economic benefits.) And so, noneconomic stimuli are important. Even if they were less important than direct economic benefits—as they may well be—it would be important to mention them here because they are the things that a corporation, concentrating on formal R&D, can easily overlook. They become doubly important because they are areas in which organizations such as yours could make a valuable contribution.

The third question is: Who should take the *initiative in terms of getting* done whatever needs doing? And in terms of laying the groundwork, through inquiry, investigation, and research, for future courses of action (whatever those courses *may be*)?

The question of who is best qualified to take this initiative can be argued extensively and inconclusively. The Government generally, through the Executive Department or the Congress? The Government as an employer or an R&D contractor? The universities? Some private or quasi-public research institution? Or a professional association such as yours? All of these can be much more useful than they have been.

One institution we cannot look to, it seems clear, is the private industrial corporation. While a few have undertaken experiments of their own or pioneered—albeit somewhat timidly—in this field, I know of none that has shown any interest in a broad exploration of this important area. Nor, as private-enterprise, profit-seeking institutions, is there any reason

why they should divert their attention from what they see as the promotion of their own self-interests.

But for the rest of us, we do have the responsibility and we ought to be getting on with the job, each in his own way and without waiting for the others to act or engaging in time-consuming debate as to who should move first. It is no time for a Gaston and Alphonse act. I am talking about my own university, and I am talking about you.

It may be worth mentioning at this time—and, I hope, put to rest—a few points that are often emphasized in discussions of this topic. These are points that may be well taken in other respects but do little, in my opinion, to help us toward solutions.

A lot of discussion centers on the respective contributions of the inventor, the developer, the innovator, the marketer, etc. The discussion is interesting, and it is important to the extent that it becomes necessary to apportion a reward or to decide who should be stimulated. But it is irrelevant to the question at hand—namely, whether and how the inventor should be rewarded or stimulated.

The answer is that all the contributors are important, each in his own way. After all, Vince Lombardi was quite a coach, but he needed the Bart Starrs and Ray Nitschkes to do an effective job, just as they needed him. And all should be the beneficiaries of appropriate stimuli and rewards. Some of those who most vigorously insist that salary incentive is all that is needed to make the inventor tick are the most insistent supporters of a "piece of the action" for themselves, typically in the form of year-end bonuses, profit-sharing arrangements, and stock options.

A second point often urged is that management is the best judge of what course and policy to follow. And that injection of outside factors, whether in the form of laws, government officials, union representatives, or the creation of legal rights in the employee (as distinguished from the *ex gratia*, discretionary award that is typically used by even the most enlightened employer) will simply louse things up.

Both points are well taken, and certainly a note of caution is in order. But the observation hardly enjoys the status of a universal and immutable law. Every business executive is not necessarily all-wise, any more than every outsider is necessarily a bumbling officious meddler. In any event, the self interest of the employer does not always coincide with the legitimate interests of the employee and of the public.

So there is a place for outside input, properly conceived and wisely administered. Until the employer can demonstrate that he invariably, consistently, and in all instances makes the best possible policy decisions, his contention that his judgment should be left completely untrammelled, come what may, is less than completely persuasive.

Finally, there is the understandable fear that any public program that might result would simply become a device for rewarding the noncontributor and the undeserving. I grant that this could happen. I grant also that many of the complaints heard about improper or niggardly treatment may stem from persons who deserved no more than they got. But there is no reason, as I see it, why a program wisely conceived and properly administered should not work effectively, equitably, and in the public interest, rewarding and stimulating those who deserve reward and stimulation, and giving the bum's rush to the freeloaders. In any event, the remote threat of such dangers hardly justifies our continued inaction in an area that cries out for exploration and imaginative treatment.

Statement of
John P. Sutton
Patent Attorney
Limbach, Limbach and Sutton

I come to you as an advocate of the Moss bill. And I urge the ACS to support it and urge its enactment by Congress.

The two most important things the bill would do are:

- Abolish preemployment assignments, the almost universal practice of requiring, as a condition of employment, the assignment of all inventions made by an employee.
- Require that the employee have a right to his invention, and that he work out with his employer what should be done about that invention.

Our patent system has been designed to promote the progress of science and the useful arts. People have argued for nearly 200 years about precisely what that means. Historically, various cases have held that either the system is designed to reward the inventor, or it is designed to protect the public interest and encourage public disclosure of inventions to prevent them from being kept as trade secrets and not freely circulating in the public domain.

The law seems to be clear that the paramount concern of the patent system is public disclosure of ideas, because that provides the building blocks upon which new ideas may be formed to promote progress. Until recently, no one seriously urged that the patent system was designed to provide an incentive to investors so that new products will be brought to the market place through investment of capital funds.

The first question is whether a problem exists. I believe there is some support for the proposition that the U.S. is falling behind some other countries in producing the maximum number of new inventions for the dollars invested in research and development, or in other ways that give rise to the invention.

A number of scholars have measured this to determine who is ahead in the number of patent applications and at what rates patent applications have been filed. Others have measured the number of disclosure documents prepared within companies. Still others have studied the introduction of new products involving inventions. Others have carried out studies of whether engineers are as productive in creating new inventions as they might be. What all the statistics mean is subject to some subjective evaluation.

One lecturer at MIT who is a patent lawyer stated in *IEEE Spectrum* that he has studied, through his students, the attitudes of engineers with respect to inventing. He said: "And if we will but be true to ourselves, we must admit that most companies are not getting anything that remotely approaches the real potential of their engineering staff."

"Again, in a moment of truth, we must recognize the almost complete apathy in most universities that ought to be hotbeds of excitement for creative people."

It is my own experience that the inventor who approaches his task with fervent zeal and dedication is either independent or owns a "piece of the action" in the sense that he has an equity position in his company that provides the financial backing. My experience with inventors in larger corporations is that they tend to give a good day's work for a good day's pay, but are not consumed with interest in developing the invention.

When I ask inventors employed by large corporations whether they are interested in the projects involving the inventions, they invariably say "yes." But, when I ask why they do not devote the time necessary to think the matter through to complete the inventions in the shortest possible time, the reaction is often "what's the use?"

The inventor is willing to give a fair shake to the employer in the form of his 9-to-5 job, but he does not want to hurry the matter along unless he is compensated for it. Those rare exceptions who do devote their attention to the matter because an overriding interest prevails express frustration at putting in more time than their colleagues for comparable pay.

I believe that invention is demanding, and requires the entire attention of the inventor for periods of time. Jack Rabinow, at the recent Conference on the Public Need and the Role of the Inventor, commented that he had plotted his own personal inventive activity over many years. When he had administrative, managerial, or other duties outside his field of interest at the moment, his productivity decreased dramatically. Similarly, when

he became an employee of a larger organization, he found that his production of inventions (according to his personal notebook) dramatically decreased.

It seems to me that inventors respond to stimuli the same as every other living organism. The stimulus that I believe is best is the patent system, which accords to inventors the exclusive rights to their inventions. That stimulus has, in effect, created a special class of people—namely, inventors and authors who are to be treated differently from others in the sense that they are to be rewarded when they publicly disclose their inventions.

When corporations come into the picture, they take away the inventors' rights through the almost universal practice of preemployment assignments. That is, as a condition of employment, the prospective employee must sign a form stating that he will assign all inventions he makes during his employment to the employer. Even when there is no written agreement, the usual rule is that the employer owns all inventions made on the job.

I submit that such assignment destroys whatever incentive might have been provided by the constitutionally created special class of inventors. The only way we can be sure that the inventor is receiving the stimulus intended by the framers of the Constitution is to assure that he receives a "piece of the action." It is only logical to do so, because of historical intention. To devote the kind of effort needed for invention we need to encourage extra effort. Extra effort is needed because inventions are above the norm in routine engineering, and they are recognized as such.

As far as I am concerned, it follows that when an invention requires production of an idea that is not obvious and beyond the skill of the routine engineer, an inventor needs to either provide extra effort or extraordinary creativity. My experience has been that extra effort is always a part of extra creativity. It then follows that when you want extra effort, you must provide extra incentive. And the very best incentive I know of is money. Money can be provided in the form of a "piece of the action" or a fair shake for having provided the invention in the first place.

So I do not leave you with the impression that my argument is grounded only on the Constitution, I want to emphasize that the reasoning is current in the U.S. Supreme Court. In *Goldstein v. California* (decided June 18, 1973), the Court said: "The words 'to promote' in the Constitutional clause to which we have referred are synonymous with the words 'to stimulate,' 'to encourage,' or 'to induce'. . . In other words, to encourage people to devote themselves to intellectual and to artistic creation, Congress may guarantee to authors and inventors a reward in the form of control over the sale or commercial use of copies of their works."

So in 1973, the Court is telling us that the Constitutional purpose is to reward inventors. The present system does not in any sense reward inventors, because the employed inventor has no guarantee of any compensation if he makes an invention. He may get a salary, but he gets no promise of any extra compensation. Rather, the windfall of savings resulting from a new invention or an enormous income from licensing goes wholly to the employer. None of it, absolutely none, goes to the employed inventor.

Some companies, acting as enlightened corporations, give a small amount of compensation to inventors who obtain patents, but there is almost never any right to such compensation. I believe the Constitutional purpose is thwarted when the reward that the Supreme Court spoke about is not provided to the inventor.

The solution to this problem is quite simple. It is to abolish preemployment assignments as a condition of employment. Even enlightened companies such as IBM and Westinghouse, who reward their inventors and provide pins and jewelry and other forms of recognition, still require that the employee promise to give his inventions to his employer as a condition of employment. This is wrong. The payment of extra bonuses and gems and other forms of compensation is entirely the result of corporate benevolence and is not an employee right. When you rely upon corporate benevolence, it is subject to management whim and the company's perceived economic situation.

I believe that assigning inventions on the day employment begins is against public policy. Such a practice is designed to stifle any anticipation an employee might have that he can get a "piece of the action" if he really comes up with something good.

It has been my experience that employees who come up with a good invention frequently leave the company to form a new one. This happens frequently in the San Francisco peninsula.

Surely it is not socially desirable to have an employee, at a time when he is most valuable—that is, after he has made an important invention—to leave the company and go through all the dislocations and frustrations of starting a new business. It would be better for society in general and the original employer specifically if the employee knew that he would share in any rewards gained from the new invention. And society would certainly benefit in eliminating the voluminous litigation over theft of trade secrets and other contract disputes that arise when these employees leave to start up new companies.

Of course, the reason the employee leaves is that he wants to share in the fruits of his labors. By having an equity position in the company he joins, he knows that his efforts—his extra efforts—can be directly shared through his partly owning the company.

I am not advocating the practice of leaving the company and forming a new corporation, because I believe that it is socially disruptive. I am simply observing that this widespread practice is a fact of life caused by the lack of incentive present in most corporations because of preemployment assignments.

Once we have abolished these assignments, it becomes much easier to deal with inventions as they arise. Then, the employee and employer can discuss the matter and reach an agreement as to what it is worth. This is all the Moss bill does.

If employer and employee agree that the invention is worth a new water bottle for the desk, or a new piece of laboratory equipment, that ends the matter. Similarly, if employer and employee agree that the invention is worth $100 at the time of filing a disclosure document, $100 at the time of filing the patent application, and $100 when the patent issues, they can still agree. Companies that have such a program in existence now have nothing to fear.

If, on the other hand, the invention has a fair market value greater than these things, the parties have to face up to the matter and agree upon what it is worth.

Some other countries have a great deal of experience in precisely this kind of determination. Nearly every sophisticated and industrialized country has such a law to protect employed inventors.

Germany and Japan, two of our strongest competitors, have had mandatory compensation systems for employed inventors for years. I do not contend that the sole reason they are on the ascent and that we perhaps are not ascending as rapidly is because of this lack of incentive. But I do submit that there is some relationship, and that there is a need for providing an employee with incentive.

In Germany, for example, there are three techniques used to determine fair market value. One is to draw an analogy to a license agreement; in other words, act as if the employee is licensing the invention to the employer. If there has been experience in such licensing, a fair market value can be readily determined by an analogy to license agreements that have been negotiated. Another technique is the actual profit that can be directly attributable to the invention. If this is impossible to determine, the parties can guess (based on certain guidelines) as to what the fair market value is. Of course, the guess is made between people negotiating at arm's length.

Statement of
Dr. Edmond D'Ouville
Director of Technical Liaison
Patents & Licensing Department
Standard Oil (Indiana)

It is certainly in the public interest and a proper concern of the Congress to make sure there are tangible incentives to encourage employed inventors to invent. It is likewise a matter of self interest and concern to most employers, and it is certainly to the inventors themselves. There is not much room for debate on the desirability of providing strong incentives to motivate creative people to use their capabilities to solve problems and improve life on this planet.

The question before us is: How can this objective best be attained in real life, where we have a wide range of industrial situations, many inventor types, and a scattering of employer policies? Should we rely on the interplay of free competitive forces, on a legislative code such as H.R.1483 (Moss bill, 92nd Congress), or on some combination of the two?

Legislation providing incentives would have to be explicit and clear. This would require simplification resulting in a law that would be satisfactory for some commercial situations but not others. Efforts to impart flexibility tend to overcomplicate the law and create administrative headaches. These might sap the enthusiasm of the employer and the inventor.

It should be remembered, too, that an inventor needs more than monetary incentives to do his best. He needs an employer who will develop his invention and commercialize it. The inventor realizes that this kind of support by his employer will not only get him more money in the long run, but also a little satisfaction, prestige, and recognition along the way. What we should try to provide are double-barreled incentives for the employer and the inventor to work together in an entrepreneurial way.

To illustrate the difficulty of administering a law such as H.R.1483 (and I am sure this difficulty will be the principal objection), I would like to cite a few statistics I have compiled during my employment with Standard Oil Co., as well as some personal observations.

From 1956 through 1965, we considered 7,460 invention disclosures submitted by employees, primarily the company's R&D staff. During those 10 years, 1,770 patent applications were filed; thus, one out of four disclosures resulted in an application. During the same decade, 1,384 U.S. patents were obtained.

Five years later, in 1970, we tried to evaluate these patents in terms of monetary worth to the company. This was a difficult assignment, even having the advantage of hindsight. I know it would have been much more difficult had we tried to do it any earlier.

One observation is that more than 90 percent of the patents were granted to only 5 percent of the R&D staff. The motivation was presumably the same for all. The prolific inventors apparently had either more inventive skills, better opportunities, or both. Other companies have observed similar results.

Another observation was that in terms of value to the company, five of the patents proved to be worth more than all the others. Three were gold mines in the million-dollar class, serving as a basis for new business and licensing. Many, of course, were of no apparent value, and two led to substantial losses when put into practice.

It is clear that a time factor is not only of the essence, but crucial. In many cases, good inventions were superseded by better ones before the patent issued. In others, the inventor was ahead of his time, and the invention will not be commercialized until the patent has expired or is ready to expire.

Perhaps the most disturbing observation is the relatively high proportion of patents for which commercialization was never really tried. It is possible for a very capable and creative industrial inventor to work for years without having the satisfaction of seeing any of his inventions commercialized.

If H.R.1483 had been in effect during this period, I am confident that a degree of prophetic wisdom unknown so far would have been required to provide equitable compensation to those inventors who were granted patents. The rigid time-frame imposed by this bill makes this omnipotence essential. The mediation board (provided by the proposed legislation) would become overburdened very quickly, and would be unable to cope.

In petroleum refining and petrochemicals, it is not easy to evaluate inventions realistically until several years after they have been made. This may not be true to the same extent in other fields, where the merit of an idea can be measured quickly by some yardstick such as sales in the first year or two after the item is on the market. Thus, it would appear H.R.1483 would work for some situations, for employers in some fields and for some employees, but not for a large proportion of them.

Considerable thought has gone into this bill, and its authors deserve credit for a good effort to solve an old problem. There are many good ideas in the bill, and the authors have taken advantage of other people's experience (especially foreign groups). But the question arises: Could the present bill be changed to make it more effective in more cases? It is certainly worth a try.

The release principle embodied in the bill is a good one and worth preserving. When an employer does not want to patent or make use of an invention having all the characteristics prescribed by statutes for patentability, he should be willing to release it to the employee-inventor in exchange for a shop-right or its equivalent. The inventor, on his part, should be willing to assume the burden of seeking patent protection himself; that is, be willing to put his money where his mouth is and not merely ask for a release to force his employer's hand.

Also, I saw an opportunity to apply what I call the minimum-wage principle to this situation. For example the law or generally accepted employment contracts could provide that employee-inventors would receive, say, a $100 fee when a patent application is filed for them; another $500 or so when a patent is obtained; and, finally, $1,000 to $5,000 when the invention has been used commercially by the employer or a licensee for five years. This would be a token compensation, but I believe an effective incentive. Primary reliance for major compensation would still have to be as salary increases or bonuses.

This fee system, however, would make employers think about and evaluate inventions, and it would force them to keep clear records on the sources of inventions and their use. It would bring in the quality factor to some degree in evaluating patents (often overlooked in granting fixed bonuses when a patent issues), and it would, I believe, stimulate inventors to invent. Finally, the uniformity would provide a common denominator of sorts, and be an improvement in many companies where "one dollar and thank you" is the only incentive.

I feel the ACS and the American Institute of Chemical Engineers could serve their membership by pressing for uniform and fair patent standards for R&D members employed by both large and small firms. This can be done by supporting legislation, or by supporting or becoming advocates of really fair employment contracts. I suggest the legislative approach be held in abeyance until the other is tried.

Statement of
Dr. Clayton F. Callis
Director of Research & Development
Monsanto

Let me emphasize at the outset that I am here as a concerned ACS member and not as a spokesman for the free-enterprise system, or even the chemical industry part of that system. I simply do not have the knowledge or experience required to do that.

My mature working life has been spent almost entirely with Monsanto, and this job experience is the basis of my remarks. I have experienced the results of Monsanto policy; until recently, I was not

involved in shaping that policy. So I do not even speak for Monsanto, and I can only relate what my own observations have been.

I am personally involved, as an administrator, in remunerating employed inventors. Not too long ago, I was involved in the same matter but as an employed inventor on the receiving end of the remuneration. (In college I certainly contemplated remuneration before I elected to join an industrial firm.) My remarks are within this framework, and they are based on my own experiences—which may parallel those of many.

Monsanto advertises itself as a firm based on technology, and I feel this is true. Invention (covered by patents or not) and innovation (defined as a shop-right or not) underlie all of our more than 1,000 products. Monsanto defends its market share by continuous invention and innovation, and it counts on technological creativity for its growth. The company is not in the banking business, and has no monopoly positions. To stay healthy in a competitive environment, the company must continually improve its product lines. And to grow, it must develop new markets or find new products for existing markets.

Monsanto realizes its dependency on invention and innovation. To support this dependency, company policy has, for a long time, included procedures through which inventive and innovative contributions by employees can be rewarded. This policy goes back to the Swiss chemists who came to St. Louis in the early years of the company to develop the first processes and start up the first production facilities.

Before you leap to the conclusion that a policy of rewarding invention and innovation is the whole secret of Monsanto's growth from a single-product company to its present stature, and to the corollary that if it worked for Monsanto it will work for society as a whole, let me take you behind the scenes. I feel there is an even more important part to the Monsanto success formula, if you will let me call it that.

Monsanto has an achievement award program. This applies to all functions: technology, marketing, manufacturing, and staff. There are written procedures for administering these achievement awards; these procedures provide for nomination, review, and disbursement of sums ranging from a thousand dollars up to three months' salary for the employee on the receiving end.

This is not an end-of-the-year "let's use up our budget" sort of event. Instead, it is a quick way to reward an employee for a significant achievement without waiting for the regular salary merit adjustment or the promotion procedure. Both of these take time, involve considerable paper work, and are subject to all kinds of external checks and constraints.

We do keep track of achievement awards by category—manufacturing, marketing, technology, and what not. For this meeting, I have generated a ratio of the number of awards made during 1972 in invention/innovation/technology to the population of the company's technology fraternity, and I have compared this ratio with that in marketing, manufacturing, and so on. Technological activities were recognized twice as often than they would have been if the achievement awards had been distributed uniformly on the basis of employment population alone.

Since 1972 could not be claimed as Monsanto's most productive technology year, the awards rate leads me to the conclusion that the company is putting its money where its advertising says it is: on a technical base.

Indirect remuneration for technological creativity at Monsanto ranges from the proverbial "pat on the head" through several varieties of peer-group recognition, to salary increases, and to promotions. It includes assignment to the science and engineering fellow program, which provides job titles for in-house recognition of engineering and scientific contributions. It is, in effect, what some other companies describe as a twin ladder of promotion, permitting an individual to stay at the bench or keep his slide rule and yet earn the rewards of a manager who is supposed to be in an office and direct people.

In some cases, as in my own, there is promotion to the administrative side. Admittedly, there are two schools of thought on whether this is a reward for technical skill or the lack of it. Some of these procedures are prescribed in company policies and procedures, some are informal. They have to be taken together to define what it is that makes the company go.

On graduation from college and after a brief brush with another employer, I joined Monsanto. I would probably have gone to work for the devil himself then if he had offered me an equipped laboratory. I wanted to continue in chemistry to the exclusion of everything else.

I do not class myself as an inventor, but I did enjoy my years at the bench. I feel that I contributed to furthering the company's objectives, and I have had the thrill of seeing my brainchildren sold at the local five-and-ten and supermarket. I have also had the internal satisfaction of knowing that, for a while at least, the products of my test tubes were the best available in commerce and that they did contribute to human health, welfare, and happiness. Monsanto shared in my feeling of pride and, over the years, I have received many of the direct and indirect rewards referred to.

This is not to imply that all Monsanto technical people have been treated fairly over the years. In my own limited and brief experience, I have seen people overrewarded for innovation, with results even more destructive of individual integrity than underrewarding. I have not agreed with the magnitude of several of the direct and indirect awards that have come to my attention. I have seen people, under duress, sharing credit with others for ideas they originated by themselves. I have never seen the outright theft of an idea, but this is not to say that such theft cannot happen.

Any human activity lends itself to abuses, and any organizational system will have built-in loopholes. In fact, warding off these abuses and guarding against these loopholes in the segment of Monsanto technology under my jurisdiction would be a very good job description for the position I now hold

Granted, there is a limit to how many laboratories an individual can occupy at one time, and I am only influenced by my reading and personal experiences. But it does seem to me that, from the point of view of the employed inventor, the Moss bill or any of its proposed variants misses the target completely.

What we are trying to do here is enhance creativity by providing positive reinforcements for acceptable behavior. Such reinforcement, it is assumed, will draw some individuals into the inventing profession, and they are expected to lead more productive lives there. This production will further the cause of technology and thereby enhance its benefits to society as a whole.

These are objectives no one can quarrel with; certainly not I. My present work is dedicated to exactly this end, and I can use all the help I can find. But I submit that in formal Federal legislation we are approaching the wrong end of the mule.

The problem is not a greedy employer seeking to keep more profit for himself. If it were as simple as this, the greedy employers would be run out of the free-enterprise system as their nongreedy competitors outinvented them and outinnovated them.

The problem is in the supervision of the innovator/inventor. This is where the positive reinforcement for a good job well done begins.

It is the supervisor who administers the encouragement and creates the work climate where suggestions are fostered, developed, and permitted to grow. It is the supervisor who initiates the paper work for the salary increase and for the promotion. It is the supervisor who recommends merit increases and achievement awards, but these are mere levers he can pull to ward off stagnation and mediocre performance. It is the supervisor who recommends promotion into the twin

ladder program if that is the employee's ambition and desire.

Supervisors are human beings. They vary in empathy and in communicative skills. Some are good at their job and some are rotten. Some can inspire their employees but not their bosses. Some can fool their bosses but not their employees. In all this welter of supervision, who will get the achievement award, who will get the salary increase, and who will get the promotion?

Or, perhaps more important, when there is no award, promotion, or incentive, who will receive the stimulation to come back into the laboratory the next day and try again? Those of you who have been at the bench will agree that the human spirit faces failure in innovation/invention far more frequently than it faces success.

We are closer now to a discussion of morality than we are to a discussion of legal rights. As our experience with the 18th amendment to the U.S. Constitution showed, it is next to impossible to legislate morality.

A Federal act to require that inventors be rewarded for their inventions will not help supervisors who already reward their inventors. It may add to the paper work and it may substitute some cash for intangible rewards, but will this really make a professional work harder? I doubt it.

A Federal act in this area will merely provide the incompetent supervisor with another document to which he can point with pride as he continues to mismanage the talent under his trust. A Federal act such as the Moss bill would provide a good deal of employment for the attorneys of litigants who feel they have been cheated, but it will not further innovation or speed development, in my opinion. In fact, I feel that by distracting those actually occupied in the work, it may well have the very opposite effect.

I believe, on the basis of my experiences, that we are dealing here with a nonlegal issue. I feel we are truly talking about basic morality as it applies to innovation/invention. And to close with a quotation from the immortal Pogo, "We have met the enemy and they is us."

Statement of
Dr. John H. Bachmann
Professor of Chemistry
University of Akron

The University of Akron recently surveyed some other universities to learn their approach to patent applications by their faculty members. Our own policy had been somewhat vague, but culminated in the university's having the right to the patent, which was assigned to the university by the rather standard payment of $1.00 and other "good and valuable considerations."

The survey revealed that a relatively vague policy for pursuing patents existed on many campuses, but usually a more generous financial agreement was made with the inventor. Following the study, we drafted a tentative policy for adoption by our board of trustees. The document establishes two important principles: There shall be speed in all stages of decision making, and reward must accrue to the inventor.

Although our document was drafted originally without reference to the Moss bill, those familiar with that bill will recognize that these two principles are fundamental to it.

It may not be obvious at first glance, but there are several problems involving speed in decision making in the patent process at a university. After the inventor makes his disclosure to the university, a decision must be made on whether the university wants the rights to the patent. In a research-oriented industrial organization, this decison generally can be made more easily than in a university, where the office of the dean of research may determine patentability and economic potential (usually with help from outside the university).

When the university decides to prosecute a patent, the inventors are kept informed of the progress, and they have an obligation to assist in preparing additional claims and amendments and in efforts to license the technology. When the university waives its rights, the inventors are given a release so that they, at their option, may engage private counsel.

According to our proposed policy, if the university were to decide to prosecute the patent, diligence must be shown. And if eventually the patent were granted, some stipulated per cent of the income from the patent would be assigned to the inventor. In principle, these provisions are compatible with the Moss bill.

University management is a very complex operation. Because of the breadth of managerial operations, not all the types of tasks that need to be accomplished can be done with consummate skill. And when you consider the variety of disciplines involved, it is a wonder that policies can be drafted and implemented which are applicable to and agreeable with such diverse interests.

Furthermore, university managerial skills do not generally extend to patent law and practice, or to the sale or exploitation of patents. In most universities, perhaps, experience in these fields is limited. In fact, invention is not generally regarded to be the target of most university research. Something called "pure science" is usually regarded as the proper objective of academic investigation.

We were quite surprised to find the number of universities in our survey that were coming up with totals such as six to 12 patents—not per year, but total.

A similar deficiency often exists in the specific managerial skills relating to invention in small industrial organizations that are not research-oriented. For organizations not oriented toward patent problems, it is desirable to have some stimulus for speeding the process from applying for a patent to eventual sale or licensing. Our proposed philosophy at Akron is dedicated to this objective. And this seems to be a major target of the Moss bill.

I imagine that everybody would like to see the time between disclosure and patent application kept short. Ideally, this should be the responsibility of the assignee. Whether authority over monitoring of diligence should be assigned to a bureaucratic arm of the Government is surely debatable.

For completeness, the attitude of Government or industry toward sponsored university research should be alluded to. Everyone I talked to in my survey seemed satisfied that agreements now written into contracts with industry adequately protect the sponsor and define the rights of the inventor, although some uncertainty exists with government grants and contracts.

I am sure that many of you have discussed the Moss bill with management people, including members of your legal department. I have talked with several of our area's industrial legal groups, and I have found concerns ranging from a feeling that the Moss bill represents the populist appeal of protecting the little man, to a concern regarding possible pitfalls. Should the Government be involved in this type of contract negotiation between employer and employee?

Among the pitfalls, consider what might happen in a lawsuit in which a patent is declared invalid. How could the assignee recover anything already paid to the inventor? Or, what if a given patent is merely a part of the big picture in some area of technology? Would it not be difficult to evaluate one patent individually as to timing, dollar value, or even significance?

DISCUSSION

(This discussion concluded the hearing.)

Dr. Marcy: You have heard from two lawyers and three chemists or chemical engineers, one representing the university community and the others generally representing industry.

We do not have a spokesman for the Government-employed inventor, but it seems to me that he would fall more within the university community than the industrial community.

It seems that what we have here is a relatively broad spectrum of opinions and facts and some experiences reported to us.

And we seem to have learned that there are different problems in these areas.

The question we need to answer is how can one bill, such as the Moss bill, apply to all of these different communities of interest?

In preparing for this hearing, I wrote to the president and executive director of both the American Institute of Chemists and the American Institute of Chemical Engineers to learn whether they would participate in any way. Dr. D'Ouville, in effect, represents the response from the AIChE, as he became a member of this panel via that route. No one was appointed or is designated by the AIC to carry the message to us in a formal way.

I happen to be a member of the AIC's patent committee. My personal feeling about the attitude of the AIC is that, while it is interested in this matter, it has not really begun to come to grips with the problem of what to do, if anything, about the Moss bill. In my capacity as a member of that organization's patent committee, I feel that committee is just groping in the dark, and there is very little real interest on the part of the membership in taking a position on the bill.

I intend to carry back to the AIC the information we develop here, and I also plan to report back to the AIChE the ideas that have come out of this meeting.

Another thing I found interesting and necessary to consider in this matter is the large-company-employed inventor versus the small-company-employed inventor. Dr. Callis indicated he thought this was a moral issue. While most large company employers are moral and ethical in their dealings with individual employees, this is not necessarily true of a smaller company, where there are but one or two technically trained employees. The Moss bill would at least provide an increased bargaining power for the small-company employee in his negotiations with his employer.

Not all small companies would be in a position to develop a complex award system, nor would they have the capability needed to administer the system. Such companies would benefit from the administrative bodies set up under the Moss Bill.

An additional item I think is quite important is that the Moss bill would apply not only to chemically oriented inventors, but also to all other inventors—such as electrical engineers, mechanical engineers, and agricultural engineers. Patenting, licensing, and exploiting of patents by companies having mechanical or electrical devices are quite different from the situation in the chemical industry. The Moss bill, as now contemplated, would apply to these as well. What effect would the Moss bill, if passed, have on these industries?

In general, it seems to me that the idea of compensation for the employed inventor has to be flexible. It cannot be inflexible and rigid. Not being a lawyer myself, I tend to think that for anything set in law, change is difficult and interpretation of the law becomes grist for the lawyer's mill.

Dr. E.J. Vandenberg, *Delaware Section and an industrial researcher:* I have worked for a large generally progressive chemical company for 34 years, and have been involved in filing over 150 patent applications; about half of these have issued as patents. A number of these patents have been very important to my company.

Needless to say, I have received very substantial recognition for my patent contributions, in a variety of ways. On the other side of the coin, however, monetary recognition, although certainly accorded, has not in my view been commensurate with the value of the patent contributions. I fully recognize the difficulty of devising a fair scheme for such recognition, since many people usually contribute to the financial success of any commercial venture.

But, we must not forget that invention is vital—indeed, the keystone—to our economic system. Therefore, I believe that it is very important that invention be fully rewarded and encouraged. We need greater incentive for creative invention. I think it is important for the ACS to take a role in obtaining greater recognition for inventions and inventors.

I speak here not for personal aggrandizement. Indeed, one might suspect this might have a negative influence. I hope not, and I suspect not, but I am speaking here as a Councilor of the Society to promote the general well-being of our profession and industry in an area where I believe we are very weak for one reason or another.

Certainly the ACS Award for Creative Invention has been an important step forward by our Society. However, even this award can be improved. Of the 26 awards given by our Society, there are only two that do not receive monetary recognition: Creative Invention Award and the Priestley Medal. All others involve $2,000 to $10,000 gifts.

In my view, a first step by the ACS should be to add an appropriate monetary recognition to the Creative Invention Award. Creative invention is the livelihood of our industry and Society, and should be recognized accordingly.

I realize that these are very difficult economic times for the ACS, but it seems to me that funds could be found for such an important area. I want to emphasize that if I should ever receive the Creative Invention Award—and I am not implying that I am eligible—I would not personally accept any monetary recognition.

Obviously, the general area of compensation for employed inventors needs much study. I do not have any panacea to suggest that would correct what I believe to be the situation today. I am not very familiar with the Moss bill. I can see from Mr. Sutton's description of it that it obviously has some problems. But I would agree wholeheartedly with most of what he said. It is a difficult, complex problem but we must work on it. At least initially we could set an example for the industry by appropriately modifying our own Creative Invention Award.

Dr. Marcy: Thank you very much. That's a very good suggestion.

Wanda Sterner, *Executive Committee of the Southern California Section:* The Southern California Section simply voted to support the principles of the Moss bill, with the proviso that Section 414, beginning with line 17, page 6, be modified to remove ambiguities. This section refers to the definition of fair market value, and I suspect that some of Mr. Sutton's suggestions, which are in the German bill, would perhaps take care of this.

Mr. Sutton: The Moss bill does not provide any specific way of determining fair market value, or how the extra compensation is to be actually determined. What it simply does is state that the fair market value should be agreed upon by the parties. If the parties feel the invention is worth a gold watch or a new water bottle for the desk, then fine, so be it. They can make that agreement, and that's the end of it.

As for the argument over what the fair market value should be, the fact of the matter is that this kind of dispute has not arisen in other countries. I think it is fair to assume that we would not have any great amount of litigation overburdening any mediation board if we were to enact legislation similar to that in other countries.

What we do have in the bill is provision for regulations to be set up. Under these regulations, we might draw upon the laws in Germany, Sweden, Denmark, Finland, Norway, Holland, Austria, Switzerland, Italy, Portugal, Japan, and the Soviet Union, all of which provide for mandatory compensation of employed inventors.

How do they do it? Three important factors need to be considered. One is who set forth the problem that was solved by the inventor? Did the inventor pose the problem himself? Did he say that there is a problem that no one knew existed and he has come up with a solution? Or did the corporation provide him with a laboratory and say here is a problem, we want you to look into it, and give him the supervison and direction? Obviously, in the first situation, the employee should get more than in the second situation.

Another factor is who contributed to the solution. Was it solely the employee, or did the supervisors Dr. Callis referred to have some part in forming the invention? Did they pose the problem and help solve it? Such assistance, and all those involved in the inventive process, are

also considered under the regulations in other countries. The time, facilities, and inventive contributions of others are all very important factors that have to be considered in weighing what the fair market value is.

Employers today usually give a specified amount as an award for each patent application. I say that is backwards. The right to the invention ought to be with the creator. Then he and whoever else wants to deal with it can negotiate and determine the fair market value. Most of the time there really is no problem in determining this. If the company is enlightened, it will make sure that someone gets either a $500 retainer, as Dr. D'Ouville suggests, or some other appropriate payment. All I am saying is that we need a mandatory provision by which the inventors can be compensated.

The third factor for determining fair market value is: what are the duties and the position of the employee who made the invention?

If he were the janitor, I think he would be entitled to greater recognition for a worthwhile invention than if he were in the research laboratory, assigned to and paid for inventing. The greater share of the reward should go to the man who is not asigned to that kind of a task.

The Moss bill specifically provides for a right of review when one side or the other does not agree on the value of the invention. My experience with most inventors is they will go along with the company's program. But the inventor ought to have the right of review by a mediation board when circumstances warrant it.

And it should not be left solely to the benevolence of the corporation. If the corporation—if all corporations—were as nice as Monsanto appears to be, perhaps we wouldn't have this problem. I can, however, testify that all corporations are not so enlightened, and I think we need a mandatory system of compensation so that each employed inventor will receive a fair shake.

Dr. Don Baker, *Chairman of the California Section, member of the Economic Status Committee, and Member of the Council, and an industrial employee:* The discussion concerning the Moss bill may be moot in that there is a very good possibility that Congress will not act upon it at the present time.

Perhaps what we are talking about may be a little bit late. It is rather easy to throw dirt at any particular bill you might be opposed to. It is much harder to make constructive comments that would make the bill more amenable to how you would like it to be worded.

The authors of the bill, and Congressman Moss, obviously had certain ideas in mind. I suggest that the ACS also has an interest in inventions, and that it consider means—such as hearings of this type—by which the thrust of the Moss bill might be made more to the liking of ACS members.

The California Section voted some time ago to support the basic tenets of the Moss bill. We felt there were some things we did not like about it; but there were a lot of other things we did like.

The idea is that this is a proper thing for the ACS to consider. The Council, the Board of Directors, and the Patent and Economic Status Committees should deal with these problems and devise some suitable means by which the membership and the Council might make suggestions to appropriate legislators.

I think it is important that incentive and recognition be given to inventors—for example, bonuses. Portions of sales, to cite another example, are given to encourage salesmen to greater sales efforts.

Actually, what the ACS promises is mediocrity. Surveys such as the salary survey vary little with whether a person is an employed inventor or whether he is in a position with even the possibility of inventorship.

Perhaps the Society can act through its Guidelines for Employers. These might be modified some way to encourage industry to furnish means for greater recognition—monetary or otherwise—for inventors.

Dr. Marcy: Do you have any suggestions as to what you think the Society should do in the way of developing some kind of detailed guidelines?

Dr. Baker: There was a survey of many chemical companies as to their policies involving patents. It pointed out how greatly industry varied from almost no recognition whatsoever to substantial financial and other types of recognition for inventors.

It is probably the most diverse type of recognition. There is no real set policy. I think that perhaps the sort of thing the Society should really decide is: What is the standard that should be applied to inventors? Should you give them just a dollar when the invention is disclosed? Or should you give them a certain amount on filing? Or should there be a certain amount when the patent issues? Should there be a certain percentage of the profits from that particular invention?

I think these are the things the Society should come to grips with—decide what is equitable, and how to encourage invention.

Dr. Marcy: Do you think there would have to be different guidelines for different industries, as, for example, the steel industry versus the petrochemical industry?

Dr. Baker: I think that for chemists, the ACS certainly could make guidelines. I think the guidelines as they would apply to chemists would also have more general applicability to, say, steelworkers, plumbers, or electricians.

Dr. Bernard Sturgis, *manager of patents and contracts for an industrial corporation:* I have been a research chemist and a laboratory director, and I certainly am not going to argue against offering incentives to chemists and engineers to invent. But I would like to ask some questions regarding the practical application of some of these concepts.

In the past nine years, I have spent my time negotiating licenses. Mr. Sutton said this is almost the same as a chemist with an invention trying to sell it to his company. It is not an easy job. Many people have come to us with inventions. They want to sell them to us. Perhaps we want to buy them.

There is never any agreement between the other company or the inventor and ourselves as to the value of the invention. We spend months, sometimes years, trying to find a common ground, trying to decide what is a fair price. Sometimes we never reach one, and negotiations are broken off.

Do we have to go through this with a chemist every time he makes an invention? Do we have to spend hours and days and months negotiating with him as to what is the value, and what should we pay for this?

Certainly we have no crystall ball to help us decide what the value of the invention may be. We have a hard enough time when an invention is made trying to decide whether it is worth filing and how broadly to file in foreign countries.

We bring all our best business minds together to try to decide how important the invention is, what it will mean to us five or 10 years from now. And we guess wrong as often as we guess right. It is not an easy job to negotiate between a company and an inventor about the value of the invention.

Another point is that we do not seem to have any lack of inventions. We get many, many invention notices, and many, many inventions filed. As Dr. D'Ouville said, we get several times as many invention notices as we do inventions that we finally decide are worth filing. We are trying to discourage filing on many of these inventions because many of them —literally—are not of that much value.

We used to file a lot of customer-use type of patents. We have almost abandoned those. We used to file a lot of patents of rather doubtful value. Our legal department just cannot handle it. There is too much work coming in.

We do not want to fill the Patent Office and the literature with a number of patents of not much value. Suppose an inventor received $500 for every patent filed. What would happen? Every time he returned an invention notice and we decided not to file, he would be very unhappy and say we are trying to cut him out of his $500.

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Is an invention worth more if you foreign file? The inventor may want to file in 25 countries; we might want to file in five. If he gets more money for filing in more countries....

Okay! It seems to me the administration of this is a very, very difficult thing, and the best solution, I think, is to reward the inventor if his invention makes money for the company. Our company has such a plan. Monsanto has such a plan. Many other companies do.

Instead of trying to outguess the inventor at the start, let the invention make money and share it with him. I think all progressive companies do that.

Mr. Sutton: I just want to comment on the problem you pose because it is a very valid point, and I think you show an understanding of the situation that is important. But I would, at the outset, say that the difficulty in negotiating the value does not mean that we should not do it. If the employee warrants compensation, he ought to receive it, even if it is very difficult to determine precisely what that ought to be.

I agree that negotiation is difficult. I, too, in the past nine years have spent some time in negotiation. But I do not believe that each time an employee makes an invention we have to go through this kind of process. Surely they do not in Japan, Germany, and the other countries, and I see no reason why our experience should be any different from theirs.

The only time you have to go through negotiation is when you have an invention that the employee thinks—rightly or wrongly—is a break through and has enormous value. And if you think it has some value (and you obviously have seen some cases where you are sure that it has a lot of value), it is just a question of defining precisely what that value is.

My experience in dealing with inventors is that they have no interest at all in the business part—the negotiation process. That is not their forte. They want to be at the bench, and they do not want to be fighting it out with somebody.

So I submit that the answer is that most companies will have the enlightened policies your company apparently does. By that I mean that they will, as a general policy, say that you determine or agree that fair market value is some fixed amount.

I am very much opposed to having fixed amounts, such as $500, because I do not think that a lot of inventions and patent application are worth $500. And we have an awful lot of those. I advise my clients not to file, just as you apparently do in your company. I think we need better and stronger patents.

All I am saying is that when you have the great one, the really big one that comes along, it is a windfall for the corporation. And if it saves a great deal of money, the inventor, without whom nothing would have occurred, ought to be able to share in it.

You indicated your company does that. But your company is in a minority. Companies as a rule do not, even today.

The C&EN report on this subject pointed out that: "Indirect compensation rather than rewards directly tied to patents has been the preferred method. The primary method of indirect compensation are salary raises and promotions." That's the way it is done today. Perhaps your company is an exception; but, I submit, this is not being universally done. I agree wholeheartedly that you reward the inventor if the company makes money.

The only idea I think we should have is that it be mandatory to have some kind of assessment of the fair market value instead of relying upon the corporation's good will and generosity. I think it ought to be mandatory, rather than wished for and hoped for.

Dr. Sturgis: I certainly do not think we should pay a fixed amount every time we file a patent, because I think the morale problem could be very great. If the company decides not to file a patent on the invention, the man does not get his money, and it may stifle his inventiveness for the next several years. I would hate to see that happen.

Dr. D'Ouville: These plans to reward an inventor years after the invention has been successful are a good thing. They have been used very effectively at DuPont, Minnesota Mining, Illinois Tool Works, and elsewhere.

But such plans are a far cry from what the Moss bill requires: namely an evaluation at the time the claims are allowed. That is the hard thing to do. Nobody knows with certainty what the invention is worth at that point in time—neither the inventor nor the company. It takes years and experience to determine the value of an invention.

As for giving a $100 award when the patent is filed, I really do not think that creates such a problem. If the invention is not worth $100, the company has no business filing it. The company ought to be willing to release it to the inventor if he thinks it is not worth more than that.

And I don't know of any company that has had trouble with the policy of giving an award when the patent is filed. It is simply a little compensation to keep the inventor's interest up during the time the attorney gets it prepared and through the office.

Dr. Sturgis: But do you file a lot of patents you would not ordinarily file that way, just so the inventor can get his money to keep him happy and keep morale up?

Dr. D'Ouville: We give only $100 when the patent is filed. I don't think we have ever filed simply to keep somebody happy. But we do have a policy that if we disagree on whether an invention is important—the inventor thinks it is and we do not and choose not to file, and it is a real invention—we release it to him and let him file it.

Dr. Sturgis: I think that should be part of the plan.

Dr. William Kirsch, *former Chairman of the Philadelphia Section, currently a member of the Committee on Economic Status, and a Councilor:* I am interested in other people's reactions concerning a specific point. That is, dealing with inventions that are not patented, or are at least not brought in as innovations, which means bringing them into the market place.

What I am asking is this: How do people feel about it? Would you like to see the Committee on Economic Status or some other part of the ACS look into the question of what should happen to the inventions, or at least to those ideas that never get commercialized? Is there a mechanism that the ACS should promote for having such an invention released under a license from the company that hires the inventor, or perhaps releasing the invention to him outright to file or exploit in his own fashion?

Dr. Marcy: Are you referring to nonpatentable inventions or to those that would not be patented?

Dr. Kirsch: I am referring to any idea, whether an invention or not legally, but an idea that is not considered marketable or worthy of investing additional labor and capital by the employer. In other words, an idea that just does not mesh with somebody's business, perhaps.

We have made a point here that the inventor can become frustrated if he brings up things that never seem to go anywhere. This is one way he can become unfrustrated, if you will.

I am interested in other people's reactions. Is there any interest in this kind of thing? Certainly there are loads of ideas that do not mesh with a person's business for valid reasons. My point is, from the view of the inventor who has invested his own education, his own knowledge, his own effort, and in addition to compensation he receives, should there be an allowance made? Should there be an opportunity for him to exploit or capitalize on his idea if the company, his employer, chooses not to?

Dr. D'Ouville: I think that the typical employment contract provides that if an employee makes an invention within the company's field of interest, he has an obligation to disclose it to the company, and, the company may either file on its own behalf or release it to him. But I think that the rule that prevails is that if the employee makes an invention outside his company's field of interest, it is his fundamental property; he can do with it as he chooses.

Dr. Kirsch: But in the case of a multinational corporation with multifaceted

interests, where do you "get outside"? Realistically. Take an entity such as IT&T. What is outside the purview of IT&T, from nuclear physics to life insurance?

Dr. D'Ouville: If it is a thermostatic control for a goldfish bowl, I would say it was outside their field of interest.

Mr. Sutton: I will give you a more direct answer, and say that the Moss bill does precisely what you are advocating. It provides that the invention belongs to the employee, and if the corporation wants it, fine. It can negotiate or adopt some kind of policy whereby the inventor is compensated for it.

If the corporation has no interest in it because it does not mesh, because they do not like the way the fellow parts his hair, or for any other reason, they do not have to take it. The employee is then, by terms of the act, free to do with it as he chooses.

Dr. Kirsch: Let me make one point, though. The reason I raised this was not to push my own idea, because it is not. I was wondering whether there is any audience interest in this kind of thing? That is why I asked.

Dr. Marcy: Perhaps we could have a show of hands. Is there anybody who feels that the Economic Status Committee should undertake to determine how best to handle this situation?

I see perhaps 10 hands out of the 50 people in the audience. I would say that is enough to warrant the Economic Status Committee to look into the matter.

Dr. William J. Bailey, *professor of chemistry and department head, ACS Presidential candidate:* I am on the Subcommittee for Governmental Centers for Research and Development of Chemistry, and the Committee on Chemistry and Public Affairs. This is a topic we have been kicking around, too—that is, the entrepreneurs, the independent inventors. We also have been concerned about getting inventions released. However, we do not know the mechanisms for getting inventions released by corporations.

Perhaps the members of this panel would like to say just what the mechanism is now, or would be under the Moss bill. How does an employed inventor go about getting the release of a patent so he can exploit it himself?

Dr. Marcy: Are you referring to Government or industrial employees, or both?

Dr. Bailey: Government employees and employees of both big and small corporations.

Dr. Marcy: This is a very important question that will probably take until next week to answer, but I might make a few comments.

In the case of the Government employee, the Government retains all United States patent rights, but will generally release on request the foreign patent rights to any invention he makes.

This problem is being discussed currently by some Government administrators, so it may be resolved in the not-too-distant future.

In industry, it is a case of bargaining with your employer. But it is very difficult for a lowly research chemist to bargain with his employer, because the employer is a large company. This is the whole point, as I see it, of the Moss bill. Perhaps some of the panel members may not agree with me.

Mr. Stedman: I think your last statement probably covers it. There is only one real answer; it all depends on whom you work for and what kind of an arrangement you have. I suppose that this is really what the legislation is directed at. It underlies the basic question: Is there a public interest in legislation that would attempt to set some general principles or rules on the theory that there is a public interest in this? Or are we quite content, now, with the system in which it simply becomes a matter of private bargaining between the employer and the employee?

In the absence of bargaining, of course, common law doctrine controls. But even that is a little bit vague. Common law, as distinct from an agreement, is probably relatively minor today.

One of the things I have been impressed with on this subject over several years has been the real lack of information. We have episodic information—this inventor, that company, and so forth. But we have no real way of knowing what the mass of people, whether they are chemists, electricians, or what not, really know or feel about this subject.

After all, there are two basic questions we need to be concerned with from a policy standpoint. One, what will or will not, in the way of law, stimulate inventors to do more than they are doing at the present time? This assumes that we want them to do more than they are doing. The second question is to what extent would a given type of law be workable from the standpoint of administration—would it do more harm than good?

Somewhere along the line, Congressman Moss or whoever it is ought to have some sort of input. And as I see it, the real input is most likely to come from organizations such as the ACS, which really could find out—presumably from its members, not from the Board of Directors—just how they feel about these things.

We are greatly concerned about how this type of legislation would work in this country. And yet, as has been indicated several times, there seems to be a rather high degree of satisfaction in the countries that do have it.

My impression is that nobody in Europe is thinking of pulling back from this kind of legislation. Several countries that do not have it are talking about it. This may not be the answer so far as the U.S. is concerned, but I find it significant.

Another thing that impresses me in Europe are the organizations and associations. There is an international organization known as the International Federation of Inventors Associations; they call it IFIA. The president of that association has been in this country a couple of times in the last two or three years, trying to find an organization in the U.S. that could be sort of the representative here. He hasn't found one; they don't exist. He was amazed at this, and surprised by it, and disconcerted by it.

There is another organization. This spring, I happened to obtain a copy of a questionnaire that was sent out by the International Federation of Commercial, Clerical, and Technical Employees, headquartered in Geneva. They are sending a memorandum and a 9- or 10-page questionnaire to associations to obtain information on practices and laws dealing with inventions and how things are working.

We are going to have this kind of information sooner or later for this country. Either that, or we do not legislate, which may or may not be a mistake. Or we do legislate, and we legislate either wisely or foolishly. We do not really know without more input than we now have.

My immediate question is: What can the ACS do to correct this situation? I would ask the same of Dr. Bachmann and people at my own university, namely, what can they do to get the answers to some of these things. This is something I would really like to see the Society direct itself to. How can we really find out, as distinguished from obtaining isolated, individual, episodic, or anecdotal experiences?

Dr. Callis: Dr. Bailey, you asked a question: How can you go about getting release of ideas? Was that not the sense of your questions?

Dr. Bailey: Right.

Dr. Callis: I feel that the key to the question of proper handling of an inventor is with supervision. If a supervisor does not stand up for his inventors, the problem has to be corrected another way. Get rid of the supervisor.

I wonder how many inventors have not been turned down, but rather assumed they would be turned down. I think the ACS can get some information on that subject.

I have often had people tell me that you cannot publish from certain organizations. I find out that they do not write up their work and ask whether it can be released or not. They just assume that it will not be released, and they start complaining that "I can't get anything released."

Dr. Henry A. Hill, *member of the ACS Board of Directors:* Someone mentioned what the ACS could do. I obviously will

not speak for the ACS, but I would like to turn this into a framework that is a little different from the one that has been developing.

From the point of view of the Past Chairman of the Council Committee on Professional Relations, and what happens to the total relationship between the professional scientist and his employer, there is frequently an employment contract that has something to say about inventions.

Some of what we have talked about here in terms of inventor compensation contains, in my view, an element of elitism, whereby we are singling out the person who happens to have made the contribution to the discovery. You will recall in the case of streptomyecin that the judge awarded a certain amount of the profits, the royalties, to the woman who cleaned the culture tubes in the laboratory. I think we have to allow that we are concerned here about all of the members of the ACS, all the professional employees, and perhaps all the employees.

If there is a way to increase the award for an individual, this may be worth pursuing. We are also concerned about the abuses, and I think I disagree with the previous speaker somehow as to how we come to correcting abuses in our society.

I think that a Morro Castle or a Coconut Grove fire are the ways in which we sometimes move to correct abuses.

As a member of the Council Committee on Professional Relations, I have seen individuals forced into early retirement. And there are many of us who could almost calculate the contribution the inventor was making to the profit picture of his corporation. So I think the question here is: Why should we be examining this anyway?

We examine it because, anecdotal though our information may be, we have enough instances presented to us where individuals have made significant contributions to corporate profits and have not been adequately rewarded. Not only have they been inadequately rewarded, in other instances they have been rather disgracefully turned toward early retirement and sent out to pasture.

So what we are looking at here is not just how we might take care of any one of our significant inventions; but how can we raise the standards under which the employer treats the professional scientist in his employ?

If we do have means left over for rewarding the .350 hitters, let us do that. But remember that the .250 boys also help keep the ballgame going.

Dr. Callis: Dr. Hill, there is one aspect of this subject that has not been brought out. What do you do with the .001 hitter? Do you ask him to turn back some of the funds that you have given him? I do not mean to say this in a derogatory manner, but I think that one of the elements in this subject is the lack of or the presence of risk in the invention process.

The inventor –that is, one employed by a corporation—does not have the same risk as the entrepreneur, the fellow who risks all when he goes out on his own. The problem of always regarding the good and not doing anything about poor performance is a bad feature of many corporation activities, I think.

Dr. Hill: Well, there is the question of the goal you set for the employee in the first place. When we talk about batting averages, it is quite clear.

But I would like to cite a guideline, which my professor (Norris) always gave us. He, as a lieutenant colonel in World War I, worked on developing poison gases. He described for us how he, as a director, assigned one man to react one molecule with another, a second man to react two molecules with another, and a third man to react three molecules with another. The third man came up with an invention; the others did not.

Dr. D'Ouville: I think it would be well to look at this entire problem from another point of view. It is true that the Germans have had legislation rewarding inventors, and it has not given rise to complex and bitter administrative problems. It is true in Japan, Sweden, Spain, and so on.

But I have never seen any evidence that the inventors in those countries are more highly motivated than American inventors are. In fact, if you were to look at the statistics on the balance between the export and import of technology, you would find that the U.S. exports more technology than any other nation and Great Britain is the second most effective exporter of technology. Neither U.S. or Britain legislate awards for inventors.

So I think we might just question whether the German inventor is more highly motivated in spite of his assured award than is the American inventor. I am not so sure he is.

Dr. Alan McClelland, *Chairman of the Committee on Economic Status:* As a member of one of the cosponsoring committees of this symposium, I would like to cordially invite anybody who has specific and anecdotal information to bring it to our attention.

One of the things the committee has wanted to do is look at what the real needs are. We have felt, therefore, that this is a matter we do not want to rush into to take some kind of a position on.

It is true that anecdotal information can sometimes be misleading. On the other hand, we all have a tendency to sort of argue from a theoretical position, and we can sometimes rush into something. For example, we might move into Federal legislation when perhaps there is not that much indication that it is needed.

I personally am not ready to take either side. But the Committee on Economic Status would be very glad to know of any specific cases that could serve as evidence of what the real problems are.

Dr. Henry Bader, *a member of the Council Committee on Professional Relations:* My company has a very high representation of patent records and independent inventions. Every time I file a patent application, I receive one dollar. I am getting my rewards for it, and I definitely do not complain. I get my increases; I get all sorts of monetary remuneration.

But my financial position — my financial rewards — is a composite of what my supervisors think I am doing for the company, the kind of an image I present, the kind of a person I am, who I am politically, who I am in hundreds of different ways, whether the big boy upstairs remembers me just on the day when it is important, or whether he remembers what I have done for him lately.

I think our main concern is the dignity of the professional man. I would like to be rewarded directly for what I think is my contribution to the company, without all these other considerations.

Dr. Sturgis: In answer to Dr. Bailey's question about releases, I think many chemists are unduly optimistic about how easy it is to make money from an invention or patent. We grant lots of releases. I don't know of a case where the person has made a nickel off his invention after we released it.

Furthermore, we hear from many chemists that if you have a lot of patents that you are not using, you are sitting on them. True; many companies have many patents they are not using. But it isn't because they don't try.

A few years ago, a large chemical company tried to license all its unused patents. It had practically no success. We have published lists of our unused patents, trying to interest people to license them. We contacted people personally. But if the patent is not of much use to you, it is not of much use to anybody else, either.

If a chemist thinks that just because the company is not exploiting his patent he can make a million dollars with it, he will probably be sadly disappointed.

Dr. Leiserson, *Government employee:* My organization funds inventors, and others, to develop technologies. The resulting patents are issued to the Government, and they are available for exploitation generally. But my experience has been that these Government patents, which we believe are valuable, are not exploited because they are available to the public at large. They are almost the same as publishing in the open literature.

We then get to the question: How do you exploit the valuable patents (using my judgment as to what is valuable) that are lying around for everybody to use? I think this is a problem that Mr. Sturgis has raised. And Dr. Bailey has raised the question. Would these patents be valuable

if we had the necessary entrepreneurism? That question has not been answered.

Dr. Bachmann: I feel that when you are talking about patents lying around, you are frequently talking about a patent that is merely a part of the big picture. How can you evaluate just one patent as to timing, dollar value, or even significance?

Many of us know people who claim discoveries which have made millions of dollars for their companies but for which they have never been given credit. I think people often tend to overestimate the dollar value of many of the things they have announced.

Dr. Callis: I certainly believe in rewards for inventions, and I hope I have given that impression. I also believe that rewards for inventors should be variable. If the person expects $100, $500, or even $1,000 from one invention, and he is always striving for that, he is going to get bored with that incentive.

He wants to have other things available to him, such as promotions or recognition from peers and bonuses. You cannot stick to one formula and keep many of these people motivated. They need a variety of stimuli to be at their creative best.

(The following letter to Dr. Maynard was included in the record of the proceedings.)

Mr. John M. Koch: *Morro Bay, California:* Please accept my thoughts with respect to the employed inventor and his ownership of his invention made while he is employed-at-will and not under a contract of employment.

A patent is defined as being "a government protection to an inventor, securing to him for a specific time the exclusive right of manufacturing, exploiting, using and selling an invention." This definition is in accord with the Constitutional provision that gives Congress the power to promote technology by giving inventors an incentive to make inventions and disclose them rather than practice them in secret. Under the common law, an inventor employed at will, owned his invention made while so employed and the employer, at best, obtained a shop-right or free use of the invention in his buiness.

Employers-at-will wanted more than a shop-right. They wanted ownership. They had the employee-at-will agree to assign ownership of his future inventions to the employer at the time of his employment. Under this practice, which became universal, the employers during the past two generations, without contracts of employment, took the place of the "inventor" in the above-given definition of a "patent." Thus, for all practical purposes, the employed-at-will inventor does not operate under the U.S. patent system and receives nothing or very little for his inventions. He is in a position inferior to that of the employed inventor in Japan, Germany, Russia and other ascending industrial nations.

To the extent that the employed-at-will inventor has lost ownership of his inventions, the Constitutional patent provision has been defeated. Congress has not exercised its power to restore this lost ownership, and the U.S. Supreme Court has not ruled upon the validity of the ownership loss. To make matters worse, the Government also took title to inventions made by its employees. This reaction of the Government reduced the above-given definition of a patent to nonsense and completed the usurpation of the at-will employees' patent bill of rights.

The universal practice of employers-at-will taking ownership of the inventions of their employees led to increasing misuse of patents in monopolies, restraints, of trade, and unfair competition. Congress reacted to these practices by passing the Antitrust and Clayton Acts. It did not go to the root of these evils; namely, the employment future inventions assignment agreement.

In recent years, the Government, largely through contracts with private corporations, spent more on research and development than private industry. Patent provisions in Government contracts resulted in Government ownership of many patents. The difficulties of determining invention ownership and use under Government contracts led to the issuance of White House memoranda to attempt to establish guidelines and uniformity in the invention and patent activities of Government agencies and Government contractors.

Inventors employed at will by Government contractors and by Government are not motivated to invent by a patent system incentive for the reasons given above. In fact, many of the most talented scientists and engineers are annoyed by the delays and confusion in which their discoveries and inventions become involved, and they prefer to publish their contributions to science and technology rather than become entangled in patent procedures and delays. They prefer prompt recognition for their contributions and brush aside delayed compensation.

Accordingly, the tug-of-war between the Government and Government contractors for patent ownership and the loss of ownership and interest in patents by employed inventors has practically destroyed the purpose of the patent system. Clearly, the first and most important need for revitalizing the patent system is to restore the original meaning to the above-given definition of a patent. This can be done only by Congress under the Constitutional provision establishing the patent bill of rights for inventors.

If this is done, misuse of patents in monopolies, restraints of trade, and unfair competition will be minimized. Consequently, the need for Government ownership will practically vanish. Incentives for employees to make more and better inventions will be maximized. Scientific contributions promptly will be published, and technology rapidly will be advanced through prompt elections to patent or to publish. Government and private employers will receive valuable shop-rights in more and better inventions at less expense and to the benefit of the public. Less trash will be filed in the Patent Office, patent applications will not pile up in huge backlogs, and the morale of the examining corps will benefit. Fewer patents will be litigated, and the courts will be more sympathetic toward upholding the validity of patents.



Dr. John T. Maynard: *Chairman of Committee on Patent Matters and Related Legislation.*

1940



Dr. Willard Marcy *is Vice President—Patent Program of Research Corp. He received his degrees from MIT and worked as a process development engineer for Amstar Corp. for over 25 years. He has been director of Research Corp.'s Patent Program since 1965.*

Research Corp. is a non-profit tax-exempt foundation that provides grants-in-aid for fundamental scientific research in the natural and physical sciences primarily at educational institutions. The foundation also provides patent assistance to educational and scientific institutions, but disclaims all rights to patents that may result from its grants.

Dr. Marcy is Chairman of the Joint Subcommittee on Compensation for Employed Inventors (see the introduction).



John C. Stedman *is a professor at the University of Wisconsin Law School. He has been at Wisconsin since 1935, teaching mainly intellectual and industrial property, antitrust, and trade regulation.*

During his law and teaching career Prof. Stedman has served with the U.S. Government in the Office of Price Administration, the Office of Alien Property, and the Department of Justice. He was Associate Counsel for the Senate Patents Subcommittee from 1955 through 1961, where he supervised the preparation of a series of studies on the U.S. Patent system and related matters.

Prof. Stedman has been a member of the National Inventors Council since 1963, and has taken part in a number of activities of the Bar Association. He has authored many law articles, including several dealing with the employed inventor.



Mr. John P. Sutton *is a patent attorney and partner in Limbach, Limbach and Sutton, a law firm in San Francisco, California. He received his bachelor's degree from the University of Virginia in 1956 and his JD from George Washington University in 1963.*

Mr. Sutton has worked as a patent examiner with the U.S. Patent Office and as a technical adviser to the U. S. Court of Customs and Patent Appeals. He has been a lecturer at various meetings of the Practicing Law Institute, the Southwestern Legal Foundation, and similar organizations, as well as the Law School at the University of California at Berkeley.



Dr. Edmond D'Ouville *was Director of Technical Liaison, Patents and Licensing Department, for Standard Oil (Indiana). He received his Ph.D. in chemistry from the University of Pennsylvania and entered the petroleum industry as a research engineer at Standard's Whiting Research Laboratory.*

Dr. D'Ouville also spent three years at Mellon Institute, returning to Standard in 1945. He has been continuously associated with research administration since then. In this role, he has been involved in formulating and implementing company invention and patent policies, including compensation and recognition of inventors. He has served on Standard's patent application committee, and represents the company in patent matters involving outside inventors. He retired from Standard in June 1974 and is presently a consultant to a number of firms.

Dr. D'Ouville also holds 39 U. S. and many foreign patents dealing with petroleum refining processes and products.



Dr. Clayton F. Callis *is Director of Research and Development for Monsanto's Detergent and Fine Chemicals Division. He received his bachelor's degree from Central Methodist College in 1946 and his Ph.D. in inorganic chemistry from the University of Illinois in 1948.*

From 1944 to 1945, Dr. Callis was an instructor at Central College. He joined General Electric as a research chemist in 1948, then went to Monsanto in 1951. He is the author of more than 30 publications and is coauthor of a reference book on particle size.

Dr. Callis is active in the ACS, serving as a Councilor from the St. Louis Section and on the Membership Affairs Committee of the Society's National Council. He was Section Chairman in 1962. He is also on The Editorial Advisory Board of the Journal of the American Chemical Society. In 1971, he received the St. Louis Section's Award.

He is also a member of the American Institute of Chemists, AAAS, and is an alternate to the Industrial Research Institute.



Dr. John H. Bachmann *is Professor of Chemistry and Head of the Department at the University of Akron. He received his bachelor's degree and Ph.D. from the University of Minnesota.*

He has worked for B. F. Goodrich and Pittsburgh Plate Glass as a research chemist, becoming manager of PPG's applied inorganic research group. He was part-time instructor at Akron from 1955 to 1961, when he became full professor and department head. He has been named an Outstanding Educator of America, and is listed in a Record of Contemporary Achievement of the Dictionary of International Biography.

Dr. Bachmann has held many offices in the ACS, including: Chairman of the Akron Section; Chairman of the section's Committee on Continuing Education after Graduation; Chairman of Project Interface; and a National Councilor. He also has been Secretary-Treasurer of the Division of Inorganic Chemistry, and member of the Committee on Public Relations, Executive Committee, and Chairman of the Planning Committee.

PART II
TRANSCRIPT OF HEARING ON PROTECTION FOR EMPLOYED INVENTORS
San Francisco, California, May 10, 1975

PROCEEDINGS

The Hearing on Protection for Employed Inventors was sponsored by the Committee on Patent Matters and Related Legislation of the American Chemical Society, following the 29th Congress of the International Association of the Protection of Industrial Property (AIPPI), to determine the attitudes and experiences of specialists from foreign countries who have worked under governmental systems in which extra compensation for employed inventors is mandatory. This Hearing was convened in the Stanford Court Hotel, California and Powell Streets, San Francisco, California, on Saturday, the 10th day of May 1975, at 9:00 a.m., John P. Sutton, Chairman, Ad hoc Subcommittee for Informal Conference on Compensation for Employed Inventors.

INTRODUCTORY REMARKS

John P. Sutton, Esq.
San Francisco, California, U.S.A.
Chairman

Good morning. I would like to welcome you all here on behalf of the Patent Committee of the American Chemical Society. My name is Jack Sutton. I am a practicing lawyer here in San Francisco, the only member of the Patent Committee of the American Chemical Society who resides in this city. For that reason it fell upon me to be the Ad Hoc Chairman of this group, and it is my presence here in this city that is my principal reason for being before you aside from an abiding interest in this subject. I believe it is important for our country and for our operation of the patent system. We are here on a fact-finding effort and we would like you to gain from the experiences that others have had in countries where legislation similar to that proposed in this county has existed.

The sponsoring organization here is the American Chemical Society. The Society is composed of individual chemists and chemical engineers. Rather than my telling you what the American Chemical Society is and does, I would like to call upon Dr. Stephen Quigley, who is the Staff Director for this Committee and a very active participant in the Society itself. He is a full time member and an employee of the American Chemical Society, but he is also a distinguished chemist as well.

Remarks of
Dr. Stephen T. Quigley
Director
Dept. of Chemistry and Public Affairs
American Chemical Society

Thank you, John. And good morning, everyone.

On behalf of the American Chemical Society, I want to express our appreciation for your taking the time out from your conference to come and share your views with the Society on this subject, which is of increasing interest to the membership of the American Chemical Society and also to a large number of other groups in this country.

As John said, the American Chemical Society is a nonprofit individual membership organization made up of about 110,000 chemists and chemical engineer members throughout the world. About 60 percent of our membership work in industry, about 30 percent in academia, and about 10 percent in Government and nonprofit institutions.

We would like to emphasize to any group that the American Chemical Society has no corporate memberships. We do not represent the chemical industry. We are a federally chartered scientific and educational society, and we like to think that our principal efforts are directed toward the advancement of the discipline of chemistry, thereby fostering the public interest in the general public welfare. We try to be as objective as possible in these fields of endeavor, and that applies to this particular subject.

Since there is an increasing interest in this type of legislation in the U.S. Congress at the present time, our membership, because of participation in agreements with employers in regard to the rights of inventors, is interested in learning all it can about the ramifications that might be involved in any change in the present system. We have been conducting, under the auspices of the Society's Committee on Patent Matters and Related Legislation, a continuing study, as indicated in the memo that John passed out to all of you on what the present practices are in U.S. corporations and what some of the practices are in foreign countries. We seized upon this opportunity of your being here in San Francisco to try to interact with you and to gain more information about how this subject is being treated in your respective countries. We certainly appreciate your taking the time to be with us this morning.

Chairman Sutton: Perhaps I should more specifically define the subject at hand. In the United States Congress there is now pending what is called the "Moss Bill." It is H.R.5605, which is currently assigned to the Committee on the Judiciary of the House of Representatives. It is possible that hearings will be held on it, although, to my knowledge, none are currently scheduled. However, in advance of any legislative interest in this subject, the American Chemical Society would like to know what, if any, its position should be, and the task has been assigned to its Committee on Patent Matters. That is why we are here, to determine if there should be any position taken by the American Chemical Society with respect to the Moss Bill.

The Moss Bill is designed to provide extra compensation for employed inventors. It is patterned very closely after the statute that exists in Germany, with some modifications for United States special problems, but nevertheless is largely similar to the German law. We are, for that reason, very much interested in the experiences of any of you who have practiced in Germany and have had any exposure to the operation of the German law for compensating employed inventors. We would like to know whether it works or whether it does not work, whether it is equitable, whether it is good for the industry as a whole and whether it is good for inventors as a whole, and any specific anecdotes you would care to share. We are here to gather facts and to gather knowledge.

We took this occasion today, after the close of the A.I.P.P.I. Congress, simply as an opportunity to hear from visitors from all over the world, a unique opportunity that we would never have had if this Congress had not been held here.

The present state of the United States law is that there is no mandatory compensation for employed inventors. Some companies, often very large companies, do provide a system where they do grant, in some instances, very sizable awards to inventors. It is not mandatory by statute. It is largesse, if I can use the term, it is a gift of the employers. One specific example is IBM, the computer company, which is very generous really in the treatment of its employees. Other companies, however, in the United States do not provide any king of compensation.

There has been a report of this general problem published by the National Bureau of Standards that is available on what some of the corporate practices are in this country. It is very helpful, and if

any of you are interested in the particular book, I would be pleased to provide information about it.

On behalf of the American Chemical Society, a survey of employed inventors within the State of California was taken. The survey showed first of all that the great majority of employed inventors assigned their inventions—something like 98 percent of the employed inventors had to assign their inventions—to the corporation that employed them, as a condition of employment. Secondly, the majority, a bare majority, but nevertheless most of the inventors, received either $1 or nothing at all by way of compensation, extra compensation that is. They received a salary and they were in many instances given benefits of one kind or another, but not extra compensation. I have a copy of the report on that survey as well, if any of you are interested in it.

The common law, however, at least as I understand it, is that the employee has the right to his invention in this country unless a contract supersedes, with one exception, and that is the "Shop Right Doctrine." That provides that the employer has the right to use the invention in the event he contributed facilities or dunds to the development of the invention. That, however, is a doctrine of common law and, again, is not a statutory one.

We have before us, however, a statute, as I indicated earlier, which has been proposed to determine whether a mandatory system of compensation, much like the German law, should be enacted. So we solicit your views on any experiences that you have had.

I am going to start with a distinguished colleague at the head table, who has had considerable experience on this subject and has written a book entitled "The Employed Inventor in the United States," MIT Press, 1971, surely the definitive work in this area as far as our country is concerned. After he speaks, I would like to have any of you come forward to state, first, your name, and any extra qualifications you have to speak on the subject. I recognize many of you here as having special expertise and qualifications that should be set forth. It will be assumed without stating that every one of you is interested in the subject or you would not be here. However, in the event you have written any papers, that you have done something as a representative of your government, or anything of that sort, it should be stated by way of qualification at the outset when you speak.

Now, I would like you, after you state your qualifications, to give us your experiences and what you have found out to be the case in your particular country.

There will only be two limitations on speaking. The two qualifications are relevancy—you have to speak to the subject of this legislation, and not some other subject—and time constraints. We have no formal rules about time, but we would ask that you be brief in consideration of those others who will follow you.

Now, at this time I would like to introduce Dr. Neumeyer from Sweden, who has been very active in this field for a good many years and has a tremendous depth of knowledge on this subject.

Remarks of
Dr. Fredrik Neumeyer
Sweden

John Sutton, Mr. Quigley, ladies and gentlemen. Well, this is really kind of an ad hoc meeting, so there are no prepared papers of any kind on my side. I don't know the state of interest and extent of knowledge you have in this very specific field, but I just thought I would give you some very general points on how this field looks from a more international perspective.

You hear many times that legal provisions on employee inventions are very new, or a very new invention made during the last decade, or starting in the Soviet Union, or something like that. But that is really not true. This field is very old. The oldest national regulation of it really came about before the turn of the century, in Austria, which at that time was called the "Austro-Hungarian Monarchy." In their patent law they have remarkable detailed provisions on employed inventors in the old Patent Act of 1897.

Even other countries started very early to look at this problem in a more or less detailed way. There may be gentlemen here from Holland. The Dutch law had already introduced provisions on employee inventions in 1910, Switzerland in some form in 1911. Japan became aware of the problem in 1935 and introduced provisions on employee inventions in their Patent Act.

It is probably more known that after that time Italy and Germany became very interested. Mussolini was very interested in the stimulation of inventors for certain reasons, and so was Hitler, because the armed forces wanted to have new inventions. There was a need for some kind of legal provisions which came about in 1934 in Italy and the 1940's in Germany (the regulations of 1942, 1943, and 1944). These legal provisions are very important. They are today a piece of legal history. But they are important if you want to get a survey of the total situation.

After World War II, in 1949, I suppose our little country, Sweden, was the first one which started in this field and did it in the way of a special law only dedicated to these specific questions.

In 1955, the next Scandinavian country, Denmark, issued a law—then Finland in 1967, and Norway in 1970. The result is that special legislation in this very field now exists in all Scandinavian countries and in the Federal Republic of Germany.

There is also international development. We have all heard Mr. Bogsch and Mr. Pfanner from WIPO in Geneva. When their organization was called "BIRPI," they produced a most remarkable document which is called the "Model Law" for developing countries on inventions. This Model Law contains Section 10, which is, in my opinion, very well drafted and gives a good idea how you can regulate the problems of employee inventions in a concentrated way. The Model Law is under revision.

We have another international organization, the International Labor office which has existed for a very long time and is concerned with the questions of the "blue collar worker." But they are, in principle, also concerned with the intellectual worker. So they have had a number of meetings and have made some resolutions which are concerned with this. Last year I made a report for them on a consultant basis with a survey of the legal provisions on employee inventions in the whole world, which covers about 70 countries. To my own surprise, I did not only find legislation in Europe, but also in a great number of developing countries, in Africa and Asia, and so on.

Now, just a very few words as to what the contents of any advanced legislation on employee inventions should contain. I think this could be concentrated into five points. We have to have a clear situation on what we in Europe, in Scandinavia and Germany, call the "categories" of employee inventions. You are bound to give a closer look to different types of inventors. And while I can't give you any details—that would go much too far—a number of countries have three types, three categories, of employee-inventors, and others have two. In this country you have no categories at all.

The Swedish main categories would be:

First, people who are making inventions in employment on the basis of their contractual service, so-called "pure service" inventions, where research or inventive activity is the primary task of the employee;

Second, employees who make inventions within the field of activity of the employer, without having any specific order to make inventions having come about in some other connection with the employment;

And, third, employed inventors making inventions outside the field of the activities of the employer or where the invention has come about without connection with employment.

Now, this has different consequences.

The main point has not been mentioned in this meeting. Of course compensation is quite basic. But compensation is not the only problem which should be solved.

The first thing would be the right of ownership or what we call the "allocation of rights." In this country you are not used to that, because usually by invention assignment the employer receives the total title in all inventions made during employment. There are, of course, possibilities that the employer is satisfied to get a license, either an exclusive license or a nonexclusive one. And the third point, of course, is when the employer will release the rights to the inventors, the so-called "waiver," which is practiced in certain U.S. government agencies such as NASA.

Now, we finally come to extra compensation. We have laws on that and we have guidelines. The word "guidelines" itself indicates that they are not binding. And guidelines on compensation, as you know, exist especially in Western Germany and in the Soviet Union. As the name also indicates, "guidelines" are meant to assist, let's say, judges or employers to come to a result which is reasonable in different ways. They have not a legal character, but they are important and should be studied by all people who are interested or who are involved with compensations.

We really have in the compensation field two different types. We have what we call "intangible awards" and "tangible awards." The tangible awards are, of course, cash or other benefits, which surely can be variational things, such as a meritorious inventor being allowed to take part in research conferences or being allowed to dedicate part of his time to research ideas in which he is personally interested. In the Soviet Union you have a chance to get a better flat if you are a good inventor. It is in the law. Also in the field of intangible awards we have, of course, number one, that the name of the inventor is cited in the patent documents, which is a point that is quite important, especially to scientists of a higher order, who often think this is more important than money.

In some countries employers have "invented" another type of intangible award. They give meritorious inventors a new title. This is especially practiced in two countries, the Soviet Union and the United States. The Soviet Union has provisions in the law stating that you can become a "meritorious inventor of the Union," or, as a meritorious person, if you make technical suggestions, you may also get a special type of title.

In the United States there are only voluntary provisions, of course. There is nothing in the law. But a number of corporations have started to give the inventors special names. They call them "Fellows," just like a kind of an academy, or use other titles. And when interviewing people of that kind you find that they are very satisfied, it is something very positive, they like to get it and it's kind of an honor which is really appreciated.

While there are very many other outlooks as to compensation, compensation is not limited to cash, as I said. The next point would be arbitration. We distinguish between permanent boards and ad hoc boards, in our country. In Sweden, we have a Permanent Board of Arbitration. Germany has one which is, I would say, half-permanent. The Germans have a permanent Chairman, but he calls on the Examiners of the Patent Office for the invention in the relevant field.

Arbitration boards for invention disputes are important because, by definition, they should work fast, cheap, and try to avoid court litigation. In Sweden, the arbitration board only gives opinions. They are not legally binding, but the statements made in these opinions carry heavy weight and we consider them to have almost the same effect as going to a court.

The fifth and last point would be provisions of past employment—what you call in this country "trailer clauses." This may be of great practical importance. If somebody quits his employment, you have to have a borderline between inventions made during employment and after employment. In many European countries we have a time limit which is, let's say, 6 months. Inventions made up to the time period of 6 months after quitting your employment belong to your former employer, and everything made afterwards is private property of the inventor.

Now, this is a very rough sketch of some of the principal points which come up more or less in all national laws and in the Model Law. I am sure that even if we ever get an international convention, we will always have to distinguish between these five main points of view.

Thank you for your attention.

Remarks of
Wilfried Stockmair
West Germany

My name is Stockmair, from Munich, Germany.

I would like to make only a few short remarks in addition to the very excellent review Dr. Neumeyer just gave. I will make a few points which are not logically correlated or developing from each other, but will have to be considered separately.

As a preliminary remark I would like to stress that there are two aspects in all these inventors' compensation laws, mainly the aspect of promotion of inventions made in companies and the social aspect of compensation to the employed inventor for his inventions.

Now, as Dr. Neumeyer has already said, in the Thirties and Forties in the then fascist countries, Italy and Germany, the aspect of promoting inventions was the basic one. There was also a certain social tendency, but mainly it was the promotion of inventions.

Since the War in Germany, the law on employed inventions and inventors has been developed from this basis of the law, originating during the time of Hitler, and has not been changed very much in fact. But now, as you can see from the case law which has been developed in the meantime, the social aspect is the main aspect. This has important consequences with regard to the situation, the position of the inventors in the company. If it comes to a dispute between an inventor and the employer, the burden to put forward evidence, and the requirements for conforming with formalities, is usually much higher for the employer than for the employee.

I would also like to make a philosophical remark. As I said, the social aspect is the main aspect now in Germany. But there is still no completely just treatment of all employed inventors.

Let me give you an example. There may be two equally qualified chemists in the same company working in different fields, making inventions on the same intellectual level, but inventions which are employed or utilized later on, applied or utilized in different fields and result in different turnovers, profits. Now, there comes up a very important question: how to compensate inventors for these inventions. And this is where I come to one of the main points I want to make. Remuneration in Western Germany is based on the value of the invention. And by "value" I mean the economic value, not the intellectual one. So in my example the invention which leads to a higher profit will lead to a higher compensation. This may be an aspect which, consequently, leads to inventors being unwilling to work in fields where no profits are to be expected. So if there is a draft of a law, of a statutory law, in the United States now, this question of compensation should be considered closely, especially with regard to whether compensation should be paid on the basis of the so-called "value" of an invention or whether it should be paid on the basis of some other criterion.

As for Western Germany, it is as of the moment, as I also mentioned, such that inventions made by employed inventors are per se attributed—by law attributed—to the employer, once the employer has claimed the invention. This involves certain formalities and certain terms within which these claims must be made. This again has the consequence of decisions being made in the employing company, decisions whether the invention is important for the employer and whether it should be claimed completely or given to the inventor's disposal.

This usually is done in the patent department of companies, but of course these decisions may be of great economic importance so that sometimes the respon-

sibility for certain decisions is not easy to take. This may sometimes lead to the people within the patent departments, who are afraid of taking the responsibilities for not claiming inventions, deciding on this problem by prefering to claim these inventions—to file applications on these inventions—just in order to be safe. That is a very simple human problem and may lead, in the beginning at least, in the United States, to a certain increase of applications. After a while it will level out again.

As for the experiences in Germany, since we have had this law for decades now, there is no overall experience—overall statistical experience—to be stated now, but there are still certain companies where the employees get a variable possibility of the inventors' law gradually and then there is a certain transitory period in which the number of inventions increases, and then it is more or less on a stagnation point.

Therefore, one of the important questions is: Who is making the decisions on whether an invention is to be attributed or claimed by the employer?

I would like to make a side remark in this respect. Since many corporations in the United States have foreign subsidiaries—are multinational companies—there are already arising problems with regard to countries where the employed inventors are subject to the national laws and are entitled to obtain compensation, and to other countries where they are not. This may not cause tension among the employees insofar as the salaries are handled differently in different countries, and appropriately handled. However, there are situations where inventors of different national subsidiaries or national companies are cooperating and making a joint invention. Here arises a situation where some of the inventors are entitled to obtain remunerations and others are not. Therefore, some of the multinational companies have set up an intercorporate system for remuneration.

In any case, for these multinational companies it is necessary to make the same decisions, whether they want to claim inventions, for instance, made in Germany or in other countries where employed inventors are entitled to compensation, or whether they do not want to claim these inventions. These decisions must be made either in the respective national countries or in the headquarters.

Now, since there are certain terms to be met, certain time limits, each step of communication promulgates this time. This leads to an organizational problem. And I can give you no comments or no recommendations on how to solve this. I can only describe certain extremes.

One extreme is that the multinationals give the right to handle patent problems completely to the national subsidiaries, which means that the decision, on whether patents are filed and what patents are filed, is completely up to the national management, and there is only an information communication which goes up to the headquarters. This leaves more time for a decision.

The other extreme is that all of the decisions on inventions must be reported to the central headquarters, with all the complications involved. So I would leave this to your consideration in your specific cases.

The last aspect I would like to mention is that in Germany there are two different types of improvements. One is the invention, the other one is the improvement as such. Also, it may be a suggestion, which could be technical or could be nontechnical. Some companies, also non-German companies, have set up suggested schemes which cover technical inventions as well as nontechnical improvements. And there is sometimes a situation that someone who has already received a remuneration for an improvement—for a suggestion of improvement—will later on come up and claim compensation for an invention. Therefore, if such suggestion schemes exist, they should be closely studied as to whether they cover the compensation, whether they cover the remuneration of the inventions, and whether they are in conformity with the formality requirements of the specific national laws.

As to the calculation of compensations or remunerations, as I said in the beginning, it is usually based on the value of inventions in Germany. Now, there are certain criteria. It could be the annual turnover. It could be the annual savings. It could be just an estimate. It is very often not easy to decide on what basis these remunerations are to be calculated.

In any case, there is only one important aspect. It is not possible in Germany to exclude by contract, or to set by agreement, certain final compensation or remuneration. If it turns up during the utilization of an invention that the profits or the value is so high that it is in misproportion to the compensation paid to an inventor, this inventor may always come up and ask for more if he did not receive an appropriate amount, even if there was a so-called "final agreement."

I will leave you with that. Thank you.

Chairman Sutton: Before you sit down . . . I find that hearing both of these speakers raises a number of questions in my own mind, and I suspect in yours as well. I think we will, after we hear representatives of national groups, perhaps ask questions that we have, each of us, and then perhaps we can have answers to those questions raised.

One question, however, I would like to pose to you now, and that I will now ask following speakers to address themselves to as well, is that we would like to have some kind of a conclusionary statement from you as to a broadscale judgmental view on whether something of this sort should be adopted in our country, or whether it should not. What is your overall view, satisfactory, unsatisfactory, or whatever comments of that sort you, and others in the audience, would like to make.

Mr. Stockmair: My personal opinion is that it should be set up here because, as it looks everywhere in the world, where there is no compensation system, there appears to be increasing tensions in the companies. The employed engineers or the chemists do not appear to be satisfied with the remuneration of their intellectual work. And this scheme of additional remuneration could have advantages for the companies, namely to urge individual efforts towards new inventions and towards promotion of new developments.

Chairman Sutton: Thank you very much for a thoughtful and detailed analysis. It is very helpful.

Remarks of
Georg Gansser
Ciba-Geigy, Ltd., Switzerland

My name is Georg Gansser. I deal with the International Organization for the Ownership of Intellectual Property, Ciba-Geigy Corporation, Limited, of Switzerland. I am not at all a specialist in this important field you are just discussing now, but I would like to make a few comments on the legislative situation in Switzerland and on the opinions which research-based industry has on the subject in my country.

The employee inventors are dealt with on the one hand in patent law, namely the tangible right to which Dr. Neumeyer referred. That means that in the patent specification issued, the name of the inventor must of course be mentioned. That is one thing.

The rest is in the label law. It is there that our present law foresees, in fact, the three categories which Dr. Neumeyer mentioned before. If an invention results from an employment contract, in other words, the part of the activity under the employment contract is inventive work, then, this invention under the law belongs to the employer. Actually he is the owner. Of course, the employer, in accordance with his employment contract, has to make the assignments necessary and all other formalities. There is no extra compensation provided for because the view is taken that salary and bonus cover the inventive activity of the employee. On the other side of the spectrum are free inventions which have nothing to do with the field of activity and the employment contract. They belong to the employee. The most difficult category is in between, namely inventions which do not result

exactly from the employment contract, but which have been made by the employee and with the facilities of the company in which he has employment. There the contract can provide that the employee claim the invention and, if it is valuable, then you have to pay a certain compensation to him. That is the position we now have.

As to the Moss Bill type of legislation, industry in Switzerland is very hesitant to follow that line. When I speak with my colleagues in Germany, of course, I speak more with patent department heads. I admit that, frankly, I would be extremely reluctant to follow the German system for my country, because not only does it involve a lot of administrative work, but also I think it often may lead to adversely affecting team work. I am not convinced that extra compensation for a certain category of people who happen to do research work will support and favor research and inventive activities in a company.

If you happen to be a very good chemist, and you work in the analytical department or in production, you simply have not the same chance of making patentable inventions and you have not the same chance to get, therefore, such extra compensation as the German system provides.

I also am a bit hesitant when I see that so many patent applications are only filed to show that they will be rejected and are then not exploited, with no compensation paid.

I must say I think it may look conservative, but we are happy with our traditional system as it stands. Thank you.

Remarks of
Robert J. Kuntz
Professional Engineering & Research Consultants
Sacramento, California, U.S.A.

Thank you. My name is Robert J. Kuntz. I am the president of a firm in Sacramento called Professional Engineering & Research Consultants, and my firm provides the management services to the California Society of Professional Engineers, of which I am the Executive Director.

CSME is the organization behind the research and the drafting of the Moss Bill. The Moss Bill is a very, very close parallel to the West German law. Rather than, as we say, "reinvent the wheel," we decided to take the experience of that drafting, look at the elements that were involved in that law, and then, having rather intimate knowledge of the situation that exists not only in corporate industry but in governmental industry, if I can use that term, and also in the educational institutional industry, interpret the actual situation into the situation that exists or was described in the law itself.

The result of that research effort is the Moss Bill. The first time that it was introduced, as H.R.15512, it included the section on improvements or technical improvements. There was an awful lot of discussion around that element as it applies to the country. And we felt that that single thing could probably be the demise of the Bill, so on the second time around, in H.R.1483, that was dropped out. The third time it was introduced, as H.R. 2370, it was similar—I think identical—to the Bill that has been reintroduced by Congressman Moss this year, H.R.5605. There are some elements in it that people would like to see polished, but I think the people that are for it are basically for it the way it is.

The arguments that have come forth—and some of them that we have heard here this morning—are administrative in nature: That it would create a very, very severe administrative problem. The people who are for it feel that the Bill itself would create a bilateral situation which recognizes that there are two interests involved in the patent process. One is the invention itself, in other words, creating something where nothing existed. The second is the innovation process, which must take that invention and bring it into something tangible that can be useful to the public. The patent law or the right to patent is the only specific right covered and delineated in the U.S. Constitution. And if one were to analyze why, the only logical thing that can come from that is that it is to provide an incentive for public disclosure which ultimately would benefit the public.

If you accept that premise, then, the question becomes any action that is taken, whether it is in the reward of inventors, whether it is in the judicial system in handling patents per se, whether it is in analyzing the effective trade secrets and trade secret contracts and State statutes. Everything can be analyzed into how that particular action affects the constitutional purpose—which is to stimulate public disclosure of new inventions so that the public can benefit. Many times the issue of rights of employed inventors has gotten off into philosophical, moralistic terms and, I think, to the detriment of the pragmatic terms that should be recognized.

If a corporation, as many in this country do, will take disclosures—and nine out of ten disclosures never see the "light of day"—is that action by corporate industry to the benefit or to the detriment of the public, in light of the constitutional intent? If disclosures are made and they turn into patents just to protect the company's ultimate interest, as we heard earlier this morning, so as to eliminate the risk that might take place, and that patent is never developed or innovated into the marketplace, how does that affect the public? Those issues have really never been, I think, adequately articulated.

There was a review of the general subject of rights of employed inventors covered by the American Patent Law Association in its Journal in May 1973. I think it covered both the pro and con from the corporate industry standpoint and also from the employed inventor's standpoint. Any of you who would like to get that document can probably get it from the American Patent Law Association. It is a very good discussion and it tries to cover the various points of interest on it.

The various organizations that represent engineers and scientists in the country have more or less stayed away from the subject because it is highly controversial when it talks about employers' rights and employees' rights. Technical societies and professional societies in the country like to feel that the professional employee is part of the management team, and any formal recognition that there might be differences of opinion on the part of certain vested interest areas is kind of untoward that professional attitude. Consequently, organizations have not taken a strong stand for legislation like the Moss Bill. Possibly the American Chemical Society will.

The National Society of Professional Engineers, of which my organization, the California State Society, is a State affiliate, has gone so far as to endorse all of the elements of the Moss Bill without endorsing the Bill per se. The reason was that the 175-member Board of Directors did not feel competent to analyze a rather comprehensive piece of legislation like that. The California Society of Professional Engineers has unanimously endorsed it every time it has been reintroduced in Congress.

In order for various groups to get their point across, they have to be strong enough that they are recognized as a group. The unfortunate thing is that the inventors in the country represent a rather small number in comparison to other pressure groups. Here are some numbers to think about: "Blue collar labor" represents about 20 million workers. Now, within the whole country there are approximately 1.2 million professional people. These statistics indicate that a professional engineer or scientist is 20 times more likely to be an inventor than all other occupational groups put together. Now, if we take that premise and if we take the 1.2 million, we find that somewhere there are about 100,000 to 200,000 who are actively involved in the invention process. The significant point of that is that 85 percent of that group are employees who have preassigned all of their rights as a condition of employment.

The next point is that it is extremely difficult to pull that group together because they are represented by something like 200 different professional and tech-

nical organizations that in themselves are autonomous and have no means of communicating or coming up with a cohesive consensus on a bill like the Moss bill. The problem is extremely complex in this country. Until there is some sort of national mandate, some sort of recognition, that this field of activity will have a profound impact on the whole commerce in the country and the role that the country plays in the international scene, it is doubtful, and I hate to be negative, having been involved in the activity for about 10 years, but I think that there is going to have to be more of a groundswell than there has been in the past if Congress is going to cover the legislation. Thank you.

Remarks of
Irving Silverman, Esq.
Messrs. Silverman & Cass
Chicago, Illinois, U.S.A.

My name is Irving Silverman. I am a senior partner of the firm of Silverman & Cass in Chicago. I speak totally as an individual, with only my own experience of a substantial period of time with clients.

I think you have to look at the political and basic philosophy of the United States. Dr. Stockmair said we have the social aspect to think of. I might say we have the socialistic aspect to think of. I am not saying anything political, but I think you must look at things the way they are. I am not going into the altruistic philosophy which was mentioned by the speaker ahead of me, that we are concerned with bringing inventions to the public and disclosing things to the public. I think that when you come down to the bottom line, the motive really is stimulation to the inventor. He is not concerned with what the public is going to get. He is concerned with how much money is going to be in his pocket. If you stimulate him that way, you will get something out of him.

In a society where the individual melds into a fabric, where all are treated alike, ingenuity and invention would seem to bear no relation to compensation. There is no advantage to a man to exert himself mentally or physically, because he will get nothing more than he has been scheduled to get under the rules of that society. He is taken care of by his society or his government from cradle to grave.

In a society where competition exists, a person with ingenuity, resourcefulness, ambition and aggressiveness, however much we may dislike that, will rise above the mediocre employees. He will produce more, invent more. His services command higher compensation. He will get greater benefits. Thus, in countries where there is no other incentive for stimulating inventions, payment to inventors in addition to that which the employee could otherwise hope to get seems justified.

In an ambient that exists perhaps only temporarily in the United States, the individual with ideas is in demand. He will live better, make more money. There is no apparent need for a system of payment over and above the benefits provided by our way of dealing with employees and engineers who invent. Perhaps as unions and employees' associations here move more and more to a concept where benefits and remuneration among any category of employee expertise rests at the same level—demanded, if you will—we may require something like this system to stimulate invention. Right now, and I again remind you that I speak only for myself, although I see a host of problems arising—but not insoluble-as-such problems—for the time being, and given the way we are constituted in the United States today, my first reaction is entirely negative. Thank you.

Remarks of
M. Klaus Bernhardt
Munich, Germany

I am Klaus Bernhardt. I am in private practice in Munich, Germany. I have only limited experience in this area with small clients and some inventors employed by such small companies.

First, speaking of inventors only, quite often they overestimate the cash they will get for an invention. Usually it is not worth as much as they expect. But what I want to point out is a problem which results from the usual development work in any type of company. When you develop a new machine, or whatever it is, you usually come up with, say, four or five different solutions of the problems, each of which may be in and of itself an invention. At some point you have to decide which of these different solutions is put into practice. What are you doing with the other four solutions?

In a big company it may be wise to file patent applications on all of them. In a small company this will create difficulties with respect to budget. Say, there are five individuals who have made these inventions and somebody has decided, "Well, we take the invention of John. What about Dick? Will he get some money? Is an application to be filed on his work, too?" This is one problem which probably was never discussed in any literature about that subject. It is only in practice with small companies where this problem arises.

In conclusion, summarizing my opinion, I would prefer the Swiss solution. Thank you.

Remarks of
C.W. Morle
London, England

My name is Morle. I am a British patent agent. I am engaged more in electronics and mechanical engineering than in chemistry. I think that makes me a stranger in this company.

I am nonetheless welcome. I speak as a member of the Banks Committee, which was appointed in England in 1966 to consider changes in British patent law. The subject of rewards to inventors—or "compensation," as I am amused to hear it called here, rather than "rewards"—was one of the matters which was considered by that Committee. It took evidence from a very large number of bodies and ultimately made a recommendation that there should be no change in British law in respect to this subject.

Much of the evidence which was presented to the Committee was not specifically mentioned in these proceedings, and my reason for being here is that I might amplify some of the evidence which was actually given. Evidence was taken from a large number of parties, including the TUC, which, I am informed reliably, is roughly equivalent to the AFL-CIO, and the Institute of Patentees, which is a body devoted to the interest principally of smaller inventors, industrial organizations and others. I need merely say that in each case the evidence offered was calculated to promote the interest of those giving evidence and in more or less a predictable way.

In addition, however, a small delegation, of which I was also a member, went to Germany to consider this point with one of the larger German organizations. And I think for a reason which will appear in a moment it would be better if that company remained anonymous.

The evidence which was offered to us by that organization was very interesting and was expressed, I may say, only by members of the management. At our first meeting the view was expressed that the German system was a tolerable one and one with which they had learned to live. After lunch, which I may say was assisted by some of the best German wines I had drunk for many years, opinions began to flow more freely, and it appeared that perhaps all was not quite as acceptable and tolerable as it appeared before lunch.

The two points which I think emerged from the post-lunch discussion were, firstly, the point which had already been made, which was that if a good chemist applies for a job in a German organization, it would be much harder to place that man in a job which was in production of a staple project rather than in research. There was strong preference for the "Green Shield Stamp philosophy," that it would be better to have something addi-

tional rather than nothing, that it was much harder to place good chemists in staple industry production.

The other point was also rather a curious one, which was this: You tend to find that inventors worked closer and more secretly amongst themselves in this system than they would in a rather more liberal one. In other words, if there were one man who wanted a particular aspect of the work on which he was working, perhaps a suitable adhesive for the materials on which he was working, he would not bother to cross the floor to go to the expert to obtain his advice because he would then feel that the expert on adhesives would thereupon take away a portion of his reward.

The other point which may be of interest and has not been mentioned is that the Banks Committee Report appears likely to be made the basis of a change of the law in Great Britain. Recently there has been published by the Government a paper called "Patent Law Reform," which is supported by a consultative document, and which states:

> Banks carefully considered the argument that employees should have a statutory right to benefit from any inventions they make in the course of their employment. They concluded that although inventive activity in this country should be encouraged to the fullest and employees' inventive efforts should be recognized and rewarded by their employers, the disadvantages of a statutory award scheme outweighed any foreseeable advantages.

That is what my committee came to as a conclusion. However, notwithstanding the Banks recommendation, the Government is prepared to give further consideration to the introduction of a statutory award scheme for employing inventors if there is substantial evidence to show that this would be fair to employees generally, and would welcome further public comment. The details of the scheme would, of course, have to be worked out carefully and provide the necessary procedures or mechanism. I think that is the relevant part of the "white paper" and that, If I may, is the factual matter which I put before you.

At this point I would like to go into what is a more personal view, which is that I have never been very concerned with ideology in changes of patent law. I cannot worry about whether we have in England in the future, the French system, the German system or the British system. I have lived through too many changes of law to worry about that. What does concern me is this, that any changes should be towards the practical, or should have practical considerations in mind. Please let us have laws and practices which are simple.

Now, when you come to awards to inventors, I am quite surprised there has only been barely one hint of what is the major problem to me, and that is: Who is the inventor? In the Banks Report we accepted that the inventor is becoming in modern research a more and more amorphous image. I am sure you will know that inventions cannot always be said to be the invention of one identifiable person. I am sure you are relaxing in the sunshine of American practice where you are obliged to have the application made by the inventor, but I suggest that the warm sunshine may turn slightly chilly and overcast when it becomes clearer that accurate statements of inventorship are coupled with financial return.

Now, what is the "inventor?" How can you define him? I think the only possible definition is, "The inventor is the man who made the invention." That merely transfers the problem from construing "inventor" to construing "invention." Is it the machine—the contraption—in the old traditional sense, that the man produces and puts on the floor? Because if it is, it may very well contain a substantial part of work carried out by a workman, embodying the idea engendered by the original inventor. Is it the application of what is claimed in the application as filed? If you do that, this is a reward to the ignorant applicant, who knows nothing of the art in which he is working. And I remind you that any laws which must be made must be applied not only to the field of chemistry but in the much wider field of mechanics and electronics. If you have a very broad claim on file and endeavor to use that as the basis of a reward, I am going to draft some very broad claims at very early stages of my application, with full realization that at a later date I may have to cut them down. If you wait until the patent is granted, you may wait, I remind you, anything up to 10 years, by which time an elderly inventor may well have passed on. It would not be a law which I personally would recommend for myself.

So I would ask this. If there are any changes in the law, you have regard to these points so that we can decide easily who is the inventor and what is his reward.

For my own part, I so value simplicity and the simplification of procedure in patent matters, which is becoming such an esoteric subject, that I come down on the side of not having any change in the law as we know it in England.

Mr. Stephen Frishauf: My name is Stephen Frishauf, from New York City. I am an electrical engineer. I would like to hear from some of our German colleagues about the difficulties or nondifficulties that they have when they represent employed inventors in connection with trying to obtain more, or just what they think they should get, by way of compensation under the German law. And is this a problem, as our colleagues see it, with relationship to continued employment, continued advancement, and so on, of the particular individual whom they are asked to represent, in a somewhat controversial position with respect to their employer.

Remarks of
J. A. Stoop
The Hague, The Netherlands

My name is Stoop. It has been said this morning that one of the prime topics is the question of the allocation of the patent. In The Netherlands the first applicant is, by law, considered to be the inventor and thus entitled to the patent. There are a few exceptions, however. There is, of course, the exception for a stolen invention. Another exception—and this touches on the subject of today's talks—is for the employee inventor. Here Article Ten of our Patent Act—and I learned this morning that we were the first to introduce such a section in our law—rules, in short, that the employer is by law entitled to the patent, but only insofar as the employee holds a position in the company, which entails the application of special knowledge to the making of inventions of the same kind as that to which the application for the patent refers. Let me elucidate on this, without the complicated wording of our Patent Act, which I have already simplified for you.

Which are the inventions to which the employer is entitled by law? It is not required that the employee be engaged as an inventor. It is not required, either, that his labor contract specifies that the employee is expected to make any inventions at all. There must, however, be some relation between the invention made and the actual—I say "actual" and not "contractual"—field of activity of the employee within the company. If, for instance, a coffee girl who is employed by a chemical plant invents a new chemical process or a new chemical compound, she may keep the invention for herself, and the employer will not have any title to the patent, however useful this patent will be for him. If, on the other hand, the same coffee girl invents a new process for the making of or serving of coffee, the title of the patent belongs by law to the employer. If a research man employed by the same plant makes an invention relating to the processes used by this plant, the title to the patent unquestionably belongs by law to the employer. If the same research man invents a new ballpoint, he may keep the invention for himself.

So there are two kinds of inventions an employee may make: those to which the employer is entitled by law and those to which the employer has no right at all,

unless the labor contract—the service contract—provides otherwise. It is always possible to deviate from this legal rule and towards the benefit of the employer. He may ask for more inventions from employees than the law requires.

Let's now assume that we are dealing with an invention made by the employee, the title of which, under Article Ten of our Patent Act, belongs to the employer. Then we come to the question of remuneration. Here the second paragraph of this same Article Ten of our Patent Act says: "In such a case the inventor cannot be deemed to find in the salary he earns, or in a special payment to be received by him, compensation for the deprivation of a patent. The employer shall be required to pay him an equitable sum, having regard to the pecuniary interest of the invention and the circumstances under which it was made."

Hence, the employee must be compensated—and that has been in our law since 1910—either by his normal salary or by a special payment. Since 1910 we have had this rule, but unfortunately we have very little jurisprudence on this subject. The inventor should be compensated, as I said, for the deprivation of a patent, for the fact that he does not get the patent. Hence, it has been argued that the compensation should be based upon the profits the inventor, and not his employer, could have made if he had been the patentee. Could he himself exploit the patent? Or could he find an interest as the licensee? That is an opinion which has been endorsed once by a court decision. But I must confess that it was rendered by a lower court, and I would not attach too much value to this court decision. The fact that there is so little jurisprudence during these past 60 years seems to show that generally in The Netherlands employers and employees find an amicable solution.

The lack of jurisprudence also leaves other questions unanswered. What is meant by the title to the patent? Do we have to think only of the Dutch patent or also of foreign applications? I believe that there is a conflict of laws. If you look at the matter from the point of labor law, governed by the law of labor contract, you see one side; the other way is to view it from the side of the patent law, and then it may be governed by the laws of the various countries where the patent is applied for.

Another open question is whether the compensation rule, which as I have said is mandatory, and from which one may not deviate by contract, should also be applied to those inventions to which the employer is not entitled by law, but only by virtue of a contract. This question has not been decided by our Supreme Court because in a case where it played a role in the lower courts, the plaintiff—the employee—had signed a contract assigning all his inventions beforehand to his employer. Once he made an invention he said, "Well, this is an invention outside of my field of activity, and since it is outside, the contract should be regarded as null and void." The Supreme Court said, "The contract is not null and void. It is a valid contract." In the Supreme Court proceedings the question of the compensation was not raised.

We have also spoken about the intangible awards. We have a rule in our law saying that the first and true inventor may always claim that his name is mentioned on the patent.

Let me conclude these few remarks by observing that a new bill has been introduced recently for the revision of our Patent Act. This rather important revision, among other things, will introduce compound protection in Holland. Nevertheless no material changes have been proposed with respect to the inventions made by employees, and I feel that the general opinion in the Netherlands is that we are satisfied with our present system.

Remarks of
Hans Peter Lieck
West Germany

My name is Lieck. I would like to answer a question which Mr. Frishauf has just posed to his German colleagues. He wanted to know if there is any dispute over the amount of compensation, and how does this affect the relation between the employer and the employee. Does it affect the further working of the employee?

Well, I have no personal experience in this field, but I know of some cases, and I would say there is a dispute only in two. One case is where both the employer and the employee have decided to go separate ways in the future, and the employee is taking this chance to get a very high amount of money, as high as possible, for a certain invention. In the other case, both the employer and the employee have decided, "Well, we don't know what the value of the invention is, how it should be compensated to the inventor, and we just want to have it decided by a neutral board." They are really not arguing against each other. They will both be content with a decision which would be made or which is then to be made by this neutral board.

Well this probably answers Mr. Frishauf's question, to a certain extent at least. I want to also make another remark which is related to the statement made by Mr. Silverman.

Mr. Silverman, you made a remark about, well, you termed it the "socialistic philosophy" probably standing behind or being behind a law on compensation or on this field we are talking about. I wouldn't go so far as to say it is a socialistic philosophy, but, sure, it is a social philosophy. And as you probably are aware, in Germany the social philosophy or the social backgrounds on especially the field of relationship between the employer and the employees has a very old tradition. What I want to say is that the relationship between the employer and the employee is not only in the field of invention but also in all other—nearly all other—aspects, subject to very definite laws and rules. Almost everything is regulated by laws, so that the special inventors' law is just, or can be seen, or can be deemed to be just, a part of this wider aspect of right . . . or can be seen as a part of the other laws which also regulate the relations between the employer and the employee.

As I understand, in the United States you have far more a philosophy of, well, the self-made man. I do not know if the German law, as such, would be a proper part of this American philosophy. I would say that it would not fit into the whole system which you are using right now.

There has been some development in the States towards a social thinking, but right now I would say that you should not just copy the German system and put it into effect here. I would say, rather than that, you should adopt a system, if you adopt one at all, which is more adapted to your view of things, to your view of the relationship between the employer and the employee.

Remarks of
Dr. Ekkehart Bokelmann
West Germany

My name is Bokelmann. I am a member of the patent department of a West German company. And I would like to make it very clear I am giving my personal opinion.

I would like to say that I like the inventors very much, because I live from them, I live from their work, and my company lives from their results. This I would like to make very clear also.

Let us assume Gentleman A finds a new component, not a very difficult component, but it is new. Nobody knows what this component does. And even this gentleman does not exactly know where the carboxylic ester amides is situated—at the first or second positon. Now, a very good chemist of the analytical department comes and finds where the carboxylic ester amides is situated.

A Gentleman C is now told to make some derivatives of the carboxylic ester amides. He makes thousands of derivatives and sends them for screening to the Pharmacological Institute and the pesticides laboratory. In one of these laboratories a gentleman finds that it has some toxic activity. The manufacturer

says, "It is too expensive to process. We cannot use this compound."

There is a Gentleman E, who is another manufacturer, who makes, not an invention, but finds a process which makes this component salable. It is not so expensive. Now, the company decides to sell it.

Now comes Gentleman F. He is a very clever gentleman. He makes the EPA clearance, and they are able to sell the product. But the customers say "Oh, we don't use this product. We have other products from you competitors."

But there is a salesman, G, who is a very good man, and he is successful in convincing his customers that they have to buy this compound and not the competitor's compound.

Finally comes Gentleman H. He is a very brilliant patent attorney in this company. He succeeds in getting a patent, whereas the other gentleman, F, in the patent department, is not so billiant and does not get a patent, so there is nothing, no remuneration, for the inventor.

I hope you understood me. It's a very complicated system. But, of course, life is sometimes complicated. If you have an invention, for example you have a process, a catalytical process, and one man finds a new catalyst and this process can be conducted with less money, it is very clear he is the inventor and he has made an important contribution to his company. But in the types of inventions that I have outlined, who is the inventor, who should be encouraged to make some results, who should get the bonus?

Second, you have joint inventions. This is a really difficult area. We make this easier in our country, but still we have difficulty with who is the inventor.

Then, Gentleman A says, "Oh, B or C. I don't know. Are you an inventor or not?"

"Yes, like you, your co-inventor."

Now, I don't know whether I am a co-inventor to every B and C, but last year I said, "You are a co-inventor, now I should be a co-inventor."

Usually companies don't look into these detailed matters because if the inventors are satisfied, as the employees, the employer says, "We three are co-inventors."

Third, an inventor has made his invention and the patent department says, "I need some more examples. I need some explanation. I need more basis for a patent application in the United States." Now, the United States is for us the most difficult country to get a patent from. Maybe it's because we are not acquainted with your ways.

The inventor says, "You only have a one year priority time. I cannot do this."

So this gentleman, X-Y, says, "You should do this. Are you sure that these gentlemen who are not inventors don't need encouragement? They have nothing to do other than to make more examples to investigate something. But they are not inventors. They should have the same stimulus." How do they get it?

Fourth, it would be interesting to know how the process works, what the scientific background is, although this information is not needed for a patent application. If this gentleman has a chance to either make a new invention or to investigate the scientific background, of course he would, in my opinion, prefer to try to come up with another invention rather than find the scientific background for the first invention.

Now, I would like to state the fifth position. The German law of employee inventors says nothing about the amount of compensation. It gives the formalities, what formalities have to be fulfilled, and it says in principal when and under what conditions a compensation should be paid. And the amount of the compensation, as Dr. Neumeyer said, is, for example in Germany, set mostly according to the guidelines.

To come to the conclusion, I am of the opinion—and please compare again the gentleman who made this very good new catalyst on his own and all the other gentlemen, A to H—that the law is what we call in Germany "Shoot birds with cannons." Sometimes when you have a really big invention, then it is very clear that the inventor should get something much more. But mostly the inventions are just the result, in my opinion—you shouldn't tell it to the Patent Office, of course—of the position the patentee has, since he is in the research laboratory and careful, not lazy, but a diligent worker. I hope you do understand me.

Remarks of
Mohamed Bakir
Cairo, Egypt

Mr. Chairman, lady and gentlemen. I am Mohamed Bakir, from Cairo. You have heard enough from the developed countries and the industrial ones, and now it is the turn of the developing countries.

In Cairo, on the 30th of November, 1949, employed inventors were mentioned on three occasions in our Patent Act. The first, under the heading "Who May Apply," and of course, the first item is the first and second inventors; the second, when an assignment is filed after the filing of an application, the Registrar should be certain that the inventor has received justified compensation; the third, that the true inventor should be named in the Patent.

Patent Acts in Libya and Kuwait have almost the same provisions as in Egypt. In Iraq it is compulsory that the application for a patent should be filed first in the name of the true inventor, and then assigned to the assignee, whether individual or corporation.

In the Arab States, where there are Patent Acts, there are references to the justified compensation for employed inventors, whilst there are none in the countries where there are no Patent Acts, namely: Sudan, Saudi Arabia, the two Yemens, and the United Arab Emirates.

Some decisions have been issued in Cairo to compensate the inventor, but these involved few cases and did not establish a legal procedure.

Lately the Arab League has asked for the assistance of the WIPO to formulate a model law. Such a model law has been formulated by IDCAS—the "Industrial Development Center for the Arab States" —and WIPO. Article 10 of this law stipulates that:

[1] subject to the legal provisions governing contracts for performing a certain work and employment contracts, and in the absence of contractual provisions to the contrary, the rights to a patent for an invention made in the execution of the contract shall belong to the person having commissioned the work;

[2] The same provision shall apply when an employment contract does not require the employee to exercise any inventive activity, but when the employee has made the invention using data or means put at his disposal; and

[3] In the circumstances provided for in part [2], the employee inventor shall have a right to remuneration, taking into account: his salary, the importance of the patented invention. Such remuneration shall in the absence of agreement be fixed by the Court.

As well, in the cases provided in part [1], the employee inventor shall have a similar right if the invention is of very exceptional importance.

Any agreement against the provisions of part [3], Article 10, shall be considered null and void.

Remarks of
Gilbert Thomas
Tustin, California, U.S.A.

My name is Gilbert Thomas. I am an attorney in Southern California, and I am speaking for myself on this issue.

I have worked for over 20 years—I have a Master's Degree in Industrial Management—as a corporation executive, having held positions including vice-president, plant manager, production control manager, research administration manager, all of the positions you can think of in a corporation. I have been in private practice for about 3 years as a patent attorney. I have decided I have had enough of corporate life and I would like to do things on my own. I have a number of corporate clients as well as a large number of individual clients.

First of all, speaking from my background in industry, I faced this problem many times. I was involved either directly or indirectly in a number of studies made under the direction of top management of corporations to find out what we can do to stimulate inventions among our creative people. I think the problem of just paying the money, as Mr. Silverman suggested, is just not that simple.

I have a degree in Philosophy, in Psychology, and I made a number of studies on employee morale, and compensation rates pretty far down the line under things that professional people and creative people want out of life. I think they want recognition. And, of course, they want compensation somewhat in relationship to the value of their work.

In corporations it is a big problem for a man to come up with an invention that the company uses, and he knows—because people are not stupid anymore, whether it is a workman on the line or a man in the research laboratory—the benefits the corporation gets from his work. He also knows the paycheck he is taking home. He knows the size of the office he is working in. He knows the title that is attached to his name.

It is a problem, gentlemen, in American industry today. I think there are hundreds of thousands of creative people that are completely demoralized. Corporate management is facing this. I think there are some progressive companies, and I have heard them mentioned today, who give sizable awards to people in proportion to the value of their inventions. But many of them have ducked this issue, many major companies and many minor companies, have been content to go along with a system where you say, "Well, we will remember that on your next pay increase."

I think we need something. I think corporations recognize they need something, and they don't know what the solution is. None of the manufacturing associations, and I belong to the American Management Association, have any clear direction for corporations in American life today. It is difficult to get studies from them that really reach this issue and talk about the real problems. I commend highly the professional engineer group and other people that are taking an interest in this subject and bringing information out, making it available to inventors and inventor groups.

I do some patent work for two or three inventor groups in Southern California, and I am certainly going to take this information back to them and ask for their support of the Moss Bill, because I believe in something like this. I have great faith in our Congress to produce a Bill that will meet the needs of our unique society. I think that we should support this Bill, and I am going to recommend that to inventors' groups that I know.

I am also going to make this information available to professional societies in Orange County and to the corporations I know that progressively want to do something different for inventors, to stimulate their activity, to show their work in our society.

I don't think all people are creative. I don't think all people have a desire to come up with new ideas and to be inventive. I think there are many people who are satisfied to do their job and to take their paycheck and to go home and have a glass of beer and watch television, and do not think creatively. But I think that those people who are creative are unique and that we should do things to properly reward them for the work they are doing. This reward, I think, should be in tangible as well as other areas. I think these ideas of fellowships and special titles for inventive people were investigated by a number of companies that I have worked for in the form of a reward which bears some relationship to the value of their invention.

I just wondered, since we never got to specifics with our friends from Germany and other countries, whether Mr. Neumeyer, could answer this question that I have:

Does the compensation paid inventors in countries where there are laws have any relationship to a royalty? In other words, is it a percentage of the sales or the savings or something like that? Or is it just a sum that is agreed upon by some arbitration group? That's what I would like to have an answer to, because I have worked out hundreds of license agreements with individual inventors, and I think the royalty system, where it is a percentage, whether it's one percent or half a percent or something, of the sales or something, would be a very, very fair system.

One other thing. I also was employed during my work history, and this was in the interim when I was moving from work to the practice of patent law, by a well-known millionaire inventor who makes an income of over a million dollars a year from inventions, royalty payments. He was under a special contract to a major company where he did not work for the company but worked as a "contractor," with an office and laboratories in the corporation, and received over a million dollars a year with a royalty rate of approximately 1 percent. And let me say that this was very nice for him, but all the other creative people in the company felt that they were at a tremendous disadvantage. Many of them were employed by the company to work for him, to develop new ideas and inventions. The company eventually had to break this relationship because they found their own research and development staff completely demoralized by the fact that one man can earn over a million dollars a year by creating inventions while the rest of the people got $20,000, $17,000, $22,000, whatever their annual salaries were, and they were contributing to this man's million dollars a year. That kind of a situation is not healthy and is not the solution either.

There must be some generally acceptable universal system. I have faith in our Congress, and I think they will come up with a good law. And I certainly want to support it all I can. Thank you.

DISCUSSION

Dr. Neumeyer: Mr. Thomas, I think this was a very nice and beautiful illustration from the point of view of a general practitioner who stumbles over these problems and does his own good and reasonable thinking. And it supports, of course, many of the ideas we have, and the experiences of a long series of countries in regulating these things, either in a statutory way or in a more voluntary way, by guidelines or things of that kind.

We can't go into details, but just to answer the question of in what way compensation should be given, there is the principal of the lump sum. This is preferred by many corporations and even by government agencies for the simple reason that it is easier to handle since you don't need any accounting from year to year, and it simplifies the situation.

From the inventor's view, it may happen that dissatisfaction may set in after many years because an invention may be more successful than expected in the beginning. Some countries have special provisions for that, with the possibility of adjusting a lump sum given earlier if there are substantial changes in the situation.

Another principal type of compensation is royalties. Royalties can be given in different ways, depending on sales and depending on other circumstances. And there is a certain amount of justice because the royalty is a percentage payment which is directly connected with the sale or use of a patented invention.

There have been many papers and surveys written in this field, which may be of interest to you. We can give you a list of literature which can guide you to these principal points of view.

Mr. Bokelmann: I would like to add something, if you will allow me, gentlemen.

We have in Germany several bases, as one of the gentlemen already described. For example, the turnover can be the base, Or, if you use this patent only for licensing, you can calculate the compensation on the basis of the royalties. But what an employed inventor gets is always less than the usual royalty, and the royalty that a free inventor gets is less than

the license. In Germany, we feel the invention was made with the work, during the time of employment, with the means of the employer, with the assistance of engineers, and so forth; therefore, this all plays a role and the royalty should be less.

Also, if you have a dyestuff patented, but there is another dyestuff already patented so you don't sell the second dyestuff because it is more profitable to sell just one, then the patent which has not been used is what we call the "spear patent." It blocks for the benefit of the one dyestuff which really is being sold, but it will also be compensated for.

In addition, in Germany we can deduct, to some extent, the compensation from taxes. That is important. You have to pay less income tax for the inventor's compensation.

Chairman Sutton: Thank you very much. Klaus, you had some comment?

Mr. Klaus Bernhardt: Well, sometimes it has been asked how these rules work. As long as the invention is used commercially, the German guidelines work quite well. There are some disputes but they are reasonably resolved, with not too much effort, by means of these guidelines. The problem comes when you have what was just said—when you have a blocking patent—or when you have a case where you are wondering, do we file an application? We aren't to use that? And what should we do about that? As I said earlier, you have in some developing situations five, six, seven different ideas to pick up —I think you call that "brainstorming" here—and what will you do with the gentleman whose ideas were very good, but were not chosen? That's one question which is totally unresolved yet.

Chairman Sutton: All right, do we have any questions that should be posed?

Mr. Silverman: I hadn't intended to get into any details, but I do have a question, and it is a practical one. I represent an American company that is dealing with a German company. The American company is having the German company manufacture certain machinery and equipment. In addition to the contractual arrangement with relation to the manufacture of the equipment, there is a provision for the German company to do some development work. In order to protect the American company, there is an arrangement that if the German company should make any inventions, they would belong to the American company.

Now, the question that I want to know the answer to is this: The German company has employees. The employees will work, and they will make inventions. Under the German law inventors must be compensated. Where does the American company stand if the American company can demand of the German company through contract that all of these inventions belong to the American company? Is the American company going to have to pay the compensation of the German inventors? Can someone tell me how this is going to be worked out?

Chairman Sutton: I would have hired a good lawyer to answer a good question like that. I wouldn't presume to be able to respond to such a detailed question. And I don't know whether anybody else is.

I think perhaps a question of that detail is not appropriate for our evidence-gathering role here today, but if anybody wants to pose a response, go ahead.

Dr. Neumeyer: It really looks like a detailed question, but this situation occurs in the cooperation between a great many industrial countries, so it is somehow not so specific as it looks. It is a general problem in international patent and knowhow agreements where there may be countries cooperating with each other between whom there is a special law, while one of those same countries may be cooperating with still another country where there is no such law. This is a case in international agreements between, for instance, Germany and the United States or Scandinavian countries and the United States. This is a branch of law in which there is not enough case law developed yet. It is really in what you call "conflict of law," what we call "international private law," and it's very important in practice. Think of the European Common Market where you have employees who are nationals in different countries and employed by corporations in different countries and working together on a common research project formulating inventions together. What law is the governing law, then? Of course, it's very sensitive if there is a German or a Scandinavian on the team, because they are considered too privileged in comparison to inventors employed by corporations in other countries. This is not a matter of law, it is a matter of international management.

I just had a case between a Swedish corporation employing scientists in a common research corporation in Holland where there are cooperating British, German and Swedish scientists making patentable inventions. What philosophy, what policy, should the corporation have with regard to compensation? There is no legal solution at the present time, there may be good management solutions. One is that all employees should get the same privileges which the inventors from countries like Germany or Scandinavia get, so that no co-working inventor from another country, for instance from England, feel underprivileged.

Mr. Bokelmann: The gentleman's question, if I may add something, is one I wouldn't like to touch with the tying-in problem of this agreement, only whether it is correct that your German party has to transfer an invention. According to the law, in my personal opinion, there is nothing wrong. The inventor in Germany has to report any written invention to his employer, the employer has to claim the invention. Now by agreement between your company and the German company, the German company has to transfer the invention to your company. So there is no problem. Still the German people are the inventors, while the German company is responsible for the compensation. Whether they say, "We get royalties from the United States company and out of these, on the basis of these royalties, we compensate the inventor," or whether they agree with you, that you should directly compensate the inventor in Germany. This is, in my opinion, a matter which can be handled without any restriction. The responsibility to remunerate the inventor still remains with the German company.

Mr. Kuntz: Yes. It is very interesting to hear the discussion here today because one could almost ignore the fact that we come from countries all over the world. It proves again that human beings are human beings, and attitudes are attitudes, and so on.

One thing that I would like to know, for my own need in terms of research, is how many of us here have been involved in the invention process personally. That is, how many of us here are inventors, holding at least one patent? Could I see a show of hands?

(Show of hands.)

Mr. Kuntz: So we have maybe three, four, out of this group. Well, I include myself in this group. It is very interesting, as this subject is debated, how few times people who are inventors themselves are involved in the debate. I have found that most of the individuals involved in it are patent attorneys or representatives of corporate management. It is kind of sad, because the group of individuals, that is, inventors, who are directly involved in the pro or con of the issue and the questions as to how the system, regardless of what country it is in, affects the attitude and the creative behavior of an individual, are silent. Those people are never heard from. And it is kind of tragic that that is the case. Maybe a discussion like what we have had here, where Jack has brought us together today, will help that problem somewhat. But until those individuals are heard from, and somehow, from the psychological standpoint, we are able to determine whether or not a system is either a stimulus to invention and disclosure or a system is a deterrent to, let's say, invention and disclosure, I really don't think we can handle the problem. The Moss Bill might create an environment where those individuals who are stimulated one way or the other can at least vocalize their feelings on a system.

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Chairman Sutton: Thank you.

We did not invite inventors here today because we invited only the attendees at the AIPPI Congress which is not composed of inventors. And so your comments, I think, can be taken as relevant to the credibility of those who have expressed their thoughts today. But I think that we nevertheless have gained some insight into the problem and I think that the experience of other nations is very important, and it is valuable to us. For that reason I would like to thank each of you for taking a Saturday morning, after a weeklong congress, and spending your time with us. It has been a tremendous help to us and to the American Chemical Society to have the benefit of your thoughts and your experiences from other countries.

We had expected to have a number of people from still more countries who are members of the International Executive Committee. I am advised, however, that the meeting across the street is still going on and they are still debating, as I understand it, the organization of the AIPPI. So we will, I think, end at this point. I again want to thank each of you for your time and your attention and your thoughtful analyses. Thank you.

(Whereupon the hearing was adjourned at 12:50 o'clock p.m.)

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The Evolution and Modern Application of the Shop Right Rule

*By Scott P. Sandrock**

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Over the past century, the relationship between employers and employees has undergone a remarkable metamorphosis. The concepts of "master" and "servant" have long since been abolished due to the wave of unionism and legislative regulation of the working relationships between employers and their employees.[1] Indeed many aspects of the work relationship have been addressed by statute or at least regulated by federal, state, and local bodies created under those authorities. The regulations cover safety hazards and environmental features of the work place and range from necessary ones to those of doubtful value.[2]

Whatever the individual reader may perceive as the status of the employer-employee relationship in today's society, one feature of that relationship that has remained unchanged for more than a century is that of the developments, improvements, or inventions of employees. For some unknown reason, this true creature of common law development has remained intact, relatively unmodified by legislators or regulators. Indeed this last vestige of common sense may stand as a singular example of "good law" formulated through the century of well reasoned opinions by seasoned courts.

Within the past few years, the legal issues involving these inventions have again become important because of a new stage in the evolution of the work relationship. Specifically, the negative effect of current economic conditions has seriously affected the competitive positions of American firms in both domestic and foreign markets.

Employers have responded to these events by attempting to increase efficiency and productivity while at the same time reducing operating costs. In order to accomplish these objectives, however, the input and cooperation of employees is both desirable and necessary. Some firms have adopted the "circle" system of

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1. For a detailed history of the labor movement, *see* A. Blum, A History of the American Labor Movement (1972).

2. *See e.g.*, the Civil Rights Act of 1964, 42 U.S.C. § 2000 (1976); Comprehensive Employment & Training Act of 1973, 29 U.S.C. § 801 (1976); Employment Opportunities for Handicapped Individuals Act, 29 U.S.C. § 795 (Supp. II 1978); Equal Employment Opportunities Act, 42 U.S.C. § 2000 (1976); Farm Labor Contractor Registration Act of 1963, 7 U.S.C. § 2041 (1976); Labor Management Relations Act of 1947, as amended, 29 U.S.C. § 141 (1976); National Labor Relations Act, as amended, 29 U.S.C. § 151 (1976); Rehabilitation Act of 1973, 29 U.S.C. § 701 (1976); Veterans Employment and Readjustment Act of 1972, 38 U.S.C. § 2001 (1976); Vietnam Era Veterans' Readjustment Assistance Act of 1974, 38 U.S.C. § 2012 (1976); and Occupational Safety and Health Act of 1970, 29 U.S.C. § 651 (1976).

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Japanese businesses whereby employees meet in groups to discuss problems and make suggestions for improvements. Beyond these affirmative steps, companies have requested and employees have granted wage and benefit concessions to facilitate the economic survival of the business and their jobs.[2]

Implicit in these events, however, is the recognition of the legal difficulties of conflicting claims to inventions or improvements. Certainly the disputes will normally arise only in those cases where the invention is implemented and where the company has received an economic benefit from it. In these instances the employee has a significant incentive to seek compensation from the employer.

INTRODUCTION

The purpose of this article is to provide a historical prospectus of the evolution of the rule of law commonly known as the "shop right rule."[4] The modern version of the rule is the result of a series of early decisions which were primarily based on a sense of fairness in each case. The facts of these cases are particularly important because the courts created the rule from the actions of the employees.[5]

The shop right rule can be described as the right of an employer to use the inventions and improvements of the employees on a nonexclusive basis without compensation to the employee.[6] Inherent in the application of the rule, however, is the occurrence of events that trigger the rule. As will be discussed in more detail later, the courts have not been in complete agreement as to the type or nature of circumstances that establish the shop right and two separate theories have been utilized. The initial version of the rule required the employer to establish that the employee had developed the invention on the employer's time and had consented or acquiesced to the employer's use of the invention.[7] The more modern version of the rule only requires that the employee used the employer's materials or that the employer bore the expense of implementing the invention.[8] The rule is limited to inventions which relate to the business of the employer[9] and by definition is limited to a nonexclusive license to the employer and does not transfer ownership of the invention to the employer.[10]

Although the rule is applicable to situations where employees are specifically hired to invent something, the primary thrust of the rule is centered on cases

3. Bureau of National Affairs, Labor Relations Yearbook—1981 (1982).

4. The phrase was apparently first coined in the case of United States v. Dubilier Condenser Corp., 289 U.S. 178 (1932) (hereinafter *Dubilier*).

5. Justice Taft in his dissenting opinion in Gemco Engineering & Mfg. Co. v. Henderson, 151 Ohio St. 95, 107, 84 N.E.2d 596, 601-02, (1949) (hereinafter *Henderson*), described the shop right as equity "refusing to help the employee bite the hand that fed him."

6. *See Dubilier*, 289 U.S. 178, discussed *infra* at pp. 961-63.

7. *See* Gill v. United States, 160 U.S. 426 (1896), discussed *infra* at pp. 959-61.

8. *See Dubilier*, 289 U.S. 178.

9. *Id.*

10. *Id.*

where the inventions were developed by employees not specifically required by their jobs to invent or make improvements.

BIRTH OF THE SHOP RIGHT RULE

One of the first cases in American jurisprudence that addressed the relationship of employer to employee in connection with employee improvements is *McClurg v. Kingsland.*[11] In *McClurg* the plaintiff was an assignee of a patent granted to James Harley for an improvement in the mode of casting chilled rollers and other metallic cylinders and cones.[12] While he was employed by the defendant and on company time, Harley invented an improvement in the manner in which iron rollers could be cast. This invention was developed in a series of unsuccessful experiments, but eventually resulted in a successful operation. During the course of this development period, all the experiments were performed at the defendant's foundry at the defendant's expense, and Harley continued to receive his regular wages during this period.[13]

While the foundry utilized the invention, Harley never objected to the use of the improvement, never requested the foundry to cease using the invention nor did he ever demand that payment be made for using the invention. Indeed, Harley had himself proposed to his employers that they should have applied for the patent and purchase his interest in the invention, which suggestion was declined.[14]

A few months after the patent was issued, Harley left his employer, assigned his patent to the plaintiff and plaintiff commenced an action claiming patent infringement.[15] The original trial court charged the jury that if the facts were found to be as testified, the jury would be justified to presume the existence of a license or special privilege or a grant to the original employer to use the invention, and that the facts appeared to equal a consent and show some consideration which would support the express license or grant.[16] Justice Baldwin analyzed the significance of the various acts of Congress which at that time governed the granting of patents pursuant to the constitutional authority

11. McClurg v. Kingsland, 42 U.S. (1 How.) 202 (1843).

12. *Id.* at 204–05.

13. *Id.* at 205. The Court did not discuss whether this resulted in a specific contract to invent but such a finding would not have changed the holding.

14. *Id.* at 205. The company used the invention for over a year before the employee applied for a patent which was granted in March, 1835.

15. *Id.*

16. *Id.* at 205–06. The Court further charged the jury that the facts brought the case within section 7 of the Patent Act of 1839 which provided:

> That every person or corporation who has, or shall have purchased or construed any newly invented machine, manufacture or composition of matter, prior to the application by the inventor or discoverer of a patent, shall be held to possess the right to use and vend to others to be used, the specific machine, manufacture or composition of matter, so made or purchased, without liability therefor to the inventor, or any other person interested in such invention . . . .

Id. at 208.

which related to the use of inventions prior to the award of letters patent.[17] The Court discussed the equitable feature of the original employer using Harley's invention for four months before the application of the patent, which use was with Harley's consent. The Court further noted that Harley, during that period, had himself made rollers at the foundry using his own invention. The Court concluded that under the Patent Act of 1836, the employer was entitled to use the invention without compensation to the assignee of Harley.[18]

The Court in *McClurg* accepted the defense of the employer that the employee had consented to the use of the invention. The facts were such that the employee appeared to have led the employer to believe that the employee would not insist on his right as a patentee to prevent the employer to use the invention.

Although the decision in *McClurg* was based on an interpretation of patent laws, as then in effect and as had been recently enacted, little did Harley realize that the factual background of his case would serve as the benchmark for analyzing all future cases involving claims of employers and employees to use the inventions of employees. Specifically, courts would examine the creation of inventions during work hours using the materials of the employer, as well as the failure of the employee to object to the use of the invention by the employer.

Forty years later, the Supreme Court once again had the opportunity to consider an employee improvement case. In *Solomons v. United States*,[19] the head of the Bureau of Engraving was asked to develop a new type of ribbon stamp to be attached to liquor sold in the United States. A patent was issued, and assigned to the plaintiff, Solomons.[20]

Justice Brewer referred to the *McClurg* decision as being controlling in the particular facts of the case.[21] Specifically, the Court noted that Clark had been employed by the government when he developed the invention, that he had expressly notified the government that he would not charge the government if they had adopted his recommendation and used the stamps. Further, the Court found that Clark had utilized government machinery in perfecting the stamp.[22]

Upon analysis, the Court defined the general rule to be that if someone is employed to perfect or devise an instrument or a means to accomplishing a prescribed result, the employee, after accomplishing the work for which he was employed, could not claim title of the improvement as against his employer.[23] The Court concluded that Solomons could not claim royalties against the government, and emphasized that the consent of the employee to use the invention *created* the license.

17. U.S. Const. art. I, § 8.
18. 42 U.S. (1 How.) at 210.
19. Solomons v. United States, 137 U.S. 342 (1890).
20. *Id.* at 348.
21. *Id.* at 347.
22. *Id.* at 348. Compare these similar facts with the events in *McClurg*, 42 U.S. (1 How.) 202.
23. 137 U.S. at 346.

The Court in *Solomons* took an additional step past the original holding in *McClurg*.[24] In *McClurg* the Court found a presumed license to exist as a matter of contract law in connection with an express consent to utilize an improvement. *Solomons* presented the additional element of an employee who had been specifically requested to develop an improvement; indeed, the *Solomons* decision appears to be an easier result than that presented by the facts in *McClurg*. An employee who was expressly directed to use his energies and ingenuity to develop or perfect an instrumentality for the benefit of his employer, who utilizes his employer's facilities to perfect his invention, and who is compensated during his endeavors, has a contractual obligation to permit his employer to utilize the concept without additional compensation.

Three years after the decision in *Solomons*, the Supreme Court addressed two separate cases dealing with the relationship between employer and employees and the rights to employees' inventions. The first was *Lane & Bodley Co. v. Locke*.[25] In *Lane*, Locke was an engineer with the company and was involved in the development of a stop valve used with hydraulic elevators manufactured by the company.[26] Locke had begun to experiment with the consent of his employer to develop and improve the stop valve. After many efforts to devise such a valve, the perfected invention was immediately put into production by his employer. Several years later, Locke voluntarily terminated his employment, proceeded to obtain a patent on the invention and subsequently brought an action for infringement.[27]

While the Court alluded to certain evidence of an implied agreement between the parties, the Court noted that the employee had made a demand for compensation to his employer which had been ignored.[28] This factor is an additional feature which had not appeared in the prior decisions of the Court. Although the Court cited both *McClurg* and *Solomons* as being controlling, the Court based its decision on an expressed equitable basis which was different than the contractual grounds used in the earlier cases. The Court held that, as a matter of equity, Locke had waited too long before attempting to exercise his legal remedy and thus was estopped from asserting any subsequent claims.[29]

The second case to be decided in the October term of 1893 was the case of *McAleer v. United States*.[30] Philip McAleer was an employee of the United States Bureau of Engraving and Printing as a skilled mechanic responsible for the maintenance and repair of the machines used by the bureau. McAleer had conceived, partially at home, an invention to improve the perforation of stamps, and he worked at the invention at home or during his leisure hours at the office.

24. *McClurg*, 42 U.S. (1 How.) 202.

25. Lane & Bodley Co. v. Locke, 150 U.S. 193 (1893).

26. *Id.* at 197.

27. *Id.* at 197–98.

28. *Id.* at 200–01. The Court noted that Lane testified that he did not pursue his claim at that time because he did not want to disturb his "friendly" relations with his employer.

29. *Id.*

30. McAleer v. United States, 150 U.S. 424 (1893).

He did utilize government materials in connection with his experiments and the machine ultimately was made with government tools and machinery with the assistance of coemployees. The invention was totally outside the official duties of McAleer.[31]

As in earlier cases cited by the Court, the improvement had been patented by McAleer, but unlike previous cases, the bureau had the foresight to obtain an executed license agreement permitting the bureau to use the improvement.[32] The government had not put the invention into operation until after McAleer was fired. McAleer's widow commenced the action claiming that the bureau had entered into an implied agreement to pay McAleer the true value of the machine and claimed that the government's use of the invention was to coincide only with the duration of the employment relationship.[33]

The Court proceeded to analyze the rules set forth in *Solomons*[34] and *McClurg*[35] and found their holdings controlling.[36] Chief Justice Fuller, however, constructed a new and unique position as to the duties of McAleer to his employer. Specifically Chief Justice Fuller stated that although the trial court had expressly found the invention was not part of his official duties, Justice Fuller concluded that a position of maintaining and repairing machines extends to the need to formulate improvements to make the machines or their functions operate more efficiently![37] The Court found that although the invention was an improvement, the improvement required modifications and tooling changes to implement the concept into practical form. There apparently was no dispute that the invention was indeed an improvement from prior facilities.[38] The Court based its denial of compensation on the executed license agreement.[39]

Again, while the Court's holding is based on contract interpretation, the *McAleer* fact pattern had instilled by 1893 certain key elements in shop right rules. Those elements included the application of the doctrine to situations where the improvement, invention, or development was not specifically within the employee's job description and where the employee partially conceived or perfected the concept outside the work place. The Court compensated for these features by pointing to the use of government machinery or equipment to perfect and to integrate the inventions into the manufacturing process. These additional elements have been repeated in subsequent decisions as the primary element triggering the application of the shop right rule.

31. *Id.* at 426–27, quoting the Findings of Fact and Conclusion of Law of the Court of Claims.
32. *Id.* at 425.
33. *Id.* at 426.
34. *Lane*, 150 U.S. 193.
35. *McClurg*, 42 U.S. (1 How.) 202.
36. *McAleer*, 150 U.S. at 430–31.
37. *Id.* at 431.
38. *Id.*
39. The Court seemed to ignore the equities in favor of McAleer where the license agreement was executed three days after the patent was issued and that McAleer was ultimately fired. *See id.* at 426.

THE MATURATION OF THE SHOP RIGHT RULE

After fifty years of analyzing the relationship between employers and employees and improvements of the employees, the U.S. Supreme Court was ready to formally define the ramification and scope of the rule in a case arising in the October term of 1896. Following the trend of analysis set forth in the cases between *McClurg*[40] and *McAleer*,[41] the Court had the opportunity to expand upon the definition of the shop right rule and its application in another case where the employee was not employed specifically to invent products. In *Gill v. United States*,[42] the employee was a machinist and draftsman at a government arsenal. Although not within the scope of his employment or within his job description as such,[43] Gill had developed certain improvements in carbine rifles and other military hardware that resulted in six separate patents being awarded to him.[44] He had approached the commander of the arsenal and suggested to the commander that an improvement should be made in certain military hardware, and after considering the suggestion, the commanding officer had authorized the device or improvements to be incorporated into the government designs.[45]

Although through the years Gill received promotions in his employment, there was never an expressed undertaking that such promotions were made in consideration for the improvements nor were any representations made by officers of the government that compensation would be forthcoming.[46] The Court further noted that actually Gill had voluntarily submitted the improvements to the government as opposed to the government requesting the improvements be designed.[47]

The Court stated the question as follows:

> This case raises the question, which has been several times presented to this court, whether an employee paid by salary or wages, who devises an improved method of doing his work, using the property or labor of his employer to put his invention into practical form, and assenting to the use of such improvements by his employer, may, by taking out a patent upon such invention, recover a royalty or other compensation for such use.[48]

In answering this question, the Court based its decision on a rather advanced analysis of traditional equitable principles. This position is significant in that most of the predecessor cases had resulted in decisions in favor of the employers

40. *McClurg*, 42 U.S. (1 How.) 202.

41. *McAleer*, 150 U.S. 424.

42. Gill v. United States, 160 U.S. 426 (1896).

43. The Court specifically noted, however, that Gill was required by his employment to exercise his mechanical skill, but was not required to exercise his inventive genius as such to make any inventions. *See id.* at 427 n.1. Compare this position with that of Chief Justice Fuller in *McAleer*, 150 U.S. at 431.

44. *Gill*, 160 U.S. at 427.

45. *Id.* at 427 n.2.

46. *Id.* at 429 n.5.

47. *Id.* at 428 n.3.

48. *Id.* at 429–30.

based upon contractual grounds instead of equitable features.[49] The Court analyzed the situation as follows:

> The principle is really an application or outgrowth of a law of estoppel *in pais*, by which a person looking on and assenting to that which he has the power to prevent is held to be precluded ever afterwards from maintaining an action for damages . . . The same principle is applied to an inventor who makes his discovery public, looks on, and permits others to use it without objection, or assertion of a claim for royalty. In such case, he is held to have abandoned his inchoate right to the exclusive use of his invention, to which a patent would have entitled him had it been applied for before such use.[50]

The Court noted that Gill had conceived the inventions outside the work place and on his own time, had subsequently translated the inventions into intelligible drawings outside the work place and had not used any property of the government in making or perfecting the inventions themselves.[51] In considering these facts, the Court further found that the invention had actually been implemented at the expense of the government which paid for the patterns, working drawings and construction of working machines to manufacture the inventions.[52] The Court concluded that although the activities outside the work place could distinguish this case from the prior cases, the distinction was too narrow to prevent the application of the rule.[53]

The Court relied heavily on the rule in *Solomons* and held that where the inventor used the labor and property of the company in putting the invention into the form of an operating machine, it did not matter whether the idea was invented on the work premises or off and that the employer was entitled to utilize the improvement. The Court adopted a risk analysis and held that where the inventor had no financial involvement and the employer bore the risk of utilizing and implementing the improvement, the employer solely bore the risk whether the improvement would be successful. This factor appears to have been determinative in the Court's holding.[54]

Despite the significance of the "risk bearing" analysis, the decisive factor in the decision was that Gill had presented the invention to his employer and had suggested that the employer adopt the improvement.[55] In one of the most articulate discussions of the estoppel features, the Court applied traditional estoppel concepts and defined the estoppel version of the shop right rule as follows:

49. Although the Court cites *Lane*, it based its holding on the authority of *McClurg*, *Solomons*, and *McAleer*, which were not primarily decided on equity theories.

50. *Gill*, 160 U.S. at 430.

51. *Id.* at 428–29 n.4.

52. *Id.* at 433.

53. Consider whether the Court could contemplate any usual series of events where an employee would or could personally implement an improvement at his workplace. It should appear obvious that most cases would fall within the application of the shop right rule.

54. *Gill*, 160 U.S. at 434.

55. *Id.* at 427 n.2.

> The acquiescence of the claimant in this case in the use of his invention by the government is fully shown by the fact that he was in its employ; that the adoption of his invention by the commanding officer was procured at his suggestion; that the patterns and working drawings were prepared at the cost of the government; that the machines embodying his invention were also built at the expense of the government; that he never brought his inventions before any agent of the government as the subject of purchase and sale; that he raised no objection to the use of his inventions by the government; and that the commanding officer never undertook to incur a legal or pecuniary obligation on the part of the government for the use of the inventions or the right to manufacture thereunder.[56]

This discussion by the Court in equitable terms has become the traditional checklist that has been followed by subsequent courts in determining whether the employer is entitled to utilize employee inventions and improvements.

The Court in *Gill* used an equitable theory to reach its decision despite the fact that the employee was not hired to make the improvements nor did he develop the improvement while on government time. The Court concluded that the acts of the employee who offered an improvement to his employer and permitted his employer to put the improvement into operation without objection is permanently bound by those actions. The conclusions reached by the *Gill* Court were the broadest approach to the shop right rule, which was ultimately refined and finally articulated by the Court thirty years later.

It is ironic that the clearest definition of the shop right rule appears in a case which is decided on grounds other than the shop right rule and does not address the application of the rule itself. The decision of the Supreme Court in the case of *United States v. Dubilier Condenser Corporation* [57] pulls together the various components of previous cases to define in detail the shop right rule.

The facts in *Dubilier* were similar to those addressed in earlier cases. Employees Dunmore and Lowell worked in the Bureau of Standards within the Department of Commerce as technicians in the radio section, which was engaged in research and testing on Army Air Corps projects. The two employees invented a series of radio-related improvements and devices which ultimately were awarded patents. The inventions were done independently of the work of the employees and were voluntarily undertaken.[58] After the employees reduced the invention to practice, they advised their supervisors of their inventions and they were permitted to use laboratory facilities to perfect the devices. At no time did the government expressly or implicitly suggest to the employees that they would be expected to assign the patents or grant exclusive rights to the government under the patents.[59]

56. *Id.* at 436–37.
57. United States v. Dubilier Condenser Corp., 289 U.S. 178 (1933).
58. *Id.* at 184–86.
59. *Id.* at 185.

Although frequently cited as the case that articulated the current version of the shop right rule, all parties in fact agreed that the government had a nonexclusive license to utilize the inventions without compensation to the employees.[60] Instead, the particular issue presented to the Supreme Court was whether the government acquired exclusive rights to the inventions or whether the inventor retained the right to license the patents to parties other than their original employer.[61] The Court answered this question by holding the employee retained rights in the patent beyond those granted to the employer and proceeded to define the limitations of the shop right rule.[62]

The Court discussed the rule as follows:

> Though the mental concept is embodied or realized in a mechanism or a physical or chemical aggregate, the embodiment is not the invention and is not the subject of the patent. This distinction between the idea and its application and practice is the basis of the rule that employment merely to design or to construct or to devise methods of manufacturing is not the same as employment to invent. Recognition of the nature of the act of invention also defines the limits of the so-called shop right, which shortly stated, is that where a servant, during his hours of employment, working with his master's materials and appliances, conceives and perfects an invention for which he obtains a patent, he must accord his master a nonexclusive right to practice the invention. . . . This is an application of equitable principles. Since the servant uses his master's time, facilities and materials to obtain a contract result, the latter is in equity entitled to use that which embodies his own property and to duplicate it as often as he may find occasion to employ similar appliances in his business. But the employer in such a case has no equity to demand a conveyance of the invention, which is the original conception of the employee alone, in which the employer had no part. This remains the property of him who conceived it, together with the right conferred by the patent, to exclude all others than the employer from the accruing benefits. These principles are settled as respects private employment.[63]

The Court blended the two distinct theories of contract and equity to articulate the rule. Although the Court admittedly was "shortly stating" the rule, the Court merely discussed the contract feature of the rule. Specifically, this language should be interpreted to mean that if the employee is already in the "work mode" and being paid for his services, then the employer has paid for all labors of the employee even if some actions are outside the job responsibili-

60. *Id.*
61. *Id.* at 186.
62. *Id.* at 189.
63. *Id.* at 188–89 (citations omitted).

ties.[64] Further, if the employee uses any materials of the employer or obtains the help of coworkers, then the employer has likewise paid for that and is entitled to the rewards of those labors. The Court noted that the implied license was not exclusive and the employee could attempt to license the improvement to other persons.[65] The Court claimed the rule is the application of equitable principles but does not cite *Gill*[66] or discuss the real equity argument based upon estoppel or waiver where the employee offers the invention to his employer, fails to object to its use, or fails to demand compensation.

The holding of *Dubilier* rejects the notion that facts must exist to establish estoppel *plus* the use of the employer's time and material. *Gill* requires both the use of employer's materials *and* either the express or implied consent of the employee before the rule is activated. It appears that the Court would consider the use of materials as evidence of the estoppel argument but that an express finding of estoppel was necessary to trigger the rule. The *Dubilier* Court, however, rejected the two-step analysis and proclaimed the rule to be applicable simply upon the use of time and materials or the implementation of the invention by the employer. The *Dubilier* holding became the "modern" statement of the rule and the extensive reliance on *Dubilier* by other courts buttresses this tailored approach.

Although the *Dubilier* decision was the high point of the discussion of the rule by the Supreme Court, other courts were faced with examining various elements not otherwise defined or included in the *Dubilier* decision. Specifically, other courts were required to resolve disputes where the employee conceived and perfected a concept at home, but ultimately utilized employer's facilities to put the invention into operation at the request of the employer. Similarly, courts were required to define the outer reaches of the rule and whether any defenses might be available to defeat the application of the rule. It is within the latter gray areas that courts have attempted to define the parameters of the rule since this initial series of decisions by the Supreme Court.

THE EQUITABLE APPLICATION OF THE SHOP RIGHT RULE

As the Court in *Gill* noted, the shop right license is an outgrowth of the law of estoppel in pais.[67] Whenever the employee has taken actions to either induce

64. Although the Court was willing to find the employer was entitled to *benefit* from "deviations" by the employee, compare the opposite result when the employee has incurred liabilities when deviating from the job responsibilities.

65. As a practical matter, the Court did not consider whether the employee could ever locate a buyer for a license for the improvement which his employee is using or marketing when the employer does not have to include the cost of a license in the price of its products. Although the opinion does not discuss this issue, it could be assumed that the employees in the case had a prospective licensee or there would have been no reason to litigate the case.

66. *Gill*, 160 U.S. 426.

67. *Id.* at 430.

the employer to utilize the improvement[68] or waits too long to assert his rights,[69] it seems reasonable that the Court should apply the rule to avoid the obvious possibility of economic extortion when the employer becomes dependent upon the use of the invention. Although the *Gill* decision was limited by the *Dubilier* holding, the two-step approach which required a showing of estoppel has been applied in later cases.

A prime example of the application of the equitable principles arose in the case of *Neon Signal Devices, Inc. v. Alpha-Claude Neon Corporation.*[70] An employee had developed a unique traffic signal device. Although his employer was not currently engaged in the traffic signal business, the employee had vigorously argued to the company that this was a potentially profitable business. After analyzing the proposal, the company invested a substantial amount of funds to enter the traffic signal business.[71] The employee ultimately concluded he could profit by forming his own business, and subsequently sued his former employer to enjoin it from using his patented invention.

In reaching a verdict for the employer, the court discussed the equitable features of the shop right rule:

> The doctrine of a shop right is of equitable origin. The principle involved is that where the inventor or owner of an invention acquiesces in the use of the invention by another, particularly where he induces and assists in such use without demand for compensation or other notice of restriction of the right to continue, he will be deemed to have vested the user with an irrevocable, equitable license to use the invention. The situation between the inventor and employer might, of course, arise by mutual agreement, but generally the situation arises when the inventor induces his employer to proceed and not only fails to object to the use, but stands by or assists, while permitting his employer to assume expense and put himself in a position where it would be to his detriment to be compelled to relinquish further use of the invention.[72]

Consider the far-reaching application of this definition of the rule. It seems likely that most employee inventions would arise without the knowledge of the company and where the employee would facilitate production of the concept by presenting the idea to his employer for ultimate implementation. If the *Neon* rule is to be literally applied, practically any employee improvement would be subject to the shop right rule. This result appears to be consistent with prior judicial interpretations, and indeed may be a reasonable result.

An earlier case, decided even before the *Dubilier* decision,[73] considered an extreme situation where the employer had indeed expended considerable funds

68. *See id.* at 426.
69. *See Lane*, 150 U.S. 193.
70. Neon Signal Devices v. Alpha-Claude Neon Corp., 54 F.2d 793 (W.D. Pa. 1931).
71. *Id.* at 795.
72. *Id.* at 797-94 (citations omitted).
73. *Dubilier*, 289 U.S. 178.

to utilize the improvement. In *Barber v. National Carbon Co.*,[74] a company hired an engineer to help reduce operating expenses. The engineer invented a machine and ultimately sought to prevent the company from using the invention without additional compensation. The company had constructed a special building to house the inventions and the machines utilizing the inventions. Although the court based its conclusion on apparently contractual grounds, factually it was an extreme case where an employer had expended considerable funds to utilize an improvement.

An equitable principle should be applied to protect the employer when an employee induces the employer to utilize an invention to determine if the invention is commercially successful and then demands the employer cease operation or exacts a high license rate. Certainly, no employee would offer to bear the losses associated with an invention that proved unmarketable and therefore it seems equitable that the risk-bearing analysis should likewise result in the ordinary application of the shop right rule.

THE CONTRACT APPLICATION OF THE SHOP RIGHT RULE

In addition to the equitable features giving rise to the shop right rule, early decisions involving the rule, including *Dubilier*, refer to the creation of an implied license between the employer and the employee arising out of the employment relationship without requiring the showing of estoppel.

One of the earliest cases dealing with the contract version of the shop right rule was *Wiegand v. Dover Manufacturing Company*.[75] Wiegand was an assistant to the company's electrical engineer and had developed an improvement to a component in the electrical units manufactured by the company. The company had been using the improvement for two years when Wiegand left the company's employ and sued for patent infringement.

The court held that even if the employee had totally developed the idea at home and had reduced the idea to practice at home, the shop right rule would still apply to the benefit of the employer. The court noted that the employee had perfected, developed, or reduced the idea to a practical form on company time, using company resources. The court emphasized that the employee in question had the assistance of other employees in reducing his concept to practical form, and that the development was only one part of the total product sold by the company. The court further emphasized that all risk in relation to the development and implementation was borne by the company and had the idea failed or proved unmarketable, the employer would have suffered all the losses.[76]

Wiegand had not made any specific claim of the invention for two years, there had been no promises to pay the employee for the concept in addition to his usual compensation, and the court concluded that the employee had not been

74. Barber v. National Carbon Co., 129 F. 370 (6th Cir. 1904).
75. Wiegand v. Dover Mfg. Co., 292 F. 255 (N.D. Ohio 1923).
76. Compare the similar analysis in *Gill*, 160 U.S. 426.

misled in any fashion by his employer. While the court did not specify the rule as based in contract rather than estoppel, the emphasis by the court on the use of materials and employee time is certainly an adherence to the contract theory.[77]

The contract version of the shop right rule is based upon the nature of employment relationship. As discussed in *Dubilier, supra*, when the employee is in the "work mode," the employee has already been compensated for the labors and ingenuity by the employer. The help of coworkers and the use of the employer's materials are additional elements that cement this application to contract principles. However, the same conclusions apply even if only a portion of the development/implementation process is accomplished using the employer's time or material.[78] The courts have rarely applied the contract rule alone and rather combine these features with the equity element to apply the shop right rule to most inventions.

DEFENSES TO THE APPLICATION OF THE SHOP RIGHT RULE

In each of the cases involving the shop right rule, the employees have raised a series of allegations against the employer to preclude the imposition of the shop right rule. These defenses usually include claims of fraud or misrepresentation by the employer or claims that the employer had promised compensation. Perhaps the earliest defense raised was that of an implied contract for compensation. In *McAleer*,[79] the employee had argued that there was an implied contract between the employer and himself for compensation for the use of the improvement. This argument had been rejected by the Court where McAleer had signed a simple assignment prior to the submission of the improvement for patent protection.

In one of the earliest cases where fraud was raised as a defense, an employee claimed that the company fraudulently induced the employee to assign his patent rights to the company. In *Bowen v. B. F. Goodrich Co.*[80] the employee further argued that because of his limited educational abilities the company had misused its relationship with its employee. The court held that the employee had testified that his purpose was to give the idea to the company for the company's use and at no time instructed the company not to use his idea. When the patent had originally been issued to the company, the employee had been paid a nominal consideration. In analyzing the issue of fraud, the court discussed the fact that the employee had been silent for three years before raising any objection to the use by the company and that although the court believed that three years may not of itself constitute laches, the failure to object

77. For similar applications of the same analysis *see* Pure Oil Co. v. Hyman, 95 F.2d 22 (7th Cir. 1938), and Shearer v. United States, 87 Ct.Cl. 40 (1938).

78. In Kinkade v. New York Ship Building Corp., 21 N.J. 362, 122 A.2d 360 (1956), the court held that even if an idea was conceived outside the work place, if the invention is perfected or implemented at work then the shop right rule applies.

79. *McAleer*, 150 U.S. 424.

80. Bowen v. B.F. Goodrich Co., 36 F.2d 306 (6th Cir. 1929).

was evidence that no fraud existed on behalf of the company and that the employee was not defrauded in the assignment of the patent.

Thirty years later, another employee asserted a similar claim against his employer in connection with the application of the shop right rule. In *Hutchinson v. Fish Engineering Corp.*,[81] Hutchinson had been an officer and employee of the company and had left due to ill health. The employee, as had Bowen, argued that the assignment of the patent rights had been achieved through fraud on the part of the company and that the company had abused its confidential relationship with the employee. The court discussed the history of the relationship between the employee and the company and noted that the plaintiff had been an officer and had waited for over nine years before objecting to the company's use of the invention. This delay according to the court's interpretation constituted laches and barred the employee from seeking any relief.

Hutchinson alternatively argued that the company's policy that all inventions had to be assigned to the company was itself inequitable. The court found that the facts did not support that position, but rather the employee had a perception that such was the case.[82] The court further noted that where the employer had spent considerable sums to develop and improve the idea submitted by the employee, the employee cannot subsequently object to the use of the improvement by the company.

Although it is rare that plaintiffs can prove the allegations of fraud, certain situations can arise in which fraud does exist and may preclude the application of the shop right rule. The well known "socket wrench" case[83] was such a case. Although the case does not specifically address the shop right rule, the claims successfully asserted in *Roberts* are similar to those defenses raised in early cases involving the shop right rule which were not adopted by the courts.

Roberts had been a sales clerk at Sears when, at the age of eighteen, he began working on a socket wrench which would permit a quick release feature with the sockets.[84] Roberts had filed an application for a U.S. patent, and then showed his invention to the manager at the Sears store where he worked.[85] After reviewing the invention, Sears had determined that the feature was relatively inexpensive to manufacture and that market tests had indicated that the new wrench would be very popular. In negotiating with Roberts, counsel for Sears had represented that the item might not be patentable, the invention would be expensive to manufacture, and that the wrenches would not sell well.[86]

The terms of the first contract provided that Roberts would receive a royalty of two cents for each wrench sold up to 500,000 wrenches. Sears manufactured

81. Hutchinson v. Fish Eng'g Corp., 42 Del. Ch. 21, 203 A.2d 53, *aff'd*, 213 A.2d 447 (Del. 1965).

82. Consider whether any employee who develops an improvement which could be utilized by his employer would not normally submit the same to his employer.

83. Roberts v. Sears, Roebuck & Co., 573 F.2d 976 (7th Cir. 1978).

84. *Id.* at 978. Although the opinion does not discuss the issue, it appears that Roberts developed the improvement at home and outside the normal application of the shop right rule.

85. *Id.* at 979.

86. *Id.* at 979–80.

and sold that many wrenches in the first nine months of sales and in a ten-year period had sold almost forty times that number. Upon reviewing these facts, the court held that Sears had fraudulently obtained the rights in the patent.[87]

Beyond the traditional fraud issues, *Roberts* contained an additional claim that Sears had breached a confidential relationship which purported to exist between Sears and Roberts. The trial court had concluded that such a relationship existed and that Sears had breached that relationship. The court noted that under Illinois law, a confidential relationship could be created where one person places such trust and confidence in another such as to give that person some influence and superiority over the first.[88]

The court described various factors to consider to determine if such a relationship exists. Those elements included the disparity of age, education, and business experience between the parties, the existence of an employment relationship and the exchange of confidential information from one party to the other.[89] The court found that each of these factors had existed in the case and the trial court had committed no error in awarding judgment to Roberts.[90]

Perhaps it is a reflection of modern judicial interpretation but the same arguments had been set forth by Hutchinson and Bowen to no avail.[91] Perhaps the different results can be attributed to the facts in *Roberts*, which differ from those in the earlier cases and were more extreme in their effect. It appears that the arguments may still have validity and may yet be raised in subsequent cases to prevent the application of the shop right rule.

In addition to the pure fraud cases, other situations may arise in which an employee can effectively negate the application of the rule. Under both the contractual and the equitable version of the shop right rule, there are limitations to the application of the rule. As noted by the Supreme Court in *Dubilier*[92] the shop right does not create an absolute right to an exclusive right in the improvement, but rather is limited to the nonexclusive license by the employer. Further, the rule can be negated by affirmative conduct of the employee. Recall that the application of the rule is based on both contractual and equitable principles. An employee may be able to defend against either theory if the facts negate the contract or preserve typical defenses to an estoppel claim.

In order to negate the contractual feature of the shop right rule, an employee may take affirmative steps to preclude the application of the rule. Absent such affirmative conduct, the rule would apply. In the case of *Gemco Engineering &*

87. *Id.* at 983.

88. *Id.*

89. *Id.*

90. *Id.* at 984. Sears had argued that Roberts had retained his own legal counsel and thus did not rely on the representation of Sears. The court rejected this argument and previously had noted that Sears had engaged the same attorney on other matters after the original negotiations began which the court found to raise some doubts as to the independence of his advice to Roberts. *Id.* at 983, 979 n.1.

91. *See Bowen*, 36 F.2d 306 and *Hutchinson*, 42 Del. Ch. 21, *aff'd* 213 A.2d 447.

92. *Dubilier*, 289 U.S. 178.

Mfg. Co., Inc. v. Henderson,[93] Henderson was specifically employed by the company to develop a tire-mounter device. Henderson perfected the mounter, using equipment and machinery at the employer's plant. A dispute subsequently arose between Henderson and the employer as to the ownership of this tire-mounter.[94]

After the perfection of the tire-mounter, Henderson began to develop a tire-demounter, although not requested to do so by his employer. His employer knew he was working on such device, but it was totally prepared at the employee's home and no materials of his employer were used in making the demounter.[95]

In analyzing the facts of the case, the Ohio Supreme Court had no difficulty in concluding that the shop right rule applied as to the tire-mounter.[96] However, as to the tire-demounter, the court concluded that the shop right rule did not apply and held:

> 2. An employee not under contract with his employer to invent, may protect himself against the establishment or accrual of a shop right in his employer in any invention or device perfected by such employee on his own time and at his own expense though during the period of his employment, by words, acts, or conduct, which clearly negate the establishment or accrual of such shop right.[97]

Again, recall that Henderson had done all the work on the invention at his home without using his employer's materials. He refused to take a model to the shop of his employer and continued to claim ownership in the device while negotiating for possible use by the company.[98] The significant difference between *Gemco* and other cases is that Henderson took affirmative steps to establish ownership in the invention and had strongly objected to the claims in the invention by the employer.[99] Although such conduct may not be conducive to continuing an employment relationship, it did serve to negate the application of the shop right rule.

A recent case has held that even the use of an employer's time or his facilities or materials may not necessarily create a license under the shop right rule. In *Dewey v. American Stair Glide Corp.*,[100] an employee filed an action against his employer based on unjust enrichment. The company had been in the business of making chair lifts for use in the home and had had a safety defect arise that could cause a rider in the lift chair to be thrown at the bottom of the stairs. After a substantial investment in engineering firms to examine the problem, the

93. Gemco Co. v. Henderson, 151 Ohio St. 95, 83 N.E. 2d 596 (1949).
94. *Id.* at 98, 83 N.E.2d at 598.
95. *Id.* at 99, 83 N.E.2d at 598.
96. *Id.* at 95, 102, 83 N.E.2d at 596, 599.
97. *Id.* at 95, 83 N.E.2d at 596.
98. *Id.* at 103, 83 N.E.2d at 600.
99. *Id.*
100. Dewey v. American Stair Glide Corp., 557 S.W.2d 643 (Mo. Ct. App. 1977).

company determined that it would be required to replace motors in several hundred units already installed.

Dewey had been employed by the company as a welder for twenty-four years. Although not within the scope of his regular job, Dewey used some scrap metal in the shop and company tools to construct a safety device that was effective in solving the problem. The company foreman had noticed Dewey working on the improvement and ordered him to not work on his device until his lunch time. At lunch, Dewey proceeded to finish constructing the model.[101]

At the end of the work day, Dewey asked the foreman if he could take the completed model home for further work and the foreman agreed. While at home, Dewey had a relative reduce the idea to a written form in a shop drawing. The next day Dewey took his drawing to his foreman who referred Dewey to the company engineer assigned to the project. Officials at the company then requested Dewey to make minor revisions which he did and submitted a final model for consideration. This completed model satisfied all necessary safety tests.[102]

Immediately after the idea had been submitted by Dewey, the company authorized an independent engineering firm to construct a final prototype model, which was later introduced into the manufacturing process to be installed on certain models already in use. Within three days after the prototype was developed, Dewey asked the company for compensation and upon being denied compensation, retained counsel who demanded payment of royalties from the company.[103]

The trial court held that although the use of the company materials and tools was limited, such use was sufficient to trigger the application of the shop right rule. The court of appeals reversed, however, holding that a de minimis use of such time and material did not amount to a shop right, particularly where the employee had not acquiesced in the company's use of the invention and had immediately demanded compensation.[104] The company further argued that Dewey had not reduced the idea to practice until the full production drawings were prepared and manufacture began. The court similarly rejected this argument and found that the issue is not relevant to the questions of the applications of the shop right rule.[105]

The lesson to be learned from *Dewey* and *Gemco* is clear; the employee must act quickly and decisively to assert ownership in the invention, but if the employee does act promptly, he may negate the application of the shop right rule if the invention was developed primarily at home and was not put into manufacture before he asserts his claims for compensation.

In attempting to analyze these various defenses, it is clear that two basic patterns exist. First, where an employee voluntarily submits an improvement to

101. *Id.* at 645.
102. *Id.* at 645–46.
103. *Id.* at 646.
104. *Id.* at 648.
105. *Id.* at 647–48. *But cf.* Gill, 160 U.S. 426 and Wiegand 292 F. 255.

the company to be used in the company's business, fails to immediately assert his rights in the improvement, and fails to take steps to preclude the company from using the invention, the company will have the advantage of the shop right rule. An employee apparently has the burden of establishing the negation of the rule or the rule is automatically applied. Second, if an employee is given misleading information or an employer misrepresents facts when the employer had knowledge of the potentials of the invention, then the shop right rule may not arise due to the claim of fraud.[106] However, the fraud claims will be subject to the traditional statute of limitations rules and an employee could not wait an indefinite period of time before claiming wrongful treatment by his employer.[107]

STATUTORY LIMITATIONS ON THE SHOP RIGHT RULE

Although the limits of the scope of the rule have not been clearly defined by the courts, the legislatures of at least four states have recently attempted to limit by statute applications of the shop right rule.[108]

The language used in the core sections of these statutes are almost identical. For example, the Minnesota statute provides:

> Any provision in an employment agreement which provides that an employee shall assign or offer to assign any of his rights in an invention to his employer shall not apply to an invention for which no equipment, supplies, facility or trade secret information of the employer was used and which was developed entirely on the employee's own time, and (1) which does not relate (a) directly to the business of the employer or (b) to the employer's actual or demonstrably anticipated research or development, or (2) which does not result from any work performed by the employee for the employer.[109]

Although the statutes appear to bolster the rights of employees, the language of the statute does very little to restrict the application of the shop right rule or define its scope. Rather these statutes are extremely limited in their effect and in fact may have changed the result of the few cases which held in favor of the employee. First, consider that the statute only applies to "any provision in an employment agreement." Under the strict construction of statutes rule, there must be a written agreement for the statute to apply. With the exception of

106. *See* Roberts v. Sears, Roebuck & Co., 573 F.2d 976.

107. *See* Hyder v. Diebold, Inc., Court of Appeals, Stark County, Ohio, Case No. 5687, decided December 2, 1981 (unreported), motion to certify record overruled March 17, 1982. In *Hyder*, the plaintiffs waited over nine years after submitting an improvement before commencing suit. The court found that the shop right rule applied *and* that the plaintiffs were barred by the statute of limitations.

108. Minn. Stat. Ann. § 181.78 (West Supp. 1982), Cal. Lab. Code §§ 2870-72 (West Supp. 1982), Wash. Rev. Code Ann. § 49.44.140-44.150 (West Supp. 1982) and N.C. Gen. Stat. § 66-57.1.

109. Minn. Stat. Ann § 181.78(1) (West Supp. 1982).

senior personnel or engineers, it seems highly unlikely that most employees would have a written employment agreement. Therefore, the average employee inventor, such as the employee in the *Dewey* case,[110] would not be entitled to the limited protection offered by the statute.

Assuming that a case arises where the employer is covered by the statute, the statute merely repeats the common statement of the elements of shop right rule itself and then expands the rule to include inventions which are made totally outside of the workplace but which relate to the business of the employer. This expansion negates the defenses that were successfully asserted in *Gemco*[111] and *Dewey*,[112] and if the statute had been in effect in Ohio and Missouri at the time, the employers in both cases would likely have prevailed. In both *Gemco* and *Dewey* the employee was able to negate the application of the rule by performing the work outside the workplace *and* objecting to the use of their inventions without compensation. Under the statute, therefore, the employee cannot negate the rule simply by objecting to the use of the invention. This burden is even more significant in that the North Carolina and California statutes provide that the burden of proof of any benefits under the statute is expressly placed on the employee.[113]

Several of the statutes, however, do provide some protection to employees by requiring the employer to appraise the employee of the limits contained in the statute.[114] Specifically, if the employment agreement requires the assignment of any invention rights, the employer must disclose in writing that inventions not related to the employer's business and which are developed outside the workplace are not included in the agreement. This disclosure provision will at least put the employee on notice as to his rights and may cause employees to negotiate rights to inventions.

To balance its statutory limits in favor of the employee, three of the states provide that the employers may require disclosure of all inventions of the employee to the employer to permit an informal determination of the rights of each party in the invention.[115] Despite these limited attempts to equalize the positions of the parties at the commencement of the employment relationship, the only penalty for violation of the statute is to make the infringing paragraph of the contract unenforceable and contrary to public policy.[116]

The statutory responses to the shop right rule do not deviate from either the basis upon which the rule is created or the case law approaches to the definition of the scope of the rule. Indeed, unless the legislation was designed to respond to

110. *Dewey*, 557 S.W.2d 643.

111. *Henderson*, 151 Ohio St. 95, 84 N.E.2d 596.

112. *Dewey*, 557 S.W.2d 643.

113. N.C. Gen. Stat. § 66-57.1; Cal Lab. Code § 2872 (West Supp. 1982).

114. Minn. Stat. Ann. § 181.78 (3) (West Supp. 1982); Cal. Lab. Code § 2872 (West Supp. 1982); Wash. Rev. Code Ann. § 49.44.140 (3) (West Supp. 1982).

115. Cal. Lab. Code § 2871 (West Supp. 1982); N.C. Gen. Stat. § 66-57.2; Wash. Rev. Code Ann. § 49.44.150 (West Supp. 1982).

116. Minn. Stat. Ann. § 181.78 (1) (West Supp. 1982); Cal Lab. Code § 2870 (West Supp. 1982); Wash. Rev. Code Ann. § 49.44.140 (1); (West Supp. 1982); and N.C. Gen. Stat. § 66-57.1.

particularly onerous conduct of employers in the preparation of employment contracts, the statutes have relatively little impact on the common law version of the shop right rule except to expand the scope of the rule to negate some of the defenses previously available to the employee, particularly the defenses of nonuse of the employer's property and the demand for compensation defense. Within the framework of these statutes, the application of the shop right rule should not vary significantly between the four states with statutes on the issue and the rest of the country.

CONCLUSION

The cases upon which the shop right rule is based involve a core of operative facts which are quite similar. Usually an employee develops an improvement outside of the normal course of his job responsibilities, partially at home and particularly during working hours which the employee submits to his employer. The motivations of the employee's actions are not usually discussed in the cases, but the assumption may be made that the employee is motivated by possible job-related rewards, such as promotions or raises, or a sincere desire to help his employer.[117] Regardless of the reasons for the actions of the employee, it is clear that the shop right rule can and does apply to employee improvements.

Counsel for employers should caution their clients to make no representations of any kind to employees who submit ideas for possible implementation. Perhaps the safest course in the area is to adopt a suggestion program for employees who may receive some nominal consideration for the suggestion or, for example, some percentage of cost savings for the first year of operations. The overriding feature of the program would be to expressly negate any potential claims for misrepresentation or unconscionable treatment of employees.

Conversely, counsel for employees must take immediate steps to put employers on notice of an objection to the use of an improvement. Although the shop right rule would apply regardless of objection if the improvement is developed on company time with company material, if the invention was developed at home then the rule might be negated provided that the employee acts quickly. Even if the presumption of the application of the rule may have been defeated, it is doubtful if an employee can wait too long to object without being barred by either an equitable application of the rule or the statute of limitations.

The adversary nature of the employer-employee relationship of the past several decades appears to be metamorphosing into a joint effort philosophy. Employee concessions, once unthinkable, are becoming commonplace as employees recognize that their jobs are contingent upon the success of their employers. Indeed, programs that fully support the team concept have been adopted where employees meet to discuss production problems and to make recommendations for improvements. Given these developments, it seems proba-

117. Although not specifically addressed in any case, query whether an employee who is promoted because of job performance including the submission of an invention has not already been compensated for the invention.

ble that situations will become more prevalent in which counsel must address the application of the shop right rule. Although in certain circumstances the application of the rule may appear to be harsh, it is for the main part the reasonable extension of the employment relationship and is as viable today as it was more than a century ago.



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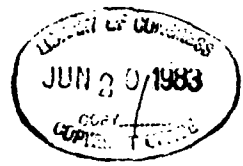

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ARTICLE IV

(Severability)

If any provision of this Act or the application thereof to any person or circumstance is held invalid, the invalidity does not affect other provisions or applications of the Act which can be given effect without the invalid provision or application, and to this end the provisions of this Act are severable.

Patent Ownership: An Employer's Rights To His Employee's Invention

Eighty-four percent of American patents are awarded to employed inventors;[1] therefore, the employer-employee relationship is critical to the modern American patent system. To encourage continued invention, the patent law must allow both the inventor and the developer (his employer) to obtain adequate compensation. Under the present United States patent system, the common law, which can be contractually altered, determines whether an inventor or his employer owns a patent.

Critics say the United States patent system discourages innovation by allowing an employer to use an employee's invention without adequately compensating the inventor.[2] Supporters argue that the employer has already compensated the inventor through his regular salary, and that an employer deserves the patent because of the vast amount of money spent researching and developing an otherwise worthless invention.[3]

The most academically pure method for compensating each contributor would be to determine the inventor's and the developer's contribution and give each a pro-rata share of the invention's value. This method, however, would be highly impractical because it requires meticulous records of each participant's work and detailed analysis of each invention's worth. The law must find a realistic but fair method of dividing an invention's value between the inventor and the developer. The patent law, therefore, needs a broad, clear rule which will allow a fair division in most circumstances.

This note attempts to articulate that rule. Part I examines the

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1 *Rights of the Employed Inventor: Hearings on H.R. 4732 and H.R. 6635 Before the Subcomm. on Courts, Civil Liberties, and the Administration of Justice of the House Comm. on the Judiciary*, 97th Cong., 2d Sess. 2 (1982) (statement of Rep. Kastenmeier). The Wall Street Journal reported a slightly smaller percentage (seventy-five percent). Wall St. J., Sept. 9, 1982, at 1, col. 6. The term "employed inventor" is not limited to persons specifically hired to invent; rather, it includes any employee who creates an invention. *See* Neumeyer, *Employee's Rights in Their Inventions*, 83 INT'L LAB. REV. 1, *reprinted in* 44 J. PAT. OFF. SOC'Y 674 (1962).

2 Wall St. J., *supra* note 1. *See also* Orkin, *The Legal Rights of the Employed Inventor: New Approaches to Old Problems* (pts. 1 & 2), 56 J. PAT. OFF. SOC'Y 648, 719, 727-36 (1974); Sutton & Williams, *Employed Inventors: The Case for the Moss Bill*, 8 U.S.F.L. REV. 557, 558 (1974); Note, *Statutorily Decreed Awards for Employed Inventors: Will They Spur Advancements in the Useful Arts?*, 15 IDEA 575, 576-77 (1971).

3 *See* Wall St. J., *supra* note 1.

common law methods for distributing patent rights between an inventor and his employer; Part II discusses the recently enacted and proposed statutory modifications to those methods; and Part III proposes an improved method for equitably distributing an invention's value between the inventor and his employer.

I. The Present System

An employer's right to his employee's patent depends on the parties' intent; an express or implied agreement determines who owns the invention and who can use it.[4] In theory, an inventor retains the title to his patented invention unless he voluntarily assigns the patent to his employer;[5] but, in practice, most employees have an obligation to assign their patents to their employers.[6] This obligation may arise from an implied agreement created when an employee is hired to invent,[7] or from a fiduciary duty which particular employees owe to their employer.[8] Even if an inventor retains the patent, his employer may have a license to use the invention if the inventor used the employer's time, facilities, or money to create the invention, or if the employer promoted the invention while reasonably expecting a royalty-free use.[9] The parties can also follow the modern trend and allocate patent rights through an express contract.[10]

A. *Employment Status*

Employment alone does not require an inventor to assign a patent to his employer.[11] Absent a specific agreement, an employer's rights (and the inventor's duties) arise from the inventor's employment status.[12] Although, arguably, federal common law may control

4 National Dev. Co. v. Gray, 316 Mass. 240, 246, 55 N.E.2d 783, 787 (1944); Kinkade v. New York Shipbldg. Corp., 21 N.J. 362, 366-67, 122 A.2d 360, 363-64 (1956).

5 Marshall v. Colgate-Palmolive-Peet Co., 175 F.2d 215, 217 (3d Cir. 1949); New Jersey Zinc Co. v. Singmaster, 71 F.2d 277, 278 (2d Cir.), *cert. denied*, 293 U.S. 591 (1934); National Dev. Co. v. Gray, 316 Mass. 240, 246, 55 N.E.2d 783, 787 (1944); A & C Eng'g Co. v. Atherholt, 355 Mich. 677, 685, 95 N.W.2d 871, 875, *cert. denied*, 361 U.S. 824 (1959).

6 *See* Sutton & Williams, *supra* note 2, at 561.

7 *See* notes 11-39 *infra* and accompanying text.

8 *See* notes 40-57 *infra* and accompanying text.

9 *See* notes 58-75 *infra* and accompanying text.

10 *See* notes 76-107 *infra* and accompanying text.

11 Banner Metals, Inc. v. Lockwood, 178 Cal. App. 2d 643, 654-55, 3 Cal. Rptr. 421, 431 (1960); Kinkade v. New York Shipbldg. Corp., 21 N.J. 362, 369, 122 A.2d 360, 363-64 (1956). An inventor can enjoin his employer from using the employee's patented invention. McNamara v. Powell, 256 A.D. 554, 11 N.Y.S.2d 491 (1939).

12 Aero Bolt & Screw Co. v. Iaia, 180 Cal. App. 2d 728, 736, 5 Cal. Rptr. 53, 58 (1960); National Dev. Co. v. Gray, 316 Mass. 240, 246, 55 N.E.2d 783, 787 (1944).

who initially receives the title to a patent,[13] state law determines an

13 *See* Orkin, *supra* note 2, at 721-27. Orkin argues the federal courts have used their rulemaking policies to create a federal common law based on the dormant patent clause power (U.S. CONST. art. I, § 8, cl. 8).

This argument for a federal common law is weak because the United States Supreme Court has acknowledged the patent clause does not eliminate the state's police power over fraud in the *assignment* of an existing patent. Allen v. Riley, 203 U.S. 347 (1906). Later, the Court even said:

> The Federal courts have exclusive jurisdiction of all cases arising under the patent laws, but not of all questions in which a patent may be the subject-matter of the controversy. For courts of a State may try questions of *title*, and may construe and enforce *contracts* relating to patents.

New Marshall Co. v. Marshall Engine Co., 223 U.S. 473, 478 (1911) (emphasis added). While both these cases involved *post*-invention transfers, the rule for *pre*-invention transfers probably would be the same. In Aronson v. Quick Point Pencil Co., 440 U.S. 257 (1979), the Supreme Court said: "State law is not displaced merely because the contract relates to intellectual property which may or may not be patentable; the states are free to regulate the use of such intellectual property in any manner *not inconsistent with federal law*." *Id.* at 262 (emphasis added). *See* Brulotte v. Thys Co., 379 U.S. 29 (1964)(forbidding the enforcement of a contract provision which exacted royalties after the patent's expiration).

This reasoning leads back to the question whether Congress has legislated in the area, so that the dormant power would preempt any state law. 35 U.S.C. § 261 (1976) provides that "Patents shall have the attributes of personal property." Taken alone, this sentence would suggest Congress intended that state law would control invention assignments in employment contracts, because personal property has traditionally been defined and regulated by state law. The federal statute, however, continues: "Applications for patents, patents, or any interest therein, shall be assignable in law by an instrument in writing." This indicates not only congressional intent to federalize the assignment of *post-invention* title, but also congressional silence concerning *pre*-invention title. Using the interpretative axiom, *expressio unius est exclusio alterius*, § 261 might even prohibit the assignment of a contingent (pre-assignment) interest. On the other hand, strictly construing the statute as being in derogation of the common law right of alienation, § 261 might even allow an oral assignment of the title to an invention after it has been created but before a patent application has been filed. More likely, Congress did not even consider pre-invention assignments.

The question, therefore, is whether the federal patent statutes, taken as a whole, leave room for a federal common law for this particular issue—the pre-invention title to an invention. A federal common law exists for some aspects of the patent law. For example, the Supreme Court applied a federal common law rule to eliminate licensee estoppel even though the Court stated that state law controlled the interpretation of the patent assignment. Lear v. Adkins, 395 U.S. 653 (1969). The Court noted the policy concerns and the need for a uniform federal rule. *Id.* at 673-74.

A federal policy or interest, however, must significantly conflict with the use of state law before a federal common law will be fashioned. Mirree v. DeKalb County, 433 U.S. 25 (1977). Interpreting this rule, the Second Circuit has said that a desire for uniformity is an insufficient reason to invoke a federal common law in private litigation. *In re* Agent Orange Products Liab. Litig., 635 F.2d 987, 993 (2d Cir. 1980), *cert. denied*, 454 U.S. 1128 (1981). Although the author feels a national standard should apply, there is no compelling need for such a uniform standard. Thus, the patent laws do not create a federal common law concerning the pre-invention title to patents.

Several courts have reached the same conclusion that state law determines an employee's status. *See* Lion Mfg. Corp. v. Chicago Flexible Shaft Co., 106 F.2d 930 (7th Cir. 1939); Papizian v. American Steel & Wire Co., 155 F. Supp. 111 (N.D. Ohio 1957); Toner v. Sobel-

inventor's employment status.[14] In addition, an employer has the burden of proving that the inventor's employment status required the inventor to assign a particular patent.[15] An inventor's obligation to assign his patent depends on his employment status when he actually created the invention, rather than on any expectations when he was hired.[16] These expectations, however, are an indication of the employee's status.[17] The expectations can be broken down into three categories. An employer can hire an employee and expect him to: 1) invent a specific thing (specifically-inventive employment), 2) generally exercise his inventive skills (generally-inventive employment), or 3) not invent at all (non-inventive employment).[18]

1. Specifically-inventive Employment

An employee is hired to create a specific invention when his employer pays him to either invent a specific thing or solve a specific problem.[19] The inventor implicitly agrees to assign the resulting patent to his employer.[20] The "specifically-inventive" employee, thus,

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man, 86 F. Supp. 369 (E.D. Pa. 1949); Heath v. Zenkich, 107 Ill. App. 3d 207, 437 N.E.2d 675 (1982); A & C Eng'g Co. v. Atherholt, 355 Mich. 677, 95 N.W.2d 871, *cert. denied*, 361 U.S. 824 (1959).

14 Standard Brands Inc. v. U.S. Partition & Packaging Corp., 199 F. Supp. 161, 176 (E.D. Wis. 1961).

15 Bandag, Inc. v. Morening, 259 Iowa 998, 146 N.W.2d 916 (1966). This is a factual inquiry. E.F. Drew & Co. v. Reinhard, 170 F.2d 679 (2d Cir. 1948); Forberg v. Servel, Inc., 88 F. Supp. 503 (S.D.N.Y. 1949). Previously assigning a patent to his employer implies that an inventor agreed to assign other patents to his employer. Fish v. Air-O-Fan Products Co., 285 F.2d 208 (9th Cir. 1960); Marshall v. Colgate-Palmolive-Peet Co., 175 F.2d 215 (3d Cir. 1944); Magnetic Mfg. Co. v. Dings Magnetic Separator Co., 16 F.2d 739 (7th Cir.), *cert. denied*, 274 U.S. 740 (1927); Daniel Orifice Fitting Co. v. Whalen, 198 Cal. App. 2d 791, 18 Cal. Rptr. 659 (1962).

16 Houghton v. United States, 23 F.2d 386 (4th Cir.), *cert. denied*, 277 U.S. 592 (1928); Forberg v. Servel, Inc., 88 F. Supp. 503 (S.D.N.Y. 1949); Oliver v. Lockport Mills, Inc., 6 Misc. 2d 356, 163 N.Y.S.2d 317 (N.Y. Sup. Ct. 1956), *appeal dismissed*, 163 N.Y.S.2d 356 (1957).

17 *See* United States v. Dubilier Condenser Corp., 289 U.S. 178 (1932).

18 *See* Gullette, *State Legislation Governing Ownership Rights in Inventions Under Employee Invention Agreements*, 62 J. PAT. OFF. SOC'Y 732, 733 (1980). Gullette divides employment into "specific inventive," "general inventive," and "non inventive." Courts often ignore this three-tiered analysis, concentrating on whether the inventor was hired to create the disputed invention. If the inventor was not so hired, the courts sometimes call him a "general employee" even though he was hired to invent. *See, e.g.*, United States v. Dubilier Condenser Corp., 289 U.S. 178 (1932).

19 Houghton v. United States, 23 F.2d 386 (4th Cir.), *cert. denied*, 277 U.S. 592 (1928); Forberg v. Servel, Inc., 88 F. Supp. 503 (S.D.N.Y. 1949); National Dev. Co. v. Gray, 316 Mass. 240, 55 N.E.2d 783 (1944).

20 Standard Parts Co. v. Peck, 264 U.S. 52 (1924); Gill v. United States, 160 U.S. 426 (1896); Solomons v. United States, 137 U.S. 342 (1890); North American Philips Co. v.

has a contractual and equitable duty to assign a patent—even for an invention created without his employer's help or knowledge.[21] Courts, however, are reluctant to find a specifically-inventive employment agreement.[22] They distinguish between employees hired to invent and those hired merely to improve the embodiment of an idea.[23] Therefore, a direction to develop an already-created idea is not a direction to invent.[24]

A more difficult problem arises when a specifically-inventive employee creates an invention outside his assigned duties. Even a specifically-inventive employee does not have to assign a patent which is outside the scope of his employment if it is also unrelated to his employer's business and immediate research.[25] And, according to the United States Supreme Court, a specifically-inventive employee must only show that the invention is outside the scope of his employment.[26] In *United States v. Dubilier Condenser Corp.*,[27] the United States Supreme Court allowed a federal employee to retain his patent for an invention which the government had paid another group within his laboratory to invent. The Court reasoned the employment contract could not be so broadly construed as to imply an assignment of

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Brownshield, 111 F. Supp. 762 (S.D.N.Y. 1953); National Dev. Co. v. Gray, 316 Mass. 240, 55 N.E.2d 783 (1944). *See generally* DELLER'S WALKER ON PATENTS §§ 376, 378 (2d ed. 1965).

21 Wellington Print Works, Inc. v. Magid, 242 F. Supp. 614 (E.D. Pa. 1965) (even an employer who had breached his employment contract by not paying the inventor's salary has a right to the patent); Daniel Orifice Fitting Co. v. Whalen, 198 Cal. App. 2d 791, 798-99, 18 Cal. Rptr. 659, 665 (1962); National Dev. Co. v. Gray, 316 Mass. 240, 55 N.E.2d 783 (1944); Steranko v. Inforex Inc., 5 Mass. App. 253, 362 N.E.2d 222 (1977).

22 *See* Howe v. Floodmaster Mfg. Corp., 45 Ill. App. 2d 203, 195 N.E.2d 278 (1963) (a complaint alleging the inventor was an employee was dismissed because he was actually an independent contractor).

23 National Dev. Co. v. Gray, 316 Mass. 240, 55 N.E.2d 783 (1944); Detroit Testing Lab. v. Robison, 221 Mich. 442, 191 N.W. 218 (1922). Research scientists, *see* Houghton v. United States, 23 F.2d 386 (4th Cir.), *cert. denied*, 277 U.S. 592 (1928), and design engineers, *see* Lane & Bodley Co. v. Locke, 150 U.S. 193 (1893), are specifically inventive employees, while a general manager, *see* Hapgood v. Hewitt, 119 U.S. 226 (1886), is not a specifically inventive employee because of his diverse administrative tasks. *See generally* Annot., 61 A.L.R.2d 386 (1958).

24 Cahill v. Regan, 5 N.Y.2d 292, 157 N.E.2d 505, 184 N.Y.S.2d 348 (1959). Designing, constructing or devising a manufacturing method are not inventive tasks because they involve applying an idea rather than creating one. United States v. Dubilier Condenser Corp., 289 U.S. 178 (1932); Banner Metals, Inc. v. Lockwood, 178 Cal. App. 2d 643, 3 Cal. Rptr. 421 (1960); Cahill v. Regan, 5 N.Y.2d 292, 157 N.E.2d 505, 184 N.Y.S.2d 348 (1959).

25 United States v. Dubilier Condenser Corp., 289 U.S. 178 (1932).

26 *Id.* at 187. The Court specifically found that the employees were *not* hired to invent. *Id.* at 195. In his dissent, Justice Stone interprets the majority to mean that the employees were not hired to create that *specific* invention. *Id.* at 213.

27 289 U.S. 178 (1932).

all work-related patents.[28]

Justice Stone, in dissent, argued that an employee hired to invent, whether specifically or generally, had a duty to assign the patent on any invention within his employer's scope of business because the employment contract implies that very purpose.[29] Stone's position has received some support.[30]

2. Generally-inventive Employment

A generally-inventive employee is hired to pursue his creative instincts, even if diverse from his assigned work;[31] his employer anticipates no specific result or invention.[32] An employee hired to generally exercise his inventive skills does not implicitly agree to assign any resulting patents to his employer,[33] although some courts infer an agreement to assign patents arising from the inventor's work.[34] In *Dubilier Condenser Corp.*, the Supreme Court held an employer may own a generally-inventive employee's patent if the inventor created the invention during working hours,[35] the patent is within the employer's scope of business,[36] or the inventor was assigned similar tasks.[37]

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28 *Id.* at 187-88.

29 *Id.* at 209. "[A]s the patent is the fruit of the very work which the employee is hired to do and for which he is paid, it should no more be withheld from the employer, in equity and good conscience, than the product of any service the employee engages to render." *Id.* at 215.

30 *See* Velsicol Corp. v. Hyman, 405 Ill. 352, 90 N.E.2d 717, *cert. denied*, 339 U.S. 966 (1950). A middle position would require an inventor to assign patents "incident" to his assigned duties. *See* Lion Mfg. Co. v. Chicago Flexible Shaft Co., 106 F.2d 930 (7th Cir. 1939).

31 *See* Gullette, *supra* note 18.

32 *Id.*

33 United States v. Dubilier Condenser Corp., 289 U.S. 178 (1932); Solomons v. United States, 137 U.S. 342 (1890).

34 *See* International Pulverizing Corp. v. Kidwell, 7 N.J. Super. 345, 71 A.2d 151 (1950). A comment to the Restatement (Second) of Agency also states:

> If, however, one is employed to do experimental work for inventive purposes, it is inferred ordinarily, although not so specifically agreed, that patentable ideas arrived at through the experimentation are to be owned by the employer. This is even more clear where one is employed to achieve a particular result which the invention accomplishes.

RESTATEMENT (SECOND) OF AGENCY § 397 comment a (1958).

35 United States v. Dubilier Condenser Corp., 289 U.S. 178, 193 (1932). *But see* Blum v. Commissioner, 183 F.2d 281 (3d Cir. 1950).

36 *Dubilier Condenser Corp.*, 289 U.S. at 193. *See also* Belanger v. Alton Box Bd. Co., 180 F.2d 87 (7th Cir. 1950).

37 *Dubilier Condenser Corp.*, 289 U.S. at 193. Justice Stone summarized the Court's position somewhat differently in his dissent:

> The opinion of this Court apparently rejects the distinction between specific employment or assignment and general employment to invent, . . . in favor of the broader position . . . that wherever the employee's duties involve the exercise of

The uncertainty in this area arises from the courts' unwillingness to adopt a clear rule. The dilemma whether to give *all* the patent rights to either the inventor *or* his employer forces courts to blur the analysis to reach their desired result. A court, therefore, will avoid the generally-inventive analysis by finding either a specifically-inventive or a non-inventive employment status. Courts might be more willing to articulate their reasoning if an intermediate position were available to divide the patent rights between an inventor and his employer.

3. Non-inventive Employment

An employee who is not hired to invent does not impliedly agree to assign any patent—even one created through his employment—because his salary is not intended to be compensation for inventing.[38] While a non-inventive employee owns the patent, his employer may have a non-exclusive license to use the invention. This license exists either because the inventor used his employer's resources in creating the invention or because his employer promoted the invention while reasonably expecting a royalty-free use.[39]

This three-tiered employment status analysis divides patent rights between an inventor and his employer according to reasonable expectations. An employee hired to create a specific invention only does what his employer expects when he creates that invention. A

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inventive powers, the employer is entitled to an assignment of the patent on any invention made in the scope of the general employment.

Id. at 213-14 (Stone, J., dissenting). For agreement with the author's interpretation of the Court's position, see Fersing v. Fast, 121 F.2d 531 (C.C.P.A. 1941); Milwaukee v. Activated Sludge, Inc., 69 F.2d 577 (7th Cir.), *cert. denied*, 293 U.S. 576 (1934); *but see* International Carrier-Call & Television Corp. v. R.C.A., 142 F.2d 493 (2d Cir. 1944).

38 Small v. Heywood-Wakefield Co., 13 F. Supp. 825 (D. Mass. 1936). In National Dev. Co. v. Gray, the court noted:

> One by merely entering an employment requiring the performance of services of a noninventive nature does not lose his rights to any inventions that he may make during the employment, athough the employment may have afforded the opportunity or occasion for the conception of an idea which may lead to a patent and the rendition of services in the course of his employment may have so enhanced his mechanical skills, scientific knowledge and inventive facilities as to enable him to develop and perfect the idea into a patentable article, and this is true even if the patent is for an improvement upon a device or process used by the employer or is of such great practical value as to supersede the devices or processes with which the employee became familiar during his employment.

316 Mass. at 246, 55 N.E.2d at 786. *See also* Banner Metals, Inc. v. Lockwood, 178 Cal. App. 2d 643, 3 Cal. Rptr. 421 (1960); RESTATEMENT (SECOND) OF AGENCY § 397 (1958). *See generally* DELLER'S, *supra* note 20, § 375.

39 National Dev. Co. v. Gray, 316 Mass. 240, 55 N.E.2d 783 (1944); *see* notes 58-75 *infra* and accompanying text.

generally-inventive employee may exceed his employer's expectations. Thus, where a generally-inventive employment is involved, the division of patent rights is more difficult, lending itself to a case by case analysis. Finally, a non-inventive employee always exceeds his employer's expectations when he creates an invention. As the foregoing suggests, the employment status analysis provides only broad categories which give the patent rights to one party or the other. This works well in the extreme categories—specifically-inventive or non-inventive employment, but does not accomplish an adequate distribution in the intermediate category—generally-inventive employment. A better analysis would apportion the rights in this intermediate category according to each party's contribution.

B. *Fiduciary Duty*

Some employees, usually corporate officers and directors, have a fiduciary duty not to compete with their employers. This duty may require an inventor to assign a particular patent to his employer.[40] Such a key employee, often called the employer's "alter-ego,"[41] has an obligation to promote his employer's best interest by assigning a potentially-competing invention created during his employment.[42] Unlike the employment-status analysis,[43] the fiduciary duty analysis depends on a duty of loyalty rather than an implied agreement in anticipation of invention.[44] An inventor is required to assign a pat-

40 Dowse v. Federal Rubber Co., 254 F. 308 (N.D. Ill. 1918); Daniel Orifice Fitting Co. v. Whalen, 198 Cal. App. 2d 791, 18 Cal. Rptr. 659 (1962).

41 In *Dowse*, the court defined an "alter ego" as "whether [the inventor] occupied such a relationship to the corporation that he was its alter ego, in such a capacity that it is consistent with good faith that he should recognize its ownership of the patents issued to him." 254 F. at 310. In a different context, such as establishing a shareholder's tort liability, "alter ego" is more restrictedly defined as:

> that the corporation is not only influenced and governed by that person, but that there is such a unity of interest and ownership that the individuality, or separateness, of such a person and corporation has ceased, and the facts are such that an adherence to the fiction would, under the particular circumstances, sanction a fraud or promote injustice.

Associated Vendors, Inc. v. Oakland Meat Co., 210 Cal. App. 2d 825, 837, 26 Cal. Rptr. 806, 813 (1963). To avoid confusion, this note substitutes the term "fiduciary duty" wherever possible. When "alter ego" appears, the author intends the *Dowse* definition to apply.

42 Dowse v. Federal Rubber Co., 254 F. 308 (N.D. Ill. 1918).

43 *See* notes 11-39 *supra* and accompanying text.

44 The cases do not clarify whether the fiduciary duty theory rests on an implied contract or equitable considerations. *See* Preis v. Eversharp, Inc., 154 F. Supp. 98 (E.D.N.Y. 1957) (based on implied contract); Grove v. Grove Valve & Regulator Co., 4 Cal. App. 3d 299, 84 Cal. Rptr. 300 (1970) (based on equity). If based on contract, the alter-ego can modify his duty to assign by specifically contracting otherwise. *See* Preis v. Eversharp, Inc., 154 F. Supp. 98 (E.D.N.Y. 1957); Daniel Orifice Fitting Co. v. Whalen, 198 Cal. App. 2d 791, 18 Cal.

ent to his employer under the fiduciary-duty analysis, if the employer can show: 1) the inventor was under a fiduciary duty to his employer; 2) the inventor had an obligation to assign that type of patent; and 3) the obligation to assign the patent existed when the invention was created.

Application of the alter-ego theory requires that the inventor have a fiduciary duty *not to compete with his employer*.[45] State corporate law determines who has this fiduciary duty.[46] Employment alone does not create a fiduciary duty not to compete with one's employer.[47] Rather, this fiduciary duty requires the existence of a confidential relationship[48] and actual control over the operation of the employer's business[49]—an alter-ego relationship.

Once an employer establishes this fiduciary duty, the employer must prove the alter-ego had an obligation *to assign the specific type of invention* to avoid unfair competition with the employer.[50] Most state corporate laws prohibit officers and directors from competing directly with the corporation by usurping a "corporate opportunity."[51]

Rptr. 659 (1962). If based on equity, the alter-ego cannot contractually modify his fiduciary duty, but may raise equitable defenses such as laches or unclean hands. The author believes the contract theory better suits modern practice because of the need for flexibility to suit individual circumstances.

45 Dowse v. Federal Rubber Co., 254 F. 308 (N.D. Ill. 1918); Melin v. United States, 478 F.2d 1210 (Ct. Cl. 1973). The alter-ego theory arose in a corporate setting but also applies to partnerships. *See* Burr v. De La Vergne, 102 N.Y. 415, 7 N.E. 366 (1886).

46 Tripp v. United States, 406 F.2d 1066 (Ct. Cl. 1969).

47 United States v. Snepp, 595 F.2d 926 (4th Cir. 1979) (a contract can create a fiduciary duty but not all contractual duties are fiduciary); Banner Metals, Inc. v. Lockwood, 178 Cal. App. 2d 643, 3 Cal. Rptr. 421 (1960)(the position's title is not controlling); National Rejectors, Inc. v. Trieman, 409 S.W.2d 1 (Mo. 1966)(en banc).

48 Vigitron, Inc. v. Ferguson, 120 N.H. 638, 419 A.2d 1115 (1980). The existence of a confidential relationship must be determined from the state corporate laws.

49 Melin v. United States, 478 F.2d 1210 (Ct. Cl. 1973). Thus, a president who is the majority stockholder, LeFiell v. United States, 162 Ct. Cl. 865 (1963); Grove v. Grove Valve & Regulator Co., 4 Cal. App. 3d 299, 84 Cal. Rptr. 300 (1970), an elected president, Preis v. Eversharp, Inc., 154 F. Supp. 98 (E.D.N.Y. 1957), a vice-president for development, Daniel Orifice Fitting Co. v. Whalen, 198 Cal. App. 2d 791, 18 Cal. Rptr. 659 (1962), a vice-president and sales manager, Diversey Corp. v. Mertz, 13 F. Supp. 410 (N.D. Ill. 1936), and even a non-officer who actually runs the business, Transparent Ruler Co. v. C-Thru Ruler Co., 129 Conn. 369, 28 A.2d 232 (1942), have a fiduciary duty to assign potentially competing inventions to their employers. A general manager, on the other hand, does not have such a fiduciary duty because he can compete with his employer. Holders Mfg., Inc. v. Cudd, 80 Idaho 557, 335 P.2d 890 (1959). Even a vice-president, general manager and principal shareholder is not his employer's alter-ego if another person actually runs the business. Melin v. United States, 478 F.2d 1210 (Ct. Cl. 1973).

50 Detroit Testing Lab. v. Robison, 221 Mich. 442, 191 N.W. 218 (1922).

51 *See* Davis v. Alwac Int'l, Inc., 369 S.W.2d 797 (Tex. Civ. App. 1963); HENN, LAW OF CORPORATIONS § 236 (2d ed. 1970). *See also* Science Accessories Corp. v. Summagraphics

Other states, applying a broader rule, forbid officers and directors from even creating a "conflicting interest."[52] Finally, a few states, applying a narrower rule, only prevent officers and directors from obtaining an opportunity learned through "official duties."[53] The conflicting interest rule apportions patents most equitably because it embodies the modern opinion of a corporate officer's fiduciary duties. Under that rule, an employer receives patents which would directly compete with its products, while the alter-ego retains the opportunity to create in subject areas where his employer does not compete.[54]

Finally, an employer must prove the inventor created the invention *while* under an obligation to assign the resulting patent to the employer.[55] An inventor does not have to assign a patent simply because he later becomes an alter-ego of an employer needing his invention.[56] Likewise, a former alter-ego does not have to assign a patent for an invention created after leaving his position, even if he had worked on the same problem while an alter-ego.[57]

The fiduciary duty analysis prevents an influential employee from abusing his confidential position or defrauding a trusting employer. The analysis, therefore, fulfills legitimate business expectations. Like the employment-status analysis, the fiduciary duty analysis varies somewhat from state to state depending on the state corporate law. Unlike the employment status analysis, the fiduciary duty analysis is well suited to actual situations because it focuses on relatively clear-cut principles of confidentiality and fiduciary duty.

C. *Shop Right*

Even if an inventor owns a patent, his employer may have a

Corp., 425 A.2d 957 (Del. 1980)(a corporate opportunity is something the corporation is financially able to undertake, within its line of business and one it is interested in).

52 *See* Daniel Orifice Fitting Co v. Whalen, 198 Cal. App. 2d 791, 800-01, 18 Cal. Rptr. 659, 667 (1962)(the law demands a scrupulous observance of an officer's duty not only to protect the corporate interest but also to refrain from doing anything that would injure the corporation or deprive it of profit which his skills might properly bring it); HENN, *supra* note 51, § 237.

53 *See* Detroit Testing Lab. v. Robison, 221 Mich. 442, 191 N.W. 218 (1922); HENN, *supra* note 51, § 237.

54 The conflicting interest test does not require an alter-ego to assign patents which the corporation would be indifferent to or only marginally benefit from. The corporation, on the other hand, is protected from the alter-ego keeping a potentially competing invention.

55 Melin v. United States, 478 F.2d 1210 (Ct. Cl. 1973).

56 Melin v. United States, 478 F.2d 1210 (Ct. Cl. 1973); Grove v. Grove Valve & Regulator Co., 4 Cal. App. 3d 299, 84 Cal. Rptr. 300 (1970).

57 *See* Daniel Orifice Fitting Co. v. Whalen, 198 Cal. App. 2d 791, 18 Cal. Rptr. 659 (1962); Steranko v. Inforex, Inc., 5 Mass. App. 253, 362 N.E.2d 222 (1977).

"shop right," a license to use the invention, because the inventor either used his employer's resources in creating the invention,[58] or allowed his employer to promote the invention with the expectation of royalty-free use.[59]

A shop right is an employer's royalty-free, non-exclusive, and non-transferable license to use an employee's patented invention.[60] An employment relationship does not automatically create a shop right.[61] Rather, the employer must establish, under state law,[62] an implied contract creating a shop right.[63] Therefore, if the inventor and his employer have already entered into an express agreement concerning patent rights, a court will not infer a shop right.[64]

An inventor who uses even a small amount of his employer's time, facilities *or* money to develop an idea, may impliedly give his employer a shop right in the resulting invention.[65] Although courts

58 United States v. Dubilier Condenser Corp., 289 U.S. 178 (1932); Banner Metals, Inc. v. Lockwood, 178 Cal. App. 2d 643, 3 Cal. Rptr. 421 (1960).

59 *See* Gill v. United States, 160 U.S. 426 (1896); Melin v. United States, 478 F.2d 1210 (Ct. Cl. 1973); Hobbs v. United States, 376 F.2d 488 (5th Cir. 1967), *modified*, 451 F.2d 849 (5th Cir. 1971); Consolidated Vultee Aircraft Corp. v. Maurice A. Garbell, Inc., 204 F.2d 946 (9th Cir.), *cert. denied*, 346 U.S. 873 (1953); Cahill v. Regan, 5 N.Y.2d 292, 157 N.E.2d 505, 184 N.Y.S.2d 348 (1959).

60 United States v. Dubilier Condenser Corp., 289 U.S. 178 (1932); Marshall v. Colgate-Palmolive-Peet Co., 175 F.2d 215 (3d Cir. 1949); Banner Metals, Inc. v. Lockwood, 178 Cal. App. 2d 643, 3 Cal. Rptr. 421 (1960). Generally, a direct employer-employee relationship must exist to give rise to a shop right. Hobbs v. United States, 376 F.2d 488 (5th Cir. 1967). *But see* Francklyn v. Guilford Packing Co., 695 F.2d 1158 (9th Cir. 1983). Courts disagree over whether a shop right is a contractual or equitable right. *See, e.g.*, Gemco Eng'g & Mfg. Co. v. Henderson, 151 Ohio St. 95, 84 N.E.2d 596 (1949).

61 Aero Bolt & Screw Co. v. Iaia, 180 Cal. App. 2d 728, 5 Cal. Rptr. 53 (1960); Banner Metals, Inc. v. Lockwood, 178 Cal. App. 2d 643, 3 Cal. Rptr. 421 (1960).

62 *Id.*

63 United States v. Dubilier Condenser Corp., 289 U.S. 178 (1932); Gill v. United States, 160 U.S. 426 (1896); Neon Signal Device, Inc. v. Alpha-Claude Neon Corp., 54 F.2d 793 (W.D. Pa. 1931); Banner Metals, Inc. v. Lockwood, 178 Cal. App. 2d 643, 3 Cal. Rptr. 421 (1960). Older cases alternately applied a contract or equitable estoppel theory. *See* Annot., 61 A.L.R.2d 356, 363 (1958).

64 Jamesbury Corp. v. Worchester Valve Co., 443 F.2d 205 (1st Cir. 1971); B.F. Gladding & Co. v. Scientific Anglers, Inc., 139 F. Supp. 236 (E.D. Mich. 1956); Aero Bolt & Screw Co. v. Iaia, 180 Cal. App. 2d 728, 5 Cal. Rptr. 53 (1960). If the employer pays royalties for the invention's use, a court will not infer a shop right. Gemco Eng'g & Mfg. Co. v. Henderson, 151 Ohio St. 95, 84 N.E.2d 596 (1949). An employer who tells an inventor to stop working on an idea waives any accrued shop right. Dewey v. American Stair Glide Corp., 557 S.W.2d 643 (Mo. App. 1977).

65 United States v. Dubilier Condenser Corp., 289 U.S. 178 (1932); Papazian v. American Steel & Wire Co., 155 F. Supp. 111 (N.D. Ohio 1957). In *Dubilier Condenser Corp.*, the Supreme Court said:

> [W]here a servant, during his hours of employment, working with his master's materials and appliances, conceives and perfects an invention for which he obtains

may be liberal in creating shop rights,[66] they at least require that the inventor have used some of his employer's resources.[67] For example, a shop right may be established if an inventor works on his invention for a short time "during the hours of employment."[68] Even if an inventor creates an invention on his own time, his employer may receive a shop right if the inventor used the employer's facilities in creating the invention.[69] This may be true even if the use is minimal.[70]

An employer also obtains a shop right by developing an invention with the reasonable expectation of royalty-free use.[71] However, the employer must reasonably rely on an inventor's conduct which manifested assent to the free use.

A shop right exists for the life of the patent even if the employment relationship terminates earlier.[72] Under the shop right, the em-

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> a patent, he must accord his master a non-exclusive right to practice the invention. . . . Since the servant uses his master's time, facilities and materials to attain a concrete result, the latter is in equity entitled to use that which embodies his own property and to duplicate it as often as he may find occasion to employ similar appliances in his business.

289 U.S. at 188-89. Since the *Dubilier Condenser Corp.* decision, the shop right concept has been broadened to include instances when only one factor is present. *See* Hobbs v. United States, 376 F.2d 488 (5th Cir. 1967); Consolidated Vultee Aircraft Corp. v. Maurice A. Garbell, Inc., 204 F.2d 946 (9th Cir. 1953); Gemco Eng'g & Mfg. Co. v. Henderson, 151 Ohio St. 95, 84 N.E.2d 596 (1949); Dewey v. American Stair Glide Corp., 557 S.W.2d 643 (Mo. App. 1977).

66 *See, e.g.*, Consolidated Vultee Aircraft Corp. v. Maurice A. Garbell, Inc., 204 F.2d 946 (9th Cir. 1953). *But see* Hobbs v. United States, 376 F.2d 488 (5th Cir. 1967).

67 McNamara v. Powell, 256 A.D. 554, 11 N.Y.S.2d 491 (1939).

68 Gemco Eng'g & Mfg. Co. v. Henderson, 151 Ohio St. 95, 84 N.E.2d 596 (1949). "Hours of employment" is narrowly defined, so it excludes lunch hour and aftework hours. Dewey v. American Stair Glide Corp., 557 S.W.2d 643 (Mo. App. 1977). But, officers are not limited to those restricted hours. Wellington Print Works, Inc. v. Magid, 242 F. Supp. 614 (E.D. Pa. 1965).

69 Kinkade v. New York Shipbldg. Corp., 21 N.J. 362, 122 A.2d 360 (1956).

70 Traditionally, minimal use, such as $4.20 worth of welding equipment, created a shop right. Consolidated Vultee Aircraft Corp. v. Maurice A. Garbell, Inc., 204 F.2d 946 (9th Cir. 1953). *See also* Callahan v. Capron, 280 F. 254 (D.R.I. 1922). Some forward-looking courts, however, have ignored such trivial use because employees routinely use small quantities of their employer's material for non-inventive purposes. Aero Bolt & Screw Co. v. Iaia, 180 Cal. App. 2d 728, 5 Cal. Rptr. 53 (1960); Banner Metals, Inc. v. Lockwood, 178 Cal. App. 2d 643, 3 Cal. Rptr. 421 (1960); Dewey v. American Stair Glide Corp., 557 S.W.2d 643 (Mo. App. 1977).

71 Francklyn v. Guilford Packing Co., 695 F.2d 1158 (9th Cir. 1983); Davis Harvester Co., Inc. v. Long Mfg. Co., 252 F. Supp. 989 (E.D.N.C. 1966), *aff'd*, 373 F.2d 513 (4th Cir. 1967).

72 Tin Decorating Co. v. Metal Package Corp., 29 F.2d 1006 (D.C.N.Y. 1928), *aff'd*, 37 F.2d 5 (2d Cir.), *cert. denied*, 281 U.S. 759 (1930). At one time, the continued existence of a shop right depended on whether the inventor still worked for that employer. *See* City of Boston v. Allen, 91 F. 248 (1st Cir. 1898)(at that time, a shop right for an invention embodied in a machine only lasted as long as the machine continued to operate while a shop right in a process continued for the life of the patent).

ployer can make, use, and sell articles embodying the patented invention.[73] This right, however, does not permit the employer to sell articles outside his normal range of business.[74] The employer cannot voluntarily transfer the shop right, but a legal successor, such as a bankruptcy receiver or a successor corporation, can exercise the shop right.[75]

The shop right doctrine equitably distributes patent rights between an inventor and his employer—the inventor retains the patent's title and his employer obtains the invention's free use. The shop right doctrine attempts to *divide* the patent rights between an inventor and his employer rather than give the rights to one or the other. If courts, following the modern trend, ignore minimal uses, the shop right doctrine will adequately reflect the parties' presumed intent.

D. *Express Contract*

Most modern employers, unwilling to allow vague common law doctrines to determine their patent rights, use express written contracts to allocate patent rights between themselves and their employees.[76] The overwhelming majority of states[77] allow these contracts which usually transfer all of the inventor's patent rights to the employer in return for the inventor's regular salary.[78] Consequently, the employer can plan a steady expense rather than risk the unprojectable future costs of obtaining the patent rights at a later date.

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73 Brown v. Ocean Drilling & Exploration Co., 374 A.2d 842 (Del. Ch.), *rev'd on other grounds*, 403 A.2d 1114 (Del. 1977); Gemco Eng'g & Mfg. Co. v. Henderson, 151 Ohio St. 95, 84 N.E.2d 594 (1949).

74 Francklyn v. Guilford Packing Co., 695 F.2d 1158 (9th Cir. 1983); Thompson v. American Tobacco Co., 174 F.2d 773, 778 (4th Cir. 1949).

75 Lane & Bodley Co. v. Locke, 150 U.S. 193 (1893) (employee continued to work for successor); General Paint Corp. v. Kramer, 68 F.2d 40 (10th Cir. 1933), *cert. denied*, 292 U.S. 623 (1934)(a parent corporation cannot use its subsidiary's shop rights as long as they retain their separate corporate identities); Neon Signal Devices Inc. v. Alpha-Claude Neon Corp., 54 F.2d 793 (W.D. Pa. 1931); Wilson v. J.G. Wilson Corp., 241 F. 494 (C.D. Va. 1917). *But see* Hapgood v. Hewitt, 119 U.S. 226 (1886). *See generally* DELLER'S, *supra* note 20, § 409.

76 *See* Orkin, *supra* note 2. These agreements supercede the common law. Jamesbury Corp. v. Worchester Valve Co., 443 F.2d 205 (1st Cir. 1971). Once a particular contract is found invalid, the employer's rights will be determined under the common law. *See* Steranko v. Inforex, Inc., 5 Mass. App. 253, 362 N.E.2d 222 (1977).

77 California, Minnesota, North Carolina and Washington have statutory restrictions on invention assignments in employment contracts. *See* notes 117-22 *infra* and accompanying text. State law controls the interpretation and validity of express patent assignments. Combs v. Plough, Inc., 681 F.2d 469 (6th Cir. 1982); Stanfield v. Osborne Industries, Inc., 7 Kan. App. 416, 643 P.2d 1115 (1982); A & C Eng'g Co. v. Atherholt, 355 Mich. 677, 95 N.W.2d 871, *cert. denied*, 361 U.S. 824 (1959); Arena v. Coldelite Corp., 205 U.S.P.Q. 566 (N.J. Super. 1979).

78 *See* Orkin, *supra* note 2.

Unfortunately, the law imposes few restrictions on these express contracts.[79] In consideration for a terminable-at-will employment contract,[80] an employee may even assign inventions created before his employment,[81] and those to be created after he resigns.[82] While an inventor theoretically can attack an employment contract requiring a patent assignment like any other contract,[83] courts are generally unsympathetic to the inventor.[84]

The courts seem to ignore the employer's inherently stronger bargaining position and superior legal knowledge. For example, employment contracts that assign patents rarely fail for lack of consideration because the inventor's continued employment is considered adequate compensation.[85] Also, public policy does not prohibit an employee from assigning his future inventions.[86] Patent rights, like other property rights,[87] can be alienated before coming into exist-

79 *See* DuPont Rayon Co. v. Paley, 4 F. Supp. 290 (N.D. Ill. 1933), *aff'd*, 71 F.2d 856 (7th Cir. 1934), where the district court stated:

> There is a modern philosophy to the effect that earned income should be more liberally returned to the individual making it possible, but until such policy shall be reflected in legislation invalidating a contract of sale of inventive labor, this court is powerless to afford relief against situations which parties, mentally competent, have created for themselves.

4 F. Supp. at 292.

80 Goodyear Tire & Rubber Co. v. Miller, 22 F.2d 353 (9th Cir. 1927); Magnetic Mfg. Co. v. Dings Magnetic Separator Co., 16 F.2d 739 (7th Cir.), *cert. denied*, 274 U.S. 740 (1927).

81 Rotary Lift Co. v. Clayton, 127 F. Supp. 176 (D. Mass. 1954); Holders Mfg. Co. v. Cudd, 80 Idaho 557, 335 P.2d 890 (1959).

82 Conway v. White, 9 F.2d 863 (2d Cir. 1925).

83 *See* Conway v. White, 9 F.2d 863 (2d Cir. 1925); Rotary Lift Co. v. Clayton, 127 F. Supp. 176 (D. Mass. 1954).

84 *See* Stedman, *The Employed Inventor, the Public Interest, and Horse and Buggy Law in the Space Age*, 4 N.Y.U. L. REV. 1 (1970), *reprinted in* 2 PAT. L. REV. 207 (1970).

85 Fish v. Air-O-Fan Products Co., 285 F.2d 208 (9th Cir. 1960); Conway v. White, 9 F.2d 863 (2d Cir. 1925). Previously negotiated employment might not be new consideration for a subsequent assignment agreement. Hewett v. Samsonite Corp., 32 Colo. App. 150, 507 P.2d 1119 (1973). *See also* Muenzer v. W.F. & John Barnes Co., 9 Ill. App. 2d 391, 133 N.E.2d 312 (1956) (employee's salary tied to sales rather than invention). In states where the adequacy of consideration can be challenged, an inventor may argue his employer did not give enough consideration because the employee's salary was only paid for his normal duties. *See generally* CALAMARI & PERILLO, CONTRACTS § 4-3 (2d ed. 1977).

86 Conway v. White, 9 F.2d 863 (2d Cir. 1925). But see Alam, *Employer's Obligations Regarding Employee Inventions—A New Perspective*, 8 EMPL. REL. L.J. 463 (1982), for a strong argument why public policy should limit these agreements. *See generally* DELLER'S, *supra* note 20, § 373.

87 The courts do not distinguish between patent rights and more concrete property rights. The author believes that intellectual property rights are considerably different because they are not attributable to any particular individual before they come into existence and the potential owner can prevent the rights from vesting in himself but cannot guarantee

ence.[88] Using the fiction of equal bargaining position, courts have refused to void these adhesion contracts as unreasonable,[89] unconscionable,[90] or against public policy.[91] But, modern developments in adhesion contract theory may mitigate these harsh results.

The inventor's best chance to successfully attack the assignment contract is to allege fraud in its execution. The inventor, however, must "clearly and cogently" prove fraud.[92] In *Roberts v. Sears Roebuck & Co.*,[93] the United States Court of Appeals for the Seventh Circuit affirmed a jury award[94] of one million dollars in damages to an inventor whose employer had fraudulently obtained a patent assignment. The court held that Sears, during the licensing negotiations, breached its fiduciary duty to Roberts, its employee, by fraudently misstating the invention's ownership, patentability, and market value. The court noted that these misstatements were made worse by the existence of an employment relationship, the exchange of confidential information, and the disparity in age, intelligence, and busi-

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they will come into existence. *But see* Muenzer v. W.F. & John Barnes Co., 9 Ill. App. 2d 391, 406 (1956)(inventive talents can be contracted for just as mechanical skills).

88 Graham v. John Deere Co., 383 U.S. 1 (1966)(rejecting the natural rights theory); Conway v. White, 9 F.2d 863 (2d Cir. 1925). *See generally* DELLER'S, *supra* note 20, § 347.

89 Conway v. White, 9 F.2d 863 (2d Cir. 1925). A turn-of-the-century case holds that an employer's threat to fire an inventor for refusing to assign a patent does not constitute duress. Barr Car Co. v. Chicago & N. W. Ry., 110 F. 972 (7th Cir. 1901), *cert. denied*, 186 U.S. 484 (1902). An employer does not even unreasonably coerce an inventor by saying the inventor will have difficulties finding another job. Rotary Lift Co. v. Clayton, 127 F. Supp. 176 (D. Mass. 1954). Modern notions of reasonableness and duress probably would change these results.

90 Patent & Licensing Corp. v. Olsen, 188 F.2d 522 (2d Cir. 1951); Guth v. Minnesota Mining & Mfg. Co., 72 F.2d 385 (7th Cir. 1934), *cert. denied*, 294 U.S. 711 (1935); Goodyear Tire & Rubber Co. v. Miller, 22 F.2d 353 (9th Cir. 1927); Conway v. White, 9 F.2d 863 (2d Cir. 1925). The theory of unconscionability has undergone drastic changes in recent times, so these old cases may be inapplicable. *See* Stedman, *supra* note 84.

91 Conway v. White, 9 F.2d 863 (2d Cir. 1925).

92 DuPont Rayon Co. v. Paley, 4 F. Supp. 290 (N.D. Ill. 1933), *aff'd*, 71 F.2d 856 (7th Cir. 1934). *See also* Arena v. Coldelite, 205 U.S.P.Q. 566 (N.J. Super. 1979)(an inventor's mistake in law—thinking he had to assign his patent to his employer—does not create a cause of action without the addition of fraud).

93 573 F.2d 976 (7th Cir.), *cert. denied*, 439 U.S. 860 (1978), *on remand*, 617 F.2d 460 (7th Cir.), *cert. denied*, 449 U.S. 975 (1980).

94 The jury awarded damages while the Seventh Circuit, on remand, refused to allow restitution. Like most employer-employee cases, most issues are factual questions. Consolidated Vultee Aircraft Corp. v. Maurice A. Garbell, Inc., 204 F.2d 946 (9th Cir. 1953); Banner Metals, Inc. v. Lockwood, 178 Cal. App. 2d 643, 3 Cal. Rptr. 421 (1960). It is rare for such issues to be tried before a jury because, rather than seeking damages, the parties often seek equitable relief—either the employer wants an injunction requiring the inventor to assign a patent, or the inventor asks the court to rescind an already executed agreement. *See* North American Philips Co. v. Brownshield, 111 F. Supp. 762 (S.D.N.Y. 1953). Juries might be more sympathetic to the employed inventor.

ness experience between Sears' patent attorney and Roberts, a teenager.[95] Thus, at least one circuit court has imposed a duty of fair dealing on an employer negotiating with his employee over rights to the employee's invention.

An inventor may also attack the duration of a patent assignment clause in an employment contract. An inventor can freely assign an invention created before his employment.[96] This is not a serious problem because both parties have an idea of the invention's value which can be reflected in the employee's salary. But, an employment contract's assignment of patents for inventions which might be created after the inventor has terminated his employment (a trailer clause) raises unfair competition questions.[97]

Trailer clauses[98] are a product of the tension between an inventor's rights to create, and to seek future employment—and his employer's right to protect confidential information. An inventor has a right to use skills and knowledge gained through prior employment;[99] thus, his former-employer cannot require him to forego his inventive powers.[100] In addition, an employee has the right during his employment to plan to compete with his employer once he has resigned.[101] The employer, however, can protect his confidential information for

95 573 F.2d at 983. Roberts, age 18, invented a quick release socket wrench. He filed a patent application and submitted his invention to Sears, his employer. After conducting several tests to determine the invention's value, Sears knowingly underrepresented the invention's value in its licensing negotiations with Roberts. In addition, Sears channeled some work to Robert's patent attorney, creating a conflict of interest. When Roberts discovered the real value of his invention, he sued for damages. Once the jury awarded damages, Roberts amended his complaint to seek rescission of the original licensing agreement and an accounting of Sear's profits. In a followup case, the Seventh Circuit, relying on a choice of remedy, refused to allow the district court to force Sears to restitute its unjust enrichment. Roberts v. Sears Roebuck & Co., 617 F.2d 460 (7th Cir.), *cert. denied*, 449 U.S. 975 (1980). Sears had already voluntarily reassigned the patent to Roberts. As a result, Sears made forty-four million dollars on Roberts' patent and only paid him one million dollars. 617 F.2d at 467 (Swygert, J., dissenting).

96 Rotary Lift Co. v. Clayton, 127 F. Supp. 176 (D. Mass. 1954). The court will not imply such an assignment. Rigging Int'l Maint. Co. v. Gwin, 128 Cal. App. 3d 594, 180 Cal. Rptr. 451 (1982).

97 *See* United Shoe Mach. Co. v. La Chapelle, 212 Mass. 467, 99 N.E. 289 (1912).

98 A trailer clause binds an inventor to assign the patent for any invention created by him during some limited time following the termination of his employment. Doherty & Iandiorio, *The Law of the Employed Inventor—Time for a Change?*, 57 MASS. L.Q. 27, 36 (1972).

99 National Rejectors, Inc. v. Trieman, 409 S.W.2d 1 (Mo. 1966)(en banc); Welex Jet Servs., Inc. v. Owen, 325 S.W.2d 856 (Tex. Civ. App. 1959).

100 Welex Jet Servs., Inc. v. Owen, 325 S.W.2d 856 (Tex. Civ. App. 1959). *See also* Hickory Specialties v. B & L Laboratory, Inc., 592 S.W.2d 583 (Tenn. App. 1979).

101 National Rejectors, Inc. v. Trieman, 409 S.W.2d 1 (Mo. 1966)(en banc).

a reasonable time.[102] An employer can also prevent an employee from creating an invention while employed and saving it until after he resigns.[103]

Because of this tension, a trailer clause is not void per se; rather, the clause's reasonableness determines its validity.[104] A clause is unreasonable if it: 1) extends beyond any apparent protection which the employer reasonably requires; 2) prevents the inventor from seeking other employment; or 3) adversely impacts the public.[105] Therefore, a trailer clause is valid when limited to a reasonable time[106] and to the subject matter an inventor worked with or had knowledge of

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102 G T I Corp. v. Calhoon, 309 F. Supp. 762 (S.D. Ohio 1969). *But see* Armorlite Lens Co. v. Campbell, 340 F. Supp. 273 (S.D. Cal. 1972) (former employee only required to assign patents based on the employer's confidential information).

103 New Jersey Zinc Co. v. Singmaster, 71 F.2d 277 (2d Cir.), *cert. denied*, 293 U.S. 591 (1934); National Dev. Co. v. Gray, 316 Mass. 240, 55 N.E.2d 783 (1944); International Pulverizing Corp. v. Kidwell, 7 N.J. Super. 345 (1950). *But see* Jamesbury Corp. v. Worchester Valve Co., 443 F.2d 205 (1st Cir. 1971) (employee could take idea short of invention even if in bad faith).

104 Universal Winding Co. v. Clarke, 108 F. Supp. 329 (D.Conn. 1952)(the court emphasized the inventor had no prior experience in the field and the limitation covered an insignificant fraction of the machine design field). *See generally* DELLER'S, *supra* note 20, § 374.

105 Dorr-Oliver, Inc. v. United States, 432 F.2d 447 (Ct. Cl. 1970); G T I Corp. v. Calhoon, 309 F. Supp. 762 (S.D. Ohio 1969); Universal Winding Co. v. Clarke, 108 F. Supp. 329 (D. Conn. 1952).

106 A court will uphold a one-year restriction on inventing in a particular field, Universal Winding Co. v. Clarke, 108 F. Supp. 329 (D. Conn. 1952), but will strike down a broad five year restriction on inventing as an unreasonable restraint of trade, G T I Corp. v. Calhoon, 309 F. Supp. 762 (S.D. Ohio 1969).

The *Clarke* court explained in dicta one of its reasons for upholding a restriction:

> In the long run, the public is better served by giving a year's head-start in the competitive race to a manufacturer who has ventured his capital and skill in research and in the practical application of the accumulation of his knowledge and experience in that field, than by leaving such a one to start the race at scratch with a competitor having no such stake in the business.

108 F. Supp. at 334. Compare the *Clarke* court's reasoning with the dicta in *Calhoon* striking down a restriction:

> First, a court could not enforce such a restraint. . . . Second, such restraint would be unduly harsh. . . . Third, a court has no power to compel an employee to erase from his mind knowledge which he has acquired from his employer.
>
> . . . .
>
> With respect to the question of whether the provision of [the] contract requiring [the inventor] to assign all ideas and improvements for a period of five years after termination of his employment contract is void against public policy, three principals of law must be considered: 1) Is the restraint reasonable in the sense that it is no greater than necessary to protect the employer in some legitimate interest? 2) Is the restraint reasonable in the sense that it is not unduly harsh and oppressive on the employee? 3) Is the restraint reasonable in the sense that it is not injurious to the public?

309 F. Supp. at 767, 773.

during his employment.[107]

Adhesion contracts shift what well-reasoned balance is found in the employment-status, fiduciary-duty, and shop-right analyses to an employer dominated situation. Because of the employer's strong bargaining position, he can deprive an inventor of his patent rights before the invention even comes into existence. Unfortunately, the existing law in most states does not prevent an employer from causing this imbalance. The legislature should restore this balance by limiting an inventor's power to contract away his patent rights.

II. Statutory Modifications

The common law methods for distributing patent rights may result in an inequitable distribution. These methods arose in an era when employees had few rights but employers were too small to take full-advantage of the legal imbalance.[108] But, as employers have grown more powerful, they have been able to obtain more and more employee patent rights through contracts. Even where the employer does not overreach in the contract, a more fundamental problem exists simply because the modern employee has no immediate stake in his invention. If an inventor contracts away his present interest in an undiscovered invention, he may be unwilling to undergo the risks associated with promoting his invention. Thus, without the potential for direct gain from his invention, an inventor may abandon a radical proposal rather than risk his employer's displeasure.

Several alternative statutory schemes would improve the present common law system of allocating patent rights between an inventor and his employer. Most reformers agree that the employed inventor is undercompensated.[109] However, they differ over what method would properly increase the inventor's compensation and what

107 One court has stated:

> Hold-over clauses are simply a recognition of the fact of business life that employees sometimes carry with them to new employers inventions or ideas so related to work done for a former employer that in equity and good conscience the fruits of that work should belong to that former employer. In construing and applying hold-over clauses, the courts have held that they must be limited to reasonable times . . . and to subject matter which an employee worked on or had knowledge of during his employment. . . . Unless expressly agreed otherwise, an employer has no right under a hold-over clause to inventions made outside the scope of the employee's former activities, and made on and with a subsequent employer's time and funds.

Dorr-Oliver, Inc. v. United States, 432 F.2d 447, 452 (Ct. Cl. 1970). Even if a trailer clause is unreasonable, some courts will enforce the clause to the extent it is reasonable. *See* Guth v. Minnesota Mining & Mfg. Co., 72 F.2d 385 (7th Cir. 1934), *cert. denied*, 294 U.S. 711 (1935).

108 *See* Stedman, *supra* note 84.

109 *See* Orkin, *supra* note 2.

amount the employer should retain as compensation for his investment in research and development.[110]

Other countries use various statutory approaches. Some countries limit the inventor's ability to alienate his patent rights, either by preventing him from assigning potential patent rights before an invention is created,[111] or by requiring him to retain an interest in his patented invention.[112] Many countries require an employer to share an invention's value with the inventor.[113] Finally, most socialist countries award the inventor a bonus for each patented invention.[114]

This country needs similar statutory reform. In the past five years, four states[115] have enacted statutes prohibiting an employer from requiring the assignment of certain inventions as a condition of employment. Congress has considered several bills[116] requiring an employer to share an invention's value with the inventor and prohibiting an employer from requiring the assignment of certain inventions as a prerequisite to employment.

A. *State Statutes*

The state statutes attempt to prevent an employer from abusing his unequal bargaining power. These statutes limit the type of inventions which an employer can contractually require an inventor to assign. Under these statutes, the employment-status, fiduciary-duty,

110 *Id.*

111 *See* Neumeyer, *supra* note 1 (Japan).

112 *Id.* (Austria).

113 *Id.* (Denmark, West Germany and Sweden). In 1977, the United Kingdom replaced its common law employee patent right distribution system with a statutory compensation scheme similar to the other members of the Common Market. The Patent Act of 1977, § 39-43, 47 HALSBURY'S STATUTES OF ENGLAND 1052-58 (3d ed. 1977). Under the 1977 English Patent Act, an inventor retains all patent rights except ones made: a) "in the course of [his] normal duties [or ones] specifically assigned to him, and . . . an invention might reasonably be expected" [generally-inventive employment] or b) the inventor "had a special obligation to further the interests of the employer's undertaking" [a fiduciary duty]. *Id.* § 39. The inventor's compensation depends on his duties and remunerations, his effort and skill in making the invention, other people's contribution to the invention, and the employer's contribution in creating and developing the invention. *Id.* § 41.

This well-drafted English statute appears to adapt the common law catagories to a statutory compensation scheme. American reformers should examine the results in England, and, perhaps, the United States should follow the English lead. For a general interpretation of the English statute, see Reid, *Employee Inventions Under the Patent Act 1977*, 1979 J. BUS. L. 350.

114 *See* Neumeyer, *supra* note 1 (U.S.S.R.).

115 California, Minnesota, North Carolina, and Washington. The Wall Street Journal Article, *supra* note 1, reported that Illinois passed similar legislation, but Enlow, *Employer and Employee Agreements*, 1982 PAT. L. ANN. 103, noted the legislation was only pending, and the author verified that fact.

116 Brown (1947), Moss (1971), Hart-Owens (1974) and Kastenmeier (1981).

and shop-right tests remain largely unchanged. The statutes differ only slightly in which types of inventions are assignable and in who has the burden of proving whether a particular invention falls within the category of those which must be assigned.

In 1977, Minnesota passed the first "freedom to create" statute.[117] The statute voids, as against public policy, any provision in an employment agreement which requires an inventor to assign an invention which was created without using his employer's "equipment, supplies, facility or trade secret," which is unrelated to the employer's business or research, and which did not result from work the inventor performed for his employer. The inventor has the burden of proving that a particular invention falls within the statutory prohibition.[118]

Washington's freedom to create statute is based on the Minnesota statute. Under the Washington statute, however, the employer has the burden of proving the statute applies to a particular invention.[119] The California statute[120] does not require as direct a relationship between the subject matter of the invention and the employer's business as the other state statutes.[121] This difference favoring the employer is mitigated since the legislative intent indicates that the term employer should be read narrowly.[122]

These state statutes restore a contractual balance between the inventor and his employer. Under these state statutes, however, an

117 MINN. STAT. § 181.78 (1977).

118 *Id.* The Minnesota statute reads: "Any provision . . . which provides . . . shall not apply . . . ," so the inventor has the burden of proving the provision's existence and its illegality.

119 WASH. REV. CODE ANN. § 49.44.140 (1979). The Washington statute reads: "A provision . . . which provides . . . does not apply . . . unless . . . ." Thus, the statute leaves the employer with the final burden of proof once the inventor establishes the prima facie case.

120 CAL. LAB. CODE §§ 2870, 2871 (West 1979).

121 The California legislature eliminated the word "directly" from the Minnesota statute. Thus, an invention which has many applications, including one useful to the employer, is covered by the California statute while the other state statutes may allow the inventor to retain the patent.

122 The California statute's author submitted the following statement to the legislature during deliberations:

> In order to ensure that the patent rights of employees do not fluctuate wildly depending upon the market position of an employee's remote parent corporation, it is necessary to declare as the legislative intent of AB 474 that in a corporation having multiple divisions, affiliates, subsidiaries, profit centers or companies, the term employee (sic) as used in AB 474 shall relate only to the division, affiliate, subsidiary, profit center, or company (whichever unit is smallest) rather than to the parent corporation.

Gullette, *supra* note 18, at 752 (Gullette's emphasis deleted).

inventor still must assign certain patents without present or future compensation. Therefore, they do not address the more fundamental problem of giving the inventor a stake in his invention.

B. *Proposed Federal Statutes*

Several proposals designed to improve the rights of the employed inventor have been introduced into Congress. The earliest measure, the Brown Bill,[123] would have invalidated any patent assignment in an employment contract.[124] This extreme solution was soundly defeated.[125] In the late sixties, Congressman Moss[126] introduced a bill which would have required an employer to share an invention's value with its inventor.[127] The Moss Bill died in committee.[128] A bill introduced in 1974, the Hart-Owens Bill,[129] which also died in committee,[130] would have required that a minimum of two percent of an invention's value be given to the inventor. In 1981, Congressman Kastenmeier[131] introduced two bills. The first would have prohibited an employer from requiring pre-invention assignment of certain inventions;[132] the second sought to establish an arbitration board to award adequate compensation to the inventor.[133] Although Congress did not enact Kastenmeier's bills, the growing number of state statutes may pressure Congress to create a national standard.

1. The Moss Bill

In 1969 Congressman Moss introduced a bill seeking to eliminate employment agreements as a method of allocating patent rights

123 The bill was named after Congressman George E. Brown, Jr., D. Cal.

124 H.R. 4932, 88th Cong., 1st Sess. (1963), *reprinted in* Orkin, *supra* note 2, at 657, *reintroduced as* H.R. 5918, 89th Cong., 1st Sess. (1965).

125 *See* Orkin, *supra* note 2.

126 Congressman John E. Moss was a Democrat from California.

127 H.R. 15512, 91st Cong., 1st Sess. (1969), *reprinted in* 116 CONG. REC. 744 (1970), *reintroduced as* H.R. 1483, 92d Cong., 1st Sess. (1971).

128 *See* Orkin, *supra* note 2.

129 S. 1321, 93d Cong., 1st Sess. (1973) (introduced by Sen. Gary Hart, D. Col.), *reprinted in* 119 CONG. REC. 9102, and H.R. 7111, 93 Cong., 1st Sess. (1973) (introduced by Rep. Owens, D. Utah). The bill was a general revision of the patent law.

130 *See House Hearings*, *supra* note 1.

131 Congressman Robert W. Kastenmeier is a Democrat from Wisconsin.

132 H.R. 4732, 97th Cong., 1st Sess. (1981), *reprinted in* 24 PAT. TRADEMARK & COPYRIGHT J. (BNA) 375 (Aug. 12, 1982).

133 H.R. 6635, 97th Cong., 2d Sess. (1982), *reprinted in* 24 PAT. TRADEMARK & COPYRIGHT J. (BNA) 376 (Aug. 12, 1982).

between an inventor and his employer.[134] The bill, modeled after the West German Patent Law,[135] divided inventions into service inventions—inventions related to the employer's business, and free inventions—all other inventions.[136]

The bill would have required an inventor to offer any service invention to his employer. The employer, upon accepting the invention, would have had to compensate the inventor for his portion of the invention's fair market value. This value would have been based on the value of a license to use the invention, the employer's actual savings or profit from using the invention, and the price the employer would have paid another to create the invention.[137]

The Moss Bill died in committee, possibly because it was such a radical revision of the existing law.[138] Several objections to the Moss Bill were advanced.[139] While most of the objections are easily dismissed, one, that the proper recipient and appropriate compensation would be difficult to determine, fatally faults the Moss Bill. Although the bill sought to establish an arbitration board to settle disputes over an inventor's compensation, the system would have relied on private settlements to avoid being overburdened. In addition, the Moss Bill did not provide real guidelines to establish an invention's value and the inventor's share of that value.

2. The Hart-Owens Bill

In the next Congress, Senator Hart and Congressman Owens introduced a bill (the Hart-Owens Bill) that would have invalidated any provision in an employment contract that required an inventor to assign a patent or patent application to his employer for less than two percent of the "profit or savings."[140] The Hart-Owens Bill, therefore, only established minimum compensation—an employer could agree to give the inventor a higher percentage. Apparently,

134 H.R. 15512, *supra* note 127.

135 *See* Gullette, *supra* note 18, at 739; Orkin, *supra* note 2, at 658.

136 H.R. 15512, *supra* note 127.

137 *Id. See also* Sutton & Williams, *supra* note 2, at 563.

138 *See* Gullette, *supra* note 18, at 740.

139 The major objections to the Moss Bill were 1) it rewards inventors rather than promotes the progress of the useful arts as the Constitution requires; 2) it interferes with the freedom of contract; 3) it increases the costs of doing business; 4) the existing laws are adequate; and 5) the proper recipient and appropriate compensation are difficult to determine. *See* Sutton & Williams, *supra* note 2, at 568-83. Sutton and Williams favored the enactment of the Moss bill.

140 S. 1321 and H.R. 7111, *supra* note 129. Orkin points out that most employed inventors receive less than the the minimum two percent, so the bill would have generally improved the inventor's compensation. Orkin, *supra* note 2, at 661.

the bill would not have eliminated the common law methods for an employer to obtain the invention.[141] Thus, the Hart-Owens Bill would not even have guaranteed the two percent unless the invention fell outside the employment-status and fiduciary-duty tests.

Unlike the Moss Bill, the Hart-Owens Bill did not propose an arbitration system—the inventor and his employer were expected to negotiate the percentage. The bill did seek to give the Patent Commissioner the authority to establish procedures to implement the system, but the inventor's basic remedy would have been to sue his employer. The bill, therefore, would have only slightly modified the existing distribution of rights while substantially raising the inventor's compensation.

The Hart-Owens Bill would have established a workable, self-patrolling system. Unfortunately, like the Moss Bill, the Hart-Owens Bill died in committee.[142]

3. The Kastenmeier Bills

In the Ninety-Seventh Congress, Congressman Kastenmeier introduced two bills to protect the employed inventor.[143] The first bill[144] sought to prohibit an employer from exacting a pre-invention patent assignment agreement from an inventor unless the invention is an "employment invention." The bill defined an employment invention as one made by an employee during his term of employment. An employment invention also had to be based on the inventor's normal or assigned duties, inside technical information acquired from his employer, or a fiduciary relationship.[145] Additionally, an employment invention had to relate to the employer's actual or contemplated business.[146] The bill also would have totally eliminated patent trailer clauses.[147] Moreover, it would have limited an employer's shop right to instances where the inventor made *substantial*

141 S. 1321 and H.R. 7111, *supra* note 129. Orkin suggests the bills are so poorly worded that the employer would be able to to stop royalty payments after the inventor's employment terminates, or the inventor would be able to regain the entire patent rights if the employer fails to pay the minimum two percent royalty. Orkin, *supra* note 2, at 661.

142 *See Hearings*, *supra* note 1.

143 H.R. 4732, *supra* note 132, and H.R. 6635, *supra* note 133.

144 H.R. 4732, *supra* note 132. This bill is modeled on the Moss bill and existing German law. *See Hearings*, *supra* note 1.

145 H.R. 4732, *supra* note 132, § 402.

146 *Id.*

147 *Id.* § 403(b). This seems to ignore the problems of trade secrets discussed in notes 98-107 *supra* and accompanying text.

use of his employer's time, material, facilities, or funds.[148]

Kastenmeier's second bill[149] proposed a mandatory compensation system for employed inventors. First, the bill divided employee's inventions into service inventions and free inventions. Service inventions are made during the period of employment and have either "grown out of the type of work performed by the employee" or are "derived from experiences gained on the job."[150] All other inventions are free inventions in which the inventor retains all the patent rights.[151] An employer could release a service invention either by failing to diligently prosecute the patent application or by releasing the invention in writing.[152] Alternatively, an employer could claim a service invention, but had to adequately compensate the inventor.[153] If an inventor and his employer could not agree, an arbitration board would determine the inventor's compensation.[154] The bill also sought to protect the inventor by prohibiting an employer from discriminating against an inventor who filed a complaint before the arbitration board.[155]

These proposed federal statutes are all pro-inventor. They also share a common problem—the government would ultimately determine the inventor's compensation. This would create a myriad of bureaucratic problems, such as protracted appeals, lengthy delays, and difficult enforcement. The statutes also would require an employer to project the inventor's compensation at an early date—even before the employer begins production. The inventor, on the other hand, risks his employer's retaliation in seeking an undetermined compensation.[156] The administrative remedies provided in these bills

148 *Id.* § 403. This does away with the trivial use problem described in notes 65-70 *supra* and accompanying text.

149 H.R. 6635, *supra* note 133.

150 *Id.* § 402(3). This ambiguous language would attract lawsuits. The concepts could be better stated as: resulting from a) duties the employer has specifically assigned the inventor or b) the employer's trade secrets. (This formula, however, requires the inventor to assign a much narrower range of inventions than the language in the current bill.)

151 *Id.* § 402(4).

152 *Id.* § 413.

153 *Id.* § 412.

154 *Id.* § 414(b). The Patent Commissioner was to appoint a three member arbitration board. *Id.* § 435. The bill determines the invention's value using its fair market value discounted to reflect the inventor's position and the employer's contribution. *Id.* § 414(a).

155 *Id.* § 438.

156 Before he confronts his employer, an inventor must determine that the potential award of the invention's share outweighs the problems of confronting his employer. The inventor may have only vague notions of his invention's value because he lacks the ability to conduct marketability tests. His employer, on the other hand, may desire to conduct extensive studies before marketing the invention.

can only sink the government deeper into the regulatory quagmire.

III. A New Proposal

The state statutes are necessary because they protect the inventor by reducing his employer's ability to obtain a patent unrelated to the inventor's work. These statutes, however, do not solve the more fundamental problem of stimulating progress in the useful arts by giving an inventor a stake in his invention. The proposed federal statutes also fail to create a definite stake because an inventor must confront his employer to receive an undetermined compensation. A better solution would provide a clearly-defined boundary between an inventor's and his employer's rights.

As one possible alternative, Congress[157] could create a "reverse shop right" which would require the inventor to retain a royalty-free, non-exclusive, singly-transferable[158] license to use any patent assigned to his employer. This reverse shop right would make the inventor more valuable because he could sub-license his invention to a new employer upon changing jobs. The license's value would be an element of the inventor's new salary. Thus, employers would bid on a valuable inventor not only for his future achievements but also for his past accomplishments. Determining compensation, therefore, would presumably be easier. The reverse shop right would also avoid the administrative burden of the proposed federal statutes because salary negotiations rather than an arbitration board would determine the inventor's compensation.

An employer faces many uncertainties in developing an invention. Presently, he can eliminate one uncertainty by paying his research staff a salary independent of any invention's value. The Moss, Hart-Owens, and Kastenmeier bills prohibited this practice, thus imposing two additional uncertainties—the invention's value and the inventor's share. The reverse shop right adds only one uncertainty—how much money it will take to keep the inventor from finding other employment. Additionally, the risk of the inventor changing employers might only arise if the invention is valuable. Employers may be more willing to face this risk than the two uncertainties involved in the proposed bills. Inventors would certainly favor the reverse

157 The author hopes that the reader is convinced of the need for a national solution. Congressional action will avoid the the possible problems raised in note 13 *supra*.

158 "Singly-transferable" means that the inventor can only license one employer *at a time*. Thus, if he had multiple employers, an inventor could only license one employer under his reverse shop right. But, if the inventor switched jobs, he could transfer the reverse shop right to his new employer.

shop right to the complicated administrative process provided by the other legislative proposals.

Precedent exists for a court to find a reverse shop right. In *Mainland Industries, Inc. v. Timberland Machine & Engineering Corp.*,[159] the Oregon Court of Appeals left open the possibility of a reverse shop right although it refused to create one under the particular circumstances.[160] While acknowledging the concept's novelty, the court saw the clear analogy to the shop right doctrine. Another pioneer court has already held that an employee has a right to use trade secrets which he created for his former employer.[161] Courts, however, may be reluctant to expand the employee's traditional right to use skills and knowledge learned through employment,[162] by following *Mainland Industries* and actually finding a reverse shop right. Congress, therefore, should remove all doubt by amending the patent laws to create a reverse shop right.

IV. Conclusion

The current common law methods for distributing patent rights between an inventor and his employer do not maximize inventiveness because an employer can obtain an inventor's patent rights before the inventor has even created his invention. Courts should critically examine pre-invention patent assignments and void, as against public policy, unconscionable and anticompetitive agreements.

A few states have improved the inventor's situation by enacting statutes preventing an employer's overreaching. In addition, various congressmen have introduced bills to amend the patent laws to give the inventor a stake in his invention. Congress, however, has not responded to the need for a national standard. Nevertheless, congressional action is needed not only to alleviate the problems of the employed inventor but also to standardize the law.

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159 58 Or. App. 585, 649 P.2d 613 (1982).

160 The court reasoned that the inventor did not have an equitable right to a shop right because not only was he paid to invent but he also tried to hide the invention from his employer. 649 P.2d at 618. Miller, Mainland's employee, created the invention in 1976 but did not reveal it to his employer—he even reported that there was no solution to the problem. Later, two months before the patent was issued, Miller retired and formed Timberland. Timberland raised the reverse shop right issue as a defense to infringment. 649 P.2d at 618.

161 Wexler v. Greenberg, 399 Pa. 569, 160 A.2d 430 (1960). *Wexler* has generally not been followed. *See, e.g.*, Basic Chems., Inc. v. Benson, 251 N.W.2d 220 (Iowa 1977).

162 Reid v. Mass Co., Inc., 155 Cal. App. 2d 293, 318 P.2d 54 (1957); National Rejectors, Inc. v. Trieman, 409 S.W.2d 1 (Mo. 1966)(en banc); Welex Jet Servs., Inc. v. Owen, 325 S.W.2d 856 (Tex. Civ. App. 1959).

An unwillingness to impose a regulatory framework onto the employment relationship has stymied federal reform. A self-executing scheme, therefore, must be found which will allow the parties to work out an invention's value without government interference.

One solution may be to create a reverse shop right in the inventor. An inventor would receive a royalty-free, non-exclusive, and singly-transferable license to use any patent which he assigns to his employer. This right would enable the inventor to bargain for a higher salary based on his invention's value.

The American inventor must receive adequate compensation for creating unique solutions to our daily problems or he will not continue to look for these solutions. While an employer should also receive adequate compensation for his efforts in researching and developing the infant invention, the law must protect an inventor from his employer's possible overreaching. America's inventive fire is flickering—whether it dies out or continues to burn brightly depends on whether the patent law adequately rewards both the inventor and his employer.

William P. Hovell

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and regardless of where or by whom they were made, and to determine as soon as feasible whether they should be patented, published, or laid aside without action—this authority being removed from the agencies. This suggestion, if implemented, would probably result in more uniform treatment of Government-owned inventions; effect savings by concentrating patent activities in a single group; tend to reduce the number of patent applications filed; increase the number of inventions published and, it is to be hoped, bring about commercialization of those inventions which the public, and industry, would find useful but which are not now being exploited because of the lack of patent ownership in one person or corporation.

If the reader likewise concludes that the proposal advanced lacks detail and omits reference to many facts and circumstances which have bearing upon the feasibility of the plan he will likewise be justified. The number of Board members, nature of its staff, location, etc., are not suggested.

It is believed, however, that in this changing world in which governmental participation in research, both here and abroad, is increasing, and national patent policies are being formulated, it is high time to pull loose ends together and that consideration of a central authority should be seriously undertaken.

It is the writer's belief that the one result of beneficial nature which would follow establishment of such a Board would be a substantial decrease in the patenting of Government-owned inventions. This would be helpful in that the cost of preparing such applications would be reduced and the Patent Office spared much trouble and expense. The effectiveness of publications as defensive documents could be enhanced by legislative action if found to be necessary for the full protection of the Government.

A Board such as that proposed might also be vested with authority to deal with comparable organizations of other nations, cooperating with the Department of State in international negotiations. It might usefully serve the nation by encouraging invention in various ways, this being of the first importance in this day of technological competition. If established, it might be helpful in eliminating the possibility that research efforts be inadvertently duplicated, although primary responsibility to prevent this from happening may be placed elsewhere.

Everything considered it is believed that substantial advantage may result from the establishment of such a Board or authority and that serious study is warranted.

A GOVERNMENT PATENT POLICY FOR EMPLOYEE INVENTIONS

Wilson R. Maltby •

I. The Objective of a Patent Policy in Relation to the Inventor.

One can hardly contribute usefully to a developing national policy without advocating definite action toward a worthy goal, based, it may be, on a viewpoint not yet fully stated. Specifically, the Government employee will be considered.

The viewpoint here urged concerns personal motivation so that the public may gain from expanding, rather than diminishing, incentives for those who we hope will contribute improvements to a growing economy. The action urged is legislative enactment of provisions to enlarge these incentives for making innovations, discoveries, and inventions.[1] The goal is a fuller use of the creative abilities of American engineers and scientists, especially those who now have scant and fleeting impetus from our patent system, because they are the employees of Government [2] or industry. As such they may be under obligation to surrender all rights in their most important inventions if these are related to their assigned duties.

Our present national policy for promoting science and the useful arts may not reach a majority of those creating the inventions now patentable.[3] Those

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Editor's Note: This article was prepared prior to the issuance of Executive Order 10930 of March 24, 1961 (26 Fed. Reg. 2583—daily issue of Mar. 28, 1961) which abolished the Government Patents Board and transferred its functions to the Secretary of Commerce.

[1] The author is persuaded that the historically strong incentive of the U.S. patent system was a major force in building up of the American economy, and would like to see it both restored in the public esteem and extended to subject matter not now regarded as patentable. The provisions here advocated are in supplement to the patent system. They are directed to encouragement of employees beyond salary, since salaries, particularly under Civil Service and military pay plans, do not reward even the outstanding producers of new ideas, innovations and discoveries. The employee of industry may similarly go largely unrewarded for his improvements and inventions used by the Government.

[2] *The Government Employees' Incentive Awards Act,* 68 Stat. 1112 (1954), 5 USC 2121-23, was passed in recognition of this need. But this act, for a number of reasons, has not become a strong force for encouragement of the type of innovations, discoveries or inventions with which this discussion deals. During the Hearings on H.R. 7316, May 14, 1952, Chairman Archie M. Palmer, representing the Government Patents Board, recommended including in any resulting legislation; "'all meritorious creative contributions, including inventions and discoveries of basic principles, which are useful in the performance of any governmental function or operation,'" and a central Inventions Awards Board within some existing executive agency was recommended to carry this out. *Hearings before Subcommittee No. 2 of the House Judiciary Committee on H.R. 7316,* 82d Cong., 2nd. Sess., ser. 16, at p. 34 (1952).

The act passed in 1954 placed in the Civil Service Commission the rule making function. Under present regulations those contributions directly related to the employee's duty may not be the subject of an award; the function is primarily local rather than under a board; the vast majority of awards are for minor or trivial, rather than significant, contributions; originality is not a prerequisite, often evaluation is by personnel or "industrial relations" officers rather than scientific or patent personnel; and because it is an act relating to civilian employees, military personnel are not included, and no provision is made for awards to employees of Government contractors, even though their work may be entirely for the public benefit as is that of direct employees of the Government.

[3] See *Distribution of Patents Issued to Corporations 1938-55, Study No. 3 under S. Res. 167,* 84th Cong., 2nd Sess. (1956), which shows about 40% of patents are now issued to individuals, while nearly 60% issued to corporations (including the Government). Mr. Robert C. Watson, Commissioner of Patents, reported to the American Patent Law Association at its meeting on

making other discoveries and useful innovations[4] are not included. What then is our policy and toward what objective is it aimed?

If we pause a moment in our thinking on broad policy and look to the inducement offered to individuals who might devise for us some practicable means for harnessing thermo-nuclear power, or some better cancer treatment, we come to a very basic question. Is it our first concern to settle with good legal logic the matter of who owns the fruit that falls freely from the tree of human imagination, or to devise livelier forces to foster quicker growth of tree and fruit? It is the author's view that the need to explore some new personal incentives is as vital to the success of our policy as the need to make sure the man who works the ground and tends the tree receives no benefit which might belong logically to the owner.[5]

It is natural that we look closely at the bargain made by the Government, since Government funds directly support some 65 percent of the research and development in the United States.[6] These expenditures account for about 10 percent of the budget, and are expected to increase. The funds are spent to encourage research, innovations and discoveries[7] as well as to produce new goods needed for defense and peaceful uses. Do we have a national policy oriented to promote the maximum of new and useful improvements through effective encouragement of personal effort? The answer must consider the individual who does the work. He may be hired by a large or small corporation, working under Government contract, or he may be employed in a Government department or facility. Quite similar inducements may serve to drive him to useful discoveries, innovations and inventions, wherever he may be employed. Are the best and the only inducements acceptable in our economy expressed in our laws?

Jan. 17, 1961 that only 27% of the patents are now issued to individuals. A majority are thus inventions of employees who may not be in a position to be reached under the present laws passed to encourage invention pursuant to Art I, Sec. 8, of the United States Constitution:

> "The Congress shall have the Power . . . To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries;"

[4] The scope of protectability has been recently extended to these new fields by some countries. The new German Federation law (1957) merits special study as well suited to present needs. It was published in *Blatt für Patent-, Muster- und Zeichenwesen* (edited by German Patent Office) Vol. 8/9, pp. 218-24 (Aug./Sept. 1957). The area of coverage is much enlarged, including patentable inventions and *proposals for technical improvements.* It is especially notable in setting out the requirement that employees in public and private service, in civil service, soldiers, and teachers shall be compensated for their inventions and proposals for technical improvement.

Prof. Konst Katzarov of Geneva, Switzerland has studied the new incentives for encouraging technical improvements adopted in some Eastern European countries and he reports some remarkable successes; *The New Structure of the Protection of Industrial Property in Eastern Europe,* 42 J. Pat. Off. Soc'y 596-620 (1960).

[5] It is the individual inventor who ultimately must nurture the tree, though the costs may be paid by the Government, analogously considered the owner. What he may retain of the fruits produced and what must go to the public warehouse is a matter of administration for our present consideration.

[6] Expenditures for 1959-60 were about $12.4 billion, $9.4 billion by industry, $1.25 billion by colleges, universities and non-profit institutions and $1.8 by Government agencies. The Government supplied, directly about 57%, 59% and 100% of these amounts, respectively, totaling about $8 billion. Nat Sci. Found. Bulls., *Funds for Research and Development in the United States 1953-59.* NSF 59-65 (1959), NSF 60-43 (1960), and press releases NSF 60-146 (Aug. 24, 1960); NSF 60-160 (Dec. 6, 1960).

[7] Total United States funds for basic research estimate for 1959-60 were $1 billion, NSF-60-146 *supra,* note 6; applied research for 1947 was 21%, according to Nat. Sci. Found. survey, *Funds for Research and Development in Industry 1957,* NSF 60-49 (1960).

It seems in the public interest to include in any emerging national policy more effective means for stimulating the source of all ideas. This source may be more in the motivated imagination of the individual than in the corporate management or the directorship of a laboratory of the Government. If so, mere declaration of a policy on ownership either by Government or industry hardly reaches the core of the present need.[8] So long as we are in a struggle for survival through technical and scientific innovations the incentives of the past, while exceedingly successful, may not be enough.[9]

Two classes of inventors (enlarged to include innovations and scientific discoveries) are especially in need of further recognition, the *employees* of the *Government* and of *industry*. An interesting comparison may be drawn between the rights of the Government employee and those of the employee of industry. The former, under our executive policy, in a majority of cases, is permitted to derive a benefit from his invention, if he can find a commercial market, while his fellow-worker in industry finds no such hope so long as he is subject to an employee agreement to assign inventions to his employer. The Government employee is not subject to such an agreement. Instead, rights under his inventions are subject to provisions of Executive Order 10096[10] which provides for a decision on the ownership of each invention, based on a stated executive policy and on equitable considerations which have been spelled out in court decisions. However, it should be kept in mind that the question of a public policy for Government employee inventions involves considerations which are not necessarily part of the legal reasoning of court decisions. In the absence of any contract or agreement the private employee is, of course, subject to court-established principles generally similar to those applying to Government employees.

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[8] The lone inventor may find reward in patenting his inventions under United States laws designed for his encouragement, tipping the scales in his favor as he seeks to compete with established industry. But advanced industrialization and the trend to development by large groups or laboratories have submerged the individual and often isolated him from these benefits, for he does not necessarily own any patent rights in his inventions whether he be an employee of industry or of the Government. The employee of industry may be required to assign his rights, either because of his contract of employment or because of the court decisions which apply the time-honored doctrines of the master-servant relationship. The employee of the Government likewise may or may not be required to assign his rights to the Government under the present policy. Furthermore, his inventions are often of application only in Government programs and may not have a ready commercial use. In most such cases the Government is entitled to free use and he may not collect any royalties except for non-governmental uses.

[9] For a critical review and some pertinent recommendations see Posnack, *Inventions, Patents and Society, and Evaluation and Re-evaluation*, 20 Fed. B.J. 263-75, at 271-275. Elsewhere much has been written of the decline in the stature of the inventor, both in the public esteem, and in financial benefits arising from his inventions. It is said that the professional inventor has nearly vanished from the American scene. A changing economy may require emphasis on aspects of personal contribution not now recognized for protection or encouragement under existing patent laws. The need for new means to this end may be as great now as when the Congress first passed a patent law to help build up an infant American economy.

Cf. Machlup, *An Economic Review of the Patent System*, S. Res. 236, 85th Cong., 2nd Sess., Study No. 15 (1958), which expresses uncertainty as to the value of the patent system. See also Melman, *The Impact of the Patent System on Research*, S.Res. 236, 85th Cong., 2nd Sess., Study No. 11 (1958), which asserts that the number of research scientists and engineers increased between 1941 and 1954 from 87,000 to 194,000 and the number of technical personnel from 42,000 to 691,000 while the number of patents granted decreased.

[10] Ex.O. 10096, 15 Fed. Reg. 389 (1950) 3 CFR 292 (1949-1953 compilation), states a uniform policy for the executive agencies of Government and provides for an advisory *Board* and an administrative *Chairman* to effectuate the policy.

II. BASIC CONSIDERATIONS AND THE DEVELOPMENT OF A UNIFORM POLICY.

Important to any policy for deciding when the Government should own any or all rights in inventions made by its employees are two basic principles appearing often in direct conflict. One is based on sound legal logic and the other on practical considerations for encouraging the making, disclosure and utilization of the inventive concepts.[11]

1. The master-servant doctrine, developed in the common law, holds that when one employs another to perform specified work, and in doing so the employee makes an invention that invention belongs to the employer, for he has done only that which he was hired and paid to do.[12] It is acknowledged that the employee of the Government is in the same situation as any other employee.[13]

2. Disclosures, as of inventions, are the means by which useful devices and discoveries in the minds of individuals come into view for the public benefit, and the enocuragement to disclose is the central aim of any patent system for rewarding inventors.[14] Taking of full ownership by the employer banishes such rewards as incentives either to develop embryonic ideas to practical form or to disclose them when completed.[15]

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[11] The controversy over Government patent policy, relative at least to employee inventions, comes ultimately to a decision between those two solidly based principles. The many who would treat as public property all patents on results of research and development done largely at Government expense see vividly the force of the master-servant relationship, whether the inventor is a direct employee or indirect employee through contract. They see an unjust enrichment to any private party who retains any exclusionary right in a patent on such Government-sponsored effort. It is argued that the public must then pay twice for its products. On the other hand the advocates for inducements to inventors would limit the trend to "socialization" of patents in the interest of enhancing the national progress through personal motivations to disclose inventions and to develop ideas and discoveries into practical form. While it is often recognized that some of the public argument on both sides of this question might be in the interest of possible personal financial gain, the question is nevertheless basic, and deserves the careful weighing of unbiased review as in any other public policy.

[12] A famous dictum of Solomons v. United States, 137 U.S. 342, 346 (1890), confirmed in Gill v. United States, 160 U.S. 426, 435 (1896), Standard Parts v. Peck, 264 U.S. 52, 59-60 (1924). The same view expressed in dictum in United States v. Dubilier Condenser Corporation, 289 U.S. 178 at 187 (1933) which distinguishes that case on principle. In Houghton v. United States, 23 F2d 386, (4th Cir. 1928) cert. den., 277 U.S. 592 (1928), the court acknowledges the rule in the *Gill* and *Peck* cases, asserts the *Dubilier* rule, but distinguishes the case from the ordinary case of an invention made by an employee, who, while discharging the duties assigned in his department of service, conceives and perfects an invention—the invention is the property of the employee; and holds the Government entitled to an assignment because the employee performed only the work and experiments he was assigned, the idea being that of his superiors, and that no official of the Government was authorized to give away any interest in it.

[13] United States v. Dubilier Condenser Corporation, *supra*, at 191; Gill v. United States, *supra*, at 435; Houghton v. United States, *supra*, at 389.

[14] Art. I, Sec. 8, U.S. Constitution.

[15] While inventions of simple nature may be adapted to manufacture and sale with little change, others require extensive engineering and design before they are suitable for marketing. The protection for risk capital to do this, or to create the required wide public demand, through advertising and promotion, is said to remain the major social objective for private ownership of patent rights. It is widely urged that Government recruitment and retention of highly qualified engineering personnel is hindered if title to their inventions is not left with employees, who often could command much higher pay in private industry. It is also said that resentment on principle and dissatisfaction with Government employment is engendered if the employee is deprived of inventions which would be his property under pertinent court decisions.

Numerous analyses of the problem are available in publications devoted to patent law. The contrasting views are often expressed either as the "title theory" or the "license theory." [16]

Conflict within the Government over these questions has a long history. Several leading court cases have served as guides but relate to specific factual situations, leaving to administrators the problem of applying or distinguishing each case as the facts appear in infinite variety. No uniformity of approach emerged and different agencies applied the court rules with widely differing results. In an effort to resolve the problem the National Patent Planning Commission, under the chairmanship of Charles F. Kettering, was directed to study the question and recommend a policy.[17] The Attorney General was later requested to make recommendations, for which an extensive study was made. His report [18] reviewed the practices of the agencies and the various proposals for legislative action, none of which had been enacted into law. He recommended the establishment of a central agency, under the President, charged with Government-wide coordination to eliminate conflicts of policy and to establish and administer procedures for the uniform treatment of all employee inventions. His views met strong opposition on policy. Nevertheless, Executive Order 10096 [19] was signed to establish a Government Patents Board, with members appointed by the respective heads of ten of the agencies most concerned with the problem. It placed all authority for carrying out the prescribed function in a Chairman [20] appointed by the President, the Board being advisory.

III. Procedure for Rights Determinations Under Executive Order 10096.

A. Introduction.

There was thus established a governmental policy for allocation of rights in employee inventions, except as otherwise provided by law.[21] In any summary of

[16] For a comprehensive review of each theory and a middle ground based on an analysis of court decisions, as well as the need for legislation to resolve the basic issues see Finnegan & Pogue, *Federal Employee Invention Rights—Time to Legislate*, 55 Mich. L. Rev. 903-66 (1957), 40 J. Pat. Off. Soc'y, 252-89 and 322-54 (1958). For a different view on legislation see Forman, *Federal Employee Invention Rights—What Kind of Legislation?*, 40 J. Pat. Off. Soc'y, 468-81 (1958). See also Forman, *Patents—Their Ownership and Administration by the United States Government* (1957), and Part I, *United States Patent Ownership Policy and Some of its Administrative Implications*, 38 J. Pat. Off. Soc'y, 380-424 and 478-500 (1956).

[17] Ex.O. 8977, Dec. 12, 1941. A report was submitted in three parts in 1943, 1944 and 1945, respectively, advocating a policy generally within the "license theory."

[18] *The Report and Recommendations of the Attorney General to the President* was published in three volumes in 1947. It advocates the "title theory," and states *inter alia* in the Summary (Volume 1, P. 2):

> ". . . [T]he ownership of patent rights is not a necessary form of incentive to the great majority of Government scientists and technicians."

It further recommends avoidance of any system of financial rewards, promotions or salary increases to employees on account of their making patentable inventions, for several reasons, but states that (at p. 3):

> "2. A general system of cash bonuses, promotions and salary increases for meritorious suggestions or ideas, regardless of whether they are patentable or not, would be free of these objections and may tend to remedy any inadequacies in the salary structure.
> 3. A valuable form of incentive and award for outstanding scientific contributions and suggestions within the Government would be public, official and professional recognition of meritorious contributions."

[19] *Supra* note 10. For historical development see Forman, *Patents Their Ownership and Administration by the United States Government*, *supra* note 16.

[20] Chairman Archie M. Palmer, June 1950-June 1955; Chairman Benjamin B. Dowell, July 1955-Nov. 1958; and Chairman Robb S. McLaughlin, Jan. 1959 to date.

[21] The Atomic Energy Commission is excluded in the Executive Order. Two other agencies are construed as excluded because of provisions of the acts creating them: The Tennessee

that policy and its administrative workings differing factual circumstances affect the distribution of rights between employer and employee. Just as court decisions recognize on a case-by-case basis the various factors presented, these same factors require individual case-by-case treatment under the executive policy.[22] Decisions are based on facts as reported by the agencies.

While a review of typical cases from the 3500 decisions by the Chairman would be helpful to those presenting matters for his consideration, more space would be required than is here allocated. This discussion must be limited instead to the broader aspects of administrative policy and procedure [23] described in general terms for those not necessarily expert in patent law matters.[24] A brief treatment of the procedural background is desirable to place the decision function in perspective.

B. Initial Agency Determination.

Under the Order each agency determines for itself when an invention has been made,[25] and by whom. The Chairman is thus not directly concerned with the rules governing originality, priority or patentability. These questions are left to the employing agency which obtains from its employees written disclosures [26] of any inventions made in the course of their work. The agency determines their value to the Government [27] and investigates the circumstances of the origin of those deemed to be significant [28] and patentable.[29]

The agency then prepares a summary of facts in accordance with procedural

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Valley Authority Act of 1933, 48 Stat. 58, 16 USC 831(d); The National Science Foundation Act of 1950, 64 Stat. 149, 42 USC 1871.

[22] The Chairman has a reviewing function for the purpose of obtaining uniform application of the policy, and in performing this function considers the criteria of the Order in the light of pertinent court decisions as noted in *Hearings Before Subcommittee No. 3 of the House Committee on the Judiciary on H. J. Res. 454*, 85th Cong., 2d Sess., at pp. 25-26 (1958).

[23] Operations under this Order are not regarded as subject to the Administrative Procedure Act inasmuch as the Chairman deals only with Government employees, not with the general public, and holds no record hearing as such.

[24] Agency reports are prepared in most cases by patent attorneys who also may prepare and prosecute patent applications.

[25] Administrative Order No. 5, 37 CFR 300.5 (1951) provides: "Each Government agency will determine whether the results of research, development, or other activity within the agency constitute invention within the purview of Ex.O. 10096." (Note 10, *supra*)

[26] Practical means for encouraging disclosures is regarded as the dominant objective of the patent system, since no law or administrator can directly compel anyone to invent or do original thinking, nor extract constructive products from another person's mind. Hence the effort in most industrialized countries is to encourage disclosures by offering inducements, either of patent ownership or by bonuses, awards, recognition, etc. The agencies involved in research wish to get a maximum of disclosures, whether patentable or not, since these become the stepping stones for further progress.

[27] Disclosures judged to be of no interest to the Government are not usually investigated or processed beyond an adverse decision as to value at the originating agency.

[28] Inventions of highly doubtful patentability and those believed patentable but not significant enough to justify consideration for patenting are usually not reported under the Order, but are often released to the inventor subject to the requirement that he secure a rights determination if he should file any patent application thereon. Agency rules and practices for these evaluations differ according to the agency objectives.

[29] When an invention disclosure appears unpatentable in subject matter, or because of prior patents or statutory bars, it is usually dropped from agency consideration and the inventor so notified. No report to the Chairman is made in most such cases, unless the inventor believes otherwise and requests a decision on rights.

instructions issued [30] or approved [31] by the Chairman, and makes a preliminary determination of the rights of the inventor and of the Government, and notifies the inventor of this determination. The employee has a right, within 30 days of notification, to appeal from such determination to the Chairman,[32] who may approve, reverse or modify the agency determination.

If the agency determines that the Government should leave any rights in the employee,[33] a report is made to the Chairman for his review,[34] both on the right of the Government to an assignment of all rights and on the right to assert a royalty-free license for all governmental purposes,[35] or otherwise leaving all equitable rights in the employee.[36] The general requirements for reporting are set out in Administrative Order No. 5 as supplemental by Procedural Instructions.[37] But if the agency requires an assignment to the Government of all rights under the invention and no appeal is taken by the employee, the Chairman has no further duty to safeguard the interest of the Government, or of the inventor, and a report of the facts by the agency is not required.[38]

The Executive Order also provides [39] that when Government is entitled to full ownership of an invention the agency concerned shall either file a patent application thereon or make a full disclosure thereof to the Chairman, who may cause such an application to be filed,[40] or may cause it to be published.[41] Such a report [42] is reviewed by the Chairman to determine whether the Government interest is thus protected, usually without a decision on the substantive right of the

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[30] Ex.O. 10096 (note 10 *supra*), para. 4 (b), provides that after consultation with the Government Patents Board the Chairman shall formulate and submit to the President for approval such proposed rules and regulations as may be necessary or desirable to implement and effectuate the policies, together with the recommendations of the Government Patents Board. Administrative Order No. 5, 37 CFR 300.1 to 300.11 (hereafter cited as A.O. 5 § —.) sets out the substantive provisions of Ex.O. 10096, and the present basic procedure. It was signed by the President, April 26, 1951. See also *Revised Procedural Instructions* issued pursuant thereto, Jan. 10, 1955.

[31] Each agency prepares its own implementing regulations or instructions to carry out the intent of the Order and these are subject to the approval of the Chairman, Ex.O. 10096 (*supra* note 10), para. 6.

[32] A.O. 5 § 300.7 provides that the employee may appeal either from a determination that the Government is entitled to all rights or to only a free license under the invention. The agency may already have secured the employee's concurrence, but if not, a 30 day period is provided for appeal from the agency determination, after which he need not be granted further consideration. Accordingly, the agency holds the determination for 30 days after notification and thereafter forwards it to the Chairman.

[33] Whether under Ex.O. 10096, para. 1 (b) or para. 1 (d); (A.O. 5 § 300.6 (b) 2, 4).

[34] This is required by A.O. 5 § 300.6 (c), and referred to as a "Report 6(c)."

[35] The Chairman also reviews the equitable right of the Government to the license if it is decided that no right of assignment should be asserted. Ex.O. 10096, para. 1(b), *infra* note 74.

[36] If there is no basis in the reported facts for asserting any rights in the Government the *entire right, title and interest is left in the employee subject to law*, Ex.O. 10096, para. 1(d) *infra* note 74.

[37] See note 30 *supra*.

[38] Elimination of the reporting of facts in such a case was intended to ease the administrative burden when no contest as to rights was in prospect and a patent application would be filed subject to a recorded assignment. A.O. 5, *supra* note 30.

[39] Ex.O. 10096, para. 2 (a), *supra* note 10.

[40] In the absence of funds or staff for this purpose the authority is seldom exercised except by forwarding such disclosures to possible interested agencies for their filing if deemed appropriate to their purposes.

[41] Under current procedures publication is at the instance of the agency or of the employee who may be seeking professional recognition.

[42] A.O. 5 § 300.8 (e); referred to as "8 (e) reports."

Government to an assignment of the invention. The employee has the right to appeal from this agency determination,[43] which is seldom exercised. He is considered to have waived any such right if he failed to take an appeal within 30 days of the agency's notification to him of its determination not to file, or to publish in lieu of filing.

When the Government is not entitled to an assignment of all rights in an employee invention, which is therefore the property of the employee, the employee may file a patent application at his own expense. Also, when the agency determines that the Government could require an assignment, but has insufficient interest in the invention to do so, it may also leave title in the inventor subject to a royalty-free license to the Government, upon approval of the Chairman, and the inventor may file a patent application at his own expense.[44]

Administrative Order No. 5 requires that each agency determine the respective rights of the Government and the inventor in "any invention made by a Government employee while under the administrative jurisdiction of such agency" [45] but requires routine reports [46] of rights determinations for the Chairman's review only when the determination is to leave title in the inventor under the criteria set out [47] either subject to a royalty-free license [48] or subject to law.[49]

About 500 inventions in which the employee retains rights are currently being reported each year. The number of cases in which the Government receives all rights is not precisely known, since these are not reported.[50] Some agencies have indicated that they have insufficient staff to process more than a fraction of the disclosures actually received, and they release for private action by the inventor those determined to be of lesser immediate value. In most such cases, no rights determination is made unless the employee states that he desires to file a patent application at his own expense.

C. *Appeal By The Employee.*

An employee who has been notified of the agency determination that an invention should be the property of the Government may take an appeal [51] directly

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[43] *Supra* note 32.

[44] In most cases the employee relies upon his agency to do this if the agency considers the subject matter of sufficient value to warrant the considerable expenditure of time and effort involved in filing and prosecuting the application. The agency requires at least a royalty-free license in return for this service. The positive assurance of this right provided through the filing of a patent application subject to an executed license provides the justification for expenditure by the Government in the preparation of a patent application and its prosecution to an issued patent, which is in all other respects the property of the employee. The right granted may be stated in the patent if filed under 35 USC 266. It may also be recorded as a separate document, an official listing at the United States Patent Office of such rights being provided for public inspection as set out by Ex.O. 9424.

[45] A.O. 5 § 6 (a).

[46] *Supra* note 34.

[47] *Infra* note 74.

[48] *Id.*, para. 1(b); A.O. 5 § 300.6 (b) 2.

[49] *Id.*, para. 1(d); A.O. 5 § 300.6(b) 4.

[50] The Department of Agriculture determined rights in 526 cases between Jan. 23, 1950 and Dec. 31, 1956, and required assignments in 90% of these cases. The figure for the Navy Department at that time was about 37% as reported by Finnegan & Pogue, *supra*, notes 16. Other departments, e.g. Health, Education and Welfare, may have a very high percentage in the title category, while others, e.g. Post Office may be very low.

[51] *Supra* note 32.

to the Chairman, and a copy is provided for the employing agency. No form is prescribed for this appeal and the employee may prepare it himself or seek the help of an attorney. In many cases the appeal from the agency determination is forwarded through the same office which prepared the original determination of rights.[52] If, upon review of the employee representations the agency concludes that the inventor is entitled to retain ownership of an invention [53] previously considered to be assignable to the Government, it may prepare a new determination and a report [54] to the Chairman for his review as though no determination to take title had been made. If, however, the agency is still of the view that an assignment should be required, its reviewing official, or the Liaison Officer,[55] may advise the employee as to the procedures for an appeal, and advise him in preparing a complete appeal statement. This statement of facts and reasons is forwarded to the Chairman, with a copy to the agency, which files a statement of its views in response thereto.[56]

D. Determination By The Chairman.

The Chairman is provided in each appealed case with copies of the original agency determination, the appeal statement of the employee and the agency response. Henceforth, such a case is treated as a disagreement between the agency and its employee, each party having a right to present whatever additional factors it believes to be pertinent. When no disagreement as to the facts appears, the Chairman may decide the issue on the record before him, or may request additional information to clarify any doubtful points. In case of dispute as to the facts, the Chairman may set an informal hearing at which both parties may appear and present their views with any supporting documents deemed important. His decision, however, is not limited to facts thus presented and he may seek information from any other available source. His decision statement analyzes the factors and applies the policy of the Executive Order consistent with pertinent court decisions. The decision is administratively final,[57] but he may reconsider or grant a further hearing at his discretion where an adequate reason therefor is presented,[58] or he may decline to reopen the case. No decision of the Chairman has been reviewed by a court.[59]

[52] The reason for this lies in the fact that the attorney or administrative office charged with the determination seeks to treat all employees fairly and is willing to undertake all work of investigating and restudy of a case necessary to satisfy the inventor of fair consideration. Equally significant is the need to secure the open and frank disclosure of the circumstances under which the invention was made, and the inventor is often the sole custodian of the pertinent facts. The attorney or official in charge of the case may serve first as an investigator in setting down the facts, then in a quasi-judicial capacity to apply the legal principles to the facts in the agency report to the Chairman.

[53] A number of agencies have internal review boards which consider the circumstances of each reported invention and formulate the agency determination.

[54] *Supra* note 34.

[55] Each agency appoints a Liaison Officer to transmit all reports, receive decisions of the Chairman, and serve as the coordinating official for the agency.

[56] A.O. 5 § 300.7 (b), referred to as a "7 (b) report."

[57] Ex.O. 10096, para. 4 (d).

[58] Several presentations of this type have been permitted where the reasons for the Chairman's decision were questioned or new facts were brought in, but no decisions once rendered after appeal have yet been abated or withdrawn upon such reconsideration.

[59] In the Hearings, *supra*, note 22, the Chairman stated his understanding that the right to such an appeal could not be denied on legal principle.

The above procedure for appeals applies to a determination either that the employee assign all rights, or grant only a royalty-free license.[60]

E. Petition for Reconsideration of Chairman's Decision.

The employee may also petition for a reconsideration [61] in any case in which the Chairman has decided that the Government is entitled to a greater right than that determined by the agency. These petition situations are considered under the same procedures as for appeals from the agency determination. In this case the Chairman reopens and reconsiders the case as though it had not previously been decided, usually upon a more extensive presentation. He may adhere to, modify or reverse his former decision. The agency may itself wish to secure a reconsideration by the Chairman of his decision to take a *greater* or *lesser* right than that asserted by the agency. Such a request for reconsideration is subject to the same procedure as an appeal. If he is satisfied that a decision differing from his prior decision is required, he may issue a substitute decision, reaffirm on the same or different grounds, or decline to reopen the case. In the light of further evidence by both parties he may find that neither the agency determination nor his decision is sustainable, and he may issue a new decision as the facts then presented may require.[62]

F. Agency Reports.

All specified reports [63] to the Chairman include:

(1) a description of the invention in sufficient detail to permit a satisfactory review; [64]

(2) name of the inventor and his employment status; [65] and

(3) a statement of the agency determination and reasons therefor.[66]

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[60] Upon appeal from reversals of the agency determination in 54 cases 17 were decided in favor of the employee and his decision was adhered to in 17 cases.

[61] A.O. 5 § 300.6 (c). A petition may be made to the Chairman within 30 days, or such longer time as may be approved, of notification of the Chairman's decision.

[62] Upon reconsideration in 18 cases the Chairman has reaffirmed in 8 cases and concurred with the prior agency determination in 9 cases, and modified or reversed both his own and the agency's prior conclusions in one case.

[63] *Revised Procedural Instructions for Submitting Reports Specified in Administrative Order No. 5*, issued by the Chairman Jan. 10, 1955, set out detailed requirements for reporting the information needed by the Chairman in each type of case, based on the experience with reports of the preceding years.

[64] *Id.*, § IV 1. This shall reveal the specific form of the invention, referring to its novel features and permissible variations, to what it relates, and either its construction and manner of operation, its composition, or the procedures involved, according to the subject matter of the invention.

[65] *Id.*, § IV 2. This shall include job-title and grade, or rank, duty station and when the invention bears any relation thereto, a brief summary of his official duties and pertinent special assignments. If the inventor was employed or assigned within any of the categories of research and development (para. 1(c) of Ex.O. 10096) the information shall show the actual relation, if any, between the duties and the invention, since it is presumed that such relation will warrant an assignment unless the relation actually disclosed rebuts the presumption that the Government is entitled thereto.

[66] *Id.*, § IV 3. The pertinent provisions are:

"(a) When the agency determination is to leave title in the inventor, the report shall indicate whether the determination was made pursuant to paragraph 1 (b) or paragraph 1 (d) of Executive Order 10096.

"(b) The report shall also indicate when, where and how the invention was actually made. When the invention was reduced to practice by the construction of a model or otherwise, with a contribution by the Government, the report shall indicate whether the

The reasons for the agency determination are of primary importance and constitute the body of the report. Since the Chairman is charged with uniform application of the policy, he requires a sufficiently detailed account of circumstances under which each invention was made to permit a decision *de novo* in every case. In a majority of all cases submitted the agency has determined that the Government is not entitled to an assignment, but already has an executed license of prescribed type. A full review of the factors which would require the reservation of a license is therefore unnecessary, except as they may also bear on the right of the Government to an assignment of all rights. A report simplified in the interest of economy and omitting non-pertinent details may then be made as provided for Special 6(c) Reports.[67]

The duty to establish and administer a uniform policy is accomplished primarily through consultations and decisions rendered by the Chairman. The number of his decisions now exceeds 3500, of which about 80 were on appeal or determination to publish a Government-owned invention in lieu of filing a patent application, or upon request for reconsideration of a prior decision. The agency determination has been reversed in some 200 cases and modified [68] to some degree in a slightly larger number of cases. The high percentage of concurring decisions indicates a growing uniformity of practice not existing prior to the Order,[69] and the result of application by the agencies of the principles clarified in earlier decisions of the Chairman. Since the agencies do not regularly report those cases in which they have determined that the Government should assert title,[70] unless an appeal is taken, figures are not available to show how uniform their practice in that respect may be.[71]

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reduction to practice was necessary (1) to determine the operability of the invention, or (2) to test its utility to the government, or (3) to determine the interest of the Government in its use for governmental purposes.

"(c) When the invention was made, wholly or partially, during working hours, with a contribution by the Government of facilities, equipment, materials, funds, or information, or of time or services of other Government employees on official duty, and there is a presumption that the Government may be entitled to assignment of the invention, each of these criteria shall be either specifically explained or negated. When there was no contribution by the Government to the making of the invention, each of the above criteria shall be specifically negated, to avoid any question as to the sufficiency of the report.

"(d) When the invention does not bear a *direct* relation to the official duties or a specific written or oral assignment of the inventor, the agency shall state the precise relation, if any, the invention does have to the duties or assignment of the inventor. The mere statement that "the invention does not bear a *direct* relation" is not sufficient.

"(e) Reports shall clearly indicate whether (1) title to the invention be left in the inventor subject to a license to the Government pursuant to paragraph 1(b) of Executive Order 10096, or (2) the entire right, title and interest in and to the invention be left in the inventor pursuant to paragraph 1 (d) of Executive Order 10096."

[67] *Id.*, § V.

[68] Many of these modifications arise in cases in which the agency did not determine whether the Government would be justified in requiring a royalty-free license, because one had already been obtained, but in which the facts reported presented a clear case. Such decisions, though not essential, are nevertheless made by the Chairman in the interest of providing a maximum of guidelines for future agency determinations.

[69] *Supra* note 18. The Attorney General's finding was that a very wide divergence in practice occurred between agencies, and even within some agencies, leading to the conclusion that there was then no recognizable policy. See also note 16, *supra*.

[70] A.O. 5, *supra*, note 30, signed by the President, effectively waived the requirement for regular review or the reporting of such agency determinations.

[71] In some departments and services research and development personnel may usually be limited to work specifically assigned. Inventions coming out of such work, and that therefore bear a direct relation to the duty assignment, fall clearly within the first principle of Part II hereof. Inventions in those activities are subject to assignment to the Government in a dispro-

IV. Balancing of Equities in Decisions by the Chairman.

A. The Chairman's Interpretation of the Order's Criteria.

An analysis of the early decisions under this Executive policy was made by Dr. Howard I. Forman,[72] who concluded that "[t]he determination of the agencies and the decisions handed down by the Chairman are fast establishing themselves as controlling precedents which . . . should serve largely to standardize the manner in which ownership rights in inventions of Government employees are handled in the future . . . ." This has proved to be the case. In the years since that study the same general policy and approach has been adhered to, but with some changes of emphasis in the light of experience. The decisions of the Chairman are not published[73] but are available within the agencies to provide guidance on the precise point of division between the rights of the employee and of the Government.

There immediately arose in the administration of this policy a basic problem grounded in the form of the Executive Order statement of criteria for requiring an assignment of all rights.[74] These criteria are stated in paragraph 1(a) as a

portionately large percentage of cases. Some other agencies apparently assert title in a much larger number of cases than others, perhaps because of the field of work, or because of the belief that their primary function in research and development is to give out freely whatever results they find rather than to employ them for internal governmental purposes. This divergence of practice for the differing types of research or the differing agency purposes constitutes a degree of nonuniformity in the treatment by the Government of its employees for which a solution is not yet at hand.

[72] Forman, *The Government Patents Board-Determination of Patent Rights in Inventions Made by Government Employees*, 35 J. Pat. Off. Soc'y 95-127, 127 (1953); see also Finnegan & Pogue, *supra*, note 16.

[73] Each Chairman has felt the need to treat agency reports of the details of work assignments as administratively confidential, like other matters of personnel administration, and some Board members objected vigorously to public discussion of cases from their agencies. The factual reports and determinations of each agency have not been released to the general public without consent of the reporting agency, but the substance of each decision is regarded as a matter of public interest and has not been withheld in any case.

[74] Ex.O. 10096 contains the following paragraph (15 Fed. Reg. 389-391, 3 CFR 292):

"1. The following basic policy is established for all Government agencies with respect to inventions hereafter made by any Government employee:

"(a) The Government shall obtain the entire right, title and interest in and to all inventions made by any Government employee (1) during working hours, or (2) with a contribution by the Government of facilities, equipment, materials, funds or information, or of time or services of other Government employees on official duty, or (3) which bear a direct relation to or are made in consequence of the official duties of the inventor.

"(b) In any case where the contribution of the Government, as measured by any one or more of the criteria set forth in paragraph (a) last above, to the invention is insufficient equitably to justify a requirement of assignment to the Government of the entire right, title and interest to such invention, or in any case where the Government has insufficient interest in an invention to obtain entire right, title and interest therein (although the Government could obtain same under paragraph (a), above), the Government agency concerned, subject to the approval of the Chairman of the Government Patents Board (provided for in paragraph 3 of this order and hereinafter referred to as the Chairman), shall leave title to such invention in the employee, subject, however, to the reservation to the Government of a non-exclusive, irrevocable, royalty-free license in the invention with power to grant licenses for all governmental purposes, such reservation, in the terms thereof, to appear, where practicable, in any patent, domestic or foreign, which may issue on such inventions.

"(c) In applying the provisions of paragraphs (a) and (b), above, to the facts and circumstances relating to the making of any particular invention, it shall be presumed that an invention made by an employee who is employed or assigned (i) to invent or improve or perfect any art, machine, manufacture, or composition of matter, (ii) to conduct or perform research, development work, or both, (iii) to supervise, direct, co-

requirement that, when *any one* of the factors named therein is found applicable to an employee invention, the Government *shall* obtain the entire right. It was clear that such an interpretation would run afoul of prevailing court decisions [75] and that a constitutional question would need resolution under such an interpretation.[76]

Furthermore, paragraphs 1 (b) and 1 (d) must obviously be considered in applying the provisions of paragraph 1 (a). In effect, they must be read as modifications of the title requirement and the paragraph read instead in its entirety. Therefore, each Chairman has sought guidance from pertinent court decisions in determining whether the contribution of the Government as measured by paragraph 1 (a) criteria is sufficient equitably to justify a requirement of an assignment of the entire right to any such invention. These views were the subject of many meetings of the Board,[77] and the advisability of construing the Executive Order in this way met with widespread, though not universal, approval.

Accordingly, it has been the practice of the Chairman to treat each reported case as requiring the balancing of the equity of the Government against the equity of the employee. The small number of appeals and petitions taken from the decisions of the Chairman may indicate considerable success in his endeavor to treat the opposing equities fairly and impartially.[78]

B. The Chairman's Application of the Order's Criteria.

The Chairman does not consider the alternative reasons for assertion of title recited disjunctively in paragraph 1 (a) *as individually sufficient* and, therefore, reads them together. For example, the mere making of an invention during working hours is not construed as justifying asserting full rights in the Government, nor is a contribution by the Government of facilities, equipment, materials, funds, information, or the services of employees on official duty. If, however,

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ordinate, or review Government financed or conducted research, development work, or both, or (iv) to act in a liaison capacity among governmental or non-governmental agencies or individuals engaged in such work, or made by an employee included within any other category of employees specified by regulations issued pursuant to section 4(b) hereof, falls within the provisions of paragraph (a), above, and it shall be presumed that any invention made by any other employee falls within the provisions of paragraph (b), above. Either presumption may be rebutted by the facts or circumstances attendant upon the conditions under which any particular invention is made and, notwithstanding the foregoing, shall not preclude a determination that the invention falls within the provisions of paragraph (d) next below.

"(d) In any case wherein the Government neither (1) pursuant to the provision of paragraph (a) above, obtains entire right, title and interest in and to an invention nor (2) pursuant to the provisions of paragraph (b) above, reserves a non-exclusive, irrevocable, royalty-free license in the invention with power to grant licenses for all governmental purposes, the Government shall leave the entire right, title and interest in and to the invention in the Government employee, subject to law.

"(e) Actions taken, and rights acquired, under the foregoing provisions of this section, shall be reported to the Chairman in accordance with procedures established by him."

[75] Leading cases are carefully analyzed in Finnegan & Pogue, note 16, *supra*.

[76] Hearings, *supra*, note 22, pp. 25-26.

[77] The minutes of Board meetings are preserved in the files of the Chairman. They show wide variations of viewpoint and the Chairman's procedures evolved in the light of these discussions.

[78] Note should be made of the fact that the criteria, upon examination, appear to justify a less favorable view toward the rights of the employee than is taken by the Chairman so that the employee may be led to believe that he has little to gain by an appeal, lest a stricter view be taken, while, from the agency viewpoint, the decision of the Chairman is administratively final and binding upon the agency, he may be requested to reconsider.

it is found that an invention bears a direct relation to the official duties assigned to, or undertaken by the inventor as a result of assignments, the invention is held to be subject to a requirement to obtain the entire right. Such a decision generally requires an apparent responsibility closely related to the invention and either that the invention be made partly or wholly during working hours, or that one or more of the named contributions be present in a prominent degree. Former Chairman Dowell testified that the wording in paragraph 1 (a) "shall [obtain the entire right]" is interpreted as "may [obtain the entire right]" in conformity with applicable court decisions.[19] This has been the practice of each Chairman. A direct relation to duty is a prerequisite to finding the Government entitled to all rights.

A further important limitation on the title requirement is found in the second substantive provision of paragraph 1 (b), which states that, although the Government could obtain the entire right under 1 (a), if the Government has insufficient interest in an invention to do so, it shall leave title in the employee, subject to the prescribed license, upon approval of the Chairman. He does not approve leaving title with the employee under this provision when the agency has sufficient interest to file a patent application to protect the rights of the Government, since all agencies must recognize that an invention, despite efforts at dedication, may be patented by someone else without reservation of any right in the Government. If the inventor must file an application at his own expense to protect the public right, if one is to be filed, the Government is not regarded as equitably entitled to require an assignment of the entire right.

Frequently it is reported that the inventor has done all of the work of conceiving an invention on his own time, with no further contribution by the Government than that which arises from a general relation to his duties. In such a case the equities are held to favor the employee, unless it appears that the invention is specifically within a clear duty of the inventor or is a solution to a problem for which he had a responsibility to seek a solution. Many variants of this problem require case-by-case analysis, and the decision must consider all factors which make up the whole picture. The director of a phase of research or development, or head of a group charged with some broad duty, presents a special problem, because, on any principle of implied contract, he may be both contractor for, and performer of, the work he does.

Another common situation involves inventions made wholly on official duty time, but in areas wherein the employee had no general or specific duty to proceed with any investigations or solutions of the problem. In such cases the Chairman usually does not find that the invention bears a direct relation to his duties or was made in consequence thereof. But when an agency report indicates no direct relation to duty and the report nevertheless shows that the employee devoted some weeks or months of official time to the problem, he may construe the facts to indicate that a special assignment of duty prevailed and find the requisite relation to duty with adequate contribution by the Government to bring the case within the paragraph 1 (a) provisions. The problem of what is a special duty assignment, a specific duty, or a general responsibility lies at the heart of each decision regarding title in the invention.

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[19] Hearings, *supra*, note 22, pp. 25-26.

In the matter of deciding whether the Government should receive a license as specified in paragaph 1(b), or no rights as in paragraph 1 (d), consideration is given to whether the Government would be entitled to a license under "shopright" principles developed in the pertinent court decisions. The Order provides no specific guide, except that the Chairman takes reported contributions of any of the types included in paragraph 1 (a) as adequate basis for the assertion of a license under paragraph 1 (b), unless these are not significant in the making of the invention.[80]

When no factors reported indicate any significant contribution by the Government of time or other named factors the Chairman holds that title should be left with the inventor "subject to law." [81] Because some employees have mistaken the meaning of such a decision the Chairman now avoids its use and employs other decision language whenever the reported facts show a license or right due to some specific factor reported. Accordingly, fewer decisions are now of the 1 (d) form.[82]

V. What Changes of Policy are Suggested by Experience?

In looking at the results of the policy and the problems remaining we note that complete uniformity has not been achieved,[83] and could hardly be expected.[84]

A further problem of concern to each Chairman has been the question of the *objective of any policy which declares inventions the property of the Government,* if to do so makes the disclosure of other inventions and their utilization by the public more unlikely as many experts assert.[85] *The ultimate success or failure of this policy may depend upon what use is to be made of the ownership rights gathered in the hands of Government. But on this vital matter there is*

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[80] The question of when an invention is "made" for purpose of the decision has been of significance. Under the pertinent court decisions the reduction to practice of an invention is regarded as part of making it. Some invention reports are made to the Chairman before this has occurred and his decisions must consider the equities then existing. Furthermore, sometimes the disclosure of a complete and clearly operable invention unrelated to the inventor's duties is built and tested without his consent or knowledge, and to assert a Government right because of unauthorized Government action beyond his control would obviously be inequitable. See also *Interpretations and Opinions No. 1 of March 5, 1951,* which provided that any inventions conceived and adequately described in writing prior to the date of the Order would be excluded *from consideration thereunder. That definition is not now* regarded as controlling.

[81] See *Interpretations and Opinions No. 4 of Mar. 11, 1954* for the meaning of *subject to law.* Such a decision does not negate any right derived from purchase, statute or other principle of law, e.g. 28 USC 1498, 35 USC 266, 35 USC 4, 42 USC 1811, 16 USC 831(d).

[82] The majority of the reported cases are subject to provisions of 35 USC 266 with a license already granted. The decision may then state that title is left in the employee subject to the license already granted.

[83] *Supra* notes 50, 71.

[84] Complete success is necessarily limited by the fact that different administrators see the *facts differently* and apply the *rules according to* their individual backgrounds. The Chairman receives his reports from officials who are generally overburdened with administrative detail and with insufficient time for investigation of all aspects of each case. What is not reported cannot enter into the Chairman's decisions, unless through some insight from prior related circumstances. The factual reporting and agency determinations show a high degree of conscientious *effort to* treat all fairly and to present the pertinent facts for decision on the merits of each case.

[85] This view is widely held, e.g., concurring opinion of Judge Frank in Picard v. United Aircraft Corp., 128 F.2d 632, 642 (2d Cir. 1942), cert. den. 317 US 651 (1942); Remarks of the *Commissioner* of Patents, Hon. Robert C. Watson, *Report of Army Patent Conference,* p. 143; and others documented by Finnegan & Pogue, *supra* note 16, pp. 946-52 and notes 141, 143, 145, 147. See also notes 15, 26, *supra.*

not yet a policy.[86] One may well ask how framers of policy can properly decide *whether* it is in the public interest to demand full ownership rights of any kind *until* it is known what use will be made of those rights. A policy for utilizing Government-owned inventions seems basic in carrying out the existing Government employee policy.[87] Any similar policy regarding Government-owned contractor inventions is of course subject to the same considerations. When the Government asserts only a domestic or world-wide royalty-free license this doctrinal conflict is not present.

Many commentators have also urged legislation to replace Executive Order 10096,[88] some because of disagreement with its middle-ground policy as now practiced, some because it is ambiguous and misunderstood, and others because of grave doubts as to the legal sufficiency of any executive regulation for adjudicating property rights. Each prior proposal for legislation has failed of passage[89] and an inter-agency divergence of views as to desirable criteria still prevails. The Bureau of the Budget has the matter under advisement but has not yet resolved the differences of view into an Administration recommendation.[90]

Concerning what may be done to remedy an apparent inadequacy of the United States statutes there is available some legislation much more significant for the purpose than the provisions of the Government Employees' Incentive

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[86] The Report of the Attorney General, *supra* note 18, Vol. I, pp. 6-7, recommends, *inter alia*, "As a basic policy all Government-owned inventions should be made fully, freely and unconditionally available to the public without charge, by public dedication or by royalty-free nonexclusive licensing;" that all inventions in which the Government has any rights be patented unless other means of dedication are employed; and that a "Government Patents Administrator" prepare for approval of the President a program to encourage and sponsor the use and practice of Government-owned inventions by small and new business concerns and report on the extent of use thereof.

Other commentators believe such a policy to be ineffective and wasteful, both of the potentially inventive faculties of scientists and engineers and of the time of patent personnel in creating unused exclusionary rights in patents.

[87] It appears that reluctance on the part of agency personnel to assert any greater right than appears to serve a governmental purpose is indeed at the heart of most problems encountered in carrying out the policy now in effect. This reluctance applies to the inventor who seeks to further develop his invention to a commercial form as well as to the local administrator who gathers the facts and initially determines the respective rights of the Government and the inventor. If a patriotic concern for the public welfare be regarded as a primary driving force among Government officials, their efforts in carrying out this policy would be better motivated if they were provided with visible objectives to be served thereby.

[88] E.g., Finnegan & Pogue, *supra* note 16, pp. 956-60, who conclude at 960 that a "middle-ground" approach should be taken. Their specific proposal has been regarded as close to the "license theory," however, and did not satisfy the requirement for a uniform policy. A further approach, somewhat closer to "title theory," was urged by the Chairman in *Hearings Before Subcommittee No. 3 of the House Committee on the Judiciary on H. J. Res. 454*, 85th Cong. 2d Sess., at pp. 32-41 (1958).

For a review of the current status of the legislative considerations see *Patent Practices of the Government Patents Board, a Preliminary Report of the Subcommittee on Patents, Trademarks, and Copyrights of the Senate Committee on the Judiciary*, S. Res. 53, 86th Cong., 1st Sess., (1959).

[89] *Hearings*, *supra*, note 88; the same bill was reintroduced as H. J. Res. 3 in the 86th Congress, but was not acted upon, nor was the alternative proposal of the Chairman set out in the *Hearings*, *supra* note 88, pp. 41-45, and in *Appendix E of the Preliminary Report of the Subcommittee*, *supra* note 88; the Foreword (p. iv) suggests that a recommendation from the Bureau of the Budget is needed.

[90] In view of the unresolved conflict between theories ,*supra* notes 88, 89, a further effort was made by the Bureau of the Budget and the Chairman to frame a bill free of these objections. Some agreement between agencies on the central policy expressed in criteria of "middle ground" type was achieved, but has not yet been recommended by the Administration.

Awards Act.[91] One example is found in the Bundestag (Diet of German Federation) law of July 25, 1957.[92] It provides for payments for inventions of employees and proposals for technical improvements whether in the civil service, military service or in private industry. These payments are conditioned on the degree to which the employer retains control of the inventions and proposals. This law provides for detailed rules to be issued by the Federal Minister of Labor for determining the amounts to be paid at least as to those inventors in private enterprise.[93]

Several Eastern European countries whose industries are not wholly socialized have adopted very interesting measures for encouraging inventions, and extending employee awards to include innovations and discoveries.[94] These measures seem to have aided or produced such results as the conversion in a few years of agrarian economies into exporters of technology.[95]

Our own recent efforts at encouraging inventions among employees of the Government are feeble in comparison with those indicated above and do not extend to all of the private sources of even our presently recognized fields of patentability. Some concern over this matter is evident in both the Senate [96] and the House of Representatives.[97] It is not clear whether the pertinent German Federation experience has been much examined, but it seems quite applicable to the

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[91] 68 Stat. 1113 (1954) 5 USC 2121-23. This Act is limited in coverage and the awards not usually effective. Its time limits usually exclude consideration of inventions. See also note 2, *supra*.

[92] *Supra* note 4.

[93] *Bundesanzeiger;* No. 156 of Aug. 18, 1959.

[94] Katzarov, *The New Structure of the Protection of Industrial Property in Eastern Europe*, 42 J. Pat. Off. Soc'y, 596-620 (1960).

[95] *Id* at 612, e.g., Roumania and Bulgaria; at 611 he states:

". . . the State has taken, in the countries of Middle Eastern Europe, very important steps towards creating the best possible conditions for the development of creative activity. . . . Such measures have not been taken in vain. Already large numbers of workers bend their efforts toward possible innovations . . . and spend their time on research. . . ."

and at 599-602 shows that most such Middle Eastern European countries have moved in this direction.

[96] In introducing a general awards bill (S. 898) Senator Leverett Saltonstall said, 105 *Cong. Rec.*, 1661:

"Reward for constructive effort has been a basic premise of the free enterprise society. . . . [T]he inventor has been compensated for it inadequately, or in some unfortunate cases not at all. . . . We cannot expect to exploit the scientific barriers of the future by simply designating a group or an agency of the Government to be responsible. We must have the contribution of all our talented citizens wherever they may be. . . ."

[97] In a recent article discussing procurement regulations and the contributions of Government and its contractors, Congressman Erwin Mitchell said:

"The free enterprise system which has made the United States the wealthiest and most powerful nation in the world is based upon competition. The ability of a manufacturer—small or large—to compete successfully against another is based upon the legal protection of his basic ideas and the national recognition of his proprietary rights and know-how for manufacture.

"Incredibly enough, while our Government is fighting desperately to uphold and maintain the cause of free enterprise throughout the world and to stimulate the greatest possible advances in our production technology, some Government-sponsored inequities appear to be destroying the very ability of industry to compete.

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"In this era of greatly complex devices and engineering feats in fabrication, all too often the contributions to the invention made by the inventor and by his employer are disregarded. . . ."

Mitchell, *Patents Rights-Path to Progress*, 16 *Aerospace* No. 7, Aug. 1960.

American economy. The major nations of Western Europe have now taken effective action to bolster the patent incentive for inventors, some by statutes requiring compensation beyond salary for inventions, and others by high court decisions which invalidate provisions of employees' agreements if they fail to provide such compensation. The new Dutch and Italian award statutes should be compared with the German Federation law. The Swiss, French, Norwegian, Belgian and Danish court rulings should also be examined to see the extent to which the same principle of special payments for inventions is being revived to build up national industrial potentials.[98]

VI. Conclusions

1. So long as free economies based on personal initiative are threatened with extinction by totalitarian Communism their survival may well depend upon effective encouragement of individual initiative. *Incentive is the most central problem of a national policy on inventions. Questions of Government, as against private, ownership of the results of sponsored research and development work are insignificant when compared to the question of survival of a free economy.*

It has been noted hereinbefore that Eastern European countries have created very strong inducements for making innovations, discoveries and inventions not matched in this or any other Western nation except Western Germany. They have taken "very important steps towards creating the best possible conditions for the development of creative activity." [99] Such strong measures for encouraging technical advances should be carefully reviewed by lawyers, scientists and legislators to see what of their experience would promote progress here.

A universal mandatory system of participating awards such as has been adopted for employees of all classes, public and private, in Western Germany [100] should be given the most serious consideration with a view to enactment of effective legislation in this country. Could not the vigorously expanding German economy be achieved here with similar inducements? Indeed some progressive companies in the United States have already adopted bonus systems generally like those prescribed by German law. [101]

2. Any such national system of awards for inventions and technical improvements by persons in the Government service requires some type of central Administrator qualified to deal in the intricacies of invention law, rather than separate lower level organizations within the several departments and agencies of the Government. He should have authority to insure that all meritorious contributions are screened for novelty and utility, and tried out, if necessary, to determine their value. The amount of award should be based on such criteria.

3. Whatever system is employed to encourage inventions—patents, bonuses, or both—should be extended beyond the presently limited areas of patentable subject matter to include scientific discoveries and innovations or technical im-

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[98] For a summary of Western European provisions see *Validity of Contracts Assigning Employee's Inventions to Employer in U.S. and Europe* by William J. Rezac, 42 J. Pat. Off. Socy. 177, (1960), at 179-81 for Germany, at 183-84 for Holland, and at 187 for Italy.

[99] *Supra*, note 95.

[100] *Supra*, notes 4, 93.

[101] E.g., E. I. duPont de Nemours: *Patent Practices and Management*, by Robert Calvert, pp 348-55, 1950.

provements. This would require legislation of comprehensive nature, including financing, and should be based on extensive expert testimony.

4. In addition to the improved incentive structure now urgently needed the present policies require some clarification by the Congress. If the Government is to adopt a "title" policy or a modified title policy, and assert ownership of inventions financed at public expense, *some* policy for their use should be declared, whether by a Government corporation or other agency charged with promoting utilization of patents, or by declaration that Government-owned patents are dedicated to the public. Such a declaration of policy seems essential to an adoption of a national policy on the criteria which will indicate whether such inventions are, or are not, the property of the Government, and such policy would aid considerably in the formulation of the criteria themselves. The declaration of what use is to be made of exclusive patent rights acquired is a *policy issue* in considering employee inventions, as it is for contractor inventions.

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Inventors, Innovators, Compensation and the Law

Donald G. Manly

Proposed new patent legislation, patterned after West Germany's law, would not stimulate invention, but rather create new problems, according to the author.

Are U.S. corporations properly rewarding the creative spirit of inventors? Some companies, although a minority, give no special awards at all for invention which has led to the claim that this lack of reward decreases incentive and is one of the reasons for the alleged breakdown of U.S. innovation. This article will focus on the need for change, if any, and what is being done as a result of this criticism.

As a matter of definition, I will refer to invention in the legal sense and consider that an inventor is a person whose name appears on a patent. Innovation, on the other hand, is much broader and covers the total scope of creativity and effort required to bring something to the marketplace. It is important to realize that patents are not normally a goal in themselves for corporations. Research monies are allocated based on potential return to the corporation. Patents can be important to the total value and success of an innovation, but they are generally a by-product of research. A patent is a monopoly granted by the government to an inventor which allows him to prevent others from making, selling, or practicing his invention without permission (1). The patent system in the U.S. was installed because it was considered that public disclosure would benefit the total knowledge generation process and that the grant of a monopoly would permit more rapid commercialization and, therefore, public benefit. Note that the system was not installed specifically to benefit the inventor, although this might well be a consequence of it. Certainly then a very relevant question is whether financial awards to the inventor are in the public interest.

In any study of special compensation for the employed inventor, one quickly discovers that very few, if any, U.S. corporations give the employed inventor a piece of the action as a royalty or as a cash payment based on the perceived value of the invention. It is, however, also obvious that many U.S. corporations do offer cash awards for invention. These awards can vary from a nominal $100 or less on filing of a patent up to substantial cash awards of a few thousand dollars for significant inventions(9). Some technologically significant companies, give no awards at all for invention. It is claimed that a very few reward the inventor by firing him or with some other form of exploitation. These cases have led to the criticism that U.S. corporations are not properly rewarding the creative spirit of inventors. Most importantly, however, it has been suggested that this lack of reward decreases incentive and is one of the causes of the "breakdown of U.S. innovation." Therefore, there is the double-barreled charge that U.S. industry is mistreating its employed inventors and helping a collapse of innovation. These charges have fostered the consideration of Federal legislation.

The Moss Bill

If one assumes, as some have, that reward to the inventor would increase the rate of invention, it follows that this is to the public benefit. (This assumption will be examined in detail later on.) Based on this assumption, Germany began a policy that ultimately evolved (1957) into present West German law which now provides that an inventor cannot negotiate away inventions before they are made and which establishes procedures for negotiating rights for each patent with his employer. Employment agreements as we know them are not permitted under the law. This system has been adopted by a number of other countries and is a

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model for the Moss bill. This bill (Congressman Moss (D) of California) has been introduced into Congress a number of times since its initial proposal in 1969. The current version (*HR 2101*) has several key features which are summarized as:

a) "An employee is entitled to adequate compensation for an invention;" that is, the "*fair* market value" adjusted by factors associated with employer contribution to the making of the invention.

b) The compensation is to be agreed upon by the employer and employee *before* issuance of the patent but *after* the invention is made.

c) In a disagreement, the matter can be brought before an arbitration board established within the Patent Office. In the event of continued disagreement, civil suit action may follow.

d) Each employee in a joint invention must reach his own agreement with the employer.

e) The employee may renegotiate whenever there is a substantial change in the circumstances, but in no case will he be obligated to return compensation.

Although this bill has received little outward support, there is a fairly strong effort by some groups to foster some such legislation. For example, the American Chemical Society has a committee that has been studying the need for such legislation for a number of years. Hearings were held in 1973 and 1975 on the subject (2) culminating in the drafting of seven resolutions which were submitted to the Board of Directors in 1977. The first of these states:

"It is the intention of the American Chemical Society to promote the progress of the useful arts by the establishment of appropriate incentive systems for the disclosure and development of inventions. This policy *may include, but not be limited to,* improving laws that provide better residual rights for employed inventors and requiring equitable preinvention assignment agreements."

This is a seemingly innocuous statement, but if adopted it opens the door for this association to begin to push for legislation. The Institute for Electrical and Electronics Engineers (IEEE) has similar resolutions and is pushing hard for legislation to give the inventor a "piece of the action." The German law is held up as a model by both societies. Because of this activity, it is felt by this author that U.S. industrial research should begin now to face up to the problem and examine the issues.

Problems Created

One of the very significant problems with a law such as that in Germany, or as proposed by Moss, is that it singles out one cog in the innovative wheel—the inventor. In the early days of research where the inventor was a single individual often working alone, this would have been acceptable. In today's R&D world, characterized by interdisciplinary teams, many specialists, and great development expenditures, it is difficult to single out any special person for award. This was summed up well by Tyrrell (*10*) who said:

"I believe that an award system which operates in terms of only patentable inventions cannot be fair as it discriminates against other equally inventive and creative technical work which, for one reason or another, may not be within the present statutory classes of invention. Even with regard to the inventive process which leads to patentable contributions to technology, the award system unfairly emphasizes the activity of only the person who is determined under the law to be the inventor, to the detriment of his associates who may also have made significant contributions though not to the inventive act itself."

Does a cash incentive stimulate invention? If one looks at the West German system and the number of patents issued since the early 1950's, one sees a steady decline. Obviously in Germany the law has not fostered greater numbers of invention. It was predicted by Stockmair (*3*) that following an initial increase in the U.S., invention numbers then would level out again and follow much the same pattern as West Germany. It is also interesting to note that the A. D. Little/IRI study on Barriers to Innovation (*14*) referred to the need for changes in the U.S. patent system, but in no case was the lack of a cash award cited as a barrier. In fact, a study done by the Industrial Research Institute Task Force on Stimulation of Creativity and Productivity (*15*) showed that monetary reward was very low on the list of factors considered most important in stimulating creativity.

It is generally conceded that Bell Labs represents one of the top U.S. research centers in terms of excellence of work and creativity. At Bell Labs the salary treatment is intended to reward invention Tyrrell (*10*) discussed awards with a number of Bell's prolific inventors and concluded that "such people were generally motivated toward invention by the desire to find new and better solutions to current problems, that they derive their greatest pleasure by seeing their inventions come into actual practical use, that they feel amply rewarded by the personal recognition and salary treatment they were given, and that *they are doubtful they would have been more inventive if an award system had been in force.*" This is not to say that security and reward are unimportant. They are simply less important to the prolific inventor than to others. This is largely because the inventor is a marketable commodity. If he is truly creative and if, in his view, he is not treated properly by his employer, he can certainly find another company who will treat him more to his liking.

The problem of evaluating the worth of an invention is indeed a severe one. In general, market research tends to underestimate the total long-term

potential. It is also true that many innovations reach commercialization only after many years. For example, a recent study (13) of ten major innovations showed an average time span of 19.2 years from conception to realization with the shortest time for those cases studied being six years. This was also pointed out by D'Ouville at the ACS hearing when he reported on 7,460 invention disclosures made from 1956 to 1965 at Standard Oil Company (4). Evaluation of their monetary worth in 1970 was reported to be very difficult and only three had reached a million dollar class. This difficulty in evaluation and in picking the winner is the reason for the provision within the Moss bill that the employee can, in the future, renegotiate his reward.

It has been pointed out that in West Germany the number of cases where significant monetary payments are made is small enough so that the awards do not present a significant financial penalty to the company (11). The real financial penalty is in the administration of such law. The expense lies mainly in the staff required to negotiate each patent, including determining its value, and to handle the litigation resulting from disputes.

It is difficult to evaluate similar costs in the U.S. because of the dissimilarity between the U.S. and West German tax laws and cultures. In West Germany there is a significant tax incentive to use an award system. The cost to the company is virtually the same, but the employee is allowed a one-half the regular rate allowance on his income tax (18). This provides a strong incentive for cash awards in lieu of salary increases. Perhaps most revealing along the culture line is the statement made at the 1975 ACS hearing by Lieck (5). He pointed out that in Germany,

"the relationship between the employer and employee is not only in the field of invention but also in all other—nearly all other—aspects, subject to very definite laws and rules. Almost everything is regulated by laws, so that the special inventors' law is just, or can be seen, or can be deemed to be just, a part of this wider aspect of right. . .or can be seen as a part of the other laws which also regulate the relations between the employer and the employee. As I understand, in the United States you have far more a philosophy of, well, the self-made man. I do not know if the German law, as such, would be a proper part of this American philosophy. I would say that it would not fit into the whole system which you are using right now."

Other comments at these ACS open meetings indicated that the West German system is not working as well as most formal reports would imply.

With approximately 38,000 German patents issuing per year to West German citizens, about 1,000 of these have reached the Arbitration Board and a handful have reached the courts. In most cases where there is a dispute, the employee already has left the company. It can be argued that if only 1,000 cases have reached the Arbitration Board over the past few years, then the amount of conflict is extremely small. This is true on the surface for this society where the employee and employer are used to being heavily regulated. It is also a society where mobility of professionals is quite low compared to the U.S. One can only speculate that the Arbitration Board would handle significantly more cases in the U.S. where mobility is higher, where free enterprise is more the rule and where litigation is becoming more and more common-place.

The German System and Innovation

Can we determine whether the West German system is indeed leading to greater innovation than the U.S. system? Data are available from the U.S. Department of Commerce statistics (17) and an article by Henriques (12). (See Figure 1.) One of the often quoted comments based on the U.S. data is that we appear to be falling behind in our innovative character because of the much greater rate at which German citizens apply for U.S. patents. The lower lines on Figure 1 plot the number of U.S. patents issued to German citizens and the number of German patent applications made by U.S. citizens. It may be seen from this plot that the growth rates are virtually identical (6% per year) over the period of 20 years since 1955. This data refutes the argument that the U.S. is suffering in the invention race with Germany. What this data really shows is that since 1955 the world has indeed become "smaller" and that worldwide patent coverage is now being sought by most companies whether of U.S. or West German origin.

The upper lines on Figure 1 also show that the growth rate of application for West German patents and the rate of issuance of U.S. patents is essentially zero or slightly negative. The U.S. data shows a major discontinuity in 1964-5 which is attributable to major changes in U.S. Patent Office administrative procedures. In other words, the data simply do not support the basic assumption that legislation along the lines used by West Germany will stimulate invention. Marcy (16) alluded to this by stating that,

"there is no unequivocal evidence that such laws actually stimulate either the evaluation of new and useful inventions, nor their introduction into the marketplace. On the contrary, there is some evidence that they have had a reverse effect by stimulating research workers to maintain silence."

The question of large awards resulting in increased secrecy and loss of teamwork has been one of the major reasons for opposition to such legislation. Gansser (6), Morle (7) and others have addressed this topic. Gansser also poses the issue of how extra compensation for a certain small group or category of people who happen to do research will support the overall research activities of a company. Will anyone wish to undertake analytical chemistry

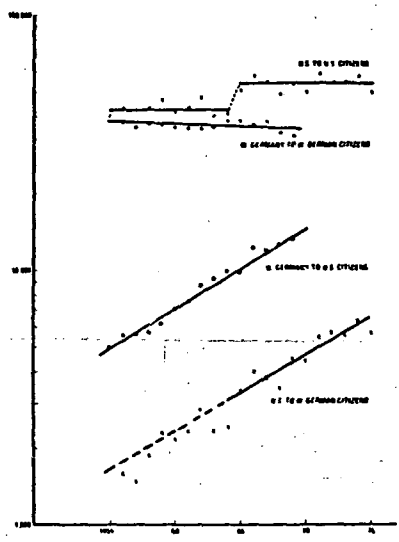

Figure 1 Patents issued by W. Germany and U.S.

or work in production, or do short-range problem solving research under such a system?

There seems to be little doubt that reward for outstanding performance via bonuses is accepted by much of industry. This type of award can reward the whole innovative team for performance as measured by economic success. It is this author's opinion that such rewards might be more extensively used and that all companies should have some form of bonus for exceptional performance but not just for inventors. With a system only for inventors, an administrative nightmare is a very distinct possibility.

In the United Kingdom a study of the West German system by the Banks Committee carefully considered the argument that employees should have a statutory right to benefit from any inventions they make in the course of their employment. They concluded that, although inventive activity should be encouraged to the fullest and employee's inventive efforts should be recognized and rewarded by their employers, the disadvantages of a statutory award scheme outweighed any foreseeable advantages (7). This seems to be a valid conclusion for the United States as well.

The need for a West German system or a Moss bill in the U.S. is indeed questionable. Callis (8) said,

"A Federal act in this area will merely provide the incompetent supervisor with another document to which he can point with pride as he continues to mismanage the talent under his trust. A Federal act such as the Moss bill would provide a good deal of employment for the attorneys of litigants who feel they have been cheated, but it will not further innovation or speed development, in my opinion. In fact, I feel that by distracting those actually occupied in the work, it may well have the very opposite effect."

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STATE LEGISLATION GOVERNING OWNERSHIP RIGHTS IN INVENTIONS UNDER EMPLOYEE INVENTION AGREEMENTS**

Introduction

In 1979, both Washington and California enacted legislation aimed at curtailing the scope of invention assignment provisions that an employer can obtain from employees under employee invention agreements, or so-called "pre-invention assignment" agreements. Two years previously, Minnesota enacted similar legislation which was heraided as the "Freedom To Create" law. Prior to this legislation, the employer and employee were free to determine their respective rights in inventions, by contract, in the form of employee invention agreements. While there is no standard form employee invention agreement, most such agreements at least provide that inventions which are conceived or made by the employee during the term of employment, and which relate to company "business," shall be assigned by the employee to the employer.[1] Others are made applicable to inventions which result from the employee's "work."[2]

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[1] Employee shall disclose promptly to Company or its nominee any and all inventions, discoveries and improvements, whether patentable or not, conceived or made by Employee during the period of employment and *related to the business of Company*, and assigns and agrees to assign all his interest therein to Company or its nominee (Emphasis mine). Milgrim, *Trade Secrets*, Appendix C, Form A.

[2] For example, the employee invention agreement currently used by The Boeing Company applies to "all inventions conceived by Employee, either solely or with others, during Employee's employment by Boring, whether or not during regular working hours, which relate to any subject matter with which Employee's work with Boeing is or may be concerned or which relate to the business carried on by *Boeing*." (Emphasis mine)

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or may extend to "all" inventions made by the employee during the term of employment.

For purposes of analyzing the common law and the state legislation, consider three types of employment:

a. Specific inventive
b. General inventive
c. Non-inventive

"Specific inventive" employment applies to an employee who is either (1) hired to invent a specific invention or (2) is assigned the task of making a specific invention or improvement to existing technology. In both cases, a specific invention or end result is contemplated. Specific inventive employment applies to the class of employees who are hired or employed to "invent," including research scientists, design engineers, and other employees whose "work" involves specific inventive activity. Inventions which result from specific inventive employment are within the scope of the employee's "work" and relate to the business or research of the employer.

"General inventive" employment applies to the same class of employees who are subject to specific inventive employment, except that no specific invention or end result is contemplated. General research or design work usually is involved and, in many instances, the employee volunteers, or is encouraged by the employer, to pursue his or her creative instincts, even though they may diverge from assigned work. Inventions which result from general inventive employment therefore fall outside the scope of the employee's "work" since no specific assignment is involved, and may or may not relate to the business or research of the employer.

"Non-inventive" employment, as the term implies, does not involve any expectation of inventive activity. Shop or manufacturing employees, as well as non-technical employees, fall into this category.

The determination of ownership rights in inventions depends upon (1) the nature and scope of employment

(whether specific inventive, general inventive or non-inventive employment) and (2) the field of the employer's business or research. The following discussion will trace the evolution of these principles through a three-tier structure—from the common law, to the contractual arrangements which have supplanted it, and finally into the legislation which now controls these arrangements in three states. Throughout this discussion, ownership rights associated with general inventive employment will receive increasing attention.

Common Law

The common law determines ownership rights in inventions, in the absence of an express agreement between the employer and employee. Under the common law, the employer owns any invention which results from specific inventive employment, whereas the employee owns any invention which results from general or non-inventive employment. Employee ownership, however, may be subject to a "shop right" in favor of the employer if the inventive activity involved use of the time or facilities of the employer.[5]

Interwoven in this common law doctrine is the concept that the voluntary exercise of inventive activity by those employees employed or hired to "invent" will remove any resulting invention from the province of employer ownership if the invention falls outside the scope of assigned "work" (i.e. to the extent it arises from general inventive employment). In 1890, the United States Supreme Court began to grapple with this issue in *Solomons v. United States*.[6] The Court enunciated the basic rule that:

> If one is employed to devise or perfect an instrument, or a means for accomplishing a prescribed result, he cannot, after successfully accomplishing the work for which he was employed, plead title thereto as against his employer. That which he has been

[5] United States v. Dubilier Condenser Corp., infra. See also, Standard Parts v. Peck, 264 U.S. 52 (1924) (citing Solomons v. United States, infra, in support of its holding).
[6] 137 U.S. 342 (1890).

employed and paid to accomplish becomes, when accomplished, the property of his employer. Whatever rights as an individual he may have had in and to his inventive powers, and that which they are able to accomplish, he has sold in advance to his employer. So, also, when one is in the employ of another in a certain line of work, and devises an improved method or instrument for doing that work, and uses the property of his employer and the services of other employees to develop and put in practicable form his invention, and explicitly assents to the use by his employer of such invention, a jury, or a court, trying the facts, is warranted in finding that he has so far recognized the obligations of services flowing from his employment and benefits resulting from his use of the property, and the assistance of the co-employees, of his employer, as to have given to such employer an irrevocable license to use such invention. (Emphasis mine.)

Implicit in the concept of "employed to invent," as emphasized in the foregoing quotation, is that the employee is employed by the employer for the purpose of and assigned to the task of inventing a specific invention which falls within the scope of the employer's business or research.

In 1928, the Fourth Circuit, in *Houghton v. United States*,[8] scrutinized the nature and scope of the employment relation in accordance with the common law doctrine and admonished us not to give the concept of "employment" an overly narrow interpretation when determining employer-employee ownership rights in inventions. The employee in *Houghton* was a chemist who, after being hired in a non-inventive capacity, was assigned the task of developing a fumigant gas combined with an irritant gas with which the fumigant gas could be detected. The Court rejected the argument that, since the employee was not "hired to invent," the invention belonged to him, not his employer:

> The right of the employer to the invention or discovery of the employee depends, not upon the terms of the original contract of hiring, but upon the nature of the service in which the employee is engaged at the time he makes the discovery or invention, and

[8] 23 F. 2nd 396 (4th Cir. 1928) (hereafter referred to as "*Houghton*").

arises, not out of the terms of the contract of hiring, but out of the duty which the employee owes to his employer with respect to the service in which he is engaged. It matters not in what capacity the employee may originally have been hired, *if he be set to experimenting with the view of making an invention*, and accepts pay for such, it is his duty to disclose to his employer what he discovers in making the experiments, and what he accomplishes by the experiments belongs to the employer. During the period that he is so engaged, he is "employed to invent," and the results of his efforts at inventions belong to his employer in the same way as would the product of his efforts in any other direction. (Emphasis mine)

The emphasized language in the above quotation implies that one "employed to invent" will be given specific instructions by the employer as to what is to be invented, thereby creating a specific inventive employment relation. This ignores the fact that many highly skilled employees who are "employed to invent" will, on their own initiative, make inventions which fall outside the scope of their immediate assigned duties, but which relate to and will benefit the employer's business. Had the Court in *Houghton* carried its admonishment to a logical conclusion, it would have realized that, for such skilled employees, the nature and scope of employment can and often does extend beyond assigned duties to generalized inventive activity. The court in *Houghton* thus did not address the issue of whether general inventive employment could yield assignable inventions. This is precisely the issue that faced the United States Supreme Court five years later in *United States v. Dubilier Condenser Corp.*[6]

In *Dubilier*, two employees of the United States Bureau of Standards were engaged in general research and laboratory work relating to airplane radios. Both employees were assigned to the radio section of the Bureau's electrical division. While so employed, they developed several inventions in the radio and electronics field which fell outside the scope of their work, and filed United States patent applications which were licensed

[6] 289 U.S. 178 (1933) (hereinafter referred to as "*Dubilier*").

exclusively to the respondent. The inventive activity from which these inventions arose was undertaken voluntarily, in at least one instance under the impetus of "scientific curiosity". The Court ruled in favor of the employees by refusing to order the assignment of the applications which was sought by the Government.

Accordingly, *Dubilier* is often cited for the proposition that an invention which is within the field of the employer's business, but which is made voluntarily by an employee outside the scope of assigned work, belongs to the employee, not the employer. This is misleading, however, unless one understands that the *Dubilier* ruling is based upon the factual conclusion that the employees were neither employed to invent, nor assigned the task of inventing.[1] The majority opinion therefore avoids speaking to the real issue of whether "employment" of certain employees "employed to invent" could be of sufficient scope to include general inventive activity beyond assigned duties (i.e. general inventive employment).

The dissenting opinion by Justice Stone in *Dubilier*, in which Justices Cardozo and Hughes concur, specifically addresses this issue, and concludes that inventions arising from general inventive employment should belong to the employer, not the employee:

> Wherever the employee's duties involve the exercise of inventive powers, the employer is entitled to an assignment of the patent on any invention made in the scope of the general employment.

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[1] "In this connection it is to be remembered that the written evidence of their employment does not mention research, much less invention; that never was there a word said to either of them, prior to their discoveries, concerning invention or patents or their duties or obligations respecting those matters; that, as shown by the records of the Patent Office, employees of the Bureau of Standards and other departments had while so employed received numerous patents and enjoyed the exclusive rights obtained as against all private persons without let or hindrance from the government. In no proper sense may it be said that the contract of employment contemplated invention; everything that Duncmore and Lowell knew negatived the theory that they were employed to invent; they knew, on the contrary, that the past and then present practice was that the employees of the Bureau were allowed to take patents on their inventions and have the benefits thereby conferred save as to one by the United States. The circumstances preclude the implication of any agreement to assign their inventions or patents." 289 U.S. at 194-195.

The dissenters in *Dubilier* thus viewed general employment for research work (i.e. general inventive employment) as synonymous with employment to invent a specifically assigned invention (i.e. specific inventive employment). Consequently, the dissenters in *Dubilier* would have ordered an assignment of the applications to the Government. The facts of the case, however, would appear to restrict application of the dissenting opinion to a situation in which the invention relates to the business or field of endeavor of the employer. (The dissenters considered the Bureau to be involved in general research work and, in particular, radio research.)

These cases also are exemplary of the spectrum within which the ownership rights of the employer and employee must be determined under common law doctrine. At the opposite ends of the spectrum, the results reached appear fair and reasonable. At one end, the employee who engages in inventive activity entirely independently of his job is entitled to lay claim to the inventions and patents that result. Likewise, at the other end, an employer who employs an employee for the specific purpose of engaging in a given inventive activity should be entitled to the resulting inventions and patents. In between, however, the doctrine can result in considerable arbitrariness,[8] depending upon whether the concept of "employment" is given a broad or a narrow interpretation. Consequently, the common law doctrine often has proven to be unsatisfactory to both employers and employees and has, to a considerable extent, been supplanted by contractual arrangements.[9]

Employee Invention Agreements

These contractual arrangements take the form of employee invention agreements which at least include an assignment provision according to which the employee agrees to assign certain inventions to the employer. At

[8] Neumeyer, "The Employed Inventor in the United States," Massachusetts Institute of Technology, 1971, p.42.
[9] Neumeyer, supra, p.42.

a general rule, these provisions are more favorable to the employer than the common law doctrine. Under most agreements, the assignment provision applies to any invention which results from general inventive employment, provided the invention relates to the business of the employer. This of course is consistent with the dissenting opinion in *Dubilier*. Others apply to inventions made in the actual course of research employment, extend to all inventions made with help from company facilities, extend to inventions that are not in the area of the employer's interest, or extend to inventions made entirely independently of the employee's work if they relate to the employer's business.[10] Inequalities in bargaining power, however, often preclude an employee from challenging the scope of such provisions and, in some instances, acceptance of such provisions has been made a condition of employment.

Federal Legislation

Concerns for the rights of employees, coupled with the increasing national fear over the last decade that the United States is rapidly losing technological leadership, triggered a number of legislative attempts at the federal level which were aimed at broadening the employee's invention ownership rights.[11] The most widely publicized attempt was the Moss bill,[12] which sought to establish an invention compensation scheme modeled after the German invention law.[13] The Moss bill met with heavy

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[10] Neumeyer, *supra* p.44.

[11] See Orkin, "The Legal Rights of the Employed Inventor," 56 JPOS 648 (Part I) and 719 (Part II) 1974; Sutton, "Employed Inventor: The Case for the Moss Bill," Univ. of San Francisco Law Review, Vol. 8, Spring 1974, pp. 557-583; and Laude, "Employee Inventions According to HR 1483," 54 JPOS 413 (1972). For a general discussion of pre-invention assignment provisions, and their impact on employee rights, see Allen, "Invention Facts: Between the Lines" IEEE Spectrum, March 1978; and Parsons, "U.S. Lags in Patent Law Reform," IEEE Spectrum, March 1978.

[12] HR 15512, 91st Congress, 1st Session; and HR 1483, 92nd Congress, 1st Session.

[13] See Kunzevich, "Employee Invention Under German Law," 54 JPOS 807 (1972).

resistance on the basis that it was such a drastic departure from the *status quo* that it was "hopelessly unworkable."[14] While this viewpoint may be somewhat severe in light of the recent enactment of corresponding legislation in Britain,[15] there appears to be little or no likelihood of any federal legislation in this field in the near future.

State Legislation

The state legislation in Minnesota, Washington and California was spawned by concerns similar to those behind the federal legislation, except the mechanism for broadening employee ownership rights in inventions is founded upon the state law governing contractual arrangements between employer and employee. The state legislation establishes state public policies for controlling operation of invention assignment provisions contained in employee invention agreements. To the extent any such provision violates this state public policy, it is void and unenforceable. That is, the "doors to the courthouse" are closed to any employer who desires to assert such a provision against an employee in a manner which violates the state public policy. To the extent any such assignment provision operates within the metes and bounds of this public policy, however, it will remain in effect and enforceable. For example, operation of the overly broad assignment provision applicable to "all" inventions will be curtailed so that only permissible as-

[14] Milgrim, supra 5.02(4), note 61.1, p.5-37.

[15] The determination of employer-employee rights which appears in Section 39 British Patents Act of 1977 is a codification of the common law. In brief, this determination is as follows. A "service invention" belonging to the employer is one made in the course of the normal duties of the employee; or secondly, outside his normal duties but during the course of duties specifically assigned to him. In both cases the circumstances must be such that an invention might reasonably be expected to result from the carrying out of such duties. Thirdly (and likely to cause most problems in practice), inventions made in the course of the employee's duties, and because of the nature of the duties and the particular responsibilities arising therefrom, he had a special obligation to further the interests of the undertaking. Russell, "Employee Invention," New Law Journal, Vol. 128, August 17, 1978, pp. 800-802.

signments (i.e. those consistent with state public policy) will result. The legislation does not affect common law rights or shop rights.

The legislation draws the metes and bounds of state public policy as follows. The employee obtains ownership rights in any invention developed entirely on an employee's own time, without use of any property of the employer, *unless* there is a nexus between the invention and either the type of employment involved or the business of the employer. If such a nexus is found, then the employer may obtain the ownership rights by assignment. Further, if the invention was developed on the employer's time, or through use of employer property, the employer may obtain the ownership rights, regardless of any such nexus. It should be remembered, however, that the mechanism by which the employer obtains ownership rights is contractually established by the employee invention agreement. In the absence of such an agreement, the common law doctrine applies.

Taken literally, the nexus required by the legislation is less in Washington than in Minnesota and California. As a consequence, the scope of permissible ownership rights of Washington employers appears to be greater than those of Minnesota or California employers. In Washington, inventions resulting from general inventive employment and specific inventive employment are assignable if they relate to the business of the employer. In Minnesota and California, however, only inventions resulting from specific inventive employment are assignable if they relate to the business of the employer. Legislative history will of course be considered when these issues reach the courts and may support a contrary interpretation, as discussed below.

The legislation in all three states also does not appear to apply to trade secret information or forms of intellectual property other than "inventions", although an employer should not be able to circumvent its effects merely by characterising an "invention" as trade secret information. The legislation does not define the term

"invention", and does not specifically spell out whether it is applicable to improvements, trade secrets, ideas or non-patentable discoveries. Since the legislation also refers to the term "trade secrets information", however, the term "inventions" should be interpreted to cover only those inventions, discoveries or improvements which satisfy the higher standards of novelty and level of inventive skill traditionally associated with patentable subject matter. Thus, if the subject matter in question cannot satisfy these standards, but otherwise qualifies as "trade secret information" in the sense that it is not generally known outside the employer, any applicable assignment provisions are outside the scope of the legislation. Nonetheless, a true "invention" which the employer elects to retain as a trade secret should be within the scope of the legislation. As will now be apparent, the form of protection applied to the invention, whether patent or trade secret, should not be determinative of whether the subject matter is an "invention" subject to the legislation.

Finally, the legislation in all three states requires that the employer notify employees of their ownership rights, and protects employees against loss of employment during disputes over these rights. And, while the legislation refers to "employment" agreements, it should be kept in mind that it typically applies to "employee invention agreements."[16] Additional similarities and differences concerning the legislation will be identified in the discussion to follow.

The Minnesota Act

The Minnesota Act[17] seems to have been an attempt to curtail the scope of overly broad employer/employee

[16] Unlike an employment agreement, an employee invention agreement does not contain terms and conditions governing employment. Instead, it only sets forth the rights and obligations of the parties with respect to inventions and, oftentimes, trade secrets or proprietary information. It therefore cannot be construed as requiring continued employment, as would a true "employment" agreement.

[17] MSA Sec. 181.78. Effective January 1, 1978. The entire Minnesota Act is set forth as Appendix A.

agreements applicable to "all" inventions and, in so doing, to protect the rights of employees to those inventions which, under common law doctrine, were at or near the end of the spectrum of employer-employee rights traditionally associated with employee ownership. Thus, the Minnesota Act was supposed to encourage innovation outside the field of the employer's business and, as a result, stimulate the growth of "spin-off" industries within the state. The Minnesota Act therefore was a far less drastic approach to the subject of employer-employee rights than the earlier Moss bill and other federal legislative proposals.

Subdivision 1 of the Minnesota ("Freedom To Create") Act reads:

> Any provision in an employment agreement which provides that an employee shall assign or offer to assign any of his rights in an invention to his employer shall not apply to an invention for which no equipment, supplies, facility or trade secret information of the employer was used and which was developed entirely on the employee's own time, and (1) which does not relate (a) directly to the business of the employer or (b) to the employer's actual or demonstrably anticipated research or development, or (2) which does not result from any work performed by the employee for the employer. Any provision which purports to apply to such an invention is to that extent against the public policy of this state and is to that extent void and unenforceable. (Emphasis mine) [10]

The emphasized "or" marks the critical point at which the Minnesota Act must be analyzed. Taken literally, assignment of any invention which an employee develops entirely on his own time, without any equipment, supplies, facility, or trade secret information of the employer is against the public policy laid down by the Minnesota Act, provided that at least one of the nexus factors set forth in subparagraphs 1 and 2 is missing. Such an invention, however, is assignable if *both* of these nexus factors are found. Employee "work" is

[10] The Minnesota Act includes two additional subdivisions relating to (1) operation of the Act as a condition of employment or continuing employment, and (2) notification of employees. The substance of these will be discussed with reference to the Washington Act.

the dominant nexus factor, since any invention which results from the employee's work should relate to the business or R&D of the employer. The converse of course is not true, as in the case of inventions resulting from general inventive employment. Based upon the literal interpretation of the Minnesota Act, therefore, only inventions resulting from specific inventive employment appear to be assignable, provided they relate to the business or R&D of the employer. As will now be apparent, a literal interpretation of the Minnesota Act leads to the conclusion that any invention which arises from general invention employment is not assignable, despite the fact that the invention may relate to the employer's business or R&D activities. It is at this point that the Washington Act on its face departs from the Minnesota and California Acts. If the "or" emphasized above were changed to "and," however, then the Washington Act would parallel the Minnesota and California Acts.

The legislative history of the Minnesota Act, however, may reveal an intent to permit assignment of inventions which result from general inventive employment, provided they relate to the business or R&D of the employer. The bill upon which the Minnesota Act was passed originally referred only to the "work project" of the employee and did not include business of the employer as a factor pertaining to the required nexus, supra. While the bill was pending, "work project" was changed to "work" (a somewhat broader term than "work project"), and business or R&D of the employer was added. Both of these amendments clearly affected the required nexus; yet, according to a literal reading of the Minnesota Act, the employee's work is the dominant nexus factor. To give significance to these amendments, it is possible to infer that the underlying intent was to establish two nexus factors which, in the alternative, could form a basis for the employer obtaining ownership rights by assignment. This of course could support an interpretation that the drafters of the Minnesota Act

intended to lessen the required nexus sufficiently to permit assignment of inventions which arise from general inventive employment, provided they relate to the business or R&D of the employer. If so, it may be fair to assume that the drafters of the Minnesota Act actually intended the "or" emphasized above to read "and". Upon considering this legislative history, a court may well contrue the Minnesota Act accordingly.

The Washington Act

The Washington Act[10] is based upon Senate Bill No. 2420 (SB 2420), which was originally introduced in the Washington State Senate on January 25, 1979. SB 2420, as introduced, was identical to the by-then enacted Minnesota Act and, in fact, was coined as the Washington "Freedom To Create" Bill. In brief, SB 2420 contained provisions directed to invention assignment, labor relations, and notice, all of which were counterparts to the Minnesota Act. A somewhat different bill was introduced in the Washington State House on February 2, 1979, as House Bill No. 725 (HB 725). Both bills sought to amend Chapter 49.44 RCW, entitled "Violations - Prohibited Practices." This chapter deals with certain employer-employee labor offenses which, with the exception of age discrimination, are misdemeanors or gross misdemeanors.

Invention Assignment

HB 725

Section 1 of HB 725, as originally presented, provided that:

> (1) Any provision in an employment agreement that requires an employee to assign any of the employee's rights in an invention to his employer does not apply to an invention:
>
> (a) For which no equipment, supplies, facilities, or trade secret information of the employer was used;

[10] 49.44 RCW, Sections 2 and 3. Effective September 2, 1979. The entire Washington Act is set forth as Appendix B.

(b) Which was developed entirely on the employee's own time;

(c) Which does not relate to the employer's *actual or clearly anticipated research or development*; and

(d) Which does not result from any work performed by the employee for the employer.

To the extent that any provision in the employment agreement purports to apply to these inventions, the provision is against the public policy of this state and is void and unenforceable.[20] (Emphasis mine).

The conditions set forth in subparagraphs (a) - (d) correspond to the conditions set forth in the Minnesota Act, with the exception that HB 725 omits any reference to "business of the employer."[21] HB 725 therefore created the possibility that title to an invention which relates to company business would be retained by an employee, unless the company is, or is about to become, actively involved in R&D efforts with respect to the subject matter of the invention. This posed a risk that important inventions relating to those company products not involved with R&D, for example, would be owned by the employee. While it could be argued that any large company is in fact always involved in R&D in all product areas, the truth of the matter is that this is not always the case, especially when viewed over a prolonged time period. Often, certain divisions or subsidiaries of such a company experience fluctuations in R&D funding levels, especially as R&D funds are siphoned off for other development efforts within other divisions or subsidiaries. This is particularly aggravated in the case of those divisions susceptible to funding fluctuations from government sponsored R&D. Indeed, it is common for funding of certain R&D work to be withdrawn altogether from certain divisions for indefinite periods of time. In these instances, the R&D work comes to a halt, of course,

[20] HB 725 included two additional sections similar to those referred to in note 16, supra.

[21] Compare subdivision 1, subparagraph (1) (b) of the Minnesota Act.

and quite often no plans are made to reinstate it at a later date.

In the end, HB 725 was amended to make it identical with SB 2420. It is interesting to note, however, that an interim amendment to HB 725 deleted subparagraph (d) of Section 1. As so amended, inventions which fall outside the scope of the employee's work could be subject to assignment, provided that they relate to actual or clearly anticipated R&D.

SB 2420 and the resulting Act.

As mentioned above, SB 2420, as originally presented, was identical to the Minnesota Act and therefore is not reproduced here. The key provision of the Washington Act as passed on the basis of SB 2420, however, differs from the Minnesota Act, as follows:

> A provision in an employment agreement which provides that an employee shall assign or offer to assign any of the employee's rights in an invention to the employer does not apply to an invention for which no equipment, supplies, facilities, or trade secret information of the employer was used and which was developed entirely on the employee's own time, *unless (a) the invention relates* (i) *directly to the business of the employer*, or (ii) to the employer's actual or demonstrably anticipated research or development, or *(b) the invention results* from any work performed by the employee for the employer. Any provision which purports to apply to such an invention is to that extent against the public policy of this state and is to that extent void and unenforceable. (New matter emphasized)

The Washington Act thus establishes two conditions which, in the alternative, will enable the employer to acquire title to an employee invention. The Washington Act prohibits assignment of any invention for which no equipment, supplies, facilities, or trade secret information of the employer was used and which was developed entirely on the employee's own time, *unless* the invention relates to company business or R&D, *or* results from work performed by the employee. In the situation presented by *Dubilier* supra, therefore, the Washington Act

would allow the employer to acquire title to inventions outside the scope of specifically assigned duties but within the field of the employer's business. That is, general inventive employment can, under the Washington Act, yield assignable inventions. Nonetheless, the Washington Act restricts operation of those overly broad employment agreements that seek assignment of *all* employee inventions.

Like the Minnesota Act, the Washington Act does not differentiate between classes or types of employees and therefore could condone an overly broad assignment provision applicable to unskilled employees not "employed to invent" (i.e. those employees subject to non-inventive employment). For example, the Washington Act could permit assignment of an invention made by a floor sweeper entirely on his own time, without use of company resources, where the invention relates directly to company business. This result, of course, is contrary to that advocated by either the majority or dissenting opinions in *Dubilier*, or to that reached under the common law doctrine. To this extent, the Washington Act, unlike the Minnesota Act, tips the balance of the equities in favor of the employer. As a practical matter, however, this should not occur. Most large corporate employers do not obtain employment agreements of the type under discussion with respect to such unskilled employees. Moreover, in many cases, such employees are subject to collective bargaining agreements which determine employer-employee rights in inventions.[22]

The Washington Act includes two additional subsections, both of which originated with the Minnesota Act. The first is a labor relations provision relating to conditions of employment. The second subsection is merely a notice provision.

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[22] Collective bargaining agreements often provide for employee ownership of inventions, subject to a shop-right. See Neumeyer, *supra*, Chapter 4, pp. 149 et seq.

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Labor Relations

The labor relations provision[25] of the Washington Act received considerable attention from a principal proponent of the legislation, the Seattle Professional Engineering Employees Association (SPEEA).[26] SPEEA sought to supplement protection afforded by their collective bargaining agreement with legislative protection afforded by this provision. In public testimony before the Senate Labor Committee, SPEEA argued that the determination of employer-employee rights ought to be removed from the work place so that employers could not threaten the employee with loss of job, either during pre-employment or employment. Since a pre-employment contract is not a subject of mandatory bargaining, SPEEA supported the legislation as a means of extending protection against such threats to the pre-employment stage.

Notice

The notice provision[27] of the Washington Act is directed at employees who sign agreements in the future. It requires the employer to give written notification to the employee at the time the agreement is signed as to those inventions which are not subject to assignment. The notice provision does not apply to those employees who signed agreements before the Act went into effect.

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[25] An employer shall not require a provision made void and unenforcable by subsection (1) of this section as a *condition of employment or continuing employment*. (Emphasis mine).

[26] SPEEA is a labor organization that represents engineers and technical employees in the Puget Sound area. SPEEA has a collective bargaining agreement with The Boeing Company.

[27] If an employment agreement entered into *after* the effective date of this act contains a provision requiring the employee to assign any of the employee's rights in any invention to the employer, the employer must also, at the time the agreement is made, provide a *written* notification to the employee that the agreement does not apply to an invention (within the scope of the Act). (Emphasis mine).

Procedure

A new provision[20] was added to SB 2430 mid-way through the legislative session and ultimately appeared in the Washington Act. This new provision creates a presumption that inventions which relate to company business or R&D, or which result from work performed by the employee, belong to the employer. To overcome this presumption, the employee has the burden of proving that no equipment, supplies, facilities, or trade secret information of the employer was used, and that the invention was developed entirely on the employee's own time. Even if this is the case, however, the employer still can acquire title to the invention under an appropriate assignment provision if the invention relates directly to the business of the employer or to the employer's R&D, or if the invention results from work performed by the employee. It is anticipated that the burden of proof imposed upon the employee by this provision will be formidable, at least as applied to those skilled employees "employed to invent." The rationale for imposing this burden on the employee (instead of the employer) is that such employees enter employment with the understanding that the employer will, under certain circumstances, own resulting inventions. In return, the employee is given access to trade secrets and confidential information of the employer which, in the absence of such employment, the employee could not otherwise obtain.

Additionally, under the new provision mentioned above, the employee is obligated to disclose inventions for purposes of determining employer or employee rights. The disclosure obligation therefore prevents an

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[20] Even though the employee meets the burden of proving the conditions specified in section 1 of this act, the employee shall, at the time of employment or thereafter, disclose any inventions being developed by the employee, for the purposes of determining employer or employee rights. The employer or the employee may disclose such inventions to the Department of Employment Security, and the department shall maintain a record of such disclosures for a minimum of five years. (Emphasis mine).

employee from making the initial determination as to whether or not the invention is subject to assignment. To protect the possible trade secret status of an invention which belongs to the employee, the employee has the right to disclose inventions to the Washington State Department of Employment Security. Although no cases have yet arisen in which an employee has made such a disclosure, it is anticipated that the agency will, if needed, adopt reasonable regulations concerning the confidentiality and handling of such disclosures.

The California Act

The provisions of the California Act[37] correspond to the assignment provisions of the Minnesota Act; the condition of employment provisions of the Minnesota and Washington Acts; and the burden of proof provisions of the Washington Act. The California Act differs in two respects. First, it authorizes provisions that subordinate the title rights of the employee to those of the United States arising from contracts between the employer and the United States. Second, it authorizes provisions requiring disclosure of inventions in confidence to the employer, provided the employer maintains a review process for determining ownership. While these aspects of the California Act certainly bear upon the issue of permissible employment agreement provisions, they do not alter the basic delineation of assignable vs. non-assignable inventions.

The legislative history of the California Act contains an interesting discussion of the meaning of the term "employer" which, as will now be apparent, is not defined in any of the three Acts in question. While AB 474 (the bill upon which the California Act was passed) was pending, its author submitted the following statement to the California Assembly and Senate:

[37] Article 3.5, Chapter 2 of Division 3, California Labor Code. Signed by Governor Brown on September 26, 1979. The entire California Act is set forth as Appendix C.

AB 474 provides that where an employee develops an invention on his or her own time without any use of equipment, supplies, facility, trade secret information or other assistance of the employer and where the invention does not relate directly to the business or the demonstrably anticipated research and development of the employer, that invention belongs solely to the employee regardless of any employment agreement to the contrary.

The problem of interpretation concerns the definition of the term employer as used in the context of this proposed statute. A person employed by a conglomerate corporation having multiple divisions, affiliates or subsidiaries may find that his or her employer's "business" is so varied and far-reaching that any inventions, no matter how far afield of the concern of that employee's own division, affiliate or subsidiary, relates to the business or research and development of the parent corporation. Such an interpretation of the term employer frustrates the obvious intent of AB 474 that otherwise independent inventions of the employee should belong solely to that employee.

In order to ensure that the patent rights of employees do not fluctuate wildly depending upon the market position of an employee's remote parent corporation, *it is necessary to declare as the legislative intent of AB 474 that in a corporation having multiple divisions, affiliates, subsidiaries, profit centers or companies, the term employee (sic) as used in AB 474 shall relate only to the division, affiliate, subsidiary, profit center, or company (whichever unit is smallest) rather than to the parent corporation.* (Emphasis mine)

The statement just quoted would narrow the scope of assignable inventions by restricting the scope of the "employer" and, hence, "business" of the employer. Thus, an invention made by an employee of one division of a multi-divisional corporate entity would be assignable only if it relates to the business of that division. If not, assignment would be prohibited, even though it may relate to the business of another division of the same corporate entity.

This ignores several critical facts which, in my opinion, require that the "employer" be considered to encompass the corporate entity as a whole. The parties to the employee invention agreements which are now governed by the state public policy laid down by the California Act typically are the employee and the cor-

porate entity as a whole, not the employee and the particular division to which the employee is assigned at the time the agreement is signed. While the corporate entity could be considered as acting through a particular division in order to conduct business, the entity as a whole is bound by the employee invention agreement. To restrict the scope of "employer" to a "unit" less than the entity which is bound by the agreement would materially alter the contractual relationship between the parties. From a practical standpoint, moreover, the employee of one division often has knowledge or should have knowledge of the business carried on by another division, especially when inter-divisional transfers or cooperative efforts are prevelant. To the extent the invention is derived from or based upon such knowledge, it ought to be assignable to the employer.

The statement quoted above also sheds light upon the legislative intent of whether inventions arising from general inventive employment are assignable, despite a literal interpretation to the contrary, as discussed supra, with reference to the Minnesota Act. The "business" of the employer is emphasized as if it were the dominate nexus factor. In fact, "work" of the employee is not mentioned at all in this context. It is therefore reasonable to conclude that the drafters of the California Act intended to permit assignment of an invention which relates to the "business" of the employer, opening up the possibility that the California Act also may be interpreted as providing that general inventive employment may yield assignable inventions.

Operation of the Acts

Having described and outlined the Minnesota, Washington and California Acts, consider the following hypothetical:

Smith is a design engineer employed by the XYZ Company, a multi-division corporation in which one division (the Airplane Division) is engaged in the business

of manufacturing and selling aircraft. Another division of the XYZ Company (the Boat Division) is engaged in the business of manufacturing and selling boats. At the time of being hired by XYZ Company, Smith signed a standard form employee agreement which provided that Smith would assign to XYZ Company all inventions conceived by Smith, either solely or with others, during the term of his employment.

1. While assigned to the flap design group of the Airplane Division, Smith is given the task of developing a flap for a new commercial airplane in accordance with specific design parameters. Using company resources, Mr. Smith invents this flap on company time.

2. Smith is a persistent inventor. One weekend while working in his garage and without using any company equipment, supplies, facilities, or trade secret information, Smith conceives a new landing gear for use with the flap he designed.

3. Smith likes to sail for a hobby. While sailing after work the following week, and without use of any company equipment, supplies, facilities, or trade secret information, he conceives a hull design for boats.

4. Smith has a background in computer science. The next night, while watching television at home, Smith writes a computer program for a home video game, again without use of any company equipment, supplies, facilities, or trade secret information.

Invention 1 belongs to the XYZ Company under the Minnesota, Washington, and California Acts. This invention was developed using company resources and results from work performed by Smith for XYZ Company. Further, it relates directly to business of the XYZ Company. This result is consistent with the traditional common law doctrine based upon specifically assigned duties.

Invention 2 clearly belongs to XYZ Company under the Washington Act because it relates directly to company business, and perhaps to actual R&D. There is room for argument as to whether the invention results from his "work," depending upon whether "work" is

viewed broadly or narrowly (i.e. in the sense of general inventive employment or specific inventive employment). To this extent, the results reached under the Minnesota and California Acts may vary. Since there is a nexus between his assigned work on flaps and the new landing gear, however, a court probably would rule in favor of the employer on the basis that the invention results from his specifically assigned duties. In California, however, Smith would have the burden of proving that he developed the landing gear without use of company supplies, equipment, facilities, or trade secret information.

Invention 3 marks the point at which the Washington Act significantly departs from the Minnesota and California Acts in a literal sense. Under the Washington Act, Invention 3 belongs to XYZ Company because it relates directly to the business of XYZ Company, as carried on by the Boat Division. This is so even though Smith satisfies his burden of proof. Under the Minnesota and California Acts, however, the assignment provision appears to be void and unenforceable with respect to Invention 3, since Invention 3 does not result from Smith's work.

Invention 4 belongs to Smith under all three Acts. It neither relates to the business or R&D of XYZ Company, nor results from Smith's work. Again, as in the case of Invention 1, the result is consistent with the common law doctrine. In Washington and California, however, Smith would have the burden of proving that Invention 4 was developed entirely on his own time, without use of company equipment, supplies, facilities, or trade secret information. In California and Washington, moreover, XYZ Company could require disclosure of Invention 4 for the purpose of determining ownership rights.

Summary

Under the Washington Act, inventions resulting from both specific inventive employment and general inventive employment are assignable if they relate to the business of research of the employer. Under the Minnesota

Act and the California Act, inventions resulting from specific inventive employment also are assignable if they relate to the business or research of the employer, but inventions resulting from general inventive employment are not assignable. Legislative history may provide a basis for interpreting the Minnesota Act and the California Act more broadly. In all three states, inventions which are developed outside the scope of inventive employment (whether specific inventive employment or general inventive employment) without use of any time or facility of the employer, and which do not relate to the business of research of the employer, are not assignable.

Conclusions

The Washington Act delineates employer and employee ownership rights in inventions more equitably than the Minnesota and California Acts. First, the Washington Act immunizes employees against the effects of over-reaching assignment provisions, yet allows the employer to enjoy the fruits produced by those employees who are employed in a general inventive capacity (i.e., subject to general inventive employment). The Washington Act, however, allows these employees to reap the benefits of their skills in "spin-off" inventions which are unrelated to the employer's business and do not result from their work.

The Minnesota and California Acts over-compensate in this area by cutting off the right of the employer to obtain title to inventions which result from general inventive employment and which, therefore, actually are not "spin-off" inventions since they relate to the employer's business or R&D. The Minnesota and California Acts do not recognize that most inventions within the field of the employer's business or R&D are derived from trade secrets and other confidential information of the employer, to which the employee is exposed or has access during the term of his employment, even though the employee may not in fact "use" such information in connection with the invention. Thus, while the invention

might not result from his work, it almost certainly will be based upon knowledge or experience which was gained by the employee as a proximate result of employment. To exclude such inventions from the province of the employer, as under the Minnesota and California Acts, ignores the equities of the situation and, in addition, may be contrary to the understanding of the parties.

Additionally, the Washington Act does not upset most employment agreements currently in use. The assignment provisions contained in such employment agreements typically apply to inventions which relate to company business *or* which result from the *employee's work*. The Washington Act does not impinge upon the scope of these provisions. It does, however, restrict the scope of those overly broad agreements which apply to "all" inventions.

The Minnesota and California Acts, on the other hand, on their face adversely affect operation of such agreements. While it could be argued that these Acts merely restore the field of employer-employee rights to the status of the common law doctrine, as enunciated by the majority in *Dubilier*, realistic reflection on the current status of this field leads to the inescapable conclusion that the dissenting opinion in *Dubilier* has, in fact, been adopted, *by contract*, in the United States. From a nation-wide standpoint, therefore, the Minnesota and California Acts raise the question of whether the benefits obtained by tilting the balance of equities in favor of the employee are outweighed by the resultant disruption in employer-employee contractual relationships. Further, the Minnesota and California Acts pose the real risk that arbitrariness, such as that which infected the common law doctrine, will creep back into this area as courts are called upon to determine the meaning and scope of the term employee "work."

"While only three states have enacted legislation in this area, it should now be abundantly clear that uniform legislation is needed urgently. In view of the apparent differences in scope between the three Acts, employers

doing business in Minnesota, Washington and California will no doubt be faced with difficult conflict of law issues in the future. This may spill over to other states as additional legislation modeled after either the Minnesota/California Act or the Washington Act is enacted. Ensuing employee transfers or relocations to or from these States will only compound the situation.

Appendix A

MINNESOTA ACT

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF MINNESOTA:

Section 1. (CERTAIN EMPLOYEE AGREEMENT TERMS RELATING TO INVENTIONS UNENFORCEABLE.) Subdivision 1. Any provision in an employment agreement which provides that an employee shall assign or offer to assign any of his rights in an invention to his employer shall not apply to an invention for which no equipment, supplies, facility or trade secret information of the employer was used and which was developed entirely on the employer's own time, and (1) which does not relate (a) directly to the business of the employer or (b) to the employer's actual or demonstrably anticipated research or development, or (2) which does not result from any work performed by the employee for the employer. Any provision which purports to apply to such an invention is to that extent against the public policy of this state and is to that extent void and unenforceable.

Subd. 2. No employer shall require a provision made void and unenforceable by subdivision 1 as a condition of employment or continuing employment.

Subd. 3. If an employment agreement entered into after the effective date of this act contains a provision requiring the employee to assign or offer to assign any of his rights in any invention to his employer, the employer must also, at the time the agreement is made, provide a written notification to the employee that the agreement does not apply to an invention for which no equipment, supplies, facility or trade secret information of the employer was used and which was developed entirely on the employee's own time, and (1) which does not relate (a) directly to the business of the employer or (b) to the employer's actual or demonstrably anticipated research or development, or (2) which does not result from any work performed by the employee for the employer.

Appendix B

WASHINGTON ACT

NEW SECTION. Sec. 2. There is added to chapter 49.44 RCW a new section to read as follows:

(1) A provision in an employment agreement which provides that an employee shall assign or offer to assign any of the employee's rights in an invention to the employer does not apply to an invention for which no equipment, supplies, facilities, or trade secret information of the employer was used and which was developed entirely on the employee's own time, unless (a) the invention relates (i) directly to the business of the employer, or (ii) to the employer's actual or demonstrably anticipated research or development, or (b) the invention results from any work performed by the employee for the employer. Any provision which purports to apply to such an invention is to that extent against the public policy of this state and is to that extent void and unenforceable.

(2) An employer shall not require a provision made void and unenforceable by subsection (1) of this section as a condition of employment or continuing employment.

(3) If an employment agreement entered into after the effective date of this act contains a provision requiring the employee to assign any of the employee's rights in any invention to the employer, the employer must also, at the time the agreement is made, provide a written notification to the employee that the agreement does not apply to an invention for which no equipment, supplies, facility, or trade secret information of the employer was used and which was developed entirely on the employee's own time, unless (a) the invention relates (i) directly to the business of the employer, or (ii) to the employer's actual or demonstrably anticipated research or development, or (b) the invention results from any work performed by the employee for the employer.

NEW SECTION Sec. 3. There is added to chapter 49.44 RCW a new section to read as follows:

Even though the employee meets the burden of proving the conditions specified in section 2 of this act, the employee shall, at the time of employment or thereafter, disclose all inventions being developed by the employee, for the purpose of determining employer or employee rights. The employer or the employee may disclose such inventions to the Department of Employment Security, and the department shall maintain records of such disclosures for a minimum period of five years.

Appendix C
CALIFORNIA ACT

LEGISLATIVE COUNSEL'S DIGEST

AB 474, Coggia. Labor: employee inventions.

The existing law contains no provisions relating to the right to ownership of an invention made by an employee.

This bill would provide that any provision in an employment agreement which requires an employee to assign any of his rights in an invention to his employer generally shall not apply, when certain conditions are met, to an invention which was developed on the employee's own time and for which various employer resources were not used. The bill would specify that contrary provisions in employment agreements are void and unenforceable. In any suit or action arising under such provisions, the burden of proof would be on the employee claiming the benefits.

The bill would also require employers who enter into employment agreements after January 1, 1980, which require the employee to assign rights to an invention to the employer, to give written notification to the employee of specified matters relating to rights to ownership of an invention.

The people of the State of California do enact as follows:

SECTION 1. Article 2.5 (commencing with Section 2870) is added to Chapter 2 of Division 3 of the Labor Code, to read:

Article 2.5. Inventions Made by an Employee

2870. Any provision in an employment agreement which provides that an employee shall assign or offer to assign any of his or her rights in an invention to his or her employer shall not apply to an invention for which no equipment, supplies, facility, or trade secret information of the employer was used and which was developed entirely on the employee's own time, and (a) which does not relate (1) to the business of the employer or (2) to the employer's actual or demonstrably anticipated research or development, or (b) which does not result from any work performed by the employee for the employer. Any provision which purports to apply to such an invention is to that extent against the public policy of this state and is to that extent void and unenforceable.

2871. No employer shall require a provision made void and unenforceable by Section 2870 as a condition of employment or continued employment. Nothing in this article shall be construed to forbid or restrict the right of an employer to provide in contracts of employment for disclosure, provided that any such disclosure be received in confidence, of all of the employee's inventions made solely or jointly with others during the term of his or her employment, a review process by the employer to determine such issues as may arise, and for full title to certain patents and inventions to be in the United States, as required by contracts between the employer and the United States or any of its agencies.

2872. If an employment agreement entered into after January 1, 1980, contains a provision requiring the employee to assign or offer to assign any of his or her rights in any invention to his or her employer, the employer must also, at the time the agreement is made, provide a written notification to the employee that the agreement does not apply to an invention which qualifies fully under the provisions of Section 2870. In any suit or action arising thereunder, the burden of proof shall be on the employee claiming the benefits of its provisions.

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Employee rights in innovative works

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Nearly 50 years ago the first meeting of the ILO Advisory Committee on Salaried Employees adopted a resolution calling for the introduction of international regulations on inventors' rights for employees.[1] The issue has still not been resolved despite numerous discussions on the subject in international, regional and national bodies dating from 1928 to the present. Although progress has been made in a number of national laws—patent Acts or special statutes—international regulations have yet to see the light of day.

Over the years the question of employer rights in their inventions has acquired new dimensions. In the late 1920s and early 1930s the scope of the problem was clear and limited: it was restricted, on the one hand, to patentable inventions and, on the other, to regulation of the transfer of rights in inventions to employers, based on a distinction between two categories of inventions and between two categories of employees. Briefly, an invention subject to a patent was (and is) any new and useful technical device, machine or process, or an improvement on one of these that was new, non-obvious and applicable in industry. The two categories of inventions were those made independently by the employee outside his or her contractual duties (so-called "free" inventions) and those made in fulfilment of employment obligations ("service" inventions). A distinction was also drawn between employees who happened to invent while in an employment relationship and those who were specifically engaged in research work with a view to making inventions. Both categories of inventors are currently covered by the term "employee-inventor".

These distinctions were, and continue to be, crucial factors in determining the extent of protection. The rights recommended by the Advisory Committee in 1931 were that an inventor should be granted the patent and, failing that, should in any case have his name mentioned in the patent or in other official documents. (A patent is usually defined as a statutory grant which confers on the inventor or his successor in title a temporary exclusive right regarding the exploitation of the invention.) This implied certain

* International Labour Office

limitations on the individual freedom of contract. It was stated, for example, that employment contracts stipulating the transfer of rights over inventions to employers should be permissible only when the employees concerned were engaged specifically to invent and even then only if they received special compensation. Compensation was also recommended for inventions that necessarily had to remain secret or undeveloped. The Committee further insisted on the right to have any differences between the parties submitted for judicial review and decision.

These recommendations are still pertinent today, even though a number of changes and developments have occurred in both theory and practice—in ways of classifying employee inventions, in the financing and organisation of research and development, in a better understanding of the work of professional or intellectual employees and in the whole approach to protection—all of which have enlarged the scope of the discussion.[2]

1. New dimensions

Turning first to employee inventions susceptible of industrial application, three instead of two categories are now generally recognised: the "free" and "service" inventions defined above and "dependent" inventions, which are made outside the employee's normal or contractual line of work but are related to the employer's interests or have been made thanks to the employer's facilities and resources. The definition of the "dependent" invention is not particularly new, having already been the subject of international discussions and national legislation in the 1940s and 1950s; protection of rights in such inventions remains, none the less, a highly controversial issue and is the focus of most debates on the question of employee-inventors' rights.

Second, still within the framework of patentable employee inventions, major changes have occurred in the organisation and financing of inventive activity. Since the Second World War in the industrialised countries and more recently in the developing countries, research and development (R and D) services have been set up with the specific aim of producing innovations of all kinds, including inventions. The result has been the emergence of a new working environment for inventors. Whereas previously inventing was more or less an individual activity, today it is increasingly a result of teamwork. In the past, identifying the author of a given invention was relatively easy. Today, it is contended, mainly by enterprises, that since most inventions result from a linear process or a simultaneous series of activities each undertaken by different persons or groups, identifying *the* inventor is nearly impossible. These various developments or arguments affect more directly the employee who is engaged to produce inventions than the employee who happens to invent since the latter would probably not be associated with R and D teams as part of the

employment relationship (managerial and supervisory personnel are possible exceptions because they could be involved in overseeing research and inventive activities).

The amount of public funds devoted to research and development is another factor that has implications for employee-inventors. Apart from the United States, where in real terms there has been a tapering off of public expenditures in this field from about $18,000 million in 1967/68 to $15,000 million in 1978,[3] and France, increases have been recorded in many countries, both developing and industrialized. Expressed as a proportion of GNP, over-all R and D expenditures in the Federal Republic of Germany and Japan increased between 1960 and 1978 from 1.3 to 2.0 per cent and from 1.2 to 1.8 per cent respectively, with the share of public funding rising in both instances. In India, where R and D expenditures increased from 0.23 per cent of GNP in 1958/59 to 0.65 per cent in 1976/77, 90 per cent of the total was concentrated in the public sector, while in the USSR and Czechoslovakia the share of GNP devoted to R and D has been estimated at 5 and 4.3 per cent respectively.[4] Examples of the major role played by public financing in R and D are to be found in the state subsidies made available to two industries of considerable current importance: the aeronautics industry in France[5] and the electronics industry in the United States and many other countries. In addition to industrial R and D, universities in many countries rely on public funds for research activities.

Greater public participation in activities related to inventions means that the State itself or the public sector becomes a potential employer of inventors and a potential proprietor of patents even in market economies. The host of issues that have been the subject of so much debate concerning employee-inventors and private employers will have to be re-examined in the light of expanding public employment and public financing. As will be seen below, a number of countries have already legislated on this issue, but the approaches to, and the extent of, protection vary.

Related to these changes in organization and financing is the generally accepted fact that more and more inventions are being made by employees rather than by independent inventors. While figures are not readily available, estimates of the proportion of all inventions currently made by employees range as high as 60 per cent in Denmark, between 60 and 70 per cent in the Federal Republic of Germany, 70 to 75 per cent in France and 80 per cent in the United States.[6] The expansion of research and development services coupled with the competitive disadvantage of the independent inventor vis-à-vis industry, universities or public institutes in terms of resources, overhead costs and the development facilities required for most inventions probably account for this phenomenon.

A third development that has broadened the scope of the discussion has been a better understanding, acquired over the past 15 years or so, of the nature and constraints of professional or intellectual work.[7] While social theory and practice may still be inadequate to deal with the concerns

of professional workers, there has been a gradual recognition that these employees, when compared with manual workers and certain non-manual workers who perform clerical or routine duties, require different skills and qualifications for their work, perform their jobs in substantially different ways and probably have different priorities concerning their conditions of work and career prospects. These differences raise the question whether the normal labour relationship, whereby the result of services or labour provided by a worker—remunerated by a salary or fee—becomes the property of the employer, is applicable to professional workers.

In the case of employee-inventor the issue is threefold. First, should remuneration be tied to service (that is, activities actually performed) or to results (inventions)? A salary, negotiated before a result is known, cannot adequately cover both without some adjustment. This principle is accepted in certain businesses that pay end-of-year bonuses to managerial personnel for outstanding results, and in contracts for salesmen, for example, who receive a salary plus a commission, the latter being an adjustment for the results achieved. The fact that inventions become material goods, as opposed to sales or managerial acumen, renders the relationship between salary and services and results more complicated, since the value of the invention may not be known for several years and may depend on the development and marketing efforts of the employer. Second, is this relationship at all pertinent to "free" or "dependent" inventions? Does the fact that a person is employed give the employer a mortgage on the employee's creative activity? The right of inventors to own the results of their labour is a delicate issue touching on both industrial property and labour law. Third, given that the dominant component of inventive work is intellectual activity, the inventor's portfolio for promotion, enhanced career prospects or new job opportunities depends on tangible recognition of that activity. This recognition must go beyond the place of employment if the inventor's professional interests are to be properly safeguarded.

A fourth and final development in the debate has been the emergence of new approaches to the protection of rights in innovative or creative works. While the definition of a patentable invention remains unaltered and employee-inventors are still very much in need of protection nationally and internationally, arguments have been advanced, backed up by legislation in some countries, in favour of protecting employees' rights in their creative works, be they inventions, rationalization proposals, discoveries, scientific and mathematical theories and methods, or the results of other fundamental or pure research. In other words, the criterion of *industrial applicability* as a basis for protection of rights has been questioned. This wider concept of "innovation" necessarily augments the categories of workers to be considered for protection.

This approach has recently been examined in the context of copyright by Rolande Cuvillier,[3] who concludes that consideration should be given to adopting a "charter for creators" covering all kinds of creative works—a

novel idea that will no doubt provoke fresh thinking on the protection of salaried intellectual workers. An important question comes immediately to mind: how, for the purpose of remunerating the creator, are monetary values going to be placed on "creations" that are not inherently tangible or do not lend themselves immediately to transformation into tangible goods? This question is of particular relevance to the protection of rights in certain discoveries or in the results of pure research.

This brief review of the new dimensions of the discussion will, it is hoped, have clarified the major issues that need to be addressed in the search for solutions concerning the appropriate scope, extent and form of protection. Before proceeding to examine these issues in greater detail, however, it should be borne in mind that there is a distinction between inventions *per se* and innovations. National law and practice are far more advanced in the field of employee inventions than in that of employee innovations. Admittedly, the concept of an invention has been generally defined in patent laws, and definitions of specific rights are widely recognized. In the section dealing with legal approaches and practices that appears later in this article employee inventions and other innovations will therefore be treated separately.

2. The issues

Do employee-inventors have rights?

The fundamental issue is whether or not employees enjoy certain intellectual or property rights in their works. There is no one answer. The idea that *individuals* have rights in their creative works has been widely accepted for some time in various legal instruments. For example, the French patent law adopted in 1791, shortly after the revolution, conferred a natural right on creative persons:

> Every novel idea whose realization or development can become useful to society belongs primarily to him who conceived it, and it would be a violation of the rights of man in their very essence if an industrial invention were not regarded as the property of its creator.[6]

Article I, section 8 (8), of the Constitution of the United States rules that Congress shall have power "to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries". In Japan the right of an inventor to obtain a patent was recognized in 1888. In more recent times the Universal Declaration of Human Rights, adopted in 1948, declared in article 27, paragraph 2, that: "Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic productions of which he is the author." So the question is whether an employment status diminishes the intellectual property rights of individuals.

Unfortunately, there is a dearth of theoretical precepts on this question and consequently the debate, and the various regulations to which it has given rise in practice, have so far been based to a large extent on pragmatic considerations, with the possible exception of moral rights. While the absence of theory illuminating the relationship between employment and intellectual property rights is regrettable, the fact remains that a number of international and national regulations, as well as certain practices in industry, recognize that some rights are warranted. The second issue, then, is which rights, their extent and the obligations they entail.

Types of rights

There are three kinds of rights—not mutually exclusive. *Moral rights*, which are widely accepted, are the rights of the inventor or other creator to have his name inscribed on the patent or other official document, thus recognizing his authorship of the work. *Property rights* usually mean ownership of a patent or an exclusive right to exploit the creative or innovative work for a limited period of time. The third type of right is *premium or compensatory*. In the absence of a property right or in the event that it is transferred to another party, a right to equitable remuneration or compensation in other forms is granted in certain circumstances.

In countries that do provide for employee-inventor rights, the choice of which right is granted is usually based on the category of invention. There is more or less general agreement that employees have a predominant right in "free" inventions—that is, they are granted both moral and property rights. There are, of course, some nuances—as in the Federal Republic of Germany, for example, where the employee must inform the employer of the invention and give the latter an opportunity to determine whether or not it is related to his commercial interests. As regards "service" inventions, there is similarly a widespread acceptance that the employer has legitimate interests in them. Consequently, depending on the country, the employee has a moral right, may or may not have a property right which he must transfer to the employer, and may be entitled to some form of compensation. The question of compensation is the main issue for this type of invention, since moral rights are largely confined to the employee and property rights to the employer. As mentioned earlier, "dependent" inventions are the subject of controversy, one reason being that in many countries the rights in them are regulated in the same way as for "service" inventions. Yet the two categories are different and it is often difficult to assess the extent of the employer's input and of his commercial interest. Consequently, precise criteria have to be established as well as procedures for settling disputes. And as for "service" inventions, the bases of remuneration or compensation have to be determined. Factors applied in this exercise include the value of the invention were it to be acquired elsewhere,

the benefits flowing from its use, the employee's duties and position in the enterprise and the value of the employer's input.

The granting of rights usually imposes obligations on the rights owner. In patent law, for example, the owner is obligated to exploit the invention within a given period—usually two to three years—and to continue doing so. Failure to exploit may entail loss of the exclusive right and result in compulsory licensing—that is, an obligation to license another party to exploit the invention. Obligations regarding employee inventions include, for the employee, a duty to inform the employer of "service" inventions and in some cases "free" inventions and a restriction on the right to dispose of inventions made shortly after the termination of employment. The amount of time that must elapse before employees are released from such obligations varies considerably. Among the countries having specific legal provisions on employee-inventors, the period ranges from six months in Denmark and Sweden, for example, to three years in Austria. In countries where these issues are regulated by contract or common law it ranges anywhere from six months to five years.

The employer's obligations in countries recognizing employee rights include a duty to decide within a certain period whether or not he intends to file for a patent or otherwise exploit the invention. The time specified in some European laws ranges from one month in Finland to four months in Denmark, the Federal Republic of Germany, Norway and Sweden. If the employer has not acted within that time, the employee is entitled to claim ownership of the invention or a re-transfer of the rights to exploit it; after a further period of silence on the employer's part, the employee is entitled to dispose of the invention. In many countries, however, even where the rights of employee-inventors are recognized, there is no obligation to inform the employee within a specified time. Similarly, in cases where the employer is required to pay compensation, the obligation to continue payment after the termination of employment is often not explicitly prescribed in legal provisions, although in practice a change in employment status does not affect this payment.

These two issues—whether the employee possesses rights and, if so, the kind of rights, their extent and the obligations they entail—are the subject of international and national law. A third issue, also crucial for the regulation of rights concerning employee-inventors, is similarly the subject of legislation. This is the settlement of disputes. Limitations of space prevent more than a brief mention of it here but its importance should not be ignored.

Settlement of disputes

Because of the highly technical nature of inventions and because of the fine line between patent law and labour law in the field of employee inventions, the settlement of disputes is often difficult. Ordinary courts of

justice hear dispute cases in Belgium, Denmark, Finland, France, Japan and Switzerland. There are special courts or arbitration boards in Italy, Norway, Portugal and Sweden and joint committees in the USSR. In some instances the arbitration boards are attached to patent offices.

Trade union organisation and collective bargaining

A fourth and final issue—one that cannot be regulated by legislation—merits some attention since it is of key importance in countries that have not legislated on employee inventions: the organisation of employees in trade unions and the role of collective bargaining. This issue is, of course, also important in certain countries that have legislated, such as Denmark, France, Sweden and the United Kingdom, where the law provides that some matters may be regulated by collective agreements and only applies to these matters in the absence of such agreements.

With a few exceptions, trade union organisation among employees who are likely to be regarded as inventors is notably absent in most market economies. Among the reasons for this is the fact that in the past such employees had a privileged position in industry, and as professionals considered that their role was one of collaboration and participation in decision-making. Collective bargaining was seen as inconsistent with this role and not in accordance with their professional status and the defence of their professions.[16] A second factor is the existence in many countries of professional associations, which normally do not engage in collective bargaining, and the fact that their relations with trade unions are still at a formative stage. In some instances their members do not consider that they can be satisfactorily represented by the unions because the nature of their work entails rights that differ from those of other categories of workers. Even where trade unions have been effective in the defence of inventors' rights, as in the Scandinavian countries, the professional associations are reluctant to have these rights regulated by collective agreements.

Three developments that have occurred in the growth and organisation of the enterprise and R and D services may lead inventors to participate more actively in organisations that can defend their interests. One is the change in the status of inventors in the place of employment.[17] Instead of holding privileged positions and playing a part in decision-making, inventors are now more and more being assigned specialised technical duties in a limited sphere of action. Both the content of their work and the way it is performed are governed by policies which they have no part in formulating. The independence of the inventor is largely a thing of the past. Second, the wage differentials that used to exist between professional and other categories of workers are gradually being eroded. This has led some of the trade unions concerned to focus their attention on remuneration and benefits. The employee-inventors' claim to monetary compensation for inventions owned by or transferred to employers could stimulate inventors

to take a more active role in trade union affairs. The third factor is one of employment. Despite the growth of R and D services, the labour market for inventors is no longer as favourable as it was in the past. There are indications that this situation may further deteriorate as public R and D investments in certain countries, such as the United States and France, seem to be declining, and the number of scientists and engineers increasing, with a resultant surplus of the employees in question.[12]

The combination of weak organisation and an unfavourable labour market in countries lacking specific legislation in this field puts the inventor in a vulnerable position. The rights of ownership normally accrue to the employer, who requires that inventors sign a contract waiving their rights as a condition of employment. The granting of special remuneration or other compensation is largely voluntary. Such practices point clearly to the need for legislation laying down basic principles and rights, which can then be supplemented by collective bargaining. But collective bargaining alone is at present insufficient to ensure the protection of this category of employees.

3. Approaches to international and national legislation

Turning first to employee inventions *per se*, at the international level the moral right of all inventors is recognised. This right was incorporated in the Paris Convention for the Protection of Industrial Property in 1934.[13] The Convention on the Grant of European Patents (Munich, 1973) and the Community Patent Convention (Luxembourg, 1975) also provide for this right. Regional agreements among developing countries, however, appear to be less specific on this issue. For example, no such provisions were made in the 1962 African-Malgache Agreement on Industrial Property (OAMPI) or in the Agreement on the Creation of an Industrial Property Organisation for English-Speaking Africa, signed in December 1976. None the less, the new WIPO Model Law for Developing Countries on Inventions clearly states in section 122 that an inventor shall be named as such in the patent, unless he expresses the wish in writing not to be so named.[14] While this is only a Model Law and not legislation as such, it can be expected that it will serve as an international guideline to promote moral rights. Regional agreements among socialist countries on inventors' certificates also safeguard the moral rights of inventors.

As to the other rights (property and pecuniary) of employee-inventors, international legislation is generally silent. No relevant provisions exist in the Paris or Munich Conventions. The Luxembourg Convention merely states that the regulation of these questions should be left to national legislation. To respect this provision, however, Member States of the European Economic Community will probably have to adopt or amend their national laws. Many of these States have already legislated on the matter and two

countries, France in 1977 and the United Kingdom in 1978, have recently changed their patent laws to include provisions on employee-inventors.

The above-mentioned WIPO Model Law does, however, include some provisions on property and pecuniary rights in section 120 ("Inventions made in execution of commission or by employees"). Unfortunately, from the employee-inventor's viewpoint, these provisions do not extend many rights to the employee and represent the lowest common denominators of the provisions in national laws. Briefly, the Model Law states that service inventions belong to the employer in the absence of contractual provisions to the contrary, and the employee is entitled to special remuneration if "the invention has an economic value much greater than the parties could have reasonably foreseen at the time of concluding the contract". The amount of the special remuneration is to be fixed by the court of competent jurisdiction in the absence of agreement among the parties. As regards "dependent" inventions, two alternatives are presented—one giving the property rights to the employer with a stipulation that equitable remuneration be paid to the employee, and the second giving the property rights to the employee who must give his employer an option to acquire the rights, in which case the employee is entitled to equitable remuneration.

At the national level several approaches have been adopted. The first is to spell out the rights of employee-inventors in patent laws or industrial property regulations, as in Austria, Brazil, France, Indonesia, Japan, the Republic of Korea, the Netherlands, Portugal, the United Kingdom and the Eastern European countries. A second approach is to adopt special employee invention Acts, as in the Federal Republic of Germany and the Scandinavian countries. A third is to regulate the question through labour laws or other codes, as in Greece, Mexico, Spain, Sudan, Switzerland and Turkey.

The scope of these laws varies considerably. Some include provisions on all three rights covering several categories of inventions such as the employee invention laws and patent Acts of France, Italy and the United Kingdom. Others are restricted to regulating the conditions for drawing up contracts, as in Austria, while still others, namely in Algeria and the socialist countries, regulate only moral and pecuniary rights since most property rights belong to the State. In some of these latter countries, and in China, a system of inventors' certificates prevails. These certificates recognize the authorship of the invention and lay down specific rules on the amount of extra remuneration to be paid in addition to salary.

Patent Acts and employee invention laws

Turning first to the patent Acts and the specific employee invention laws, one of the major differences of approach between them is that "service" inventions according to the former are the property of the employer whereas in the latter the employer is entitled to obtain the

property rights which initially belong to the employee. The patent Acts of Japan and the Republic of Korea differ somewhat from the others in that the employer is entitled to a non-exclusive licence; under these Acts, however, it is possible for the employer—through contracts, service regulations and other stipulations—to obtain exclusive rights to "service" inventions. According to the special employee invention laws (in Denmark, Finland, the Federal Republic of Germany, Norway and Sweden), the employer must state his intention to obtain total or partial rights in writing within four months of the date he is notified of an invention by an employee. In the Scandinavian countries inventors can apply for a patent in their home country during this four-month period, provided that they have informed their employer beforehand, it being understood that if the employer opts to have the patent it will be transferred to him. The law of the Federal Republic of Germany grants other rights to the employee in the area of filing for patents and use of "service" inventions. If the employer has claimed only a limited or partial right in the invention and the inventor feels that the use of the invention is too restricted, he can demand that the employer obtain an unlimited right within two months or else release the rights in the invention to the employee-inventor. Moreover, an employer is obligated to file for a patent in his home country if he has acquired limited rights; failure to do so could result in the inventor himself filing in the name and at the expense of the employer. Unlimited rights given to the employer mean that he must also file for foreign patents. If there are countries where the employer chooses not to file for patents, he must release this right to the employee-inventor. Vesting the rights over "service" inventions in the employee-inventor, as is done in the Federal Republic of Germany and the Scandinavian countries, with the employer guaranteed the property rights if he wants them, ensures that a number of questions concerning the obligation to file for patents and exploit the invention are regulated. They tend to be left unregulated by those patent Acts which directly confer the property rights to "service" inventions on the employer.

On the question of compensation to the employee-inventor—should the employer either have, or opt to have, the property rights in "service" inventions—the provisions in the patent Acts and in the employee invention laws are more similar, even though there are considerable differences from one country to the next. Special compensation is compulsory in the Federal Republic of Germany, where specific rules governing the assessment of such compensation according to certain criteria have been issued separately from the law, and in Japan and the Republic of Korea, where the laws stipulate that the amount is to be based on the profits resulting from the invention and on the employer's contribution, but fail to mention who is to determine the amount or how disputes on this issue are to be resolved. Special compensation is envisaged in the laws of a number of other countries, provided that certain conditions

are met. In the Netherlands and in Portugal, for example, the employee-inventor is entitled to compensation if he has not already been given a special monetary award for the invention or if his salary is deemed to be insufficient. These provisions are quite similar to those found in the employee invention laws in Scandinavia, where special compensation is granted provided that the value of the rights in the invention, taking into account the respective contributions of the employee and employer and the emoluments of the employee, exceeds the value of a product that could normally be expected of an employee-inventor. The condition that has to be met in the new patent law of the United Kingdom is that the invention result in an "outstanding" benefit to the employer. In Italy an employee hired to invent and remunerated accordingly is not entitled to compensation, whereas other employees who invent are. In France the question whether compensation should be paid and if so how much is left to collective agreements and employment contracts.

The regulation of employee rights in "dependent" inventions, both in patent laws and in employee invention laws, generally grants the employer an option to acquire the rights against compensation to the employee or at least a priority claim on the invention should the employee decide to cede his rights. Usually the employer has a few months—three to four—to make up his mind, and compensation is generally obligatory.

Where compensation for both "service" and "dependent" inventions is provided for in national legislation, the amount and the form of payment (e.g. a lump sum or royalties) are usually determined by contract or collective agreement. The terms of such agreements will obviously vary according to the value of the invention, and it is virtually impossible to prescribe precise sums in advance. This points to the importance of bargaining strength and of clear and equitable procedures for resolving disputes. Trade unions in the Scandinavian countries have been particularly effective in this area and satisfactory collective agreements have been established. It is too early to determine how effective the British and French trade unions are in this respect since the new laws have only recently come into effect. In Japan the question of compensation is usually regulated by company agreements which are based on model regulations drawn up by the Patent Office. One such agreement, which may be cited as an example, provides for an invention examination committee composed of officials of the Patent Office and of the company concerned.[9] It appears that the inventor or his representative does not participate in this committee unless the chairman (a Patent Office official) so decides. The employee can file an objection to the decision of the committee, but it is filed with the Patent Office. These procedures may serve the interests of all parties in practice, but they raise questions concerning employee representation and the possibility of impartial review.

The procedures in force in Sweden, based on the law and on a nationwide collective agreement,[10] are described below as an example because

they provide specific guidelines for compensation as well as adequate safeguards for the settlement of disputes. According to the collective agreement, actual sums are determined on an invention-by-invention basis, but specific criteria for evaluating the amount of compensation and methods of payment are clearly spelled out. The criteria, laid down in both the law and the agreement, are the value of the invention, the extent of the rights that the employer has acquired, the impact of the employment relationship on the making of the invention, and (for "service" inventions) the employee's position, salary and other employment benefits. For "service" inventions warranting compensation and for "dependent" inventions, an employee is entitled to a predetermined standard payment (either a lump sum or instalments) at the time, for example, that the patent application is filed. If the value of a "service" invention substantially exceeds the value initially assessed, further compensation must be paid. For "dependent" inventions, further compensation is normally to be paid unless the value of the invention is particularly small. The employee's right to compensation is not affected should the employer decide not to file for a patent. The collective agreement also provides that the amount of compensation may be reviewed by the parties if circumstances have substantially changed since the initial sum was set. The employee, however, cannot be required to repay the employer the compensation he has already received, nor can the employer regain any rights to the invention he previously waived.

The collective agreement also lays down guidelines for the compensation of employees working in companies where development work rarely results in patentable inventions. In this instance, precise amounts are cited as examples: once the employer decides the invention is patentable and of use to his company, the employee immediately receives 500 kronor. If a patent is filed and granted in Sweden the employee receives an additional sum of between 500 and 1,500 kronor, the exact amount being determined by the employer. The granting of patents in foreign countries does not entail a standard-payment compensation.

Procedures for resolving disputes over employee inventions in Sweden are set out in general terms in the law which states that, if the issue goes to court, the court can consult a special jury composed of representatives of the two parties as well as legal experts and an expert in patent legislation. The collective agreement is more specific. It states that disputes will be subject to local negotiation (at the company level) and, if that fails, to central negotiation (between workers' and employers' organisations). If all this is to no avail, a special arbitration board composed of six members will be established. In the appointment of the board the organisations representing the workers and the employers have a strong voice. The chairman and vice-chairman are chosen jointly by these organisations, which also independently choose one representative each. The remaining two members are elected as follows: one jointly by the employers organisation

and the company in question, the other jointly by the workers' organisation and the employee. This procedure ensures that the interested parties are represented equally and that labour *and* industrial property issues are given a hearing.

The regulation of rights in "free" inventions is more or less uniform in countries having legislation on employee inventions. These inventions normally belong to the employee. There are laws, however, that require the employee to inform the employer of all inventions that may be related to the employer's field of business so that the employer can participate in the decision that the invention is truly an independent one and can have the first option on acquiring the rights. This is the practice in some Scandinavian countries and in the Federal Republic of Germany and is stipulated in company regulations in Japan.

A brief mention should also be made of the provision in Civil Codes, Codes of Obligations, laws on contracts and similar Acts. These provisions are usually very cursory and lay down general principles concerning "service" inventions and "other" inventions, thereby grouping "dependent" and "free" inventions in one category. The "service" invention belongs to the employer according to the General Law on Employment Contracts in Argentina, the Code of Civil Law in Greece, the Federal Labour Act in Mexico, the *Code des obligations* in Switzerland and the Obligations Act in Turkey. Only in Mexico is there a specific stipulation that the employee should be compensated for not owning the rights to "service" inventions. The amount of compensation is set by agreement or determined by an arbitration panel. In Greece, Switzerland and Turkey the employer can reserve, subject to the payment of a special equitable remuneration, the right to acquire "other" inventions. In Argentina and Mexico the employee must offer the employer the rights to "other" inventions, should he decide to cede them.

Systems of protection in the socialist countries

In the socialist countries, protection of the employee's rights in inventions is ensured through a combination of a patents system and a system of inventors' certificates. While the inventor in most of the countries of Eastern Europe can choose between the two systems of protection, as a general rule employee inventions are protected by inventors' certificates. These certificates specify that the inventor is the author of the invention and that he is entitled to remuneration in respect of it. The right to exploit the invention, however, belongs to the State. Such provisions exist in the Laws of Bulgaria, Czechoslovakia, Poland, Romania and the USSR, and to a certain extent in the law of the German Democratic Republic which distinguishes between "economy" patents and "exclusive" patents, the former resembling an inventors' certificate. The 1978 invention law in China contains similar provisions.

While these various laws differ in a number of ways, namely in the duration of protection and in the methods of calculating and paying remuneration, they all lay down detailed procedures concerning the application for certificates, the obligations of both employers and employees, and appeals. These procedures ensure that the views of employees are fairly represented in decisions concerning their inventions, and relegate few questions to negotiation.

The duration of protection granted by inventors' certificates in Bulgaria, Czechoslovakia and the USSR is without limit of time. In the German Democratic Republic, Poland and Romania it is bound to the duration of patent protection and is generally limited to 15 years. Methods for determining remuneration, which is in addition to salary, are usually set out in separate decrees annexed to the laws. The general criteria for determining the amount of remuneration are based on the salary of the employee or on the savings that result from an exploitation of the invention; the employee is entitled to a certain percentage of these savings, with maximum amounts defined in cash terms set by the decree. In the German Democratic Republic, for example, if an invention is patentable and a patent application is filed, the employee is entitled to an award of between 300 and 500 marks, and in the case of joint inventions made by several employees an amount of 1,500 marks is to be shared by the inventors. The actual sum is determined by the head of the enterprise and the decision must be approved by the union in the enterprise. If an invention is particularly important, a provision in the regulations specifies that the inventor can receive up to 10,000 marks. In Romania the amount of the award, fixed by the National Council for Science and Technology and the Ministry of Finance on the recommendation of the socialist organisation that holds the patent, is based on the salary of the employee. The yearly award, which is paid for a maximum of five years, cannot exceed three times the monthly remuneration of the employee. The law also provides for special awards for outstanding achievements. In China the employee is entitled to a medal and an award ranging from 1,000 to 10,000 yuan. The amount is determined by an evaluation committee and approved by the State Scientific Commission.

Rights in countries without special laws

Some countries, of course, have no legislation on employee inventions and practice is determined by collective agreements and individual contracts, based in some instances on common or case law. This situation is found in Australia, Belgium, Canada, New Zealand, the United States and in many developing countries. The rights of employees in these countries vary considerably, although in general inventions made in the course of contractual duties belong exclusively to the employer. For "dependent" inventions, the situation is less clear. In Australia the employer and the

employee may share the rights. In the United States, in some instances, the employer has a "shop-right", or a non-exclusive licence to exploit the invention for purposes related to his commercial interests. "Free" inventions, as a rule, belong to the employee but the burden of proof that the invention really was made independently is placed on the employee. Special compensation for inventions that belong to the employer is largely voluntary. The lack of specific regulations on employee inventions in these countries results in a variety of practices where the employee must rely on contracts, collective agreements and eventually the judicial system in order to protect his rights.

While the different approaches adopted by the countries that have legislated on the matter all have their merits, it is the present writer's belief that the special employee invention laws and the inventors' certificates are the most worthy of emulation. They are comprehensive in the treatment of employee-employer relationships and deal specifically with inventions related in some way to employment. Patent Acts, by their very nature, must deal with a host of other questions concerning industrial property and rarely embody detailed regulation of the particular problems arising from an employment relationship. In view of the complex issues that have to be resolved in an environment that is increasingly emphasizing the need for innovation and creativity, it is to the special laws and the inventors' certificates that one should look for guidance at both the national and international levels.

Employee innovations

In contrast to employee inventions, the regulation of employee innovations is still at a very tentative stage. There are a number of reasons why this is so. First, the term "innovation" is used in various ways to denote such disparate activities as research, scientific discoveries, general improvements or rationalization proposals. Alternatively, it is used to cover all of the above, as well as inventions. For example, according to section 65 of the Romanian Law on Inventions and Innovations, 1974, an innovation is "... any technical achievement showing novelty ... evidence of progress and economic or social advantages, and solving a problem in industry or in any other field relating to the economy, science, culture, the protection of health and national defence or in any other branch of economic and social life ...". In a document submitted to a Working Group on Technological Innovation in 1978, the World Intellectual Property Organization suggested that the term covers invention, rationalization and adaptation of technology.

A second major reason why the rights in innovations have not been regulated is the fact that the value or results of innovative activity are often difficult to assess in monetary terms. Unlike inventions that are by

definition applicable in industry, innovation can touch on the domains of pure science, economics, health or other social fields. The potential value of an innovation may be substantial; yet because of its nature, particularly if it contributes to social progress or to the advancement of knowledge, a monetary assessment may not be feasible or may involve years of evaluation. This reasoning is based almost entirely on practical considerations.

On a theoretical level, however, it is difficult to comprehend why the rights in innovations cannot be regulated in ways similar to those governing the rights in inventions. This is particularly true for the employee-employer relationship. The work of innovators is not inherently different from the work of inventors. The creative result of innovation warrants the same consideration for recognition, rights of disposal and compensation as is given to inventions. Certainly moral and pecuniary rights are justified. Where further thought is required is on the question of rights analogous to property rights in inventions. Innovations, as yet, do not have a framework similar to the patent system, which may make it difficult to protect exclusive rights. But the granting of an exclusive right could be examined as a matter of principle, to be complemented later by a system of protection.

The socialist countries, such as Bulgaria, Czechoslovakia, Hungary, Romania and the USSR, have taken certain initiatives in regulating the rights of employee-innovators. These countries have either adopted separate laws on innovation or have extended the scope of their laws on inventions to cover innovations. Since property rights belong to the State, this question has been easily resolved. The moral and pecuniary rights of employee-innovators are regulated in virtually the same way as the rights of employee-inventors.

The increased attention that is currently being paid to innovation throughout the world warrants a review of incentives to innovate. One such incentive, proposed for example in the United States, is to grant rights to employees in innovations as well as inventions.[7] These rights will have to be based on careful consideration of the respective interests of employers and employees and of feasible means of ensuring protection. This consideration has been given to inventions in many countries. It is to be hoped that it will soon be given to innovations.

4. Concluding remarks

From what has been said above it is clear that the employment relationship does not negate the principle that authors of creative works have rights worthy of protection. The employment relationship does, it is true, modify the extent of these rights, but the special employee invention laws and some industrial property laws illustrate that this modification can

be applied in an equitable manner, safeguarding the interests of both employers and employees.

Unfortunately, the adoption of such laws is not widespread. The 50-year-old recommendations of the ILO Advisory Committee on Salaried Employees (and the repeated recommendations of more recent sessions of its successor, the Advisory Committee on Salaried Employees and Professional Workers) can provide guidance as to the measures needed. It was proposed on these various occasions, and the proposal is still valid, that an international instrument should be adopted.

One could legitimately ask whether the rights of employees in their works is an issue of sufficiently wide interest to warrant international standards. In considering this question, however, it should be recalled that individuals who are not employed do already enjoy protection of their rights. The basic issue, then, is to define how the employment relationship affects the entitlement to rights and how these rights should be protected. The focus of this debate, in the past, has been limited to employee-inventors. But, as the brief discussion on innovation in this article has tried to demonstrate, the issue is not necessarily restricted to them: it is relevant to a number of professions, including scientists, researchers, development personnel and even authors. It is also relevant to any employee, whether or not hired to invent, innovate or write, who happens to discover or create a novel idea, process or product. The potential scope of an eventual instrument could therefore be very wide indeed, since any employee, whatever his field of specialisation or sector of economic activity, may at some time in his career author a creative work. Such an instrument would find its natural place in the ILO, since the basic issue that needs to be addressed is the balance of rights and interests in an employment relationship.

Should the ILO consider the adoption of an international instrument, the new question that would have to be examined concerns the definition of the rights under discussion. These rights are, however, closely linked to the wider field of industrial property and even to intellectual property rights in general. This article has shown that the regulation of intellectual property rights differs from country to country and from one economic system to another. Care would have to be exercised in drafting an ILO instrument to ensure that its provisions remained within the competence of this Organisation and were applicable to different systems of property rights. In themselves the close links between intellectual property law and labour law on this question and the existence of different systems of property laws do not represent obstacles to the adoption of an ILO instrument on employee rights in innovative works. They do, however, merit special attention and would have to be considered in the decisions taken on the content of such an instrument.

The rights of employees under discussion—property and pecuniary rights—have not been the subject of international regulation. There are

now ample examples in national legislation—both in the specific employee invention laws and in the laws of the socialist countries—on which to begin consideration of the form and content of a possible instrument. But international legislation, even when reflected in national law, is not the entire answer. As we have seen, in France, the Scandinavian countries and the United Kingdom certain issues, and most notably the assessment of the amount of compensation, are regulated by collective agreements. Legislation must therefore be accompanied by action to strengthen the bargaining position of the employees most likely to be affected. This is up to the employees themselves, of course, and the vigorous approach adopted by the Scandinavian trade unions in this field provides a valuable example.

Notes

[illegible] Recommendation concerning the protection of salaried employees' inventions adopted by the Advisory Committee on Salaried Employees at its first meeting (Geneva, 18-19 April 1961), in *Industrial and Labour Information* (Geneva, ILO), Vol. XXXVIII, pp. 99-102.

[illegible] See, in general, P. Sauvageot: "Employees' rights in their inventions: a comparison of national laws", in *International Labour Review*, Jan. 1961, pp. 16-44; R. Gaulier: "Intellectual workers and their work in social theory and practice", ibid., Apr. 1974, pp. 291-317; ILO: *Le personnel scientifique et technique: besoins, qualité* (Conditions of employment and labour (Geneva, 1974); and idem: *Conditions of work and employment of professional workers* (Geneva, 1977), pp. 91-99.

[illegible] "American R & D: some disturbing trends", in *Newsweek* (New York), 4 June 1979, p. 76.

[illegible] See *Status of science and technology in India, 1978* (New Delhi, Council of Scientific and Industrial Research, 1978), p. 2.

[illegible] "L'invention dans l'entreprise: une partie de la recherche": interview with Pierre Aigrain, Secretary of State for Research, in *Revue de l'entreprise* (Paris), July-Aug. 1978, pp. 63-66.

[illegible] *Comparative study of employees' inventions law in the Member States of the European Communities*, Labour Law Series No. 2 (Brussels, Commission of the European Communities, 1973), p. 9; C. Douglas: "Salaried inventors' rights", in *Report on the Trade Unions' Conference of Salaried Employees in Industry* (Geneva, ILO/FIET, 1978), p. 152; and I. C. Sirdeman: "The employed inventor: issues, but no answers", in *AIPLA Quarterly Journal* (Arlington (Virginia)), Vol. 1, No. 1, 1973, p. 144.

[illegible] For a thorough discussion of this question see Gaulier, op. cit.

[illegible] R. Gaulier: "Employment and copyright", in *Copyright* (Geneva, World Intellectual Property Organization), Apr. 1979, pp. 112-125.

[illegible] Cited in Department of Consumer and Corporate Affairs, Canada: *Working paper on patent law revision* (Ottawa, Supply and Services Canada, 1976), p. 16.

[illegible] ILO: *Conditions of work and employment of professional workers*, op. cit., Ch. II.

[illegible] "Les ingénieurs: "nous voulons être mieux utilisés"", in *Revue de l'entreprise*, June 1978, p. 16.

[illegible] "L'ingénierie française exporte de son avenir", in *Le Monde* (Paris), 17-18 June 1979, p. 21.

[illegible] The Paris Convention for the Protection of Industrial Property was adopted in 1883 and revised on a number of occasions in 1900, 1911, 1925, 1934, 1958 and 1967. It is due to be revised again in 1980.

[14] World Intellectual Property Organisation, *WIPO Model Law for Developing Countries on Inventions*, Vol. 1, *Patents* (Geneva, 1979), p. 22.

[15] *Regulations concerning employees' inventions* (Tokyo, General Affairs Division, Patent Office, 1971).

[16] Concluded on 15 January 1970 between the Swedish Employers' Association and the Swedish Confederation of Trade Unions.

[17] See *Industrial Property* (Geneva, World Intellectual Property Organisation), Oct. 1979, pp. 108-113.

[18] World Intellectual Property Organisation, *Study prepared by the International Bureau, Working Group on Technological Information* (Geneva, 1979, doc. WIT/TII/2).

[19] Advisory Subcommittee on the Public Interest, *Domestic policy review of industrial innovation* (Washington, Department of Commerce, 1979, mimeographed).

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Employers' Obligations regarding Employee Inventions—A New Perspective

NAVEED ALAM*

When employers purposelessly withhold their employees' inventions from public disclosure, they engage in conduct that is incongruous with policies of patent laws. Additionally, this conduct is not consistent with employers' obligations to protect certain "residual" rights of employees. The traditional analysis of disputes between employers and their employees involving ownership of inventions has considered only the contract aspects of their relationship. This article proposes that the conduct of employers who purposelessly withhold their employees' inventions should be evaluated in terms of employees' residual rights and the injury caused by such conduct."

Introduction

Most employers require that all inventions conceived by employees during their employment be assigned to the employers. Usually, the employees cannot bargain for the terms of such assignment contracts. It often happens that when an employee submits an invention to the employer, the employer may reject it as worthless and thus would normally have no purpose to retain it. However, the employer may at the same time claim ownership of the "worthless" invention and withhold it. Under such circumstances, an employee who wants independently to obtain a patent for the "worthless" invention is not permitted to do so. The employee must accept the employer's claim as a final disposition of the invention. This practice has been widely accepted under the principle that, with the assignment contract, the employee-inventor contracts away all rights to the invention. However, when closely examined, this practice is not in harmony with principles of contract and patent laws.

The issues of employers' rights regarding their employees' inventions have often been litigated, and a great deal has been

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written about the subject.[1] The issues that have been discussed extensively cover the competing rights of the employers and their employees in the latter's inventions. The available literature and the courts have not addressed the issue of possible injury to the public that results when the employers purposelessly withhold inventions of their employees. The literature has also not considered that the employees may have certain inalienable "residual rights" in their inventions. This article examines and analyzes these issues.

Purpose of the Patent System

The patent laws and provisions of the Constitution seek to promote the progress of science by offering to an inventor an exclusive monopoly for a limited period in exchange for disclosure of his or her invention to the public.[2] When the limited period expires, society will have free use of the invention and the consuming public thus benefits from the unrestricted exploitation of the disclosure.[3] The offer of a patent monopoly extends to all inventors, including those who are employed.

There are two public interests in the patent realm that are affected when an employer purposelessly withholds the inventions of his employees. A first public interest seeks to provide a patent monopoly to the inventor who desires protection for an invention. A second public interest requires that an inventor seeking a patent for an invention must promptly disclose the invention to the public.

By withholding employee inventions and not permitting employees to independently secure patent protection, an employer impedes the offer of a patent monopoly from reaching its employees. Such conduct is inimical to the public interests. The conduct hampers the progress of science by preventing an increase in the pool of public knowledge that would result if the employees could obtain patents for their "worthless" inventions. These factors have not been considered in disputes between employers and employees regarding ownership of inventions made by the employees.

Traditional Analysis Protects Employer

The purpose of the traditional rule, which permits an employer to claim its employees' inventions, is to protect the

employer in its business. An employer's claim to its employees' inventions has been upheld under principles of contract laws. However, when the employer purposelessly withholds its employees' inventions, for example, while characterizing the inventions as "worthless," the purpose of the traditional rule is obviated. The employer does not need protection under the circumstances; however, the employees are prevented from enjoying their "residual" rights in the inventions. Nor is the public interest served when inventions are withheld and thus cannot contribute to the pool of public knowledge. In this environment, the contract principles that support the employer's claim to the inventions lose their vitality when contrasted with the injury to the public that results from the employer's conduct.

Employee Inventions—Rights and Obligations

Consider the following situation. An individual employee, Smith, signs a contract promising to disclose and to assign to his employer, the XYZ Company, any invention he conceives during the course of his employment. Smith conceives an invention and submits it to the XYZ Company. It is assumed here that Smith wants to obtain a patent for the invention. The XYZ Company considers the invention worthless, but still claims ownership of it. Consequently, the company withholds the "worthless" invention and does not permit Smith to independently seek a patent for it.

In examining the relationship of the parties and the nature of the assignment contract, let us further assume that there are no issues of trade secret or breach of confidential relationship involved and that the only means of public disclosure is through issuance of patents. (This will be particularly important later, when we discuss Smith leaving his job and obtaining a patent for the invention in his own name.) We will also assume that, in addition to the express terms of the assignment contract, the XYZ Company may assert ownership of the invention based on the nature of its employment relationship with Smith. (For purposes of this article, the term *assignment contract* includes any contract or tort theory that the XYZ Company may utilize to claim the issued patent.) The XYZ Company also may have justifiable reasons for withholding the invention, for example,

for later exploitation, and purposelessly withholds the invention.

The Assignment Contract

Smith's obligation to assign to the XYZ Company any invention conceived by him during his employment is a contractual obligation grounded in the assignment contract. Such contracts have been accepted as proper.[3]

When the XYZ Company and Smith execute the assignment contract, there takes place an exchange of promises. Smith promises to disclose to the XYZ Company any invention he conceives and to sign proper papers of assignment. The XYZ Company promises certain benefits, such as employment, bonus, or a percentage share of any proceeds derived from the invention. These promises, which are part of the "contract basket" of exchanges, require positive action by the parties and reflect on their legally binding course of conduct. The rights and obligations of the XYZ Company and Smith under the contract basket flow from the express or implied terms of the assignment contract. An implied element of the contract basket is that both the XYZ Company and Smith agree not to undertake any action that may injure or defeat the other party's interest in the subject matter of the contract.[4]

The assignment contract also touches and concerns intellectual property, an area of the law having its own discriminating rules and policies. Thus, there is an "intellectual property basket" of exchanges that comprises, inter alia, certain obligations relating to enjoyment of a patent monopoly. This basket is necessary in order to determine, for example, the scope and quality of Smith's rights in the property he has promised to assign.[5]

Accordingly, the exchanges comprising the intellectual property basket spring from the nature of the property that is involved and form an integral part of the assignment contract. While the contract basket determines the mutual rights and obligations of the XYZ Company and Smith, the intellectual property basket, and particularly its patent component, determines the metes and bounds of the subject of the assignment contract (i.e., inventions and patents) and the parties' obligations to the public-at-large. There is a kindred relationship between the two baskets and together they comprise the bundle of obliga-

tions assumed by the XYZ Company and Smith toward one another and toward the public.

The Employer's Obligations

The XYZ Company's contractual rights to claim ownership of and obtain a patent for Smith's inventions are derivative in nature, flowing from Smith as the inventor. The XYZ Company thus becomes an intermediary between Smith, the inventor who wants a patent for his invention, and the public-at-large.[6] As the conduit between an inventor and the public, the XYZ Company assumes the responsibility for moving the invention forward into the public realm. The public no longer has any expectations of the employee (i.e., Smith) disclosing the invention.

The XYZ Company realizes its rights to obtain a patent for Smith's invention and the power to enforce it against the public-at-large, when and if the patent issues, only by virtue of the assignment contract. As a party to that contract, Smith assigns to the XYZ Company only those rights that may be transferred, together with concomitant obligations. (Transferable rights will be discussed in the next section.)

After the assignment contract is executed, the XYZ Company may obtain a patent for Smith's invention. The patent would be a contract between the public and the inventor (i.e., Smith), whereby the inventor or the assignee obtains a monopoly for a limited time and the public receives free use of the disclosure after such time. There exist certain obligations, such as prompt and "best mode" disclosure of invention, that Smith, as the inventor seeking a patent, owes to the public. These obligations must be satisfied before Smith may validly claim the benefits of the statutory patent monopoly. With the assignment contract, the XYZ Company assumes control of the flow of the invention to the public. As a result, it can be said that the XYZ Company, on behalf of Smith, contractually agrees to satisfy the inventor's obligations to the public.[7]

There are two facets to the company's obligations resulting from its dominion and control over the invention. The first facet relates to the XYZ Company's obligations toward Smith. Here, the XYZ Company assumes an undertaking to preserve Smith's interests in the invention and to fulfill any obligation that

Smith, as an inventor desiring a patent for his invention, may owe to the public. The second facet concerns the XYZ Company's control of the invention. The XYZ Company is the only party that can be responsible for moving the invention forward to public disclosure; in addition, it is the party that will enjoy the benefits of a patent monopoly that may be obtained on the invention. Therefore, from the public's perspective, the XYZ Company must satisfy obligations owed by Smith, as an inventor, to the public. The burden on the XYZ Company to satisfy these obligations to the public parallels the burden on an inventor seeking a patent for his or her invention. Thus, considerations that exact prompt disclosure of inventions from an inventor seeking the benefits of a patent monopoly apply with equal vigor to the employer (i.e., the XYZ Company) that controls the flow of the invention.[8]

The Employee-Inventor's Residual Rights

As an inventor, Smith has an inchoate right to obtain a patent for his invention and the right to enjoy the patent monopoly that may be granted for the invention. However, when Smith enters into an assignment contract with the XYZ Company, he transfers only the right to obtain a patent and not the full inchoate right. This position is supported by the following analysis.

When a patent issues, the government (i.e., the public) will protect Smith or his assignee, the XYZ Company, in his rights to exclude others from making, using, or selling the invention. These protected rights mature only after a patent issues and relate to the pecuniary aspects of a statutory monopoly. These rights, together with the right to obtain a patent are "transferable."

There are certain "residual," or "nontransferable," rights that remain vested with Smith. These residual rights relate to the intercourse between the inventor and the public-at-large, which grants the patent monopoly. Smith has a residual right to apply for a patent and a residual right to credits that flow from any patent that issues in his name.

When Smith enters into an assignment contract with the XYZ Company, he agrees only to submit the invention for the company's consideration. To that extent, Smith's residual right to submit an application for a patent can be harmonized with the

rights transferred to the XYZ Company in the assignment contract. If the XYZ Company desires, it may then take appropriate ministerial steps *on behalf of* Smith to submit an application for a patent. The ministerial steps may include filing a patent application in the Patent Office and seeing that the patent issues. The powers of the XYZ Company are only ministerial because Smith, as the inventor, must personally approve the prepared application and execute an oath before the application may be properly submitted to the Patent Office.[9] All of these factors show that Smith did not completely part with his inchoate right to apply for and obtain a patent for this invention. At best, the XYZ Company acquired the power to independently file the patent application, if Smith is unwilling or uncooperative, and then only on Smith's behalf.[10] Thus, the XYZ Company acquires only the right to help Smith obtain a patent for his inventions.

Smith's second residual right concerns credits for the invention. This right is complementary with the statutory requirement that a patent must issue to the true inventor. This right is inalienable in the sense that Smith cannot part with it; in other words, Smith cannot permit a different person to be advanced as the inventor.

In addition, there are public policy reasons why Smith cannot surrender his residual right to credits for his invention. These public policy reasons recognize that, when a patent issues, Smith's name would attach to it. The patent will thereafter become a definite and continuing source of credits to Smith.[11] As a matter of human nature and public policy, Smith cannot—and should not have to—agree to contract away the right to credits for his invention.[12]

Withholding an Invention Is Inconsistent with Assignment Contract Purpose

After Smith conceives an invention and presents it to the XYZ Company, Smith has fulfilled his obligation under the assignment contract to disclose the invention to his employer. The XYZ Company decides whether a patent should be obtained for the invention and then Smith would be asked to perform his second obligation under the assignment contract (i.e., to execute papers of assignment).

It is assumed here that the XYZ Company considers the invention "worthless." If the invention is worthless, the company is not affected in its business when it decides to withhold the invention. Thus, its right to claim and withhold the invention, given the purposes of the assignment contract, is questionable.

The XYZ Company's decision to consider the invention worthless may be premised on a variety of factors that may have very little or nothing to do with the merits of the invention. For example, the XYZ Company may believe the invention to be worthless because of the competition in the market, the XYZ Company's market position, the investment required, and the established line of products with which the invention may compete. The XYZ Company's decision represents an evaluation of all relevant factors and is a decision best suited to its interest.

While the XYZ Company is considering these factors, the inventor may be prevented from seeking a patent and thus is delayed in releasing his or her invention to the public. This delay may result in total loss of the inventor's rights. Similarly, the reasons for which the XYZ Company considers the invention worthless would not excuse its decision to purposelessly withhold the invention from public disclosure. This is so because the result of the company's conduct is the same (i.e., the public is deprived of the disclosure). Thus, an element of public disfavor attaches to any future claim by the XYZ Company to the purposelessly withheld invention against the public-at-large.

As noted earlier, Smith retains the residual right to submit an application for a patent. During the period that the XYZ Company withholds the invention, Smith does not forfeit this right. Now, instead of purposelessly withholding the invention, if the XYZ Company permits Smith to obtain a patent for the invention at his own expense, there are no conceptual problems. Smith is free to enjoy his residual rights in the invention, and the rights of the XYZ Company are protected under principles of "shop rights." This alternative would accommodate the interests of the public, Smith, and the XYZ Company. However, there are considerable problems when the XYZ Company withholds a "worthless" invention and at the same time blocks Smith's access to a patent monopoly, thereby hindering accretion to the public knowledge.

Employer Is Not an Outright Owner by Virtue of the Assignment Contract

Some courts have suggested that, once a company assumes ownership of an invention, it may do as it pleases (i.e., the XYZ Company may ignore or discard the invention without considering Smith's desire to obtain a patent).[13] This raises considerable conceptual difficulties. The XYZ Company's rights in dealing with the invention spring from the express or implied terms of the assignment contract and/or from its relationship with Smith as the employee. These powers must be tempered by the fact that Smith, as the inventor, has at least some residual rights that are not subject to the employer's discretion.

Further, the XYZ Company's freedom of action to deal with the invention is dictated by, and should be commensurate with, its potential right to enjoy the monopoly of the patent obtained for the invention. If an employer is considered an outright owner of its employees' inventions before a patent issues, this would imply that employers may never act on their employees' behalf in obtaining patents for their inventions. Such broad employer powers would unnecessarily encumber the scheme of the Constitution to stimulate inventions. (This will be expanded on later in the article.)

However, a company may be considered an outright owner only where its conduct does not injure the employee's residual rights regarding an invention or the public interests of the patent laws. For example, the XYZ Company may withhold and claim total ownership of inventions for which it has a purpose to withhold. Indeed, in this instance, Smith's residual rights and the two public interests may be subordinate to the company's interests.

Nonetheless, while the XYZ Company may have gained, by virtue of the assignment contract or by its relationship with Smith, the right to ignore or withhold the invention as far as Smith is concerned, this right may not be potent against the public-at-large. There is a vital public interest in the free use of an invention as soon as possible,[14] and this public interest attaches not only to inventors but also to those who stand in similar relation to the public as the inventor and who seek to enjoy the benefits of the patent monopoly. This public interest attaches to the XYZ Company as the party standing in Smith's shoes and the party that is to enjoy the patent monopoly.

Further, the XYZ Company's claim to do what it pleases with the invention would not supercede another important public interest (i.e., the public interest to provide that the Constitution's patent scheme reaches those inventors who desire a patent for their invention). The technical requirements or demands of a contract on which the XYZ Company may rely must give way to these two public interests.[15]

Therefore, when the XYZ Company purposelessly withholds the invention, Smith is prevented from enjoying his residual rights and the public interests are injured. Accordingly, there is a certain public disfavor and consequences the company faces that may impair its claim of total ownership of the invention. The nature of this disfavor and the consequences will now be examined.

Consequences of Purposelessly Withholding an Invention

Let us now assume that there has been a lapse of time and Smith, after leaving his employment, has obtained a patent on the invention in his own name. It should be emphasized that Smith has obtained the patent despite the XYZ Company's delay in allowing the invention to be released to the public. The patent proves to be valuable. The XYZ Company now invokes the assignment contract and claims title to the patent. (As noted earlier, no question of breach of trust or confidential relationship by Smith is involved here. This will preserve the focus on the XYZ Company's conduct.)

The first issue to examine here is the hiatus between the XYZ Company's initial withholding of the invention and its present claim of title to the patent. This inquiry belongs to the contract realm and has roots in the contract basket of exchanges between the XYZ Company and Smith. A second inquiry should be into the company's initial failure to move the invention to public disclosure when Smith, as the inventor, continued to desire a patent. This inquiry belongs to the patent realm and has roots in the intellectual basket of exchanges.

Traditional Contract Analysis

Traditional analysis focuses on an employer's contract rights regarding its employees' inventions. A few cases will serve as illustration. These cases show that, in general, an employer's claims

to its employees' inventions, whether premised on an assignment contract or on the nature of the employee-employer relationship, are affected by the hiatus between the employer's initial disinterest in the invention and later claims to it.

In *L. A. Migel v. Bachofen*,[16] an employer knew of its employee's experiments to develop an invention and contributed a certain sum of money to it. An assignment contract was drawn up. After the employee was discharged, the employer ceased to be interested in the matter and took no steps to ascertain if the employee was still working on the invention. Only after the employee had succeeded in making the invention and had become a potential competitor did the employer institute a suit seeking remedies. The employer, wishing to suppress the invention, sought assignment of the patents involved. The employer's purpose in bringing the suit was not to enjoy use of the patent but to prevent its use by any competitor in the industry.

The assignment contract had provided for royalties for the employee and there was nothing in it that required the employer to *use* the patent; thus, the former employee-inventor would have been cut off from any sources of royalties, because the employer had invested heavily in a different type of machine since the time of the assignment contract. The court stated that equity should not lend its aid to execute a scheme so manifestly unfair to the employee, and no assignment of the patent to the employer was required.

In *Texas Co. v. Gulf Refining Co.*,[17] an employer contended that one of its present employees was the true inventor of a process and prosecuted an interference proceeding with a former employee-inventor. The proceeding went on from 1917 to 1922. At no time during this period did the employer claim that, even if the former employee was the true inventor, the employer was the equitable owner of the invention because the invention was made while the former employee was still employed and subject to the terms of an assignment contract. At the same time, the former employee's assignee was spending large sums of money installing machinery to practice the process invented, and the employer was aware of such expenditures. The employer's delay of some nine years in asserting its rights under the assignment contract, and its conduct during that period, was held to estop the employer from enforcing its claim.

In *Reece Folding Machine Co. v. Fenwick*,[18] an employee agreed to assign to his employer all inventions already made (during employment but before an assignment contract was executed) and improvements he might thereafter make on the inventions. After his discharge, Fenwick considered all his relations with the employer ended. Six months after the discharge, Fenwick attempted to interest the employer in arrangements to develop an improvement he had devised. The employer turned its back on Fenwick and acquiesced in Fenwick's belief that his relations with the employer had ceased and that he would be on his own in making the improvement. The employer was held not entitled to the improvement invention.

These cases demonstrate that, as a consequence for the delay in asserting its claim to the issued patent, the XYZ Company may lose rights to it. Smith will be able to use contract and equity principles as *defenses* against the company's claims to the patent. Clearly, any consequences to the XYZ Company result only from considerations of the parties' mutual rights and obligations.

However, this analysis is deficient in ignoring the fact that the assignment contract is an admixture of a contract basket and an intellectual property basket. The traditional analysis has considered consequences to the XYZ Company only under the contract basket. There is no reason why the consequences that may flow from the intellectual property basket should not be considered as well.

The patent component is particularly relevant in the intellectual property basket. Patent laws view, with significant disfavor, conduct that impairs the terra firma of those seeking a patent monopoly. Accordingly, when the XYZ Company purposelessly withholds Smith's invention, the result may be public disfavor regarding any of the company's future claims to the invention. We will now examine the type of public disfavor that may accrue to the XYZ Company.

The Patent Realm: Public Interests Injured

The purpose of the monopoly granted to inventors under the patent laws is to encourage inventors and to increase the pool of useful knowledge. This purpose is best achieved by rewarding

those inventors who are diligent and prompt to disclose their inventions. Those who withhold their inventions do so at their own risk.[19]

As discussed earlier, there are two public interests that are affected when the XYZ Company purposelessly withholds Smith's invention and does not permit Smith to independently obtain a patent. These public interests will now be examined.

Public interest to provide an inventor with access to a patent monopoly. There exists a public interest to provide inventors with access to a patent monopoly offered by the patent laws. This public interest has not been articulated in the literature as such; however, it can be recognized by example.

Consider that the XYZ Company purposelessly decides never to file patent applications for any of its employees' inventions and claims the right to withhold the inventions under some contract principles. The public interest is at issue here because of the injury to the scheme of the Constitution to encourage inventions and to induce inventors to come forward and disclose their inventions. If the XYZ Company sues an employee who nevertheless obtains a patent for an invention, the company's conduct will come under scrutiny. It is possible that the XYZ Company may be denied relief, irrespective of any contract that may exist between the employer and the employee.

Public interest to enjoy free use of the invention as soon as possible. The patent laws have several "time-is-of-the-essence" principles that support the public interest to receive the disclosure as soon as possible. These principles apply initially to Smith, since he is an inventor who desires a patent for his invention. They require that Smith release his invention to the public as soon as possible, and if he delays doing so, consequences await him. These consequences accrue to the XYZ Company when it acts contrary to the principles at issue.

1. One-year period to file application for patent. Under 35 USC section 102(b), Smith must file an application for a patent within one year after the invention is described in a domestic or foreign publication or is in public use or on sale in this country. Section 102(b) does not allow delay beyond one year, irrespective of any reasons Smith may have for his delay. Other subsections of section 102 also contain time limitations.

2. Statutory standards of patentability encourage prompt filing. The statutory criteria of an invention's novelty are mea-

sured against the prior art. If Smith withholds his invention, he does so with the knowledge that the pool of the prior art is dynamic and ever-increasing. When Smith finally files an application for a patent, after an extended delay, others may have already enriched the public knowledge. As a result, Smith's claims to the invention may be defeated.

3. *Abandonment and forfeiture.* Smith may abandon his invention and lose his right to obtain a patent for his invention. Abandonment would result from a delay on Smith's part to timely claim his invention against the public. Although it is well settled that a mere delay will not prejudice Smith's right to obtain a patent, it is equally clear that, if the question arises, the burden will be on Smith to successfully explain the delay.[20] To that extent, at least, Smith's inchoate right to obtain a patent is affected when he withholds his invention from the public. If some public rights have intervened during the time period of the delay, a doctrine akin to estoppel may be applied against Smith.[21] In addition, Smith may forfeit his right to obtain a patent by conduct designed to delay his invention's release to the public.[22]

4. *Abandonment, suppression, and concealment under 35 USC section 102(g).* If Smith is the first to invent something and it is determined that he abandoned, suppressed, or concealed his invention, a rival inventor, although a latecomer, would be entitled to receive the patent for the invention.[23]

Consequences to the Inventor

The above principles of patent law show that Smith's rights to his invention may be lost if he does something that is contrary to the public interest in receiving the invention as soon as possible. Similar consequences may result if the public interest to provide an inventor with access to a patent monopoly is injured by the inventor's conduct.

These results are predicated on a well-enunciated policy that a patent, by its very nature, affects the public interest. Any attempt by Smith to postpone the beginning of the term of his monopoly, and thus delay free public enjoyment of the useful invention, is an evasion of the statutes and defeats its benevolent aim.[24] There should be no rewards for those who would materially retard the progress of science and are least prompted

to communicate their discoveries.[25] Thus, it would be reasonable, and consistent with patent policy, to withhold from Smith the privilege of the exclusive monopoly, unless he promptly puts the public in possession of his invention. The public's rights and interests should not be made to yield to schemes of selfishness or cupidity. The rights of the community must be considered and effectually guarded.[26]

Effects of Employer's Conduct

When the XYZ Company purposelessly withholds Smith's invention, and Smith continues to desire a patent, then the patentability of the invention, or the validity of the patent that may issue, is affected. The invention will be extenuated by the increase in the pool of prior art, the burden to disprove an intent to suppress, and the burden to overcome the prejudice that flows from a possible finding of abandonment, suppression, or concealment.

Thus, by purposelessly withholding Smith's invention, the XYZ Company has an effect on Smith's residual rights to the extent that the invention is blemished. In addition, the company had the option to permit Smith to patent the invention while remaining protected under principles of "shop rights." Having failed to take advantage of this appropriate alternative, thus accommodating the public, the XYZ Company may now lose its claim to the invention.

Further, arguments can be made to show that the XYZ Company is aware that its conduct may affect its claim to the invention. The reason this possibility exists is that an inventor's delay in disclosing an invention to the public assumes cognizable importance in an interference proceeding or in an infringement action where the validity of the patent is an issue. The interference and infringement actions are both conflicts related to the ownership of a patent or an invention; both represent the only occasion that the question of such a delay is considered. In an interference proceeding, the successful party obtains title to the invention and may then enforce the resulting patent monopoly against the public. In a validity dispute, the action is of sorts between the public and the patent holder, the challenger representing the public. If the patent is found invalid, the challenger, as well as the public, will have free use of the invention immediately.

In a validity dispute, the question of delay is the inventor's delay in disclosing an invention to the public. In an interference action, the measure of delay is the relative delay of the parties involved to disclose their inventions to the public. The important element is the public's access to the invention and the parties' conduct is evaluated with respect to that.[27]

Conclusion

In analyzing the assumed facts in the example presented here, the conclusion is that traditional analysis be expanded to include considerations of Smith's residual rights to his invention. Further, the XYZ Company's conduct, in purposelessly withholding its employee's invention, should be considered as a relevant factor, separate and apart from any analysis of the parties' mutual rights regarding the issued patent, and evaluated for the extent to which the two public interests have been vitiated.

This conclusion is consistent with the obligations assumed by the XYZ Company in the assignment contract. Under the contract basket, the XYZ Company assumed an obligation not to undertake any conduct that may injure Smith's rights in the assignment contract. When the XYZ Company purposelessly withholds the invention, Smith cannot enjoy his residual rights in the invention. Thus, the company's conduct is not consistent with its contractual obligations toward Smith.

In the context of the intellectual property basket, the effect of this interpretation would be as follows: the XYZ Company's conduct unnecessarily postpones the time when the public would have free use of the invention and prejudices the public interest therein. Therefore, such conduct would be recognized as not promoting the progress of science. In addition, the XYZ Company's efforts to gain title to the patent through the courts (i.e., the public) come with bad grace since it is appealing for favor to that society which, if it has not injured, it certainly has neither benefitted nor intended to benefit.[28] The patent resulted despite the company's purposeless attempt to withhold the invention.

Such an interpretation would reinforce the scheme of the Constitution and the patent laws as well as the public interests. The proposal does not interfere with the existing traditional

analysis of the assignment contract, which focuses only on the contract basket. It only suggests expansion of the traditional analysis, and consideration of the exchanges under the intellectual property basket.

Therefore, the XYZ Company would still have the competence to decide which of its employees' inventions it wishes to retain title to, but would be urged to release to employees other inventions that it does not consider worthwhile or has no purpose to withhold. In many instances, employees, like Smith, may obtain patent protection at their own expense. Employees may be satisfied with the intangible benefits flowing from the public disclosure. Thus, the pool of public knowledge would be increased an extra degree and the progress of science additionally promoted. Such, after all, is the purpose of the patent scheme envisioned by the Constitution.

NOTES

1. The following is a collection of articles on the subject: Lieberstein, "Suing the Former Employee," 59 *J. Pat. Off. Soc'y* 705 (1977); Doherty, "Law of the Employed Inventor-Time for Change," 57 *Mass. L. Q.* 27 (1972); Stedman, "Rights and Responsibilities of the Employed Inventor," 45 *Ind. L. J.* 254 (1970); Stedman, "Employed Inventor, the Public Interest, and Horse and Buggy Law in Space Age," 45 *NYU L. Rev.* 1 (1970); Leonard, "Protected Rights of the Employee Inventor in His Invention" 49 *J. Pat. Off. Soc'y* 357 (1967); Note, "Employer's and Employee's Rights in Patents Arising from the Employment," 11 *Vill. L. Rev.* 823 (1966).

2. 35 USC § 1 *et seq.*, U.S. Constitution, article 1, clause 8, section 8: "The Congress shall have power . . . to promote the progress of science and useful arts, by securing for limited times to . . . inventors the exclusive right to their . . . discoveries."

3. *United States v. Dubilier Corp.*, 289 U.S. 178, 186–87 (1932); see also *Brulotte v. Thys Co.*, 379 U.S. 29, 31 (1964); *Special Equipment Co. v. Coe*, 324 U.S. 370, 378 (1945); *Kellog Co. v. Nat'l Biscuit Co.*, 305 U.S. 111, 118 (1938).

4. *Ohasi v. Verit Indus.*, 536 F.2d 849, 853 (9th Cir. 1976), *cert. denied*, 429 U.S. 1004 (1976); see also *Galfand v. Chestnutt*, 402 F. Supp 1318, 1329 (S.D.N.Y. 1972), *aff'd*, 573 F.2d 1290 (2d Cir. 1977), *cert. denied*, 435 U.S. 943 (1978), *rehearing denied*, 436 U.S. 914 (1978).

5. *Crown Die & Tool Co. v. Nye Tool Works*, 261 U.S. 24, 33 (1923); see also *United States v. Dubilier Condenser*, note 3, *supra* at 187; *United States v. Bell Telephone Co.*, 167 U.S. 244, 249 (1896); Ellis, *Patent Assignments* § 2 (1955).

6. *McClung v. Kingsland*, 42 U.S. 202, 205 (1843); see also Robinson, *The Law of Patents*, vol. 2 § 767, pp. 525–26; Ellis, note 5, *supra* at § 349.

7. Smith is bound by the conduct of his assignee, the XYZ Co. See *Wilson*

v. Goldmark, 172 F.2d 575, 582 (C.C.P.A. 1949); *Automatic Elec. Co. v. Dyson*, 281 F.586, 588 (App. D.C. 1922); Ellis, note 5, *supra* at § 349.

8. *Macbeth-Evans Glass Co. v. General Elec. Co.*, 246 F. 695, 699 (6th Cir. 1917), *cert. denied*, 246 U.S. 659 (1918).

9. The content of the patent application, together with the oath and the applicant's signature, constitute the substantive aspect of the patent application. These define the scope and field of the invention, as envisioned by Smith. The oath and signature, while concededly ministerial, should nevertheless be considered substantive because they are testimonial to the application, and any impropriety in them will impair the validity of the patent that may issue.

10. There are provisions that would permit the XYZ Co. to independently file a patent application if Smith is unavailable or uncooperative. See 35 USC § 111, 116–18; 37 CFR § 1.41–1.47.

It has been stated that an inventor's assignment of his invention transfers the inchoate right to obtain a patent for it. See *Toner v. Sobelman*, 86 F. Supp 369, 380 (E.D. Pa. 1949); Ellis, note 5, *supra* at § 248. How can this be reconciled with Smith's residual right to apply for a patent? It is believed that there is no inconsistency. The XYZ Co. obtains the right to file an application for a patent insofar that it may utilize this right when—and only when—Smith is unavailable or uncooperative. Such reasoning does no injury to established rules and is complementary to them since the rights of the XYZ Co. are not diminished in any respect.

11. Barnes, "The Patent System from an Inventor's Point of View," 5 *Patent, TM & Copyright J. Research & Educ.* 63, 68 (1961); see also *Consolidated Fruit-Jar v. Wright*, 94 U.S. 92, 96 (1876).

12. The following authorities support the propositions that: (1) Smith does not agree to give up rights to credits for his invention by executing the assignment contract; (2) this fact is well recognized by employers, like the XYZ Co.; (3) the assignment contract can be deemed executed with due cognizance of this fact; thus, it is part of the bargain of the contract; (4) public policy provides a basis to uphold Smith's right to credits for his invention; and (5) right to credits should be recognized as a distinct and important aspect of the assignment contract. See "Research and Development Direction," 7 *Patent, TM, & Copyright J. Research & Educ.* 23, 25 (Conference Issue) (1963); Barnes, note 11, *supra* at 68. See also "Employee vs. Company Interest in Trade Secrets and Patents," 10 IDEA 67, 73 (Conference Issue) (1966); Regal, *Intangible Rewards for Engineers and Scientists* (Ann Arbor: Bureau of Industrial Relations, Univ. of Mich., 1958).

The issue of credits for inventions has been addressed by the courts. See *Dr. A. Reed Cushion Shoe Co. v. Frew*, 162 F. 887, 889 (2d Cir. 1908); *Garfield v. Western Elec.*, 298 F. 659, 661 (S.D.N.Y. 1924); *Misani v. Ortho Pharmaceutical Corp.*, 33 N.J. Super. 1, 198 A.2d 791 (1964), *rev'd*, 414 N.J. 552, 210 A.2d 609 (1965), *appeal and cert. denied*, 382 U.S. 203 (1965), *rehearing denied*, 384 U.S. 923 (1966).

13. *Dellar's Walker on Patents* § 37, p. 176; § 359, p. 40. See also *Misani v. Ortho*, note 12, *supra*, 198 A.2d at 796–97.

14. This does not mean that the inventor is always under a duty to see that the public receives the disclosure quickly. See, e.g., *Hartford-Empire Co. v. United States*, 323 U.S. 386, 432 (1945); *United States v. Bell Telephone Co.*, note 5, *supra* at 250 (1896). The focus of the present analysis is on the public. The access of the public to the invention is paramount. Normally, there is no duty on Smith to seek a patent for his invention. However, if he does desire a

patent (and it is assumed that he does), then any delay in releasing his invention to the public may be considered whenever necessary, for example, in any dispute involving the invention.

15. *Lear v. Adkins*, 395 U.S. 653, 670 (1969) ("... the technical requirements of a contract doctrine must give way before the demands of the public interest.").

16. 69 N.J. Eq. 608, 126 A. 396 (1924).

17. 26 F.2d 394 (5th Cir. 1928), *cert. denied*, 278 U.S. 625 (1928) (district court's opinion at 13 F.2d 873 (S.D. Tex. 1926).

18. 140 F. 287 (5th Cir. 1905). See also *Parker Rust-Proof Co. v. Allen*, 231 Mich. 69, 203 N.W. 890 (1925); *Phillip Screw Co. v. Givnan*, 256 P.2d 253 (Sup. Ct. Ore. 1953); *Pure Oil Co. v. Hyman*, 95 F.2d 22 (7th Cir. 1938).

19. *Young v. Dworkin*, 489 F.2d 1277, 1283 (C.C.P.A. 1974) ("... the warning has been sounded that one who delays in filing his application does so at the peril of finding of suppression or concealment due to the circumstances surrounding the delay."); *Derr v. Gleason*, 258 F. 969, 972 (App. D.C. 1919) ("A limited monopoly under the patent laws is granted that the public may be benefitted, and he who slumbers on his right does so at his risk.")

The following cases support the position that, if Smith desires patent protection for his invention, he must be prompt to disclose his invention to the public: *Woodbridge. v. United States*, 263 U.S. 50, 56 (1923); *Macbeth-Evans Glass Co. v. General Elec.* note 8, *supra* at 706; *Brown v. Campell*, 41 App. D.C. 499, 501–502 (1914); *Mason v. Hepburn*, 13 App. D.C. 86, 95–96 (1898); *Kendall v. Winsor*, 62 U.S. 322, 328 (1858); *Pennock & Sellers v. Dialogue*, 27 U.S. 11, 23 (1829).

20. *Elec. Storage Battery v. Shimadzu*, 307 U.S. 5, 15 (1938), *rehearing denied*, 307 U.S. 650 (1939).

21. *Consolidated Fruit-Jar v. Wright*, note 11, *supra* at 95–96.

22. *Woodbridge v. United States*, note 19, *supra* at 59. See also *Kendall v. Winsor*, note 19, *supra*.

23. The following doctrines also apply here: (1) Late claiming. The inventor who delays filing a patent is precluded from claiming an aspect of his or her invention disclosed but not already claimed (see Chisum, Patents § 11.05); (2) Spurring. If Smith does not pursue his invention to fruition until spurred into activity by knowledge of a rival inventor's entry, he may be deemed to have forfeited his invention; or such activity may constitute abandonment, concealment, or suppression under § 102(g).

24. *Woodbridge v. United States*, note 19, *supra*.

25. *Pennock & Sellers v. Dialogue*, note 19, *supra*; *Kendall v. Winsor*, note 19, *supra*; *Mason v. Hepburn*, note 19, *supra*.

26. *Sears, Roebuck & Co. v. Stiffel*, 376 U.S. 225, 229 (1964); *Kendall v. Winsor*, note 19, *supra*.

27. See Robinson, note 6, *supra* at § 46.

28. *Kendall v. Winsor*, note 19, *supra*.

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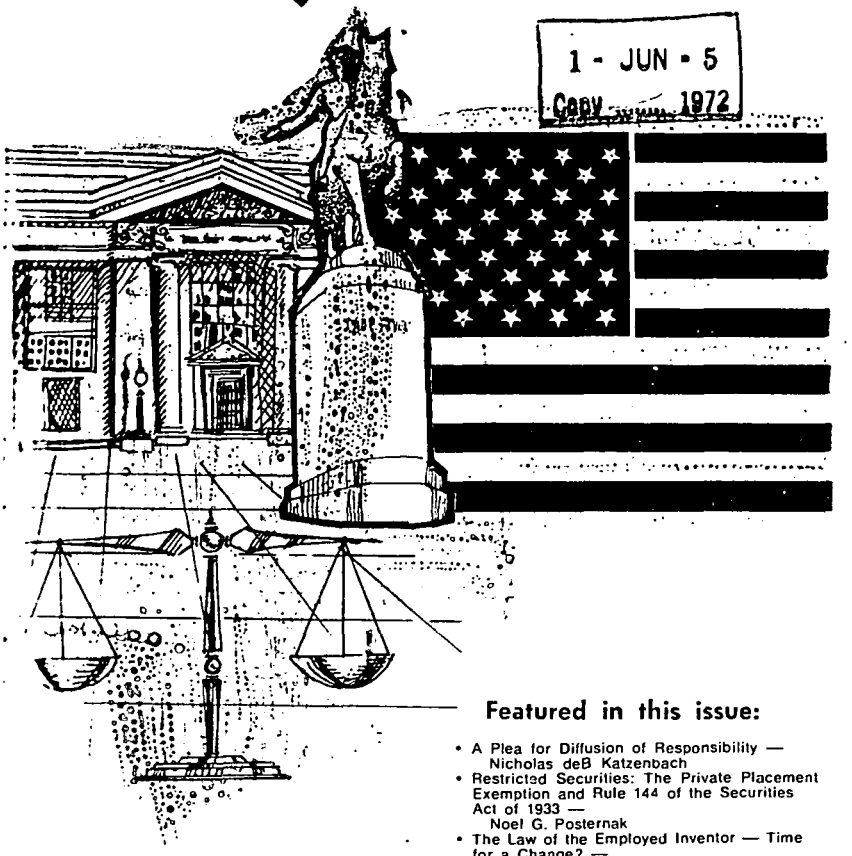

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through any other means; the number of shares of the class outstanding or the relevant trading volume; and whether the seller has solicited or made any arrangement for the solicitation of buy orders, or has made any payment to any other person in connection with the proposed transaction.

[12] A notice is not required to be filed with respect to transactions during any period of 6 months involving not more than 500 securities or $10,000, whichever is less.

[13] To this commentator, the argument is quite strong in view of the drastic changes made by Rules 144 and 237, changes which undercut 40 years of judicial and administrative interpretation of Sections 4(2) and 2(11) of the 1933 Act.

[14] In order to give some additional relief to holders of restricted securities, Regulation A has been amended to allow public offerings by non-controlling stockholders under the Regulation A exemption not to exceed $100,000 per person, and not to exceed $300,000 by all such persons in the aggregate, during any 1 year. Offerings within these limitations by non-controlling stockholders will not be offset against the amount (up to $500,000) available to the issuer under the Regulation A exemption.

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The Law of the Employed Inventor— Time for a Change?

GEORGE M. DOHERTY*
JOSEPH S. IANDIORIO*

Focusing on a recent case decided by the United States Circuit Court of Appeals for the First Circuit, the authors examine the legal problems generated by the employee-inventor who conceives a potential invention during his employment but defers tangible embodiment of his idea until he has severed his relationship with the employer. After sketching the legal framework of "master-servant" and traditional "employment contract" law — and the deficiencies in both approaches to the problem — the authors suggest a new system for dealing more effectively with an issue bound to recur with increasing frequency in a state as technologically-oriented as the Commonwealth.

> "Inventors are a meritorious class. They are public benefactors. They add to the wealth and comfort of the community, and promote the progress of civilization." *Consolidated Fruit Jar Co.* v. *Wright*, 4 Otto (94 U.S.) 92, 96 (1876).

Most technically employed persons are familiar with the conventional employment contract to which they must become a party before they can gain employment in almost any technical or supervisory position. Among the provisions in the employment contract are likely to be some relating to inventions made by the employee in the course of his employment; typically such provisions bind the employee to assign all such inventions, without further compensation, to the employer. Since these provisions are enforcible in the courts,[1] the employment contract has now almost totally supplanted the master-servant common law in determining title to employee's inventions. Since very few employers would be encouraged to support research activity without some guarantee that they would profit from the results, and because seldom did the provisions of master-servant law confer title to employee inventions on the employer, the employment contract's guarantee of title to the employer has assumed a conspicuous centrality in the fostering of sponsored research.

These considerations lengthen the significance of a recent decision in the First Circuit which may cast doubt on the generally assumed

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value of such contract provisions, and raises the more vexing question of whether the privately bargained employment contract still determines the rights and obligations of the employed inventor adequately for the interests of either employer or employee.

The case is *Jamesbury Corp.* v. *Worcester Valve Co.*[2] This article will examine that decision and will raise the question of whether there exists or can be devised a different legal framework which would prevent, or at least better resolve, the dispute which arose in the subject case.

The Facts

Immediately upon graduation from college in 1940, Howard Freeman commenced working as an engineer for the Rockwood Sprinkler Co. (hereinafter "Rockwood"), a manufacturer of ball valves. Under the terms of his employment contract, Freeman agreed "without further consideration to give to Rockwood . . . any and all inventions or improvements which he might make while in the employ of Rockwood" relating to Rockwood's business and to "disclose promptly to Rockwood all of the above-described inventions or improvements. . . ."[3] By 1953, Freeman's inventions, which he regularly assigned to Rockwood, had resulted in 19 patents, and Freeman had risen to Director of Research at an annual salary of $25,000.

From time to time, Rockwood's customers would ask for a "double-seated" ball valve,[4] but although the need and market existed, until 1953, Rockwood had never developed such a ball valve. Late that year, Freeman became convinced that he could develop a double-seated ball valve, and began to study the literature seeking to learn how he might implement some of his ideas in this area. However, instead of communicating his proposals to Rockwood, as he had done in the past, he instead sought out investors with the intention of forming his own company to market the new ball valve. At Freeman's instructions, all checks from investors were post-dated to February 2, 1954. When Freeman had secured some $60,000 in investment capital and had "virtually conceived"[5] in his own mind the ball valve design which he eventually patented and marketed, he "arranged his timely extrication from Rockwood by demanding a large salary increase on January 13, 1954, predictably not expeditiously granted, and resigned as of January 25."[6] In his parting conversation with his employer, Freeman carefully acknowledged that he had no undisclosed ideas which had not been reduced "to writings, drawings or practice."

Thereafter the pace quickened. Freeman's new Jamesbury Corporation had its organizational meeting on January 29, and on February 1 and 2 Freeman commenced making drawings and sketches of the ball valve which was in essence the product eventually patented. Freeman added the name of another (who had never worked for Rockwood) to the patent application, along with his own, as joint inventor of the ball valve invention, so, arguably, to make it appear that the invention could not have been conceived until after Freeman left Rockwood.[7] The patented valve was a great commercial success — in 1970, about $13,000,000 in sales of Jamesbury was directly attributable to this ball valve.

Rockwood never made any claim on Freeman, and Rockwood was eventually purchased by E. W. Bliss Co. (hereinafter "Bliss").

These facts remained undisclosed for almost 12 years until, in 1965 and 1966, Bliss learned that Freeman had testified in some infringement suits pending by Jamesbury against alleged infringers of the ball valve patent that he, Freeman, had conceived the idea for the ball valve in early February, 1954. Their suspicions aroused, Bliss intervened in an infringement suit pending in the District of Massachusetts by Jamesbury against Worcester Valve Co. Bliss alleged that Freeman had "made" the ball valve "invention" while still in the employ of Rockwood and hence that, under Freeman's employment contract, Bliss, as Rockwood's successor, was entitled to an assignment of the patent.

The Holding

The District Court held that the invention belonged to Freeman alone, and the Court of Appeals affirmed. In each court, the decision turned on the meaning of "invention" in Freeman's contract. This meaning was held to be determined by an 1893 decision of the Massachusetts Supreme Judicial Court, *Lamson* v. *Martin*, 159 Mass. 557, 35 N.E. 78.[8] The District Court found specifically that "invention", as used in the contract, meant more than a mere idea in the mind, and that it was "impossible to find on the basis of the evidence that Freeman had completely conceived the entire invention at the time he left Rockwood."[9] In affirming, the Court of Appeals' phraseology was that the word "invention", under the applicable law of Massachusetts, requires that there be a "tangible" embodiment of the idea.[10]

In a narrow sense the decision can be viewed as a simple matter of contract interpretation and, although it can be expected to cause a

hurried perusal of existing employment contracts to supplement or replace the word "invention", would have limited radiations. However, viewed more broadly, the decision illumines some of the frailties of the legal framework that has traditionally obtained for settlement of disputes between the employed inventor and his employer. In this case, the record discloses an employee whom the District Court found to have intentionally and wittingly concealed from his employer an invention of great merit. He was not employed as a mere machine operator or a technician, but as "Director of Research." For fourteen years he had been employed to improve his employer's product lines, and in the course of that employment and, as an integral part of it, had become conversant with the problems of an entire industry and the techniques for analyzing and solving those problems. And yet, when he finally conceived an invention of potentially great merit and economic value, instead of communicating and assigning it to his employer, as he had done in the past, he decided to seek to avoid his contractual obligations and exploit the invention totally for his own profit. And when, confronted with these facts, the employer sought solace in his "employment contract", he received small comfort indeed.

At the least these facts indicate that reliance on contract law, much as the master-servant law, may not be wholly adequate to govern the employment of inventors in an evolving and sophisticated technological society.

The Legal Framework of Master-Servant Law

In the absence of an employment contract, title to the inventions of the employed inventor is usually determined by the traditional common law of master-servant. Under that law, the employer gains title to the employee's inventions only by demonstrating that the employee was "hired to invent." The applicable law is well summarized in *National Development Co.* v. *Gray*, 316 Mass. 240, 246, 55 N.E. 2d 783, 786 (1944):

> "One by merely entering an employment requiring the performance of services of a noninventive nature does not lose his rights to any inventions that he may make during the employment . . . , and this is true even if the patent is for an improvement upon a device or process used by the employer or is of such great practical value as to supersede the devices or processes with which the employee became familiar during his employment. * * * * * The law looks upon an invention as the property of the one who con-

> ceived, developed and perfected it, and establishes, protects and enforces the inventor's rights in his invention unless he has contracted away those rights."

If a person is specifically hired and compensated to make an invention, the law imposes on him an obligation, in the nature of an implied contract, to assign to the employer the inventions so made.[11] The difficulty usually arises in proving that the employee is "hired to invent".

It is usually held irrelevant that but for his employment, the employee would have learned neither of the existence of a problem nor of the techniques to be applied in its solution.[12] Even if the employee utilizes the employer's equipment and tools to make the invention, all that the employer gains is a shop right — a non-exclusive, non-transferable, royalty-free license to use the employee's invention.[13]

There are several obvious situations in which the employer does acquire the right to title, for example, if he assigns to an employee a particular task — i.e., to solve a particular problem, or to design a machine to perform a specific function.[14] In these and like situations the employer obtains title to the resultant inventions. Again, if the employee is in fact the "alter ego" of the employing entity, then the law may impose on the employee a fiduciary duty to assign title to the inventions to the employing entity.[15]

The most troublesome area involves the inventions of employees having supervisory or administrative duties, particularly over research activities — e.g., employees like Freeman. Whether the inventions of the titled "Research Director" are his or belong to his employer depends on the nature of the employed's duties. It has been held that a general supervisory employment, whether over research personnel, or even broadly to improve the employer's products, does not confer title in the supervisor's inventions in the employer.[16] This is so even in these situations where "it was his duty to use his skill and inventive ability to further the interests of his employer by devising the improvements generally in the appliances and machinery used in the employer's business."[17] It is incumbent upon the employer to prove that the employee was an "idea man."[18] Despite the formulation of various tests, such as the straightforward one set forth in *Bowers* v. *Woodman,* 59 F.2d 797, 802 (D. Mass. 1932), that the employee's inventions were his because:

> "If he had never invented anything, he could not have been charged with a failure in the performance of his duties as

> superintendent, or with a failure to fully earn his compensation,"

nonetheless, where the determination of title depends on such factual inquiries, protracted and expensive litigation will often result.[19] At the least there is a lack of certainty about the ultimate title which can inhibit the employer from investing in research.

The Existing Framework of Employment Contract Law

To avoid the evidentiary burdens of master-servant law, and, undoubtedly, spurred by the courts' constant preface that those burdens were due to the absence of an express agreement, employers have resorted to the apparently more easily enforcible "employment contract." The typical employment contract binds the employee to do (or refrain from doing) a number of things, some of which may have been implied obligations under master-servant law (e.g., not to disclose the employer's trade secrets, even after termination of employment[20]), and some of which apparently were not (e.g., not to compete with the employer after termination of employment[21]). With regard to inventions, the employment contract typically binds the employee to assign all inventions relating to the employer's business to the employer, whether or not the employee is "hired to invent." Thus, although a general employment is not adequate under master-servant law to confer on the employer title to the inventions of the employee, it has nevertheless been held sufficient consideration to support the employee's contractual promise to assign such inventions.[22]

On the surface, it appears that the employer with the employment contract is in a much stronger position that he would have been under master-servant law. The validity of the supposition is less clear when the employer attempts to enforce the agreement. It is then that he may discover, midst a maze of interpretive maxims, that the protection he thought he had gained by use of his employment contract has been, if not entirely eroded, at least significantly narrowed.

A comparison of the positions of the employed inventor under master-servant law and under the employment contract indicates that the employee appears to have lost something in the movement on the part of employers to utilize the employment contract. But it may be that the courts are seeking, by construction, to minimize this loss. In the final analysis, the employer's obligations under the employment contract need not be greater than those without it — for example, he need not guarantee the employee that employment will continue for

some minimum period.[23] There does not appear to be any additional consideration accorded to the employee for agreeing that inventions which would otherwise have been his, should, by virtue of the employment contract, be assigned without additional compensation to the employer. Where a valid contract obtains, no matter how profitable the invention might prove to be, if a reward is given to the employee, it derives from the employer's largesse and not out of any legal obligation.[24] Since courts have decided that a general employment is sufficient consideration to support an employment contract, where a major invention has resulted, the question of whether the consideration is in fact "adequate" is not an open issue.[25] Parenthetically, it should be noted that the usual employment contract has consistently withstood attacks on its fairness and conscionability, as well as its constitutionality.[26]

But the bare legal enforcibility of a contract is no guarantee that it will be broadly construed. And, if the employer has seemingly "gained" in changing from master-servant to contract principles, it appears that his equity position has slipped considerably. Whereas in master-servant law he could plead that he had paid for the work of his employee's mind and was therefore entitled to own it, in contract law he is seeking to enforce a contract devised and required by him as a condition of employment. As such, all other things being equal, he loses. The statement of the Court of Appeals in the present case is typical:

> "The interpretive evidence in favor of Bliss' definition of 'invention' would seem nonexistent. But even if we were to say that there remained some doubt about the definition of that term, we would resolve that doubt in favor of the party who did not choose the wording of the agreement. Martson v. American Employers Insurance Co., F.2d (1st Cir., March 22, 1971); 3 Corbin, supra, §559, at 262. This agreement was a standard form contract drawn up by Rockwood and signed by Freeman shortly after being graduated from college. Rockwood drew up the contract and had superior bargaining power."[27]

This interpretive maxim is so often echoed in decisions construing employment contracts that perhaps it can fairly be considered a "settled" principle of employment contract interpretation.[28]

A different approach to the same result was taken in the District Court, requiring the employer to hurdle "public policy" considera-

tions, in particular, "the broad public policy of encouraging inventors to take financial risks for the betterment of society."[29]

Presumably, however, more precise or creative drafting of the contract provisions might avoid application of these interpretive burdens. In the subject case, both courts said as much, and even offered suggestions as to the kind of contract provisions which might have changed the result.

"Inventions Conceived"

The District Court suggested that an employment contract giving the employer title to "all patentable ideas" or all "inventions conceived" might have enabled the employer to prevail.[30] Whether this would necessarily have been so is open to question.

Neither of the two decisions relied on by the District Court provide great encouragement to employers. *Winton Research Corp.* v. *Minnesota Mining & Mfg. Co.*[31] contains, in the reported decision, no explanation of the evidence relied upon by that court to determine when the invention there at issue was "conceived." In *New Jersey Zinc Co.* v. *Singmaster*,[32] the employee had, in fact, prepared a written disclosure of the invention dated six months before he terminated his employment. That decision was distinguished on these exact grounds in *Smoley* v. *New Jersey Zinc Co.*,[33] decided several years later, the court in the latter case specifically holding that the *Singmaster* decision did *not* stand for the proposition that an agreement to assign "patentable ideas" would entitle the employer to an assignment even if only the "idea" was conceived during the period of employment. In the latter case, title to the idea was held to be in the employee.[34]

On the other hand, a recent decision of a lower Ohio state court, *Morgan Adhesives Co.* v. *Questel*[35], supports the usefulness of such

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contract langauge in a factual situation closely analogous to the subject case. In *Questel,* the employed inventor had contractually agreed to assign to his employer "all inventions made or conceived" by him in the course of his employment. The inventor was the employer's Research Director, and, like Freeman, conceived the invention and contacted patent investors in the attempt to exploit it while he was still employed. And, within two weeks after leaving his employer, the inventor had formed a corporation. The Ohio court, in finding that the invention rightfully belonged to the employer, relied heavily on the circumstantial evidence surrounding his financing of the project[36], and took a rather different view of the equities.

> "It is interesting to note that his very employment with the plaintiff company as Research Director was to discover, if possible, a new method of producing pressure sensitive adhesives: the very process that he did, in fact, discover. He had available to him for several years all of the financial backing and equipment and processes of the plaintiff company in order to assist him in carrying out his employment contract with that company. It would be grossly unfair to suggest that once he had attained the successful goal to which he had been assigned by the plaintiff that he could thereupon leave the employment to the derogation of the investment that they had in his abilities and to directly and almost immediately enter into a business in competition with his former employer."[37]

There is in this language conspicuous deference to the equities of master-servant law, that the inventions of one hired to invent are fairly those of the employer, and that the employee should not, by an artful interpretation of the employment contract, avoid those equitable obligations.

However, despite the attitude of this Ohio court, it is not at all certain that the Court of Appeals would accept either its evidentiary or equity approaches. In point of fact, the language of the Court of Appeals in the present case is far from assuring to the thesis that an employer may contractually obtain title to his employee's undisclosed ideas:

> "Bliss argues that it would be sound policy to frustrate the success of such bad faith. * * * * To rule as Bliss would have us rule would require the court to attempt to read inventors' minds in order to determine when the essential

idea behind an invention was conceived. Such an interpretation is perhaps facially appealing in close cases such as Lamson, where there was some evidence that the critical ideas were conceived before termination of the contract, or the instant case, where reduction of ideas to paper followed quickly, but such an approach would also, in cases where ideas were not reduced to practice for many years, involve the courts in something close to retrospective telepathy."[38]

"Trailer Clauses"

The Court of Appeals' advice was, in the subject case, accordingly, different. The court suggested that the employer should have utilized a "trailer clause," binding the employee to assign inventions made by him during some limited period following termination of his employment, assuming that the inventions pertain to the employer's business.[39] Such clauses have been held enforcible,[40] but are subject, like the remainder of the employment contract, to very narrow interpretation, particularly, e.g., in defining what is the employer's relevant line of business.[41] Moreover, such clauses, particularly where of long or indefinite duration, may run afoul of the anti-trust laws.[42] Finally, the "reasonableness" of such clauses, in time and in extent, will always prove to be the regular issue when a controversy arises.[43] And such an issue, like "hired to invent", is a veiled invitation to litigation at least when the economic stakes are sufficiently high.

In summary, it is obvious that both master-servant and contract law render the employed inventor and his present or past employer potential protagonists in title disputes rather than joint venturers in innovative activities.

A New System

What neither master-servant nor contract law has been able to accomplish, in the absence of the most precise express agreement, is to separate title to the invention and the economic benefit derived from it. With the exception of the limited "shop right" of master-servant law (which the employer gives up when he invokes the employment contract), and which is not of substantial economic benefit, the law provides for no division between title and economic benefit. The absence of divisibility clearly has not promoted satisfactory resolution of title disputes. Is it time to consider a system which would treat separately the issues of title and profit?

Such a system should provide, minimally, that the employed inventor be adequately and specially compensated for those meritorious inventions which improve his employer's business. In return, title to the invention, and the sole and exclusive control over its exploitation, would go to his employer.

To assure the adequacy of the compensation, a number of approaches are possible. A statutory formula might be devised (similar to that presently obtaining in West German practice[44]) to take into account and weight appropriately various factors bearing on compensation. These factors might include the value of the invention to the employer and the employee's contribution to that value. Perhaps, to achieve greater flexibly, an administrative body might be established to acquire the expertise necessary to settle compensation disputes.[45]

In ascertaining "title", certain presumptions might be provided to facilitate the employer's proof of his right to title. Vesting in the employer rights to the inventions of terminated employees, a burden rendered less onerous on the employee by the guarantee of compensation therefor, could be facilitated by the existence of a statutory right in the employer to all inventions conceived or reduced to practice by the employee during some fixed period following termination of his employment and which relate to the employer's business. Not only might the existence of compensation preclude a circumscribed judicial interpretation of the scope of the relevant business, but in addition, a statutory presumption that an invention was conceived or reduced to practice within that fixed period if disclosed within some longer, but still limited, period might be established and enforced.

In sum, while doubts as to the "adequacy" of compensation would be resolved in favor of the employee, any doubts as to title would be resolved in favor of the employer.

There has been introduced, in the present session of Congress, a bill by Congressman Moss to "create a comprehensive federal system for determining the ownership of and amount of compensation to be paid for inventions and proposals for technical improvement made by employed persons."[46] It is not at all certain that this is an area which should be the subject of federal legislation. Questions of title to inventions as well as those related to employee disputes have traditionally been tried in the state courts or regulated by state legislatures.

Whether the "Moss bill" even provides a proper conceptual framework within which to study proposals for changing the law of the employed inventor is open to serious question. For example, the pro-

posal, rather than imposing on the employee the obligation to assign to the employer all those inventions which relate to the employer's business, merely grants the employer an *option*, which he must exercise within four months of the employee's disclosure,[47] to acquire title to the invention. In return for the exercise of this option, the employee must be compensated "adequately." Unless the employer exercises this option (or demonstrates the need to keep it secret[48]), the employee is free to do what he wishes with the invention.

The exercise of the option imposes on the employee a number of obligations, which may evoke, in the present form of the bill, considerable controversy. For example, exercising his option obligates the employer to apply for a patent within six months,[49] and failure so to act results in reversion of the invention to the employee. Only if the employer determines that the invention must remain a trade secret may he avoid filing a patent application. But, if he chooses such a course of conduct, the employee must be specially compensated to an amount in excess of that which he would have received had a patent been applied for.[50] The employer's freedom to control exploitation of the invention is also limited by a provision that, if the employer abandons a patent application before the employee has received his compensation, whatever rights remain in the invention revert to the employee.[51] Finally, the bill does not appear to make provision for inventions made by the employee after termination of his employment.

There is a strong possibility, if not a likelihood, that the more controversial provisions of this bill will obscure the larger issues which it ought to provoke study of. Since the bill has not yet been enacted and there appears at the present no indication that swift enactment is likely,[52] it should not prevent or delay an investigation of the feasibility and possible provisions of a new state legislative system for regulating the rights and obligations of the employed inventor.[53] It can be argued that creative exercise of leadership by the Massachusetts legislature might render Massachusetts a favorable location for productive sponsored research which this Commonwealth, in the light of present economic realities, can scarcely afford to overlook.

FOOTNOTES

[1] *Thermo Electron Engineering Corp.* v. *Lyczko*, 151 U.S.P.Q. 303 (Mass. Superior Ct. Essex, 1966).

[2] *Jamesbury Corp.* v. *Worcester Valve Co.*, 318 F. Supp. 1 (D. Mass. 1970), aff'd F.2d , 170 U.S.P.Q. 177 (1 Cir. 1971).

[3] *Id.* at 318 F. Supp. 10.

[4] The ball valves manufactured by Rockwood could control fluid flow in only one direction, whereas a double-seated ball valve would be capable of controlling fluid flow in two opposite directions. *Id.* at 2.

[5] "In this case Freeman virtually conceived patent '666 while employed by Rockwood . . . . It is necessary to qualify the court's finding of fact by the adverb 'virtually' because it is impossible to find on the basis of the evidence that Freeman had completely conceived the entire invention at the time he left Rockwood. He had gotten to the point where no more than a few additional days or perhaps few hours of thinking were required for him to put his ideas on paper in a form substantially the same as his later patent application." *Id.* at 7.

[6] *Supra* note 2 at F.2d , 170 U.S.P.Q. 178.

[7] "If relevant, this court would find that Vaudreuil was added to the application as a spurious joint inventor to shield Jamesbury against any claim by Rockwood that its president and principal shareholder had conceived the invention while a Rockwood employee." *Supra* note 2 at 318 F. Supp. 6n.6.

[8] Federal jurisdiction being based on diversity, the courts looked to Massachusetts law.

[9] See note 5, *supra.*

[10] Whether, to have "invention" under Massachusetts law, one must construct a working model, or merely produce rough sketches from which one of ordinary skill in the relevant techniques can build a working model is not spelled out in either opinion. In the cited *Lamson* case, several witnesses had testified to the content of oral descriptions of his idea by the inventor, but the court found those descriptions too spotty and vague to support the conclusion that the "invention" had been made at the time of those descriptions.

[11] *Standard Parts* v. *Peck*, 264 U.S. 52 (1924); *National Development Co.* v. *Gray*, 316 Mass. 240, 55 N.E. 2d 783 (1944). But the courts are "reluctant" to find such implied agreements. *United States v. Dubilier Condenser Corp.*, 289 U.S. 178 (1933); *Cahill* v. *Regan*, 4 App. Div. 2d 328, 165 N.Y. Supp. 2d 125 (1957), aff'd, 5 N.Y. 2d 292 (1959).

[12] *National Development Co.* v. *Gray, supra* note 11; *Bowers* v. *Woodman*, 59 F.2d 797 (D. Mass. 1932).

[13] *United States* v. *Dubilier Condenser Corp., supra* note 11; *American Circular Loom Co.* v. *Wilson*, 198 Mass. 182, 84 N.E. 133 (1908); *Pursche* v. *Atlas Scraper & Engineering Co.*, 300 F.2d 467 (9 Cir. 1961).

[14] *Standard Parts Co.* v. *Peck, supra* note 11; *National Development Co. v. Gray, supra* note 11; *Marshall* v. *Colgate-Palmolive-Peet Co.*, 175 F.2d 215 (2 Cir. 1949).

[15] *La Feil* v. *United States*, 138 U.S.P.Q. 312 (Ct. Cl. 1963); *North Branch Prods., Inc.* v. *Fisher*, 131 U.S.P.Q. 135 (D.D.C. 1961) aff'd per curiam, 312 F.2d 880 (D.C. Cir. 1962), cert. den. 373 U.S. 913 (1963); *Dowse* v. *Federal Rubber Co.*, 254 Fed. 308 (N.D. Ill. 1918).

[16] *Dalzell v. Dueber Watch-Case Mfg. Co.*, 149 U.S. 315 (1893). For example, in *Bowers* v. *Woodman, supra* note 12 at 799, the court held that title to the designated invention was in the employee, Woodward, even though:

> "Woodman's duties as superintendent included the exercise of due diligence and skill in promoting the success of the business carried on by the complainants. This involved his attention to, and his active interest in, improving and adding to the products of the plant over which he had superintendency."

Other decisions holding that employees in rather high positions of responsibility nonetheless retain title to their inventions include: *De Jur-Amsco Corp. v. Fogle*, 233 F.2d 141 (3 Cir. 1956); *Bandag, Inc. v. Morenings*, 259 Iowa 998, 146 N.W. 2d 916 (1966) (head of research and development); *Cahill v. Regan, supra* note 11.

The reasoning underlying this rule was set forth rather philosophically by the Supreme Court in *United States v. Dubilier Condenser Corp., supra* note 11 at 188:

"The reluctance of courts to imply or infer an agreement by the employee to assign his patent is due to a recognition of the peculiar nature of the act of invention, which consists neither in finding out the laws of nature, nor in fruitful research as to the operation of natural laws, but in discovering how those laws may be utilized or applied for some beneficial purpose, by a process, a device or a machine.

* * * * *

"Though the mental concept is embodied or realized in a mechanism or a physical or chemical aggregate, the embodiment is not the invention and is not the subject of a patent. This distinction between the idea and its application in practice is the basis of the rule that employment merely to design or to construct or to devise methods of manufacture is not the same as to invent."

[17] *American Circular Loom Co.* v. *Wilson, supra* note 13 at 201, 84 N.E. at 135.

[18] *Belanger* v. *Alton Box Board Co.,* 180 F.2d 87 (7 Cir. 1950).

[19] And the employer's burden of proof is heavy. For example, that the employee had in the past regularly assigned his inventions to the employer does not necessarily establish the existence of an agreement to assign later inventions, even where they are far more valuable than those earlier assigned.

Otis Elevator Co. v. Magee, 140 U.S.P.Q. 148 (N.Y. Supreme Ct. 1964), aff'd, 21 App. Div. 2d 752, 251 N.Y. Supp. 2d 909 (1964), although such a course of prior conduct is evidence of the existence of such an agreement, *Fish* v. *Air-O-Fan Prods. Corp.,* 285 F.2d 208 (9 Cir. 1960).

[20] *Junker* v. *Plummer,* 320 Mass. 76, 61 N.E. 2d 667 (1947).

[21] See *Stoneman* v. *Wilson,* 169 Va. 239, 192 S.E. 816 (1937). Several states have statutes making such clauses illegal: e.g., California (West's Ann. Bus. & Prof. Code §16600) and Michigan (Comp. Laws 1948, §§445.761 & 445.776).

[22] The language in *Aero Bolt & Screw Co.* v. *Iaia,* 180 Cal. App. 2d 728, 5 Cal. Rep. 53 (1960), is instructive:

"A synthesis of the rules relating to such assignments of the employee's inventions would be either (a) where the employee is hired to invent (i.e. has a duty to invent) or (b) where even though there was no duty to invent, that it was part of the employment contract that if there should be an invention, that the employee would assign the title thereof to the employer."

See also *Patent & Licensing Corp.* v. *Olsen,* 188 F.2d 522 (2 Cir. 1951); *Paley* v. *Dupont Rayon Co.,* 71 F.2d 856 (7 Cir. 1934).

[23] *Goodyear Tire & Rubber Co.* v. *Miller,* 22 F.2d 353 (9 Cir. 1927).

[24] Sometimes employers have "Suggestion Systems" by which employees receive cash awards for disclosing and granting title to their employer of inventions made by the employee. The enforcibility of the employer's rights in inventions so granted does not require that the cash award be of necessity adequate to compensate the

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employee for the rights he has given away. See *Raybestos-Manhattan Inc.* v. *Rowland*, 310 F. Supp. 993 (D.S.C. 1969) ($250 cash award sufficient to vest title in employer).

[25] *Fish* v. *Air-O-Fan Prods. Corp., supra* note 19.

[26] *Misanai v. Ortho Pharmaceutical Corp.*, 83 N.J. Supp. 1, 198 A.2d 791 (App. Div. 1964), rev'd on other grounds, 44 N.J. 552, 210 A.2d 609 (1965) ("frivolous" to assert unconstitutionality). Also see *Thibodeau* v. *Hildreth*, 124 Fed. 892 (1 Cir. 1903); *Thermo Electron Engineering Corp.* v. *Lyczko, supra* note 1; and, cases cited *supra* note 22.

[27] *Supra* note 2 at F.2d , 170 U.S.P.Q. 181.

[28] *De-Jur-Amsco Corp.* v. *Fogle, supra* note 16; *Universal Winding Co.* v. *Clarke*, 108 F. Supp. 329 (D. Conn. 1952); and, *Hirshhorn* v. *Mine Safety Appl. Co.*, 106 F. Supp. 798 (W.D. Pa. 1952).

[29] *Supra* note 2 at 318 F. Supp. 7.

[30] *Supra* note 2 at 318 F. Supp. 8.

[31] 350 F.2d 134 (9 Cir. 1965).

[32] 71 F.2d 277 (1934).

[33] 24 F. Supp. 294 (D.N.J. 1936), aff'd, 106 F.2d 314 (3 Cir. 1939).

[34] The court also held that the idea was not novel. *Id.* at 301.

[35] 162 U.S.P.Q. 61 (Ohio Ct. Com. Pl. 1969).

[36] After summarizing the employee's activities along these lines, the court stated: "These matters are not completed in matters of hours or even days, and so it appears that the knowledge and principles of what he was to envision for the future were apparently made for some considerable period prior to the termination of his employment." *Id.* at 62.

[37] *Ibid.*

[38] *Supra* note 2 at F.2d , 170 U.S.P.Q. 182.

[39] *Ibid.*

[40] In *Universal Winding Co. v. Clarke, supra* note 28, the provision in an employment contract requiring the employee to assign his inventions "made or invented" for one year following termination of his employment was held valid and enforcible (when construed to be very narrowly limited in applicable technical field). To the same effect are, e.g., *Winton Research Corp.* v. *Minnesota Mining & Mfg. Co.*, 350 F.2d 134 (9 Cir. 1965); *Gas Tool Patents Corp.* v. *Mould*, 133 F.2d 815 (7 Cir. 1943); and, *Conway* v. *White*, 9 F.2d 863 (2 Cir. 1925).

[41] *Universal Winding Co.* v. *Clarke, supra* note 28.

[42] In *United Shoe Mach. Co* v. *Lachapelle*, 212 Mass. 467, 99 N.E. 289 (1912), the court held agreements by employed inventors to assign their inventions made during the ten years following termination of their employment unenforcible because the agreements were part of a concerted plan on the part of a number of employers in the industry to monopolize the industry by denying to competitors the services of those skilled in the industry.

In *Stewart-Warner Corp. v. Westinghouse Electric Corp.*, 143 U.S.P.Q. 211 (W.D.N.Y. 1964), the court, in denying summary judgment, held that provisions in employee invention assignment contracts binding the employee to assign all later improvements on that invention, whether or not made after termination of employment, may violate the antitrust laws.

[43] *Universal Winding Co.* v. *Clarke, supra* note 28.

[44] Under the West German practice, an elaborate mathematical scheme is set forth to determine what percentage of the value of the invention the employee should receive as special compensation (over and above his salary). Among the factors increasing the employee's compensation are the amount of employee initiative and originality involved, the degree of creativity, and the extent to which it is the employee's job to innovate (e.g., a research director would receive more than a design engineer). Neumeyer, The Law of Employed Inventors in Europe, S.Res. 267, 87th Cong., 2d Sess. pp. 43-51.

[45] The Swedish law provides for a board to furnish opinions (which are not

binding absent agreement of the parties) as to the proper compensation for particu... inventions. *Id.* at 8.

[46] H.R. 1483, 82d Cong., 1st Sess. (1971).

[47] *Id.* at §§412-414.

[48] *Id.* at §425.

[49] *Id.* at §421. This period is considerably shorter than the normal "grace period" provided by the Patent Laws for filing an application after some event, such as publication of the invention, has occurred. In general, an inventor has one year to file a patent application after the occurrence of some such event. 35 U.S.C. §102.

[50] The rationale given in the statute is that the employee should be compensated for the fact that no "protective right", i.e. patent, has been granted on his invention. H.R. 1483, *supra* note 46 at §425.

[51] *Id.* at §424.

[52] The bill was filed in January, 1971, and the only action thus far taken has been to request reports from the Departments of Commerce, Defense, and Justice. As of August 6, only Defense had responded and no hearings had as yet been scheduled. Legislative Calendar (Comm. on Judiciary, Aug. 6, 1971).

[53] An objection to state legislation is that it presents difficulty to the interstate corporation, in that its inventor-employees in one state may have rights or obligations differing substantially from employees in another state. However, the foment in this area (exemplified by the publication of the first comprehensive treatise dealing with this field — Neumeyer, The Employed Inventor in the United States (The MIT Press, 1971)) demands, minimally, a reevaluation of the present typical employment contract with a view to considering whether providing, in it, special compensation for meritorious inventions, will materially enchance the enforcibility of the contract, and, in the long term, avoid the imposition of a legislated system.

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Disobeying a Father's Voice: A Comment on Commonwealth v. Brasher

By SANFORD N. KATZ* and
WILLIAM A. SCHROEDER**

The Massachusetts Supreme Judicial Court recently sustained the constitutionality of the Commonwealth's "stubborn child" laws against claims that the statute violated due process, right of privacy and equal protection provisions of the United States and Massachusetts Constitutions. In this comment the authors take issue with the Court's opinion and suggest that the decision should be reversed by legislative action at the earliest possible moment.

On June 7, 1971, the Supreme Judicial Court, in the case of *Commonwealth* v. *Brasher*,[1] upheld the constitutionality of the Massachusetts stubborn child law, a three hundred and twenty-five year old statute which has its origins in a 1646 enactment of the Massachusetts Bay Colony which provided that:

> "If a man have a stubborn or rebellious son of sufficient years of understanding, e.g., sixteen; which will not obey the voice of his father or the voice of his mother, and that when they have chastened him will not harken onto them, then shall his father and mother, being his natural parents, lay hold onto him and bring him to the magistrates assembled in court . . . Such a son shall be put to death."[2]

In practice, punishments less stringent than the death penalty were generally employed and in 1654 the law was amended to substitute whipping as the statutory penalty. In substantially its 1654 form the statute has survived periodic statutory consolidations and rearrangements and, more recently constitutional challenges and legislative attempts at repeal or amendment. In its present form the statute provides that:

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Employees' inventions

and the Patents Act 1977

Jeremy Phillips

Kenneth Mason

EIPR 6 September

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Introduction

The function of this monograph is to explain how the employee inventor will benefit from the 'compensation code' contained in the new Patents Act, and to illustrate the divergent conclusions which may be reached by different readings of that code, which is contained in sections 39 to 43. It is no function of this work to give an account of the operation of domestic or European patent law, nor to argue the issue of what the law should be. Consequently the author will be concentrating the reader's attention upon the specific words chosen by the legislature for the enactment of the new law, and not upon the wider issues of social and economic policy or of comparative law.

The 'compensation code' represents a legal crossroad: patent law here intersects with industrial relations law and also with the principles of the law of contract. The author has presumed that the reader has no especial knowledge of each individual subject, but has provided reference points for those who wish to travel further in any one of these directions.

Jeremy Phillips Trinity College, Dublin 1978

Chapter 1

The genesis of the employee inventor's statutory rights

Prior to the last decade of the nineteenth century the interests of the employee as patentee or inventor were scarcely threatened. While the Industrial Revolution had directed the focus of man's endeavour from field to factory, the law still viewed the obligations of the contract of employment as those terms laid down which best expressed the mutual aspirations of gentlemen bargaining one with another, each for their own advantage. Where one man was 'employed' by another, the word connoted not a relationship of an industrial or employing concern with those regularly engaged in performing its profit-making activities but, as often as not, the mere fact that the one party had undertaken to perform a task for another. A man who was engaged simply to do or perform an act required by an individual hirer would not be regarded as owing his hirer any general obligation to further the latter's interests; it was, after all, in pursuance of the 'employee's' interest that he entered into the contract of hire.

By the turn of the century the contract of employment was viewed in a different light. It was noted that the hire of labour was a matter of increasing industrial importance at a time when the self-employed skilled craftsman and the small business gave way to the large-scale employment of labour by companies responsible only to their shareholders; and indeed the process of legal evolution saw the development of rules which augmented the power of the 'employer' by increasing the general spread of obligations which the employee was to owe him. This process of evolution is well reflected in the laws relating to the ownership of inventions; for, while formerly an invention belonged only to its inventor, the employee inventor was regarded as a trustee of any resulting patent which he then held for the employer's benefit if (i) the employee made the invention in the course of his contractual duties or (ii) the employee held a position of high responsibility in the employer's concern. From this there developed the notion that it was a term implied in every contract of employment that the inventive produce of an employee's mind resulting from the fulfilment of his employment duties would belong to the employer. Around the 1920's there developed also the practice of inserting into the contract of employment an express provision to the effect

that the employer had the right to use, or indeed to require the assignment of, any invention made by the employee whether in the course of his employment or otherwise.

This legal evolution took place with the very proper expectation that it would protect the employer (or shareholder) against the employee who abused his position with the employer by making inventions by the use of knowledge entrusted to him by virtue of his position of employee, or who was employed to invent a particular device, did so, and then tried to establish an independent business for the purpose of exploiting his invention; and doubtless in many cases the employer who required the 'pre-assignment' of his employee's patent rights felt that he was only helping himself to that which was his own by right. However, the effect of the shift in legal perspective was, in general, to deprive inventors of the expectation of any reward or compensation in respect of their inventions. The rigour of this deprivation was fortunately mitigated in many cases by the fact that an employee inventor so deprived of his patent rights would receive an *ex gratia* payment of a reward in return, and many employees knew that their 'reward' for invention would be promotion or further responsibilities within the employer's increasingly corporate structure; but there were also employees who were disgruntled at the treatment they had received, or at the fact that there was no machinery whereby their rightful recompense could be compelled.

At the end of the second world war there arose a widespread feeling that the inventor's lot should be improved. By 1949 the Royal Commission on Awards to Inventors had completed its task of bestowing in the tangible form of monetary awards the gratitude of a nation victorious in war upon the inventors whose creative endeavours had secured its continued existence; and these awards were received by those employed to invent as well as those who were not. And the Swan Committee on patent law reform reported in 1947 that the employee inventor should be granted the opportunity to secure a just and equitable proportion of the benefit secured by his employer from the use of the patent. The Swan Committee's proposals were accepted by the government of the day, and were incorporated into the Patents Act 1949 section 56.

It so often happens that the intention of Parliament is not reflected by the expressions which it chooses in drafting statutes, and section 56 of the Patents Act 1949 turned out to be indeed an unwanted child of verbal infelicity. On the very first occasion on which that provision was litigated, in the famous case of *Sterling Engineering Co Ltd v Patchett*, the House of Lords pointed out that while it had widely been assumed that a right was given to all inventors to secure from their employers a share of the patent

profits, the words of the Act said otherwise: the employee was entitled to secure compensation if it were just and equitable for him to do so, *only* if he had a legal interest in the benefit of the patent. This is a circumstance which rarely occurs, though it did happen in 1905 in the case of *Pashley v Linotype Ltd* where it was found as a fact that both employer and employee intended (under the contract of employment) to share the benefit of the patent but had not indicated how the benefit was to be shared.

In 1965 a bill was introduced in the Lords which was calculated to restore the law to the position which, before *Sterling Engineering Co Ltd v Patchett,* section 56 was presumed have held. This attempt, the Patents (Employees Inventions) Bill, was ill-conceived and badly-drafted, received little support within Parliament or outside it, and was dropped.

The movement which culminated in the 'compensation code' of the 1977 Act can be traced back to 1968 when the Banks Committee was appointed to examine the patent system. The Trades Union Congress and the Institute of Patentees submitted that the then-current law was unfair to employee inventors because it deprived them of their property rights in patents without providing them with any corresponding right of compensation, and it was suggested that inventors would be more greatly encouraged if a statutory award scheme were set up in the United Kingdom as it had been in West Germany. This submission was successful to the extent that the Banks Committee Report (1970) proposed the rendering unenforceable of any contract whereby employers sought rights in patents yet unmade and which would not be theirs under the common law; but the award scheme suggestion was rejected on the ground that there was no evidence (i) that employees were unfairly treated in practice, or (ii) that a statutory award scheme would in fact have an encouraging effect upon employee inventors.

The government White Paper 'Patent Law Reform', published in 1975, accepted the Banks proposal to render unenforceable the contractual pre-assignment of employees' inventions, but left open the question of a statutory right to compensation; after all, it seemed, if the Banks Report had rejected the proposal on the ground that there was no evidence to support it, would it not be most sensible to allow further submissions of evidence as to the unfair treatment of employee inventors and the beneficial effects of a statutory award scheme? In response to this challenge the Institute of Patentees and Inventors presented a paper which documented a number of cases in which employee inventors had been poorly treated and argued, with the support again of the Trades Union Congress, that these instances could be remedied by the implementation of a statutory code providing for the protection and compensation of employee inventors. The Standing Advisory Committee of the Patent Office considered these representations and weighed

them against the arguments of many industrial and commercial bodies that the law should not materially be changed. It seemed that government policy was to press for a statutory scheme, because the Standing Advisory Committee eventually produced a model for one, notwithstanding the scepticism or opposition of some of its members; and eventually a compromised scheme, agreed by the moderates on both sides, was put before Parliament and received the royal assent on 29 July 1977. Like most compromises, the statutory scheme embodied in the Patents Act failed adequately to satisfy either side; the employee-inventor lobby claimed that the scheme was too narrow and limiting in its effect, while the industrial lobby regarded it as a further legislative interference with the principles of freedom of contract and as another headache for the employer already weighed down with statutory responsibilities.

The scheme finally adopted bears interesting comparison with that of West Germany (the most widely-publicised scheme currently in operation). While the German scheme utilises an entire state-run bureaucracy in the administration of inventors' awards, and provides detailed mathematical formulae for the calculation of compensation, the United Kingdom scheme is to be operated through the ordinary courts and through the pre-existent jurisdiction of the Comptroller-General of Patents, and only the most general principles of assessment of compensatory awards are adverted to. Ideally the employee and his employer are to get together and agree between themselves as to that sum which most fairly represents the adequate compensation of the inventor, turning to the courts only if they cannot agree. In reality there may be a strong temptation to litigate on the part of the employee, it being almost axiomatic that inventors value their work at a higher price than do those who use those inventions. The West German scheme, on the other hand, is well-used because it promises the employee an automatic right to compensation for the use of an invention by his employee; in the United Kingdom the employee's right to lodge the initial claim is so set about with qualifications and variable factors that it is probable that there will be more litigation dealing with the entitlement to claim an award than with its assessment.

Chapter 2

The Patents Act 1977: Section 39

Text

39(1) Notwithstanding anything in any rule of law, an invention made by an employee shall, as between him and his employer, be taken to belong to his employer for the purposes of this Act and all other purposes if —
(a) it was made in the course of the normal duties of the employee or in the course of duties falling outside his normal duties, but specifically assigned to him, and the circumstances in either case were such that an invention might reasonably be expected to result from the carrying out of his duties; or
(b) the invention was made in the course of the duties of the employee and, at the time of making the invention, because of the nature of his duties and the particular responsibilities arising from the nature of his duties he had a special obligation to further the interests of the employer's undertaking.
(2) Any other invention made by an employee shall, as between him and his employer, be taken for those purposes to belong to the employee.

Commentary

Section 39 replaces the common law and equitable tests of the ownership of inventions described in Chapter 7. The new statutory test is more easily susceptible of application than the old case law and, while there is a substantial area of overlap between the application of the two tests, the new statutory test is likely to produce results more favourable to the employee in 'borderline' cases. Section 39(1) (a) replaces the test for ownership where the inventor is an ordinary employee, while section 39(1) (b) operates where the employee occupies a special position of responsibility towards the employer, as where he is a managing director or a consultant.

Under section 39(1) (a) an invention will belong to the employer where the employee has made it in the course of his normal duties, or in the course of duties specifically assigned to him, and in either case an invention might reasonably be expected to result from the performance of the employ-

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ment duties. It is no longer necessary to refer to factors such as the use of the employer's time or facilities, the employee's status within the employer's undertaking, or the existence of professional skills or qualifications on the part of the employee in order to ascertain the right of ownership of the invention as between the two parties. Note that the invention must be 'reasonably . . . expected to result' from the carrying out of the employee's duties; the test, it seems, is an objective one. In litigation the employer will claim that he expected an invention to result, while the employee will claim the opposite. In reality the question can be resolved in one of two ways: (a) by looking forward from the time that the duties were laid upon the employee, and determining whether, at that time, the invention was foreseeable as likely to result, or (b) by working back from the time that the invention was made, asking the question, 'Is this invention a reasonable and expectable consequence of the employment duty having been performed?' Test (a), it is submitted, is to be preferred as conforming more closely to the spirit of the legislation, since the word 'expected' is a forward-looking verb.

Under section 39(1) (b) an invention will belong to the employer where the employee has made it in the course of his duties, if when the invention is made the nature of his responsibilities indicates that he is under a special obligation to further the interests of the employer's undertaking. Thus where a person makes an invention, if he occupies so responsible a position as to be the employer's *alter ego,* or if he acts as a consultant for his employer, the invention will belong to the employer. This sub-section is intended to put into statutory form the tests laid down in the *Worthington Pumping Co* and *British Syphon* cases, but it is arguable that by the inclusion of the words 'the invention was made in the course of the duties of the employee' the legislature has in fact failed to accomplish this. In both of those cases the employee was not clearly under any duty which involved having to invent the thing invented, but was deemed to hold his invention in trust for his employer on the strength of his special responsibilities alone. The result of giving a full meaning to the words above quoted would be that there would be a further increase in the rights of the employee inventor under the new Act.

Section 39(2) simply states the general rule that, in the absence of the operation of section 39(1), an invention is regarded as belonging to the employee. Note that this section does not give the employee any rights against third parties (eg fellow employees) with ownership claims.

Words and phrases

'anything in any rule of law': ie the law as described in Chapter 7;

'invention': the Patents Act 1977 contains no definition of this word. Section 1(1) of the Act describes the criteria for patentability of an invention, but since section 39 does not limit its scope to the ownership of patentable inventions only it can be suggested that it is intended to govern the ownership of all inventions, whether patentable or not.

'employee': defined in section 130(1) as 'a person who works or (where the employment has ceased) worked under a contract of employment or in employment under or for the purposes of a government department'; This is the latest in a bewilderingly long line of statutory definitions of 'employee' each, it seems, being marginally different from the other. This definition does not include those employed under contracts of apprenticeship, which means that that category of persons so employed is deprived of the protection of the Act, and that the Patents Act is in this respect different from the Copyright Act 1956 section 4. It should also be noted that the definition does not include independent contractors.

'employer': defined in section 130(1) as 'in relation to an employee, . . . the person by whom the employee is or was employed'.

in the course of . . . duties: this is presumably narrower than the term 'in the course of employment' which, after *Beloff v Pressdram Ltd*, would seem capable of interpretation as meaning 'during the duration of the employment'. It is hoped that in interpreting this phrase the courts will not make undue reference to those cases which deal with the vicarious liability of employers for their servants' torts, for in those instances the courts have sought what is considered to be a desirable social end by construing the phrase 'course of employment' as widely as possible.

normal: if the phrase 'normal working hours' is construed in another industrial relations context as excluding overtime even when it is obligatory (*Pearson v Jones*), there is a case for construing 'normal duties' in a similarly restrictive manner.

specifically assigned: as perhaps in *British Reinforced Concrete Ltd v Lind*, where an employee with general draughtsman-type duties was set to work in solving particular mining problems.

particular responsibilities . . . to further the interests . . . of the employer's undertaking: in past cases (*Hivac v Park Royal* and *British Syphon Co v Homewood*) courts had articulated a vague but all-pervading duty on the part of employees, the 'duty of fidelity', which was basically a general duty to further the employer's interests and not to do anything which might be to his detriment. In the sense conveyed by this duty, all employees have a responsibility to further their employer's interests; but such responsibilities are not 'particular'.

undertaking: defined in the Local Employment Act 1972 section 21(1) as

'any trade or business, or other activity providing employment'. Taken thus, the employee's obligation would have to be one of benefiting not the employer's interests in general but, presumably, benefiting the place of employment or business through which the employee is attached to the employer.

Chapter 3

The Patents Act 1977: Section 40

Text

40(1) Where it appears to the court or the comptroller on an application made by an employee within the prescribed period that the employee has made an invention belonging to the employer for which a patent has been granted, that the patent is (having regard among other things to the size and nature of the employer's undertaking) of outstanding benefit to the employer and that by reason of those facts it is just that the employee should be awarded compensation to be paid by the employer, the court or the comptroller may award him such compensation of an amount determined under section 41 below.

(2) Where it appears to the court or the comptroller on an application made by an employee within the prescribed period that –

(a) a patent has been granted for an invention made by and belonging to the employee;

(b) his rights in the invention, or in any patent or application for a patent for the invention, have since the appointed day been assigned to the employer or an exclusive licence under the patent or application has since the appointed day been granted to the employer;

(c) the benefit derived by the employee from the contract of assignment, assignation or grant or any ancillary contract ('the relevant contract') is inadequate in relation to the benefit derived by the employee from the patent; and

(d) by reason of those facts it is just that the employee should be awarded compensation to be paid by the employer in addition to the benefit derived from the relevant contract;

the court or the comptroller may award him such compensation of an amount determined under section 41 below.

(3) Subsections (1) and (2) above shall not apply to the invention of an employee where a relevant collective agreement provides for the payment of compensation in respect of inventions of the same description as that invention to employees of the same description as that employee.

(4) Subsection (2) above shall have effect notwithstanding anything in the relevant contract or any agreement applicable to the invention (other than any such collective agreement).

(5) If it appears to the comptroller on an application under this section that the application involves matters which would more properly be determined by the court, he may decline to deal with it.

(6) In this section —

'the prescribed period', in relation to proceedings before the court, means the period prescribed by rules of court, and

'relevant collective agreement' means a collective agreement within the meaning of the Trade Union and Labour Relations Act 1974, made by or on behalf of a trade union to which the employee belongs, and by the employer or an employers' association to which the employer belongs which is in force at the time of the making of the invention.

(7) References in this section to an invention belonging to an employer or employee are references to it so belonging as between the employer and the employee.

Commentary

Section 40 enables the employee inventor for the first time to claim compensation from his employer for the use of his inventions by the employer. This new claim is exercisable whether or not the employee has received any compensation prior to his claim, although the amount which the employee will receive depends in each case upon a number of variable factors, of which compensation received is one. The employee may obtain compensation whether the invention belongs to himself under section 39(1) or whether it belongs to his employer; the only circumstance which positively bars the recovery of compensation is where the making of inventions of the same description as that invented, by employees of the same description as the employee, is governed by a collective agreement providing for the inventor's reward. It is perhaps surprising that an agreement between the employer and a trade union, to which the employee is not party, can bar the employee's claim for compensation, whereas nothing in the employee's contract of employment, or in any contract in which he passes his rights to his employer, can prevent him from obtaining his reward (see section 40(4) and section 42(1)).

It is open to the employee to apply for his compensation either to the relevant court or to the comptroller. The comptroller may decline to deal with the application if it appears to him that it concerns matters which would more properly be determined by the court. Thus if, by way of oppos-

ing an employee's claim, an employer argued that the patent was in fact invalid, the comptroller might feel that the case was one in which he should exercise his power under section 72(7)(b) to have the question of validity heard by the court; he cannot be forced to make a decision on the merits of the employee's claim, and then pass the issue of validity on to the court, since section 40(5) empowers him to dispose of the employee's claim in its entirety to the higher tribunal.

The employee's entitlement to an award is greater if the invention belongs to him than where it is his employer's. If the invention is his own, he must show under section 40(2) that (i) the invention has been patented, (ii) his patent rights have been assigned or exclusively licensed to his employer, (iii) his benefit arising out of the assignment is inadequate compared with the employer's, and (iv) by reason of the three prior requirements it is just that he should receive additional compensation. Rather more rigorous strictures are placed upon the application of the employee whose invention belongs to his employer, for he must show under section 40(1) that (i) the invention has been patented, (ii) that the patent is of outstanding benefit to the employer, and (iii) by reason of the two prior factors it is just that he should be paid compensation. It seems to be a fact of commercial life that a few patents, taken alone and not in their industrial context, are of outstanding benefit to the inventor's employer, which would indicate that claims under section 40(1) may not be made with any great frequency or success. The section does give some guidance as to the assessment of 'outstanding benefit', by stating that it is referable to, among other things, the size and nature of the employer's undertaking; unfortunately the section does not indicate *how* the size and nature of the employer's undertaking affects the assessment of 'outstanding benefit', as the following illustration shows: inventor A is employed by company B, a small firm with an annual turnover of about £100,000: A's invention is worth another £50,000 per annum to B in increased turnover. Inventor Y works for multinational company Z with an annual turnover of £100 millions; and his invention generates a further turnover of £200,000 per annum for Z. Taken absolutely, Y's invention has added four times as much money to Z's turnover as A's has to B's, but if one takes the size of the employer into account, Y's invention has added only 0.2 per cent to Z's turnover, which is a drop in a bucket, compared with the 50 per cent increase achieved by A. It seems anomalous that A should be entitled to an award if Y is not, epsecially if one considers that, had Y worked for the small company B and A for the larger Z, Y's invention — being an 'outstanding benefit' to B — would entitle him to a reward while A's invention for Z would not. It is further anomalous that, had A's invention and Y's been both worth £100,000 per annum in extra turnover, section

40(1) would operate to insure that because the size and nature of their employers' undertakings were different, their awards would be different also.

Words and phrases

court: defined by section 130(1) as '(a) as respects England and Wales, the High Court; (b) as respects Scotland, the Court of Session; (c) as respects Northern Ireland, the High Court in Northern Ireland'.
'comptroller': defined by section 130(1) as 'the Comptroller-General of Patents, Designs and Trade Marks'. Section 41(1) replaces his jurisdiction under the Patents Act 1949 section 56, which has not been repealed (see Patents Act 1977 schedule 1 section 1(2)).
employee: see page 11.
prescribed period: defined in section 40(6) above.
invention: see page 11
employer: see page 11
patent: under section 130(1) 'patent' means 'a patent under this Act'; but section 43(4) indicates that, for the purposes of this and the next two sections, 'patent' refers to any patent or other form of protection (eg the German *gebrauchsmuster,* or petty patent) under the laws of the United Kingdom or elsewhere.
nature: this perhaps includes 'purpose' (*per* Dr Lushington in *The Westmoreland).*
undertaking: see page 11
outstanding: it is clear from the context that it must be the benefit, and not the invention, which is outstanding.
benefit: defined by section 43(7) as 'benefit in money or money's worth'. Does this include the 'benefit' to an employer who takes an employee's patent but does not develop or work it, relying instead upon the fact that he controls a market in which his position is unassailable because his rivals do not possess his patent? 'Benefit', in any event, will be construed more widely than 'income from patents' as defined by the Income and Corporation Taxes Act 1970 section 388(1).
to be paid for by the employer: the burden of compensating the employee rests with the employer, notwithstanding the fact that others may also use and derive benefit from the patent.
appointed day: 1 June 1978.
exclusive licence: defined by section 130(1) as 'a licence from the proprietor of or applicant for a patent conferring on the licensee, or on him and persons authorised by him, to the exclusion of all other persons (including the pro-

prietor or applicant), any right in respect of the invention to which the patent or application relates . . .'.

derived: per Gresson J in the New Zealand case of *Inland Revenue Commissioner v N V Philips Gloeilampen-Fabriken,* 'derived' should not be read as 'received'; 'The word "derived" means more than "received"; it connotes the source or origin, rather than the fund or place, from which the fund was taken. It means flowing, springing, emanating from, or . . . arising from or accruing'.

contract of assignment: the inclusion of the words 'contract of' where the statute might equally have talked of 'benefit derived from the assignment' indicates that this subsection is concerned with the benefits which the *terms* of the contract of assignment confer upon the employee. Were he, as a consequence of his invention being assigned to the employer, promoted to a position of greater responsibility within the employer's undertaking, this would be a benefit which flowed from the fact of assignment but not from the contract of assignment.

assignation: the Scottish term for 'assignment'.

'ancillary': for example the employee may have made the invention while employed by undertaking A but during secondment to undertaking B; if the invention is assigned to A, who licenses its exploitation by B, and B is directed by A to negotiate the employee's remuneration in excess of the salary he receives, any contract between the inventor and B will be 'ancillary' to the contract of assignment itself.

relevant collective agreement: defined by section 40(6) above.

inventions of the same description: the word 'description' in the Restrictive Practices Act 1956 section 6(1)(2) has been held to mean kind (*re British Waste Paper Association's Agreement).* It is not easy to predict the degree of precision with which a collective agreement will be required to 'describe' inventions for the purpose of this section. If, for example, a collective bargain provides that only a small sum may be paid by way of compensation for an invention 'which leads to shop-floor redundancies or the reduction of overtime', will any invention falling within this category be regarded as being of the same description, or will the courts require something more precise in the way of 'content-description', for example 'inventions involving the application of electronic principles to storage and retrieval'? Currently this is not a pressing problem, because so few trade unions take any interest in the ownership or reward of intellectual property, either at branch or at national level.

employees of the same description: a strict regard for the wording of section 40(6) leads one to conclude that both the employee concerned in the claim and those to whom the collective agreement applies must be members of the trade union with which the employer has concluded the agreement; but the

further requirement that the employee be 'of the same description' as the employees described in that agreement is not clear. In *R v Tugwell* the word 'description' in relation to a person was interpreted as 'that which tells what he is'; but in another case involving bills of sale, *Sims v Trollope & Sons,* the court felt that the 'description' of a witness meant no more than his profession, trade, occupation or style. Perhaps the context of the new Act requires that a man's 'description' be an account of his normal employment duties or of duties to which he is specially assigned, which would tie the requirement closely to the meaning of section 39(1).

Chapter 4

The Patents Act 1977: Section 41

Text

41(1) An award of compensation to an employee under section 40(1) or (2) above in relation to a patent for an invention shall be such as will secure for the employee a fair share (having regard to all the circumstances) of the benefit which the employer has derived, or may reasonably be expected to derive, from the patent or from the assignment, assignation or grant to a person connected with the employer of the property or any right in the invention or the property in, or any right in or under, an application for that patent.

(2) For the purposes of subsection (1) above the amount of any benefit derived or expected to be derived by an employee from the assignment, assignation or grant of –

(a) the property in, or any right in or under, a patent for the invention or an application for such a patent; or

(b) the property or any right in the invention;

to a person connected with him shall be taken to be the amount which could reasonably be expected to be so derived by the employer if that person had not been connected with him.

(3) Where the Crown or a Research Council in its capacity as employer assigns or grants the property in, or any right in or under, an invention, patent or application for a patent to a body having among its functions that of developing or exploiting inventions resulting from public research and does so for no consideration or only a nominal consideration, any benefit derived from the invention, patent or application by that body shall be treated for the purposes of the foregoing provisions of this section as so derived by the Crown or, as the case may be, Research Council.

In this subsection 'Research Council' means a body which is a Research Council for the purposes of the Science and Technology Act 1965.

(4) In determining the fair share of the benefit to be secured for an employee in respect of a patent for an invention which has always belonged to an employer, the court or the comptroller shall, among other things, take the following matters into account, that is to say –

(a) the nature of the employee's duties, his remuneration and the other advantages he derives or has derived from his employment or has derived in relation to the invention under this Act;
(b) the effort and skill which the employee has devoted to making the invention;
(c) the effort and skill which any other person has devoted to making the invention jointly with the employee concerned, and the advice and other assistance contributed by any other employee who is not a joint inventor of the invention; and
(d) the contribution made by the employer to the making, developing and working of the invention by the provision of advice, facilities and other assistance, by the provision of opportunities and by his managerial and commercial skill and activities.

(5) In determining the fair share of the benefit to be secured for an employee in respect of a patent for an invention which originally belonged to him, the court or the comptroller shall, among other things, take the following matters into account, that is to say –
(a) any conditions in a licence or licences granted under this Act or otherwise in respect of the invention or the patent;
(b) the extent to which the invention was made jointly by the employee with any other person; and
(c) the contribution made by the employer to the making, developing and working of the invention as mentioned in subsection (4)(d) above.

(6) Any order for the payment of compensation under section 40 above may be an order for the payment of a lump sum or for periodical payment, or both.

(7) Without prejudice to section 32 of the Interpretation Act 1889 (which provides that a statutory power may in general be exercised from time to time), the refusal of the court or the comptroller to make any such order on an application made by an employee under section 40 above shall not prevent a further application being made under that section by him or any successor in title of his.

(8) Where the court or the comptroller has made any such order, the court or he may on the application of either the employer or the employee vary or discharge it or suspend any provision of the order and revive any provision so suspended, and section 40(5) above shall apply to the application as it applies to an application under that section.

(9) In England and Wales any sums awarded by the comptroller under section 40 above shall, if a county court so orders, be recoverable by execution issued from the county court or otherwise as if they were payable under an order of that court.

(10) In Scotland an order made under section 40 above by the comptroller for the payment of any sums may be enforced in like manner as a recorded decree arbitral.

(11) In Northern Ireland an order made under section 40 above by the comptroller for the payment of any sums may be enforced as if it were a money judgment.

Commentary

Once the criteria for receiving an award have been established under section 40, it is section 41 which sets down the means of determining the size of that award. Section 41(1) outlines the general compensatory principle, that any award received by the employee inventor should represent a fair share of the benefit which the employer has derived or may reasonably expect to derive from the patent. It is laid down that the employer's 'benefit' is to include not solely the advantage which accrues to him through utilising the patent, but also the benefit derived through granting patent rights to third parties.

It may be noticed that the word 'or' appears seven times in section 41(1), and it is not entirely clear what sense the section is trying to convey. Thus the words 'to a person connected with the employer' might be construed as applying to the preceding word 'grant' alone, or they may be taken with 'assignment, assignation or grant'. The sense is different in each case, although there is no conflict between the two interpretations if the benefit derived by an employer who assigns the patent to someone other than a 'person connected' is a benefit derived 'from the patent'.

Section 41(2) protects the employee inventor from loss of an anticipated award where the employer transfers his patent rights to a 'person connected' — usually a company under the same control as the employer's — for a nominal or insubstantial sum. The employer is not entitled to rely upon the fact that he personally has received no benefit from the invention, because the court or comptroller is entitled to look beyond the actual consideration for the assignment and may substitute for it a sum which the employer could have expected to receive had he sold the patent in the open market. Presumably this would be the sum that a willing purchaser would pay a willing vendor, though the Act is silent.

Where the employee works for the Crown or for a Research Council he would be put at a disadvantage as against his brethren in competitive or profit-making firms, because those two employers are often more concerned that an invention be utilised than that they receive anything other than nominal consideration for it; but section 41(3) seeks to redress this disadvantage. Where Crown or Research Council allows a third party to utilise any

patent under an invention made by an employee, the benefit of that third party is treated as the benefit received by the employer.

How does the court or comptroller know what a 'fair share' of the employer's benefit actually is? Guidelines are provided under section 41(4) for inventions belonging *ab initio* to the employer, and under section 41(5) for those inventions which belonged originally to the employee, but which he has assigned to his employer.

Where the invention belongs originally to the employer, the factors which are to be taken into consideration are (i) the nature of the employee's duties and the benefits he has already derived from his employment or from the invention itself, (ii) the effort and skill which the employee put into the making of the invention, (iii) the inventive contributions of others and the non-inventive contributions of fellow-employees, and (iv) the employer's contribution to the development and working of the invention. The nature of the employee's duties is taken into account because the more distant is the invention from those duties, the more meritorious is the inventor's activity; and benefits already received are considered because, firstly, the employee may have been paid a high salary in the expectation of his invention or may already have received tangible benefit from the invention and, secondly, because the employee is entitled to make further claims under the Act in respect of an invention which the court or comptroller has already dealt with under these provisions, and in the case of such further claims the tribunal concerned would be obliged to look again at any benefits which it had previously conferred. Effort and skill on the part of an employee are to be considered, though it is not perhaps obvious why; the commercial value of an invention is the same notwithstanding the amount of effort or skill put into it, and while few could argue that the dedicated employee who spares no effort in making an invention does not deserve an award it may be wondered whether a section purporting to give an employee a fair share in the employer's benefits is the most appropriate place for it. The inventive contributions of others are taken into account because the employer's benefit remains constant whether the invention was made by one man or ten, and the employer may indeed have to face claims from other parties in respect of the same one invention; and the employer's own contribution is taken into account on the ground that such contribution, though not a *sine qua non* of the invention itself, may indeed have been the feature which turned a bare patentable idea into a commercially viable proposition for exploitation.

Where the invention, belonging originally to the inventor, is assigned to the employer the following factors are taken into account: (i) the terms of any licence of the patent concerned, (ii) the inventive contribution of any third parties, and (iii) the employer's contribution to the development or

working of the invention. It is surprising that the court or comptroller are not expressly told to add to these *considerata* the benefits actually received by the employee.

In both section 41(4) and 41(5) it should be noted that the lists of factors to be considered is not intended to be a complete one. This gives the tribunal concerned a wide scope in deciding what it will consider as relevant to the determination of the employee's 'fair share'. Further discretion is given to the court or comptroller in that they may award payment to the successful claimant either by way of a lump sum, or through periodical payments. Moreover, on the application of either party any order can be varied, suspended or discharged in the light of further consideration as to the question of the employee's entitlement to compensation. This may produce the unfortunate effect of forcing employees to pay back under a second order money which they have already spent after the first order was made.

Orders for the payment of money can be recovered through a county court in England and Wales, and by the equivalent courts in Scotland and Northern Ireland.

Words and phrases

employee: see page 11
patent: see page 16
benefit: see page 16
assignation: see page 17
derive: see page 17

person connected: section 43(8) refers the reader to the Income and Corporation Taxes Act 1970 section 533 for a definition of the phrase. Section 533 of that Act regards as connected persons (i) spouses, relatives, relatives' spouses and the spouses of one's spouse's relatives, (ii) trustees of a settlement in relation to beneficiaries or to persons connected with beneficiaries, (iii) partners and their spouses, (iv) companies controlled by the same person, or related by various different permutations of connected persons.

employer: see page 11

right: defined under section 130(1) in relation to any patent or application as including 'an interest in the patent or application and, without prejudice to the foregoing, any reference to a right in a patent includes a reference to a share in the patent'.

Crown: while this section refers to the Crown in its capacity as an employer, section 42(4) deals with the term 'Crown employee', which it defines for the purposes of that section alone. It is submitted that there is no reason why

the Crown as an employer in this section cannot simply be construed as the employer of a Crown employee under section 42(4).

Research Council: any body which is a Research Council for the purposes of the Science and Technology Act 1965 – principally the Science Research Council and the Medical Research Council.

nominal consideration: in the light of "no consideration" which precedes it, nominal consideration will be regarded presumably in its literal sense, and will not include consideration which, while not reflecting the true commercial value of the invention, is of some substance or value.

remuneration: not defined under the Patents Act of 1949 or 1977 but the subject of frequent definition in the sphere of industrial relations. Blackburn J in *R v Postmaster-General* regarded it as being a wider concept than that of 'salary', being more in the nature of a *quid pro quo.* 'Whatever consideration a person gets for giving his services, seems to me a 'remuneration' for them'. The Contracts of Employment Act of 1972 includes as remuneration all that is quantifiable in money terms and which is paid to the employee for his work, including expenses he receives in connection with the use of his own car (*S & V Stores v Lee,* and see the Air Corporations Act 1967 section 33). There is a long definition in the Local Government Superannuation Act 1937, section 40, which likewise suggests that remuneration is a far wider concept than that of salary, as does section 7 of the Remuneration, Charges and Grants Act 1975 whereby remuneration includes 'any benefit, facility or advantage, whether in money or otherwise, provided by the employer or by some other person under arrangements with the employer . . . by reason of the fact that the employer employs him . . .'.

in relation to: wider, presumably, than the simple word 'from'.

effort and skill: 'skill' embraces 'care', but is not synonymous with it (*McCrone v Riding*).

jointly: co-ownership of inventions and patent is dealt with under section 36 of the new Act.

advice and other assistance: there is no indication as to whether such advice and assistance need be solicited by the employee inventor. Presumably the tribunal, in assessing the quantum of compensation, will be encouraged to give more weight to advice and assistance which the inventor actively seeks, and which can thus be construed as being part of the cause of the invention, and would give less weight to that advice which the employee does not ask for and which he could have derived from another source.

developing: does this mean 'developing an embryonic idea into an invention' or 'developing an invention into a commercially viable proposition'? Since the word is preceded by 'making', it can be argued that the section refers to the development of the invention once it has already been made, yet develop-

ment at the 'pre-invention' stage would only be considered by the court or comptroller if (i) 'development' here were not so narrowly construed, or if (ii) 'making' an invention includes pre-invention development, or if (iii) such development is considered under section 41(4)(c).

working: if this means the commercial exploitation of the invention by manufacturing it if it is a product, or by using it if it is a process, then this is likely to be a 'contribution' made wholly by the employer.

opportunities: in R v Shurmer (a case dealing with the Criminal Law Amendment Act 1867 section 6) the word 'opportunity' was held to refer both to opportunities of which the accused availed himself and to those of which he did not. However, the context of this section suggests a narrower interpretation here; opportunities not taken up can scarcely be regarded as part of the 'contribution made by the employer to the making, developing and working' of an invention.

licence: cf 'exclusive licence' see page 16

granted under this Act: licences may be granted under the Patents Act 1977 where (i) the proprietor of a patent has it registered as a 'licence of right' under section 46, or (ii) a compulsory licence is granted under section 48; the power of the Crown to perform certain infringing acts under sections 55 and 59 is in one sense a 'licence', and is granted under the 1977 Act, so that power too might be included within the scope of section 41(5)(a). Indeed, since under the Act both the proprietor of the patent and any licensee may claim compensation from the Crown for its use of the invention, it would seem to be only reasonable that such compensation, being part of the benefit received by the party entitled to work the patent, should be susceptible of assessment when the employee's 'fair share' of the employer's benefit is calculated.

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The Patents Act 1977: Section 42

Text

42(1) This section applies to any contract (whenever made) relating to inventions made by an employee, being a contract entered into by him –
(a) with the employer (alone or with another); or
(b) with some other person at the request of the employer or in pursuance of the employee's contract of employment.

(2) Any term in a contract to which this section applies which diminishes the employee's rights in inventions of any description made by him after the appointed day and the date of the contract, or in and under patents for those inventions or applications for such patents, shall be unenforceable against him to the extent that it diminishes his rights in an invention of that description so made, or in or under a patent for such an invention or an application for any such patent.

(3) Subsection (2) above shall not be construed as derogating from any duty of confidentiality owed to his employer by an employee by virtue of any rule of law or otherwise.

(4) This section applies to any arrangement made with a Crown employee by or on behalf of the Crown as his employer as it applies to any contract made between an employee and an employer other than the Crown, and for the purposes of this section 'Crown employee' means a person employed under or for the purposes of a government department or any officer or body exercising on behalf of the Crown functions conferred by any enactment.

Commentary

Section 42 implements the proposal of the Banks Committee that employers should be prevented from securing by way of express contract the rights in any inventions which the employee had not yet made and which, apart from that contract, would belong to the employee to the exclusion of the employer. Under section 42(2) any term in any contract made by the employee

with his employer or with a third party but at the employer's request becomes unenforceable to the extent that it lessens any rights conferred by the above sections.

It has very often been found necessary to impose upon employees a contractual duty not to divulge to any third party any information which is the 'property' of the employer, or which the employee acquired by dint of his position as an employee in the employer's undertaking. Could such a contractual term be construed as diminishing the rights accorded the employee under this part of the Act? Where the employee's rights are in an invention belonging initially to his employer it is unlikely that there will be any real conflict; but where an employee makes an invention which builds upon confidential information belonging to the employer, and that invention belongs to the employee alone, there may indeed be difficulties. Section 42(3) resolves these conflicts in favour of the employer by indicating that section 42(2) shall not be construed as derogating from any duty of confidentiality which the employee owes his employer, whether by virtue of any rule of law or otherwise. This would seem to indicate that, whether the employee's obligation to maintain the confidence is written or is simply implied, the employer's right to the protection of that confidence automatically overrides the employee's property right in his invention.

Section 42 applies not only to employees in private and public sectors of employment but to Crown employees themselves. Crown employees have traditionally been required or expected to assign away any rights in their inventions with hope only of an *ex gratia* payment; but now they will be treated as ordinary employees notwithstanding the special nature of their employer.

Words and phrases

'whenever made: ie whether the contract has been made before the Act comes into force or otherwise.
inventions: see page 11
employee: see page 11
employee: see page 11
alone or with another: it has previously been the practice of, for example, the Science Research Council, when entering into research partnership agreements with private industrial concerns, to require that the inventions which result from their financial sponsorship be assigned to them. It is not sufficient for the Science Research Council to contract with the employer that the employee's rights in his inventions shall vest in the Council, because the employee is not a party to that contract and cannot be sued upon it. It

is thus necessary for an employee – if he has not previously signed any 'pre-assignment contract' – to contract both with his employer and with another party, the Science Research Council that inventions made by him will belong to them. Another instance of an employee contracting with both his employer and with another party is where the employee is to be employed by one party but is seconded to perform his duties at the workplace of the other.

with some other person at the request of the employer: this will in probability overlap substantially with section 42(1)(a).

pursuance of . . . contract of employment: 'contract of employment' may here mean no more than 'employment duties'.

rights: see page 23

description: the force of the word 'description' in this section might be to allow section 42 to apply only where the invention which the employer seeks diminution of the employee's rights is actually described in the contract. Further on, section 42(2) talks of clauses of contracts being unenforceable to the extent that they diminish rights in an invention 'of that description'. If this is so, then it will defeat the intention of the legislature, which intended that *no* pre-assignment clauses or diminutions of the employee's rights were to be permitted. If the legislature had used the words 'any invention' instead of 'invention of any description' and 'invention of that description' no possibility of ambiguity could arise.

of any rule of law or otherwise: 'any rule of law' presumably refers to the equitable quasi-tortious duty not to divulge information which belongs to others; 'or otherwise' would then refer to the contractual duty not to breach any confidence.

arrangement: the word 'contract' is not used, presumably because employees of the Crown are customarily not regarded as employees under a contract of employment.

Crown employee: defined in section 42(4).

Chapter 6

The Patents Act 1977: Section 43

Text

43(1) Sections 39 to 42 above shall not apply to an invention made before the appointed day.

(2) Sections 39 to 42 above shall not apply to an invention made by an employee unless at the time he made the invention one of the following conditions was satisfied in his case, that is to say –
(a) he was mainly employed in the United Kingdom; or
(b) he was not mainly employed anywhere or his place of employment could not be determined, but his employer had a place of business in the United Kingdom to which the employee was attached, whether or not he was also attached elsewhere.

(3) In sections 39 to 42 above and this section, except so far as the context otherwise requires, references to the making of an invention by an employee are references to his making it alone or jointly with any other person, but do not include references to his merely contributing advice or other assistance in the making of an invention by another employee.

(4) Any references in sections 40 to 42 above to a patent and to a patent being granted are respectively references to a patent or other protection and to its being granted whether under the law of the United Kingdom or the law in force in any other country or under any treaty or international convention.

(5) For the purposes of sections 40 and 41 above the benefit derived or expected to be derived by an employer from a patent shall, where he dies before any award is made under section 40 above in respect of the patent, include any benefit derived or expected to be derived from the patent by his personal representatives or by any person in whom it was vested by their assent.

(6) Where an employee dies before an award is made under section 40 above in respect of a patented invention made by him, his personal represenatives or their successors in title may exercise his right to make or proceed

with an application for compensation under subsection (1) or (2) of that section.

(7) In sections 40 and 41 above and this section 'benefit' means benefit in money or money's worth.

(8) Section 533 of the Income and Corporation Taxes Act 1970 (definition of connected persons) shall apply for determining for the purposes of section 41(2) above whether one person is connected with another as it applies for determining that question for the purposes of the Tax Acts.

Commentary

Section 43 deals with various supplementary matters pertaining to the preceding sections. It specifies that sections 39 to 42 shall not apply before the day appointed, 1 June 1978; nor shall they apply to inventions made by any employee not working mainly in the United Kingdom or not working in any place in particular but whose employer has a place of business in the United Kingdom to which he is attached. However, so long as the invention falls within the scope of the new provisions they will apply just the same whether the invention is patented at home or abroad, or under any treaty or international convention.

Section 43(5) makes it clear that where, in sections 40 and 41, reference is made to the employer's benefit derived under a patent, or to benefits which he is reasonably expected to derive, the mere fact of the employer's death will not deprive the employee of his right to a full fair share of that benefit; for such benefit is taken to include the benefit derived or expected to be derived by the employer's personal representatives or their assignees. Nor does the employee's right to compensation die with him. Under section 43(6) his personal representatives or their successors in title may bring an application under section 40 to secure the award.

Words and phrases

appointed day: 1 June 1978.
invention: see page 11
employee: see page 11
mainly: probably means 'more than half' (*Fawcett Properties v Buckingham County Council*). Note also section 8(1) of the Race Relations Act 1976, which applies to all employments save those which are 'wholly or mainly' outside Great Britain; the words 'or mainly' are to be omitted in the case of (i) employment upon British registered ships, and (ii) employment upon aircraft or hovercraft operated by a person or business ordinarily resident in

Great Britain. This would suggest that one employed within these two exceptions was not employed 'mainly' in the area concerned.

United Kingdom: under section 132(3) the territorial waters of the United Kingdom are to be construed as part of that Kingdom, thus protecting the rights of employees upon offshore oil installations. Section 132(2) extends the Act to cover the Isle of Man, subject to any qualifications which may be made by Order in Council.

place of employment: defined in the context of the exemption of employees from receiving unemployment benefit if there is a strike at their place of employment as 'the factory, workshop, farm or other premises or place at which (the employee) was employed, so, however, that, where separate branches of work which are commonly carried on in separate departments on the same premises or at the same place, each of these departments shall for the purposes of this paragraph be deemed to be a separate factory or workshop or farm or separate premises or a separate place, as the case may be'. National Insurance Act 1965 section 22(6). This seems to be much narrower than the definition of 'business premises' in the Income and Corporation Taxes Act 1970 section 202(1): '. . . (inclusive of) all premises occupied . . . for the purpose of any trade carried on . . .'.

jointly: see page 24

advice or . . . assistance: see page 24

or other protection: eg a German petty patent, or perhaps an American registered design (which has an higher degree of inventivity than its British equivalent).

treaty: the Patent Co-operation Treaty.

convention: the European Patent Convention or the Community Patent Convention. The Parish Convention deals with matters concerned with reciprocity of patent recognition, but does not provide for the 'granting' of any patents.

benefit: see page 16

derived: see page 17

personal representatives: ie the executors under his will, or the administrators of his intestate estate. In practice, most employers today are corporate, and do not die. Note the personal nature of the employer's duty to compensate: there is no mention of any such duty being imposed upon his successors in title.

Chapter 7

Inventions made before the coming into force of the new Act

Does the new Act cover old inventions?

It is clear that the new provisions which deal with the ownership and remuneration of inventions made by employee inventors do not apply to any patents, applications for patents, or patents consequent upon any such applications as exist upon the appointed day (1 June 1978) upon which the new Act is to come into force; for those provisions are not enumerated in Schedule 2 to the Act (which lists those provisions which are intended to apply to pre-existing patents and applications). Section 43(1) goes further still, barring the application of the new provisions to any inventions not made before the appointed day, notwithstanding the fact that there may be no application for a patent in respect of such an invention until some time after the appointed day has elapsed. The practical consequence of section 43(1) is that it will doubtless be a long time before any litigation takes place upon the new provisions. Certainly, where an employee claims compensation for the operation of his invention by his employer, enough time will have to elapse for the act of invention and the securing of a patent to have taken place since the appointed day, before the employee even contemplates litigation. So it is important to review the current law which the new Act replaces, for its relevance will remain with us for some years.

Ownership of old inventions where there is no express contract

The person who makes an invention and receives a patent in respect of it is presumed to be the person entitled to enjoy its benefit, in the absence of any express contractual agreement to the contrary. However there has developed a substantial corpus of case-law to the effect that the inventor's employer may be the better entitled to the beneficial interest in the employee's in-

vention than is the employee himself. The cases fall neatly into two categories: first there are those where the employee inventor is deemed a trustee of his employer's interests in general, or of the patent in particular, by virtue of his position of responsibility in relation to that employer; and secondly there are those cases wherein, by virtue of the nature of the employee's employment duties towards his employer, the courts have implied a term into the contract of employment that the employer is entitled to the benefits resulting from the performance by the employee inventor of his duties in an inventive manner. These two groups of cases will be taken in turn.

(a) Where a trust is implied by virtue of the employee's position

In *Worthington Pumping Engine Co v Moore* the defendant was the UK agent for an American firm but their relationship was of the 'closest and most confidential character'; the defendant was entrusted with all the information which his employer possessed, and received a huge salary, plus commission, for his services. He was described by the judge as owing to the plaintiff company a duty virtually the same as that owed by a partner, and he was regarded as that company's *alter ego* on this side of the Atlantic. Moore took out three patents in his own name – though he had tested them in the company's name and at its expense – and sought to hold them as against the company. Byrne J held that by virtue of the position of extreme responsibility owed by the defendant to the plaintiff he could not be regarded as holding the three patents otherwise than as a trustee for the plaintiff. It was not suggested at any time that the defendant was under a duty to make inventions, or that he had indeed been asked to do so; it was only the position of the employee in relation to the employing concern which led to the declaration of a trust in the latter's favour.

A similar result was achieved upon less cogent facts in the case of *British Syphon Co v Homewood*. The defendant there was not so much an ordinary employee of the plaintiff company as an adviser or consultant. He was not asked to design any syphons, nor indeed was his advice upon the subject expressly sought. Homewood made an invention relating to syphons and applied for a patent upon it at a time when he was still employed by the plaintiff, whose service he left shortly after. When the plaintiff heard of its ex-employee's invention it sought a declaration that Homewood held it in trust for his ex-employer's benefit, a remedy granted by Roxburgh J. The ground upon which the court relied was the fact that the invention was made at a time when the plaintiff could still 'use' Homewood by seeking his advice and by exploiting his expertise. A duty was found to be owed by Homewood

to his employer, being an obligation not to put himself into a position where – if he were consulted – the best advice could not be given, or could not be acted upon if so given; and it was this duty which the employee was held to have broken. The logic of the court in moving from this proposition to the conclusion that – no advice having been sought from the employee – the plaintiff was entitled to the patent, may be questioned; but there is no doubt but that the case is regarded as good law.

(b) Where a trust is implied by virtue of the employee's duties

At the turn of the century the courts started to imply into an appropriate contract of employment a term to the effect that that particular employer was entitled to the fruits of invention of that particular employee. Thus in *Edisonia Ltd v Forse* the defendant, an employee and ultimately manager of the plaintiff's phonograph cylinder moulding department, made two inventions together with the firm's general manager. The latter claimed no beneficial interest in the resulting patents and assigned his interests to the company, but Forse refused to do this. The court however held that Forse was employed 'to do his best by his skill, knowledge, and inventive powers to improve the manufacture of the cylinders', even though such a term of employment had never expressly been made; and since Forse's invention was made in the execution of his employment duties, the resulting benefit of the patents was held to be for the employer. As Warrington J put it:

It may very well be that in the circumstances of a particular case, it is inconsistent with the good faith that ought properly to be inferred or implied as an obligation arising from the contract of service that the servant should hold the patent otherwise than as a trustee for his employer.

In *Adamson v Kenworthy,* a similar case but where the employee was a draughtsman, not a sound recording engineer, Farwell J held that the employee's duty when instructed by his employer to prepare a design was

. . . to use such skill and inventive faculty as he may possess in order to produce the best possible design within his ability . . .

and that, accordingly, the employer would be regarded as the beneficiary of the patent notwithstanding the fact that it was not foreseen nor required that the performance of the employee's duties would result in a patentable invention.

Eventually the courts ceased to look to the specific nature of the employee's contractual duties and position, agreeing instead that it is an implied term in the contract of every employee that he will serve his employer in the best and most inventive manner in the performance of his duties. Thus in *Sterling Engineering Co v Patchett* Viscount Simonds could say that

It appears to me that it is . . . an implied term, though not written at large, in the contract of service of any workman that what he produces by the strength of his arm or the skill of his hand or the exercise of his inventive faculty shall become the property of his employer.

Ownership of old inventions where there is an express contract

By the normal principles of contract law the courts will give effect to the intentions of employer and employee where they are manifested in the contract of employment. Thus if a term of that contract stipulates that an invention shall be the property of the employer, or indeed that all inventions made by the employee shall belong to the employer, then the courts will simply regard that stipulation as part of the consideration flowing from the employee to his employer in return for his pay-packet. This principle had never been seriously questioned until the recent decision of *Electrolux Ltd v Hudson and others,* an important case dealing with the express terms of the contract of employment.

The defendant in *Electrolux* was a storekeeper, whose duties were not expected to lead to the making of any inventions at all. When he entered the plaintiff's service he promised to comply with the plaintiff's rules and conditions of employment. The rules and conditions were not known to him when he promised to obey them, nor was there an available copy for him to inspect. Under the company's rules the defendant was obliged to assign to his employer the rights to any process, discovery or invention made by him and which related to the production or the product of the employer or of any of its associated companies in the United Kingdom or elsewhere. This clause did not become known to the defendant until after he had made an invention of some value to the plaintiff company and had taken steps towards marketing it himself. The court did not discuss the issue of whether the defendant was bound by a term of which he had no notice but, proceeding from the assumption that he *was* so bound, went on to hold that the term concerned was so wide as to be unenforceable as a restraint upon trade. While this decision is undoubtedly in accord with the provisions of the new Act – which is not yet in force – it may be argued that the court's judgment does not represent the correct state of the common law. There are two grounds upon which the case may be criticised, of which the second is the stronger: (i) it is difficult to see how a clause in a contract which provides for the assignment of rights in future inventions can be in restraint of the defendant's trade, which is that of a storekeeper; and while such a clause clearly restricts the employee's right to exploit his own inventions, such a right is only ancillary to the employee's trade; and (ii) it is almost unknown for the

courts to hold as a restraint upon trade any clause in an existing contract of employment which relates to the rights and duties of the two parties for the duration of that contract. It is where the employer seeks to restrict the operations of an employee after that employee has left his service, either in barring him from competing with his former master or by preventing him from working for any competitor or by prohibiting him from plying his particular trade at all, that the doctrine of restraint of trade is supposed to apply. Virtually the only circumstances in which the courts will interfere with the terms of a current contract of employment are where (i) by its terms the employee is effectively a slave, deprived of his freedom and physical liberty *(Sommersett's Case)*, or where (ii) the servant or contractor is obliged to work for the employer alone but that employer is under no corresponding obligation to remunerate the employee or to provide remunerative facilities for him *(Schroeder Music Publication Co v Macaulay)*.

One further *dictum* of Whitford J in the *Electrolux* case was to the effect that the clause in contention was not only in restraint of trade where the employee was a storekeeper or another such performer of non-inventive duties, but would be in restraint of trade even where the employee was specifically employed to do research for his employer and then made an invention not falling within the scope of his normal contractual duties. If the reasoning of the court was incorrect in respect of the defendant storekeeper, it will *a fortiori* be incorrect in the case of the research worker; and, even if it is correct, the employer is not without remedy where his research worker has indeed made an invention to which the employer assumed he would be contractually entitled. This is because where the express terms of the contract of employment are struck out as being unreasonable, the court may still imply a term into the contract to the effect that the employer is entitled to the invention *(Triplex Safety Glass Co v Scorah)*. It should be noted that the facility to imply such a term where an express term is held unenforceable is an exception to the general rule established in *Mason v Provident Clothing and Supply Co*, that once a term expressed for the employer's benefit is held unenforceable, no reasonable term will be implied. To do so is to encourage employers to put unreasonable terms into the express contract in the knowledge that employees will not wish to shoulder the cost of litigation to test them; after all, even if the term is unreasonable, the employer may still then win his case.

Finally on the subject of express contractual terms, it should be remembered that the terms are only enforceable for as long as the contract still subsists. An agreement between employer and employee to share the proceeds of the exploitation of patents made by the latter does not extend to cover an invention made shortly after the contract is terminated *(Wollaston*

and Knowles v Chapman). But where the terms of a contract determine the status of the parties in relation to an invention, the termination of that contract does not alter that status; thus where a contract establishes that an employee inventor holds an invention in trust for the benefit of his employer the termination of that contract does not determine also the employee's duties *qua* trustee *(British Celanese Ltd v Moncrieff).*

The employer's obligation to compensate the employee inventor

In general an employer is not bound – in the absence of any contractual duty – to pay to an employee any compensation for the assignment of a patent to which he is legally entitled, in excess of the employee's normal salary. The act of invention and the actual assignment are in such circumstances regarded as part of the employee's employment duties or as a consequence of the employee's position of responsibility to his employer, and the performance of those acts is taken to be good consideration for the employment. The only compensation which an employee can claim as of right is the recovery of his out-of-pocket expenses in applying for and in securing the patent *(Worthington Pumping Engine Co v Moore).* It has not been argued whether an employee, or ex-employee, who holds a patent in trust for his employer may be entitled to any further remuneration in respect of his duties as trustee, but while the issue may be open it is difficult to imagine that the courts would find an employee to be entitled to anything in excess of his ordinary wages where the patent he holds in trust for his employer is a direct consequence of the fulfilment of his contractual duties.

Where the contract of employment provides for some remuneration to be paid to the employee by way of compensation for the creation or the assignment of an invention it is open to the employee to sue for the recovery of that compensation only in the instance where such compensation is not described as being *ex gratia* or awardable at the employer's discretion; it is the impression of this author that while in very many cases an employer will seek to make a reward to the employee in excess of his normal wages, that reward will usually be entirely at the employer's discretion or will be assessed by a procedure which – though formal or semi-formal in its nature – does not give rise to any remedy on the part of the employee. In some cases the payment of a reward is the subject of an agreement between the employer on the one hand and a staff association (or, sometimes, trade union) on the other. It must be remembered that the employee is not a party to such agreements and cannot in his own right sue upon them if they are not followed.

It is possible that by the terms of an express or implied contract the

employer and employee may have agreed that the benefit of the employee's invention should be shared between them, while not actually indicating the proportion of the share to be accorded to each. This is what happened in *Pashley v Lintotype Co Ltd.* In that case Walton J directed the jury to estimate what would be a 'fair and reasonable thing' for the employer to pay to the employee who had been 'justly and as a matter of right . . . promised that he should get something'. The factual situation of *Pashley* is now probably the only circumstance in which section 56(2) of the Patents Act 1949 still has any application. The subsection reads:

'In proceedings before the court between an employer and a person who is or was at the material time his employee, or upon an application made to the comptroller . . . the court or comptroller may, unless satisfied that one or other of the parties is entitled to the exclusion of the other, to the benefit of an invention made by the employee, by order provide for the apportionment between them of the benefit of the invention, and of any patent granted or to be granted in respect thereof, in such manner as the court or comptroller considers just.'

The legislative history of this provision has been discussed in the previous chapter, and need not be touched upon here. Once the House of Lords held in *Sterling Engineering Co Ltd v Patchett* that the word 'entitled' meant 'legally entitled' and not 'beneficially entitled' its practical scope was confined to putting *Pashley's* case into statutory form. This section has not been repealed by the 1977 Act, and will continue to apply to all inventions in being when the new law comes into force.

As a postscript to this chapter it should be noted that in some American courts there has been a concerted and partially successful attempt to secure for the employee inventor compensation for the making or for the assignment of his invention, through the application of the equitable doctrines of *quantum meruit* and unjust enrichment. Though these developments are not strictly relevant in a discussion of the law of the United Kingdom, they may indicate a possible future trend in British legal thinking. A full discussion of these American developments may be found in the author's unpublished Ph.D thesis, 'The Allocation of Intellectual Property Rights between Employers and Employees in the United Kingdom', chaper 17. The thesis is available at the Library, the University of Kent at Canterbury.

PART II

THE OWNERSHIP OF INTELLECTUAL PROPERTY OTHER THAN INVENTIONS

Chapter 8

The Ownership of Copyright

The relevance of copyright to the ownership of inventions

Section 39 of the Patents Act 1977 deals with the ownership of inventions, and, while it will be of prime importance mainly in those instances where the invention is patented, or is at least patentable, there is no suggestion that it does not apply also to unpatentable inventions. In the case of all inventions, but especially those where no monopoly protection is available, the employer always runs the risk that an employee who has made an invention belonging to the employer will not co-operate in the exploitation of that invention. In particular the employee may claim that while indeed the employer owns the invention as an abstraction, it is he alone who owns the copyright in the plans, diagrams, flow-charts, tables and calculations in which the invention is embodied. In such circumstances it is necessary to make reference to the Copyright Act 1956. It is not the function of this work to deal with the large variety of literary and artistic works protected by that Act, nor to examine the duration or the quality of protection provided by copyright law; but the rules relating to the ownership of copyright materials of a literary or artistic nature will be examined and contrasted with the new laws touching the ownership of inventions.

Copyright Act 1956 section 4. Relevant text

4(1) Subject to the provisions of this section, the author of a work shall be entitled to . . . copyright . . .

(3) . . . where a person commissions the taking of a photograph . . . or the making of an engraving, and pays or agrees to pay for it in money or

money's worth, and the work is made in pursuance of that commission, the person who so commissioned the work shall be entitled to . . . copyright . . .

(4) Where . . . a work is made in the course of the author's employment by another person under a contract of service or apprenticeship, that other person shall be entitled to any copyright . . .

(5) Each of the . . . preceding subsections shall have effect subject, in any particular case, to any agreement excluding the operation thereof in that case.

Copyright Act 1956 section 4. Commentary

Section 4 deals both with photographic and engraving works and with literary and artistic ones. The significance of the former to the employment of the inventor is that where data or calculations are recorded on microfilm or on some similarly photographic medium of reproduction then section 4(3) will determine whether or not the employer has a right to reproduce such material. It is plain from the wording of that subsection that it was envisaged as a test applying as between an independently commissioned craftsman and the man who commissioned him, although it is quite likely that works created in the duration of an ongoing contract of employment may fall appropriately within its wording. It seems that an employer, in order to avail himself of the subsection, must at least direct the employee to take the picture concerned; and it may be that consideration in excess of the employee's normal salary — to which the commissioning itself can be referred — will be necessary (see discussion of Registered Designs Act 1949 section 2, at chapter 9 below). If the work in question is requested by the employer but on terms that the employee will only derive a benefit from it if the work, once executed, fits the employer's needs, section 4(3) will not apply (*Leah v Two Worlds Publishing Co Ltd*). It should be remembered that where section 4(3) is inapplicable there is nothing to prevent the employer from claiming ownership of the copyright material under the subsequent terms of section 4(4), discussed in the next paragraphs.

Section 4(4) has been the subject of some litigation, but of little close analysis of the words which comprise it. Do the words 'under a contract of service or apprenticeship', for example, refer to the word 'made' or to the phrase 'the author's employment', and is there any significance in those words being attached to the one or to the other? And what is the precise difference in meaning of *'in the course of employment'* as distinct from 'under a contract of service or apprenticeship'? And why is the word 'duties' nowhere mentioned in the subsection, given that the intention of the sub-

section (per Graham J in *Antocks Lairn Ltd v Bloohn Ltd*) is

'. . . to give the copyright . . . to the author . . ., unless he is what perhaps may be called a normal employee who is employed for that purpose'?

Judicial opinion is united in agreeing that there are two necessary conditions which the employer must fulfil before rebutting the presumption that an author of a work is its owner also. The first is that the work come into existence at a time when the employee is employed under a subsisting contract of service; the second is the work be made in the course of the author's employment. The first requirement is not usually in dispute, because it is in general quite simple to ascertain whether the work in question came into being while the contract of employment was subsisting. The second requirement has proven to be more contentious, and has been interpreted in different ways by different judges. Not least of the difficulties facing the parties here is the fact that the words 'course of employment' do not appear merely in the context of copyright ownership; the scope of 'course of employment' is relevant where the employer may be vicariously liable for the torts committed by servants in the course of their employment, or for criminal offences committed by them, not to mention instances where the employer may be liable to compensate the employee who is injured while in his master's service. Cases on these topics have been cited and discussed in copyright cases with little regard for the fact that, on policy grounds, there may have been grounds for applying an especially broad or narrow test of what is done within the 'course of employment', which are of no concern in copyright cases. No reference will be made to non-copyright interpretations of 'course of employment' in this monograph.

In *Byrne v Statist Co* (decided under the Copyright Act 1911, substantially similar to the 1956 Act in this respect) the plaintiff was an employee of a well-known newspaper, as a member of its editorial staff. He was assigned a special task of translating and précising a speech made by a Brazilian politician; this assignment was to be completed in his own time and for extra remuneration from his employer. The court agreed that while the translation was made during the time that the employee was part of the employer's establishment it was not executed as a part of the plaintiff's employment duties under his contract of employment; and the plaintiff accordingly had the *locus* to sue infringing third parties. The principle and the application of it to the facts were broadly similar in another case under the 1911 Act, *Stevenson, Jordan & Harrison Ltd v MacDonald & Evans*, where the employee — an accountant with the plaintiff firm — was asked to deliver, and did deliver, a set of public lectures upon various aspects of accounting theory. The employee used the text of these lectures, together with some materials which he wrote while in the course of advising a particu-

lar client, as the basis for a book to be published by the defendants. The Court of Appeal held that while the materials written in the course of advising the plaintiff's client was clearly written in the course of the accountant's employment, and was thus the copyright property of the plaintiff, the text of the lectures was not. The lectures were delivered while the accountant was employed, but did not flow from the 'course of employment'. Denning LJ felt that it was 'just and common sense' that the text of the lectures belong to their author; and indeed in this instance it would seem that, while the employer had an interest in the delivery of the lectures, that was an interest in the fact of such delivery, not in their form or content.

These cases were certainly in harmony with the presumed intention of Parliament in 1911 to deprive an author of his copyright only where it would be an unfair or unjust hindrance to the employer were he to be deprived of it; but in *Beloff v Pressdram Ltd* the court found the employer to be the owner of the copyright in an employee's work in a situation in which not only had the employer not instructed or solicited the work, but where the employer did not want the copyright in it. The employee was a journalist employed by a well-known newspaper; the work concerned was an internal memorandum written by the employee to her editor. The memorandum was not – unlike the employee's articles – intended for publication, nor was it required by the employer; if the employee were under any duty to keep the editor informed of various matters, this duty could be discharged just as easily by telephoning him or by speaking to him personally. At any rate the memorandum was published in *Private Eye* in circumstances embarrassing to the employee, who sued for *inter alia* infringement of copyright. Ungoed-Thomas J held that since the memorandum fell within section 4(4) of the 1956 Copyright Act the plaintiff had no *locus standi* to sue for its infringement. In doing so, the learned judge cited an *obiter* passage from the judgment of Denning LJ in *Stevenson, Jordan & Harrison's* case:

. . . under a contract of service, a man is employed as part of the business, and his work is done as an integral part of the business; whereas, under a contract for services, his work, although done for the business, is not integrated into it but is only accessory to it.

Since in this case, the judge held, the plaintiff's job-role was an integral part of the newspaper's business, it followed that the plaintiff was employed under a contract of service; consequently, the other requirement of section 4(4) being undisputed, the copyright vested in the employer, and the plaintiff could not sue.

The difficulty in *Beloff's* case is that it takes a different view from *Byrne* and *Stevenson, Jordan & Harrison's* case on the two requirements of section 4(4). Instead of requiring that (i) there be a subsisting contract of

service and that (ii) the work be created in the course of the employee's employment duties, *Beloff* seems to require only that (i) a contract be subsisting (ii) which is a contract of services and not a contract for services. It would seem that no importance was placed in *Beloff's* case upon the facts that (i) the memorandum written by the plaintiff was not intended to be published, while the works which she was employed (ie under a duty) to write were so intended, (ii) the plaintiff had not been required as part of her service duties to furnish a memorandum, and (iii) the contents of the memorandum could equally well have been passed to the editor by an alternative means. It is submitted that in *Beloff* the court was tempted to reason that, since the plaintiff's employment was integral to the employer's business, every act performed by the plaintiff in relation to the employer's business was performed under a contract of service – an analysis which fails to take into account the fact that one cannot imply a duty upon the plaintiff to perform an act by virtue of the fact that the act was indeed performed.

It is not known which interpretation of section 4(4) will prevail, *Beloff's* or that which existed before it. *Byrne* and *Beloff* are both decisions at first instance, while *Stevenson, Jordan & Harrison* is a decision of a strong Court of Appeal. Perhaps *Beloff* will simply be distinguished on the ground that in that case the court did not advert its attention to the question of whether the employee was under a duty to write the memorandum in question.

Finally it should be noted that the provisions of section 4 apply only insofar as they are not inconsistent with any express provisions of the contract of employment. Compare this with Section 42(2) of the Patents Act 1977.

Chapter 9

The ownership of registered designs

The relevance of registered designs to the ownership of inventions

Where an invention made by an employee but belonging to an employer is the invention of a product, not a process, there may be good reason for the employer to contemplate seeking the protection not of a patent but of registering the invention as an industrial design under the Registered Designs Act 1949. The factors which might encourage the employer to seek such protection would probably be (i) the fact that the appearance of the product is to a great extent determined by its function, (ii) the striking or distinctive appearance of the product itself, and (iii) the likelihood of the patent application being rejected for lack of an inventive step, or of the patent itself being weak and thus encouraging litigation or infringement. Registration as an industrial design can protect the shape or appearance of the invention, and not the inventive idea itself; but where the shape of the invention is nearly synonymous with the notion of the invention itself, it may be hard for people copying the invention to avoid copying its physical embodiment too.

The fact that the employer may claim ownership of an invention under section 39 of the new Act does not of itself entitle him to claim ownership of an industrial design. Designs, in common with works protected by copyright, are taken to be owned by the author; but under section 2 of the Registered Designs Act 1949

'. . . the author of a design shall be treated for the purposes of this Act as the proprietor of a design; Provided that where the design is executed by the author for another person for good consideration that other person shall be treated . . . as the proprietor'.

Ownership of registered designs: cases and commentary

Curiously enough there have been no cases involving employer and employee which have had at their heart the disputed ownership of a registered design of which the employee was the author; but there are several *obiter dicta* and

decisions made upon other grounds which throw light upon the relation of the parties to the contract of employment in respect of designs. For example in *Lazarus v Charles,* an old case dealing with the registrability of designs, it was suggested in passing that an employee making a new design loses it to his master 'by virtue of the relations that exist between them'; while in *Ware v Anglo-Italian Commercial Agency Ltd (No 1),* in an action seeking an interlocutory injunction against an alleged infringement, the court did not feel that where a contract of employment existed between the plaintiff employer and the author of the design the existence of that contract of employment did not *ipso facto* entitle him to sue. Furthermore, it seems from *Hothersall v Moore* that – at any rate in an action between the employer and a third party – it is for the employer to discharge the burden of proof of satisfying the court that he is indeed the proprietor. From the two latter cases it would seem safest to suggest that *Lazarus* is of little effect and that the employer is not to be regarded presumptively as having any right in the design by virtue of the bare fact of the employment contract. It is further submitted that, since section 2 of the Registered Designs Act 1949 does not mention the contract of employment when it provides a test of proprietorship, the fact of a master-servant relationship is of no relevance to it.

The nature of the distinction between the registered design and the patent of invention has resulted in the development of one further possible means of depriving the author of his proprietorship which is not open to the employers of inventors, and that is the possibility that the employer may himself be construed as the author. While the employer who instructs an inventive employee to perform certain acts can scarcely be regarded as the 'inventor' of any resulting invention because it is the mental effort of the employee which has produced the thing protected, it is not unreasonable to regard the employer as an author where he has given to his employee such explicit instructions for the execution of the design that the employee acted as a mere amanuensis, producing a design which corresponds exactly with the employer's instructions and which, in essence, would be no different from the execution of the same directions by any other person. This notion of the employer as author has been recognised in *Pearson v Morris Wilkinson & Co, Pressler & Co Ltd v Gartside & Co,* and also in the copyright case of *Stannard v Harrison* where the following words of Bacon V-C may be taken to be of some interest to the employers of inventors:

. . . Mr Stannnard cannot draw. He never said he could. Mr Stannard can invent, which is more valuable a great deal, and as happens in 99 out of every 100 inventions, the inventor generally is a man who cannot perfect the machinery by which the invention is to be carried into effect.

While it is true that the Vice-Chancellor may not have intended his words

to be of any application where the ownership of patents or inventions is concerned, it is equally true to say that the words invite through their very breadth of scope an application wider than merely the field of copyright.

Turning from the obliquely relevant case-law to the more pertinent requirements of section 2 of the Registered Designs Act 1949, we may note that an employer will enjoy the proprietorship of a design upon the fulfilment of two conditions: (i) the design must be executed for him by the employer, and (ii) the execution must be made in return for good consideration. Failing this, the employer can only become the proprietor of the design by virtue of assignment, for which he must negotiate at arm's length.

The first requirement, that the design must be executed for the employer by the employee, presumably demands that the design be solicited from the author by the employer, or that the author be employed on the terms that he is to execute designs for the employer. Where there is no element of duty or responsibility upon the author to make the design it will not be treated as being executed on his employer's behalf (*Woolley v Broad*). The second requirement, that the execution must be made for good consideration, does not actually mean that, where the author of the design is an employee, the wages received by him for his services in general are not good consideration for the specific designing of the work in question; but where it is not clear that the execution of the design is part of the employment duty, it may be prudent for the employer to give good consideration which is especially earmarked for the performance of the employee's designing services. This should forestall the argument that because the employee receives his wages whether he designs or not, there is no good consideration for the designing.

Chapter 10

The ownership of confidential information

In this chapter 'confidential information' refers to those forms of intellectual creation which derive their legal protection not from the fact that they are patented or covered by the laws of copyright or design registration, but which are protected by virtue of the fact that they are not intended to be made freely available to the public. In the broad sense of the concept, confidential information comprises trade secrets, customer lists, details of accounting and taxation arrangements, innovative ideas and industrial know-how; but in this chapter we are only concerned with confidential information made or invented by the employee during the period of his employment, and with the question of whether it is he or his employer who is entitled to own it. It is not the concern of this chapter to discuss the means of protecting property rights in confidential information, a topic which has already generated much legal commentary.

Once section 39 of the new Patents Act comes into force it will decide all questions of ownership of inventions, whether those inventions be patented, patentable or unpatentable (see chapter 3 page 11, on 'invention'). In respect of patentable and patented inventions this section replaces the law described in chapter 2 above; but where an invention is not patentable it is difficult to establish whether section 39 is replacing anything at all. There is only one case upon the ownership of a non-patentable invention, *Makepeace v Jackson*, decided in 1814 and so obscurely reported that it is difficult to ascertain its exact ground of decision; but it seemed from that case that the employer, a dyer, was entitled to the benefit of a set of instructions conceived of by the employee for the mixing of certain new colours. It is submitted that, in general, the courts have been prepared in the past to apply the same test to the ownership of confidential information created by an employee as was applied to patents (see chapter 2); but there is little concrete evidence to support this save the fact that in the *Worthington Pumping Engine* case the court did not feel that the fact that the patents in question were probably invalid would affect the question of their ownership.

The most common means of allocating the ownership of confidential information between employer and employee is the utilisation of the con-

tract of employment itself. Thus it is not uncommon to find clauses which require an employee to divulge to his employer any ideas or inventions or improvements which he may think up, perhaps coupled with another clause declering that the employer is to be entitled to the benefit of such ideas. Clauses such as these are of little significance where the employee does not divulge ideas or innovations to his employer, because until the ideas emanate from the employee the employer will not know of their existence; but teeth are added to those obligations by a further prohibition upon the employee from divulging such ideas or innovations to anyone else.

How do such clauses square with section 42 of the new Act, which is intended to protect the employee inventor from the loss of inventions to which his employer would not otherwise be entitled? The section applies to all inventions, whether patentable or otherwise, which would clearly bring within its ambit the sort of things created by employees which, though not patentable, may be of great value if confined to the employer's use. This would indicate that where the employee's creation was an 'invention' falling within section 39(2), the employer could not restrict its use or dissemination by the employer. However, section 42(3) requires that nothing in the section shall be construed as derogating from any duty of confidentiality owed by the employee to his employer 'by virtue of any rule of law or otherwise'. If 'by virtue of any rule of law' refers to the equitable tort of breach of confidence, then 'or otherwise' will have to refer to the contractual terms by which the employer restricts the use by the employee of the invention. Perhaps the net effect of the provisions of section 42 is to ensure that while, on the one hand, an employee cannot, by asserting a property right under section 39(2), use information which the employer is require as being kept confidential, the employer himself is prevented from treating the invention as his own for the purposes of exploiting the invention commercially; but the new provisions do not say this explicitly.

It should be remembered finally that even in the absence of any express contractual clause entitling an employer to enjoy his employee's ideas and improvements in a confidential manner, such a clause may be implied by the courts where it is just that they should do so.

Figure 1: Ownership of Inventions

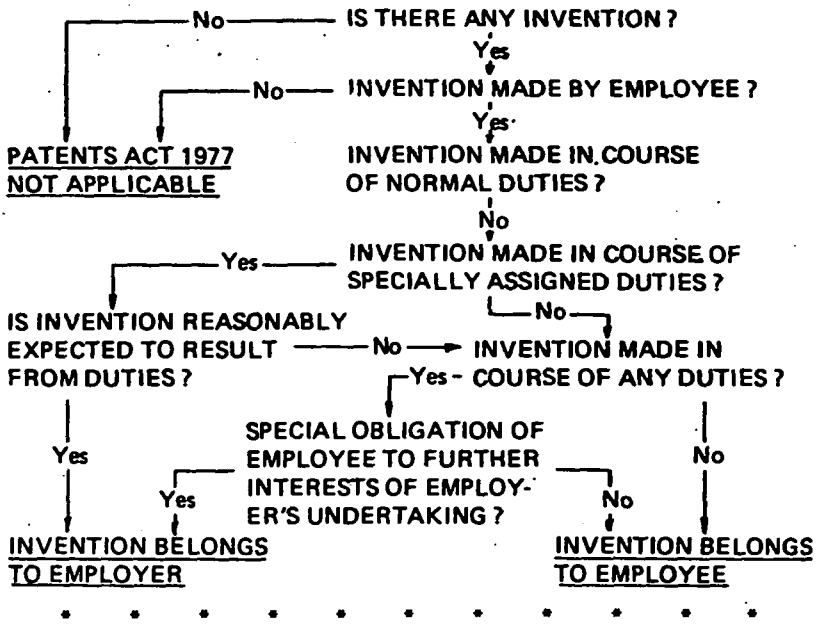

Figure 2: Compensation for Inventions belonging to the Employer

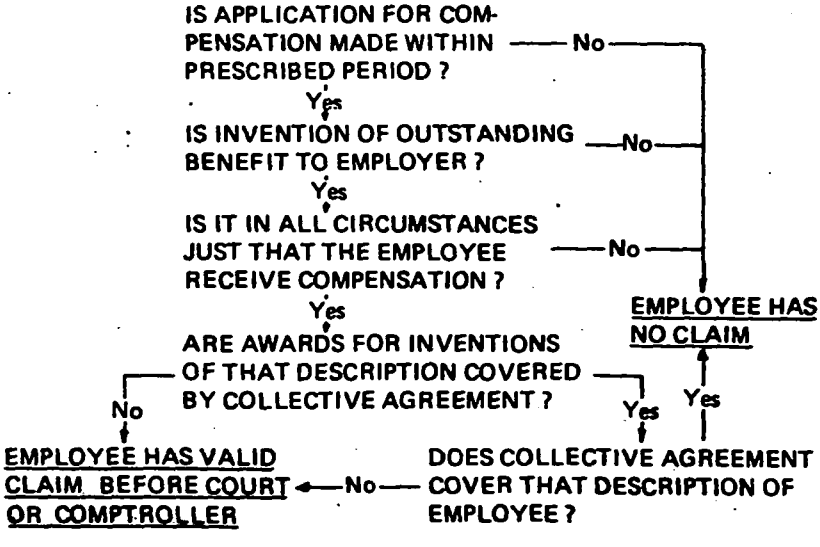

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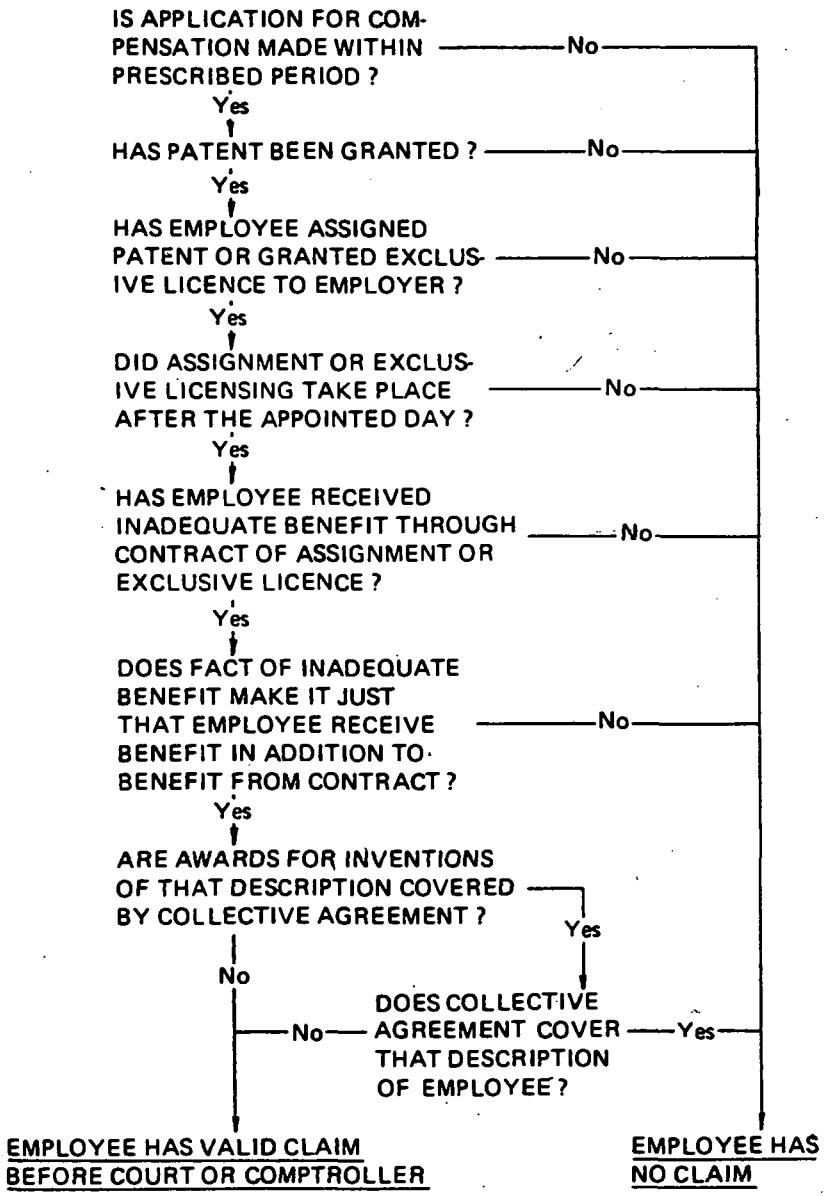
Figure 3: Compensation for Inventions belonging to the Employee



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Woolley v Broad (1892) 9 RPC 208
Worthington Pumping Engine Co v Moore (1903) 20 RPC 41

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the patent does not limit competition or raise prices, licensees who settle prior infringement suits may be estopped from contesting validity a second time even where no consent judgment is entered.[92]

2. It is clear that a licensee cannot be required to terminate or repudiate the license before bringing a declaratory judgment action. Licensors, however, should expressly provide in the license agreement that the license will be terminated upon a non-payment of royalties to leave open the possibility of suing the licensee for infringement as in *Morton-Norwich.*

3. Entitlement to the royalties due during litigation does not depend upon possession. If a patent is held invalid, a contesting licensee is freed from royalty liability from the time it brought a declaratory judgment suit or filed a defense challenging validity. *PPG Industries* indicates that a licensee under appropriate conditions might be freed of royalty liability from a date prior to contesting validity in court. A non-contesting licensee, however, must normally pay royalties until eviction.

4. Licensees who have made a large capital investment to practice the licensed invention should attempt to establish an escrow account under the rationale of *Shivers,* although only the Sixth Circuit has accepted the escrow alternative without a showing that the licensor was insolvent. Courts have not yet allowed a licensee to stop paying royalties *and* continue under the license agreement.

[92] In a recent case, the Second Circuit in a split decision felt that Aro v. Allied Witan was an imprecise and uncertain test and refused to follow it. The dissenting judge, in contrast, said it provided a sound accommodation of the competing interests involved in the suit. Warner-Jenkinson Co. v. Allied Chemical Corp., ... F.2d ....., 197 U.S.P.Q. 753 (2d Cir. 1977).

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Stanley H. Lieberstein *

SUING THE FORMER EMPLOYEE

In "Fiddler On The Roof," there is a character by the name of Tevye who has a number of unique qualities. Among them is the ability to argue with himself, simultaneously taking both sides of a given issue.

For example, if Tevye was presented with the problem of whether to sue a former employee for theft of trade secrets, his reasoning would likely be: On the one hand, it is necessary to file a suit to prevent loss of trade secrets by disclosure to third parties. After all, if I do not act quickly, my former employee may make the information public and once made public, that trade secret vanishes forever. Of course, it may be possible to obtain some money as a result of a lawsuit, but if I was looking for money, I would have licensed my competitors a long time ago.

On the other hand, bringing an action against a former employee has certain risks. For example, more than one company has brought suit against a former employee only to learn that the employee did not know as much as the company thought he knew. The lawsuit, however, served to educate that former employee as to the significance of certain facts and details which he had not previously appreciated. In one case, a respected company in the pharmaceutical industry learned the hard way, through a suit against a former employee, that the employee, although intimately involved in production, was ignorant of certain details and did not appreciate some key aspects of technique that were fundamental to a successful, commercial process. During the course of litigation, as the result of discovery and the questions asked of the former employee, the

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company became painfully aware of the employee's ignorance as to certain sensitive points. The word "painful" is appropriate only because that former employee was sufficiently talented and knowledgeable to recognize what it was that he had missed or forgotten.

In the course of trade secret litigation against a former employee, both sides are likely to conduct pretrial discovery and the former employee can be expected to press hard for specific disclosure of just what his employer claims to be secret. The burden is on the party alleging secrecy to establish, at least *prima facie*, the existence of trade secrets. Although "in camera" proceedings can be requested whereby the public cannot attend the hearings and copies of confidential information are kept apart from public files and are not generally available to the public, still the former employee is a party to the suit and, therefore, should be informed of just what his former employer is claiming as a trade secret. The former employer, on the other hand, might seek a protective order to prevent the former employee from again having the trade secret described to him or from learning any other secret information.

And yet, on the other hand, to continue reasoning like Tevye, a lawsuit against a former employee establishes a precedent for the company and establishes its image as a vigorous enforcer of its trade secrets. The lawsuit may prove to be useful as a deterrent to other employees. While an overly aggressive policy may backfire, a lackadaisical policy may prove equally inadequate to protect trade secrets and discourage their mishandling or abuse by former employees.

And yet again, on the other hand, if the court finds the absence of any trade secrets in the subject matter of the lawsuit, it may decide to publish the information in its Opinion as part of its analysis of the fact situation and why it concluded that there were no trade secrets taken by the employee. While the court may well be correct, as a matter of law, still if your competitors

were somewhat unsure as to what you were doing, they no longer need guess - they can now read about it.

Although there are perfectly valid and justifiable reasons for suing a former employee, emotion is not one of them. Yet all too often, the decision as to whether to sue a former employee stems mainly from the emotional context of the relationship between the officers of the company and that employee instead of the calculated, deliberate decision that it should be. This is particularly true in paternalistic companies where employees are vested with a large degree of "trust" and are sometimes considered "part of the family."

There is a theory sometimes called "The Blinder Theory" which runs something like this: Most individuals, and particularly technically trained specialists such as engineers and scientists, tend to compartmentalize their work and to sub-specialize. This is often true because of the practical problems of keeping up with new developments and the limitations of time and the demand of one's job and one's outside interests. The net result is that an individual over the course of years may learn a piece of a puzzle, if we may use that metaphor, exceptionally well. He probably understands, in a general sense, how that piece he is responsible for fits into the overall puzzle, but perhaps not in sufficient detail to be able to reproduce the entire puzzle. Thus, it is necessary to assess the knowledge of that former employee against the perspective of how his work fits into the entire scheme of things, what his plans are for the future, just who he will be associated with or working for, and the likelihood of his being able to actually damage the company he left.

One of the first considerations that should be made before bringing suit is to determine the full extent of the former employee's knowledge—not just the amount of knowledge that he appears to have had based on the nature of his former job, but the knowledge that he, in fact, did possess. Often, conversations with the former

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employee's associates at work will reveal much about the extent of his knowledge. For example, by inquiring into the knowledge possessed by those associates, one can extrapolate to the extent of knowledge that the former employee had. Ignorance as to certain key elements of the secrets on the part of other employees charged with similar or related responsibilities may indicate similar ignorance on the part of the former employee.

After making the evaluation of all circumstances and assuming it is concluded that a lawsuit is justified, then the key is *speed.*

Quick action is important for several reasons. One of them is to prevent disclosure and resultant loss of secrecy in the trade secret. Another reason is to avoid creating an impression, which will most surely be seized upon and emphasized to the Court by counsel for the former employee, that the trade secret is not really important—else why would you hestitate so long. That you waited before deciding to assert your rights may have been perfectly reasonable. Nonetheless, you are put on the defensive in having to offer an explanation. And as any good litigator knows, it is far better tactics to keep your adversary on the defensive. You lose valuable time and money in having to "excuse" conduct which may be justifiable but which weakens your position in the "justifying." And, more importantly, it serves to divert the court's attention from the issues you would like it to concentrate on.

A further reason for acting promptly is to prevent a substantial investment by the ex-employee or his new employer in exploiting the trade secret—or else you may find yourself with a fait accompli. This is because the law applies an equitable principle of estoppel under circumstances where, because of your delay, the ex-employee or his new employer justifiably assumes that you will take no action (or perhaps, that you have concluded you have no cause of action) and proceeds to invest

heavily in reliance on that assumption. You may still, however, be allowed reasonable compensation for the trespass.

If the delay in asserting your rights is significant, if the circumstances reasonably justify the ex-employee's assumption that you will not or cannot take action, then you may well find the principle of estoppel applied against you. Now, that does not necessarily mean you forfeit all your rights, but your remedy may be limited and you may forfeit your right to an injunction. An injunction, in trade secret cases against a former employee, is generally the most valuable and important remedy.

It may be possible to obtain reasonable compensation in the form of damages. But this is tantamount to a compulsory license of your trade secret. Thus, while it is important to investigate the facts surrounding an employee's departure thoroughly, it is equally important to do so in a quick and efficient manner.

The Rules of Civil Procedure for the Federal Courts and the rules of procedure for most State courts permit you to move for a Temporary Restraining Order against disclosure or use of the trade secrets on the basis of affidavits and a limited notice to the opponent (often less than a day—sometimes only an hour or two). The court may issue a temporary, short-term, i.e., ten day, restraining order and schedule a Hearing for a Preliminary Injunction. Trade secret cases are often won or lost at this early stage of the litigation.

If a Temporary Restraining Order is granted, then the parties will be encouraged to take depositions or other discovery before the Hearing on the Preliminary Injunction. Quite often, cases are settled at the time of such discovery. Furthermore, you learn a lot more through those depositions. And your views as to the knowledge that the former employee possesses, as well as the extent of harm he is most likely to create, can and

frequently does become clearer. With increased knowledge, you may alter your views with respect to litigation, or perhaps alter your strategy in the litigation.

It is worthwhile to keep in mind that the purpose of the Temporary Restraining Order and the Preliminary Injunction is to maintain the status quo and to prevent the defendant, or ex-employee, from divulging or using the secret information and thereby obtaining an unfair competitive advantage. When the restraint is refused by the court, the ex-employee can use or possibly divulge the information prior to the time that a trial is had.

In many cases, Courts have held that the mere public sale of products made with the utilization of a trade secret constitutes a public use of that trade secret. In one such case, for example, the use of a lady's undergarment, although not on public display, constituted a public use. The point is that the ex-employee's use of the information can destroy its trade secret status prior to the time that an actual trial is held and, from that point on, all you can hope to recover is damages.

To obtain a Preliminary Injunction, it is essential to persuade the court of:

I. The likelihood that the company will succeed at a subsequent trial,
II. The likelihood of disclosure or use of the information in the absence of an injunction, and
III. The inadequacy of monetary damages as a remedy.

Likelihood of success at the trial stage is an important factor because the court is reluctant to grant an injunction, even on a temporary basis, that can prevent the former employee from engaging in an otherwise perfectly lawful business or occupation and particularly because, as a practical matter, a delay of any significant time may prevent an effective start-up of a competitive business altogether. In addition, as a matter of public policy, courts are reluctant to restrain trade. Therefore,

it is essential to satisfy the court that you have not only a *prima facie* case, but that there is sufficient substance to your case that you are likely to succeed in the event of trial. Thus, in a sense, courts often weigh the probable value of the evidence which you have and predetermine, subjectively, the likely outcome.

Notwithstanding likelihood of success, should a court find that, under the circumstances, disclosure or use before trial is not likely, or that monetary damages are an adequate form of compensation, then it will not issue a preliminary injunction.

I. Is Success At Trial Likely?

Likelihood of success at trial is proven by establishing the following three elements:

A) The existence of an enforceable trade secret.
B) An obligation of confidentiality on the part of the former employee.
C) Disclosure would damage your business.

A). *Is there an enforceable trade secret?*

The criteria employed by most courts in determining whether they will enforce a trade secret are as follows:

(1) The extent to which the information is known outside the employer's business.

To evaluate this, you should first determine whether the information has been, perhaps inadvertently, included in publications, patents, or public talks delivered at technical symposia, professional meetings or sales conventions. A slip of the pen or tongue is not uncommon. In addition, a search of the literature and prior patents should be undertaken.

(2) The extent to which it is known by employees and others involved in the business.

Aside from examining published information, examine your own employees to see how knowledgeable the competition really is. Your own employees are often a good

source of information, within this sphere of activity or expertise, as to what is known in the trade or field, what competitors are offering and the differences between products or services available in their field. There is one caveat, however. After years of specialization, people sometimes look at differences between their work and/or products and that of competitors and see the differences as being magnified to a degree many times greater than that which a lay Judge will view those same differences. Thus, a slight difference in temperature conditions, type of controls, or in the raw materials may be important to one who works in the field. But, to a Judge, those distinctions may appear as just so much minutia. Therefore, when gathering such information, it is worthwhile to think in terms of an ultimate presentation to a Judge unfamiliar with the nuances of your work. Gather information which will support your estimate of the importance of the distinctions you wish to make. It is helpful to think in terms of the *results* brought about by the distinctions you refer to and why those results are important. For example, a slight shift in one raw material, which may appear to a lay Judge to be analogous to the material used by competitors, may well give rise to a much less costly and more efficient process. The difference between what you and your competitors are doing may appear small, but in terms of results that difference may loom quite large.

(3) The extent of measures taken by the employer to guard the secrecy of the information.

If we had to choose one point or area of maximum vulnerability on the part of most employers, this would be it. The case law is rampant with instances of employers' losing their trade secret claim because of the way the information had been treated internally by the employer. For example, when Motorola [1] sued several of its former employees and Fairchild Camera and Instrument Corp.

[1] Motorola, Inc. v. Fairchild Camera & Instrument Corp., 366 F. Supp. 1173, 177 USPQ 614, 622 (D. Ariz. 1973).

for the wrongful taking of trade secrets, among other claims, the court stated:

> It is further the conclusion of the Court that plaintiff's (Motorola's) trade secret claims must fail because as to those in issue at trial no real effort was made by plaintiff prior to trial to keep them secret. They were also either revealed in the marketed product; fully disclosed by issued patents; generally known to those skilled in the industry or trade; or consisted of information easily acquired by persons in the industry from patents, literature, or known processes freely available. . . .

The *Motorola* v. *Fairchild* case tells us that it is important for the employer to segregate confidential information from general information and to make every effort to maintain that information in confidence. It is helpful to properly identify confidential information, limit its distribution to those having a "need to know" and restrict access to it. There should be no question in the minds of employees as to just which information they are handling is confidential and which is not.

(4) The value of the information to the employer and to its competitors.

That the trade secret was developed or obtained at great expense is generally an important fact. It tends to impress upon a court the significance of the case, the seriousness of the harm. It also serves as evidence of the likelihood of disclosure of the trade secret because of its desirability to competitors. Whether you are using the information and whether it is providing you with a "competitive advantage" is an important criterion to which most courts look in deciding whether to accord information "trade secret" status.

(5) The amount of effort or money expended by the employer in developing the information.

This factor is indicative of possible unjust enrichment on the part of the former employee or his new employer. They, presumably, are being spared the expense, effort, and time of developing the information independently, through experience or research and development. They

are spared the need to purchase or obtain a license to use valuable know-how. The time factor, in some cases, may be the most important from a commercial or marketing viewpoint. The lead time in many businesses, particularly those in high technology areas, can sometimes be critical to the success of the business and is often, at the least, an important component of profitability. Having to acquire know-how through independent trial and error or research can not only be costly but time consuming.

(6) The ease or difficulty with which the information could be properly acquired or duplicated by others.

The law permits competitors to copy and sell unpatented products obtained through reverse engineering and/or chemical analysis, so long as the competitor does not attempt to trade on the good will of others by "palming off" his product as theirs. A court looks at the ease or difficulty with which a trade secret may be obtained by competitors, through reverse engineering or chemical analysis, to help it determine whether the information is truly protectable as a trade secret. If its intrinsic nature is such that the "secret" may be readily perceived, a court would deny it the status of a trade secret.

For example, in *Wesley-Jessen Inc.* v. *Reynolds*[2] the court denied relief to Wesley-Jessen saying, among other things, that the camera, used to help reveal the shape of the human cornea for the purpose of fitting contact lenses, had been sold and leased publicly and regularly. It found that the camera could be "reverse-engineered" to reveal the secret in a couple of days of study. Although, in that case, the court also found evidence of disclosure of "secret" information in publications and promotional literature, nonetheless it is extremely unlikely that the court would have accorded trade secret status to information that could have been obtained by a study of the publicly available camera.

[2] Wesley-Jessen Inc. v. Reynolds, 182 USPQ 135 (N.D. Ill. 1974).

B). *Is there an obligation of confidentiality on the part of the former employee?*

It is necessary to establish that the former employee not only knew of the information but also knew of its confidentiality and that it was entrusted to him in confidence. Proof of knowledge need not be absolute but can be implied from the circumstances. For example, proof of access to where the information was stored, the capability to understand and appreciate the true significance of the information, and the opportunity to read and copy the information are all indicative of possible knowledge. Combined with other evidence indicating the desirability of taking such information, e.g. that the employee suddenly set up a competitive business which inherently utilizes that information, a *prima facie* case of knowledge can be made.

More often, the evidence of knowledge is much stronger. Usually the employee not only had access to, but received copies of materials containing the information, his name appears on copies of documents and some of the documents may have been addressed to him. That former employee may well have been a key man, if not the key man, in a product line or segment of the business. Thus, actual knowledge of the information or data can often be established.

That the employee had knowledge of the information or data is still not adequate because it is necessary to show that the employee also knew of its confidential or trade secret status. Here, as mentioned earlier, the manner in which the information is treated internally, whether it is marked confidential, segregated from non-confidential information or data, filed separately, and whether access to the information is limited, are all key factors. It is not enough to show that someone "told" the former employee that the particular information was secret. If, in fact, that information was not treated as a secret, but was widely disseminated and generally

available, copies being available in general files open to most employees, etc., then the information in question cannot be protected as a trade secret.

The law recognizes, and, indeed, imposes a special duty upon "key" or high level employees. That obligation is often characterized as a "fiduciary" one. That is, the high level employee is deemed to hold a position of trust and the standard of conduct expected of that fiduciary is different than that normally expected. The rule of "caveat emptor," for example, does not apply with respect to a fiduciary. This common law principle is derived from "master-servant" law.

In order for the wheels of commerce to turn smoothly, it is essential that an organization be able to trust its key or high level employees. The law does not recognize an arms-length relationship between an employer and his employee, particularly if that employee holds a fairly significant position such that he is exposed to, and therefore entrusted with, the employer's secrets. Thus, an employment contract is not a prerequisite to a successful lawsuit against a former employee and, indeed, may even be a hindrance. That is, an improperly drafted contract may be the basis for dismissing a lawsuit, particularly in those jurisdictions that decline to "blue pencil" a contract they regard as unenforceable. For example, some courts will limit the scope of contractual restrictions on employees considered to be against public policy or in violation of a statute but others will simply find the contract unenforceable as written and dismiss the complaint.

A contract provides an additional basis for a lawsuit. An enforceable employment contract with a well drawn confidential information protection clause is, of course, positive evidence of the employee's obligation. Presumably, in that contract, the employee recognizes that he will be entrusted with confidential information and agrees to maintain its confidentiality. In that respect a contract can facilitate proof of an obligation of con-

fidentiality. It can facilitate proof that disclosure would constitute a breach of confidence. But note that a contract does not prove that the employee actually knew of the information in question nor that he knew it was confidential. It does, however, serve as part of the surrounding circumstances and can help an employer establish that the employee was in a position to know the information and knew what was expected of him as to the treatment of that information. In short, a contract may give rise to an inference that the employee had reason to know or determine that certain information was confidential and was not to be disclosed. It provides a basis for a breach of contract claim in addition to claims based on common law principles.

C). *Would Disclosure Damage Your Business?*

The element of damage is significant for several reasons. For one, courts are loath to entertain lawsuits between private parties to allay fear, suspicion or correct a breach of principle, where no real harm is at stake. For another, the prevention of damage is part of what a preliminary injunction is all about. Moreover, a strong showing of severe damages tends to impress a sense of urgency upon the court.

Take a close look at the value of the information or data. How much did it cost you to acquire? How long did it take? When calculating cost, keep in mind such factors as the salaries, benefits and overhead, not only of R&D personnel but also of supporting services, general administrative costs (which can be allocated pro rata), materials, parts, consultants' services and other expenses reasonably related to learning the information or data in question. In some instances, of course, the information may have been acquired by sale or license from a third party. The cost, however, is not necessarily limited by the purchase price or royalty payments. There may have been significant expenditures preliminary and subsequent to the sale or license, in evaluating

the information, determining its desirability, in negotiations (including travel and entertainment), counselling fees, in adapting the information to conform to your particular business, and in modifications or improvements.

Don't overlook the importance and value of "lead" time or the time it takes to get a head start. If the information is time consuming to learn or develop independently, then the sooner that information is acquired, the sooner one can start in business. A fair measure of the lead time is the time it took to develop the information in the first place. The burden then shifts to the former employee to establish that less time is needed because of other published advances in technology or possible reverse engineering. But whatever lead time is established, courts tend to permit recovery for lost sales or lost profits during the interval between the time the trade secret information was misappropriated and the estimated time the court finds it would take to reproduce or independently acquire that information.

As a practical matter, at the outset of a trade secret case it is difficult to measure "lost sales." At the time a motion for a preliminary injunction is brought, courts tend to view evidence of lost sales as speculative, and unless you are selling a major item, e.g. jet airplanes, where the loss of one sale is substantial, it is ordinarily difficult to predict future losses. Thus, in most cases, particularly in the early stages, it is important to primarily focus upon the cost of the information to you. That cost, in terms of time and money, should be emphasized to the court.

Other factors which are important to the assessment of damages include loss of market position—to the extent it can be attributed to the entrance of new or cheaper products by competitors benefiting from the misappropriation of your trade secrets.

The loss of licensing revenue, both in terms of actual or potential licenses, also forms a measure of damages. But note that the existence of licenses tends to weaken

a request for a preliminary injunction on the theory that since the information has been disseminated to others, damages (equivalent to royalties) would serve as an adequate recovery. There is no requirement for compulsory licensing, although some representatives of the Justice Department have informally expressed their personal views in favor of such a requirement, but a court may assess damages which approximate a reasonable royalty. Thus, it is important to show the court why a license or its equivalent, having been granted to others, is inappropriate here. Although, technically speaking, the mere fact that you just do not want to grant another license usually is enough reason for you to refuse a request for license, it is sometimes inadequate when you are requesting a court of equity to issue an injunction. The fact that you may have granted an "exclusive" or "sole" license or the existence of commercial considerations making it anti-competitive to dilute the marketplace, or low profit margins such that another licensee would drive existing licensees out of business, are all relevant considerations to the inadequacy of monetary damages and may help persuade a court of the need for an injunction.

The loss of other gains and advantages enjoyed by the proprietor of a trade secret should also be pleaded. This is somewhat of a catch-all category that may encompass economic advantages that are unique to a particular situation and that may be lost upon loss of the trade secret.

Punitive damages and attorney's fees may form part of your plea for damages and may be recovered, after trial, particularly in aggravated cases where the evidence points to a willful disregard of the employee's obligations and an intentional misappropriation of the employer's trade secrets. Although this is not usually an issue at the time of a motion for preliminary injunction, it is noted here because, if applicable, it should form part of the initial pleadings and evidence of preda-

tory conduct may influence the court to issue the preliminary injunction.

II. Is Disclosure Likely in the Absence of an Injunction?

If we keep in mind that the purpose of a Preliminary Injunction is to maintain the status quo during litigation, then it is easy to perceive why a court must look to the likelihood of disclosure in terms of whether the status quo is about to be upset in the absence of an injunction. The courts have a tendency to talk about likelihood of disclosure in terms of its "imminency" or "inevitability."

When duPont[3] brought suit against American Potash and Chemical Corp. and Donald E. Hirsch over the hiring by Potash of Donald Hirsch, who duPont alleged was its second most knowledgeable employee as to the manufacture of titanium dioxide by the chloride process, the court issued a Preliminary Restraining Order barring Hirsch from engaging in any work with Potash in connection with or related to the operation and development of that process. In denying a Motion for Summary Judgment on behalf of defendants Potash and Hirsch, the court left the Restraining Order standing pending the trial of the case. In its Opinion, the court described a series of events leading up to the motion before it. Those events included a description of aborted efforts by Potash to acquire the know-how from duPont through a license, Potash's efforts to get into the business including its recruitment of personnel for a plant it was designing in California for the manufacture of titanium dioxide, and its recruitment of Donald Hirsch through advertisements in a Wilmington, Delaware paper where duPont's plant was located. Although the issue before the court did not require a direct ruling on the issue of imminency of disclosure, that issue was indirectly pre-

[3] E. I. duPont de Nemours & Co. v. American Potash & Chemical Corp., 200 A. 2d 428, 141 USPQ 447 (Del. Ch. 1964).

sented to the court by Potash in its argument that in the absence of an "imminent" threat of disclosure there was no factual basis in the record before the court to continue the case and therefore summary judgment should be granted. duPont argued that disclosure by Hirsch in the event he worked on the titanium dioxide process for Potash was "inevitable." In denying the Motion for Summary Judgment by Potash and Hirsch, the court noted and let stand the Restraining Order pending the trial, and observed in its opinion:

> I have no doubt but that the trial court is entitled to consider, in judging whether an abuse of confidence is involved, the degree to which disclosure of plaintiff's trade secrets is likely to result from the circumstances surrounding Hirsch's employment by Potash. The defendants say that a finding of 'inevitability' would be no more than a 'prophecy' here. Nonetheless, in the context of determining whether a threat of disclosure exists, it is but a finding as to the probable future consequences of a course of voluntary action undertaken by the defendants. Courts are frequently called upon to draw such conclusions based on a weighing of the probabilities, and while a conclusion that a certain result will probably follow may not ultimately be vindicated, courts are nonetheless entitled to decide or 'predict' the likely consequences arising from a given set of facts and to grant legal remedies on that basis. I am satisfied that the degree of probability of disclosure, whether amounting to an inevitability or not, is a relevant factor to be considered in determining whether a "threat" of disclosure exists.

The requirement for "imminency" has been phrased in various ways. In the case of *Jackson* v. *Walbers*[4] the Louisiana court said:

> There must be at least a reasonable probability that the injury will be done if no injunction is granted, and not a mere fear or apprehension.

It is interesting to contrast the *duPont* v. *Potash & Hirsch* case with that of *Standard Brands, Inc.* v. *Zumpe*.[5] The latter case relates to the issuance of a

[4] Jackson v. Walbers. 2 La.App. 53 (2d Cir. 1925).
[5] Standard Brands, Inc. v. Zumpe, 264 F.Supp. 254, 152 USPQ 731 (E.D. La. 1967).

permanent injunction after trial. In denying the request for an injunction, the court noted:

> Absent imminence of disclosure, an injunction shall not issue. Disclosure has not been shown to be either imminent or eventually inevitable.

Walter T. Zumpe had been a Plant Manager for Standard's Chase & Sanborn Product Division in New Orleans before resigning to join William B. Reily & Company, Inc. The Reily company operated a plant in New Orleans just a few hundred yards away from Standard's plant. Reily made a coffee blended with chicory marketed under the trade name "Luzianne." Zumpe was hired as Reily's Vice President and General Manager in charge of production. Standard operated a pilot plant engaged in testing and improving its coffee and tea products. Since Zumpe had access to and had received much technical information, including trade secrets, as Standard's Plant Manager, Standard sought an injunction to prevent him from working for Reily. Among other points, Standard contended that Zumpe could not discharge his duties for Reily without "inevitably" disclosing Standard's trade secrets.

The court disagreed, noting that Reily had an existing plant for the manufacture of coffee (compare— Potash was just getting into the business) and did not need know-how or secrets from Standard (Potash had tried to license know-how from duPont). Furthermore, the nature of Reily's business was somewhat different and there was no evidence of an intention by Reily to "market a new dry coffee concentration in the foreseeable future." (Potash intended to manufacture and market in direct competition with duPont). Thus, the court concluded:

> It is doubtless true that Zumpe may be tempted to use his confidential information to Reily's benefit, but, because of the nature of Reily's business, it does not follow that disclosure is inevitable.

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III. The Inadequacy of Money Damages As A Remedy.

Ordinarily a court will deny a request for a preliminary injunction if it considers the matter essentially rectifiable at the time the case is tried. Although a lawsuit can remain pending for months and even years before trial, most courts prefer that a trial judge, who has the benefit of a full presentation of the facts at trial, issue whatever orders are appropriate. Thus, if it appears that a matter can reasonably wait until trial, and any damage done be remedied then, a court will usually not issue a preliminary injunction. Hence, it is essential to demonstrate to the court the consequences of permitting the former employee or his new employer to make use of the trade secrets pending the outcome of a trial.

Unlike many commercial transactions including patent disputes, trade secrets constitute a most unique property right. What other right vanishes on disclosure? In a lawsuit over patent infringement, for example, the trial court can decide to issue a permanent injunction to prevent future infringement and can assess damages for past infringement. The patent remains intact. Therefore, in most patent infringement suits, courts tend to deny motions for preliminary injunctions.

But in a lawsuit over a trade secret, a trial judge may not be able to decide to issue a meaningful injunction. Obviously, no court can enjoin disclosure once it is made. And since trade secrets often represent the kind of know-how that disappears into a manufacturing process or a product, it may no longer be practical to attempt to enjoin the "use" of that trade secret. And a court is not about to enjoin the operation of a plant or the manufacture of a product unless the trade secret is essentially synonomous with the manufacturing process or product. There have been some such instances. One occurred in *Head Ski Co.* v. *Kam Ski Co.*[6] in 1958 where

[6] Head Ski Co. v. Kam Ski Co., 158 F.Supp. 919, 116 USPQ 242 (D.Md. 1958).

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the court found that the defendants, former employees of Head Ski, would not have "had the idea of making a metal ski" but for their work for Head Ski. The court attributed essentially all of their ski making operations to the know-how acquired during their employment by Head Ski. The court stated:

> In the instant case . . . defendants' entire operation has been built upon plaintiff's techniques, methods, materials and design. In such a case, an injunction against manufacture of the product is appropriate.

In the ordinary case, however, a trade secret, like "puff—the magic dragon," may disappear into existing processes and product lines and not be clearly distinguishable. Moreover, the knowledge, once possessed by the marketplace, cannot be erased. Therefore, assuming the facts so indicate, it is necessary to impress upon the court at the time a request for a preliminary injunction is made of the fact that a trial court may be stripped of the power to issue a meaningful injunction, no matter how warranted, because of intermediate events or acts, unless those events or acts are enjoined pending the trial.

In the absence of an injunction, you must rely on monetary damages. But the contribution of the secret information to competitor's products or processes generally may not be measurable in dollars and cents. Unless, as in *Head Ski* v. *Kam Ski,* the entire product can be attributed to the trade secret information, it may simply not be possible to determine which portion of a given process or product is utilizing a trade secret and how much contribution that trade secret is making to the profitability of any particular product, as opposed, say, to increased advertising, a reorganized or stronger marketing program, or other modifications to the process or product. Where the facts permit such isolation of a trade secret's contribution to a process or product line, then its further use may be enjoined and damages assessed. But where the trade secret is fungible, then such an assessment becomes extremely difficult. It is in the

latter instance that a court will most likely issue a preliminary injunction.

As noted earlier, a preliminary injunction is important in a trade secret case. It not only prevents disclosure and further damage pending trial, but it can also serve as an indicator of the ultimate outcome of the case. Having obtained a preliminary injunction, it is reasonable to conclude that the court was satisfied that you at least have a *prima facie* case and probably can prevail at trial. The converse, however, is not necessarily true. That is, failure to issue a preliminary injunction does not necessarily mean that the court has decided you are not likely to prevail at trial (although this, of course, may well be true) but the court may simply not have been persuaded of the urgency for an intermediate remedy. The court may have felt that the circumstances were such as to justify waiting for a trial and that adequate relief could be had then.

A trade secret case follows the normal pattern of litigation, although, as we have seen, the early stages take on heightened importance and sometimes can be decisive. After the preliminary injunction stage, further discovery through written interrogatories and oral depositions may be had. Considerable time may elapse during which that discovery takes place, additional motions are filed and, perhaps, settlement discussions are held. Time, in a trade secret case, in the absence of a preliminary injunction, is usually on the side of the former employee and his new company or employer.

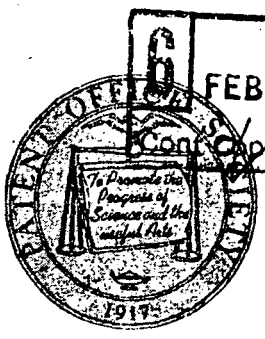
A motion for summary judgment, such as that made in the *duPont* v. *Potash* case, rests on the premise that there are no issues of fact in dispute. If that is true, and only issues of law have to be resolved, then a trial is pointless and a court should resolve the issues of law on such a motion. But, it should be recalled, the court denied Potash's motion for summary judgment because it could not reach a conclusion from the facts before it.

Pre-trial conferences with the Judge assigned to the case may give rise to a basis for settlement but otherwise a trial date will be assigned. The evidence at the trial will essentially constitute a more elaborate presentation of the same points noted earlier with respect to proof of the existence of a trade secret. During the trial, counsel for the employer will emphasize the extent of damages to maximize recovery. Where it appears that the former employee has done well and that success can be attributed to the trade secrets, then the former employer will seek recovery of those profits. But where the former employee, perhaps due to start-up problems, has not fared well, the former employer will probably concentrate on his losses as the measure of damages, arguing that the former employee's inability to make a high profit initially was attributable to a high initial capital investment or to early management or marketing mistakes. The former employer will attempt to show that loss of the trade secret resulted in loss of a marketing position, loss of market share, loss of ability to influence market price for his product, and, if applicable, loss of possible licensing revenue.

If the former employer is successful, the trial will end with an award of damages and a permanent injunction. If the former employee is successful, it may end with a judgment in his favor and, depending upon the existence of counterclaims (for matters outside the scope of trade secrets), an award of damages or other relief depending on the nature of those counterclaims.

In summary, the decision to file a lawsuit against a former employee for the wrongful taking of trade secrets should be a deliberate one, made after careful evaluation of the extent of that former employee's knowledge, the extent to which measures have been taken to safeguard the information so that it is protectable as a trade secret, and the extent of damage that may result from that former employee's disclosure or use of the trade secrets. Upon a determination that a lawsuit is justified, prompt

action should be taken to obtain a Temporary Restraining Order and Preliminary Injunction to prevent disclosure and use of the trade secrets by the former employee pending the outcome of the trial.



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in *International News Service* v. *Associated Press*,[37] trade secret and breach of confidence causes. It might be possible to stretch Section 43(a) to cover some of these areas if the case is a strong one and the wrong is deliberate, but it does not seem reasonable to depend upon Section 43(a) as establishing a broadly-based federal law of unfair competition in these areas.

Accordingly, there appears to be a need for a new legislation,[38] such as S.3681, introduced by Senator McClellan in the Second Session of the 89th Congress, which would amend Section 43 of the Lanham Act expressly to cover, in positive terms, all areas of unfair competition.

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[37] 248 U.S. 215 (1918).

[38] See Pattishall, "U.S.A. Courts and the Prevention of Unfair Competition," 53 Trademark Rep. 599 (1963); Peterson, "The Legislative Mandate of *Sears* and *Compco*: A Plea for a Federal Law of Unfair Competition," 69 Dick. L. Rev. 347 (1965).

May, 1967, Vol. XLIX, No. 5 357

John W. Leonard

THE PROTECTED RIGHTS OF THE EMPLOYEE INVENTOR IN HIS INVENTION

Section 111 of the Patent Act of 1952 requires that an application for a patent be made in the name of the inventor, and the subsequent sections allow few exceptions to the requirement that the applicant be "the original and first inventor". Special problems arise when the inventor is an employee, for the employer should be entitled to some rights in the invention, especially if he has employed the inventor specifically to solve a problem for which the invention is a solution. The apportionment of rights in an invention between the employee-inventor and his employer has been the subject of much litigation and discussion in this and other countries, and the diversity of solution reflects the complexity of the problem. Some countries attempt to establish criteria and formulas which completely define the respective rights of the employee-inventor and his employer, while others rely heavily on their courts and contracts between the employee-inventor and his employer to define their respective rights. All countries recognize a disadvantage in the bargaining position of the employee, and impose some limitation on the employer's ability to acquire rights in an employee's invention through a contract, or terms of service, concluded in advance, hereafter referred to as an assignment in anticipation. This paper focuses on the extent to which various countries have limited the effect of assignments in anticipation between the employer and employee through independent judicial and statutory determination of their rights.

In the United States it is customary for an employer to require an employee to enter into an assignment in anticipation.[1] As in other contracts, actual and valuable consideration is required in order for such agreements

[1] Costa, *Inventing in Employment* 87.

to be valid, but the adequacy of such consideration may not be inquired into short of fraud.[2] Thus, the employment itself or the continuation of such employment is sufficient consideration to support an assignment of an invention which falls within the scope of the hiring.[3] During the term of employment an invention is considered to be within the scope of the hiring if the subject-matter is definitely or indefinitely related to the employer's business.[4] A sufficient relation would be subject-matter that the employer could manufacture, or that concerned his machines, or that involved work assigned to the employee, or that affected any business of the employer.[5] If an employee is hired to invent, a blanket agreement to assign all inventions made during the term of employment is valid.[6] The rules regulating free competition, as laid down in the so-called anti-trust laws, are not violated since the employee is free to terminate his employment, and is not hindered in earning a living by working in his chosen profession or occupation.[7]

A covenant requiring assignment of inventions made after the employment has terminated must be limited in subject-matter to those inventions related to the employer's business, or it will be unenforceable.[8] A provision to assign all future inventions, unlimited as to subject-matter and time has been held invalid.[9] A limitation of time of ten years does not validate such a blanket provision.[10] However, a provision requiring assignment of all future improvements on a particular machine which was itself assigned has been held valid.[11] A similar provision limited to the same general art in which the

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[2] Costa, op. cit. 97 (supra is implied).
[3] Costa, op. cit. 92-3.
[4] Costa, op. cit. 119.
[5] Costa, ibid.
[6] Goodyear Tire and Rubber Co. v. Miller 22 F.2d 363 (9th Cir. 1927).
[7] Rezac, Assignments of Inventions to Employers Here and in Europe, 15 N.Y.U. Intra. L. Rev. 219 (1960).
[8] Costa, op. cit. 118.
[9] Guth v. Minnesota Mining and Mfg. Co., 72 F.2d 385, 22 U.S.P.Q. 89 (7th Cir. 1934), Cert. denied, 294 U.S. 711 (1935).
[10] United Shoe Machinery v. LaChapelle, 212 Mass. 467, 99 NE289 (1912).
[11] Aspinwall Mfg. Co. v. Gill, 32 Fed. 697 (C.C.D. N.J. 1897).

employee specialized has also been held valid.[12] The diverse decisions of the courts when faced with an assignment in anticipation that purports to operate after the employment has terminated indicate that no meaningful generalization is possible.[13] This accounts for the unsupported statement by Neumeyer that "violation of the anti-trust laws may exist if contract provisions contain unreasonable restraints in terms of time, space or subject-matter", and a similar statement by Arthur M. Smith that "blanket assignments of all employee inventions in any field whatsoever are so broad that they may be challenged if an inequitable situation is created."[14]

Several judicial doctrines influenced by the master and servant laws supplement the rights that an employer can acquire through an assignment in anticipation with his employee. In the classical case of *Agawan Woolen Co.* v. *Jordan*, 7 Wall. 583, 19 L. Ed. 177 (1868), where the employer contributed the general principle or plan of the invention and the employee used his workmanship and mechanical skill to give it form, the court held that the employer was the inventor and the owner of the patent. Costa terms this doctrine "inventorship", and states that it is founded on the theory that conceiving an inventive idea is more basic to the act of invention than a reduction to practice.[15] Short of a new and independently patentable invention, whatever contribution the employee may have made to the completed resultant invention is attributed to the inventive conception of the employer.[16]

An implied contract to assign the employee's invention to the employer is found when an employee is hired to invent, and does in fact invent the specific invention for which he was hired or one incident thereto.[17] This doc-

[12] Indep. Electric Co. v. Jeffrey Mfg. Co., 76 Fed. 981 (C. C. S. D. Ohio 1896).
[13] Costa, op. cit. 116-121.
[14] Neumeyer, Employee's Rights in Their Inventions, 44 J.P.O.S. 709 (1962); Smith, A., *Patent Law* 698.
[15] Costa, op. cit. 39.
[16] Costa, op. cit. 65.
[17] Standard Parts Co. v. Peck, 264 U.S. 52 (1924).

trine has recently been extended into the field of an agreement to assign future inventions.[18]

A shop-right is a non-exclusive royalty-free license created by operation of law that the employer has in the invention of his employee. It requires a contribution from the employer in materials or appliances,[19] that the inventing take place during the employment (in the performance of assigned duties or during the hours of employment) and the consent of the employee (which may be implied from the 'facts').[20] A shop-right may not be assigned,[21] but does pass to the successor in business,[22] and exists for the life of the patent.[23] The scope of a shop-right in the context of the recent opinions extends to the employer's legitimate business requirements,[24] and includes articles made by another for the employer.[25] The more liberal view is that a subsidiary's rights inure to the benefit of the parent company.[26] However, the possessor of a shop-right is under the limitations of no standing to bring an interference suit and no right to license another.

In the United Kingdom, the main limitation on assignments in anticipation between the employee-inventor and his employer is the doctrine which invalidates express terms found to be in restraint of trade.[27] During the term of employment, an agreement to assign will be valid if it is reasonably necessary to protect the interests of the employer, but will be invalid if it requires assignment of inventions which are not remotely concerned with the employer's business.[28] Any attempt to require

[18] Costa, op. cit. 130.
[19] U.S. v. Dubilier Condenser Corp., 289 U.S. 178, 53 S. Ct. 554, 77 L. Ed. 1114 (1933).
[20] Costa, op. cit. 10-18.
[21] Hapgood v. Hewitt, 119 U.S. 226 (1886).
[22] Wilson v. J. G. Wilson Corp., 241 Fed. 494 (D. Va. 1917).
[23] Wiegand v. Dover Mfg. Co., 292 Fed. 255 (N.D. Ohio 1923).
[24] Tin Decorating Co. v. Metal Package Corp., 37 F.2d 5 (2d Cir. 1930).
[25] Schmidt v. Central Foundry Co., 218 Fed. 466 (D. N.J. 1914), aff'd 229 Fed. 157 (1916).
[26] Papazian v. American Steel and Wire Co., 155 F. Supp. 111 (N.D. Ohio 1957).
[27] Neumeyer, op. cit. 707; Rezac, op. cit. 219.
[28] Rezac, op. cit. 220.

assignment after the termination of employment is invalid as a restraint of trade.[29] As in the United States, several judicial doctrines have matured which serve to decide the rights of an employee-inventor and his employer in the absence of or in addition to an agreement to assign. These doctrines stem from the old master and servant laws, and are applied when conformable to the express or implied conditions of the contract of employment.[30] Thus, the master is considered to be the owner of any invention which was produced by his servant from the inventive idea of the master, regardless of the assistance he has had in developing the main and leading inventive idea.[31] In addition, suggestions of one employed to develop a specific invention belong to the master, as do any improvements in the mechanical details of his equipment.[32] The above situations result in the master being declared the inventor and owner, but he may also be entitled to all the rights of ownership when his servant is the inventor, but is considered to be a trustee for the master. Such a situation occurs when the servant is employed to improve the manufacture of products of the employer.[33] The courts take note of the terms of the contract of employment, the relative positions of the master and the servant, and the circumstances under which the invention was made.[34] The employee is considered a trustee when, during the course of his employment and during working hours, he makes an invention while following the instructions of the employer and using his materials.[35]

One problem in Great Britain is that the courts do not apportion rights in an invention between the employee-inventor and his employer, but rather have a winner-take-all attitude.[36] This was alleviated somewhat in 1949

[29] Electric Transmission Ltd. v. Dannenberg, 66 R. Pat. Cas 183 (1949).
[30] Neumeyer, op. cit. 702.
[31] Fox, *The Canadian Patent Law and Practice* 155.
[32] Fox, ibid.
[33] British Reinforced Concrete Eng. Co. v. Lind, 34 R.P.C. 101 (1917).
[34] Neumeyer, op. cit. 703.
[35] Barnet Instruments Ltd. v. Overton, 66 R.P.C. 315 (1949).
[36] Neumeyer, op. cit. 705.

with the addition of section 56 to the Patent Act which allows the Comptroller-General of the Patent Office to apportion benefits of an invention between the employee-inventor and his employer upon application by the parties.

In Canada, the courts apportion the rights in an invention in certain cases through the doctrine of an implied license. Such a license might be implied from the relationship of master and servant, or from a term in the "contract of service" which requires assignment to the employer of all inventions of the employee and is therefore invalid as being in restraint of trade.[37] When an employee devises a method of construction for doing the work in which he is employed and uses the property of the employer and the services of other employees and assents to the use of his invention by the employer, an irrevocable license is impliedly granted to the employer, similar to the American shop-right.[38] The extent and nature of an implied license is determined from the circumstances and nature of employment, and the type of business conducted by the employer.[39]

A different attitude toward the regulation of the effect of assignments in anticipation is adopted by the civil law countries. The most dramatic example is that of West Germany, which has adopted the general principle that the rights and obligations provided within its special Act of 1959 cannot be set aside by an agreement to the disadvantage of the employee.[40] Before analyzing the German Act, it would be helpful to know the law of Austria on the subject, since the German Act was influenced by Austrian law when Germany absorbed Austria in 1938.[41]

In Austria, the Patents Act of 1925 as re-enacted in 1950 provides that the employee and employer can only contract as to "service inventions", and that the em-

[37] Fox, op. cit. 364.
[38] Fox, ibid.
[39] Fox, op. cit. 365.
[40] Neumeyer, op. cit. 701 (citing section 22 of the German Act).
[41] Neumeyer, op. cit. 678.

ployee-inventor is entitled to all rights under the patent in the absence of an agreement to the contrary. A "service invention", in Austria, is one whose subject-matter is within the employer's field of work, and: 1. the activity that led to the invention was part of the employee's duties (narrow scope) or 2. the stimulus to the employee that led to the making of the invention came from activity within the enterprise (stimulated by occupational circumstances) or 3. the making of the invention was substantially facilitated by use of the experience and resources from the enterprise (broad scope includes the experience gained from employment and the contribution by the employer). The employer is entitled to an assignment or license in such an invention, and the employee is entitled to reasonable special compensation for the rights taken by the employer.[42] An employee who is hired to invent is entitled to special compensation only if his salary is not already reasonable compensation.[43] Any disputes are settled by the courts, and the employee is entitled to any rights in the invention later surrendered by the employer.[44]

West Germany has attempted to legislate the complete rights of an employee-inventor and his employer in an invention of the employee. In order for the employer to have any rights in such an invention, it must have been made during the term of employment, and any attempt to require assignment of inventions made after termination of employment is contrary to law. However, the employer may have the employee agree to refrain from competition for a limited period after termination of employment, and a period of three years has been held to be sufficiently limited.[45] The employee is required to report in writing any invention he makes to his employer, and the employer is required to determine if it is a "service invention" or a "free invention", and if the former

[42] Neumeyer, ibid.
[43] Neumeyer, op. cit. 679.
[44] Neumeyer, ibid.
[45] Rezac, op. cit. 227.

he must declare within four months whether he will claim complete or limited rights in the invention.[46] A "service invention" in Germany is one which was stimulated by the employee's functional activities in the employer's business or was based on the experience or operation of the business, and all other inventions are "free inventions". A service invention is the only type in which the employer can claim rights, and it should be noted that the German definition of a service invention is substantially the same as the Austrian definition. If the employer agrees that the invention is free, the employee may exploit it. However, if the invention is within the employer's field of business, the employee must offer the employer a nonexclusive license. The duty of loyalty that the employee owes to the employer forbids him from competing with the employer, or from permitting a competitor of his employer to exploit the invention.[47]

If the employer claims rights in the employee's invention, the employee is entitled to adequate special remuneration. The "Rules for the Determination of the Compensation for Inventions made by Employees in Private Service", enacted in July, 1959, provides a detailed formula for determining the amount of "adequate, special remuneration". The main factors which are considered are the commercial utility (value) of the invention, the position, and responsibility of the employee in the employer's business, and the extent to which the employer's business contributed to the making of the invention.[48] The value is computed by subtracting the operation costs from the yields due to the use of the invention, or from an estimate of future yields or is determined from a license analogy in which the cost of a license in the invention is estimated.[49] In this manner, a value is estimated for a purely defensive patent. The importance and extent of an employee's contribution

[46] Rezac, op. cit. 220.
[47] Rezac, op. cit. 221.
[48] Laude, The Compensation for Employee Inventions in Germany, 44 J.P.O.S. 772 (1962).
[49] Laude, op. cit. 773-5.

to the invention is then computed to determine the percent of the employee's share in the invention, and his compensation can then be calculated by multiplying the value of the invention by the percent of the employee's share. In determining the percent of the employee's share in the invention, a pre-determined weight is given to the extent of the employee's contribution in recognizing the problem, in working towards the solution and to the position and responsibilities of the employee within the company.[50] A special committee in the patent bureau decides all disputes regarding the above calculations.[51]

The other European countries regulate the effect of an assignment in anticipation to a lesser extent than West Germany. Switzerland requires that an employee receive special and adequate consideration for an assignment of an invention whose subject-matter is not within the field of the employer's business.[52] Any agreement to the contrary is declared void.[53] If the employee was hired to invent ("inventive activity comprised in his service duties") his salary is considered to be adequate consideration.[54] It is not certain whether an employer can validly require assignment of inventions made after termination of the employment, but such a provision limited in scope to the field of the employer's business and in time to a term of three years or less would probably be valid. The custom is to make the employee agree not to work for a competitor for a period of three to five years.[55]

France has no specific legislation, unlike most other countries, on the subject of assignments in anticipation, and the courts will invalidate such an agreement only if the "right of free enterprise" is violated.[56] The right of free enterprise requires special remuneration for an

[50] Laude, op. cit. 776-80.
[51] Takino, The Protection in Japan of Inventions by Employees During Course of Their Employment, 39 Wash. L. Rev. 564 (1964).
[52] Rezac, op. cit. 226.
[53] Swiss Civil Code Book V Title X sec. 343.
[54] Rezac, op. cit. 226.
[55] Rezac, op. cit. 229.
[56] Neumeyer, op. cit. 677; Rezac, op. cit. 227.

assignment of an invention whose subject-matter is not within the field of the employer's business.[57] As in Switzerland, the salary of a man hired to invent is considered to be adequate consideration for the assignment of his invention. After termination of employment, an assignment in anticipation must be limited in time to a term of three years or less, and in subject-matter to that within the field of the employer's business.[58] A striking feature of French law is the possibility of common ownership when a single person cannot be singled out as the inventor, as held by the Cour de Cassation on November 29, 1948.[59]

Italy defines and limits the employer's rights in an invention of his employee by Italian Royal Decree No. 1127 of June 29, 1939. An employer owns the invention if the employee was hired to invent or if the invention was made in the performance of a labor or service contract.[60] In the latter case, the employee is entitled to reasonable compensation. The employee owns the invention if he is in a category where inventive activity is not expected.[61] However, the employer has a preemptive right to an exclusive or non-exclusive license if the subject-matter of the invention is within the field of activities of his enterprise.[62] Arbitration is available if a dispute arises. After termination of the employment, the limit of the employer's rights is a presumption that an invention was made during the term of employment if the former employee files an application for patent within one year of the termination of employment and the subject-matter is within the field of activities of the employer's enterprise.[63]

Belgium does not permit an assignment in anticipation of inventions whose subject-matter is not within the field of the employer's business. If the employee is a type who is not normally expected to produce an invention,

[57] Rezac, op. cit. 221.
[58] Rezac, op. cit. 227.
[59] Takino, op. cit. 562.
[60] Neumeyer, op. cit. 683.
[61] Rezac, op. cit. 226.
[62] Neumeyer, op. cit. 683.
[63] Rezac, op. cit. 229-30.

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an agreement to assign an invention whose subject-matter is within the field of the employer's business will be invalid, unless special remuneration is provided. In doubtful cases, there is a recent tendency to grant co-ownership.[64] After termination of the employment, the "odre public" upholds an assignment in anticipation only if it is reasonable and operates for a limited time. The factors that are considered in determining reasonableness are the length of time employed, the importance and remuneration of the employee, the nature of the employee's specialization, and the field of the employer's business.[65]

The Netherlands has set up guide lines in their Patents Act of 1910, as amended in 1931, 1936, and 1954, which must be carefully followed. Any departure therefrom is null and void, and may make the entire contract null and void. If an employee makes an invention that entails the application of special knowledge and the position of the employee in his employer's business requires him to have that special knowledge, the employer has full title.[66] If the invention is important, the employer and employee must agree on special remuneration based on the financial importance of the invention to the employer and the circumstances in which it was made.[67] Either party may apply in writing to the Patent Office for a determination, which is binding on the parties. An agreement to assign inventions which is not limited to the field of the employer's business is valid only if it provides adequate, special remuneration. In the absence of such an agreement, inventions outside of the field of the employer's business belong to the employee. Under Dutch Civil Law, sec. 1637, an assignment in anticipation after termination of the employment is valid if it contains reasonable limitations. The courts will declare an agreement in-

[64] Rezac, op. cit. 223.
[65] Rezac, op. cit. 228.
[66] Rezac, op. cit. 223.
[67] Neumeyer, op. cit. 682.

valid if it is too unreasonable, and the customary limitation on time is two years.[68]

The Scandinavian countries of Denmark and Sweden have special laws which determine the rights that an employer and an employee-inventor have in his invention, and Norway is currently preparing a similar law.[69] Denmark's statute is the most recent, having been passed in April of 1955 as Act No. 142. It applies to all employees, whether in private employment or the public service, and is designed to foster "decent business practices" while eliminating "evidently unreasonable business results."[70] The employer may acquire rights in an invention of his employee if the subject-matter is within the employer's sphere of activities, and the employee is entitled to reasonable, special compensation unless the invention is a service invention.[71] A service invention, in both Denmark and Sweden, is one made by an employee who has a special duty to invent, or an invention resulting from an employee following a specific order or task assigned by the enterprise.[72] Denmark recognizes a "company invention", which the co-operation of a number of persons has produced and when it is not possible to identify a single person as the inventor. After termination of employment, the employer may not limit the former employee's activities for more than one year.[73]

Japan enacted rules regarding employee inventions in 1959, which became effective on April 1st, 1960. The act declares that assignments in anticipation are valid only as to service inventions, and are null and void as to free inventions.[74] A service invention is defined as one which is within the scope of the employer's business and which was brought about by acts which were part of the employ-

[68] Rezac, op. cit. 228.
[69] Neumeyer, op. cit. 676.
[70] Rezac, op. cit. 224.
[71] Rezac, ibid.
[72] Neumeyer, op. cit. 694-7.
[73] Rezac, op. cit. 228.
[74] Takino, op. cit. 553.

ee's duties, past or present.[75] An assignment in anticipation is valid only during the term of employment, and the employer has no rights in an invention made after the employee retires, even if it is within the scope of the employer's business. The employer has a non-exclusive license in a service invention similar to the American shop-right, and may contract for an exclusive license or a complete assignment. He must pay the employee reasonable, special compensation for either of the latter two rights, which is calculated according to the profit obtained or anticipated from the invention and the degree of contribution by the employer to the development of the invention.[76] If the employee breaches the assignment in anticipation, the employer's rights are limited to damages.

The U.S.S.R. has laws regarding inventors which are somewhat indicative of the problems faced by all governments with respect to their employees. An ordinance was enacted in 1959 in an attempt to encourage invention, disclosure and implementation in a non-competitive system in which the employee does not acquire proprietary rights in his invention. The Soviet Union classifies the fruits of an inventive act in three groups: inventions, discoveries, and efficiency suggestions. Money awards are made to the innovator based upon the estimated or calculated annual savings attributable to the use of the innovation.[77] The operating manager of the organization employing the innovator determines whether or not to adopt and utilize the innovation, as well as the rouble amount of annual savings.[78] If the innovation is successful, the manager receives a reward for the implementation. The greatest difficulty in determining the compensation to be given to the innovator is calculating the annual savings due to the use of the innovation, since the compensation is found by applying a sliding scale to the annual savings. Disputes are taken to the courts.

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[75] Takino, op. cit. 554.
[76] Takino, op. cit. 553.
[77] Neumeyer, op. cit. 685.
[78] Clesner, Inventor's Payment Determination in the U.S.S.R., 6 P.T.C. J 226 (1962).

An interesting analogy can be made between the problems the Soviet Union is having in fostering invention and disclosure and the efforts of the United States government to stimulate and reward its inventing employees who are deprived of proprietary rights in their inventions. A controversy has arisen about the best apportionment of rights in an invention when the employee-inventor is a company. The sections in the Atomic Energy Act and section 305(a) of the National Aeronautics and Space Act which provide for government ownership of any inventions made in the performance of any work under government contract have provoked the assertion that the government should receive only a royalty-free non-exclusive license since few companies would bother to develop inventions commercially or to expend vast sums and time without patent protection.[79] The importance of a Federal policy that would foster invention development and disclosure by contractors and employees has been stressed.[80] Yet, most of the arguments in favor of such a policy can be applied to the private sector as well.[81]

The laws of all the countries reflect a realization that an employer should have some rights in the inventions of his employee, since the employer provides the facilities, tools, materials and invests in the employee's labor and brains. However, the laws also reflect a realization that the employer is in an advantageous bargaining position in concluding assignments in anticipation, and this paper has attempted to discover the extent to which various countries have limited the effect of such assignments through statutory and judicial determination of the rights of an employee-inventor and his employer. The trend of recent legislation in the countries studied is to

[79] Patent Rights Under Government Contracts, National Association of Manufactures of the United States of America, 9 (1960).

[80] Symposium on Patents, Copyrights and Trademarks, Need for a federal policy to foster inventions disclosures, 34 (1965).

[81] McTierman, Employee-Inventor Compensation Plans, 46 J.P.O.S. 475 (1964).

relegate the concern with the proprietary rights in an invention to a secondary level, and instead focus on an equitable apportioning of the profits from the invention between the employee-inventor and his employer. Such a policy seems bet suited for achieving a fair and reasonable distribution of the benefits of the invention, as well as stimulating the development and disclosure of employee inventions.

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EMPLOYER'S AND EMPLOYEE'S RIGHTS IN PATENTS ARISING FROM THE EMPLOYMENT

I. INTRODUCTION

The Patent Act of 1952 prohibits the issuance of a patent if any applicant "did not himself invent the subject matter sought to be patented."[1] Under this statute, only the discovering employee can obtain a patent for an invention which he has discovered during the course of his employment. The employee-inventor's rights have long been limited, however, by the doctrine that "where one is employed to make an invention and succeeds in accomplishing that task during the term of his service, the invention is the property of the employer, and the employee is bound to assign any patent which he may obtain to his employer."[2] Where the doctrine is applicable, the remedy of specific performance is available to compel an assignment should an employer be faced with an unwilling employee.[3]

Balancing between the two extremes of complete ownership by the employee and complete ownership by the employer, the courts have developed case-doctrine intended to provide substantial justice and to effectuate the intention of the parties. By dividing the legal situations into three main classifications — where a contract specifically provides for the employer's patent rights in an invention; where there is an express or implied contract to invent; and where there is only a general employment contract — a workable body of law may be obtained from the confusing myriad of cases.[4]

II. AN EXISTING CONTRACT SPECIFICALLY REGULATES THE PATENT RIGHTS IN ANY FUTURE INVENTIONS

As in any area of potential conflict, possible conflicts in patent claims can best be avoided by an agreement among the parties which specifies their respective rights. As a Michigan court stated in deciding that a complicated factual circumstance did not give rise to an implied contract to assign

1. 35 U.S.C. § 102(f) (1954). A limited exception is stated in 35 U.S.C. § 118 (1954):

> Whenever an inventor refuses to execute an application for patent, or cannot be found or reached after diligent effort, a person to whom the inventor has assigned or agreed in writing to assign the invention or who otherwise shows sufficient proprietary interest in the matter justifying such action, may make application for patent on behalf of and as agent for the inventor on proof of the pertinent facts and a showing that such action is necessary to preserve the rights of the parties or to prevent irreparable damage. . . .

The applicant must also make an oath that he believes himself to be the "original and first inventor." 35 U.S.C. § 115 (1954).

2. 1 WALKER, PATENTS § 407 (Deller 2d ed. 1964).

3. Since Mississippi Glass Co. v. Franzen, 143 Fed. 501 (3d Cir. 1906), patent assignment contracts have been held subject to the remedy of specific performance. *Accord*, Universal Winding Co. v. Clarke, 108 F. Supp. 329 (D. Conn. 1952).

4. See RESTATEMENT (SECOND), AGENCY § 397 (1958). For an excellent article, see *Bishop, Employers, Employees, and Inventions*, 31 So. CAL. L. REV. 38 (1957). See also Cornfeld, *The Employer-Employee Relation in Patent Law*, 32 J. PAT. OFF. SOC'Y 345 (1950).

to the employer: "the case illustrates the advisability of reducing contractual relations to writing where the parties contemplate that any invention made by an employee during the course of his work shall belong to the employer."[5] Recognizing this principle, companies which employ personnel likely to discover patentable inventions procure from such employees at the time of hiring, an assignment of any future patents which may be obtained by the worker. The standard clause refers to inventions "during the term of said employment related to the employer's business."[6]

Inasmuch as the desirability of such an arrangement presupposes the existence of an enforceable contract, it presents as much a question of contract law as of patent law. Thus it is necessary that the requirements of a valid contract — such as adequacy of consideration[7] — be met. Neither can the contract be unconscionable;[8] it must contain the necessary mutuality of remedy for specific performance,[9] and its enforcement may be barred by the defense of laches.[10]

The requirement of an adequate consideration in the patent assignment contract between an employee and employer has usually been met. Generally, mere hiring or continued employment has been determined to be sufficient.[11]

Furthermore, the standard patent assignment contract has not been found to be inherently unconscionable,[12] even in view of the fact that the company is usually in a much stronger bargaining position than the employee. This is true even though no royalties are given to the inventor under the contract and the invention is not used.[13] However, if the agreement is not limited in time to the duration of employment or in subject matter to the business of the employer, unconscionability will result.[14] It

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5. Gear Grinding Mach. Co. v. Stuber, 282 Mich. 455, 276 N.W. 514, 516 (1937). For a treatment of these express contracts see ELLIS, PATENT ASSIGNMENTS ch. 13 (3d ed. 1955).

6. *E.g.*, Rotary Lift Co. v. Clayton, 127 F. Supp. 176 (D. Mass. 1954). While an assignment contract is usual, the same legal rules would apply to a license agreement. See Woodruff v. New State Ice Co., 197 F.2d 36 (10th Cir. 1952); Bowers v. Woodman, 59 F.2d 797 (D. Mass. 1932).

7. United States v. Dubilier Condenser Corp., 289 U.S. 178 (1933); Corthell v. Summit Tred Co., 132 Me. 94, 167 Atl. 79 (1933) (adequate consideration not found).

8. Guth v. Minnesota Mining & Mfg. Co., 72 F.2d 385 (7th Cir. 1934), *cert. denied*, 294 U.S. 711 (1935). See 19 MINN. L. REV. 485 (1935).

9. Triumph Elec. Co. v. Thullen, 228 Fed. 762 (E.D. Pa. 1916), *aff'd on other grounds*, 235 Fed. 74 (3d Cir. 1916).

10. Gas Tool Patents Corp. v. Mould, 133 F.2d 815 (7th Cir. 1943); Reese Folding Mach. Co. v. Fenwiels, 140 Fed. 287 (1st Cir. 1905).

11. Patent and Licensing Corp. v. Olsen, 188 F.2d 522 (2d Cir. 1951); Hebbord v. American Zinc, Lead & Smelting Co., 161 F.2d 339 (8th Cir. 1947).

12. Goodyear Tire & Rubber Co. v. Miller, 22 F.2d 353 (9th Cir. 1927); DuPont Rayon Co. v. Paley, 4 F. Supp. 290 (N.D. Ill. 1933), *aff'd*, 71 F.2d 856 (7th Cir. 1934); Briggs v. United Shoe Mach. Corp., 92 N.J. Eq. 277, 114 Atl. 538 (1920), *cert. denied*, 254 U.S. 653 (1920).

13. Briggs v. United Shoe Mach. Corp., *supra* note 12.

14. Guth v. Minnesota Mining & Mfg. Co., 72 F.2d 385 (7th Cir. 1934), *cert. denied*, 294 U.S. 711 (1935); Pressed Steel Co. v. Hansen, 137 Fed. 403 (3d Cir. 1905) (dicta). It should be noted that some cases speak of these contracts as being an unreasonable restraint of trade and thus contrary to our antitrust public policy, as well as being unconscionable. See, *e.g.*, Chadeloid Chem. Co. v. H. B. Chalmers Co., 243 Fed. 606 (2d Cir. 1917).

is possible for a court to avoid the effects of the application of this general rule by construing the assignment — employment contract as divisible, separating the employment term from subsequent time periods, and holding the contract valid only as to inventions discovered during the period of employment.[15]

In most instances, the required assignment of unlimited subject matter patent rights for a limitless period of time will be held unconscionable *in toto,* while a required assignment for the period of employment will, if otherwise valid, be upheld. The crucial time limit separating validity from non-validity in cases falling between these two extremes is the somewhat nebulous "reasonable time after the termination of employment." The determination of a "reasonable time" is a factual question which will turn on the employee's type of work, the technique or art's status in the industry, and other relevant circumstances, as well as the extent of the time period itself. A one year extension of the requirement after employment has ended has been held valid,[16] while a ten year period has been found to be unconscionable.[17]

As previously noted, the law finds unconscionability in the assignment of unlimited subject matter for a limitless period. The cut-off point for unconscionability relative to the assignment of subject matter, assuming an unlimited time clause, is also found in a reasonableness concept. There may be enforcement of a contract to assign inventions made after employment where the inventions are in a reasonably limited field,[18] or in a specific limited line,[19] or where the assignment is reasonably restricted, if such coverage is necessary for the protection of the employer's business.[20] A contract requiring a machine designer employed by a winding machine manufacturer to assign patent rights related to clutch designs, even though discovered after the termination of employment, has been held valid where the new designs were particularly pertinent to winding machines; a requirement to assign patents to inventions in the entire field of clutch design, however, would be invalid.[21]

The equitable remedy of specific performance demands that the contract possess mutuality of remedy. Thus, where the employment contract is for an indefinite time, specific performance of an assignment clause in the contract cannot be obtained, inasmuch as the assignor–employee could not obtain specific performance to force continued employment for a specific period of time.[22]

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15. Guth v. Minnesota Mining & Mfg. Co., *supra* note 14.
16. Universal Winding Co. v. Clarke, 108 F. Supp. 329 (D. Conn. 1952).
17. United Shoe Mach. Co. v. La Chapelle, 212 Mass. 467, 99 N.E. 289 (1912).
18. Universal Winding Co. v. Clarke, 108 F. Supp. 329 (D. Conn. 1952).
19. Dry Ice Corp. of America v. Josephson, 43 F.2d 408 (E.D.N.Y. 1930).
20. Chadeloid Chem. Co. v. H. B. Chalmers Co., 243 Fed. 606 (2d Cir. 1917); Hulse v. Bonsack Mach. Co., 65 Fed. 864 (4th Cir. 1895).
21. Universal Winding Co. v. Clarke, 108 F. Supp. 329 (D. Conn. 1952).
22. Triumph Elec. Co. v. Thullen, 228 Fed. 762 (E.D. Pa. 1916), *aff'd on other grounds,* 235 Fed. 74 (3d Cir. 1916).

Laches, another equitable concept, may also bar the plaintiff–assignee where he unreasonably delays in bringing his action for enforcement, or leads the employee to believe that he is not interested in the particular invention.[23]

If the general contract requirements have been met, the patent assignment clause in the employment contract will be upheld. In practice, as with the enforcement of any contract, as much depends upon the courts attitude of interpreting each type of contract as upon the theoretical legality of the agreement. As the basis of patent law is to provide an incentive to inventors, judges generally are reluctant to imply an agreement to assign,[24] although once an agreement is found, the provisions are broadly applied.[25] Thus patents obtained on inventions conceived during but patented after employment,[26] patents obtained during employment but prior to the execution of the assignment contract,[27] and patents obtained which relate to the employer's business but which are the result of private invention on the employee's own time,[28] have all been held subject to assignment to the employer. Inventions discovered by the employee prior or subsequent to his employment, however, have generally not been considered to be within the assignment requirements unless the employment agreement has so provided.[29] In addition, the employer–plaintiff has the burden of proving that the employee's invention is within the scope of his "business" as it is defined in the contract.[30]

III. THE EMPLOYEE IS HIRED TO INVENT

Absent an express contract granting the employer an interest in any invention made by his employee, the general rule is to award the invention to the employee *in toto*.[31] However, this practice is subject to an exception which is based upon an implied contract to grant the employer an interest

23. Gas Tool Patents Corp. v. Mould, 133 F.2d 815 (7th Cir. 1943); Reece Folding Mach. Co. v. Fenwick, 140 Fed. 287 (1st Cir. 1905).

24. United States Colloid Mill Corp. v. Myers, 6 F. Supp. 283 (S.D.N.Y. 1934).

25. United States v. Dubilier Condenser Corp., 289 U.S. 178 (1933).

26. New Jersey Zinc Co. v. Singmaster, 71 F.2d 277 (2d Cir. 1934); Fullman v. Steel City Elec. Co., 2 F.2d 4 (3d Cir. 1924).

27. United Aircraft Products, Inc. v. Warrick, 79 Ohio App. 165, 72 N.E.2d 669 (1945); United Aircraft Products, Inc. v. Cruzan, 76 Ohio App. 540, 62 N.E.2d 763 (1945).

28. United States v. Houghton, 20 F.2d 434 (D. Md. 1927), *aff'd*, 23 F.2d 386 (4th Cir. 1928); Detroit Lubricator Co. v. Lavigne Mfg. Co., 151 Mich. 650, 115 N.W. 988 (1908). Also, the ownership of the employer's business may change from time to time. The employee is still bound to assign to the new owner. Guth v. Minnesota Mining & Mfg. Co., 72 F.2d 385 (7th Cir. 1934), *cert. denied*, 294 U.S. 711 (1935). Intracompany transfers have no effect on the agreement. Goodyear Tire & Rubber Co. v. Miller, 14 F.2d 776 (S.D. Cal. 1926).

29. Standard Plunger Elevator Co. v. Stokes, 212 Fed. 893 (2d Cir. 1914). And where there is such a specific provision, it is strictly construed. Gas Tool Patents Corp. v. Mould, 133 F.2d 815 (7th Cir. 1943).

30. Triumph Elec. Co. v. Thullen, 228 Fed. 762 (E.D. Pa. 1916), *aff'd on other grounds*, 235 Fed. 74 (3d Cir. 1916).

31. *E.g.*, Solomons v. United States, 137 U.S. 342 (1890); Howard v. Howe, 61 F.2d 577 (7th Cir. 1932), *cert. denied*, 289 U.S. 731 (1933).

in future patented inventions.[32] The exception applies where the employee is hired to invent, either in a general or specific area.

From such an employment relation, based on either a formal or an implied contract, the law implies an agreement by the employee to assign to his employer any future patent rights in inventions related to his employment and discovered during the term of employment.[33] This employment relationship may exist where the employee's entire job consists of inventing or where he is to solve only a particular problem requiring an inventive solution.[34] The employee in either case reasonably understands "that such inventions as resulted from his performance of the contract should belong to the employer, [and that] the employee is under an implied obligation to assign any patents acquired by him for said inventions to his employer."[35] Since there is an implied contract for the term of the employment, the employer need not have a prior specific agreement to assign any inventions,[36] and he can compel an assignment in equity.[37] In *Standard Parts Co. v. Peck*,[38] the leading case in the area, an employee was held not to have an interest in an automobile front spring that he had been hired to invent.[39]

A situation requiring a difficult application of this theory exists where the employee is not hired to invent, but discovers an invention as a direct result of his employment. It has generally been held that such circumstances do not give rise to an implied contract to invent. In *United States v. Dubilier Condenser Corp.*,[40] the Supreme Court held that two government employees were under no obligation to assign patents on a radio device perfected by them, even though their invention was only an extension of their work in the development of remote control bombs and torpedoes. Another circumstance which creates difficulty in the interpretation of this

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32. Perhaps one may conceive of another exception applicable to the narrow situation where the employee holds a peculiar position of trust in the company. Such would be the case where the employee pirates and patents an invention in his own name, after having been entrusted to manage the total operation of a company manufacturing the invention. See Transparent Ruler Co. v. C-Thru Ruler Co., 129 Conn. 369, 28 A.2d 232 (1942). See also Dowse v. Federal Rubber Co., 254 Fed. 308 (N.D. Ill. 1918).

33. The invention may be achieved on or off the job, but it must be in the employers line of business.

34. *E.g.*, Goodyear Tire & Rubber Co. v. Miller, 22 F.2d 353 (9th Cir. 1927) (general contract to invent); Lion Mfg. Co. v. Chicago Flexible Shaft Co., 106 F.2d 930 (7th Cir. 1939) (having to develop a specific device). See 4 WALKER PATENTS §§ 375-76 (Deller 2d ed. 1964).

35. National Development Co. v. Gray, 316 Mass. 240, 55 N.E.2d 783, 787 (1944).

36. Houghton v. United States, 23 F.2d 386 (4th Cir. 1928), *cert. denied*, 277 U.S. 592 (1928).

37. Tennessee Copper & Chem. Corp. v. Martin, 4 F. Supp. 38 (D.N.J. 1932), *aff'd*, 66 F.2d 187 (3d Cir. 1933).

38. 264 U.S. 52 (1924). See 36 HARV. L. REV. 468 (1923). Another important Supreme Court case with this view is United States v. Dubilier Condenser Corp., 289 U.S. 178 (1933).

39. *E.g.*, Wireless Specialty Apparatus Co. v. Mica Condenser Co., 239 Mass. 158, 131 N.E. 307 (1921); Air Reduction Co. v. Walker, 118 Misc. 827, 195 N.Y. Supp. 120 (Sup. Ct. 1921).

40. 289 U.S. 178 (1933).

rule occurs where the employee is hired for his expertise in a certain field to aid in the development of the company's product. Here again, the law does not imply a contract of assignment.[41]

Court application of this doctrine places the burden of proof on the employer to show that there was in fact a hiring to invent,[42] and there must be a very strong showing of favorable circumstances to imply such a contract.[43]

IV. THE EMPLOYEE INVENTS USING THE EMPLOYER'S RESOURCES — THE SHOP-RIGHT DOCTRINE

Just as an employer may obtain an implied assignment of future patents by hiring an employee to invent, he may also obtain an implied license to use the employee's invention if the employee has utilized the employer's resources in the discovery.[44] This doctrine is based upon two theories. First, when an invention is discovered through the use of an employer's facilities, the employer as a matter of justice is entitled to free use of the invention.[45] The second theory finds an implied contract to grant a license to the employer, the consideration given by the employer being the use of his resources. However, since this latter basis is contractual, the employee–inventor must also assent to the employer's use.[46] It should be noted that in either case this shop-right of the employer is a mere license and not an assignment granting full title.[47] Neither is shop-right license an exclusive one;[48] others may be licensed by the patentee–employee. However, the

41. American Circular Loom Co. v. Wilson, 198 Mass. 182, 84 N.E. 133 (1908); Gemco Engineering & Mfg. Co. v. Henderson, 82 Ohio App. 324, 77 N.E.2d 742 (1947).

42. Heywood-Wakefield Co. v. Small, 87 F.2d 716 (1st Cir. 1937); State Bd. of Education v. Bourne, 150 Fla. 323, 7 So. 2d 838 (1942). Another courtroom rule, this one of evidence, is whether prior express assignments of the employee's invention justify the conclusion that he was hired to invent. It has been stated that this is conclusive evidence. Magnetic Mfg. Co. v. Dings Magnetic Separator Co., 16 F.2d 739 (7th Cir. 1926), *cert. denied*, 274 U.S. 740 (1927). But the better view would limit the evidentiary force of this fact short of allowing it to be conclusive. See Bowers v. Woodman, 59 F.2d 727 (D. Mass. 1932); Pressed Steel Car Co. v. Hansen, 137 Fed. 403 (3d Cir. 1905), *cert. denied*, 199 U.S. 608 (1905).

43. Howard v. Howe, 61 F.2d 577 (7th Cir. 1932); Gear Grinding Mach. Co. v. Stuber, 282 Mich. 455, 276 N.W. 514 (1937).

44. This situation, where the employee actually achieves a patentable invention by discovering the scientific principle, should be distinguished from another possible situation where the employer uses only mechanical skill in giving form to his employer's principle. In such a case the employer, not the employee, is the inventor and has title, not a license. See Agawan Woolen Co. v. Jordan, 74 U.S. 563 (1898); Pembroke v. Sulzer, 265 Fed. 996 (D.C. Cir. 1920).

45. United States v. Dubilier Condenser Corp., 289 U.S. 178 (1933).

46. McClurg v. Kingsland, 42 U.S. (1 How.) 187 (1843). As in *McClurg*, some cases allow this assent to be implied from circumstances, *e.g.*, the allowing of the employer to utilize the invention. Other cases have required an expressed assent. Solomons v. United States, 137 U.S. 342 (1890).

47. Whether an officer of a corporation may be considered an employee within the shop-right doctrine is subject to some disagreement. See American Stoker Co. v. Underfeed Stoker Co. of America, 182 Fed. 642 (W.D. Pa. 1910); *contra*, Dalzell v. Dueber Watch Case Mfg. Co., 149 U.S. 319 (1893); Detroit Testing Laboratory v. Robinson, 221 Mich. 442, 191 N.W. 218 (1922).

48. Solomons v. United States, 137 U.S. 342 (1890).

license is presumed to be gratis[49] and it is up to the employee to show that the employer agreed to pay a royalty.[50]

The shop-right doctrine is a doctrine of the common law initiated as far back as 1843 in *McClurg v. Kingsland*.[51] In that case, suit was brought by assignees of the employee–patentees against the employer for infringement. The verdict was for the defendant on the ground that he possessed a license to use the invention (an improved method of casting metallic cylinders and cones) since it had been developed by using the employer's physical facilities and on the employer's time.[52]

But while the shop-right theory may be easily and concisely stated as implying the grant of a license from an employee's use of his employer's facilities, the finding of a use sufficient to warrant the application of the rule in a particular situation involves a complex factual determination. The use of company time and materials has been deemed sufficient.[53] Utilization of the employer's tools, any labor assistance from fellow employees and company funds are other resources of the employer. In each case, the court must make a decision as to the equity of implying a license in the particular circumstances.[54]

The employer's claim under the shop-right theory is limited to inventions applicable to his business[55] and it is coextensive only with his business requirements.[56] The shop-right is also limited in extent of time. In *Withington-Cooley Mfg. Co. v. Kinney*,[57] the court divided inventions into three categories: processes, machines for making articles or products for sale, and articles or products made for use or sale. Processes provide shop-rights for the life of the patent as do any inventions or articles made for use or sale. However, the invention of a machine permits a shop-right only to the use of that specific machine.

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49. Gill v. United States, 160 U.S. 426 (1896); Barry v. Crane Brothers Mfg. Co., 22 Fed. 396 (N.D. Ill. 1884); *contra*, Deane v. Hodge, 35 Minn. 146, 27 N.W. 917 (1886) (but this case is against the overwhelming weight of authority).

50. Wilson v. American Circular Loom Co., 187 Fed. 840 (1st Cir. 1911).

51. 42 U.S. (1 How.) 187 (1843). The Court also based its decision on the fact that the employer had been allowed by the employees to utilize the invention and thus the employees had abandoned their exclusive patent rights.

52. For the shop-right doctrine in general, see ELLIS, PATENT LICENSES §§ 67–73 (Deller's ed. 1958).

53. Pure Oil Co. v. Hyman, 95 F.2d 22 (7th Cir. 1938). The use of company time, material and labor assistance was deemed sufficient in Scott v. Madison Woolen Co., 3 F.2d 331 (S.D. Me. 1925).

54. "This is an application of equitable principles. Since the servant uses his masters time, facilities and materials to attain a concrete result, the latter is in equity entitled to use that which embodies his own property and to duplicate it as often as he may find occasion to employ similar appliances in his business." United States v. Dubilier Condenser Corp., 289 U.S. 178, 188–89 (1933).

55. Small v. Heywood-Wakefield Co., 13 F. Supp. 825 (D. Mass. 1936).

56. Pure Oil v. Hyman, 95 F.2d 22 (7th Cir. 1938). And where the patent obtained by the employee has other applications besides those in the employer's business, the shop-right only extends to the use in the employers business line. Crites v. Radtke, 28 F. Supp. 282 (S.D.N.Y. 1939).

57. 68 Fed. 500 (6th Cir. 1895).

Another limitation on the shop-right is its non-assignability. The license implied under the theory is a personal right of the employer's firm, and only the business-employer or his corporate successor may legitimately use the invention.[58] This prohibition on third-party assignment is consistent with the limiting of shop-right subject matter to the employer's business.

V. CONCLUSION

By focusing on the contract between the employee and his employer, and characterizing this relation into three main divisions, a body of law may be obtained capable of analyzing the many cases dealing with the conflicting patent claims of employers and employees.

An express contract between the parties will govern and require assignment by the employee. However, in the absence of an agreement regulating their conflicting interests, the employee and his employer must resort to case law to ascertain their patent rights. An employment contract to invent, either generally or as related to a particular problem, implies an agreement to assign resulting patent claims to the employer. A general employment contract has no such result, yet if the employee uses the resources of his employer, the shop-right doctrine implies a license in the employer. Absent the application of any of the above rules, the employee retains full and absolute title to the patent.[59]

Thomas C. Siekman

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58. *E.g.*, General Point Corp. v. Kromer, 68 F.2d 40 (10th Cir. 1933), *cert. denied*, 292 U.S. 623 (1934).

59. See RESTATEMENT (SECOND), AGENCY § 397 (1958). However, where an employer has adequately overcome his burden of establishing an interest in the employee's invention, the employee may still avail himself of two defenses — release or estoppel. The defense of a release, in this area as in any other, settles the controversy between the parties. So a release by which the employer relinquishes all rights and claims he has in the patent is a valid defense. See Cahill v. Regan, 5 N.Y.2d 292, 157 N.E.2d 505, 184 N.Y.S.2d 348 (1959). Estoppel obviously is also a doctrine not confined to the patent field. If the employer previously insisted that the invention was not made during the employment [Texas Co. v. Gulf Refining Co., 26 F.2d 394 (5th Cir. 1928), *cert. denied*, 278 U.S. 625 (1928)], or where he rejects the invention [Parker Rust-Proof Co. v. Allen, 231 Mich. 69, 203 N.W. 890 (1925)], he is later estopped from claiming whatever rights he may have had.

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GUEST COMMENTARY



Walter Nold

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Walter Nold is president of Inventors USA Ltd., a strictly non-profit organization based in Worcester, MA, consisting of professionals whose purpose is to foster patent reform and to educate and inform those requiring assistance in the field of invention. He is also president of Walter Nold Company, Inc., Natick, MA, an R&D and manufacturing concern. He was formerly with Raytheon, IBM, Arthur D. Little, Laboratory for Electronics and the National Radio Co.

Patents, inventions and inventors

Special to Design News

Natick, MA—The technological advantage that the United States has enjoyed may soon vanish. Others, notably Japan, are encroaching on our status.

Washington is reacting, forming committees, hiring consultants, doing many things—but it is not asking advice from inventors, the very people we depend upon to promote new technologies and stimulate growth.

Inventions come from every segment of our country. Many of our inventions emanate from independent inventors, working in kitchens, or basements.

Inventors often possess an ability to foresee problems and to come up with an idea to solve them. The legwork necessary to bring the idea to reality is where the difficulty lies, at first. So a mechanic may create an electronic guidance system, a dentist may create a new adhesive and an electrician, a new type of carburetor. Being Americans, they believe the patent system will protect their invention. Unfortunately, this belief may be a major difficulty.

Here is a case history of a member of our Inventors USA Ltd., who followed the rules of patent law.

While in the process of mass-producing a useful patented invention, this woman's product caught the eye of a large hardware supply conglomerate that was skilled in obtaining patent rights. It had copied the product, manufactured it in huge quantities in Hong Kong and flooded the USA market, ruining her chances for deserved profits. She exercised the right bestowed upon her by her patent: the right to sue and defend. However, the infringer was able to "forum shop": to choose the federal district where the court action was to take place. And there the judge, unfamiliar in patent/technical matters, ruled in favor of the conglomerate. My friend lost her business investment, her market, $75,000 in legal fees (it now costs an average of $250,000 to defend a patent in court and the tab is continually increasing), and she lost her patent as well. The culprit in this case was the "obviousness clause" of patent law. That is, in the eyes of many ruling judges, if an invention is simple and is obvious after it has been fully explained, it then becomes obvious that someone will have the same idea.

Another member of Inventors USA invented a ratchet wrench. A large company was able to have the patent declared invalid, much the same as with our other member, thus minimizing the leverage of the inventor and the importance of royalty payments. The judge that presided defended his judgment with the pronouncement that anyone could have invented the wrench. This remark probably will become a classic.

A national television commentator once said that if Thomas Edison existed today, he would most likely be cheated, that patents would be stolen, and that little could be done about it.

Continued appeals to congressmen have finally resulted in legislation which possibly will be of assistance to the independent inventor. The newly passed Single Court of Appeals Act will presumably eliminate forum shopping. The Re-examination Act will presumably strengthen surviving patents. These new enactments, however, have not yet been tried in court.

It is important that the U.S. Patent Office operate as efficiently as possible. Every patent application deserves the most stringent examination. When a patent is granted, it should have unparalleled strength so the obviousness clause may not be used against it in court as a legal tool or as a means to infringe upon the inventor's rights. This would require absolute top-notch patent examiners and easily available filing and reference systems.

Such changes would be expensive, but would help the inventor. The days of the obviousness clause would be dead. Many new technologies would become available.

Inventors USA Ltd. is a non-profit group of concerned citizens, serving without recompense. Its purpose is to sponsor patent reform and to advise and educate those that either have or think they have useful inventions.

Patents sometimes are necessary, since most companies will not consider anything new unless it is covered by a patent. (A Boston company, with the cooperation of a fellow inventor organization, has just opened the door a crack. In a trial experiment, it is allowing interviews with inventors having unpatented ideas that do not conflict with existing product lines. This is the start of a promising breakthrough. Hopefully more companies will do the same.) Patents are not always necessary, however. It is possible to create a market and yet maintain secrecy by different methods. Coca Cola does not have a patent and therefore opportunities for others to infringe upon it do not exist. For Coca Cola and many others, a registered trademark offers the greatest protection of all. It reflects on the quality, integrity, and reputation of the manufacturer.

Inventors are advised to locate a legitimate non-profit inventor-organization such as Inventors USA. There should be no charge for attending meetings, where subjects such as patent law and marketing are discussed.

As a parting thought I remind all inventors: Learn as much as possible on legal and marketing aspects before investing any time or effort on a possible invention and especially before trying for a patent. And beware of any organization that requires monetary payments for supposed helpful services. □

The Washington Post

HIGH TECH: LEAVING HOME

MAY 1-6, 1983

Loaned Science Returns as Competition

By Dan Morgan
Washington Post Staff Writer

In the 1950s and '60s, inventor George Devol took out several dozen patents for what he called his "programmed article handling device." He felt sure that American industry would be revolutionized by his ideas.

The patents were soon acquired by a struggling young company called Unimation, anxious to cash in on the new technology that seemed certain to sweep the country.

But U.S. companies showed little interest in Unimation's products, and in 1968 the company in desperation made a deal with Kawasaki Heavy Industries, allowing the Japanese firm to use its know-how.

HIGH TECH: LEAVING HOME

PART 1

Devol's "programmed article handling device" is known today as a robot. And today, Japan leads the world in the manufacture and use of industrial robots.

Now, Kawasaki and other Japanese companies sell robots to America's industrial giants, which are belatedly acknowledging the merit in Devol's ideas. Kawasaki robots, based on technology acquired from Unimation, will work on automobiles that will soon start rolling off Nissan Motors' first U.S. assembly plant in Tennessee.

"We're handing it to the Japanese on a platter," said Devol, now 71. "I just can't understand America."

Stories such as that, repeated across a wide spectrum of U.S. industry, raise deeply troubling questions about the nation's ability to compete in the demanding business conditions of the Information Age.

The United States developed the first computer-controlled robots, the transistor, the integrated circuit, the video cassette recorder, the communications laser, fiber-optic cable, gene splicing and the software that enables computers to design, test and manufacture products.

Yet good ideas percolating out of research laboratories and machine shops have not guaranteed the health of American industry. Japanese companies are ahead of or equal to the United States in several of the businesses that grew out of those innovations.

Is something fundamentally wrong with U.S. management? Are foreigners "ripping off" precious American technology? Has the country sold its ideas without giving enough thought to the impact on its future industrial competitiveness? Is America destined to relive the economic decline of Great Britain, another nation with a proud history of

See TECHNOLOGY, A18, Col. 1



General Motors photo

Industrial robot with vision undergoes testing at GM Technical Center in Warren, Mich.

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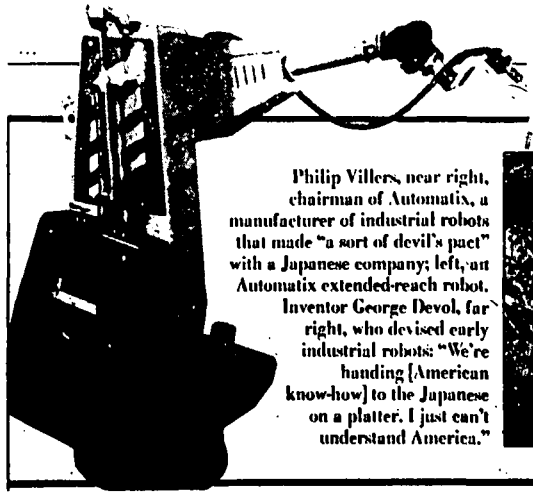


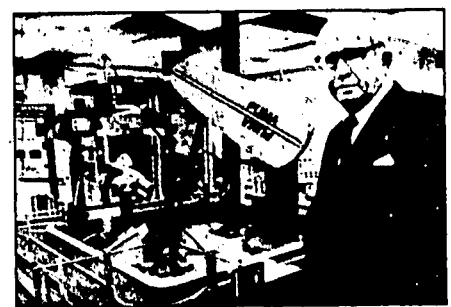


Philip Villers, near right, chairman of Automatix, a manufacturer of industrial robots that made "a sort of devil's pact" with a Japanese company; left, an Automatix extended-reach robot. Inventor George Devol, far right, who devised early industrial robots: "We're handing [American know-how] to the Japanese on a platter. I just can't understand America."

Associated Press

U.S. Science Sows Foreign Competition

Contributing to this series were Tokyo bureau chief Tracy Dahlby, who conducted interviews in Japan, and Hobart Rowen, senior economics writer. Staff researcher Carin Pratt assisted with the reporting and research.



United Press International

inventions and technological innovation? Can an open, unplanned society that tolerates a high degree of economic confusion survive the challenge of societies operating on the principle of consensus and clear national objectives?

This series examines these questions in the light of the technology trade with Japan, America's principal economic rival. The ever increasing pace of technological advances and the way both nations use the new discoveries play a controlling role in the rise of some industries and demise of others.

Movement of technology from one country to another, through sale of a patent, purloining of a trade secret, the visit of a student, publication of a technical paper, establishment of a joint business venture or acquisition of a foreign company can influence the balance of economic power between countries in the 1980s as surely as the petroleum trade did in the 1970s.

It can sound the death knell of an industry, and cost American jobs, as it has in parts of the steel industry hit by imports of Japanese and South Korean steel manufactured with the newest continuous-casting processes.

For industrial countries, technology is a particularly precious asset, a trust for the future, that can help offset the competitive advantages that lower wages and less expensive social programs give some other nations.

As the United States shifts slowly from a manufacturing to an "information" economy, emerging high-technology industries offer one hope for generating new wealth and new jobs requiring skills greater than those available in overseas labor forces.

While high-technology industries in themselves will not generate enough jobs to solve the U.S. unemployment problem, application of a wide range of technologies to dozens of industries at least holds out the hope for a more productive, competitive and growing U.S. economy.

Ironically, American technology has played an enormous role in the emergence of the Japan now challenging the United States for economic supremacy.

Lacking natural resources and excess manpower, Japanese industry has prospered by a near-fanatical emphasis on maximum exploitation of advanced technology.

Between 1950 and 1980, Japanese companies acquired almost all of the world's available advanced technology by signing at least 30,000 licensing or technical agreements with western companies, mainly American. The price paid by Japan in royalties and fees has been about $10 billion, less than one-fifth of what is spent in the United States for research and development in one year.

Exports Provide Industrial Base

U.S. licenses and advanced equipment have provided the base for numerous Japanese high-technology industries.

One example: U.S. computer graphics systems and electron-beam etching devices were used by Japan to produce 64,000-bit computer memory chips ahead of American chip makers.

Another example: The Pentagon-backed sale of dozens of sophisticated U.S. aerospace technologies to Japan under a joint weapons-production program is helping to create an advanced Japanese aircraft industry.

This massive transfer of technology, in the interest of strengthening a military ally, is upgrading the capability of Japan's expanding commercial aircraft industry to compete against Boeing and McDonnell Douglas by the year 2000.

"Japan is doing to us what we did in Europe after World War II," said Jacob Rabinow, consultant to the National Bureau of Standards and holder of 218 U.S. patents. "They are taking our science and making products out of it."

However, few who operate out of the "engine rooms" of advanced industries think that it would be desirable, or even possible, for America to put a sudden lock on its trade secrets.

"The horse is out of the barn," an aerospace executive said.

The web of transpacific business relationships that has grown over the years is much denser than most Americans probably realize. General Motors-Toyota, IBM-Matsushita, General Motors-Fanuc, General Electric-C. Itoh. These are just a few of the hundreds of joint ventures, partnerships or technical tie-ups now in place. Untangling this web would be almost unthinkable now.

Moreover, the United States no longer enjoys a technology monopoly in this relationship. Japanese steel companies, for example, are selling U.S. companies their processes for continuous casting and cold rolling, and Sumitomo Metals Industries is helping U.S. Steel build the first U.S. mill capable of turning out 48-inch, Arctic-grade pipe.

Japan Seeks Breakthroughs

One of the most far-reaching comparisons of U.S. and Japanese technology, conducted last year by Japan's Society of Science, Technology and Economics, concluded that Japan was inferior to the United States in 56 key technologies but superior in 51. The survey examined 43 products in 37 industrial fields and compared the degree of automation, methods for testing product quality and design techniques.

Between 1970 and 1979, the five largest Japanese computer chip companies filed for almost as many U.S. patents (1,200) as the five largest U.S. firms (1,500).

If the United States is having trouble with Japanese competition when U.S. science and technology remain superior, some ask, what will the situation be later in the decade when Japan's concerted effort to create its own breakthroughs in the "knowledge intensive" industries begins to bear fruit?

Japan is not the world's only technologically advanced country. French aviation expertise, British computer software, Swedish robotics and Soviet missilery are impressive. But Japan is emerging as the strongest challenger in the 1980s.

Tokyo's Ministry of International Trade and Industry (MITI), the superagency that guided the successful export drive in automobiles and consumer electronics in the 1970s, has put together consortiums of Japanese companies and banks to develop computers that think like humans, "intelligent" robots, a supercomputer 1,000 times more powerful than anything sold by IBM, an electric car, fuel-efficient ceramic engines, carbon dioxide lasers and a new generation of computer software.

WHO'S WINNING THE TECHNOLOGY RACE

JAPAN VS U.S.A.

✔ INDICATES LEADER IN FIELD

	U.S.A.	JAPAN
OPTICAL COMMUNICATIONS		
GLASS TELEPHONE LINES	=	=
LASERS, LIGHT SOURCES		✔
RECEIVERS	=	=
COMPUTER CHIPS		
MEMORIES		✔
MICROPROCESSORS	✔	
COMPUTERS		
HIGH SPEED SYSTEMS	✔	
SOFTWARE	✔	
COMPUTER AIDED DESIGN & MANUFACTURING (CAD/CAM)	✔	
GENETIC ENGINEERING		
GENE SPLICING	✔	
FERMENTATION PROCESSES		✔
INDUSTRIAL ROBOTS		
MOTORS & ARMS		✔
CONTROLS & SOFTWARE	✔	
FINE CERAMICS		
ENGINES		✔
ELECTRICAL COMPONENTS		✔
COMMERCIAL AEROSPACE		
ENGINES	✔	
AVIONICS	✔	
FUSELAGE DESIGN	✔	
COMMUNICATIONS SATELLITES	✔	
STEEL		
HIGH TEMPERATURE BLASTING		✔
SPECIALTY STEELMAKING		✔

SOURCES: OFFICE OF TECHNOLOGY ASSESSMENT; JOINT ECONOMIC COMMITTEE; CABINET COUNCIL ON COMMERCE AND TRADE; JAPANESE SOCIETY OF SCIENCE, TECHNOLOGY AND ECONOMICS; INDUSTRY SOURCES.

Few U.S. industrialists underestimate the seriousness of this effort.

Recent American visitors to Japan, for example, have been impressed with efforts under way there to develop a new generation of powerful computers, capable of functioning at very high speed and emulating some of the flexibility and creativity inherent in human thinking.

"If these projects are successful, which appears likely, advanced economic and military research in the United States may become dependent on access to supercomputers of [Japanese] manufacture," concluded three computer scientists from Los Alamos National Laboratory in a report published in Science magazine last December.

For Americans who grew up in a postwar world in which the United States seemed to hold a virtual monopoly on technological advances, those statistics often seem bewildering. The United States has 124 Nobel Prizes in physics, chemistry and medicine to Japan's four, and American scientists are hard pressed to name a single Japanese innovation that has truly changed the world.

But Japan exports about $5 billion more in high-technology products to the United States than it imports. While the U.S. share of world trade in high-tech products and technical information declined from 31 percent in 1962 to 21 percent in 1979, the Japanese share rose from 5 percent to 14 percent.

To some extent, the government reaction to this has focused on a need to formulate policies that would safeguard U.S. technological advantages.

James C. Abeggien and Thomas M. Hout of the Boston Consulting Group in Tokyo have called sale of civilian technology to Japan at bargain prices "a disaster" and "the biggest fire sale in history."

"With the benefit of hindsight, it is now apparent that many U.S. firms overestimated the permanence of their technological supremacy and underestimated the 'boomerang effect' of their technology licenses," Washington trade attorney Carl J. Green said.

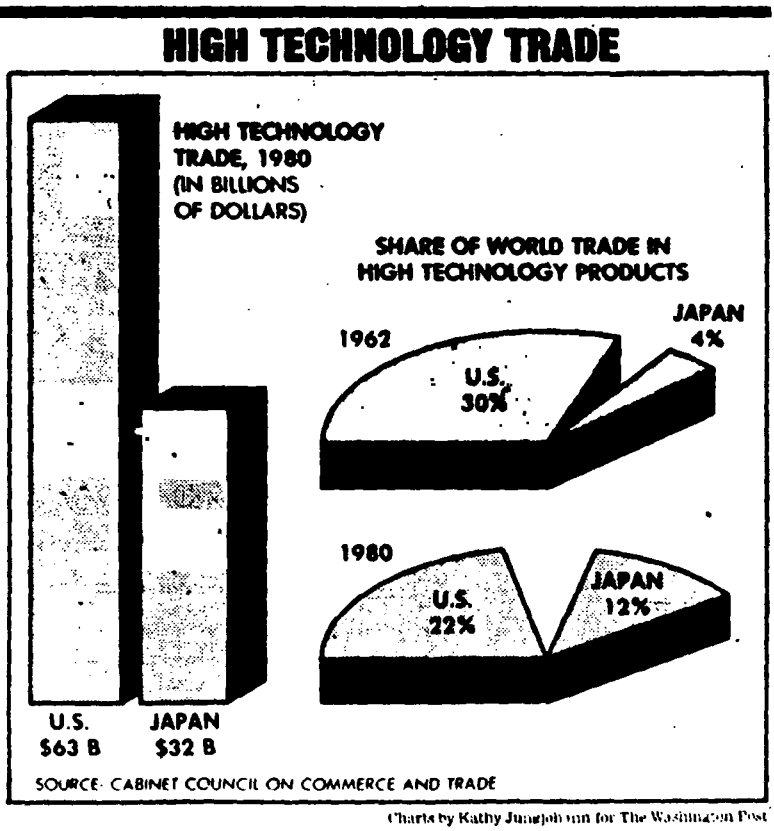
Companies explain their licensing of technology to Japan by saying that Japan's protectionist policies have often barred them from selling U.S.-made products there. Moreover, they suggest, royalties are often pure profit and help recoup past research costs. The $517,000 received by Unimation in royalty payments from Kawasaki in 1980 amounted to half of the company's net earnings.

However, such royalty payments often seem small compared with the benefits to Japan. RCA, industrialists note ruefully, still is receiving royalties for licensing color-television processes to Japanese companies, which compete aggressively with RCA.

At the same time that the issue of technology safeguards is being raised, there is equal concern that the United States not overlook its own well-documented industrial shortcomings.

"The problem in this country isn't innovation. We innovate like hell. The problem is that our developed industries don't adapt and adjust rapidly enough," said Prof. Leslie Eric Cross, acting director of the materials research laboratory at Pennsylvania State University.

In a report on Japan written in 1981, Washington consultants Harald B. Malmgren and Jack Baranson criticized U.S. industry for being too quick to move factories abroad to take advantage of low wage rates, "rather than redesigning and reengineering production techniques to meet Japanese competition."



Robert B. Reich, of the Kennedy School of Government at Harvard University, criticized government research policies "subject to sudden changes in national security needs and prevailing policies."

Inventor Jacob Rabinow is critical of U.S. corporate managers, a breed that he said suffers from "technological illiteracy."

"They're bankers and lawyers . . . . They'd rather sell a company than straighten it out," he said.

For all the concern about the failures of U.S. business, U.S. policymakers stress the need for a sense of perspective. "Japan is not yet a technological giant," Undersecretary of Commerce Lionel H. Olmer said.

The race between U.S. and Japanese robotics companies shows why it may be risky to jump to conclusions about the demise of U.S. industries.

The United States as Underdog

The United States is undoubtedly the underdog. Japan, with about 150 robotics companies, is on the verge of a major export push that will put new pressures on the United States. Although it now exports only about 5 percent of the robots it manufactures, Japan wants to increase that to 20 percent by the mid-1980s.

This strong Japanese position is in some respects a natural outgrowth of Japan's earlier concerns about manpower shortages, rather than a far-sighted commitment to technological advances.

By 1972, these concerns had given rise to the Japan Industrial Robot Association (JIRA), formed with the backing of MITI. JIRA published papers, circulated technical information and raised the consciousness of Japanese businessmen about robots.

In 1980, an MITI-sponsored consortium comprised of 24 robot manufacturers and 10 insurance companies was set up to buy robots and lease them to Japanese manufacturing companies on a trial basis. This was a major boon because plant managers no longer bore all of the risk of introducing an untried and relatively expensive technology.

By contrast, the U.S. automobile industry, the largest potential market for fledgling robot companies in the mid-1960s, faced no such problems. Fear of labor union opposition, rather than potential manpower shortages, was the auto makers' dominant concern. General Motors, Ford and Chrysler were then in the position of having almost no serious competition that might have whetted their interest in radical productivity gains.

The major asset of U.S. robot companies in the new competitive situation is quintessentially American: superior technology.

While Japan has excelled at the mechanical engineering required for mass production of high-quality robot arms, gears and sensors, U.S. companies maintain that they are ahead in the increasingly important field of producing software programs that "teach" robots to perform tasks.

Automatix, a three-year-old company located in Billerica, Mass., amid one of the nation's fastest growing high-tech clusters a few miles from Rte. 128, is an example of a company gambling on technology to beat back the Japanese challenge.

Tucked away in the Massachusetts woods, Automatix exudes the hustle and bustle typical of small "start-up" companies founded by entrepreneurs eager to ride the expected boom in lasers, microwave communications, microelectronics, home computers, robotics and other Information Age industries.

In a workshop where gangly robot arms hang limply, half a dozen young men stare intently into a tangle of wires protruding from the open back of a computer. A guide explains that the men are "smart guys from MIT" who might be up all night trying to improve a program that guides the path of a robot arm along the line where two pieces of metal come together to be welded.

In a nearby room, a visitor is invited to try his skill at "teaching" a robot. Using a hand-held controller to make the robot arm move up, down, sideways and forward, the visitor moves the device into position while a computer records the trajectory to within eight-thousandths of an inch and memorizes it for future use.

Automatix started with excellent credentials and technical assets.

Its chairman, Philip Villers, had proved his entrepreneurial abilities as cofounder of Computervision, an aggressive computer graphics firm that had experience in Japan in the 1970s. Vice President Victor Scheinman helped design the "Stanford Arm" while working at the Stanford Artificial Intelligence Laboratory.

And Automatix had acquired a valuable piece of software from the Stanford Research Institute: algorithms used to give robots a primitive sense of sight, a step toward more versatile machines.

Automatix' major problem at the outset was lack of a robot for arc

See TECHNOLOGY, A19, Col. 1

INDUSTRIAL ROBOTS

	JAPAN	U.S.
PRODUCTION IN UNITS	3,200	1,269
PRODUCTION IN VALUE (IN MILLIONS OF DOLLARS)	180	100
INSTALLED OPERATING UNITS	11,250	4,370

SOURCE: PAUL ARON, "ROBOTS REVISITED: ONE YEAR LATER"

Battling to Innovate and Emulate: Intel vs. Nippon Electric

By Dan Morgan
Washington Post Staff Writer

Peering into a microscope at a greatly magnified computer chip one day last August, Peter Stoll of Intel Corp. saw something startlingly familiar. In one of the tiny cells, two transistors were disconnected from the rest of the chip, and dangled uselessly in their bed of silicon.

Stoll, 33, a chip designer, recognized the defect as a small, last-minute repair job he had performed on Intel's 8086 microprocessor several years earlier. It had worked, correcting the minor flaw in the chip's logic, and the 8086 went on to become phenomenally successful as the "brain" in a wide range of business computers, robots and industrial machinery.

But what startled Stoll was that the chip under the microscope was not Intel's. It was a product of Nippon Electric Co. (NEC) of Tokyo. Stoll concluded that he was looking at a Japanese copy so perfect that it even repeated the small imperfection in the original chip.

Intrigue of that kind in the $13 billion-a-year global market for computer chips has led to U.S. accusations of unfair

HIGH TECH: LEAVING HOME

PART TWO

Japanese practices, ranging from copying to protectionism. Critics of Japan say that its efforts to gain supremacy in computer chips, perhaps the single most important technology of the Information Age, are typical of the methods employed by "Japan Inc."

"We're at war, no doubt about it," said a computer scientist from a large U.S. research laboratory. "If I had money in 'Silicon Valley,' I'd get it out . . . . It's just like any other war zone."

U.S. politicians are in a mood to strike back.

Democratic Reps. Don Edwards and Norman Y. Mineta, from California's so-called Silicon Valley area, have introduced a bill to give copyright protection to chip designs. They say the measure is needed to stop "pirate firms" from "flooding markets with copied designs that undersell the innovating firms."

But some trade specialists caution that there is a Japanese side to this story. For one thing, U.S. companies are holding their own in the competition.

Japan, whose share of the U.S. chip market is well under

See TECHNOLOGY, A10, Col. 1

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The Battle to Innovate and Emulate

TECHNOLOGY, From A1

10 percent, has made inroads in some kinds of chips, such as memories, that store information. But the United States is dominant in microprocessors, the "computers on a chip" that serve as brains for computers and controls in dishwashers, jet aircraft, missiles, industrial robots, telephone systems, traffic lights and hundreds of other products.

Many experts insist that Japan's progress is not attributable to copying.

"The basis for the Japanese taking an ever larger share of the [chip] market is not transfer of American technology," said a patent attorney for a large U.S. company. "It's Japanese management, equipment and a degree of cooperation between firms that's prohibited in this country."

Even the issues in the Intel-Nippon Electric dispute about alleged copying of the 8086 microprocessor become fuzzier on closer inspection. Intel contended that NEC wrongfully copied the chip's microcode, the set of internal instructions laid out as a pattern of transistors on the chip's memory. Intel counsel Roger Borovoy said the microcode was copyrighted and could not be used without Intel's permission.

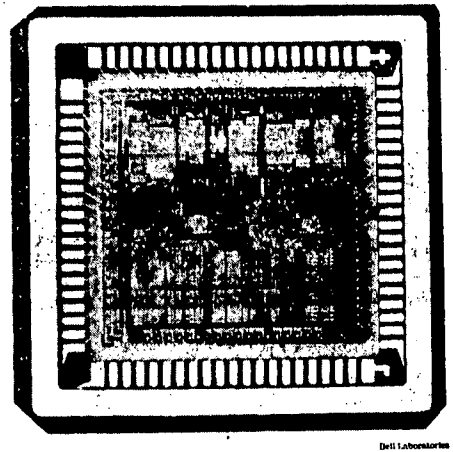
Officials from NEC's U.S. sales company acknowledge that the microcode on their chip is identical to that on Intel's, including the flaw engraved onto the original.

"If you're not 100 percent identical, you're dead. If you take the fatal flaw out, it wouldn't be compatible. We have chosen to be as close to the original as possible," said NEC's David Millet, who is in charge of nationwide marketing of microprocessors.

But NEC officials in Japan and the United States deny that the company did anything wrong, contending that they had a right to produce their own version of the chip under a 1976 agreement allowing both companies to use the other's patents.

NEC officials in this country say the question of whether the microcode can be copyrighted has never been decided in court, and Intel agrees. And they say that NEC even sent Intel a 1979 announcement of NEC's version of the 8086.

The story of the NEC-Intel dispute is representative of the suspicion, tension and, often, grudging admiration that characterize the competition between the two countries. It begins with the markedly different cultures and societies from which the two have emerged.



Bell Laboratories

This microprocessor chip, smaller than a dime, is able to perform as much work as a room-sized computer of the 1960s.

The Roots of Competition

Compared with the 84-year-old NEC, Intel is an upstart company, an example of American boldness and nerve that began with a few dozen employes in Santa Clara, Calif., in 1968 and grew into a business with 19,000 employes worldwide.

Intel's stock in trade has been innovation. Since it was founded, the company has spewed out firsts, including the first microprocessor in 1973. A founder, Robert Noyce, is one of the inventors of the integrated circuit, which became a basic component of modern electronics.

Intel is also a sort of corporate melting pot that, like the nation itself, has drawn its brain power from all over the world. Its current president came to America as a refugee from Hungary in 1957; a senior vice president was born in Hungary, and an Israeli, an Italian and a Japanese are credited with helping to develop several new Intel products.

NEC has succeeded in typical Japanese fashion: through dogged determination, aggressive marketing and initial reliance on U.S. technology, including that of Intel.

Robert Noyce, top left, and Tomihiro Matsumara, above, differ over the fairness of trade practices. In NEC's Kyushu plant, left, and Intel's Santa Clara lab, top right, silicon wafers undergo similar inspections.

From the outset, NEC had financial and structural advantages over Intel. While Intel makes more than 80 percent of its income from the sale of chips, NEC is a conglomerate that produces computers, electrical equipment and other products. Chips account for less than 20 percent of its revenue, so a temporary decline in that business can be offset by gains in other products.

As a member of the influential Sumitomo industrial group, NEC could draw on the financial resources of the Sumitomo Bank and on the marketing connections of the Sumitomo trading company. But Intel has depended for its financing on the vagaries of the U.S. stock market and bank loans. For most of the last 10 years, Intel has had to borrow money at much higher interest rates than NEC.

Until the early 1970s, NEC was no match for American chip makers. The U.S. computer chip industry was expanding rapidly, thanks in part to heavy government spending on chips for the Apollo man-on-the-moon space program and the Minuteman intercontinental ballistic missile.

In 1973, computer scientists in Intel's laboratory scored a major breakthrough with invention of the first microprocessor. This was a watershed not only for Intel, but also in the history of the information industry.

Until then, chips generally had performed only a single task, such as adding, subtracting, multiplying or dividing. Combining those tasks required wiring together several chips on a bulky board. But a single microprocessor chip could perform all those functions. This meant, for example, that one computing chip could run a pocket calculator, shut off a microwave oven, analyze blood or control traffic signals.

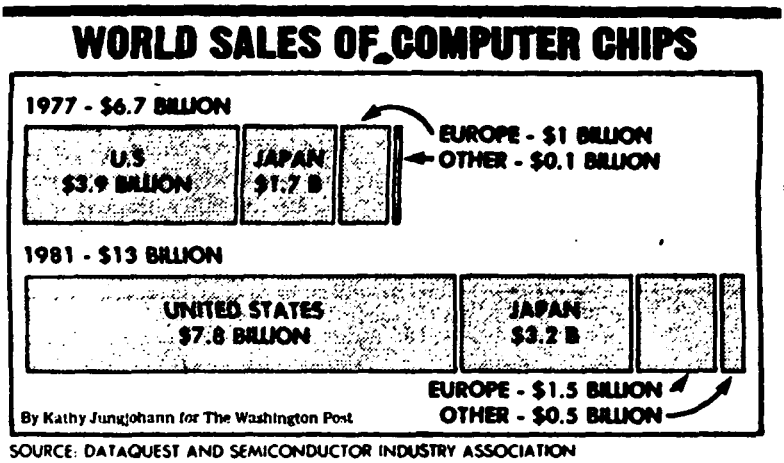
It was possible for general-purpose microprocessing chips to replace more expensive, customized ones previously needed by industry. As microprocessors became more sophisticated, they increasingly began to do jobs that previously had required large, cumbersome computers.

NEC claims to have developed an early microprocessor on its own at about the same time as Intel. This chip, the uCom 4, could handle simple tasks such as operating a pocket calculator. But Japanese officials acknowledge that they have had trouble keeping up with U.S. advances in microprocessors. To do so, Japanese companies have repeatedly relied on U.S. patents and "reverse engineering."

Industry representatives make a distinction between reverse engineering, a generally legitimate practice in which one company's designs are used as a model by another company's engineers, and copying, in which imprints of circuitry are taken by using photographic and lithographic techniques.

In the late 1970s, for example, NEC produced a version of Intel's 8080 microprocessor, the first chip complex enough to handle word-processing programs. A new generation of microprocessors was making possible the era of small, compact personal computers, and Intel was again in the lead.

Tomihiro Matsumara, NEC's senior vice president for research, acknowledged in an interview that NEC attempted to make and sell its own



comparable chip, "but we did not succeed." So, he said, NEC engineers analyzed the 8080, then laid out their own "completely different" version, using NEC manufacturing techniques.

Roger Borovoy, Intel's general counsel until he left the company last month, said Intel had no objection because NEC had used the 8080 only as a model and not "copied" it.

Japan, he acknowledged, was becoming an innovator in chips in its own right. Between 1974 and 1977, the government had poured at least $300 million into a research consortium that included NEC and five other companies. "They had come a long way with their own development. They'd attained a status of their own," Borovoy recalled.

Evidence of NEC's progress came in April, 1976, when Intel and NEC signed an agreement that enabled each company to use the other's patents. In the next several years, Intel was to utilize several NEC patents for specialized types of chips.

By the late 1970s, NEC, Hitachi, Fujitsu and Toshiba were grabbing significant shares of the world market in memory chips, devices that store information but do not perform the complex tasks of microprocessors. But these companies still had problems with the far more complex microprocessors.

In 1978, a year before NEC completed its version of the 8080, Intel introduced a much more advanced microprocessor, the 8086. It crammed 30,000 transistors onto a quarter-inch-square piece of silicon, producing as much computing power as some 1960s' computers that filled rooms. The 8086 could handle not only word processing but also complex mathematics, and it and comparable microprocessors are being used in most sophisticated personal and business computers, such as IBM's popular personal model.

NEC's representatives recognized that the 8086 gave the United States a decisive edge in silicon brain power. In 1978 they approached Intel about supplying technical aid to produce the 8086 in return for a percentage of the money NEC would get from selling the 8086 in Japan.

But this time, Intel turned NEC down. NEC, in the midst of a U.S. expansion program, was preparing to enter the international chip market in a big way. It had just purchased a California computer memory company called Electronic Arrays and was planning a second California facility for making memories and logic circuits.

"We weren't anxious to help our competitor," an Intel official said.

Instead, Intel made a deal with NEC's Japanese rival, Fujitsu. Thwarted, NEC decided to go ahead with a version of the 8086 without special help from Intel.

CHIPS: A GLOSSARY OF TERMS

- **Silicon:** the hard, gray, lightweight material from which chips are made. Wafers of silicon are "doped" with impurities in selected places to change electrical properties and affect the path of the current. Lithography is used to imprint tiny wires, or circuits, on a chip's silicon layers.
- **Transistor:** an electrical switch in a chip that can be turned on and off in a controlled way to store or process data.
- **Integrated circuit:** a combination of transistors. The latest generation contains as many as 100,000.
- **Memory:** a chip that stores information.
- **Microprocessor:** a chip that performs some of the same tasks as a computer; the "brain," or control, in hundreds of pieces of equipment, from car engines to computers.
- **Microcode:** a software program that is the permanent set of instructions on a microprocessor chip.
- **Bit:** A single "on" or "off" signal, a single piece of electronic code. It takes several bits together to represent one letter, punctuation mark or numeral.

NEC's Matsumara acknowledged that the resulting chip is "interchangeable" with the Intel version, but he strongly denies that it was "copied." Similarly, Robert Hinckley, an attorney for NEC in San Francisco, contends that NEC had a right to reverse-engineer the chip because of the patent cross-licensing agreement of April, 1976.

NEC officials said it was no secret that they would produce the 8086. Electronic News reported it and, NEC officials said, they sent a copy of their announcement to Intel and received no protests.

NEC, however, had several problems.

For one thing, the Japanese company apparently had difficulties reproducing a version of the Intel device without American help. It was not until 1980, two years after Intel's 8086 appeared, that NEC's comparable chip was sold in the United States.

There was also the problem of Intel's copyright on the chip's microcode, a sort of brain within a brain. It is the part of the microprocessor that takes electronic commands from a keyboard and tells the rest of the chip's parts what to do with the commands and in what sequence.

Like a video-game cartridge, the microcode is a computer program that has been written by a programmer and then is built into the chip. In a Pac Man videogame, the microcode tells the Pac Man what to do. In a microprocessor, the microcode tells a computer what to do. Although the microcode appears in the 8086 as hardware—a pattern of 10,752 tiny transistors—Intel maintains that it is not a mere piece of electrical circuitry but is "intellectual property" covered by copyright law.

Copyrighting the microcode had seemed to Borovoy a way to protect the company's intellectual effort from infringement. Borovoy said his "knees wouldn't shake" at bringing a lawsuit against a company that copied Intel's microcode.

But Hinckley, NEC's San Francisco attorney, said no cases have been adjudicated establishing any company's copyright claim on such material.

"Copyright is designed to protect works of authorship—artistic works—and we don't think microcode qualifies," he maintained.

Whatever the merits of their respective cases, NEC and Intel reached a settlement on the 8086 in March after several months of negotiations and without litigation. Borovoy, who said he could not discuss details of the settlement, said the agreement would save hundreds of thousands of dollars in court costs.

The Battle for Market Share

But the dispute over the 8086 is seen at Intel as only one chapter in what will undoubtedly be a continuing battle.

"The Japanese see themselves locked in a warlike struggle, determined singlemindedly to reach their objectives by any means, regardless of the impact on the U.S. . . . It's going to be a very, very bloody battle out there," Intel's Noyce said.

He argued that Japanese tactics have denied American companies the fruits of their innovation, profits that enable them to pour money into creating new technical breakthroughs needed to maintain the U.S. lead.

U.S. studies have accumulated a mass of evidence buttressing Noyce's contention that the Japanese government has shielded local chip companies from U.S. competition while they prepared for an onslaught on traditional U.S. markets. U.S. companies have never been able to capture more than 20 percent of the Japanese chip market even when their technological lead was overwhelming.

Before 1978, only Texas Instruments was permitted to establish a wholly owned manufacturing subsidiary in Japan, and even TI had to share some of its patents with Japanese companies to secure that concession.

Few deny that the Japanese challenge is serious. Japan is running a $250 million trade surplus with the United States in chips. And NEC and Hitachi ranked just behind Motorola and Texas Instruments as world leaders in sales last year.

A detailed study issued in February, 1982, by the congressional Joint Economic Committee warned that the main casualties of the relentless Japanese export drive could be small, innovative Silicon Valley companies. With them out of the running, it warned, Japan would be in a position to beat the United States at innovation.

Some industrial experts say the United States should keep its sense of perspective as it responds to Japan's challenge.

Robert B. Reich of the Kennedy School of Government at Harvard University said Japanese chip companies made headway after 1975 primarily because they plunged ahead while U.S. companies, hard hit by the recession, "stood still."

U.S. companies have recently regained some of their lost share of the world market in memory chips and still have an impressive lead in microprocessors. In typical U.S. fashion, Intel is on the verge of marketing an even more advanced microprocessor, the 80386, which the company claims will be far ahead of anything produced in Japan.

Intel has also announced that it will soon sell the first magnetic, bubble-type memory capable of storing 4 million bits of information, the equivalent of 240 typewritten pages.

"Despite trade barriers and protection and copying, we're still winning, although that's no guarantee for the future," said Bob Derby, who ran Intel's marketing operations in Japan.

That, free traders say, should be a warning to those in Congress who want to wield the big stick of government retaliation in the computer chip battles with Japan.

NEXT: Hitachi's coup in lasers

Contributing to this series were Tokyo bureau chief Tracy Dahlby, who conducted interviews in Japan, and Hobart Rowen, senior economics writer. Staff researcher Carin Pratt assisted with the reporting and research.

In Laser Advances, An Orient Express

By Dan Morgan
Washington Post Staff Writer

In 1970, a team of scientists at Bell Laboratories successfully tested a tiny laser the size of a grain of sand that made possible a new era of "optical" communications.

Although the device was primitive by today's standards, it was the predecessor of lasers that can be turned on and off tens of millions of times a second to transmit telephone conversations,

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PART THREE

messages and other information in the form of light waves pulsing through extremely pure glass fiber cable.

"It was the first time I ever saw champagne brought into Bell Laboratories," recalled Bell physicist Morton Panish, one of two scientists credited with the invention.

Now, 13 years later, the U.S. companies that make lasers have less to celebrate.

When Bell Telephone began looking around in 1980 for lasers to go with the first light-wave cable under the Atlantic Ocean, to be installed later in this decade, it turned to Hitachi of Japan.

"Hitachi appeared to have potentially the most reliable laser in the world," Jack Sipress, director of Bell's undersea systems laboratory, said. "We have had no reason to doubt the wisdom of that."

The story of how a Japanese company got a beat on the Bell System's manufacturing subsidiary, Western Electric, and on RCA, Exxon, Hewlett-Packard and Xerox—all of which had access to Bell's patents and were working on lasers in the 1970s—raises questions about U.S. industry's ability to take advantage of technologies being developed in its own back yard.

"The United States is an underdeveloped country when it comes to getting useful, proven technologies transferred to business and industry," said John A. Alic, who has specialized in studying U.S. industrial policy at Congress' Office of Technology Assessment.

The reasons for this vary from industry to industry. Computer-chip companies slowed product development in the mid-1970s due to sliding demand during recession, and some of the coun-

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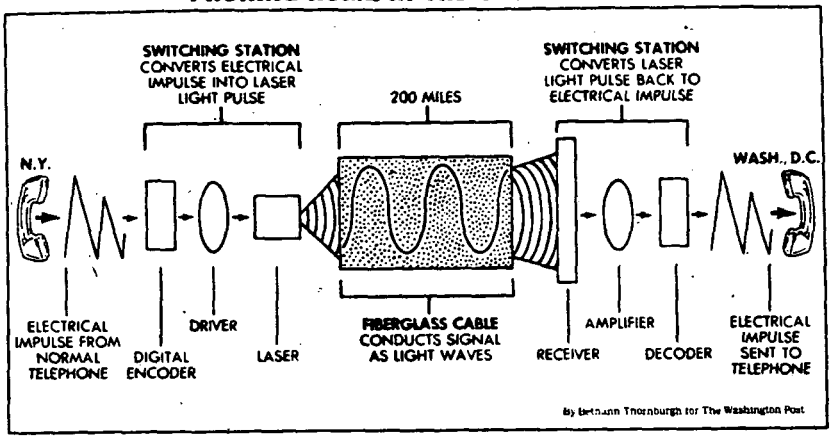
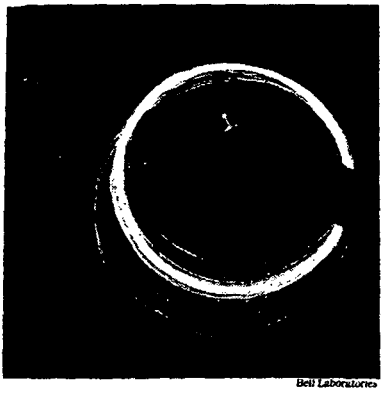
PHONING HOME IN THE OPTICAL ERA



By Bethann Thornburgh for The Washington Post



Bell Laboratories

Light travels through this coil of hair-thin, superpure glass fiber and shines at center. Laser bursts can be used to transmit telephone conversations on the fiber.



Bell Laboratories

Hand holds cable that carries voice, television and data light signals. Protected by steel wires, the cable contains 12 ribbons, each of which holds 12 fibers.

In Laser Advances, An Orient Express

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try's innovative genetic engineering companies are having trouble raising capital. But a more general problem appears to be the shortsightedness of large, established U.S. companies.

"The fact is the U.S. has tire marks all over its back when it comes to getting the products out," a Bell scientist said. "When you come right down to it, nobody sat down as early as [Hitachi] did and said, 'We're going to do this.' "

Japanese officials said there is nothing magical about their success.

"American industry has the frontier spirit, and big Japanese enterprises don't, so we think we should guide [Japanese firms] to develop the technology," said a representative of the Ministry of International Trade and Industry (MITI) in Tokyo.

In the early 1970s, MITI joined Japan's public phone company, Nippon Telephone and Telegraph, and several private companies to begin experimental research on fibers, lasers, video cameras and other optical devices. Most of the money was supplied by private industry, with an eye to winning at least half of a worldwide market in optical communications equipment projected at $8 billion by 1990.

The effort was aided by Japanese scientists strategically placed in U.S. research laboratories where work on lasers and optical fibers was proceeding, and by U.S. patents and processes for which Japan has paid little.

The economic stakes in the optical communications race are staggering in size, although other high-technology communications systems such as microwave and satellite also hold promise.

But microwave use congests air-wave frequencies and telephone communications by satellite can suffer from distortion because of the distances involved.

These restrictions do not apply to optical communications. Thus, the world is on the verge of a major change that will continue well past the year 2000 as optical systems carry increasingly larger amounts of information over smaller, cheaper lines than the current electromechanical systems. The first such line has just been installed between Washington and New York.

A half-inch-thick glass fiber cable can carry 46,368 simultaneous conversations, the same amount as a four-inch copper coaxial cable. Installation of optical cables should be considerably easier in overcrowded urban systems.

In addition to long-distance communications, lasers and optical recorders capable of storing tens of millions of bits of information will become standard in offices, computers, video-disc equipment and broadcasting.

Bell Labs, Soviet Institute Pioneer Lasers

Optical communications also will be useful to the military services because there are no effective methods of intercepting signals transmitted as light waves.

In a light-wave system, a voice is converted into an electrical impulse, as it is in a standard telephone system. This signal is scanned by a digital encoder at a central office and converted into a stream of "ons" and "offs."

The laser light source is then activated and transmits "ons" as a pulse of light and "offs" as the absence of one. Booster stations amplify the light signal every few miles.

Undisputed pioneers in developing laser-light sources for such systems were Bell Laboratories and the Ioffe Institute in Leningrad. But until 1970, researchers were plagued by several problems.

In one, lasers became overheated as beam-generating current passed through them and could only function continuously in super-cold liquid nitrogen, which made them unsuitable for commercial telephone systems. In another, the intense light could not be confined and tended to leak.

Bell's solution brought together the worlds of telecommunications and microelectronics. It involved using gallium aluminum arsenide to make a laser similar to a computer chip. This laser required very little power and could run at room temperature without overheating.

Details of the experiment were published in mid-1970 in the Applied Physics Letter of the American Physical Society. Bell officials recalled that the article, by Bell tradition, revealed somewhat more than other companies tend to publish about their technical achievements.

Because of its position as research arm of American Telephone & Telegraph (AT&T), a government-approved monopoly, Bell in 1956 signed a consent decree agreeing to make its patents available to other companies. Partly because of that agreement, openness became something of a tradition at Bell Laboratories.

The publication, which appeared at almost the same time that Soviet physicist Zhores Alferov of the Ioffe Institute was publishing his results, triggered widespread interest in the future of lasers as a communications medium. It also tied in with efforts under way at Bell and Corning Glass Works to develop a process for making glass fibers to carry the laser light signals.

"Once we and the Soviets had published, everybody filed in to do research," inventor Morton Panish recalled.

In retrospect, however, representatives of Bell and other companies acknowledged that the record of American companies in following up on this breakthrough was less than scintillating.

One U.S. company that saw early commercial promise in the new technology was Hewlett-Packard. In the mid-1970s it hired several people from Bell Laboratory's laser division and put them to work with a laboratory staff at Palo Alto, Calif.

One of them, C.J. Hwang, has mixed memories of the Hewlett-Packard work. The company, he said, "developed a whole laser program from scratch. But when the time came to go into production, they went back and forth and finally decided not to make the product because they couldn't generate positive cash flow within a year."

Hwang left soon after that to start his own company, General Optronics, which sells lasers to International Telephone & Telegraph (ITT), General Telephone & Electronics Corp. (GTE), Siemens in West Germany and SAT in France. General Optronics lasers are being used in France's Biarritz project, which involves use of fiber-optics communications to transmit television, telephone and picture-phone services to 1,500 houses.

Hewlett-Packard spokesman Robert Bouzon said holding off production was a "market decision." At the time, he said, it did not appear that there would be a profitable market for the lasers until 1985 to 1987.

"Why produce a product without a market? If you can get the state-of-the-art product from Japan, you get it," he said. Hewlett-Packard, he said, is continuing research on laser products.

To some, Hewlett-Packard's hesitation is reminiscent of developments in the U.S. consumer electronics industry in the 1960s and 1970s. An analysis of that period by William J. Abernathy and Richard S. Rosenbloom of the Harvard University Business School concluded that U.S. and Japanese managements took a very different approach to marketing, which had much to do with the final, disappointing outcome for the United States.

"American managers tend to rely on market research and 'objective' analysis to identify latent market opportunities, whereas [Japanese] firms like Sony took risks on novel products and set out to develop the market," they wrote.

In 1977, Exxon attempted an ill-fated foray into the laser world.

Through its venture capital arm, Exxon Enterprises, it bought a small Elmsford, N.Y., firm called Optical Information Systems (OIS) and began attracting a wide range of talent. Physicists were hired from Bell and RCA, and even a Soviet emigre physicist joined the project.

But within 24 months, Exxon was trying to sell the company, and many of the top scientists drawn to it were drifting away.

Exxon Enterprises spokesman Darcie Bundy said that although OIS was promising Exxon Enterprises was "sharpening its focus on certain other major companies, and OIS did not have the degree of necessary interdependency" with those companies.

Bundy did not say, however, why reaching that conclusion took Exxon almost two years, during which a substantial research effort had been launched.

Critics of Exxon's role have said privately that such in-and-out plunges by industrial giants is a waste of resources that hardly strengthens American economic competitiveness.

In December, 1981, Exxon finally found a buyer for its unwanted acquisition: the U.S. subsidiary of Japan's Mitsubishi Chemical Corp., which took a very different view of OIS's potential.

According to James M. Campanozzi, the reconstituted OIS's vice president for marketing, the Japanese company believes that lasers will have widely varied applications in office information systems, recording and broadcasting, as well as communications.

While Exxon had stressed research, he said, Mitsubishi "takes a more commercial view. We want to move into the systems area . . . into product lines for video, voice and data communication."

At RCA, early work on lasers focused on military rather than commercial applications. RCA's scientists were busy developing lasers that could pick out military targets and function as fuses in missiles.

Such work has given RCA a potential niche in President Reagan's planned new "Star Wars" system of electronic and laser anti-ballistic missile shields.

This emphasis is defended by Michael Ettenberg, head of RCA's optoelectronic devices and systems. "Military contracts kept us alive," he said. "There was not a significant commercial market for 15 years, and most business until the last couple of years was military in nature."

Asked why the Japanese had not been hindered by the same lack of a commercial market, Ettenberg put part of the blame on the U.S. recession in the late 1970s, and added: "The U.S. doesn't invest in the future as much as the Japanese."

RCA's history at least raises questions about the heavy military emphasis in much U.S. research and development. Robert Reich of Harvard University's Kennedy School of Government acknowledges that the Pentagon has stimulated research activities but "not always in the direction of commercial success."

U.S. experts also acknowledge that U.S. companies had reason to be skittish. For one thing, producing lasers proved to be extremely complex and costly. Even today, one of the tiny light sources costs $2,000 or more.

Also, rapid advances in processes for producing pure glass fiber cables to transmit the laser light kept changing requirements for the lasers late in the 1970s. While lasers producing light-wave lengths of 0.8 microns were in favor in the early stages of fiber-optical cable development, wave lengths of 1.3 microns appeared to work better with the purer fibers developed in the late 1970s. A micron is 1 millionth of a meter in length.

Yet those obstacles did not keep Hitachi, again with help from Japanese scientists who had worked at Bell, from having a 1.3-micron laser ready by 1980.

Within a year after the initial Bell paper was published, according to Bell physicist Panish, "the Japanese were reproducing our results and in several years were doing their own research."

One asset was the network of Japanese scientists with first-hand experience in the U.S. research effort. Izuo Hayashi, who heads a government-industry effort in optical communications in Japan, was working at Bell when the first successful laser was assembled in 1970 and is credited, along with Panish, as one of its co-inventors.

One of Hayashi's mentors in Japan was another Bell alumnus, Michiyuki Uenohara, now a managing director of Nippon Electric. The roster of light-wave specialists at Japanese companies is studded with scientists who studied or worked at U.S. research facilities.

However, a Hitachi official, who asked not to be identified, credited the company's success primarily to the "free flow of information" among the 2,000 engineers at the firm's research laboratory on the outskirts of Tokyo.

"Anyone who wants to consult colleagues or form a discussion group on a new idea can immediately pinpoint people and exchange information. This contrasts with the United States where engineers tend to feel technologies they've developed are their own personal property and are likely to keep [blueprints] locked away . . . ." he said.

Hitachi Gets Credit for Laser Initiative

"At Hitachi, these things are not the assets of each individual or each team but of the whole company . . . . The researchers who were working on this [communications laser] field felt keenly that the product was something that had to be developed," he said.

Laser experts give Hitachi full credit for initiative.

"The Japanese have taken the open technology from the United States and have done a rapid, government-funded development to the point where they are in production and we are having a hell of a time keeping up," said Kenneth Nill, vice president of Lasertron, a small Massachusetts laser company founded in 1981 by three scientists from Lincoln Laboratories. "They are fine-tuning, producing faster and more reliable stuff."

In the United States "there is always a missing connection between the laboratory and production," General Optronics President Hwang said. "It's basically an organizational problem, not that we can't compete with the Japanese."

Bell officials respond that the United States is still far fro' being out of the laser race. Western Electric produces the 0.8-micron lasers used in the first light-wave telephone link between Washington and New York City and it is gearing up to turn out 1.3-micron devices at a plant in Reading, Pa.

Several weeks ago, Bell also announced the successful test of a "secret weapon" in the communications laser battle. Called a "cleved coupled cavity (C-cubed) laser," it has transmitted 420 million bits of information over an 80-mile-long fiber-optic line without error.

"It's an extremely significant development," Bell patent attorney George Indig said. "We may have made the breakthrough. It appears to be the most practical way to transmit light waves error-free."

The "C-cubed" machine is a pair of tiny lasers that operate in tandem on a chip to emit a light wave on a single frequency. The advantage of the single frequency is that receivers do not have to unscramble various light-wave signals emitted by different parts of the light spectrum, as they do in the case of light from other existing lasers.

"We're very excited," Indig said.

However, Bell officials note that the development essentially is a conceptual one that others can follow. The manufacturing technology is not radically different from the one in which Hitachi now seems to lead.

"It doesn't mean that the Japanese won't exploit this idea and turn out these lasers before we do," Indig said.

NEXT: Secrets and the aircraft industry

Staff writers Tracy Dahlby in Tokyo and Hobart Rowen in Washington conducted interviews for this series. Staff researcher Carin Pratt contributed to the report.

The Glass Makers' Standoff

Turning glass into gold is a trick that Corning Glass Works has been performing for 131 years, but now there is another group of corporate alchemists on the block by the name of Furukawa, Sumitomo and Fujikura.

Those three companies are determined to gain a major share of the biggest new glass market since the invention of the light bulb: superpure Fiberglas communications cable, annual sales of which are projected to reach billions of dollars by 1990.

This has given rise to a battle of tactics pitting Corning against its Japanese rivals. Technology is at the root of the conflict.

Although Corning developed the first process for making the ultrapure glass fiber needed to transmit laser light waves, it has been thwarted in efforts to sell the fiber to Japan. At the same time, Corning has refused to license them to use Corning's patents to make fiber for sale here and has made known that any company selling fiber in this country must obtain a license or face a patent infringement suit.

The Corning process, called chemical vapor deposition (CVD), was invented in 1970. Heated gases were put into a chemical reaction with a revolving cylinder of quartz. This produced sooty deposits that were heated and drawn out from an extruder like strands of warm taffy. The hair-thin strands of glass then were coated, cooled and wound on reels.

In 1974, Bell Laboratories announced a modified version of the Corning process. "There's no question that Bell publishing the details helped everybody all over the world," a Corning executive was to say later. While Corning was carefully guarding its invention, Bell licensed its patents widely.

This appears to have undercut Corning's efforts to preserve its technical lead. Furukawa and Fujikura, which are among the companies that have broad patent licenses from Bell, soon began using the Bell process. Bell officials estimate that half of the fiber being produced in Japan is made with it.

Meanwhile, Corning's efforts to sell its own glass fiber in Japan were thwarted.

When Corning attempted in the mid-1970s to sell its fiber to Nippon Telephone and Telegraph, Japan's public phone company, NTT advised Corning that it purchased communications equipment only from Japanese firms. NTT also refused to buy from a Japanese-American joint venture proposed by Corning.

Finally, in December, 1977, Corning licensed Furukawa to use its patents but only to make fiber for sale in Japan.

By this time, however, Sumitomo was ready with a process of its own. This development, industry sources said, was aimed at "getting Japan out from under the Corning patents."

Sumitomo was subsequently granted a U.S. patent for its invention, and Corning patent specialists acknowledged that it uses different manufacturing procedures than does Corning. However, Corning officials maintained that the Sumitomo process relies on know-how developed by Corning in the 1970s in that it also uses the same materials and lays down a sooty deposit on the outside of a quartz rod.

Corning recently filed suit against Canada Wire and Cable, which bought fiber from Sumitomo, claiming that the imported fiber infringed on Corning's patents.

Japanese companies are also fighting Corning at home.

Corning's license agreements in Japan call for Japanese companies that use the invention to pay royalties to Corning. But one Corning official said, "I'm not aware of any royalties being paid." Although one Japanese patent has been issued to Corning, Japanese companies are challenging Corning's applications for several other patents.

Bell has had problems, too. Seven Japanese companies, including Furukawa and Fujikura, are opposing Bell's 8-year-old application for a Japanese patent.

In 1981, American Telephone & Telegraph was jolted when four of seven bids to install optical-transmission systems between New York City and Cambridge, Mass., came from Japanese companies. The low bidder was Fujitsu, but it was rejected in favor of Western Electric, the manufacturing arm of the Bell System and an AT&T subsidiary.

Corning executives plainly are in a mood to fight for what they view as their rightful share of a potentially huge worldwide market.

"The Japanese will target and protect until they no longer need to," Corning chairman James R. Houghton said. "Once they've driven out the competitors, they raise prices like everybody else. But we're fighting them on the patents. We're going to go down the cost curve with them and come out on top."

—Dan Morgan

Is It Sharing Know-How or Selling the Store?

By Dan Morgan
Washington Post Staff Writer

Some of the U.S. aircraft industry's most precious technologies are processes for using a new generation of strong, lightweight plastics to replace metal in airplane bodies.

But in 1980, the Defense Department turned aside Air Force concerns and decided to let Mitsubishi Heavy Industries learn some of the secrets for using materials in the speed brakes of F15 fighter-bombers being built by Mitsubishi in Japan.

The Navy and Air Force also have argued that computer software for the AIM9L Sidewinder missile carried by the F15 is too sensitive to share even with allies, because of the impact on U.S. security if Soviet spies obtained it.

But Defense authorized Raytheon to transfer AIM9L production data to Mitsubishi and a German-led consortium in Europe.

In the mid-1970s, NASA spent tens of millions of dollars developing the Quiet Short Haul Research Aircraft, an experimental plane that

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cycled its jet exhaust back across its wings for extra lift.

According to the White House Office of Science and Technology Policy, Japanese companies acquired NASA's public papers on the plane, including a Boeing report that was to be restricted to U.S. agencies. They used the the papers to produce their own experimental, short-take-off plane.

Those incidents, all of which have enhanced the technical capability of an already expanding Japanese aircraft industry, are at the heart of a spreading controversy in Washington about whether the United States has given away information vital to its security and commercial competitiveness.

Under fire are liberal policies on sharing technology during the Carter administration, which justified them by citing a need to help Japan attain its defense commitments.

In a study published in March, 1982, the General Accounting Office said that the Carter administration's agreement of June 20, 1978, to allow Japan to build 100 U.S.-designed

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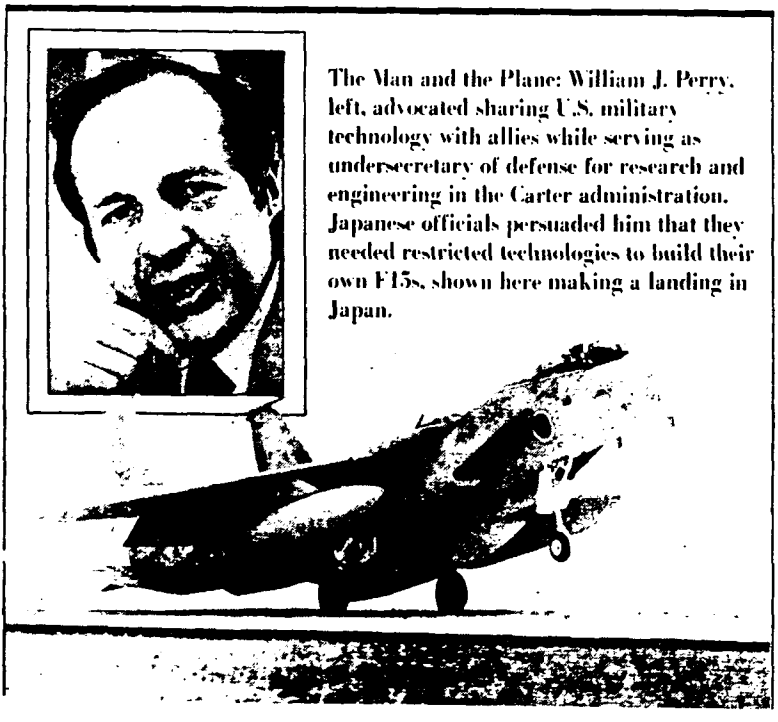

The Man and the Plane: William J. Perry, left, advocated sharing U.S. military technology with allies while serving as undersecretary of defense for research and engineering in the Carter administration. Japanese officials persuaded him that they needed restricted technologies to build their own F15s, shown here making a landing in Japan.

U.S. Debates Wisdom of Sharing Military Know-How

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F15s for its Air Self Defense Force "supported Japan's strategy to develop a world-class aircraft industry."

A preliminary draft of a report by the president's Cabinet Council on Commerce and Trade contended that "[military] co-production has had an adverse commercial effect for the United States in a number of cases."

One U.S. official put it far more bluntly:

"We've been using the crown jewels of technology to get a country, Japan, to defend itself even though that should be in its interest, and in the process we've undermined our own industrial base and taken work away from our own defense contractors. We've taken the view that turning the spigot of technology on to accommodate our allies was a price worth paying. It's been a dangerous and irrational policy."

Generosity Begets Competition

Japanese government officials and businessmen readily acknowledge using U.S. military co-production deals to help thrust Japan into the big leagues of the global commercial-aircraft industry, which has "significant technical influence on other industries," as one Japanese government report noted.

In the F15 case, the Air Self Defense Force is paying civilian defense contractors $1.8 billion more to acquire manufacturing processes and components needed to build 100 of the planes than it would have cost the Japanese military to buy them "off the shelf" in the United States.

Conflicting pressures and views inside and outside the U.S. government are propelled by concerns beyond the monetary costs of a weapons system.

Diverse interests in the F15 case include the foreign policy and strategic goals of the State and Defense departments, defense contractors' desires to sell aircraft in Japan, the armed services' fears that critical technology could leak to the Soviet Union, Commerce Department fears about strengthening foreign commercial competitors and the U.S. special trade representative's doubts that this country is receiving enough technology in return.

"It gets very tricky," said Roger Winblade, manager of NASA's subsonic aircraft office. "Other countries have extensive research activities. If we were to be too heavy-handed in limiting what others could have, we could hurt ourselves. Technology is so international today that trying to compartmentalize it is very difficult. It's a very delicate balance."

In a sense, the conflicts inherent in controlling the flow of U.S. technology abroad are built into the confusing maze of scattered and often seemingly contradictory regulations and laws.

NASA's charter, for example, requires the agency "to provide for the widest practicable and appropriate dissemination of information concerning its activities," including large amounts of aerospace research and development useful to other countries.

The Commerce Department's National Technical Information Service annually distributes about 80,000 papers containing results of federally financed research. The service is available to foreign countries, including those in eastern Europe, and was available to the Soviet Union until February, 1980, when President Carter canceled the subscription in retaliation for the invasion of Afghanistan.

Commerce maintains a lengthy "commodity control list," composed of sensitive products and processes that could be used for either military or civilian purposes.

Under the law, companies exporting these products to some non-communist nations need a validated license in which they stipulate that equipment or production data will not be diverted to the Soviet Union.

The requirement excludes goods shipped to Canada, which has at least 13 communist-owned but Canadian-chartered companies, some of which may be acquiring U.S. defense-related technology, according to a report of the White House science adviser.

U.S. Lists 'Critical' Technologies

The Export Administration Act of 1978 tried to clarify this issue by requiring the executive branch to draft a list of "militarily critical" technologies. This exercise has proved far more complex than was foreseen, because it affects hundreds of companies.

The Pentagon's first attempt to draw up such a list in 1980 became a 700-page document that was highly classified on grounds that the list could provide a mountain of useful information to the Soviets. A National Academy of Science panel said it needed "drastic streamlining."

However, one of the most glaring technology "leaks" is acknowledged by Reagan administration officials to be the Pentagon's previous desire to provide large amounts of technology to allies as an inducement to purchase U.S. weapons.

In return for buying a U.S. weapons system, foreign countries have been authorized by the Pentagon to build part of the system. That often involved acquiring from U.S. defense contractors the technical knowledge to produce very sophisticated equipment, including missiles and aircraft.

In 1975, the Ford administration signed an agreement with Great Britain waiving traditional "buy-national" requirements. Under the Carter program, such agreements were signed with other NATO allies to create "rationalization, standardization and interoperability" (RSI) of NATO equipment.

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On June 29, 1978, Jean A. Caffiaux of the Electronic Industries Association warned a House Armed Services subcommittee that military co-production understandings being "secretly negotiated" by the Pentagon "may have the effect of committing U.S. industry to deals that are unwise, unfair and could require the surrender of technology to foreign competitors without adequate compensation or safeguards."

Former associates describe William J. Perry, then undersecretary of Defense for research and engineering, as a fervent advocate of sharing technology to promote the "interoperability" of allied military equipment. On Nov. 10, 1978, for example, he wrote a memo complaining that the program lacked "full effectiveness" because of the "inability of [foreign] countries to gain access to . . . technical data relating to acquisition programs."

On March 5, 1980, a Defense Department directive advised that Pentagon agencies "shall encourage the transfer of technology" to allies and should "foster an early mutual exchange of technological and other information with NATO allies to promote the development and adoption of standardized or inter-operable weapons systems."

"The Defense Department was put in a position of fearing to defend critical technology," a Pentagon source said.

One side effect of these Carter administration policies toward NATO was to encourage an aggressive Japanese push for some of the same access that Europeans were getting.

Perry, now with the San Francisco venture capital investment company of Hambrecht & Quist, declined to be interviewed for this series. The Pentagon has denied, on national security grounds, repeated requests by The Washington Post over a four-month period to examine the Japan-U.S. F15 agreement, the report of the Military Information Disclosure Policy Committee that evaluated Japan's ability to keep top technology secrets, or any other documents connected with the deal.

Privately, however, The Post was told that a major reason for the denial was concern that such information could embarrass the Japanese government, which is facing domestic criticism for its planned arms buildup.

F15 Program Caused Tension

From the beginning, the F15 program aroused sensitivities on both sides of the Pacific.

Soon after the June, 1978, "memorandum of understanding," Air Force specialists at the Pentagon and Wright-Patterson Field in Dayton, Ohio, drew up an extremely detailed list of technologies considered too sensitive to be transferred to Japan because of the danger to U.S. security if they fell into Soviet hands.

Nicknamed the "negative list," it was obtained somehow by officials at Japan's Ministry of Defense, according to V Garber, who worked for Perry as director of international programs.

Garber said the list apparently was passed to the Japanese by someone at the Defense Security Assistance Agency. In any case, he said, when he and Perry traveled to Japan in late 1978 they were greeted with "indignant demands" that restricted F15 technologies be released. Japanese officials argued forcefully that without these technologies it would be difficult for them to make repairs, Garber said.

Garber, now at NATO headquarters in Brussels, said in a telephone interview that it was "most unfortunate" that the Japanese obtained the detailed list. But once they acquired it, it was deemed necessary to soothe ruffled feelings.

"I told the Air Force what the Japanese demands were and asked them to review the list now that we had a more unhappy situation vis a vis Japan," he said.

Garber denies that "Perry or I overrode the Air Force," but Air Force sources remember this as a time of extreme pressure from Perry, Garber and the Japanese.

"The RSI banner was waving, and the bugles were blowing," one Air Force officer said later.

Firms Cleared for Licensing

Air Force sources are also critical of the failure by Perry and Garber to establish a ceiling on what amount of the plane could be built by Japanese companies, thus departing from procedure followed in the European F16 co-production program. According to McDonnell Douglas, work done in Japan accounts for more than half of the value of the Japanese F15s.

The absence of a ceiling cleared the way for a massive flow of military technology to Japan.

Virtually every big name in U.S. defense contracting was cleared after 1977 to license designs and manufacturing processes to Japanese companies in connection with military co-production. They included United Technologies, Honeywell, TRW, Rockwell, Texas Instruments, Goodyear Aerospace, Litton, Teledyne, General Electric, Itek, Motorola, Raytheon and Sperry.

Although the Air Force prevailed in opposing release of such highly sensitive technologies as design criteria for the gyroaccelerometer in the inertial navigation system—adaptable, the Air Force said, to ballistic missiles—it failed in trying to keep some of McDonnell Douglas's composite materials know-how out of the hands of Mitsubishi, the F15 program's prime contractor.

"Composite materials," a family of strong plastics that includes Fiberglas, kevlar and carbon-graphite fibers, have begun to revolutionize the aircraft industry.

Although aircraft designers still are learning how to exploit these materials, they soon are expected to extend the range of planes and missiles, add thousands of hours to the flying life of jet fighter-bombers, make possible exotic new airplane and helicopter designs, save fuel and resist radar detection.

Although only about 3 percent of the weight of Boeing's new jetliners is made of composites, the company estimates that this could rise to a "minimum" of 65 percent by the year 2000.

Japanese companies are considered the leading producers of these materials, but U.S. aircraft companies are ahead in the critical technology: knowledge of the properties, bonding techniques and applications.

"The materials are common to the industry," a Boeing executive said. "It's how you use them that makes the difference."

According to military sources, the Japanese military was adamant about obtaining McDonnell Douglas' designs and procedures for building the F15 speed brake out of carbon composites. The Air Force, citing the company's "highly perishable" lead, was opposed. So strong was the Air Force's opposition that it was not until early 1981, more than two years after the F15 deal was approved, that the government finally authorized release of the technology.

TRADING AIRCRAFT TECHNOLOGY



MITSUBISHI'S
DIAMOND ONE

THE F15

Japanese companies are learning to use a new generation of composite materials as part of the F15 coproduction program. Earlier military programs with the United States gave Mitsubishi some of the expertise to produce commercial jets such as the Diamond One (inset).

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Japanese executives acknowledge that this technology has been valuable to Japan's commercial aircraft industry. In an interview with The Wall Street Journal published last Nov. 26, Mitsubishi Heavy's chief engineer, Akira Ikeda, said his company's F15 work was teaching it "many things" about composites useful in future airliners.

Ikeda also noted that wing-bolting techniques and rubber fuel tanks on his company's Diamond One business jet, now being sold in the United States, were developed as a result of previous military co-production projects.

Security Raised Concerns

The Air Force's concern about the security implications of the F15 deal increased in late 1978, when Koku Journal, a Japanese aviation magazine, published a 200-page special edition on the F15 that included dozens of color photographs, charts and diagrams. The publication sparked a brief investigation by the Air Force's Office of Special Investigations, which concluded that the information had come from "technical orders" furnished by McDonnell Douglas and the Commerce Department.

The difficulty of separating military and civilian programs is evident at Japan's main aircraft works in Nagoya, where civilian and military programs proceed side by side. A Nagoya-based aircraft consortium that includes the F15 prime contractor, Mitsubishi, is at work on a major commercial project, building fuselage parts for Boeing's new 767 jetliner.

Public and private officials involved in the F15 program nevertheless question whether any unduly sensitive technologies were in fact transferred to Japan in the pressure of the moment.

Garber, who recalls the differences of view with the Air Force over releasing composites, says that in retrospect he does not believe the decision to share the know-how was "really regrettable—it wasn't the latest technology."

McDonnell Douglas spokesman Timothy J. Beecher said the company was on the sidelines for the decision on composites.

"It was between the two governments," he said. "But we think it's valid to ask the people who made the decisions whether countries involved could not have obtained those technologies elsewhere."

By the time the carbon fiber technology was released to Mitsubishi, he noted, the commercial aircraft consortium in Nagoya was making landing gear and wing edges for the Boeing 767 out of composites and using procedures supplied by Boeing.

A Boeing official acknowledged that, under the commercial program, the Japanese are using Boeing specifications and design information for the plastic composite kevlar but not for carbon fibers, considered more advanced.

"The Japanese would have loved to have had all our fancy computer programs on how we put wings together," said H.O. Withington, Boeing's vice president for engineering. "But we guarded that pretty carefully. As far as giving away the store, I don't think we've ever given anything that wasn't available to anybody who wants to take the trouble to do it."

Impact of Co-Production Studied

Under the Reagan administration, concern about U.S. technology losses has increased dramatically. The impact of co-production programs is being studied by NASA, the Treasury Department, the Defense Science Board, the president's Cabinet Council on Commerce and Trade and the White House Office of Science and Technology.

Some aircraft specialists suggest that the debate over U.S. technical aid to Japan's airframe industry may be overtaken by developments that have made more technology sharing inevitable in the global aircraft business. It now seems likely that a Japanese consortium will become a full partner later in this decade with either Boeing, McDonnell Douglas or Europe's Airbus in building the next-generation jetliner, a fuel-efficient 150-seater.

Despite the massive flow of military technology to Japan, the U.S. government has not gained assurances from the Japanese government that specific technologies will be released to U.S. defense contractors in return.

Japanese officials have pointed out that Japanese law prohibits export of defense equipment—a broad category that could include many processes and materials if the Japanese wanted it to.

But Stephen Piper of the special trade representative's office says Japan "should not hide behind a weapons export ban . . . . If we tried, we could identify basic Japanese technologies which are basic to us."

NEXT: Is America Inc. the answer

Staff writers Peter Dahlby in Tokyo and Hobart Rowen in Washington conducted interviews for this series. Staff researcher Carin Pratt contributed to the report.

U.S. Sells 'Crown Jewels' of Knowledge

By Dan Morgan
Washington Post Staff Writer

During the last decade, dozens of Japanese companies have bought some of the most powerful tools created by American technology: software programs revolutionizing the way industry uses computers.

Companies such as Yokogawa Electric, Fujitsu, Fuji Heavy Industries and Mitsubishi have U.S.-developed "source codes" for new computer systems used to design, test and manufacture computer chips, automobiles and aircraft.

Source codes are programs that tell computers what to do. Written in languages that humans can understand, they reveal the logic and mathematics underlying the systems. One computer company executive calls them "the crown jewels of American technology."

Some Americans say they see nothing amiss in the fact that U.S. companies have sold this knowledge to Japan. A world in which the flow of ideas and knowledge is restricted would be one of slow growth and costlier products, they say.

HIGH TECH: LEAVING HOME

PART FIVE

"You can talk about limiting the flow of technology, the flow of knowledge. But it's hard to dam up knowledge in a society like the United States," Assistant Secretary of Commerce Clyde Prestowitz said.

The United States has won its standing in the world by throwing open its research laboratories, universities and corporations to foreigners. About 300,000 foreign students, eight times as many as in 1954, are enrolled in U.S. colleges and universities. Ninety-one Japanese were graduate students at the Massachusetts Institute of Technology last fall, and more than 100 are working at the National Institutes of Health.

This openness has contributed enormously to U.S. prosperity. But Japan's acquisition of such crucial technologies as U.S. software data still makes some people uneasy. Computer software is one of America's main technological assets, and one of the few technological domains in which the United States still enjoys a commanding lead over Japan.

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U.S. 'Crown Jewels' Exported in Codes

TECHNOLOGY, From A1

"When push comes to shove, America had better keep its software capabilities," said William O. Baker, retired president of Bell Laboratories, America's largest private research facility. "Software is going to be the principal means of technology transfer in the '80s. It's our ace in the hole. Software can give competitors the ability to leapfrog us."

Software programs written for the latest generation of computer-aided design and manufacturing (CAD/CAM) systems have revolutionized the role of computers in industry, moving them from the financial and accounting departments into the front line of design, engineering and production.

With the present line of computer graphics systems, a draftsman can display his drawings in three dimensions on a television screen, reshape them in a fraction of a second, insert additional pieces from a "menu" stored in the computer's memory, measure the length of lines, turn the product to inspect it from every angle and test it for strength and durability—all before a single blueprint has been drawn on paper.

Computer companies are working on ways to link the draftsman's electronic work board with the factory floor, by having the same computer control the path of cutting tools or the movement of assembly-line robots.

"It's the highest industry, I think, because it's seminal," a computer executive said. "There isn't a Fortune 1000 company that hasn't made a major commitment to this technology. There are more damn people doing designs and engineering on computers now than there are accountants cracking numbers."

Today, engineers are cutting thousands of man hours off the time required to design or redesign airplanes, integrated circuits, nuclear weapons and toys, among other products. Boeing, for example, designed 30 percent of its 747 aircraft and 40 percent of its new 757 on computers.

Underlying new CAD/CAM systems are millions of lines of programs, often requiring teams of people working thousands of hours. Some inside the growing CAD industry are concerned that Japanese companies, skillfully exploiting stiff competition among the growing number of U.S. CAD companies, have gained threshold knowledge of this technology, as well as ready access to the tool itself.

"I am concerned about how much they're learning from us," said William D. Beeby, who recently retired as Boeing's director of engineering computer systems.

Japanese computer-chip companies used U.S. CAD systems to design memory chips that put them ahead of their U.S. competitors in the late 1970s, and a consortium of Japanese aircraft companies is using U.S. CAD systems to help them become major players in the commercial airliner business.

Transfer Takes Place Gradually

Transfer of this technology to Japan has occurred over several years. For instance:

• In 1974, a Bedford, Mass., company called Computervision began distributing its Computer Automated Design Drafting System-3, or CADDS-3, through a Tokyo distributor with access to the CADDS-3 source code. CADDS-3 displayed three-dimensional pictures and was considered by some the most advanced system of the time.

It was subsequently purchased by dozens of Japanese companies, including Mitsubishi, Toyota, Nissan Motors and Sanyo. According to a Computervision executive, customers could obtain the CADDS-3 source code by signing a written pledge not to divulge it.

• In December, 1978, Lockheed licensed Fuji Heavy Industries, one of the major Japanese aircraft companies, to use Lockheed's "Cadam" computer design system. The license agreement gave Fuji access to the Cadam source code.

• In 1979, Gerber Scientific Systems Technology of Hartford, Conn., signed an agreement with Yokogawa Electric Co., giving the Japanese company all of the source codes and technical data for its CAD system, as well as exclusive manufacturing rights in Japan, Singapore and South Korea.

The path of CAD from the minds of American computer scientists to Japanese companies is an example of how knowledge spreads in today's international economy.

Some of the initial work on computer graphics was done in the early 1960s by Ivan Sutherland, who, as an MIT graduate student, developed concepts for programming computers to portray a draftsman's lines, circles and shapes.

His program, called "Sketch Pad," was ahead of its time. Computers functioned too slowly and lacked storage capacity to handle complex programs required in such graphic display.

By the late 1960s, however, hardware developments that gave the industry better disc drives and display terminals created new opportunities for using computers in the production end of business.

Many credit a maverick genius, Patrick J. Hanratty, with developing the first true commercial CAD software programs.

Hanratty got his first taste of computers at a two-week training program in 1955. After three days, he recalled, "I felt I had learned all I could and had ideas my instructor didn't seem to have about how to talk to computers."

Over the next 17 years, he left his mark as a writer of software at General Motors Research Laboratory, McDonnell Douglas and finally at his own company, MCS, often putting in 80- to 100-hour work weeks.

Bits and pieces of his work can be found in the software programs of most CAD companies.

In 1971, soon after starting MCS, Hanratty and his associates produced "Adam," a software program that was to have widespread influence. "Adam really opened some eyes," Boeing's Beeby recalled.

Adam could create three-dimensional pictures, print out blueprints and drawings of what was displayed on the computer screen and create a tape that controlled tools to cut and fabricate shapes on the screen. In the next several years, MCS licensed Adam to companies developing and selling their own CAD/CAM systems: Gerber Systems, Computervision and United Computing.

Hanratty's easygoing licensing procedure involved him in litigation with clients who complained that they alone had exclusive rights to Adam. The litigation eventually was dropped, but the licensing resulted in rapid spread of ideas underlying Hanratty's conceptual breakthroughs. Ultimately, Computervision, Gerber and McDonnell Douglas (which acquired United Computing) licensed CAD/CAM systems to Japanese firms. [See accompanying chart]

Today, Hanratty sells his newest creation, the ANVIL 4000 CAD/CAM system, to about 20 Japanese companies, and has adapted its control console to the Japanese Kanji alphabet. Japanese computer scientists troop to MCS headquarters in Irvine, Calif., to be trained.

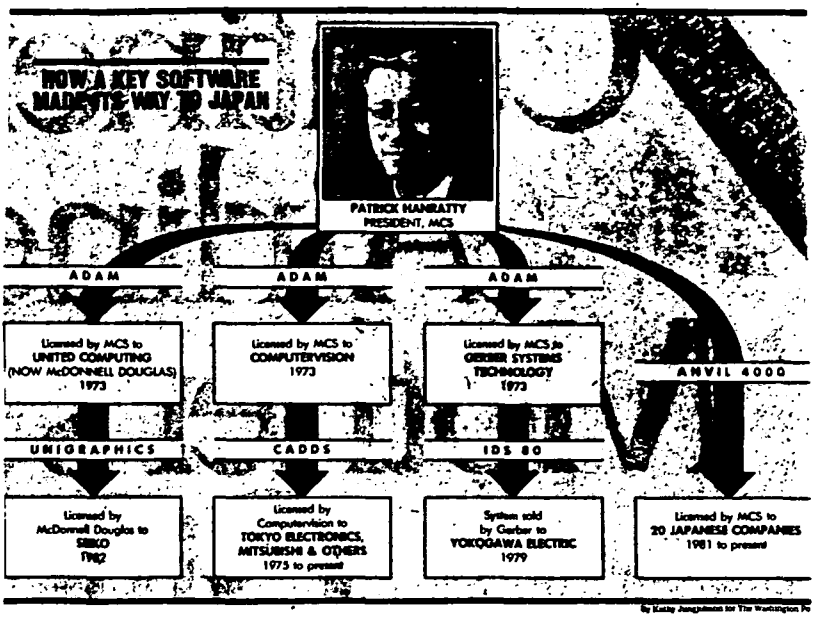
Hanratty said he provides customers with source codes but is not concerned that Japan will use this information to narrow the American lead in software. All of his clients, he said, "enter into a stringent legal contract not to divulge it without MCS' permission."

In any case, he said, "our code is so mammoth that you couldn't duplicate it .... It takes two or three years for our own people to develop an understanding of it, and they are the cream of the electronics industry. I think it would be close to impossible for anybody to understand the full span of Anvil 4000 today."

Others are more uneasy.

Japan is trying to overcome its software shortcomings by educating more computer scientists, encouraging small, American-style "software factories" and emphasizing the need to do better.

Some U.S. companies are concerned enough about transfer of proprietary knowledge that they refuse to provide Japanese firms with source codes. Calma, Applicon and Intergraph, three leading U.S. CAD/CAM companies, provide only "object code," a computer program virtually indecipherable by humans.



By Kathy Jeaquinton for The Washington Po

Staff writers Tracy Dahlby in Tokyo and Hobart Rowen in Washington conducted interviews for this series. Staff researcher Carin Pratt contributed to the report.

Object code is created when source code comprehensible to computer programmers is translated into a stream of "ons" and "offs" stored on a tape or disc and sensible only to a machine.

Some in the industry have questioned Gerber's sale of its entire "IDS" CAD/CAM system to Yokogawa Electric in 1979. The sale included not only source codes but also other technical information. Gerber received a $1 million initial payment, a promise of a percentage of net sales and pre-tax profits and a guarantee of a second $1 million within five years. But some in the industry say Gerber gave up too much for too little.

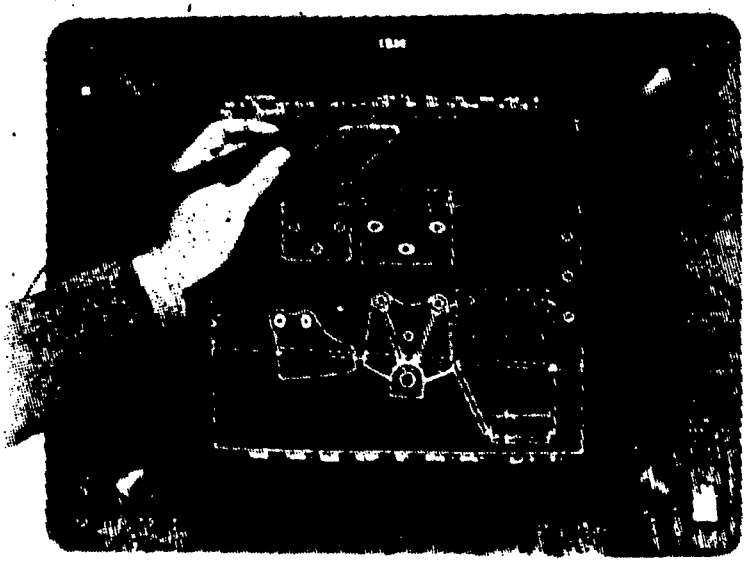
Computervision turned down Yokogawa's request for a similar deal.

"It opened up a whole bunch of technology to them and gave them freedom to use it that nobody else had," said Joan Ruru, Computervision's vice president for industrial marketing. "We didn't want to give up the family jewels."

Of the Gerber deal, another former Computervision executive, Michael J. Cronin, said: "They were giving away the keys to the kingdom."

Some in the computer industry also questioned Lockheed's licensing Dec. 14, 1978, of source code for its Cadam graphics systems to Fuji Heavy Industry.

Cadam had been developed by Lockheed over several years to increase its aircraft productivity. But when Lockheed's air-production problems mounted in the 1970s, special high-technology divisions were counted on to generate profits.



Lockheed eventually sold the Cadam system throughout the world, including to competitors such as Dassault in France, one of the leading companies in the European Airbus consortium. Japanese customers eventually included Fuji, Hitachi, Kawasaki, Mitsubishi and Nippon Steel.

Although Mitsubishi and Kawasaki did not receive the Cadam source code, Fuji had it from late 1978. Fuji was a member, with Mitsubishi and Kawasaki, in a consortium that forms the nucleus of Japan's budding aircraft industry.

Explaining the 1978 decision, a spokesman for Lockheed's computer graphics subsidiary said: "Lockheed is not one company. [This subsidiary] sells software. What we did was not tied to the strategic position of the [Lockheed] corporation. We were just doing our thing."

Lockheed Reverses Policy

The spokesman said that, if the Japanese had not obtained Cadam, they could have obtained other non-American systems, such as Britain's Medusa or France's Catia. "It was just a matter of time before they would have gotten it from somebody else," the spokesman said.

Nevertheless, on Jan. 1, 1982, Lockheed announced that it would no longer provide source code with the systems it sold or licensed.

Cadam, meanwhile, has proved useful to Japan's commercial aircraft effort. It was used, for example, in Japanese work on parts of Boeing's 767 commercial airliner built under a co-production arrangement.

"We turned over the drawings to the Japanese, they digitized the geometry and put it on their Cadam system," said Marvin Wehrman, director of Boeing's computer programs. The Japanese completed their part of the design work using Cadam, Wehrman said, and the results dovetailed perfectly with Boeing's.

The cooperation worked well but raised several questions.

As required by Boeing's contract with the Japanese consortium, Wehrman said, the Japanese returned the drawings after completing the work. But, he said, they retained the electronic tapes that activated CAD pictures of parts of the Boeing plane.

Beeby, now retired from Boeing, said Japanese engineers expressed keen interest in Boeing's CAD programs.

"After the engineers left, their top management came back and looked at the system," Beeby recalled. "They were a major subcontractor. We couldn't very well shut them off."

Some, including Computervision's Hurd, even question whether the United States is very far ahead. "I find tough competition in Japan," he said.

In typical Japanese fashion, Japanese companies have begun to penetrate a few, selected parts of the market.

Typical of the new breed of entrepeneurial, American-style CAD companies making their debut in Japan is Zuken, founded by Makoto Kaneko, 38, a computer expert. Sales increased from $450,000 in 1978 to $10 million in 1982, mainly on CAD systems for designing electronics systems and computers.

Marketing director Akihiko Miyakami sees a bright future. Computers soon will be required to design computers, and Zuken is preparing for that day, he said.

NEXT: Taking up the challenge

Made in America, Sold in Japan

Even before he had seen a recent article about himself in Venture Capital Journal, John B. Henry, president of Crop Genetics International in Dorsey, Md., began receiving telephone calls from Japanese businessmen interested in a possible joint venture in Southeast Asia.

Such offers are extremely tempting for small, innovative U.S. genetic engineering companies working on new products and medicines ranging from the laboratory-produced sugar cane seed of Crop Genetics to the interferons of Biogen and Genentech.

With many of these products still several years from the marketplace, pioneering U.S. genetic engineering firms need money to continue research and testing. Japanese companies are providing plenty of it in return for technology, exclusive marketing rights for future products and other concessions.

Why Japanese companies, rather than U.S. financial centers or pharmaceutical firms, are putting up the money and positioning themselves for the profits is a riddle that provides insights into pressures driving the technology trade between the two countries.

In the late 1970s, adventurous U.S. and foreign investors poured money into new companies formed by scientists who had been working on the recombinant DNA (gene splicing) technology at such centers as Harvard, Massachusetts Institute of Technology, Stanford, the National Institutes of Health and the University of California at Berkeley and San Francisco.

There was great excitement about new laboratory-produced microbes that might increase crop yields, provide inexpensive new sources of energy and, most important, form a new family of drugs against hitherto resistant viruses and other diseases.

Now, however, investors have grown more cautious.

"A couple of years ago, any university professor with credentials could generate a seven-figure investment," said Thomas D. Kiley, vice president and general counsel of Genentech in South San Francisco. "Now investors are becoming more sophisticated."

In the U.S. system, Kiley said, running up too much debt by borrowing from banks is considered bad business. Even if banks agree to loan money, he said, rising debt drives down the price of stock, creates financial worries and makes it difficult to attract investors or qualified executives.

The way out, he said, is to do research for other companies for a fee or sell them technology in return for commissions from sale of products made with those technologies. "The trick is to do that without selling your birthright," Kiley said.

Making deals with larger U.S. pharmaceutical companies is extremely risky because it often can mean relinquishing the U.S. market to those companies when products are ready for the marketplace. Many biotechnology companies are cutting deals with Japanese firms instead.

For example, Genentech signed agreements with Toray Industries and Daiichi Seiyaku giving them exclusive rights to buy one type of interferon, gamma, for sale in Japan. The Japanese companies pay Genentech while the U.S. firm continues its research, but Genentech retains control of technical processes for making the interferon, which scientists hope will be used to fight cancer and viruses.

However, Genentech could be forced to give Toray and Daiichi the technology if the Food and Drug Administration does not approve gamma for use in the United States. In that case, the product could not be exported, and Genentech has agreed to provide the gene splicing and process technology to the Japanese companies.

Other U.S. companies have made even broader concessions to the Japanese.

In 1981, for example, Genex of Rockville agreed with Green Cross Corp. of Osaka to perform research aimed at developing a microbe strain that can produce human serum albumin (HSA) in a laboratory.

Hospitals now use HSA to treat shock and a condition called hypoproteinemia, a protein deficiency in the blood. Because HSA is prepared from human donors' blood, it is expensive and sometimes scarce. Laboratory development of HSA using recombinant DNA technology could enable Genex to tap into a market worth $600 million a year.

However, Genex agreed to give Green Cross an exclusive worldwide license to "make, use and sell" all of the HSA eventually produced under the contract.

That Japan's efforts to acquire U.S. molecular biology technology are anything but haphazard is evident from the fact that Tokyo's Ministry of International Trade and Industry has picked 14 companies to lead a research effort. More then 100 Japanese companies and research institutes are spending about $217 million a year on research in biotechnology.

"America has unequaled capacity to develop and apply science, but our companies are competing with well-financed [foreign] corporations acting in partnership with their governments .... U.S. government, business and labor are running uphill," Genentech President Robert A. Swanson said.

—Dan Morgan

For Industrial Health, First, a Self-Examination

By Dan Morgan
Washington Post Staff Writer

In a laboratory at Genentech, the south San Francisco genetic engineering company, bearded biologists in white gowns hover over trays of purple-colored cultures of interferon that someday may fight human viruses from colds to herpes.

Across the country, in Short Hills, N.J., Martin Lapselter of Bell Laboratory's advanced microelectronics division proudly displays a snapshot of something that looks like a row of fences across a sandy desert. Actually, the picture shows parts of an electronic circuit narrower than a human hair, etched by an X-ray machine on a tiny silicon chip.

Reassuring as those glimpses of the nation's high-technology resources may be, they are not an automatic guarantee of America's economic future. As examples used in this series show, innovations produced in U.S. laboratories frequently have resulted in products made in Japan.

HIGH TECH: LEAVING HOME

CONCLUSION

This phenomenon has evoked an angry reaction from U.S. politicians and the public.

Protectionist sentiment is running high on Capitol Hill, and Congress has taken up one of the most restrictive pieces of legislation since World War II: the "domestic content bill," which would require that foreign automobiles sold here include an arbitrarily established percentage of U.S. components.

The Reagan administration opposes the measure but has taken a tough approach in negotiations with Japan aimed at breaking down Japanese barriers to U.S. trade and investment.

"The time has come to act .... We're already 10 years too late," said William C. Norris, the outspoken chairman of Control Data Corp., who has

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U.S. to deny visas to foreigners suspected of seeking restricted technological data. Page A9

Friday, May 6, 1983 P. A1

2261

From manufacture of aircraft and parts for American jetliners to undersea oil drilling and the Betamax video recorder, Japanese industry has benefited from the partnership role of the government. Japanese companies, *with a nudge from Tokyo*, can move more quickly than American firms in getting new technology to the marketplace.

Self-Examination, Industrial Health

TECHNOLOGY, From A1

suggested "kicking out" all Japanese working in U.S. research facilities as a warning shot across Tokyo's bow.

Such suggestions are indicative of a mood of rising anger at Japan. Whether the steps contemplated so far will change the Japanese-American technological equation is moot.

Trade restrictions certainly would invite retaliation not only from Japan but also perhaps from countries such as France, where U.S. companies fare well. Moreover, in today's interconnected global economy, technology has become increasingly internationalized. Ideas travel with jet speed across borders, not only from America to Japan but also in return. Science is universal.

What distinguishes economies today often is not who is first with the technology but who first uses it effectively.

This is more than a technical problem. It involves organization, availability of capital and such subtle factors as motivation, determination and national will. These are not easily quantified or readily fitted into theories of "scientific management" that have prevailed in the United States since the 1950s.

Japanese companies already are shifting their strategies in anticipation of more antagonistic U.S. policies, forming joint ventures with U.S. companies and investing in U.S. industry.

But for the United States to think in terms of retaliation alone, warned Robert B. Reich of Harvard University's Kennedy School of Government, would be to miss an unprecedented opportunity for national self-examination. This is a process that he and other experts say must take place before American industry can return to full health.

The problem, as Reich sees it, is that politicians and their policies are lagging far behind changes reshaping the world economy.

As this series has suggested, the fragmented U.S. business community has often sold technology to Japan too cheaply and with too little consideration of its long-range impact on U.S. competitiveness. Washington has contributed to the problem by aggressively promoting sale of U.S. technology abroad as part of weapons co-production programs.

By contrast, Japan controls export of technologies developed with government support and is tightening copyright laws on computer software as Japanese industry improves its skills in this area.

But in talks with more than 150 businessmen, government officials, scientists, researchers and economists, many other explanations for flagging U.S. competitiveness were given. Prominent among them:

• The U.S. research and development effort, the world's second largest after that of the Soviet Union, has suffered from its emphasis on defense. Half of all research and development dollars spent in America are from the federal government, and more than half of those are defense-related.

While much of the Defense Department's support for research on computers, microelectronics, lasers and aerospace has potential commercial spinoffs, the U.S. government lacks effective procedures for getting it quickly into commercial channels.

By contrast, Japan's New Technology Development Agency provides financial assistance to private firms to help them convert work done at government laboratories into products.

• Big corporations and government alike tend to overemphasize research on basic science and underemphasize research on less exotic but important technologies. One example cited was robotics.

U.S. research stresses vision systems but, according to one senior executive, American robots are in urgent need of improved ability to grip objects, a mundane but crucial part of a robot's work. Although the payoff presumably would be enormous, no company has found a way to reduce drastically the time required to wash and dry clothing by machine.

In Japan, government-supported research and development often goes to less exotic "medium-tech" projects with immediate commercial potential. In the United States, "nobody wants to do the routine stuff," said Rustom Roy, a fellow at the Brookings Institution.

Japan Helps With Tradition of Cooperation

• The federal government is "spending more but getting less" for its research dollars, according to S.J. Buchsbaum, Bell Labs' executive vice president for research. The more than 700 government research laboratories are "diffused" and lack well-defined goals. Materials research, which "underlies everything," is especially splintered, he said.

• The United States does not pay enough attention to foreign technological developments. Only 20 percent of Japanese technical publications are translated into English, according to John A. Alic of Congress' Office of Technology Assessment.

• "The [cooperative] Japanese system stands in stark contrast to the adversary relationship that typically prevails between U.S. industry and government," according to Washington consultants Harald B. Malmgren and Jack Baranson.

Robert M. Price, president of Control Data, said the most important difference between the two countries is "development of a Japanese tradition of cooperation in developing and exploiting base technologies."

• U.S. antitrust laws are ambiguous and outdated. Japan helps establish research cartels while seeing to it that companies compete vigorously in marketing products resulting from the research. But U.S. industrialists said U.S. antitrust laws make forming such research consortiums here risky.

• Unlike Tokyo, Washington lacks "anti-cyclical" policies to keep emerging industries growing and developing during recessions. As a result, Japanese companies have been able to exploit periods of slack business activity to catch up with U.S. competitors squeezed for capital and customers during these periods.

• With some notable exceptions, such as IBM, Texas Instruments and American Telephone & Telegraph, managements of large U.S. corporations pose major stumbling blocks to the exploitation of new technologies.

Prof. Leslie Eric Cross, acting director of the materials research laboratory at Pennsylvania State University, noted that large U.S. corporations often leave development of new technologies to smaller companies "to which they can dictate terms." Large Japanese companies, however, are "technology driven," and take the lead in new areas.

• "Takeover fever" and "paper entrepreneurialism" distract U.S. management from production problems. RCA announced in 1979 that it lacked the $200 million needed to develop an American video recorder, the fastest selling appliance of the decade. But in the same year it spent $1.2 billion to acquire a finance company.

• Large U.S. corporations, which depend on the stock market to raise much of their capital, are much more concerned with impressing potential investors with short-term profits than are Japanese firms, which tend to borrow from banks with which they have close and longstanding associations.

The net result is that Japanese companies feel free to spend capital on long-range goals, including development of new products.

• U.S. corporate managements are more removed from the production process than are their Japanese counterparts. Until recently, Ford Motor Co. had five more layers of management between the factory floor and chairman of the board than Toyota had.

• U.S. management has devoted fewer of its research and development dollars to quality control than has Japan, and Japanese quality has consistently been superior to that of America.

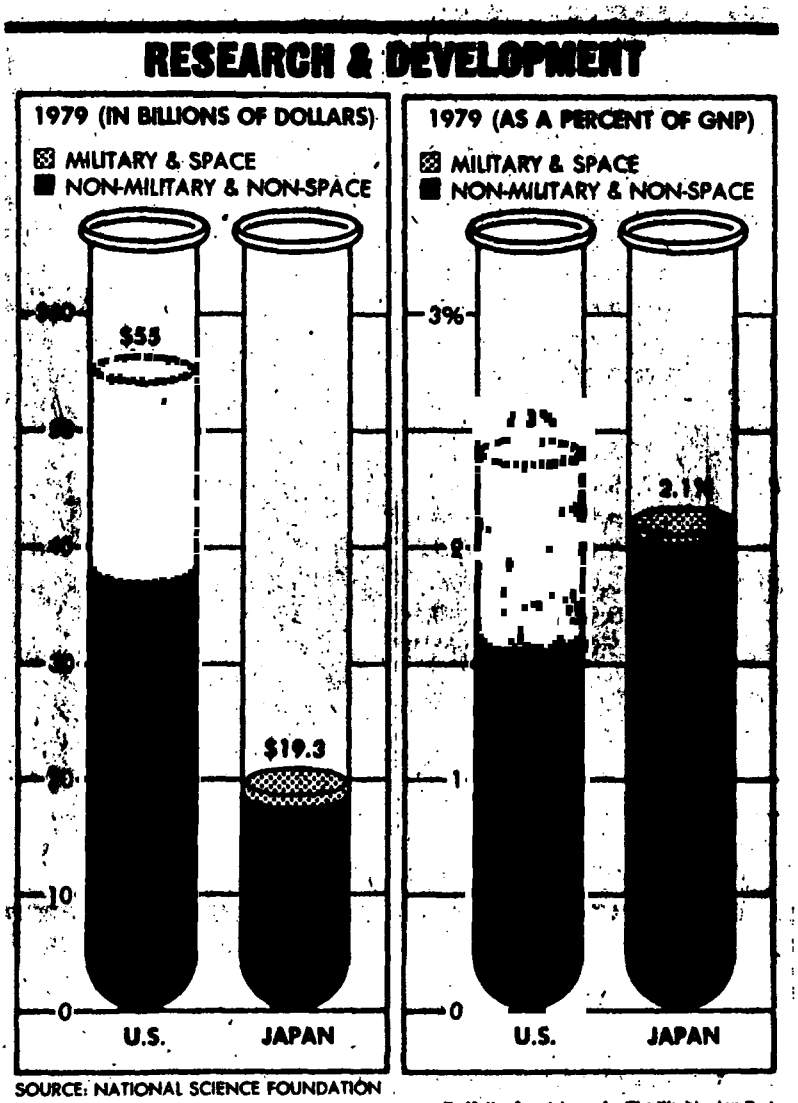
• The U.S. public education system has fallen far behind Japan, West Germany and the Soviet Union in math and science preparation. Half of the engineering graduate students in the United States are foreigners because Americans either are not applying or are not qualified.

The American Association for the Advancement of Science has said that "far too many students . . . lack motivation to study science and mathematics" because of "boring" teaching and a school climate "unfavorable to the pursuit of excellence."

Whether all or some of these reasons can explain Japan's successes in its technology race with the United States, they suggest the myriad factors that influence it.

Much has been made of the government-industry cooperation that foreigners nickname "Japan Inc.," and there is no doubt that the Japanese government has made a difference.

Current government-backed efforts involving tax breaks, research funding and pooling of research information and other subsidies are under way in genetic engineering, automated manufacturing, superspeed computers, optical communication and measurement, manganese nodule exploitation and subsea oil exploration.


RESEARCH & DEVELOPMENT
1979 (IN BILLIONS OF DOLLARS)
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JAPAN
SOURCE: NATIONAL SCIENCE FOUNDATION
By Kathy Jungjohann for The Washington Post

An example of how the Japanese government nudges an emerging industry forward was its establishment of Nihon Aeroplane Manufacturing Co., a special corporation. Government and private firms invested in NAMCO, but the government bore the main financial risk. NAMCO developed the 64-seat YS11 civilian plane, not a great success, but the work helped companies acquire experience.

Subsequently, Japan set up the Civil Transport Development Corp., a consortium of three large aircraft companies established to coordinate Japan's work in building part of Boeing's new 767 jetliner. However, at that point direct government financial support was reduced because the companies were deemed strong enough to shoulder more of the financial risk.

Meanwhile, Japan's Ministry of International Trade and Industry (MITI) has sponsored another consortium to enable the nation to be a 50-50 partner with Britain's Rolls-Royce in construction of a new turbo engine for the next generation of international airliner, the 150-seater.

Several experts warn against placing too much importance on the government role in Japan's success. The U.S. government pumps far more money into the American scientific and industrial community for research and development than does Japan. The Tokyo government supplies only 30 percent of the total of such funds in Japan, while Washington supplies more than 50 percent in this country.

Japan's success also clearly owes much to the ingenuity, determination and flexibility of private industry.

William J. Abernathy and Richard S. Rosenbloom of the Harvard Business School, who studied the way Japan captured the U.S. video recorder market, cited "the element of persistence" in Japanese companies.

Betamax, they noted, was the fourth generation of video recorder developed by Sony and the first that succeeded with U.S. consumers. With no assurance of success, Matsushita established an entire department of 1,200 employes to develop a video recorder for the commercial marketplace.

Little things, rather than big, often make a crucial difference, according to Americans who have studied Japanese industry.

Toyota and other auto makers save warehouse space and cash by using a "just-in-time" delivery system for components. Parts arrive only when they are ready to be installed, sometimes with less than an hour to spare.

Working with tiny inventories, the auto makers can adjust quickly to ups and downs of demand.

In at least one key technological area, auto design methods, the United States is superior to Japan, according to a detailed comparison published last August by Japan's Society of Science, Technology and Economics.

While Congress' Office of Technology Assessment does not discount the importance of Japan's lower wage rates in the auto makers' success, it said recently that another key element was the Japanese refusal "to quit the American market when their first offerings proved unappealing; they persisted and steadily improved their sales."

U.S. businessmen speak almost with awe of the speed with which Japanese companies master new technologies and make high-quality products.

"Every time they do something, they do it better [than the last time]," said former Boeing vice president William Beeby, who worked on development of the Boeing 767, parts of which are manufactured in Japan. "The quality coming back [from Japan] is better. We saw that."

"The Japanese have been organized to tap the pool of science in this country," said Dan Burg of Carnegie-Mellon University. "They send teams here, and it's done in an organized fashion. They'll send post-doctoral students to spend time at our locations, but it's rare for U.S. students to go to a Japanese university."

Whether the United States should, or could, respond to the Japanese challenge by adopting some of Japan's methods is an open question among politicians, industrialists and economic experts.

The Office of Technology Assessment has described the fragmented U.S. industrial policy as a "potential strength."

"Our pluralistic system, which is responsible for so much of the ad hoc character of U.S. policies toward industry, creates an environment where flexible and innovative responses are sometimes possible," the OTA said.

Nevertheless, there is a growing sense in industry and academia that government needs to provide more consistent direction.

Washington Hinders With Stop-and-Go Policies

An example of Washington's stop-and-go tendencies are Reagan administration proposals to curtail energy research just as it has made progress after the 1973-74 oil-price scare.

"Science isn't run on a six-month basis," Brookings' Roy said. "You have to wait 10 years for results."

While the Japanese ministry has announced a seven-year, $140 million research effort involving 10 private companies to develop "intelligent" robots capable of assembling dozens of different products, including an entire automobile, the U.S. government's main robotics research program, at Wright-Patterson Air Force Base in Dayton, is geared primarily to making defense contractors more efficient.

"U.S. industrial policy is a mess," a congressional aide said. "It doesn't add up. It's little bits and pieces. The political element is always dominant here. The kind of political system we have just isn't conducive to coherent policies."

There are, however, some signs of change. The Reagan administration has given other indications of its readiness to consider new approaches.

In a highly significant move, the Justice Department's Antitrust Division has allowed 10 competing U.S. computer companies to establish a joint research company, Microelectronics and Computer Technology Corp. No Japanese companies are members, and Japanese firms seeking access to MCC's technologies must deal with the consortium, not a single company.

Some have described this project as "America Inc."

In 1981, Congress passed the research and development tax credit, enabling companies to accelerate their depreciation on R&D equipment. It is credited with spurring a dramatic increase in the amount invested in new, "high-tech" ventures, from $58 million in 1978 to $1.7 billion in 1982. And California, under then-Gov. Edmund G. (Jerry) Brown Jr., established the first Commission on Industrial Innovation to recommend state policies that would help "high-tech" industries.

These steps have the advantage of not requiring a political confrontation with Japan. For, in the heat of the present, it is easy to forget that Japan is actually a great American success story.

It has reached its position of near technological parity through American aid, open market and technical prowess. Now, Japan is forcing the United States to take stock of its own economic performance and is becoming a teacher to its own postwar teacher.

But, as Undersecretary of Commerce Lionel H. Olmer has said, "Japan is not yet a technological giant."

The United States is still bigger and richer. Japan's labor productivity, the measure of the man-hours required to turn out products of a certain value and indirectly a measure of technological prowess, still lags behind that of the United States, although the difference is narrowing and Japan is an equal or ahead in some key industries such as automobiles.

The $15 billion spent by Japan annually on civilian research and development is only half the amount spent by the United States. The Japanese government's annual spending for research on supercomputers is less than that of IBM.

Japan's vaunted system of national planning is not infallible. It has made serious miscalculations, such as promoting growth of an aluminum industry now on the brink of bankruptcy.

Some even think that Japan's success in international trade may be exposing its companies to forces that will weaken its society's traditional discipline and unity of purpose that has characterized Japanese industry.

"The rapid evolution of Japan's economy toward the creation of a 'knowledge intensive' society carries with it enormous potential opportunities," Olmer said. "... The technological race does not need to be a zero sum game. Both sides can win, and the results will be of enormous benefit to all."

Staff writers Tracy Dahlby in Tokyo and Hobart Rowen in Washington conducted interviews for this series. Staff researcher Carin Pratt contributed to the report.

bcc: Mr. Remington

One Franklin Plaza, P.O. Box 7929, Philadelphia, Pennsylvania 19101

SmithKline Beckman
CORPORATION

Alan D. Lourie, Ph.D.
Vice President, Corporate Patents and Trademarks
(215) 751-5189

February 17, 1984

The Editor
Harvard Business Review
Boston, MA 02163

Dear Sir:

I have read with interest the article by Neal Orkin in the January-February 1984 issue of the Harvard Business Review entitled "Rewarding Employee Invention: Time for Change." I'm afraid I must disagree with its basic recommendation that the U.S. enact a German-type inventors' compensation statute, similar to that embodied in H.R. 3285.

I am a strong believer in the importance of incentives to stimulate risk-taking, investment, and innovation. No doubt incentives such as equity ownership have played an important role in the creation of many new enterprises in electronics and biotechnology in the United States. In fact, I would urge that the preeminent success of U.S. companies in these fields is testimony both to the vitality of U.S. enterprise and to the adequacy of our incentive systems, in contrast to the author's impression that the nationals of other countries, particularly in Germany and Japan, are outdoing us.

The scheme that Mr. Orkin advocates, however, and the German system it is based on, principally affect employees of larger companies rather than entrepreneurs of smaller and newer companies. And for this type of employee, I believe this system would be unfair, useless, and bureaucratic.

It would be unfair because it focuses solely on inventorship, which is a rather precise, limited, legal concept. In a large company, many people play important and critical roles in the creation and development of a product, not just those who, according to the U.S. rules of inventorship, are designated inventors. Moreover, much of the success of a new invention arises from effective teamwork in the testing, development, and marketing of an invention, and a system that provides significant royalty or other added compensation to only the limited group legally entitled to be considered inventors would be disruptive, not stimulative of new invention.

In addition, such a system would not promote real creativity among the scientists of large organizations, particularly in the chemical and pharmaceutical fields. The reason is, in my opinion, that most of these people are scientists who are principally interested in their science rather than the level of reward that would be provided by a statutory inventors scheme. Even more importantly, the nature of their research is such that it would not be increased in quality by means of a monetary incentive. Genuinely creative ideas emerge by themselves, and inventions consisting of the making and testing of new chemical compounds are similarly unlikely to be stimulated by such incentives.

Finally, a statutory scheme such as is suggested would impose an expensive and cumbersome corporate bureaucracy on the patent and research process. It would impede genuine progress and increase costs that would be passed on to consumers. It would require timely action, supported by documents, on all patent disclosures, timely filing of patent applications in order not to lose ownership rights, and simply add to the backlog in patent departments and the U.S. Patent and Trademark Office. It would be known as The Patent Lawyers Employment Act by analogy with the new tax laws which create enormous amounts of business for tax and estate lawyers and accountants. It would also be a bonanza for the paper companies.

In my view, the present Administration and the Congress are proceeding with the kinds of initiatives that are best calculated to improve innovation and creativity in this country. They include patent term restoration to provide better incentives to justify investment in risky and long-term development activity; liberalization of government patent policy to leave larger companies with exclusive patent rights on inventions they have made with government funding, and also to provide greater incentive for investment; improvements in the patent laws to eliminate hypertechnical impediments to patent validity, and others.

Moreover, the grass is always greener in other countries, and we should not lose sight of the fact that our new scientific and technology-based industries are leading the world. I am aware that the numbers of patent applications filed by residents of some countries are unfavorable to the U.S., but I suspect that many of those applications are merely sterile responses to the inventor compensation systems which Mr. Orkin advocates, rather than filings on significant new inventions.

There may well be better ways to compensate our creative scientists, and I have indeed devoted thought to the problem. I am confident, however, that the German-type inventors' compensation system is not what we need.

Very truly yours,

Alan D. Lourie

Alan D. Lourie

ADL:ba

cc: Mr. N. Orkin

JANUARY/FEBRUARY 1984
Harvard Business Review
Advance Galley

Rewarding employee invention: time for change

Neal Orkin

Mr. Orkin is a Philadelphia area attorney and adjunct assistant professor of business law at Drexel University who also holds a degree in electrical engineering. A student of employee-inventors' rights since 1967, he is coauthor of Employees' Inventions: A Comparative Study *(Fernsway Publications, Sunderland, England, 1981).*

By relying on a voluntary system of rewarding employees for inventions and innovations, U.S. corporations are losing out on new ideas that would help them compete effectively in the world race for new technology. Proposals that would remedy this situation have come before Congress on several occasions in recent years, but industry has consistently opposed them. Now the time for reappraisal has come. Lest American innovation and inventiveness decline even further, we must enact a national statutory award scheme for employed inventors.

Although patents are not an absolute indicator of innovation, their growth – or decline – provides one measure of industrial creativity. By *this gauge*, American inventiveness decreased during the 1970s. The number of U.S. patents per million population issued to American citizens and corporations fell from 225 in 1970 to 169 in 1980; the number per billion dollars of GNP, measured in constant 1972 dollars, dropped from 53.7 in 1972 to 25.8 in 1980. During the same decade the percentage of U.S. patents granted to foreigners – mostly residents of West Germany and Japan – increased from 25% to 38.9%.

Were these foreign scientists and engineers inherently more creative than their U.S. counterparts? I think not. If one assumes, as I do, that royalties are an effective way to stimulate invention, then our reward system stifles new ideas.

Rewards American style

Whereas most industrial nations protect employees' patent rights by statute, often American workers must sign preemployment contracts that turn over these rights to their companies.

At most large corporations, employee-inventors do receive nominal awards; these range from pen sets and plaques to bonuses of a few hundred dollars. But management reserves for itself large bonuses based on the sales and profits those inventions generate. That this generally accepted policy tends to sour employer-employee relations should come as no surprise. Nor should it be hard to understand why it leads scientists and engineers to abandon invention for management.

To encourage innovation, one segment of U.S. industry has tried a new approach. Video game manufacturers give their designers optimal working conditions and highly visible personal recognition. More important, they pay them royalties that range from 10% to 15% of the profits on their games. The industry's rapid growth demonstrates the advantage of this more equitable system of rewards.

Rewards European style

Many Western European nations have enacted statutes to protect the rights of employers and employees. *These laws differ in several* regards, but all divide employees' inventions into two general categories: free inventions, which are non-work-related, and service inventions, which derive from work-related tasks. The second is more significant, because 80% to 90% of all patented inventions grow out of the employment relationship.

West Germany's statute, enacted in 1957, is the most comprehensive of the Western European service-invention laws. Like most others, it covers inventions that are kept as company trade secrets as well as those that are actually patented. In addition, it extends protection to cost-saving, technical improvement suggestions, which are not eligible for patents.

Guidelines for computing the compensation due the employee are also included in the German statute, so that the amount can be adjusted according to the employees' duties and participation in the creative process as well as the invention's value to the business and the company's investment in developing it.

Employer-employee negotia*tions usually determine compensation,* with arbitration before a tribunal as a last – or next-to-last – resort. Although an appeal through the judicial system is possible if either party is dissatisfied with the settlement proposed by the arbitration board, few cases follow this route. In the first 17 years of the law's existence, only 1,100 cases came to arbitration, and 75% of these were settled amicably before the board had to impose a decision.

Not all the European statutes have been drafted this equitably. For example, although many countries allow employees to present claims regardless of the invention's profitability, the United Kingdom's 1977 patents act allows compensation only for patents of "outstanding benefit to the employer." As defined during the Parliamentary debates, this means that the patent must be a "a humdinger of a winner," "a bonanza for the employer," or "the sort of invention that may revolutionize a company or even perhaps a whole industry." If the English courts uphold these interpretations, most employee-inventors will not be entitled to compensation.

Rewards Japanese style

Japan's 1959 patent compensation statute contains provisions similar to those in the Western European laws. Compliance is voluntary, not mandatory as in Europe. As of 1980 almost 75% of Japan's corporations had adopted service-invention regulations modeled on those published by the Japanese patent office. Most of the others have their own schemes for rewarding employee-inventors.

Companies that follow the model regulations establish service invention review boards composed of a chairman, a vice chairman, and some employee members appointed by the chairman. Each board determines the compensation due its company's employees. With the chairman's permission, inventors may attend the board meetings to express their views.

The amount of money involved in these awards is small by American standards: the maximum is less than $10,000. Nevertheless, in conjunction with employment practices that also reward innovative contributions, they have had a noticeable effect on Japanese inventiveness. Within ten years of the law's enactment the number of patent applications from Japanese citizens had more than tripled, rising to well over 100,000 per year.

Learning from experience

Proposed legislation based on the West German employee-inventors law now appears as H.R. 3285 of the 98th Congress. Although similar to its prototype in many regards, it differs in this way. The German arbitration board's findings can be appealed through the courts. The U.S. board's factual conclusions cannot, unless there has been a mistake of law or the holding has been capricious.

Representatives of American industry contend that such a law would disrupt team effort and that worthless patent applications would flood the patent offtce. In addition, Americans who have dealt with the German legislation argue – and German industrial leaders do not deny – that it necessitates cumbersome paperwork and is very time consuming.

But according to a report recently issued by the U.S. Library of Congress, most German business people believe that the innovation the law fosters outweighs its faults. Therefore, I suggest that we draw on the Germans' experience to improve the pending legislation. The following changes should make the proposed law more acceptable to U.S. corporate managers without changing its fundamental principles:

- ☐ Appeals to an arbitration board would be limited to inventions that have earned more than $20,000 for the company. Inventions that fall short of this amount would entitle the inventor to a modest compensation award (perhaps $200) payable when the patent is granted. This change would minimize the number of appeals and reduce paperwork. The National Labor Relations Board and certain federal court actions provide precedents in stipulating that a minimum monetary amount must be satisfied before they assert jurisdiction.
- ☐ Time limits that are now ill-defined or too restrictive would be altered to reflect industry practice.
- ☐ H.R. 3285 allows compensation to be redetermined when a major change in circumstances occurs – for example, when an invention becomes profitable in mid-life, after the parties have agreed to a minimum compensatory amount. This section would be limited to cases in which charges of fraud or misrepresentation appear.
- ☐ H.R. 3285 also mandates the release of all rights to the employee if the company abandons a patent or allows it to lapse. Although this arrangement may be equitable under most circumstances, it could create a hardship for an employer that is holding back the invention to protect trade secrets or to avoid making other products obsolete. A "use it or lose it" provision would resolve such problems by requiring an employer to pay a nominal rental fee for unused inventions.
- ☐ Finally, tax policy should be designed to reward real invention and innovation. Current tax laws, which allow a 15-year, 25% tax credit for increases in corporate R&D expenditures, arguably encourage as much creative accounting as invention. I propose that employee-inventors be allowed to reduce the amount of taxes due on their royalties for one year, employers be entitled to claim a one- or two-year deduction and credit equal to the aggregate royalties paid, and innovators be eligible to receive partially tax-free bonuses for their work. In addition to stimulating invention, these tax benefits would promote team effort by rewarding those who contribute to an invention's commercial success as well as its creator.

'A piece of the action'

Invention and innovation require more than the minimum needed to complete an assigned task. Yet our present system of rewards does little – or nothing – to encourage this extra effort. Remuneration is still the most effective way to motivate employees, particularly if it includes "a piece of the action."

The Supreme Court has long recognized the link between invention and the prospect of personal gain. The time has come for the laws governing employee-inventions to do the same. By enacting a comprehensive service-invention law with properly channeled tax incentives, we will give our scientists and engineers their overdue fair share and prevent a drain of talent from the R&D ranks to management, where rewards are greater. In so doing, we will better our chances of competing successfully in the world market.

RESOLUTION 104-1
Resolved, that the Section of Patent, Trademark and Copyright Law favors in principle the adoption, by those states which choose to enact employee invention legislation, of the following Model State Law set out below:

PROPOSED MODEL STATE LAW REGARDING EMPLOYEE INVENTIONS

Any provision in an employment agreement which provides that the employee shall assign or offer to assign any of his rights in an invention to his employer shall not apply to an invention that the employee developed entirely on his own time without using the employer's equipment, or supplies, or facilities or proprietary information except for those inventions that (i) relate, at the time of conception of the invention, to the employer's business, or that of its parent, subsidiary or related companies, or actual or demonstrably anticipated research or development of the employer or said companies, or (ii) result from any work performed by the employee for the employer. To the extent a provision in an employment agreement purports to apply to the type of invention other than those described in subsections (i) and (ii) hereof, it is against the public policy of this State and is unenforceable. The employee shall bear the burden of proof in establishing that his invention qualifies under this section.

An employer may not require a provision of an employment agreement made unenforceable hereunder as a condition of employment or continued employment. An employer, in an employment agreement, may require that the employee report all inventions developed by the employee, solely or jointly during the term of his employment to the employer, including those asserted by the employee as nonassignable, for the purpose of determining employee or employer rights. If required by a contract between the employer and the United States or its agencies, the employer may require that full title to certain patents and inventions be in the United States.

file
Jacobs Employed inventors suit.

September 20, 1983

Mr. David W. Beier, III
Assistant Counsel
Subcommittee on Courts, Civil Liberties,
and the Administration of Justice
Committee on the Judiciary
2137 Rayburn House Office Building
Washington, D.C. 20515

Dear David:

It was a pleasure meeting with you last week and Bob Frank and I appreciate the information you shared with us concerning the various legislative issues pending before Mr. Kastenmeier's Subcommittee.

At the luncheon, Bob referred to a study that John Stedman had prepared for our West Coast Patent Subcommittee which addressed Congress' jurisdiction to enact legislation dealing with permissible employee pre-invention assignment agreements. I have attached a copy of John's analysis of this issue as it related to HR 4732 and HR 6635 of the 97th Congress, the predecessors to HR 3285 and HR 3286 of the 98th Congress. I had hoped to be able to have the attached retyped prior to submitting it to you; however, I am leaving the country this weekend and wanted to be certain that it was in the mail to you prior to my departure.

Again, thank you for the time you spent with the two of us last week and we look forward to working with you, Michael and Mr. Kastenmeier on these and other legislative issues.

Sincerely,

Tom

W. Thomas Suttle
Manager, Professional Programs

Attachment
cc with attachment: Carl Bayless
Leo Fanning
cc: Bob Frank

JCS--7/11/82

CONGRESS' JURISDICTION TO ENACT H.R. 4732 AND H.R. 6635

A. Provisions of H.R. 4732 and H.R. 6635

(not going into detail as to provisions, except as necessary to the discussion)

1. H.R. 4732

a. Defines "inventions" subject to the bill

(1) Covers only "patentable" inventions

(2) Defines "employment invention" (lists circumstances that brings it within that term)

b. Prohibits (i.e., renders unenforceable)all "pre-invention assignment agreements" other than those relating to "employment inventions."

(1) "Pre-invention assignment agreement" is defined as one that assigns rights in an invention not yet made, other than a shop right (which is defined, but not in the term of "shop right" as such, as a non-transferable, non-exclusive license to practice an invention which is conceived or made during actual employment with substantial use of the employer's "time, materials, facilities or funds").

c. Requires an employee to disclose all inventions made by him during employment (subject to the employer keeping confidential).

d. In case of conflict, provides for mandatory arbitration in the state of employment

2. H.R. 6635

a. Defines "service inventions" as those made during employment and growing out of the employee's type of work or derived from "experiences gained on the job related to operations carried out by the employer".

b. Employer has a right to claim ownership of all "service inventions", subject to payment of "adequate" compensation (defined as "fair market value" adjusted to take into consideration (1) the employee's duties and (2) the employer's contribution).

c. Remaining provisions, designed to implement the foregoing, include the employee's obligation to notify the employer and the latter's duty to respond; employer's duty to patent or admit patentability; provisions for arbitration, court proceedings, etc.; confidentiality requirements; provisions re foreign rights; prohibitions against conflicting contracts, discrimination by the employer, etc.; and others.

d. All inventions, other than "service inventions" are "free inventions", and belong to the employee.

(1) Employee's only duty with respect thereto is to disclose free inventions made during employment to his employer so the latter can contest the employee's claim that it is "free."

3. Both H.R. 4732 and H.R. 6635 are introduced as amendments to Title 35 (the "Patents" statute).

H.R. 4732 and H.R. 6635

B. Constitutional Provisions and Issues

1. Under our Federal system of delegated authority, Congress can enact only such legislation as the Constitution has authorized it to enact.

2. The delegated authority to enact patent and patent-related laws, is to be found primarily in Article I, Section 8, Clause 8 (hereinafter referred to as "Clause 8"), which reads as follows:

"The Congress shall have power . . . to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."

3. QUESTION: Does the above-quoted Clause 8 empower Congress to enact statutes that

a. Allocate rights in patentable inventions (including the allocation of "shop rights", provided for in H.R. 6635) as between employers and employees, in the manner provided by H.R. 4732 and H.R. 6635?

b. Require employers to pay "adequate compensation" for those patent rights to which the bill declares he is entitled, as provided in H.R. 6635?

c. Render unenforceable agreements that conflict with its provisions?

d. Include miscellaneous provisions reasonably designed to implement its requirements and policy?

C. Constitutional Doctrine and Interpretation, As It Applies to the Proposed Legislation

1. Specific provisions of Clause 8, literally interpreted, contain five conditions:

a. The purpose must be to "promote the progress of . . . useful arts."

b. Legislation must be limited to "inventors"

c. Legislation must be limited to "exclusive rights"

d. Legislation must relate to "discoveries"

e. Rights granted must be for a "limited time" only

2. Inasmuch as both H.R. 4732 and H.R. 6635 impose conditions and limitations as to patented and patentable inventions only (i.e., inventions that comply with the provisions of Title 35), it is indisputable that the proposals come within the Constitutionally-delegated authority of Clause 8, insofar as subject matter is concerned.

3. The only question, then, is whether the Constitutional provision limits Congress strictly to the granting of patents, or is broad enough to enable Congress to:

a. Provide for, limit, and impose conditions with respect to the assignment of such patents (as do both H.R. 4732 and H.R. 6635);

b. Prohibit agreements that conflict with such provisions (as do both H.R. 4732 and H.R. 6635);

c. Require the employer to pay "adequate" compensation for the assignment to it of inventions made by employees;

d. Impose "housekeeping" provisions (re notice, arbitration, etc.) designed to implement enforcement of the substantive provisions and render them operable and enforceable.

4. The general, settled doctrine of Constitutional interpretation is as follows:

a. Congress may not enact legislation that is in conflict with express limitations contained in the Constitution. Clause 8 contains no such express limitation on the power to implement the provisions contained therein re "inventions"--provisions that are reflected in the language of Title 35.

b. Congress may enact legislation reasonably designed to implement and further the carrying out of legislation that is enacted pursuant to, and lies within, the authority delegated to it by the Constitution. See, e.g., Katzenbach v. McClung, 379 U.S. 294 (1964) holding Constitutional under the commerce clause, a statute that prohibited racial discrimination in restaurants offering service to interstate travelers. Some of the Court's comments were as follows:

> /Congress is empowered to legislate/ "appropriate means to the attainment of a legitimate end, the effective execution of the granted power to regulate interstate commerce. . . . The activities that are beyond the reach of Congress are 'those which are completely within a particular State, which do not affect other States, and with which it is not necessary to interfere, for the purpose of executing some of the general powers of the government.' Gibbons v. Ogden, 9 Wheat. 1, 195, 6 L ed 23, 70 (1824). This rule is as good today as it was when Chief Justice Marshall laid it down almost a century and a half ago." (p. 302)
>
> ". . . In passing on the validity of legislation of the class last mentioned the only function of courts is to determine whether the particular activity regulated or prohibited is within the reach of the federal power." (p. 303)
>
> ". . . where we find that the legislators, in light of the facts and testimony before them, have a rational basis for finding a chosen regulatory scheme necessary to the protection of commerce, our investigation is at an end. (pp. 303-304)
>
> "We think . . . Congress acted well within its power to protect and foster commerce . . .. (p. 304)
>
> "The power of Congress in this field is broad and sweeping; where it keeps within its sphere and violates no express constitutional limitation it has been the rule of this Court, going back almost to the founding days of the Republic, not to interfere. The Civil Rights Act of 1964, as here applied, we find to be plainly appropriate . . .. We find it in no violation of any express limitations of the Constitution and we therefore declare it valid." (p. 305)

5. The "reasonableness" of the provisions of H.R. 4732 and H.R. 6635 conforms to

a. The expressed Constitutional purpose of Clause 8;

b. Established general doctrine of Constitutional interpretation expressed in authoritative legal decisions;

c. Comparable provisions in the present Title 35;

d. Considerations of logic, reason and common-sense; and

e. General understanding and acceptance.

(Elaboration of these five propositions follows)

6. Accepted Constitutional and statutory purpose to encourage invention and innovation by rewarding (and stimulating) INVENTORS

a. The most authoritative expression of the intended purpose behind Clause 8 is to be found in the Federalist papers. See Federalist Paper No. 43, authored by James Madison, in which he comments as follows on the power of Congress to enact a patent law:

> "The utility of this power will scarcely be questioned. The copyright of authors has been solemnly adjudged in Great Britain to be a right at common law. The right to useful inventions seems with equal reason to belong to the inventors. The public good fully coincides in both cases with the claims of individuals. The states cannot separately make effectual provision for either of the cases, and most of them have anticipated the decision of this point by laws passed at the instance of Congress."

b. Mazer v. Stein, 347 U.S. 201 (1954), although a copyright case, contains the following comment:

> "The economic philosophy behind the clause empowering Congress to grant patents and copyrights is the conviction that encouragement of individual effort by personal gain is the best way to advance public welfare through the talents of authors and inventors in 'Science and useful Arts.' Sacrificial days devoted to such creative activities deserve rewards commensurate with the services rendered." (p. 219)

c. As recently as 1966, in Graham v. John Deere Co., 383 U.S. 1 (1966), the Supreme Court commented:

> "The Congress in the exercise of the patent power may not overreach the restraints imposed by the stated constitutional purpose. Nor may it enlarge the patent monopoly without regard to the innovation, advancement or social benefit gained thereby. . . . Innovation, advancement, and things which add to the total sum of useful knowledge are inherent requisites in a patent system which by constitutional command must "promote the Progress of . . . useful Arts." This is the standard expressed in the Constitution and it may not be ignored. . . .
>
> "Within the limits of the constitutional grant, the Congress may, of course, implement the stated purpose of the Framers by selecting the policy which in its judgment best effectuates the constitutional aim. This is but a corollary to the grant to Congress of any Article I power. Gibbons v. Ogden, 9 Wheat. 1. Within the scope established by the Constitution, Congress may set out conditions and tests for patentability." (p. 6)

d. The Constitution speaks expressly in terms of granting patents to inventors. This concept is adopted throughout Title 35, which speaks exclusively in terms of granting a patent to the inventor (secs. 101, 102) and requiring that the application be filed by him except in special circumstances (secs. 111, 115, 117, 118). In contrast, the laws of many countries authorize the employer of the inventor to apply for the patent in his own name.

e. Many other examples could be added, but the foregoing are quite sufficient to support the proposition that both Clause 8 and the Patent statute enacted thereunder, are directed primarily to "promoting progress" through the device of rewarding and stimulating the individual inventor--granted, that others, such as the inventor's employer, may benefit secondarily from his inventive activities. It would appear incontrovertible that provisions which protect the rights of inventors, including employed inventors, from encroachment upon their patent rights, are a reasonable exercise of the Constitutional objective expressed in Clause 8.

7. Established general doctrine of Constitutional interpretation

a. The courts have consistently held that the Constitutional provisions delegating authority to Congress to legislate, in the absence of express language to the contrary, must be broadly construed to permit Congress to exercise its discretion in selecting what it considers appropriate means of achieving the Constitutional objective. Nowhere has the concept been better stated than in the famous case of McCullough v. Maryland, 4 Wheat.(U.S.) 316)1819), upholding the power of Congress to incorporate a bank, even though such power re banks is not expressly stated in the Constitution. The Court said:

> ". . . we think the sound construction of the constitution must allow to the national legislature that discretion, with respect to the means by which the powers it confers are to be carried into execution, which will enable that body to perform the high duties assigned to it, in the manner most beneficial to the people. Let the end be legitimate, let it be within the scope of the constitution, and all means which are appropriate, which are plainly adapted to that end, which are not prohibited, but consist (sic) with the letter and spirit of the constitution, are constitutional." (p. 421)

b. The mere fact that the Congress may, in enacting legislation, interfere with or limit common law doctrine or the power of the states does not prevent its legislating, providing it otherwise falls within its delegated power. See Katzenbach v. McClung, quoted supra. The doctrine with respect to impairment of the power of the states was well summarized in United States v. Darby, 312 U.S., at 124, where the Court said:

> "The amendment states but a truism that all is retained which has not been surrendered. . . .
>
> "From the beginning and for many years the amendment has been construed as not depriving the national government of authority to resort to all means for the exercise of a granted power which are appropriate and plainly adapted to the permitted end."

c. Again, in the light of these broad and generous concepts, it appears obvious that the proposed legislation clearly lies within the discretion of Congress, as a means of promoting the progress of the useful arts, pursuant to the provisions of Clause 8.

8. The provisions in the bills are not unlike several provisions already contained in the Patent Laws

a. To the extent that one may question whether Congress would be exceeding its Clause 8 authority by going beyond the sole act of granting patents and legislating with respect to assignments and payment of compensation in return for the assignment of patent rights, one may point out that Congress has already so legislated. To question the legality of the proposals contained in H.R. 4732 and H.R. 6635, therefore, would be equally to cast doubt on these universally accepted provisions. Examples of such legislation are as follows:

(1) Sec. 122 of Title 35, preserving the confidentiality of patent applications, imposes "secrecy" limitations on patent applications--even though many of these may eventually turn out to be unpatentable "inventions."

(2) Sec. 152 provides that a patent may be granted to the "assignee of the inventor of record."

(3) Secs. 181-188 provide for withholding issuance of patents on "national security" grounds, abandonment of patents for unauthorized disclosure, and payment of compensation for damages resulting from a secrecy order and for Governmental use of the invention.

(4) Sec. 261 provides that a "patent shall have the attributes of personal property," shall be assignable or the subject of an exclusive license, and that an assignment shall be void as against a subsequent purchaser unless recorded.

(5) Sec. 1498, title 28, grants, in effect, a non-exclusive license to the Government, subject to the payment of "reasonable and entire compensation."

(5) Many other provisions relate to the usage of, limitations upon, and compensation related to, patents, but the foregoing is sufficient to indicate the prevalence of provicions that go beyond the narrow scope of granting patents, and extend to questions of how they are used, compensation for use, assignment and licensing thereof, etc.

9. Considerations of logic and reason support the proposed legislation

a. Initially, it should be noted that, even though Congress may not have seen fit heretofore to legislate as to employee assignments and compensation, this fact provides no basis for contending that it cannot do so. See Hart, The Relations Between State and Federal Law, 54 Col. L. Rev. 489, 526-527 (1954), wherein the author points out that, with respect to delegated powers, since Congress has discretion not to act at all, a fortiori it has discretion to act only for a limited purpose. In support of this proposition, he selects the patent laws as an example, commenting as follows:

"Again, Congress has exercised its constitutional authority to provide for issuance of patents for inventions.

> But the patent laws, as construed, confer only a narrow right to exclude other persons on certain conditions, from the use of the invention."

b. Inasmuch as Congress can control and legislate with respect to ownership of patent rights, it follows as a matter of course that it can control and legislate with respect to the lesser right of assigning and licensing one's rights in such patents.

c. Likewise, it follows that Congress can control and legislate with respect to providing for compensation as a condition of conveying one's rights.

10. There appears to be virtually universal acceptance of Congress' POWER to legislate regarding allocation of rights and payment of compensation, as provided for in H.R. 4732 and H.R. 6635.

a. Although there is considerable difference of opinion as to the desirability of the legislation proposed in H.R. 4732 and H.R. 6635, there appears to be no suggestion that Congress lacks power to enact such legislation

(1) The Section of Patent, Trademark and Copyright Law of the American Bar Association vigorously opposes H.R. 4732 and urges state legislation in lieu thereof, but it concedes that Congress could enact legislation on the subject of allocation, saying:

> "... if a federal law is considered desirable in the interest of increased uniformity, the committee prefers enactment of federal legislation based on the model state statute." 1982 Committee Reports, p. 67

(2) Neal Orkin, in a recent article on the subject (The Legal Rights of the Employed Inventor In the United States: A Labor-Management Perspective, in Employees' Inventions--A Comparative Study (Jeremy Phillips ed., Fernsway Publications, 1981), p. 152), states his belief that this issue of employee rights should be treated as a "labor-management" problem, not as a "patent" problem (p. 152), but it appears clear from his discussion th at he believes that Clause 8 gives Congress the power to legislate in this area (see pp. 169-172, referring among others/many of the references discussed above).

b. While there are numerous cases involving patents holding that state law (including common law) rather than federal law should be applied to various patent assignments, licenses and claims to ownership (allocation) and to suits for royalties (compensation), without exception these decisions are based on findings that Congress has chosen not to act in the areas in question. None questions Congress' power to act; indeed, almost invariably the court has expressly conceded that if Congress had chosen to act, the federal statute would be controlling. See,e.g., United States v. Dubilier Condenser Corp., 289 U.S. 178 (1933); Isbell v. Delpark, 372 U.S. 672 (1963); Kaplan v. Johnson, 409 F.Supp. 190 (1976), reversed on the ground that Congress had legislated regarding allocation of patent rights as between a federal employee and his Government employer (Kaplan v. Corcoran, 545 F.2d 1075 (1976). Cf. Gibbons v. Ogden, 9 Wheat. 1 (U.S. 1824), in which the question of federal pre-emption vis a vis

the states with respect to patent rights was argued extensively, although the Supreme Court held that the state statute in issue was unconstitutional under the "commerce clause" and, hence, passed over the Clause 8 issue without discussion on the merits. It is significant, however, that there is nothing in the reported arguments of counsel (which consume 186 pages of Wheaton, Volume 9I) on either side that even remotely questions the power of Congress to legislate in this area if it sees fit.

c. One of the most enlightening and extensive discussions of the power of Congress to act, as contrasted with its actual legislation, is found in the Dubilier case. In this case, the Court held that, in the absence of contract or regulation to the contrary, patent rights in a Government employee's invention belonged to him, not to the Government, in accordance with common law doctrine. The Court, however, recognizes in numerous statements the power of Congress to legislate on the subject. See, e.g., the following:

"To the laws passed by the Congress, and to them alone, may we look for guidance as to the extent and the limitations of the respective rights of the inventor and the public. . . . And this court has held that the Constitution evinces no public policy which requires the holder of a patent to cede the use or benefit of the invention to the United States, . . ." (p. 189)

"The statutes, decisions and administrative practice negate the existence of a duty binding one in the service of the Government different from the obligation of one in private employment." (p. 192, emphasis supplied).

The Court summarily rejects a Government contention, which it states as follows: ". . . that a public policy, to be declared by a court, forbids one employed by the United States, for scientific research, to obtain a patent for what he invents, though neither the Constitution nor any statute so declares. (p. 197, emphasis supplied).

In further comments on this proposition, the Court states:

"The courts ought not to declare any such policy; its formulation belongs solely to the Congress. (p. 198). . . . the decision as to what will accomplish the greatest good for the inventor, the Government and the public rests with the Congress. We should not read into the patent laws limitations and conditions which the legislature has not expressed. . . . Moreover, we are of opinion Congress has approved a policy at variance with the petitioner's contentions. This is demonstrated by examination of two statutes, with their legislative history, and the hearings and debates respecting proposed legislation which failed of passage." (pp. 198-199, emphasis supplied).

In concluding that Government employees should have the same rights as private inventors, the Court comments:

"Congress has now confirmed the soundness of the views held by the law officers of the Government

> [regarding a bill leaving patent rights with employees except for a shop right in the Government] (p. 203) . . . it is clear that Congress had no purpose to declare a policy at variance with the decisions of this court (p. 205). . . . Hitherto both the executive and the legislative branches of the Government have concurred in what we consider the correct view,--that any such declaration of policy must come from Congress and that no power to declare it is vested in administrative officers." (p. 209).

Cf. a subsequent order amending the Court's opinion, by striking (289 U.S. 706) the following:

> "No act of Congress has been called to our attention authorizing the United States to take a patent or to hold one by assignment. No statutory authority exists for the transfer of a patent to any department or officer of the government, or for the administration of patents, or the issuance of licenses on behalf of the United States."

The amendment does not, however, challenge the basic proposition that authority for legislating lies with Congress.

d. This Subcommittee, itself, has on frequent occasion considered bills which involved issues of employer-employee allocation and employee compensation, pursuant to its Clause 8 delegated authority. A recent example is H.R. 6933, forerunner to Public Law 96-517.

e. Again, numerous other instances could be cited supporting the general and unquestioning acceptance of the power of Congress to enact legislation of the H.R. 4732 and H.R. 6635 type if, in its discretion, it deems such enactment desirable.

D. Conclusion

The foregoing discussion conclusively demonstrates, in our opinion, that the answers to the question posed in E, e (supra, page 2) is unquestionably "YES" with respect to all four types of provisions.

SCHUMPETER



In which the author argues that our politicians and economists,

By Peter F. Drucker

THE TWO GREATEST economists of this century, Joseph A. Schumpeter and John Maynard Keynes, were born, only a few months apart, a hundred years ago: Schumpeter on Feb. 8, 1883 in a provincial Austrian town, Keynes on June 5, 1883 in Cambridge, England. (And they died only four years apart—Schumpeter in Connecticut on Jan. 8, 1950, Keynes in southern England on Apr. 21, 1946.) The centenary of Keynes' birth is being celebrated with a host of books, articles, conferences and speeches. If the centenary of Schumpeter's birth were noticed at all, it would be in a small doctoral seminar. And yet it is becoming increasingly clear that it is Schumpeter who will shape the thinking and inform the questions on economic theory and economic policy for the rest of this century, if not for the next 30 or 50 years.

THE TWO MEN WERE NOT ANTAGONISTS. Both challenged long-standing assumptions. The opponents of Keynes were the very "Austrians" Schumpeter himself had broken away from as a student, the neoclassical economists of the Austrian School. And while Schumpeter considered all of Keynes' answers wrong, or at least misleading, he was a sympathetic critic. Indeed, it was Schumpeter who established Keynes in America. When Keynes' *General Theory* came out, Schumpeter, by then the senior member of the Harvard economics faculty, told his students to read the book and told them also that Keynes' work had totally superseded his own earlier writings on money.

Keynes, in turn, considered Schumpeter one of the few contemporary economists worthy of his respect. In his lectures he again and again referred to the works Schumpeter had published during World War I, and especially to Schumpeter's essay on the *Rechengeldzeuge* (i.e., money of account) as the initial stimulus for his own thoughts on money. Keynes' most successful policy initiative, the proposal that Britain and the U.S. finance World War II by taxes rather than by borrowing, came directly out of Schumpeter's 1918 warning of the disastrous consequences of the debt financing of World War I.

Schumpeter and Keynes are often contrasted politically, with Schumpeter being portrayed as the "conservative" and Keynes as the "radical." The opposite is more nearly right. Politically Keynes' views were quite similar to what we now call "neoconservative." His theory had its origin in his passionate attachment to the free market and in his desire to keep politicians and governments out of it. Schumpeter, by contrast, had serious doubts about the free market. He thought that an "intelligent monopoly"—the American Bell Telephone system, for instance—had a great deal to recommend itself. It could afford to take the long view instead of being driven from transaction to transaction by short-term expediency. His closest friend for many years was the most radical and most doctrinaire of Europe's left-wing socialists, the Austrian Otto Bauer, who, though staunchly anticommunist, was even more

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AND KEYNES

sometimes unknowingly, are following the wrong prophet.



anticapitalist. And Schumpeter, while never even close to being a socialist himself, served during 1919 as minister of finance in Austria's only socialist government between the wars. Schumpeter always maintained that Marx had been dead wrong in every one of his answers, but he still considered himself a son of Marx and held him in greater esteem than any other economist. At least, so he argued, Marx asked the right questions—and to Schumpeter questions were always more important than answers.

The differences between Schumpeter and Keynes go much deeper than economic theorems or political views. The two saw a different economic reality, were concerned with different problems and defined "economics" quite differently. These differences are highly important to an understanding of today's economic world.

Keynes, for all that he broke with classical economics, operated entirely within its framework. He was a "heretic" rather than an "infidel." Economics, for Keynes, was the equilibrium economics of Ricardo's 1810 theories, which dominated the 19th century. This economics deals with a closed system and a static one. Keynes' key question was the same question the 19th-century economists had asked: "How can one maintain an economy in balance and stasis?"

For Keynes, the main problems of economics are the relationship between the "real economy" of goods and services and the "symbol economy" of money and credit; the relationship between individuals and businesses and the "macro-economy" of the nation-state; and finally, whether production (that is, supply) or consumption (that is, demand) provides the driving force of the economy. In this sense Keynes was in a direct line with Ricardo, John Stuart Mill, the "Austrians" and Alfred Marshall. However much they differed otherwise, most of these 19th-century economists, and that includes Marx, had given the same answers to these questions: The "real economy" controls, and money is only the "veil of things"; the micro-economy of individuals and businesses determines, and government can, at best, correct minor discrepancies and, at worst, create dislocations; and supply controls, with demand a function of it.

KEYNES ASKED the same questions that Ricardo, Mill, Marx, the "Austrians" and Marshall had asked but, with unprecedented audacity, turned every one of the answers upside down. In the Keynesian system, money and credit are "real," and goods and services dependent on, and shadows of, the "symbol economy"; the macro-economy, the economy of the nation-state, is everything, with individuals and firms having neither power to influence, let alone to direct, the economy nor the ability to make effective decisions counter to the forces of the "macro-economy"; and economic phenomena, capital formation, productivity and employment are functions of demand.

By now we know, as Schumpeter knew 50 years ago, that every one of these Keynesian answers is the wrong answer. At least they are valid only for special cases and

Schumpeter insisted that innovation is the very essence of economics and most certainly of a modern economy.

within fairly narrow ranges. Take, for instance, Keynes' key theorem: that monetary events—government deficits, interest rates, credit volume and volume of money in circulation—determine demand and with it economic conditions. This assumes—as Keynes himself stressed—that the turnover velocity of money is constant and not capable of being changed over the short term by individuals or firms. Schumpeter pointed out 50 years ago that all evidence negates this assumption. And indeed, whenever tried, Keynesian economic policies, whether in the original Keynesian or in the modified Friedman version, have been defeated by the "micro-economy" of businesses and individuals, unpredictably and without warning, changing the turnover velocity of money almost overnight.



When the Keynesian prescriptions were initially tried—in the U.S. in the early New Deal days—they seemed at first to work. But then, around 1935 or so, consumers and businesses suddenly sharply reduced the turnover velocity of money within a few short months, which aborted a recovery based on government deficit spending and brought about a second collapse of the stock market in 1937. The best example, however, is what happened in this country in the last few years. The Federal Reserve's purposeful attempt to control the economy by controlling money supply has largely been defeated by consumers and businesses who suddenly and almost violently shifted deposits from thrifts into money market funds and from long-term investments into liquid assets—that is, from low-velocity into high-velocity money—to the point where no one can really tell any more what the "money supply" is or even what the term means. Individuals and businesses seeking to optimize their self-interest and guided by their perception of economic reality will always find a way to beat the "system"—whether, as in the Soviet bloc, through converting the entire economy into one gigantic black market or, as in the U.S. in the last few years, through transforming the financial system overnight despite laws, regulations or economists.

This does not mean that economics is likely to return to pre-Keynesian neoclassicism. Keynes' critique of the neoclassic answers is as definitive as Schumpeter's critique of Keynes. But because we now know that individuals can and will defeat the system, we have lost the certainty that Keynes imposed on economics and that has made the Keynesian system the lodestar of economic theory and economic policy for 50 years. Both Friedman's monetarism and supply-side economics are desperate attempts to patch up the Keynesian system of equilibrium economics. But it is unlikely that either can restore the self-contained, self-confident equilibrium economics, let alone an economic theory or an economic policy in which one factor, whether government spending, interest rates, money supply or tax cuts, controls the economy predictably and with near-certainty.

That the Keynesian answers were not going to prove any more valid than the pre-Keynesian ones that they replaced was clear to Schumpeter from the beginning. But to him this was much less important than that the Keynesian questions—the questions of Keynes' predecessors as well—were not, Schumpeter thought, the important questions at all. To him the basic fallacy was the very assumption with which Keynes had started out: the assumption that the healthy, the "normal," economy is an economy in static equilibrium. Schumpeter, from his student days on, held that a modern economy is always in dynamic disequilibrium. Schumpeter's economy is not a closed system like Newton's universe—or Keynes' "macro-economy." It is forever growing and changing, and is biological rather than mechanistic in nature. If Keynes was a "heretic," Schumpeter was an "infidel."

Schumpeter was himself a student of the great men of Austrian economics and at a time when Vienna was the world capital of economic theory. He held his teachers in lifelong affection. But his doctoral dissertation—it became the earliest of his great books, *The Theory of Economic Development* (which in its original German version came out in 1911, when Schumpeter was only 28 years old)—starts out with the assertion that the central problem of economics is not equilibrium but structural change. This then led to Schumpeter's famous theorem of the innovator as the true subject of economics.

Classical economics considered innovation to be outside the system, as Keynes put it, with innovation belonging in the category of "outside catastrophes" like earthquakes, climate or war, which, everybody knew, have profound influence on the economy but are not part of economics. Schumpeter insisted that, on the contrary, innovation—that is, entrepreneurship that moves resources from old and obsolescent to new and more productive employments—is the very essence of economics and most certainly of a modern economy.

He never minimized what he was the first to admit, from Marx. But he used it to disprove Marx. Schumpeter's *Economic Development* does what neither the classical economists nor Marx nor Keynes was able to do. It makes profit fulfill an economic function in the economy of change and innovation, profit, in contrast to Marx, is not a distortion, a "surplus value" stolen from the workers. On the contrary, it is the only source of jobs for workers and of labor income. The theory of economic development shows that no one except the innovator makes a genuine "profit," and the innovator's profit is always quite short-lived. For innovation in Schumpeter's famous phrase is also "creative destruction." It makes obsolete yesterday's capital equipment and capital investment. The more an economy progresses, the more capital formation will it therefore need. Thus what the classical economist—or the accoun-

tant or the stock exchange—considers "profit" is a genuine cost, the cost of staying in business, the cost of a future in which anything is predictable except that today's profitable business will become tomorrow's white elephant. Thus, capital formation and productivity are needed to maintain the wealth-producing capacity of the economy and, above all, to maintain today's jobs and to create tomorrow's jobs.



SCHUMPETER'S "INNOVATOR" with his "creative destruction" is the only theory so far to explain why there is something we can profit. The classical economists very well knew that their theory did not give any rationale for profit. Indeed, in the equilibrium economics of a closed economic system there is no place for profit, no justification for it, no explanation of it. If profit is, however, a genuine cost, and especially if profit is the only way to maintain jobs and to create new ones, then "capitalism" becomes again a moral system.

Morality and profits. The classical economists had pointed out that profit is needed as the incentive for the risk taker. But is this not really a bribe and thus impossible to justify morally? This dilemma had driven the most brilliant of 19th-century economists, John Stuart Mill, to embrace socialism in his later years. It had made it easy for Marx to fuse dispassionate analysis of the "system" with the moral revulsion of an Old Testament prophet against the "exploiters." The weakness on moral grounds of the profit incentive enabled Marx at once to condemn the "capitalist" as wicked and immoral, and assert "scientifically" that he serves no function and that his speedy demise is "inevitable." As soon, however, as one shifts from the axiom of an unchanging, self-contained, closed economy to Schumpeter's dynamic, growing, moving, changing economy, what is called "profit" is no longer immoral. It becomes a moral imperative. Indeed, the question then is no longer the question that agitated the classicists and still agitated Keynes: How can the economy be structured to minimize the bribe or the iniquitous surplus called "profit" that has to be handed over to the capitalist to keep the economy going? The question in Schumpeter's economics is always: Is there sufficient profit? Is there adequate capital formation to provide for the costs of the future, the costs of staying in business, the costs of "creative destruction"?

THIS ALONE makes Schumpeter's economic model the only one that can serve as the starting point for the economic policies we need. Clearly the Keynesian—or classicist—treatment of innovation as being "outside" and in fact peripheral to the economy and with minimum impact on it, can no longer be maintained (if it ever could be). The basic question of economic theory and economic policy, especially in highly developed countries, is clearly: How can capital formation and productivity be maintained so that rapid technological change as well as employment can be sustained? What is the minimum profit needed to defray the costs of the future? What is the minimum profit needed, above all, to maintain jobs and to create new ones?

Schumpeter gave no answer—he did not much believe in answers. But 70 years ago, as a very young man, he asked what is clearly going to be the central question of economic theory and economic policy in the years to come.

And then, during World War I, Schumpeter realized, long before anyone else—and a good ten years before Keynes did—that economic reality was changing. He realized that World War I had brought about the monetarization of the economies of all belligerents. Country after country, including his own still fairly backward Austria-Hungary, had succeeded during the war in mobilizing the entire liquid wealth of the community, partly through taxation, but mainly through borrowing. Money and credit, rather than goods and services, had become the "real economy."

In a brilliant essay published in a German economic journal in July 1918—when the world Schumpeter had grown up in and had known was crashing down around his ears—he argued that, from now on, money and credit would be the lever of control. What he argued was that neither supply of goods, as the classicists had argued, nor demand for goods, as some of the earlier dissenters had maintained, was going to be controlling anymore. Monetary factors—deficits, money, credit, taxes—were going to be the determinants of economic activity and of the allocation of resources.

This is, of course, the same insight on which Keynes later built his *General Theory*. But Schumpeter's conclusions were radically different from those Keynes reached. Keynes came to the conclusion that the emergence of the "symbol economy" of money and credit made possible the "economist-king," the scientific economist, who, by playing on a few simple monetary keys—government spending, the interest rate, the volume of credit or the amount of money in circulation—would maintain permanent equilibrium with full employment, prosperity and stability. But Schumpeter's conclusion was that the emergence of the "symbol economy" as the dominant economy opened the door to tyranny and, in fact, invited tyranny. That the economist now proclaimed himself infallible, he considered pure hubris. But, above all, he saw that it was not going to be economists who would exercise the power, but politicians and generals.

And then, in the same year, just before World War I ended, Schumpeter published *The Tax State* ("The Fiscal State" would be a better translation). Again, the insight is the same Keynes reached 15 years later (and, as he often acknowledged, thanks to Schumpeter): The modern state, through the mechanisms of taxation and borrowing, has acquired the power to shift income and, through "transfer

He prophesied inflation would destroy democracy and capitalism. Inflation is now the central problem of free markets.

payments," to control the distribution of the national product. To Keynes this power was a magic wand to achieve both social justice and economic progress, and both economic stability and fiscal responsibility. To Schumpeter—perhaps because he, unlike Keynes, was a student of both Marx and history—this power was an invitation to political irresponsibility, because it eliminated all economic safeguards against inflation. In the past the inability of the state to tax more than a very small proportion of the gross national product, or to borrow more than a very small part of the country's wealth, had made inflation self-limiting. Now the only safeguard against inflation would be political, that is, self-discipline. And Schumpeter was not very sanguine about the politician's capacity for self-discipline.

Schumpeter's work as an economist after World War I is of great importance to economic theory. He became one of the fathers of business cycle theory.



BUT SCHUMPETER'S REAL contribution during the 32 years between the end of World War I and his death in 1950 was as a political economist. In 1942, when everyone was scared of a worldwide deflationary depression, Schumpeter published his best-known book, *Capitalism, Socialism and Democracy*, still, and deservedly, read widely. In this book he argued that capitalism would be destroyed by its own success. This would breed what we would now call the "new class": bureaucrats, intellectuals, professors, lawyers, journalists, all of them beneficiaries of capitalism's economic fruits and, in fact, parasitical on them, and yet all of them opposed to the ethos of wealth production, of saving and of allocating resources to economic productivity. The 40 years since this book appeared have surely proved Schumpeter to be a major prophet.

And then he proceeded to argue that capitalism would be destroyed by the very system it had helped create and made possible. For in a democracy, to be popular, government would increasingly become the "welfare" state, would increasingly shift income from producer to nonproducer, would increasingly move income from where it would be saved and become capital for tomorrow to where it would be consumed. Government in a democracy would thus be under increasing inflationary pressure. Eventually, he prophesied, inflation would destroy both democracy and capitalism.

When he wrote this in 1942, almost everybody laughed. Nothing seemed less likely than an inflation based on economic success. Now, 40 years later, this has emerged as the central problem of democracy and of a free-market economy alike, just as Schumpeter had prophesied.

The Keynesians in the Forties ushered in their "promised land," in which the economist-king would guarantee the perfect equilibrium of an eternally stable economy through control of money, credit, spending and taxes. Schumpeter, however, increasingly concerned himself with the question of how the public sector could be controlled and limited so as to maintain political freedom and an economy capable of performance, growth and change. When death overtook him at his desk, he was revising the presidential address he had given to the American Economic Association only a few days earlier. The last sentence he wrote was: "The stagnationists are wrong in their diagnosis of the reason the capitalist process should stagnate; they may still turn out to be right in their prognosis that it will stagnate—with sufficient help from the public sector."

Keynes' best-known saying is surely, "In the long run we are all dead." This is one of the most fatuous remarks ever made. Of course, in the long run we are all dead. But Keynes in a wiser moment remarked that the deeds of today's politicians are usually based on the theorems of long-dead economists. And it is a total fallacy that, as Keynes implies, optimizing the short term creates the right long-term future. Keynes is in large measure responsible for the extreme short-term focus of modern politics, of modern economics and modern business—the short-term focus that is now, with considerable justice, considered a major weakness of American policymakers, both in government and in business.

SCHUMPETER ALSO KNEW that policies have to fit the short term. He learned this lesson the hard way—as minister of finance in the newly formed Austrian republic in which he, totally unsuccessful, tried to stop inflation before it got out of hand. He knew that he had failed because his measures were not acceptable in the short term—the very measures that, two years later, a noneconomist, a politician and professor of moral theology did apply to stop the inflation, but only after it had all but destroyed Austria's economy and middle class.

But Schumpeter also knew that today's short-term measures have long-term impacts. They irrevocably make the future. Not to think through the futurity of short-term decisions and their impact long after "we are all dead" is irresponsible. It also leads to the wrong decisions. It is this constant emphasis in Schumpeter on thinking through the long-term consequences of the expedient, the popular, the clever and the brilliant, that makes him a great economist and the appropriate guide for today, when short-run, clever, brilliant economics—and short-run, clever, brilliant politics—have become bankrupt.

In some ways, Keynes and Schumpeter replayed the best-known confrontation of philosophers in the Western tradition—the Platonic dialog between Parmenides, the brilliant, clever, irresistible sophist, and the slow-moving and ugly, but wise, Socrates. No one in the interwar years was more brilliant, more clever than Keynes. Schumpeter, by contrast, appeared pedestrian—but he had wisdom. Cleverness carries the day. But wisdom endureth. ■

A WAGNERIAN VISION

There is no place in Keynes' system for IBM, McDonald's hamburgers and venture capital. There is in Schumpeter's.

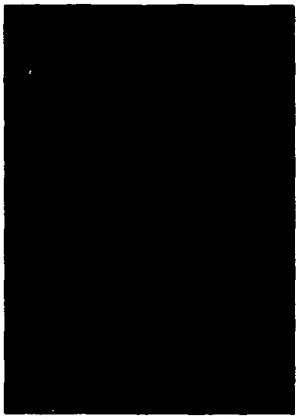
By James W. Michaels and Herman Gall

As a young man Joseph Alois Schumpeter proclaimed he had three wishes in life. To be the greatest lover in Vienna. To be the greatest horseman in Europe. And to be the greatest economist in the world. History records only spottily his achievements in the first two fields, but it is now quite clear that he did become the greatest economist of the 20th century. His vision was not narrowly economic but close to being prophetic about the whole direction in which society has been moving.

Schumpeter is not easy to read, but he did have a wry sense of humor. He wrote that Marx' ideas had a good chance of prevailing, not because they were correct, but in good measure because they appealed to the unsuccessful, who were, by definition, the most numerous. Such flashes of ironic humor and his own colorful personality notwithstanding, Schumpeter was not the popular essayist Keynes was. Nor were his ideas what the press, the public and the politicians wanted to hear.

He believed that full employment and economic stability were unhealthy and unwise goals. That the recessionary phase of the business cycle and its attendant suffering in temporary joblessness and numerous bankruptcies were therapeutic for preserving economic efficiency and inflation-free growth. That the welfare state would lead to a society bereft of vitality.

He believed that economic vitality came essentially from entrepreneurs, who, applying technology and innovation to a society produced efficiencies that earned the entrepreneurs large profits. The innovation could be technological, as in IBM. Or it could be a simple rearrangement of existing resources, as in McDonald's. In either case the profit was the fruit of this innovation rather than something stolen from the workers. Moreover, most of these profits would be reinvested in economic growth. Thus—as Peter Drucker points out in the preceding article—profits and economic inequality were not immoral, in fact, they were the engine of a better life for everyone. The government that uses its taxing powers to redistribute income, to deprive the entrepreneur of his reward, is thwarting this creative process.



An affectionate caricature of Schumpeter in 1919, when he was Austria's Minister of Finance. He was later to write: "Of all the reasons for the failure of able men, the most important is the inability to wait."

In Schumpeter, profits and savings are central. Without them there can be neither growth nor progress. Schumpeter faulted Keynes for denigrating the importance of savings. In this we now know that Schumpeter was correct. We are currently paying the price in slowed growth for decades of neo-Keynesian policies that penalized savings and encouraged, even subsidized, consumption.

There is much more in Schumpeter. Like Marx he felt that capitalism was doomed, but for totally different reasons. Where MARX thought capitalism would be killed by its excesses, Schumpeter thought its very successes would do the job. By its great productivity capitalism would make possible the transformative state which would end by taxing productive industry near to death. By its great productivity capitalism would create what we now call the "new class"—intellectuals, professors, bureaucrats, journalists—who would help bring it down. Schumpeter thought such thoughts before they were fashionable. Perhaps because his was not a cheerful message it made few converts. But that was before the world learned about stagflation bred by neo-Keynesian policies.

Fittingly for a child of turn-of-the-century Viennese culture, there was something Wagnerian about Schumpeter. He was a romantic in his thinking as in his life. The same young man who craved beautiful women and beautiful horses once reportedly fought a duel with a librarian over his students' right to use books. Unlike Keynes, Schumpeter was not in love with order but with dynamism. Keynes sought economic equilibrium; Schumpeter believed in economic growth.

"We are all Keynesians now," Richard Nixon proclaimed a decade or so ago. But the tide is swinging slowly away from what passes today as Keynes' ideas and toward the kind of thinking Schumpeter espoused. Quietly, a Schumpeterian revival is under way. It remains to be seen whether his warnings will be heeded soon enough to save capitalism and democracy from being destroyed by their own success.

Patents and incentives to invent

J. Phillips

The laws which govern the grant of patents for inventions are assumed to serve two useful ends. Firstly, they are conceived as an incentive to inventors to make and then disclose their inventions. Secondly they are viewed as providing an appropriate means for facilitating a division of resources between those who make inventions and those who exploit them. Both these presumed functions are examined in this article, which raises questions as to the utility of current laws in the achievement of these ends.

Nowadays the notion of the patent grant is generally equated with that of the provision of a legal reward for a person who makes an invention, but this has not always been the case. Since the first English patent was granted in 1331 the patent has been variously employed as a means of protecting foreign artisans, as a reward for royal friendship or patronage, as a mineral concession, and as an adjunct to the development of craft apprenticeships [1]. The role of the patent as an inventor's reward, and as an encouragement of further invention, which has enjoyed great currency during the last two centuries, is now becoming the subject of close and critical scrutiny on the part of lawyers and laymen alike. It is the function of this article to review some of the assumptions underlying the patent system, to place them within the current industrial environment in which patents are supposed to play their role, and to investigate some of the criticisms which have been levelled against the patent system as it operates today.

Briefly stated, a patent gives its owner [2] a legal right to prevent anyone else from making or using the invention which is its subject. This right is not automatic, but is contingent upon the successful outcome of a process of application, and public disclosure, of the invention which commonly exceeds two years and is frequently longer. Once granted, the right subsists for a period which commonly lasts for twenty years (sixteen in the United States) from the 'priority' date of the patent application; in fact, in many jurisdictions the patentee must renew his patent each year (often after the expiry of the fourth year) if he wants his right to continue. The right, once granted, is not absolute, for a patent may be revoked, compulsorily laid open for the use of commercial competitors, or used for the purposes of the State. It is, however, treated much like any other type of legal property, and may be sold or licensed to others.

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EURO ARTICLE
(see page ii)

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The patent as a stimulus to invent

Most legislatures, and apologists for the patent systems, have assumed that the availability of a patent grant operates as a stimulus upon the mind of the inventor, and that the promise or expectation of some sort of pecuniary advantage deriving from it will motivate the otherwise non-inventive (or merely potentially inventive) mind to invent. This assumption has scarcely been challenged throughout history [3], although there is no empirical evidence to support it and some recent evidence to indicate that it is misconceived.

That a causal connection between the hope of a patent grant and the act of invention should be presumed is itself remarkable. However one seeks to define the mental process of invention, it is obvious that it is a process which itself requires a degree of intellect sufficient to initiate an innovatory thought process or at any rate to recognise the significance of any novel occurrence. We may call this the 'capacity to invent.' The lure of a patent grant cannot create or enhance this capacity to invent; it can, of course, stimulate in abstract the desire to invent, but this is not a sufficient condition of the art of invention.

What does stimulate inventors to invent? The question is fraught with problems of definition and of methodology. How can one indicate with sufficient precision what one means by a stimulus? Is a pecuniary stimulus, say, of the same order as a purely intellectual one? How does one measure the relative impact where more than one stimulus, or class of stimulus, has apparently motivated an inventor? Is the inventor's own *ex post facto* self-report a reliable basis upon which to gauge the effect of stimuli? The inexact nature of the discipline of psychology, and the tensions between cognitive and behaviourist schools of psychology, give some measure of the nature of these problems as regarded by the legal policy-maker, the economist, or the industrial sociologist.

A recent survey of inventors in Australia, conducted by Stuart Macdonald [4], revealed that the desire to solve a specific problem was given by 411 out of 586 respondents as a reason for their engaging in invention, and the desire to be useful to society was mentioned by 420, while the making of money was mentioned by only 328. On the other hand, once an invention had been made, 436 out of 569 respondents applied for patents in order to make money out of their inventions. It is difficult to know what conclusions are to be drawn from this self-report survey but it is likely that, if the reasons given are the product of honest response and not of a wish to appear to be (initially) motivated by altruism, the patent grant does not so much stimulate inventive activity as provide a potential means of converting the fruits of that activity into some sort of financial benefit.

This survey was, however, conducted among 'individual' or 'non-corporate' inventors. Though there is little in the way of actual data, it is generally reckoned that around 80–85 per cent of patents derive from inventions made by employees in the course of their employment duties [5]. How does the patent system affect them? Once again reputable data is scarce [6], but it is

generally assumed that the likelihood of a patent grant will not be of concern to the employee inventor where the benefit of the patent will accrue to his employer, a result which is obtained in many jurisdictions where the function of the law is seen not merely as the encouragement of invention but also as the protection of the employer's investment in the inventor's salary, training, and work environment.

Where the inventor is a full-time employee of a company or organisation which dictates the area of research and, in many cases, the way in which it is to be conducted, it has been recognised that the prime stimulus to invent is not the patent grant but the sum total of 'in-house' incentives provided by the employer. In the United States, where the Federal legislature has been reluctant to intervene in the delicate balance of interests of employer and inventor, such incentives have taken many forms: for example, cash rewards, holidays, improved research conditions or facilities, or even the allocation of shares in the employing company. The common factor showed by these apparently diverse inducements is that they are in principle *ex gratia*: the employee inventor has no right to receive them but merely the hope that he will do so. The principle of *ex gratia* awards has often been criticised in that *the inventor cannot be sure to receive* compensation commensurate with the commercial value of his invention; but even the hope of an *ex gratia* benefit is capable of motivating an employee towards inventive activity of a kind desired by the employer, so long as the prospect of gain is more real than illusory.

Legal rights as stimulus or response

The foregoing account has dwelt solely upon the problem of providing an apt *stimulus or incentive to invent*. It is apparent that this problem does not conveniently lend itself to the formulation of a legal solution, since law (like psychology) is an inexact science. Moreover the law, if it is not to be *ad hoc* in its embodiment, seeks as its preferred mode of problem solution the formulation of rules which are to be of general application, while it is evident that there are a multiplicity of reasons why people invent and that the law cannot easily encompass them all.

Legislators have therefore concentrated their attention upon the results of inventive activity instead. Once an invention is made, the law provides general rules which govern the opportunity to derive a fair reward for the exploitation of it. In a mixed or capitalist economy the law customarily provides for the grant to the inventor (or whoever holds the right in his place) of a right to the exclusive exploitation of that invention. The extent to which that right is exploited is taken to be the fair reward for the making of the invention and for the financial outlay which leads to its being marketed [7]. In a controlled economy the law seeks instead to facilitate state exploitation of the invention and to provide for the calculation of a reward for the inventor's endeavours which is based not upon the commercial value of the invention but upon its social value in the community where it is used [8].

Both the capitalist and communist legal responses to invention are, however, linked to the notion of the law as a means of providing an inventive stimulus. This is because in both systems there rests the very sensible expectation that the presence of well-rewarded inventors, whether in the work-place or within the larger community, will attract the attention of others who will in turn seek to imitate their actions and share their prosperity. Such an incentive should be capable of operating upon the mind of would-be inventors even if the notion of the grant of a patent right is not, of itself, a potent stimulus to invent. It fails, however, when the would-be inventor perceives no such beneficiaries of the fruit of success.

Rewarding employee inventors

Since the vast majority of patentable inventions are made by those who are employed to do so, the provision of adequate and incentive-bearing rewards for employee inventors should be a prime concern of any stimulus-oriented patent law. The number of legal options is considerable. For example, the law can provide cash or other rewards at the state's expense, which measure the social or the commercial utility of the invention [9]; or it can make no express provision at all, leaving it open to employers to weigh against each other the competing claims of expenditure on invention compensation and invention development [10]; again, the law can leave the patent technically under the employee's control but subject to the employer's first option on its exploitation [11], or to his free licence to use the invention as he pleases [12]; or it can take the patent away from the inventor so as to safeguard its exploitation by the party which has paid for it, but allowing the employee to claim compensation where the patent is used—profitably [13] or otherwise by the employer.

Each legal solution raises practical objections. A problem shared by all solutions is the difficulty of computing the appropriate level of compensation to be received by the employee inventor. This is because the principles to be followed in making the compensatory award are open to controversy. If, for example, inventors A and B both make similarly lucrative inventions for their employer, should the fact that A is under a duty to invent but B is not, and is assumed to be non-inventive, mean that B receives greater compensation than A for his efforts? If B does receive more because his invention is the more meritorious for its being unexpected by the employer, will there be a negative impact upon the stimulus of future inventions made by A and his fellow invention-orientated employees? And if C and D both make similarly lucrative inventions for their respective employers, should C receive more than D when his employer is only a small firm upon which his invention makes a big impact, while D's employer is a *multinational* conglomerate whose profits from the invention will scarcely be noticed in the annual balance sheets? These and many other similar problems will trouble the seeker after a uniformly applicable formula for the compensation of employee inventors.

The 'favoured solution'

Notwithstanding the practical and theoretical problems inherent in this area of legal application, it is apparent that there is a developing trend amongst Western industrialized economies towards the adoption of a type of compensation law which, whatever its theoretical objections, does seem in theory to provide adequate compensation for the inventor, sufficient incentive for the prospective inventor, and security for the employer. The typical characteristics of such a law are in general, as follows:

(i) The employee inventor is allowed to keep an invention which he was clearly not engaged to make;

(ii) The employer will own an invention which *the employee inventor* is clearly engaged to make;

(iii) In 'grey areas' such as inventions made at the periphery of an employee's employment role, or those which relate to the employer's business activities, the employer may expect either the first option to obtain ownership of the patent, or a right to use the invention where the legal right is retained by the inventor;

(iv) The employer is unable to compel an employee to assign to him the legal rights in inventions which are unrelated to the latter's duties;

(v) Use of the invention by the employer will entitle the inventor to secure compensation;

(vi) Such compensation may be very small (or non-existent) where the invention is closely related to the employee's duties, or where its exploitation generates little profit, but large

where the act of invention is over and above the inventor's duties or where the exploitation of the invention generates especially great profit;

(vii) The amount of compensation payable is to be negotiated by the inventor and his employer but, failing agreement, assessment of a reasonable figure for the award will be made by a court of law or by an expert tribunal.

(viii) The sum to be received by an inventor may be subject to the application of more detailed schemes negotiated between the employer (or employer's organisation) and trade unions.

Efficacy of the 'favoured solution'

Advocates of the 'favoured solution' claim that it is not only the fairest in terms of its allocation of economic resources and in its reward for human endeavour, but that it actually encourages inventive activity. In countries such as West Germany and Sweden, where such laws have long been in existence [14], there is certainly a record of considerable domestic inventive productivity, but it is not possible to assess whether this would not have taken place even in the absence of their respective legislative frameworks. More tellingly, some countries which operate the 'favoured solution' (or analogous) laws, and Japan in particular, do seem to have encouraged a higher rate of domestic inventive activity than the United States, where the canons of freedom of contract are able, for the most part [15], to determine how patent rights and their rewards are divided between employer and inventive employee [16]. Bald figures do not, however, indicate the quality of the inventions which are the subject of patent application, so it cannot be gauged whether figures from 'favoured solution' jurisdictions simply reflect a larger number of applications for relatively worthless patents made at the instigation of employees eager for the chance of a reward.

Critics of the 'favoured solution' argue that it is an act of misconceived charity to award the employee inventor at the expense of other employees whose admittedly non-inventive work may nevertheless have done much to contribute to the invention's success; that it creates rivalry and distrust between fellow members of research teams; that it requires the employer to pay twice for his employee's work and that the inventive employee is already sufficiently rewarded by having a job which pays him whether or not he succeeds in making an invention [17]. It is only fair to say that these criticisms would appear to have as little substance in fact as do some of the laudatory assertions of proponents of the 'favoured solution'. It is, however, worthy of note that, while advocates of that solution can be found on both sides of the industrial divide, critics tend to belong specifically to the employer's side.

One important practical matter has so far remained undiscussed: that is the incentive towards the inventor's not so much taking the invention as disclosing it once he has invented it [18]. The employee who stands to gain from the marketing of an invention by his employer, whether he or the employer actually owns the patent, has a more obvious reason for telling his employer about it than does the employee who has signed away all his rights to benefit in exchange for a salary which he is already earning. Without the disclosure of the invention by the inventor, there is no exploitation of it and no-one benefits at all. The 'favoured solution' provides an incentive towards such disclosure, and this incentive is not always provided in the freely-negotiated contract of employment.

The British experience

In 1977 the United Kingdom adopted its own version of the 'favoured solution' in respect of inventions made on or after 1 June 1978. The introduction of such a scheme was not endorsed by the Banks Committee on Patent Law Reform in its 1974 report [19], nor does it appear to have been supported by British industry. On its introduction it was claimed that the scheme, in so far as it sought to encourage future invention or provide recompense for inventions once made, was effectively a dead letter because of the legal qualifications militating against the employee's entitlement to receive a reward [20]. For example, where an invention belonged initially to the employer, the employee could not expect to receive anything at all unless he could prove that the patent resulting from the invention was of 'outstanding benefit' to the employer [21]. No criteria for such 'outstanding benefit' were laid down, and no convenient means were provided for the prospective claimant to ascertain the value of the patent to his employer.

How has the scheme actually operated over its first five years? What impact has it made upon the inventive environment within which it operates? There is little in the way of informed comment upon its practical effect [22] and little, too, in the form of hard statistical data. A glance at Table 1 indicates that there is no general upward trend in domestic innovation, as evidenced by the aggregate of patent applications received from United Kingdom applicants, although it can be seen that United Kingdom applications form an increasing proportion of all applications.

TABLE 1

Year	Applications of U.K. origin	Proportion of all applications
1974	20,545	32.0
1975	20,842	39.0
1976	21,797	38.7
1977	21,114	38.8
1978	19,384	38.5
1979	19,005	43.6
1980	19,350	42.5
1981	20,791	53.1
1982	20,530	55.3

These figures are, of course, open to a number of explanations. The relatively constant aggregate of patent applications of United Kingdom origin may be viewed as evidence that no surge of inventive activity has followed from the adoption of incentive and compensatory laws; or it may be claimed that the positive effects of the incentive have been eroded by industrial decline and recession throughout the period, during which there has indeed been a general decrease in the proportion of the gross national product devoted to research and development activity [23]. The fact that the apparently constant level of United Kingdom applications represents an ever-increasing proportion of all applications should not be explained in terms of relative British success at a time of world recession: it may instead be related to the increased volume of activity of the European Patent Office, which opened its doors to patent applications on 1 June 1978.

One further feature of the British patent statistics which should not escape notice is the proportion of applications received from the applicants of different nations. Table 2 sets out the changes which have materialised in the origins of British applicants over the last decade.

In Table 2 the countries are arranged in descending order of 'inventive merit', those who have increased their proportion of applications by the largest amount over the period 1972–1982 appearing first. The column on the right indicates whether or not the country operates or recommends special legal provisions for the making of rewards to employee inventors. It is interesting to note that there is no pattern of correlation between the operation of invention compensation policy and the proportion of U.K. applications lodged, although, curiously, countries without special compensation

TABLE 2 PROPORTION OF NON-U.K. APPLICATIONS FILED IN THE U.K. (%)

	1972	1974	1976	1978	1980	1982	Legal right to compensation for employee inventors
Japan	9.1	12.4	11.7	11.8	19.4	20.6	yes
Italy	2.7	2.6	2.9	3.2	4.2	3.7	no
Taiwan	0.0	0.1	0.2	0.2	0.5	0.8	no
Hong Kong	0.2	0.2	0.2	0.4	0.8	0.8	no
Australia	0.8	0.9	1.0	1.2	1.0	1.1	no
Norway	0.2	0.3	0.3	0.4	0.2	0.4	yes
Germany (Democ. Rep.)	—*	0.6	0.3	0.4	0.7	0.8	yes
South Africa	0.4	0.4	0.4	0.4	0.5	0.5	no
Spain	0.4	0.4	0.4	0.5	0.5	0.5	no
New Zealand	0.2	0.2	0.3	0.3	0.3	0.3	no
Denmark	0.9	1.2	1.5	1.2	0.7	0.8	yes
Canada	1.8	1.8	2.0	1.7	1.5	1.5	no
Austria	0.8	0.7	0.8	0.7	0.7	0.4	yes
Sweden	2.4	2.9	2.8	2.8	2.6	1.8	yes
USSR	1.6	1.1	1.0	1.1	0.7	0.8	yes
Switzerland	5.6	5.3	3.4	5.2	5.0	4.1	no
France	8.2	7.2	7.5	7.4	5.0	3.5	yes
Germany (Fed. Rep.)	20.7	20.4	19.2	19.7	16.4	13.8	yes
United States	37.1	35.0	35.2	33.1	30.7	29.7	no

(The actual figures from which these percentages are calculated are taken from the *Annual Reports of the Comptroller of Patents, Trade Marks and Designs*).
* No figure given

laws would seem to have done in general better than one might have expected. On the other hand, the biggest proportional increase has occurred in Japan, where many employees can expect to achieve excellent recompense for their inventions [24], while the United States—a country whose lack of provision for employee inventors has been a major focus for legal and industrial criticism [25]—fares by far the worst. In considering these figures it should, of course, be recognised that, while they may be expected to reflect general trends in patenting activity, they cannot be regarded as being in any way drawn from a typical sample of patent applications.

A new proposal: 'Orkinomics'

The 'favoured solution', like any set of legal principles, is capable of refinement and adjustment in the light of defects discovered or criticisms levelled at it. Perhaps the most sophisticated version of it is that which has been put forward by the American labour lawyer *Neal Orkin* [26]. His proposed scheme, eponymously labelled 'Orkinomics', is that of the 'favoured solution' as integrated into the fiscal structure of the state. The modifications he suggests are that:

(i) The employee inventor's reward should be in the form of royalties on successfully-exploited inventions, a proportion of which should be taxfree [27];

(ii) The royalty paid by the employer should be the subject of positive tax advantage (for example, if the employer pays the inventor $10 000 in a year, he is entitled to deduct, say, $12 000 from his taxable income);

(iii) The voluntary payment of bonuses to innovators (whom he defines as non-inventive employees whose endeavours go to make the invention commercially successful), also on a tax-advantageous basis, should be encouraged.

These proposals have, potentially, the advantages that inter-employee rivalries (if they truly exist) between inventors and non-inventors can be minimised or eliminated, that employers will have no incentive to be ungenerous towards deserving inventors, and that the cost of rewarding the inventor will ultimately be borne by the state, the original source of the now relatively unattractive incentive of a patent monopoly. Whether such a scheme is acceptable is, of course, a political matter rather than a question of practical feasibility.

Conclusion

The nature of patent rights, and their legal and economic effects, are matters which greatly exercise the ingenuity of the lawyer. This is because the lawyer is merely the servant of those who profess other disciplines. It is for the economist to prescribe the desirability of establishing monopolies for new markets, or for new means of competing within old markets. It is for the psychologist to determine what measure of incentive or inducement is required; and it is for the compromise of politicians to determine the wider parameters of acceptability for the economists' and psychologists' prescriptions. Once this compromise solution takes embryonic form it is examined by industry for its practical feasibility, and by commerce for its subjective profitability; again the conflicting needs of the system's users will be harmonised or compromised by potential considerations. Only then will the lawyer be called upon, not to prescribe what the law ought to be but to design it within the boundaries set for him by others. Sadly, if the law is found to have shortcomings, it is lawyers who are called to account for its injustice.

The unregulated relationship of employer to employee inventor is one of almost inevitable antipathy and conflict of interest. The 'favoured solution'—whether it stimulates invention or not—is capable of removing this conflict, and of emphasising the mutually beneficial potential of the yoking together of research funds and inventive ability with a view to the profitable exploitation of resulting inventions. It is submitted that the practical benefits which it is capable of attaining far outweigh the theoretical criticisms made of it, and that these criticisms are, in any event, largely or entirely overcome by the Orkinomic model discussed above.

References and notes

[1] On the early history of patents in Europe see e.g. Frumkin, M. *Transactions of the Newcomen Society*, 47, 1947–9; Phillips, J. *J. Legal History*, 3, 71, 1982; Gomme, A. 'Patents of Invention: Origin and Growth of the Patent System in Europe', 1946.

[2] Most patent legislation determines that the inventor should be the first grantee of the patent, but in practice the owner of the patent is usually someone else, such as an employer or assignee.

[3] Cf. Phillips, J. *The Inventor*, 4, 10, 1981.

[4] Australia—the patent system and the individual inventor. *European Intellectual Property Review*, 41, 1983.

[5] Ruete, M. In: Phillips, J. (ed) 'Employees' Inventions: a Comparative Study' (hereafter Employees' Inventions) p. 180 estimates the figure for West Germany as 80–90% for employees' inventions; Le Stanc, C. *ibid*, p. 41, estimates that nine out of ten French inventions are made by employees.

[6] There are exceptions, e.g. Neumeyer, F. 'The Employed Inventor in the United States', 1971; Page, E. 'Award Schemes for Employee Inventions', CIPA, 2, 1975.

[7] See e.g. Coryton, J. 'Treatise on the Law of Letters-Patent for Inventions . . .', 41–2, 1955.

[8] See e.g. Boguslawsky, M. *International Review of Industrial Property and Copyright Law*, 6, 121, 1975.

[9] E.g. the COMECON countries.

[10] E.g. the United States, the Republic of Ireland, Australia, and, indeed, most of the English-speaking world.

[11] E.g. the Swedish 'category three' inventions described by F. Rausing in 'Employees' Inventions', p. 99.

[12] The United States 'shop right', see e.g. U.S. v. Dubilier Condensor Corp. 289 U.S. 178, 1933.

[13] E.g. Employer-owned inventions under the United Kingdom Patents Act 1977, s. 40(1).

[14] Swedish Act of 18 June 1949. German legislation is derived from the concepts contained in the Patents and Utility Models Acts of 1936.

[15] Cf. state laws enacted in e.g. Minnesota (S.F. 208, the 'Freedom to Create' Act of 1978) and California (Assembly Bill 474, approved on 26 September 1979).

[16] For a detailed account of United States law see N. Orkin, 'The Legal Rights of the Employed Inventor in the United States: a labor-management perspective'. In: 'Employees' Inventions'.

[17] See e.g. Taylor, C. and Silberston, Z. 'The Economic Impact of the Patent System, p. 323, 1973.

[18] On this subject see McTiernan, C. *J. Patent Office Soc.*, 46, 475, 1964.

[19] The British Patent System, Cmnd. 4407, 1974.

[20] See e.g. Phillips, J. *Industrial Law Journal*, 30, 35, 1978.

[21] Patents Act 1977 s. 40(1).

[22] Speculation as to the likely practical implications of the British law can be found in Phillips, J. and Hoolahan, M. 'Employees Inventions in the United Kingdom', 1982.

[23] See Schott, K. 'Industrial Innovation in the United Kingdom, Canada and the United States', 1981, esp. 1–12.

[24] For an account of the rewards received under the apparently successful voluntaristic law of Japan see Doi, T. in 'Employees Inventions', p. 66 *et seq*. A wider appreciation of Japan's unique approach to industrial relations may be gleaned from Takezawa, S. and others, 'Improvements in the Quality of Working Life in Three Japanese Industries', 1982.

[25] See e.g. Orkin, N. in 'Employees' Inventions', pp. 152–172, and in *J. Patent Office Soc.*, 56, pp. 648 and 719, 1974.

[26] Orkin, N. *European Intellectual Property Review*, 331, 1982.

[27] Ibid, p. 335. This notion has already been put into practice in West Germany. See Ruete, M. in 'Employees' Inventions', p. 200.

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EMPLOYMENT OF INVENTORS AND CREATORS OF OTHER INTELLECTUAL PROPERTY

William Larry Respess

THE EMPLOYMENT CONTRACT AND OTHER FACTORS AFFECTING THE OWNERSHIP OF EMPLOYEE INVENTIONS

INTRODUCTION

The manner in which our legal system has permitted the ownership in an employee's invention to be resolved between the employer and employee permits an analogy to be drawn, ableit a crude and imprecise one, with the way in which it accomplishes the disposition of property owned by a deceased. Thus, substantial latitude in the way property is disposed is permitted if the owner expresses his wishes through the vehicle of a will prior to the need to distribute his property. However, in the absence of such an expression, the legal system imposes a "will" on the estate by distributing it according to a formula set by the law of the state where the deceased was domiciled. Use of the formula, while it may not have been the one which the deceased would have chosen had he exercised his discretion, at least permits the orderly transfer of property rights by foreclosing litigation designed to divine what the deceased would have intended had he made a will. Not content with a system in which property is distributed either as the owner expresses in a will or by formula if no will, recently states have, in effect, entered the will drafting process and require provision for certain natural objects of the deceased's bounty, e.g., the spouse.

So it is also with regard to the ownership of an employee's invention. Putting aside for the moment the disparity

between their respective bargaining powers, employer and employee have generally been free to negotiate agreements which apportion between them the ownership rights in the employee's invention. However, in the absence of such a predisposition, the law imposes a formula for determining rights in the invention. Unfortunately, as we shall see, while the formula is fairly simple, its application in specific instances often is disputed and must be resolved by litigation. Finally, in recent years, the states have begun to intrude upon the agreement process and thereby limit the extent to which the employer and inventor can apportion rights in the invention. These and other aspects of the relationship between the employer and employee-inventor are considered below.

THE RESPECTIVE RIGHTS IN EMPLOYEE INVENTIONS IN THE ABSENCE OF AN EXPRESS AGREEMENT

No one disputes that an invention belongs exclusively to the inventor in the absence of some relationship, either contractual or implied, with another party. In fact, our patent laws generally presume ownership by the inventor since applications must be made in the name of the inventor and a substantial showing is required by a non-inventor who seeks to prosecute an application based on a proprietary right in the invention when the inventor is not cooperative or unavailable. See 37 C.F.R. 1.47. This same presumption is perhaps reflected in 35 U.S.C. 261 which requires recording of patent assignments if one is to take title over a subsequent bona fide purchaser for value who does not have actual notice of the assignment.

In the situation where there is no agreement between the employer and employee as to the ownership of inventions, depending upon the circumstances, the law will imply an agreement under which the employee will be in a position to take title or, at least, enjoy a non-exclusive, royalty free license to use the invention, i.e., a "shop right". In other circumstances, however, the employer will obtain no right whatsoever in employee inventions arising from the fact of the employer-employee relationship.

The common law among the several states apportioning ownership rights between employer and employee is remarkably uniform. Generally, these rights are influenced by three main factors: (1) the nature of the employment relationship; (2) the relationship of the employee's invention to the employer's business, actual or contemplated, and (3) the use, if any, of the employer's resources by the employee in making the invention. The rights of Federal employees to inventions in the context of their employment relationship with the Federal government is also determined by these criteria and Federal law is indistinguishable from the common law of the states.

A now classic case, but by no means even an early one, dealing with the respective rights of an employer to an employee's invention is United States v. Dubilier Condenser Corp.[1] which considered the rights of the U.S. vis a vis certain employees of the

1. 289 U.S. 178, 77 L.Ed. 1114 (1933)

Bureau of Standards.[2]

The employees, Dunmore alone and Dunmore and Lowell jointly, had obtained patents, respectively, for the concept of the application of alternating current to broadcast reception and for a power amplifier. Although assigned to work on projects of significance to military problems, neither of the patents arose from the projects assigned to the inventors although government resources were used to perfect the inventions. The patents which they obtained were assigned to Dubilier.

The government sought either title to the patents or their dedication to the public. The Supreme Court ruled, however, that the patents belonged to Dubilier because originally the inventions were the property of the inventors. The important principles which may be distilled from the Dubilier case, and others, are that, absent an actual agreement:

1. The employer owns inventions made by persons employed to invent which are made within the scope of their employment.

2. The employee owns inventions which are made by him outside the scope of his employment even if hired to invent subject to the caveat that the employer acquires a "shop right" in the nature of a non-exclusive right to practice the invention if the employee uses the materials, equipment, facilities, or other

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2. An excellent treatment of this and other notable cases involving a resolution of the rights of an employer to an employee's invention that goes far beyond the scope of this paper may be found in "Who Owns What Is In Your Head? Trade Secrets And The Mobile Employer", S. H. Lieberstein, Hawthorne Books, New York (1979).

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resources of the employer in making his invention.

The essential harmony between state and federal law can be seen by comparing Dubilier with, for example, the holdings in Pursche v. Atlas Scraper & Engineering Co.[3] and Panner Metals, Inc. v. Lockwood,[4] the latter, at least, applying the state law of California.

The holding in Pursche, which is not unique, also recognize that an invention made by an employee, even if not hired to invent, would still belong to the employer if the employee was actually assigned a task from which the invention resulted.[5]

When the employer acquires title to the invention by operation of the common law, he does not thereby acquire legal title to any patent on the invention. Instead, he obtains an equitable title and may specifically enforce the obligation of the employee to assign the patent.[6]

Although not necessarily determinative, the existence of a fiduciary relationship or other special relationship between the employer and employee can affect whether a court will hold that the invention belongs to the employer. For example, in LeFiell v.

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3. 300 F.2d 467, 132 U.S.P.Q. 104 (9th Cir. 1961)

4. 178 Cal.App.2d 661, 125 U.S.P.Q. 29 (1960)

5. 300 F.2d 484, 132 U.S.P.Q. 118

6. Keller v. Clark Equipment Co., ____ F.Supp. ____, 210 U.S.P.Q. 742, 768 (D.N.D. 1981)

United States,[7] a patent taken out in the name of the company president and principal stockholder was held to belong to the company on the basis that he was the company's alter ego. Cases cited in LeFiell reached similar results using theories of a constructive trust,[8] that the employee was a quasi-trustee,[9] or merely because of the close relationship between the employer and employee. However, it seems to be the law of New York, at least, that an employer in a fiduciary relationship with a corporation such as an officer and director is not obliged to assign his inventions in the absence of an express agreement merely because of his position.[10]

THE USE OF WRITTEN AGREEMENTS TO DEFINE OWNERSHIP RIGHTS IN EMPLOYEE INVENTIONS

There is a sense of fundamental fairness in the common law scheme for allocating ownership rights in an employee's inventions. If the employer is hired to invent it is certainly not unjust that inventions made in the scope of his employment belong to the employer. After all, he is paid to make inventions and his compensation is consideration for the release of ownership. It is also hard to complain with the result that an employee owns all rights in inventions made on his own time and at his own

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7. 138 U.S.P.Q. 312 (Ct.Cl. 1963)

8. Diversey Corp. v. Mertz, 13 F.Supp. 410, 29 U.S.P.Q. 294 (N.D.Ill. 1936)

9. Dowse v. Federal Rubber Co., 254 F. 308 (N.D.Ill. 1918)

10. Tripp v. United States, 157 U.S.P.Q. 90 (Ct.Cl. 1968)

time and at his own expense with the possible exception of the situation where knowledge and skills acquired on the job inspire the invention and where it relates to the employer's business. The grant of a "shop right" represents a comfortable middle ground when the employer's resources have been used in making the invention. Perhaps, therefore, in a perfect world there would be no need for a written agreement affecting rights in view of the symmetry of the common law scheme, particularly if fine-tuned.

However, it has been suggested in Jamesbury Corp. v. Worcester Valve Co., Inc., that the practice of making written agreements between employers and employees to set forth their respective rights to the employee's inventions is the product of the unpredictability of how Court's will apply the common law.[11] From the employer's point of view, a shop right is by its very nature a very poor consolation prize compared to outright ownership of the invention since it is a non-exclusive license, personal to the holder and, therefore, non-transferrable.[12] In the instance where the invention cannot be practiced directly by the employer, the existence of a shop right is of no value to him since it cannot even be exploited by a licensing arrangement. Furthermore, the holder of a shop right in a patented invention, again being a bare licensee, cannot bring suit to stop infringement by a third party.[13]

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11. 443 F.2d 205, 214, 170 U.S.P.Q. 177, 182 (1st. Cir. 1971)

12. Pursche, supra, 300 F.2d 485, 132 U.S.P.Q. 118

13. Kurtzen v. Sterling Advertisers, Inc., 228 F.Supp. 696, 697, 141 U.S.P.Q. 391, 392 (E.D.Pa. 1964)

In view of these circumstances, it should not be surprising that employers have insisted upon written contracts defining their rights to inventions as a condition for employment. In many instances, these agreements have gone so far as to require the assignment of inventions made on the employee's own time, outside the scope of his employment and without use of the employer's resources, conditions under which the employer could not even acquire a shop right under the common law. Such contracts have, nevertheless, been held to be enforceable.[14] In some cases, the written agreements have further provided that post-employment inventions must be assigned to the former employer through so called "trailer" or "hold-over" clauses. The Courts, however, view these as restraints on competition and construe them narrowly. For example, in Armorlite Lens Co., Inc. v. Campbell, an agreement requiring the employee to turn over to his former employer all inventions made within a year after his employment terminated was held to be unenforceable as broadly written on the ground it was an unreasonable restraint on trade.[15] The Court held:

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14. Misani v. Ortho Pharmaceutical Corp., 145 U.S.P.Q. 625 (N.J. Supreme Court 1965)

15. Armorlite Lens Co., Inc. v. Campbell, 340 F.Supp. 273, 275, 173 U.S.P.Q. 470, 471 (S.D.Ca. 1972)

> "An agreement, such as the one involved in the instant case, which requires a former employee to turn over to his former employer all new ideas and concepts concerning the field of work or the products of the employer which occur to him within one year after the termination of his employment, is unnecessarily broad. The plaintiff has argued that this one-year period is necessary to 'prevent cupidity upon the part of the employee who, upon recognizing he has hit upon a material improvement in the employer's field, resigns and after termination brings out his improvement.' (Plaintiff's Memorandum In Opposition p. 10, lines 19-22). The employment agreement in question, however, encompasses not only the dishonest employee with whom plaintiff is concerned, but also the honest employee who legitimately conceives an idea or improvement following his termination. To require a former employee, who has developed a new idea or concept following the termination of his employment and which is not based upon the employer's secrets or confidential information, to turn over the fruits of his labors to his former employer constitutes, in the opinion of this Court, an unreasonable restraint of trade."

The Court did hold that the agreement was valid and enforceable insofar as it related to inventions based upon secrets or confidential information of the former employer, in effect rewriting rather than voiding the entire contract provision.[16] A similar result was reached in Dorr-Oliver, Inc. v. United States, where the Court held:[17]

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16. Id. at 340 F.Supp. 275, 173 U.S.P.Q. 471

17. 432 F.Supp. 447, 452, 165 U.S.P.Q. 517, 520 (Ct.Cl. 1970).

> "Hold-over clauses in employment contracts are enforceable only if they constitute a reasonable and justifiable restriction on the right of employees to work in their profession for subsequent employers. Guth v. Minnesota Mining & Mfg. Co., 72 F.2d 385, 22 USPQ 89 (7th Cir. 1934); IV Walker, Patents §374 (Deller's 2d ed. 1965). See also Knoth, Assignment of Future Inventions, 27 Chi-Kent L. Rev. 295 (1949). Their legitimate purpose is to prevent an employee from appropriating to his own use or to the use of a subsequent employer inventions relating to and stemming from work done for a previous employer. Hold-over clauses are simply a recognition of the fact of business life that employees sometimes carry with them to new employers inventions or ideas so related to work done for a former employer that in equity and good conscience the fruits of that work should belong to the former employer. In construing and applying hold-over clauses, the courts have held that they must be limited to reasonable times (Guth, supra) and to subject matter which an employee worked on or had knowledge of during his employment. Universal Winding Co. v. Clarke, 108 F.Supp. 329, 94 USPQ 295 (D. Conn. 1952). Unless expressly agreed otherwise, an employer has no right under a hold-over clause to inventions made outside the scope of the employee's former activities, and made on and with a subsequent employer's time and funds. Gas Tool Patents Corp. v. Mould, 133 F.2d 815, 56 USPQ 357 (7th Cir. 1943)."

In summary, the courts have been quite generous in permitting written employment contracts to materially alter the manner in which ownership rights to employee inventions were apportioned under the common law. Whether done for reasons of expediency and to preclude future conflict over ownership of an invention or because of a genuine desire to acquire ownership of potentially

valuable inventions which would be denied them under the common law, the former being more likely, employers have used their generally greater bargaining power or the naviete of the employee to obtain provisions in contracts giving them outright ownership or other rights in the employee's invention broader than those contemplated by the common law scheme. As a result, the stage has been set for legislative action to restore balance to what has been perceived, rightly or wrongly, as being unfair bargaining strength between the employer and employee-inventor. We turn next to a consideration of the efforts being made in that direction.

STATUTORY SCHEMES AFFECTING THE ALLOCATION OF OWNERSHIP RIGHTS TO EMPLOYEE INVENTIONS

Prior to about 1977, the state statutes, if any, affecting the ownership of inventions made by employees took a form like §2860 of California's Labor Code which provides as follows:

> §2860. Ownership of things acquired by virtue of employment
>
> Everything which an employee acquires by virtue of his employment, except the compensation which is due to him from his employer, belongs to the employer, whether acquired lawfully or unlawfully, or during or after the expiration of the term of his employment.

The impact of the California statute on the common law affecting the employer's rights in invention of the employee has not been construed. However, North Dakota's nearly identical

statute, N.D. Cent. Code §34-03-11, has been construed to create no greater rights than arise under the common law.[18]

In 1977, Minnesota became the first of four state legislatures which have, to date, enacted legislation limiting the extent to which an employee can be obliged by contract to assign rights in his inventions to an employer. That statute, Minn. Stats. Anno. §181.78 provides as follows:

> **181.78 Agreements; terms relating to inventions**
>
> Subdivision 1. Any provision in an employment agreement which provides that an employee shall assign or offer to assign any of his rights in an invention to his employer shall not apply to an invention for which no equipment, supplies, facility or trade secret information of the employer was used and which was developed entirely on the employee's own time, and (1) which does not relate (a) directly to the business of the employer or (b) to the employer's actual or demonstrably anticipated research or development, or (2) which does not result from any work performed by the employee for the employer. Any provision which purports to apply to such an invention is to that extent against the public policy of this state and is to that extent void and unenforceable.
>
> Subd. 2. No employer shall require a provision made void and unenforceable by subdivision 1 as a condition of employment or continuing employment.
>
> Subd. 3. If an employment agreement entered into after August 1, '77, contains a provision requiring the employee to assign or offer to assign any of his rights in any invention to his employer, the employer must also, at the time the agreement is made, provide a written notification to the employee that the agreement does not apply to an invention for which no equipment, supplies, facility or trade secret information of the employer was used and which was developed entirely on the employee's own time, and (1) which does not relate (a) directly to the business of the employer or (b) to the employee's actual or demonstrably anticipated research or development, or (2) which does not result from any work performed by the employee for the employer.
> Laws 1977, c. 47 § 1.

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18. Keller v. Clark Equipment Co., ____ F.Supp. ____, 210 USPQ 745, 767-68 (D.N.D. 1981)

Shortly thereafter, Washington and California followed suit. The first legislation introduced into California as AB2257, if adopted, would have radically altered the employer-employee relationship insofar as the ownership of inventions is concerned. Under that bill, the employee would retain ownership of his inventions. In the situation where the employee wanted to use the invention he would be obliged to negotiate terms for doing so with the inventor. This legislation failed to pass but, in 1979, legislation which became California Labor Code §§2870-2872 governing the extent to which an employer could require an employee to assign his inventions as a condition for employment was adopted in the following form.[19]

§ 2870. Employment agreements; assignment of rights

Any provision in an employment agreement which provides that an employee shall assign or offer to assign any of his or her rights in an invention to his or her employer shall not apply to an invention for which no equipment, supplies, facility, or trade secret information of the employer was used and which was developed entirely on the employee's own time, and (a) which does not relate (1) to the business of the employer or (2) to the employer's actual or demonstrably anticipated research or development, or (b) which does not result from any work performed by the employee for the employer. Any provision which purports to apply to such an invention is to that extent against the public policy of this state and is to that extent void and unenforceable.
(Added by Stats.1979, c. 1001, p. —, § 1.)

Library References
Master and Servant ⇨62.
C.J.S. Master and Servant §§ 73, 74.

19. For a helpful discussion of the original bill and the legislation ultimately adopted in California see McGuire, "Employment-Invention Contracts, A History of California Code Sections 2870-2872", New Matter, Vol. 5, No. 2, 1980.

§ 2871. Conditions of employment or continued employment; disclosure of inventions

No employer shall require a provision made void and unenforceable by Section 2870 as a condition of employment or continued employment. Nothing in this article shall be construed to forbid or restrict the right of an employer to provide in contracts of employment for disclosure, provided that any such disclosures be received in confidence, of all of the employee's inventions made solely or jointly with others during the term of his or her employment, a review process by the employer to determine such issues as may arise, and for full title to certain patents and inventions to be in the United States, as required by contracts between the employer and the United States or any of its agencies.
(Added by Stats.1979, c. 1001, p. —, § 1.)

Library References
Master and Servant ⇔61.
C.J.S. Master and Servant §§ 73, 74.

§ 2872. Notice to employee; burden of proof

If an employment agreement entered into after January 1, 1980, contains a provision requiring the employee to assign or offer to assign any of his or her rights in any invention to his or her employer, the employer must also, at the time the agreement is made, provide a written notification to the employee that the agreement does not apply to an invention which qualifies fully under the provisions of Section 2870. In any suit or action arising thereunder, the burden of proof shall be on the employee claiming the benefits of its provisions.
(Added by Stats.1979, c. 1001, p. —, § 1.)

The state of Washington also adopted legislation in 1979 curbing the extent to which an employer could require an employee to assign his inventions. This legislation is embodied in RCW 49.44.140 and 49.44.150 which provide:

49.44.140 Requiring assignment of employee's rights to inventions —Conditions

(1) A provision in an employment agreement which provides that an employee shall assign or offer to assign any of the employee's rights in an invention to the employer does not apply to an invention for which no equipment, supplies, facilities, or trade secret information of the employer was used and which was developed entirely on the employee's own time, unless (a) the invention relates (i) directly to the business of the employer, or (ii) to the employer's actual or demonstrably anticipated research or development, or (b) the invention results from any work performed by the employee for the employer. Any provision which purports to apply to such an invention is to that extent against the public policy of this state and is to that extent void and unenforceable.

(2) An employer shall not require a provision made void and unenforceable by subsection (1) of this section as a condition of employment or continuing employment.

(3) If an employment agreement entered into after September 1, 1979, contains a provision requiring the employee to assign any of the employee's rights in any invention to the employer, the employer must also, at the time the agreement is made, provide a written notification to the employee that the agreement does not apply to an invention for which no equipment, supplies, facility, or trade secret information of the employer was used and which was developed entirely on the employee's own time, unless (a) the invention relates (i) directly to the business of the employer, or (ii) to the employer's actual or demonstrably anticipated research or development, or (b) the invention results from any work performed by the employee for the employer.

[Added by Laws 1st Ex Sess 1979 ch 177 § 2, effective September 1, 1979.]

C2S Master and Servant §§ 73, 74.
Key Number Digests: Master and Servant ⊂⊃62.

49.44.150 Requiring assignment of employee's rights to inventions—Disclosure of inventions by employee

Even though the employee meets the burden of proving the conditions specified RCW 49.44.140, the employee shall, at the time of employment or thereafter, disclose all inventions being developed by the employee, for the purpose of determining employer or employee rights. The employer or the employee may disclose such inventions to the Department of Employment Security, and the department shall maintain a record of such disclosures for a minimum period of five years.

[Added by Laws 1st Ex Sess 1979 ch 177 § 3, effective September 1, 1979.]

The most recent legislation is that of North Carolina §§66-57.1 and 66-57.2 of the General Statutes of North Carolina provide:

ARTICLE 10A.

Inventions Developed by Employee.

§ 66-57.1. Employee's right to certain inventions.

Any provision in an employment agreement which provides that the employee shall assign or offer to assign any of his rights in an invention to his employer shall not apply to an invention that the employee developed entirely on his own time without using the employer's equipment, supplies, facility or trade secret information except for those inventions that (i) relate to the employer's business or actual or demonstrably anticipated research or development, or (ii) result from any work performed by the employee for the employer. To the extent a provision in an employment agreement purports to apply to the type of invention described, it is against the public policy of this State and is unenforceable. The employee shall bear the burden of proof in establishing that his invention qualifies under this section. (1981, c. 488, s. 1.)

Cross References. — As to larceny of secret technical processes, see § 14-75.1.

§ 66-57.2. Employer's rights.

An employer may not require a provision of an employment agreement made unenforceable under G.S. 66-57.1 as a condition of employment or continued employment. An employer, in an employment agreement, may require that the employee report all inventions developed by the employee, solely or jointly, during the term of his employment to the employer, including those asserted by the employee as nonassignable, for the purpose of determining employee or employer rights. If required by a contract between the employer and the United States or its agencies, the employer may require that full title to certain patents and inventions be in the United States. (1981, c. 488, s. 1.)

Notwithstanding their differences, the common origin of these statutes is obvious. §2870 of the California Labor Code and Subdivision 1 of MSA 181.78 are in all significant respects identical. It has been suggested that Subdivision 1 of the Minnesota statute contains an ambiguity which would, of course, have been carried over into the §2870 of the California Code. Thus, one interpretation is that an employer can contract for ownership of an invention made by the employee on his own time and without using the resources of his employer in any of three situations, i.e., where the invention relates (1) directly to the business of the employer, or (2) to the employer's actual or demonstrably anticipated research or development, or (3) where the invention results from any work performed by the employee for the employer. Another, more restrictive interpretation suggested for these sections is that the employer cannot contract to acquire ownership in inventions even if related to his business or his research and development unless it also results from work performed by the employee for the employer.

The first interpretation seems the more logical and apparently is consistent with the Minnesota Legislative history.[20] If interpreted in that way, the Minnesota and California statutes can be harmonized with the Washington and North Carolina statutes which, despite some differences in wording, clearly provide that the employer is permitted to require the employee to assign inventions made on his own time without use of the resources or trade secrets of the employer where an invention is related to the business of the employer, or to his actual or anticipated research and development or the invention results from work performed by the employee for the employer.

In effect, while these statutes preclude an employer from obtaining, by way of an employment contract, title to inventions for which he could have acquired no rights under the common law, they permit acquisition of title to inventions in which the common law would have granted only a shop right.

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20. The author is indebted to Mr. H. E. Otto Jr., Managing Patent Attorney, San Jose Patent Operations of IBM, San Jose, Ca. who provided a commentary on the Minnesota Act prepared by Mr. D. F. Voss of IBM, Rochester, Minn. According to Mr. Voss, Staff Counsel to the Minnesota Senate summarized the pending legislation as follows:

> "The proposed legislation makes unenforceable a provision in an employment agreement providing for an assignment by an employee of all his rights in an invention to his employer to the extent that the provisions apply to inventions which do not relate to the employer's actual or anticipated research or development or inventions which do not result from any

Each of these statutes make provisions in employment contracts granting the employer greater rights than provided by law void and unenforceable but only to the extent the provision exceeds the scope permitted by the legislation. None of the statutes distinguish between contracts made before their effective date and after insofar as they purport to render provisions void or unenforceable. However, retroactive application may not be constitutional under the United States or state constitutions which prohibit states from enacting laws which impair contractual obligations.[21]

Each of the statutes, except that of North Carolina, provides that, if an employment contract provides for assignment by the employee of any rights in inventions to the employer, the contract must contain a notice that the requirement does not extend to the inventions which the employee cannot be obliged to assign. This requirement suggests that the best course available to the draftsman of an employment contract would be to state affirmatively that the obligation to assign inventions does not extend to the inventions referred to in the statute using the literal wording of the statute.

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work performed by the employee for the employer. The invention must also have been produced by the employee without the use of the employer's equipment, supplies, facilities or trade secret information and must have been developed exclusively on the employee's own time."

21. U.S. Const., Art 1 §10, Cl. 1. See also Bradley v. Superior Court, 48 Cal.2d 509 (1957) and Union Oil v. Moesch, 88 Cal.App.3d 72 (1979).

Under the California and North Carolina statutes, the employee has the burden of proof that an invention is of the kind which he cannot be required to assign by operation of law. By contrast, the Minnesota statute does not have such a provision. It seems likely, however, that the employee will have the burden since the statute appears to create an affirmative defense in an action to compel enforcement of an agreement to assign. While the Washington statute does not explicitly state that the employee has the burden of proof, it implies such in §49.44.150.

An interesting wrinkle in the California and North Carolina statutes permits the employer to require in his employment contracts that title in inventions be vested in the United States where necessary to comply with contracts between the employer and the United States or its agencies. These statutes also permit the employer to require the disclosure, which California requires to be maintained in confidence, of all inventions made by the employee during his employment. The California statute further permits a review process to be imposed in order to determine any issues which may arise. The draftsman of an employment agreement might also be well advised to provide for such contingencies in his agreements.

Questions which these statutes raise are numerous. Who is the "employer" in the case of highly diversified corporations, the subsidiary corporation, division or other entity by whom the inventor is directly employed or the parent and all of its subsidiaries collectively? The former was urged by Assemblyman Goggin who introduced the bill which became the California statute. However, his view was not accepted as part of the legislative history suggesting that the latter construction was the intention of the legislature.[22]

Another question is what would qualify as an "invention" as that term is used in the statutes? For example would an invention have to fall within one of the classes set forth in 35 U.S.C. 101 or do the statutes also embrace "inventions" such as computer programs which may not be patentable per se but which can be protected as a trade secret or made subject to a copyright?

Each of the statutes declare provisions in an employment agreement conferring rights upon the employer beyond that permitted to be against the public policy of the state. Does that mean a California or Washington Court would not enforce a broader New York agreement against an employee who moves into one of their states? Are the statutes intended merely to protect the employees who reside within the state or to regulate corporations or other employers who are domiciled in the state, or both giving rise to questions about the extra-territorial reach of the statutes and about the application of conflicts of laws principles.

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22. See footnote 19.

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The draftsman of an employment agreement for a multi-state corporation has particular problems. Is it better to have a different contract form for employees in a state having no statute from that used in Minnesota, California, Washington or North Carolina?

A solution, whose only recommendation may be simplicity, but which may be pragmatic as well, would be to draft all employment contracts so as not to exceed the scope permitted by the new state statutes. Those inventions which would not be acquired by such a practice are not likely to be of much value to the employer in any event. A complicating factor is the differences in wording adopted in the various states. However, since it appears that the limit placed on employment agreements is effectively the same in each case, use of the wording of any one of them should serve the purposes of the other statutes. Because of their clarity, the language of the Washington or North Carolina statutes would be preferable.

Another apparently complicating factor in the statutes are the provisions for requiring title to be vested in the United States for certain inventions found in the California and North Carolina statutes but not in those of Minnesota or Washington. This does appear to be a real problem, however. The Minnesota and Washington statutes would expressly void only those provisions in contracts which would require the assignment to employers of qualifying inventions. In view of the similar language in the California and North Carolina statutes, the provision of the

latter statutes for vesting title in the United States appears to be a clarification of the scope or intent of the statute, rather than an expansion of the rights which the employer may assert. A form of employment agreement embodying this concept is Part A of the Appendix.

The proposed agreement contains several other important provisions. One is a choice of laws provision in view of a covenant not to compete contained in another provision. Covenants not to compete, a subject beyond the scope of this paper, are not enforceable in some states. California, for example, generally prohibits such covenants except as part of an agreement by which the sale of a business and its goodwill is accomplished.[23] Therefore, the employment agreement should contain a choice of laws provision which designates a state reasonably related to the relationship between the parties whose law permits a covenant not to compete. Obviously such a clause should not be incorporated into a contract which governs the employment relationship of an employee who actually works in California or other states which prohibit such covenants.

The second of the important clauses is a severability clause which is intended to preserve the balance of the agreement when one of the clauses is interpreted to be against a fundamental policy of either the jurisdiction which governs its interpretation or, in some instances, the forum state.

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23. California Business and Professions Code, §16600 and 16601 and see Monogram Industries, Inc. v. Sor Industries, Inc., 64 Cal.App.3d 692 (1976).

PROPOSED FEDERAL LEGISLATION

In view of the passage by state legislatures of statutes regulating the extent to which employer's may secure rights in employee's inventions by reason of employment contracts, it should not surprise anyone that an effort would be made to secure passage of Federal legislation having a similar objective. Just such an effort has been initiated in the form of a bill designated H.R. 4732, introduced on October 13, 1981 by Congressman Kastenmeier. A copy of the bill, which has been referred to the House Judiciary Committee follows as Part B of the Appendix.

The proposed bill, which differs substantially from the existing state legislation described above, would add §§401-403 to Title 35 of the United States Code. Section 401 declares the purpose of the statute to be the need to balance the incentives to the employee to invent in areas unrelated to his employment against that of the employer to support research and development activities and to encourage the commercialization of inventions. The effect of such a policy is likely to preempt state legislation. A statute more generous to the employer than the Federal law would apparently reduce the incentive of the employee to make inventions while legislation more favorable to the employer would presumably tend to reduce the incentive of the employer to support research and development and to encourage commercialization of inventions.

Section 402 is a definitional section which defines, in §402(d), an "employment invention" to mean an invention made by the employee during his employment (1) as a result of his normal or specifically assigned duties; or (2) based in significant part on technical data or information possessed by the employer which is acquired by the employer and which is not generally known to the public; or (3) wherein the employee occupies a fiduciary or other similar special relationship with the employer and the invention relates to the actual or contemplated business of the employer that is known to the employee.

§403(a) defines the limitations on preinvention assignment agreements between the employee and employer. Such an agreement is not enforceable to transfer rights to the employer in any invention that is not an employment invention except that the employer may acquire what is effectively a shop right in non-employment inventions when the employee has made the invention using the employer's time, materials, facilities or funds. Trailer clauses are, prohibited by §403(c). In effect, therefore, proposed §403 appears to be an effort to limit the allocation of rights in inventions by employment agreements to that allocation made under common law principles in a situation where no agreement exists. A provision is made in §403(d) which provides for compulsory arbitration of any disagreement about rights in an invention. Presumably this is done to limit the expense to which the employer would be subjected in asserting his rights by precluding resort to litigation.

The clear impact of the proposal of Mr. Kastenmeier, if adopted, would be to substantially reduce the right of employers to contract with an employee to secure rights in the employee's inventions as a condition for employment even beyond that presently permitted under the statutory schemes of Minnesota, California, Washington and North Carolina.

THE EMPLOYEE ORIENTATION PROCEDURE

The process of considering the applicable law and drafting an appropriate employment agreement should be complemented with an effective orientation process for the new employee if the employer is to enjoy the maximum benefit from the employer-employee relationship.

Employment agreements are usually closely scrutinized by a Court who view them, if not as contracts of adhesion, as having been drawn by lawyers for presentation to lay persons who are not aware of the extent of their rights by an entity, the employer, who holds most of the bargaining power. Therefore, a part of the orientation process should include a thorough review of the agreement with the employee before its execution to insure his understanding. This process can be fostered by using an agreement whose language has been made as simple as possible. The employee should also be permitted a period to "think it over" and should not be discouraged, if not encouraged, to seek legal counsel if unsure of its meaning. In that regard, it should be pointed out to him that the agreement may govern his conduct even after he leaves the employ of the company.

The initial interview need not be handled by a lawyer but should be conducted by someone who does it regularly. The process can be augmented by using an interview record form which would be retained as a record of the interview in which the employee acknowledges having been informed of particularly important features of the agreement. The written notice about limitations on the obligation to assign his inventions to the employer imposed by statute can be made part of the form. A suggested form is Part C of the Appendix.

At the interview, the employee should be informed about the kinds of information that should be maintained in confidence, including customer lists and financial data, as well as technological developments. The need for doing so should also be pointed out, i.e., that the loss of valuable trade secrets can impair the company's competitive position and that premature disclosure of information can cause the loss of valuable patent rights, particularly in foreign countries. In that regard, it may be particularly important to stress that even "table talk" with friends at scientific meetings should not include a discussion of the company's confidential business and technical information. It would not hurt periodically to remind all employees of this need to maintain information in confidence by way of internal memoranda, at group meetings or any other appropriate occasion.

Another important purpose of the interview could be to point out the details of the company's security system and the importance of following established procedures for the maintenance of trade secrets.

The interview should not be concluded without the employee receiving a copy of the agreement if he signs it at that time. This practice could well be repeated at the exit interview as well when the employee terminates his association. The interview sheet could contain an acknowledgement of receipt of a copy of the agreement.

From the foregoing, it should be apparent that the most important ingredient of an orientation process is the application of common sense in adopting general guidelines to the specific employment environment.

AVOIDING LIABILITY TO THE FORMER EMPLOYER WHEN HIRING NEW PERSONNEL

The newly hired employee-inventor is almost certainly going to possess confidential information, trade secrets, etc. in the situation where he has been previously employed. Furthermore, the purpose for hiring him is usually because of his technological expertise and the old and new employer may very well be competitors. The new employee is also likely to have continuing contractual obligations to his old employer arising from an employment contract. The existence of such a situation can obviously present fertile ground for litigation that is fraught with particular danger when the new employer is, in fact, a new venture initiated by high level employees of the old employer.

While nothing can prevent the former employer from bringing a lawsuit for perceived injury, steps can be taken which reduce the risk of liability. Therefore, it may be particularly important

for the lawyer to participate in the hiring process in an advisory capacity when the risk of litigation is high.

The recruitment of the new employee, if at all possible, should be handled by an agency. If contracts are made directly, they should not be through a former employee now in the employ of the recruiting company. The opening salary offer should not be based upon knowledge gained from former employees since companies treat their salary structure as confidential and an initial offer from the new employer, if higher than the employee's salary, may be viewed as taking unfair advantage of the knowledge of confidential information. One approach might be to inquire of the potential employee what his salary requirements would be and to negotiate from that point.

The recruiting process should not involve contacts made during the business hours of the present employer since the employee is supposed to devote his time to his employer's business. Even long lunches should be avoided. Evening contacts are best.

If the prospective employee accepts a position, he should be counseled to scrupulously avoid preparing for his new employment using the time and facilities of his old employer. Obviously, he should return all documents, models, samples, etc. obtained from the old employer. He should not during working hours use the company telephone to contact his new employer. He should not use the secretaries or other employees of his present employer to prepare letters or other services which aid the transition to his new employment. He particularly should not attempt to recruit other

employees of his present company to join his new company. He should not even use the copy machine, stationery or other supplies of his employer since the inference is likely that any indiscretion means that others, more serious have occurred as well.

It would be well to advise the prospective employee to announce his intention to leave his old employ as early as possible. If this draws a firing it may brunt a later charge that the employee was a key person. Otherwise there would have been negotiations to retain him or at least to persuade him to stay to finish certain tasks. He should be counseled, furthermore, to complete, if permitted, housekeeping tasks such as quarterly reports, etc. which would have to be done by someone else less familiar than he with his work, causing obvious expense and unnecessary delay for his old employer.

The prospective employee should be counseled, preferably by an attorney, about exit interview proceedings. He should be advised that he may wish to have his own attorney present and should not sign any exit interview document prior to review by his attorney. These documents frequently have the employee acknowledge his prior employment contract which is not objectionable per se. However, they also frequently include acknowledgement of access to, or actual possession of bodies of information generally designated to be confidential. Such acknowledgements may contain damaging and unnecessary admissions.

The employee can indicate a willingness to sign such a document shorn of unfair provisions but require an employer to designate specific trade secrets which he would be bound to respect. In that regard, the employment agreement with the new employer should contain a provision that the employee acknowledges an obligation not to use the trade secrets of his old employer for the benefit of the new and positively state that the new employer has no desire to obtain confidential information from the old.

Finally, the new employee should take a vacation or other break between the termination of his former, and the beginning of his new employment. This provides for as clean a break as possible between the two which should be at least long enough to exhaust accrued vacation so that efforts for the new employer cannot be argued to have been made while the employee is being compensated by the prior employer.

EMPLOYMENT INVENTION AGREEMENT

In consideration of my employment by _____ _____, or a subsidiary thereof, and its successors, assignees, or designees, (hereinafter referred to as "The Company"), and for the renumeration now and hereafter paid to me, and the opportunity which my employment affords me to become acquainted with The Company's business and engineering, research and development work, and other confidential information, I, the undersigned, agree as follows:

1. That all inventions, discoveries, developments and ideas (hereinafter "Industrial Property"), including but not limited to, all processes, machines, manufactures, compounds, compositions of matter, improvements thereto and know-how related thereto, whether patentable or not, conceived by me during the term of my employment by The Company or within one (1) year thereafter, solely or jointly with others, together with all patent rights therein (including rights under international conventions), shall be the sole property of The Company except that inventions made by me solely or jointly with others for which no equipment, supplies, facilities or trade secret information of The Company were used, and which were developed entirely on my own time, or our own time in the case of joint inventions, shall not become the property of The Company unless (a) the invention relates (1) directly to the business of The Company, or (2) to The Company's actual or demonstrably anticipated research or development, or (b) the invention results from any work performed by me or by my joint inventor for The Company.

2. That all writings prepared by me solely or jointly with others which relate in any manner to the research, development or other business activities of The Company shall be deemed "work for hire" and all rights therein, including copyrights or any other rights, shall be the sole property of The Company and that such writings shall be held in confidence by me until written authorization to publish is obtained from a duly designated representative of The Company.

3. To promptly review, execute and return all papers to The Company or its designated representative which, in the discretion of The Company, are required to obtain for The Company the right, title and interest in and to The Company in the Industrial Property, including all patent rights therein, and in any writings, including any copyrights therein, or are required in order to maintain or enforce any rights in the Industrial Property or writings and to render such other assistance as The Company may require, and at its expense, in proceedings before any Patent Office, Court or other tribunal or governmental agency in any country.

4. To disclose in writing to The Company, or its designated representative, all Industrial Property made or conceived solely by me or jointly with others, during the term of this Agreement including any Industrial Property which I believe would not become the property of The Company under any provision of this Agreement.

5. To maintain in confidence and use my best efforts to preserve the confidentiality of all trade secrets, or other information held in confidence by The Company which are acquired by me or maintained in my custody.

6. That documents including, but not limited to, notes, manuals, blueprints, notebooks, reports, photographs, and other records in any tangible form whatsoever, and whether generated by me or others, which I acquire as a result of my employment with The Company shall be the exclusive property of The Company and shall be returned to The Company, and no copies kept by me, upon the termination of my employment or upon any request made by The Company or its designated representative.

7. To assign inventions conceived or made by me during the term of this Agreement to the United States or any of its agencies where necessary to fulfill the requirements of any contract between the United States or its agencies and The Company, even in the situation where this Agreement would not otherwise oblige me to assign the invention to The Company.

8. That during the term of my employment by The Company, I shall devote my best efforts to accomplishing tasks assigned to me.

9. That the execution by me of this Agreement constitutes an understanding by me that The Company does not wish to acquire, or for me to use in connection with my employment, any trade secret or confidential information of others known to me and I agree to maintain such trade secrets and other confidential information in confidence and not to disclose it to The Company or any of its representatives or to use it in the course of the discharge of my responsibilities to The Company.

10. That nothing in this Agreement shall give The Company rights in inventions made by me solely or jointly with others prior to this Agreement. Those inventions made solely by me or jointly with others prior to this Agreement are listed on Exhibit A hereto.

11. I agree that upon termination of my employment by The Company, and thereafter for a period of one (1) year, I shall not attempt to solicit the resignation of any other employee of The Company and not to compete with The Company in the development, production or sale of any product or service for which I was involved in the development, production or sale while employed by The Company in a geographical area comprising _____.

12. That any portion of this Agreement which a Court of competent jurisdiction shall determine to be void or unenforceable as against public policy, or for any other reason, shall be deemed to be severable from the Agreement and shall have no affect on the other covenants or provisions in the Agreement. I further agree that the Court shall be empowered upon the request of The Company to reform and construe any provision which would otherwise be void or unenforceable in a manner that it will be valid and enforceable to the maximum extent permitted by law.

13. That the legal interpretation of this Agreement is to be determined according to the laws of the state of _____.

14. That this Agreement shall be binding on my heirs, executors, administrators, representatives and assigns and that any prior Agreement made between me and The Company shall be superseded by this Agreement.

15. That this Agreement shall not become effective until executed on behalf of The Company by its designated representative.

IN WITNESS WHEREOF, I _____, have executed this Agreement on this _____ day of _____, 19___.

_____

Accepted on behalf of _____

By:_____
Signature

EXHIBIT A
TO EMPLOYMENT INVENTION AGREEMENT

The following is a list of all inventions made solely by _____ or jointly with others prior to his employment by The Company. The form of the list is not believed by _____ to contain any trade secret or confidential information belonging to others.

EXHIBIT B
TO EMPLOYMENT INVENTION AGREEMENT

NOTICE

NOTHING IN THIS AGREEMENT OBLIGES _____ _____ TO ASSIGN TO THE COMPANY ANY INVENTION FOR WHICH NO EQUIPMENT, SUPPLIES, FACILITY OR TRADE SECRET INFORMATION OF THE COMPANY WAS USED AND WHICH WAS MADE ON HIS/HER OWN TIME UNLESS (A) THE INVENTION RELATES DIRECTLY TO THE BUSINESS OF THE COMPANY, OR (1) TO THE COMPANY'S ACTUAL OR DEMONSTRABLY ANTICIPATED RESEARCH OR DEVELOPMENT, OR (B) THE INVENTION RESULTS FROM ANY WORK PERFORMED BY HIM/HER FOR THE COMPANY.

97TH CONGRESS
1ST SESSION

H. R. 4732

To amend title 35 of the United States Code, to set Federal standards for permissible employee preinvention, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

OCTOBER 13, 1981

Mr. KASTENMEIER introduced the following bill; which was referred to the Committee on the Judiciary

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A BILL

To amend title 35 of the United States Code, to set Federal standards for permissible employee preinvention, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That title 35, United States Code, is amended by adding at the end thereof the following new part:

"PART V—EMPLOYEE INVENTIONS

"§ 401. Declaration of purpose and policy

"In order to promote the progress of the useful arts, and in order to encourage the free flow of commerce by the cre-

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ation of new products and processes, it is the purpose and policy of this part that incentives provided by the patent laws to encourage individuals to make inventions and, once made, to disclose them to the public, and to commercialize them should not be withheld from employees for inventions made by them that are unrelated to their employment, while at the same time maintaining an incentive for employers to support research and development activities and to commercialize inventions that are related to the employment.

"§ 402. Definitions

"When used in this part, unless the context otherwise indicates:

"(a) The terms 'employer' and 'employee' shall have the meaning as defined in the Fair Labor Standards Act of 1938 (29 U.S.C. 203), as amended.

"(b) The term 'invention' means an invention which is patentable under part II of this title.

"(c) The term 'preinvention assignment agreement' means an agreement which an employee executes at the request of the employer that gives any rights to the employer in any inventions of the employee not yet made at the time of execution of the agreement.

"(d) The term 'employment invention' means an invention that is made by an employee during a term of employment—

"(1) as a result of the employee's normal or specifically assigned duties; or

"(2) based in significant part upon technical data or information possessed by and acquired from the employer, and which is not generally known to the public; or

"(3) wherein the employee enjoyed a special position of trust, confidence, or fiduciary relationship with the employer at the time of making the invention, and the invention is related to the employer's actual or contemplated business known to the employee.

"(e) An invention is deemed to have been 'made' when it is conceived or first actually reduced to practice.

"§ 403. Limitation upon terms of an employee preinvention assignment agreement

"(a) A preinvention assignment agreement shall not be enforceable to transfer any rights to the employer in any invention not an employment invention; except that an employer may require the granting to it by the employee of a nontransferable, nonexclusive license to practice an invention not an employment invention whenever such invention is made by the employee with a substantial use of the employer's time, materials, facilities, or funds.

"(b) An employer may require that the employee disclose all inventions made by the employee, solely or jointly

with others, during the term of his employment provided the disclosures are received and kept in confidence.

"(c) A preinvention assignment agreement shall not be enforceable to transfer any rights to the employer in any invention that is conceived by the employee after termination of employment.

"(d) In case of any disagreement or conflict with respect to any clause of this part V, the matter shall be settled by arbitration in the state of employment in accordance with the rules of the American Arbitration Association, at the request of either party.

"(e) This section shall not affect rights in any invention conceived prior to January 1, 1982.".

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EMPLOYMENT INTERVIEW
ACKNOWLEDGEMENT FORM

I, _____, acknowledge that I was interviewed by _____ on behalf of The Company on _____, 19__ with regard to future employment by The Company. Where my initials appear I acknowledge as follows:

1. That I was given an Employment Agreement Form which was reviewed with me by _____.

_____

2. That I was given the time I desired to complete the review of the Employment Agreement before executing it.

_____

3. That I was advised that the Employment Agreement could impose obligations on me to The Company after my employment is terminated.

_____

4. That I understood the Employment Agreement when I executed it.

_____

5. That after execution of the Employment Agreement, I was given a copy for my personal records.

_____

6. That I was advised that I have an obligation to maintain the confidentiality of trade secrets or other confidential information acquired during prior employment, that I should not disclose the trade secrets or other confidential information so acquired to anyone associated with The Company or use the trade secrets or other confidential information so acquired to discharge duties assigned me by The Company.

_____

7. That I was given notice that nothing in the Employment Agreement would oblige me to assign to The Company any invention for which no equipment, supplies, facility or trade secret information of The Company was used and which was made on my own time unless (A) the information relates (1) directly to the business of The Company or (2) to The Company's actual or demonstrably anticipated research or development, or (B) the invention results from any work performed by me for The Company.

_____

Dated:

_____
Signature

LAW OF EMPLOYEE INVENTIONS IN FOREIGN COUNTRIES

Prepared by Members of the Staff

June 1983

Library of Congress
LAW LIBRARY
American-British Law Division
European Law Division
Far Eastern Law Division
Hispanic Law Division
Near Eastern and African Law Division

Bulgaria

[redacted] Democratic Republic

Germany, Federal Republic of (will follow)

Greece

Italy

Japan

Netherlands, The

Sweden

United Kingdom

U.S.S.R. (will follow)

BULGARIA

In the People's Republic of Bulgaria, the question of inventions made by employees is dealt with by the Special Law on Inventions and Innovations of October 8, 1968, 1/ and the Regulation of June 20, 1969 2/ concerning its implementation.

According to section 9 of this Law, the State Committee for Science and Technical Progress is the agency in charge of these matters. However, the Committee functions under the administrative and scientific guidance of the Institute of Inventions and Innovations. 3/ It must be pointed out here that since economic, cultural, and scientific matters in the country are state controlled, the private sector of activity is limited. This makes the state the sole employer through its enterprises, organizations, and institutions.

According to section 12 of the Law, an invention is a new creative technical solution of a given problem related to any branch of the national economy, science, culture, public health, and national defense, which is more progressive and more useful compared with the existing level of technology. An innovation, as defined by section 47 of the same Law, is a technical solution of a given problem which constitutes a novelty at least within the framework of the enterprise or organization in which it was proposed.

1/ Dŭrzhaven Vestnik [official law gazette of Bulgaria, DV], No. 81, October 18, 1968, effective on January 1, 1969.

2/ DV No. 48, June 20, 1969.

3/ G. Dobrev, Protection of Industrial Property in the People's Republic of Bulgaria 17 (Sofia, Patent and Trade Mark Bureau, 1970).

further expressly states that all remunerations, awards, privileges, etc., [redacted] nonproperty rights related to the authorship are, however, not subject to inheritance. 4/

Prepared by Dr. Ivan Sipkov
Chief
European Law Division
Law Library, Library of Congress
June 1983

IS:cbr
6/9/83

4/ Sl. Manzharov and D. A. Slavelkov, Izobretatelsko i patentno delo i patentna informatsiia (Invention and Patent Work and Patent Information). (Sofia, 1977); also M. Koszhasshev, Prava na izobretatelite i ratsionalizatorite (The Rights of the Inventors and Innovators) (Sofia, Profizdat, 1970).

GERMAN DEMOCRATIC REPUBLIC

Reminiscent of the language used by the Nazi regime between 1933-1945, employee inventions in the German Democratic Republic appear under the heading Neuererbewegung, emphasizing the collectivist character of innovations. Thus, in the spirit of social usefulness, innovations are rewarded mainly through moral recognition and only secondarily through material recognition. The basic principles of employee inventions are contained in the Decree on the Promotion of the Activity of the Inventor and Rationalizers in the Invention Movement of December 22, 1971. [1] According to this Decree, the main objective of the Invention Movement is to provide inventors with a chance to use their mental facilities and energies toward strengthening the German Democratic Republic. In other words, inventions are only important if they are useful to the state. [2] The usefulness of the invention is, of course, subject to decisions made by bureaucrats. Here, governmental department and trade unions must work together closely. [3] The activities of these organs are coordinated by invention centers located in the various provinces. [4]

Pursuant to section 7, the management of a factory is responsible for promoting employee inventions. The managers are responsible for keeping themselves and their superiors informed about the current state of inventions, encouraging employees to study scientific literature, etc. Of

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[1] Gesetzblatt [official law gazette of the German Democratic Republic, GBl.], II, p. 1.

[2] See the Preamble and sections 1-2.

[3] Sec. 3.

[4] Sec. 4.

course, all these activities must be planned according to the guidelines issued by the Communist Party. Each factory maintains a [redacted] tion Movement which coordinates and controls all the activities connected to employee inventions. If a need arises to conduct research in a certain field, managers are authorized to sign a so-called invention agreement. Under this agreement, a collective of employees is obligated to research, analyze, experiment and implement a certain invention. The collective is entitled to be rewarded for this work. In all cases, the factory then has the right to acquire and use the invention. The inventor has the right to demand a decision within the time limits set by the Decree. The inventor may also participate in the preparations, examinations, and utilizations of his invention. Finally, the inventor is entitled to both moral and material recognition. 5/ If the invention is rejected, the inventor can appeal in writing to the manager. 6/ Monetary awards for an invention can range from 50 marks to 30,000 marks. Monetary awards for an innovation (erfindung) can range between 75 and 200,000 marks. 7/ The precise sum should be determined by the manager according to the social usefulness of the invention. 8/ In case of any dispute arising out of monetary compensation, both the factory and the inventor can request a decision by a conflict commission organized under the Directive of the State Council of the German

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5/ Sec. 22.

6/ Sec. 28.

7/ Sec. 30.

8/ Sec. 29.

Democratic Republic of October 4, 1968. 9/ In their pursuit of an equitable compensation, the managers are assisted by the Decree on the Examination of the Usefulness of an Invention in Order to Compensate Inventors of July 20, 1972. 10/

In conclusion, the system designed to promote inventions is overcomplicated, a trait not unusual for legislation in the German Democratic Republic. This intricate system clearly favors the state and necessarily discourages inventions. In addition, judging by the frequently voiced criticism, the current legislation makes the entire process cumbersome, frustrating, and thus grossly ineffective. This latter characteristic, of course, is the greatest impediment on modernizing the East German economy.

Prepared by Dr. Miklos K. Radvanyi
Senior Legal Specialist
European Law Division
Law Library, Library of Congress
June 1983

MKR+cbr
6/21/83

9/ Sec. 32 and GBl. I, p. 287.

10/ GBl. II, p. 550.

FEDERAL REPUBLIC OF GERMANY

In the Federal Republic of Germany, the Employee Inventions Law [1] has been in effect for more than 25 years, and it is the general opinion of industry and labor that the Law has been successfully implemented and has proven beneficial to the German economy. [2]

The importance of the Employee Inventions Law within the German patent system can be assessed from the fact that between 80 and 90% of the inventions [3] made in Germany are employee inventions. [4] In larger enterprises, the percentage is even higher. In enterprises with a sales volume in excess of 250 million DM (Deutsche Marks), 97 to 98% of the patents held are employee inventions, whereas in smaller enterprises with a sales volume below 10 million DM, only 49% of the patents held are employee inventions. [5] The lower percentage for smaller enterprises results partly from the fact that the owners of these enterprises are themselves inventors and partly from the fact that the employees of smaller firms often are not

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[1] Gesetz über Arbeitnehmererfindungen [ArbnErfG] vom 25. Juli 1957, Bundesgesetzblatt [BGBl., official law gazette of the Federal Republic of Germany] I, p. 756, as amended by Gesetz vom 4. September 1967, BGBl. I, p. 953. An English translation from 11 Industrial Property 226 (1972) is included as Appendix I, together with the Directives on the Compensation for Employees' Inventions, id. at 233. Included as Appendix II is an article by H. Schade entitled "Employees' Inventions — Law and Practice in the Federal Republic of Germany," id. at 249.

[2] See Appendix II, at 254; Gätz Hartung, Die Vergütung der Verbesserungsvorschläge 1 (Köln, 1979).

[3] The detailed rules on compensation for employee inventions in the ArbnErfG apply to those that can be protected by patent or as utility models. The Law also contains some rudimentary rules on compensation for other innovative proposals.

[4] G. Schaub, Arbeitsrechts-Handbuch 606 (München, 1980).

[5] K. Grafenmann, "Patentwesen und technischer Fortschritt," in Hundert Jahre Patentamt 42 (München, 1977).

~~sufficiently aware of their rights. The substantial degree of compliance~~ with the Employee Inventions Law can be ascribed to its mandatory nature. As stated in section 22, the provisions of the Law cannot be changed to the detriment of the employee by an employment contract or collective agreement.

The Employee Inventions Law promotes technological progress in two ways. First, the expectation of reaping sizable financial benefits and personal recognition from an invention is an incentive that spurs employees on to greater efforts; 6/ second, since the Law has the effect that most inventions actually are patented, the ensuing publicity of the patent application creates an impetus for further research and speeds up the development of new technologies. 7/

An empirical study undertaken in Germany in the early 1970s shows that in the most patent-intensive industries (chemical, electrotechnologic, and mechanical engineering) only 5% of the inventions that can be patented are kept secret; all others are patented. The study also shows that the Employee Inventions Law is one of the major factors that encourages patent applications. Although the rule requiring the employer to apply for a patent for a claimed service invention permits of certain exceptions (sec. 13 of the Law), the employer in most cases is faced with the choice of either releasing the invention to the employee or of applying for a patent. 8/

6/ Id. at 49.

7/ Ifo-Institut für Wirtschaftsforschung, 1 Patentwesen und technischer Fortschritt 45 (Göttingen, 1974).

8/ Supra note 5 at 41.

Although the Employee Inventions Law places the German industry at a competitive disadvantage in comparison with the industries of other countries 9/ (none of which are by law subjected to as far-reaching an obligation of compensation to its employees 10/) and although this Law creates frictions for German enterprises engaging in joint ventures with foreign firms, 11/ German industry, nevertheless, has a very positive attitude toward the Employee Inventions Law. This can be seen, for instance, from a statement made in 1979 by the Employee Inventions Committee of the Federal Organization of Employer Associations. In discussing the possibility of unifying employee inventions law within the European Communities, the Committee expressed the hope that unification would not lead to changes in the German law to the detriment of the balance inherent in the German system. 12/

Employee inventions law is a complicated subject matter, as can be expected from its position at the crossroads between labor law and patent law. Among the difficult issues that must be resolved in each case is the adequacy of compensation for a claimed service invention. These computations are usually made by reference to the Guidelines of 1959. 13/ In

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9/ W. Kremnitz, Das Arbeitnehmererfinderrecht in der Praxis des Unternehmers 1 (Köln, 1977).

10/ H. Schade, "Arbeitnehmererfindungen," 28 Recht der Arbeit 159 (1975).

11/ H. Schippel, "Die Grenzen der Parteiautonomie im internationalen Arbeitsvertragsrecht und die Arbeitnehmererfindung," 62 Mitteilungen der deutschen Patentanwälte 229 (1971).

12/ Jahresbericht der Bundesvereinigung der Deutschen Arbeitgeberverbände 33 (1979).

13/ See Appendix 1.

essence, compensation depends on the "invention value" and the "participation factor." The latter represents the ratio between the employee's achievement as compared to the resources provided by the enterprise. In assessing the invention value, a license analogy is often used. In determining the participation factor, many circumstances are taken into account by a point system, such as the initiative of the inventor, his employment duties, and the resources, expertise, and assumption of the risk provided by the enterprise. In practice, the participation factor may lead to awarding the employee 13 to 21% of the amount that would be payable to an independent inventor. 14/ Although the Guidelines are complex and have in some instances been further developed by the Arbitration Board, their application, in practice, has worked out well. 15/ In larger enterprises, the compensation calculations, as well as the other paperwork required by the Law, are handled routinely by experienced patent departments. 16/

The Arbitration Board has played an important role in the successful implementation of the Law. The submission of disputes to the Arbitration Board before resorting to judicial recourse has the effect that less of an adversary relationship is created between employer and employee. However, the statutory provisions are flexible enough to permit the parties to forego arbitration if they feel that an amicable settlement cannot be

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14/ See Appendix II

15/ These percentages have been awarded in arbitrated settlements. In undisputed cases, the percentage for the participation factor may be somewhat lower: A. Reimer, Das Recht der Arbeitnehmererfindungen 327 (Berlin, 1975).

16/ Supra note 10 and B. Johannesson, Arbeitnehmererfindungen 65 (Weinheim, 1979).

reached. The Arbitration Board, however, is called upon in most disputes because it enjoys a great deal of authority and respect because of its objectivity, realistic attitude, and technical and legal expertise. 17/

Most employee inventions are compensated without controversy, as can be seen from the statistics of the Patent Office. During the period from 1957 to 1981, the Arbitration Board in Munich was invoked in 1,730 cases; it proposed 1,073 settlements, 763 of which were accepted. In 1981, 72 applications were received, and 65 proceedings were pending at the end of the year. These figures have to be viewed within the context of the patent and utility model statistics: in 1981, 49,002 patent applications and 36,333 utility model applications were received by the German Patent Office; of these, 64% of the patent applications and 79% of the utility model applications were submitted by German applicants. 18/

The Employee Inventions Law has generated a large body of legal literature and case law, and these developments have served to provide uniformity and legal certainty in the interpretation of the Law. Some minor problems persist, however, and some proposals for reform have been made. 19/ Among these problems are the observation that employees in smaller firms are sometimes not aware of their rights or do not pursue them; 20/ also, the

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17/ Id. at 102.

18/ Deutsches Patentamt, Jahresbericht 1981. Another Arbitration Board operates in Berlin. On the average, it handles 2-5 cases per year.

19/ H. Hanner, "Die Behandlung der zu einem geltend zu machenden Monopol führenden Arbeitsergebnisse von Arbeitnehmern — Das ArbEG, wie es ist und wie es sein müsste," Gewerblicher Rechtsschutz und Urheberrecht 91 (1983).

20/ See Appendix II.

institution of a limited claim to the invention by the employer has not proven successful in practice. 21/ Furthermore, employers have recently suggested that many of the so-called "reserve patents" lack usability and therefore should not be compensated. 22/ On balance, however, the Law on Employee Inventions has been successfully implemented and has made a significant contribution to technological progress in the Federal Republic. Moreover, a curtailment of the compensation benefits granted to employee inventors would not be politically feasible and is therefore not contemplated by anyone.

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21/ Supra note 9, at 13-19.

22/ Jahresbericht der Bundesvereinigung der Deutschen Arbeitgeberverbände 30 (1980).

GREECE

The issue of the right of employees to their inventions is of major social, financial and moral significance because the originators of important inventions may be persons who do not work independently but are employed by various enterprises. Although the conflict of interest that occurs in such cases (i.e., the rights of employers versus those of employees) has been solved differently in various countries, there is an increasing tendency to reinforce employee rights both morally and materially.

In the Greek legislation, inventions have been extensively regulated by Law 2527/1920 on Patents of Inventions, 1/ as amended, by Law 1023/1980, 2/ and by article 668 of the Greek Civil Code of 1946. More specifically, article 4, paragraphs 2 and 3, of Law 2527/1920, which was inspired by an Austrian law favorable to employees, states that workers, employees, assistants, or partners in industrial enterprises or commercial firms shall be considered as the originators of inventions made by them during the period of their employment. An agreement made to the contrary shall be valid, unless the invention is outside the scope of activity of the enterprise.

The 1920 provision has been supplanted by a partially different provision of article 668 of the Greek Civil Code, 3/ inspired by the Swiss Civil Code. According to this article, inventions made by employees during the performance of their duties shall belong to them, unless the inventions

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1/ A. Tousis, B' Emporikos Kodix [Commercial Code] 304 (Athens, 1975).

2/ P. Kaptarchis, 11 Diarkes Kodix Nomothesias [Continuous Compilation of Laws] 210,05(a) [Looseleaf].

3/ I. Spyridakis and K. Perakis, B/2 Astikos Kodix [Civil Code] (Athens, 1972).

constitute the work assigned to the employees or the employers have reserved the right to the invention. If such a reservation exists, the employee shall be entitled to a special, reasonable fee. Thus, the law adopted a fair solution by stipulating that inventions belong to the inventor-employee unless there is an agreement made to the contrary.

The entire article is not applicable to inventions made by employees during their leisure time and independently of their work, even when machines or other tools belonging to the employer have been used.

The term "reasonable fee" granted to the employee does not constitute a salary, and if its amount is in doubt it will be determined by the court, which will take into consideration the principle of good faith and the special circumstances of each case, e.g., the type of invention and its usefulness, any cooperation or assistance from the employer, etc. A reasonable fee does not mean full compensation to the employee for his lost financial rights when the invention is of an incidental nature. In the event that the financial significance of an invention later changes for the better, the inventor-employee is entitled to an additional fee. Any differences arising from the determination of the amount to be paid to the employee will be solved according to the procedure used in labor disputes.

The question of whether or not an invention took place during the performance of duties has been generally considered on the basis of factors relating to place or time. The most correct interpretation, though, is the one that takes into consideration the fundamental connection between the invention and the kind of work carried out by the employee.

According to article 668 of the Greek Civil Code, there are two cases where the invention belongs to the employer. One is when the invention constitutes the type of work assigned to the employee, and it is concluded from the word "belongs" that the employer acquires an absolute and exclusive right to the invention upon its completion. Employees are obliged to notify their employers, and not third persons, of their inventions as soon as they complete them. The second case is when the employer has reserved the right to the invention. Such a reservation, in order to be valid, should be established in the form of a contract between employer and employee that is either attached to the original contract of employment or done independently; it can have a specific reference or be a more comprehensive one that includes any invention related to the type of work assigned to the employee.

In general, an invention is a creative, intellectual work that generates three rights for the employer: 4/

(a) the right to the invention as a mental work existing before the issue of any patent, such right being inheritable and transferable;

(b) the right to apply for a patent; and

(c) the right to be acknowledged as the inventor.

4/ Ch. Agallopoulos, Meletai Ergatikou Dikaiou kai Koinonikes Politikes [Studies of Labor Law and Social Politics] 159 (Athens, 1975).

The right to acknowledgement derives from the general right of personality protected by article 57 of the Civil Code and ensures that the inventor is entitled to request that his name be mentioned in the patent.

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ITALY

The patent right and the exclusive right to implement the invention belongs, in principle, to the inventor, as established in articles 2584 and 2588 of the Civil Code. 1/ In accordance with articles 2590 and 2591, the subject of employee inventions is regulated by special laws: Royal Decree No. 1127 of June 29, 1939, 2/ and subsequent amendments regulating the patents for industrial inventions; and Decree of the President of the Republic No. 3 of January 10, 1957, 3/ Consolidation Act of Provisions Concerning Employees in Public Service, that regulates the inventions of such employees.

Royal Decree No. 1127 states that when an industrial invention is made in execution or fulfillment of a contract or of a labor or employment relationship, wherein the inventive activity is foreseen as an object of the contract or relationship and is rewarded as such, the rights accruing from the invention belong to the employer, except for the right of the inventor to be recognized as the originator of the invention. If remuneration is not foreseen and fixed as a reward for the inventive activity, and the invention has been made in the execution or fulfillment of a contract or of a labor or employment relationship, the rights accruing from the invention belong to the employer. However, the inventor, in addition to the right to be recognized as the originator of the invention, is entitled to an equitable bonus, depending upon the importance of the invention.

1/ R. Cantagalli, *Codice Civile Commentato e Leggi Complementari* (Edizioni Laurus, Firenze, 1961).

2/ Id. at 2083.

3/ Id. at 2116.

Whenever the conditions mentioned above do not apply and the industrial invention is related to a field of activity of private enterprise or of public administration to which the inventor belongs, the employer has the right of pre-emption for the exclusive or nonexclusive use of the invention or for the acquisition of the patent, as well as for the privilege of applying for or purchasing foreign patents on the same invention, against payment of royalties or a sum of money. Royalties or other payment must be established after deduction of an amount equivalent to the assistance, in any form, that the inventor may have received from the employer for achieving the invention. The employer may exercise the right of pre-emption within three months of receipt of a communication concerning the grant of the patent. The relations established by the exercise of the pre-emption right provided for are legally dissolved when the amount due is not wholly paid within the stated term.

Furthermore, an industrial invention for which a patent application is filed within one year of the date the inventor left the private enterprise or the public administration in the field of activity in which the invention falls shall be considered as having been made during the execution of the contract or of the labor or employment relationship.

Decree of the President of the Republic No. 3 of January 10, 1957, states that the rights derived from an industrial invention made during the performance of a public service work relationship, in which inventive activity is foreseen as the object of such a relationship and is rewarded on this basis, belong to the state, except that the inventor has the right to be recognized as the originator of the invention. If no reward is payable

to the inventor, he is entitled to a fair compensation, depending upon the

[redacted]

When the aforementioned conditions are not present and when there is at issue an industrial invention included in the usual range of activity of the department of the public service in which the inventor is employed, the said department has the right of pre-emption of the exclusive or non-exclusive use of the invention or the right to purchase the patent. Such department also has the power to apply for or to purchase foreign patents on the same invention, against payment of a royalty or a price to be fixed after deduction of a sum of money representing the value of any assistance the inventor has received from the department towards the achievement of the invention. The department may exercise the right of pre-emption within three months of receiving notification of the grant of a patent. The terms agreed upon concerning the exercise of the right of pre-emption are discharged by law when the compensation due is not completely paid by the end of the due date. The compensation, the royalty, the price, and the mode of performance relevant thereto shall be fixed by a decree of the competent Minister.

In addition, an industrial invention is deemed to have been made during the work relationship when the patent has been applied for within one year from the date on which the inventor left the department of the public service where he engaged in activity to which the invention is related.

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JAPAN

The subject of employee inventions is governed in Japan by the Patent [redacted] 1/

Article 35 of that Law specifies that if an employee makes an invention as a result of a work related action, the invention is called an "employee's invention." The employee has the right to obtain a patent for such an invention. The patent is however subject to a royalty-free non-exclusive license given to the employer. Such inventions may furthermore be assigned or exclusively licensed by the employee to his or her employer by an agreement or by the employer's own work regulation, provided that the regulation is established in advance of the actual invention.

An employee may transfer the right to obtain a patent for an "employee's invention". In such a case, or when the employee has granted the employer the exclusive right to use his or her invention, a reasonable remuneration must be offered to the employee. In determining the amount of any such remuneration, the value to the employer of the invention and the extent of the employee's contribution to its development should be considered.

If an employee creates something that does not fall into the category of employee's inventions by, for instance, making an invention through acts outside the scope of his official duties, the employer does not have the right to enforce any work regulation regarding the right to obtain a patent for the invention. 2/

1/ Law No. 121 of April 13, 1959. It was last amended by Law No. 45 of May 18, 1981.

2/ See Zentaro Kitagawa, 4 Doing Business in Japan, VI2-29 (New York, Mathew Bender & Co., 1982).

The Patent Law itself is silent on the specific subject of the ownership of the patent right when the government has research performed by a corporation through a contractual arrangement or by giving a grant. In the absence of special provisions governing this situation, it may be construed that, depending on the terms of the contract concluded between the government and the corporation, the government may be given by the corporation an exclusive or non-exclusive license to use a resulting patent or the patent itself, provided that the corporation as the employer has been given such right by the employee, under Article 35 of the Patent Law. 3/

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3/ This was confirmed in a telephone conversation with the legal attache of the Japanese Embassy on August 26, 1982.

THE NETHERLANDS

In the Netherlands, an invention made by an employee is covered by the Patent Law. [1] If the employee is engaged in a position whose nature entails the use of his specialized knowledge in making inventions of the same kind as that invention to which a patent application relates, the employer is entitled to the patent. [2] This means that an employer is not entitled to the patent right if an invention is made outside the scope of the employee's specialized knowledge for which he is engaged and if the job cannot be regarded as one in which the employee uses specialized knowledge to make inventions. However, in the employment contract the employer can stipulate that he will be entitled to patent rights on inventions made by the employee that are in any way connected with his work.

The law further provides [3] that if the salary of the employee cannot be deemed to provide adequate remuneration for his invention, the employer can be required to pay the employee an equitable sum.

The amount of compensation depends on the monetary value of the invention and the circumstances under which it was made. If the employer and the inventor are unable to agree on the appropriate amount of compensation, the Patent Council will determine it upon request. The Council's

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[1] Law of November 7, 1910, Staatsblad [official law gazette of the Netherlands] 313, as amended.

[2] Id., art. 10, para. 1.

[3] Id., para. 2.

decision is binding on the parties. The provision of the law on just compensation for the employee is mandatory. [4] Another mandatory provision [5] gives the person who made the invention, but who is not entitled to the patent right, the right to be named in the patent as the inventor.

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[4] Id., para. 3.

[5] Id. art. 12A, paras. 1-2.

EMPLOYEE INVENTIONS AND JOINT INVENTIONS UNDER SWEDISH LAW

I. General

The Swedish copyright and patent statutes do not have provisions that discriminate against non-citizens. Hence, in the case of a joint inventorship between a Swedish and a foreign national they will both be granted the same protection under Swedish law. To state this in another way, the foreign national will be granted full national treatment. The following Part II deals with inventions made jointly by inventors, while the special Swedish provisions on a peculiar type of joint ownership between an employee inventor and his employer are covered by Part III below.

II. Joint Inventions

A. Domestic Swedish Law

Section 1, subsection 1, of the current Swedish Patent Statute (No. 1978:149 in Svensk Författningssamling, hereafter referred to as SFS) 1/ provides:

> Sec. 1, subsec. 1: Anyone who has made an invention which is susceptible of industrial application, or his successor in title, is entitled pursuant to Chapters 1-10 of this Statute to obtain, upon application, a patent for the invention in this country and thereby acquire an exclusive right to exploit the invention commercially. Provisions concerning European patents are given in Chapter 11.

1/ J. W. Baxter and J. P. Sinnott, 2 C World Patent Practice 29 "Sweden" (1974-). The section on Sweden in vol. 2 C of this looseleaf service contains full translations of the current Swedish Patent Statute (SFS 1978:149), as well as the Patent Statute (SFS 1967:837) in force before June 1, 1978. However, the translated Statute on the Board of Appeals of the Patent and Registry Office on page 28 has now been replaced by the Statute (SFS 1977:729) on Patent Appeals.

Although the word "anyone" is singular, it does not prevent a joint application from joint inventors in the case of a bona fide joint invention. However, a claim of joint inventorship to secure joint property rights in the patent may be of dubious value already because of the legislative history of the Patent Statute. The original Scandinavian draft to the Swedish Patent Statute of 1967 contained in its section 7 a provision that would have allowed the issuance of a so-called company patent in situations where an invention resulted from cooperation between several persons within an enterprise in such a way that it would be impossible to indicate any specific person or persons as inventors. Since this proposed section 7 was directly rejected by the Swedish Parliment, one could imagine circumstances supporting a contention that a claim of joint inventorship was in reality an attempt to obtain one of the rejected "company patents." However, such an objection would normally not in itself be sufficient to invalidate a patent under Swedish law, as distinguished from the laws of the United States,[2/] because section 52, subsection 2, of the Swedish Patent Statute (1978:149) states:

> Sec. 52, subsec. 2: A patent shall not be declared invalid on the grounds that the one who has obtained the patent was only entitled to a certain share of it.

Lars Holmquist in his book on Swedish Patent Law[3/] is succinct on the matter of joint inventions: the names of the joint inventors should be stated in the patent application, and only one inventor should be entered into the Patent Register. He also states that the joint inventors are not

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2/ Id., v. 2:197.

3/ L. Holmquist, Patenträtt 51 (Stockholm, 1976).

prevented from agreeing on their respective shares in a separate contract under private law.

Claes Sandgren in his important comparative work Patentlicenser (Patent Licenses)[4/] does not deal with problems possibly arising out of a joint application for a patent. He does, however, in his Chapter 9 discuss at length the fact that a licensing agreement with a patent application as its object enjoys substantial protection under French, Swedish, and German law, while its legal protection would be less under the laws of the United States. Hence, this writer is inclined to assume that a Swedish patent lawyer would prefer to solve problems of the kind similar to those posed by a "company invention" with a licensing agreement of the type indicated by Sandgren, rather than attempt to establish joint inventorship in a patent application.

While the brief Summary in English in Sandgren's book[5/] does give the American reader some idea of its contents, it cannot be relied on to be an accurate abstract of Sandgren's text in Swedish. This applies to coverage of the cited Chapter 9 on pages 381-382, and it applies even more to the somewhat cryptic statement on page 378: "It is established...that the actual use of forms is limited." This is a matter that is important to anyone who has to draft or evaluate a Swedish patent licensing agreement. Fortunately, Sandgren explains on pages 58-63 that unilaterally prepared forms for licensing agreements (and for many other subjects) are not much used in Sweden.

4/ C. Sandgren, Patentlicenser (Stockholm, 1974).

5/ Id. at 377-393: Summary by Richard Cox, trans. (Appendix I)

The Swedish (and Scandinavian) preference is for standard contracts prepared in active cooperation between the interested parties.[6/] Sandgren also notes that when unilaterally prepared forms are used to this limited extent for licensing agreements those prepared by ORGALIME (Organisme de Liaison des Industries Mécaniques Européennes) seem to be preferred. In his footnotes Sandgren cites the ORGALIME forms and those published by Sveriges Mekanförbund, an Association of Swedish employers, as well as a number of non-Swedish sources that may be useful for the drafting of Swedish licensing agreements.[7/]

B. Swedish Private International Law

As indicated above, Sweden grants foreign inventors and authors the same protection granted to its own inventors and authors. Consequently, Swedish courts will in almost all cases use Swedish law when deciding matters pertaining to intellectual property rights. Hilding Ek in his book The Swedish Conflict of Laws[8/] explains the Swedish private international laws pertaining to intellectual property rights in this way:

> Copyrights, Patents, Marks and Designs
>
> In these fields solution of external problems has been sought through the extensive use of conventions. By this means conflicts have been avoided and a kind of droit unioniste has been created, composed in part of uniform rules and in part of rules providing national treatment of foreigners....

6/ U. Bernitz, "Consumer Protection and Standard Contracts," 17 Scandinavian Studies in Law 11-50 (1973), discusses the Swedish concept of standard contracts in some detail.

7/ Supra note 4, at 58-59.

8/ H. Ek, The Swedish Conflict of Laws (The Hague, 1965).

Eek's statement is still very descriptive of the Swedish laws pertaining to these matters, and the conventions he refers to are international agreements of the type negotiated by the Swedish government through the usual diplomatic channels because they usually require approval by the Swedish Parliament in accordance with Chapter 10, article 2, of the Swedish Constitution or Instrument of Government Act.[9/] The latest Swedish international agreement of this kind seems to be its ratification in 1978 of the European Patent Convention of 1973 that was "transformed"[10/] into national Swedish law by extensive amendments of the Patent Statute (SFS 1978:149) and by some separate statutes, including the important Statute (SFS 1978:152) on the Jurisdiction of Swedish Courts in Certain Litigation on Patent Rights.[11/] Section 2 of this Statute (SFS 1978:152) is a good example of the basic principles described by Eek:[12/]

9/ Sweden, Riksdagen, Constitutional Documents of Sweden, The Instrument of Government... (Stockholm, 1975 with 1978 Supplement).

10/ The need for such "transformation" of the provisions in a lawfully concluded international agreement to make it part of the domestic Swedish laws is explained in the English Summary of: Sweden, Justitiedepartementet, Internationella Överenskommelser och Svensk Rätt 19-26 (Stockholm, 1974). (Statens Offentliga Utredningar 1974:100).

11/ Lag (SFS 1978:152) om svensk domstols behörighet i vissa mål på patenträttens område m.m.

12/ Translated by Dr. Finn Henriksen.

Sec. 2: Litigation described in section 1 [on the European patent] may be litigated before a Swedish court if:

1. the defendant is domiciled in Sweden;

2. the plaintiff is domiciled in Sweden and the defendant does not have his domicile in any state that has ratified the Convention [on the European Patent]; or

3. the parties have agreed in writing or verbally with written confirmation that the courts of Sweden shall decide such dispute.

III. Employee Inventions

A. Domestic Swedish Law

Sweden, West Germany, and the other Scandinavian countries have a type of statutes on the right to employee inventions that is unknown in the United States. The Swedish expert Frederik Neumeyer wrote in 1963 a good survey of The Law of Employed Inventors in Europe, and his coverage of Denmark and Sweden, especially, is still surprisingly current.[13/] The Swedish Statute (SFS 1949:345) on the Right to Employee Inventions is available in a translation that is practically up-to-date.[14/] Of the mandatory provisions in the Statute (i.e., provisions that cannot be waived by the parties by contractual agreement), section 6, subsection 1, especially, may give rise to situations of conflict of laws:

13/ United States Senate, Committee on the Judiciary. The Law of Employed Inventors in Europe (Washington, D.C., 1963). (Appendix II contains copies of pages 1-35 covering Denmark and Sweden.)

14/ International Labour Office, Legislative Series 1949 at 6, "Sweden." (Appendix III)

Sec. 6, subsec. 1: An employee for whom the employer, either in accordance with the Statute or otherwise, acts wholly or in part as an assignee with respect to an invention shall be entitled to reasonable compensation, regardless of what may have been agreed on before the invention was made.

Useful background information on the Swedish law on employee inventions may also be found in an analysis of West German laws on these matters recently done by Dr. Edith Palmer.[15/] While the West German and Swedish statutes on the right to employee inventions are far from being identical, they do belong to the same general type of statutes when compared to the laws of the United States. For instance, Dr. Palmer's statement[16/] "that according to prevailing German views the law on employee inventions pertain to labor law and not to the law of industrial property" is even more true when applied to the prevailing Swedish view of the Statute (SFS 1949:345) on the Right to Employee Inventions.

B. Swedish Private International Law

The Swedish concept of the Statute (SFS 1949:345) on the Right to Employee Inventions as a labor protection statute, rather than one on industrial property law, is an important one because it is well established in Sweden that labor protection laws apply to all work done within the Swedish territory. Moreover, it is established that the mandatory provisions in labor protection statutes have superiority over otherwise valid contractual agreements in employment contracts.

15/ E. Palmer, Limitations Imposed on Patent Sharing Agreements by the Employee Inventions Laws of the Federal Republic of Germany. Typewritten report prepared for the Library of Congress, Law Library, June 1980.

16/ Id. at 6.

Danish Professor Ole Lando has surveyed the laws on labor protection in this broad meaning in a recent article "Arbejdsforhold og International Privatret; en Retssammenlignende Undersögelse" (Employment Conditions and International Private Law; a Comparative Law Study).[17/] From Lando's description of Swedish law on pages 28-30, it appears that there are very few reported Swedish court decisions in this broad field, none of them dealing with employee inventions, and that the Swedish literature on conflict of laws does not give much guidance. It appears further from Lando's conclusions on pages 43-44 that he finds it reasonable to apply mandatory labor protection law provisions in a narrow sense, such as provisions on work hours, safety, and health, to all employees in the territory, regardless of possibly contrary provisions in their employment contracts under private law. But he does not find it reasonable to disregard provisions in foreign employment contracts in a situation where a foreign employee has been sent by his foreign employer to Denmark or Sweden for a specific assignment or for a limited period of time simply because provisions in the foreign contract may be contrary to mandatory provisions in statutes that pursue broad social goals such as provisions on dismissals, minimum wages, clauses not to compete, or codetermination.

Lando's argument that the statutes on the right to invantions by employees are statutes that pursue broad social goals rather than labor protection in a narrow sense is a convincing one, and in a hypothetical proceeding

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17/ 92 Tidsskrift for Rettsvitenskap 1-46 (1979).

before a Swedish Court,[18] in all likelihood the Swedish Labor Court, it could well be used as an argument. However, opposing counsel would probably argue that the principle of the superiority of the mandatory labor law provision over otherwise lawful agreements between the parties in employment contracts under private law is well-established in Sweden; furthermore, the recent European Patent Convention of 1973 has directly confirmed that mandatory provisions in the statutes on right to inventions by employees do have superiority over contrary provisions in foreign employment contracts.

The relevant provisions behind this argument are Article 60 (1) of the European Patent Convention of 1973 and Articles 4 and 5 in the Protocol on Jurisdiction and the Recognition of Decisions attached to the Convention.[19] These provisions state:

> Art. 60. Right to a European patent.
>
> (1) The right to a European patent shall belong to the inventor or his successor in title. If the inventor is an employee the right to the European patent shall be determined in accordance with the law of the State in which the employee is mainly employed; if the State in which the employee is mainly employed cannot be determined, the law to be applied shall be that of the State in which the employer has his place of business to which the employee is attached.
>
> . . .

18/ U. Bernitz, L. Pehrson, and C. Sandgren, Industiellt Rättsskydd 34 (Stockholm, 1974).

19/ Commercial Clearing House, 2 Common Market Reporter, secs. 5564 and 5790d-E (1978-). (Looseleaf Service)

Art. 4. [Invention of employee].

Subject to Article 5, if the subject matter of a European patent application is the invention of an employee, the courts of the Contracting State, if any, whose law determines the right to the European patent pursuant to Article 60, paragraph 1, second sentence, of the Convention, shall have exclusive jurisdiction over proceedings between the employee and the employer.

Art. 5. [Agreements between parties].

(1) If the parties to a dispute concerning the right to the grant of a European patent have concluded an agreement, either in writing or verbally with written confirmation, to the effect that a court or the courts of a particular Contracting State shall decide on such a dispute, the court or courts of that State shall have exclusive jurisdiction.

(2) However, if the parties are an employee and his employer, paragraph 1 shall apply only in so far as the national law governing the contract of employment allows the agreement in question.

The Swedish statutory provisions that "transform"[20/] the quoted treaty provisions into national Swedish law are sections 3 and 4 of the Statute (SFS 1978:152) on the Jurisdiction of Swedish Courts in Certain Litigation on Patent Rights:[21/]

Sec. 3: Regardless of the provisions in section 2, the Swedish courts shall have jurisdiction over litigation described in section 1 [on the European patent] that deals with inventions made by employees and involves a dispute between employer and employee, provided that:

1. the employee was mainly employed in Sweden when the invention was made or, if it cannot be determined where he was mainly employed, that the employer had a place of business in Sweden to which the employee was attached; [or]

20/ Supra note 10.

21/ Translated by Dr. Finn Henriksen.

2. the parties have agreed in writing or verbally with written confirmation to the effect that the courts of Sweden shall decide such dispute, and that such agreement is lawful under the laws of the state that are applicable to the agreement on employment.

If Swedish law is applicable to the agreement on employment, an agreement between employer and employee to the effect that a foreign court shall decide such disputes [on employee inventions] is void.

Sec. 4: Swedish law shall be applied in litigation that is before a Swedish court in accordance with section 3, subsection 1, No. 1.

If a Swedish court takes jurisdiction in accordance with section 3, subsection 1, No. 2, the dispute shall be decided in accordance with the laws of the state where the employee was mainly employed when the invention was made or, if it cannot be determined where he was mainly employed, where the employer had a place of business to which the employee was attached.

These provisions would not apply directly to a U.S. inventor acting in Sweden because the United States has not ratified the European Patent Convention of 1973, and the solution offered by this Swedish international or regional European agreement seems not to be a particularly advantageous one from the U.S. point of view. Nevertheless, the statutory provisions may have an indirect effect in the sense that a Swedish court probably would be reluctant to grant more protection to the provisions in a U.S. investor's employment contract with his U.S. employer than it could grant under the Convention to, say, the provisions in a French inventor's employment contract with his French employer. The statutory provisions may also make it easier for a Swedish court to apply the more liberal practice suggested by Ole Lando if an employed U.S. inventor made an invention in Sweden without being mainly

employed in Sweden and provided that his employer did not have a place of business in Sweden to which this employed inventor was attached.

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September 1981

ADDENDUM

The above report is still reasonably up-to-date and is, as indicated on page 6 above, representative of the Scandinavian region. Norwegian Statute No. 21 of April 17, 1970, on Employee Inventions is available in translation,[22] but no translation of the corresponding Danish Statute No. 142 of April 29, 1955, on Employee Inventions has been found. A Swedish Royal Commission in 1980[23] suggested increasing an employer's possibilities of acquiring all the legal rights of inventions made by his employers, as described in the English summary of the Commission's report.[24] This

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22/ International Labour Office, Legislative Series 1970 at 3, "Norway." (Appendix IV)

23/ Sweden, Justitiedepartementet, Arbetstageres Uppfinningar (Stockholm, 1980). (Statens Offentliga Uttredningar 1980:42).

24/ Id. at 17-21. (Appendix V)

proposal was strongly criticized, however, and it has not been passed by the Swedish Parliament.

Updated by Dr. Finn Henriksen
June 1983

File

APPENDIX I

Patent-licenser

Studier i licensavtal angående patent, patentansökningar och know-how med särskild hänsyn till amerikansk och tysk rätt

av

Claes Sandgren

p. 377-393

With a Summary in English

P A Norstedt & Söners förlag
Stockholm

87th Congress
2d Session

COMMITTEE PRINT

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Copy
1963

THE LAW OF EMPLOYED INVENTORS IN EUROPE

STUDY

OF THE

SUBCOMMITTEE ON

PATENTS, TRADEMARKS, AND COPYRIGHTS

OF THE

COMMITTEE ON THE JUDICIARY

UNITED STATES SENATE

EIGHTY-SEVENTH CONGRESS, SECOND SESSION

PURSUANT TO

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U.S. Congress, Senate

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2379

APPENDIX 77

APPENDIX III

INTERNATIONAL LABOUR OFFICE

LEGISLATIVE SERIES
1949

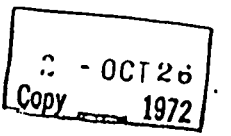
p. 1 – 3

GENEVA
1952

Price: 3d. (6 cents) *November-December 1952*

APPENDIX IV

INTERNATIONAL LABOUR OFFICE

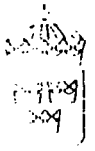


LEGISLATIVE SERIES
1970

p. 1-4

GENEVA
1972

APPENDIX V



Statens offentliga utredningar
1980:42
Justitiedepartementet

Arbetstagares uppfinningar

p. 17-21.

Betänkande av utredningen rörande rätten till arbetstagares uppfinningar

Stockholm 1980

UNITED KINGDOM

Introduction

At common law, under an implied term in the contract of service, anything produced by an employee in the course of his employment "by the strength of his arm or the skill of his hand or the exercise of his inventive faculty [became] the property of his employer." 1/ Moreover, the employer was also considered to have the right to require the assignment of any invention made by an employee outside the course of employment. The strictness of these rules was in practice mitigated by the payment of ex gratia rewards for the inventions. The first statutory attempt to grant an employee inventor the opportunity to secure a just and equitable share of the benefit received by the employer from the use of the patent was contained in the Patent Act, 1949. 2/ The section, however, was badly drafted and in the very first case brought under it, it was given a strict statutory interpretation and held that the employee was entitled to be compensated only if he had a legal interest in the benefit of the patent. 3/ Since that happens only in a few instances, the employee inventor continued to remain unentitled to any compensation as a matter of right.

The issue of fair compensation for the employee inventor was addressed in 1970 by a committee appointed to examine the patent system.

1/ Sterling Engineering Co. v. Patchett, [1955] A.C. 534, 544 (H.L.).

2/ 12, 13 & 14 Geo. 6, ch. 87, § 56.

3/ Sterling Engineering Co. v. Patchett, [1955] A.C. 534 (H.L.).

The committee was urged to recommend the adoption of a compensation scheme like the one set up in West Germany. In its report, however, the committee rejected the scheme on the ground that there was no evidence of the unfair treatment of employee inventors. The committee did propose though that any contractual clauses depriving an employee of any rights to an invention to which he would have been otherwise entitled should be prohibited. The committee's position on the absence of unfair treatment of the employee inventor was rebutted by the Institute of Patentees and Inventors in a paper documenting cases in which they had been badly treated. Eventually, a compromise was reached and a statutory compensation scheme was established by the Patent Act, 1977. 4/

The 1977 Act

A. Ownership of employee inventions

Section 39 of the Act codifies the common law of ownership of employee inventions. An invention will belong to an employer, if it is made in the course of the employee's normal duties or in the course of duties specifically assigned to him, and the circumstances in each case were such that an invention might reasonably be expected to result.

Section 39(1)(b) provides that an invention will also belong to the employer if an employee has made it in the course of his employment and had the kind of responsibility which imposed a special obligation to

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4/ ch. 37, §§ 39-43. A copy is attached.

further the employer's undertaking. This subsection is designed to implement tests concerning consultants and persons who are the employer's alter ego as laid down in previous case law. 3/

All other inventions are declared by section 39(2) to belong to the employee. Section 42 implements the proposal prohibiting any contractual term granting any right to an employer that would otherwise belong to an employee. Such terms are made unenforceable. The affected terms are those that are made before the invention is completed. Thus any agreement conferring ownership on the employer of an invention belonging to the employee under section 39 will not be affected. Section 42 applies to all employees including government workers. This is a significant departure from common law rules under which government workers were required to assign their rights to the government in expectation of an ex gratia payment. In order to avoid the difficulties which may arise in cases in which an employee's invention uses confidential information belonging to an employer, section 42 is not to be construed as derogating from any duty of confidentiality owed by an employee.

B. Compensation Scheme (sections 40, 41)

An employee making an invention the patent of which belongs to his employer is entitled to receive compensation if:

1) the patent is of outstanding benefit to the employer, and

2) it is just that compensation should be paid.

3/ Worthington Pumping Engine Co. v. Moore, 20 Reports of Patents Designs and Trademarks Cases 41 (Ch. 1903); British Syphon Co. v. Homewood, [1956] 1 W.L.R. 1190 (Ch.).

The amount to be paid is determined by the Comptroller General of Patents, Designs and Trade-Marks or a court, based on the following factors supplied in section 41(4):

1) the nature of the employee's duties and the benefits he has derived from his employer and the invention;
2) the extent to which the employee devoted his efforts and skill in making the invention;
3) the contribution made by fellow employees, and
4) the contribution of the employer by way of advice, the provision of facilities, etc. in the making, development and working of the invention.

Under section 40(2) compensation is also payable to an employee in cases where he owns the patent to an invention, if he can show that:

1) the patent rights have been assigned to the employer,
2) he is receiving inadequate benefit in comparison to that being received by the employer, and
3) in view of the above, it is just that he should receive additional compensation.

The factors to be taken into consideration for compensation in these cases are stated in section 41(5) as follows:

1) any conditions in the license,
2) the contribution of the employee in the making of the invention, and

3) the contribution of the employer in the making, developing and working of the invention.

Applications for compensation are governed by the Patent Rules, 1978. 6/ The compensation scheme can be displaced by a labor agreement made by a trade union to which an employee belongs if the agreement is in existence at the time the invention was made. There is no provision that the agreement give equal or better compensation to the employee.

Questions concerning ownership of patents and whether compensation is due can be tried by the High Court or upon a reference to the Comptroller.

Implementation of the Act

Around the time of the enactment of the Act, it was predicted that because of the very general principles for the calculation of compensation, there may be a strong temptation on the part of the employee to litigate. 7/ In the number of years in which the Act has been in effect, however, there has not been a single reported case under the provisions dealing with employees' inventions.

In comparison to the West German scheme of compensation that is supported by a complex set of regulatory guidelines and formulae which

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6/ The Patent Rules 1982, 1982 Stat. Inst. No. 717, rules 60-61. A copy is attached.

7/ J. Phillips, Employees' Inventions and the Patents Act 1977 8 (1978). The publication has useful charts on the ownership and compensation of inventions, a copy of which is attached.

grants an employee an automatic right to compensation, the British scheme does not supply all the hard answers. 8/ It therefore seems likely that the variable factors involved will have to be dealt with by the court at some stage.

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June 1983

8/ W.R. Cornish, Employees' Inventions In The Patents Act 1977, Queen Mary College, Patent Conference Papers, ed. M. Victoria, at 80 (1978).

KBS/njs
6/22/83

HALSBURY'S STATUTES OF ENGLAND

THIRD EDITION

VOLUME 47

CONTINUATION VOLUME
1977

LONDON
BUTTERWORTHS
1978

The Patents Act 1977 : ch 37 : ss 39-43
T. P + PP 1005, 11 12 · 54

STATUTORY INSTRUMENTS

1982 No. 717

PATENTS

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The Patent Rules 1982

Made - - -	*17th May* 1982
Laid before Parliament	*24th May* 1982
Coming into Operation	
Except for rules 3(1) and 124	*14th June* 1982
Rules 3(1) and 124	*12th July* 1982

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rules 60, 61

EMPLOYEES' INVENTIONS AND THE PATENTS ACT 1977

Jeremy Phillips

Kenneth Mason

FEDERAL REPUBLIC OF GERMANY

In the Federal Republic of Germany, the Employee Inventions Law 1/ has been in effect for more than 25 years, and it is the general opinion of industry and labor that the Law has been successfully implemented and has proven beneficial to the German economy. 2/

The importance of the Employee Inventions Law within the German patent system can be assessed from the fact that between 80 and 90% of the inventions 3/ made in Germany are employee inventions. 4/ In larger enterprises, the percentage is even higher. In enterprises with a sales volume in excess of 250 million DM (Deutsche Marks), 97 to 98% of the patents held are employee inventions, whereas in smaller enterprises with a sales volume below 10 million DM, only 49% of the patents held are employee inventions. 5/ The lower percentage for smaller enterprises results partly from the fact that the owners of these enterprises are themselves inventors and partly from the fact that the employees of smaller firms often are not

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1/ Gesetz über Arbeitnehmererfindungen [ArbnErfG] vom 25. Juli 1957, Bundesgesetzblatt [BGBl., official law gazette of the Federal Republic of Germany] I, p. 756, as amended by Gesetz vom 4. September 1967, BGBl. I, p. 953. An English translation from 11 Industrial Property 226 (1972) is included as Appendix I, together with the Directives on the Compensation for Employees' Inventions, id. at 233. Included as Appendix II is an article by H. Schade entitled "Employees' Inventions -- Law and Practice in the Federal Republic of Germany," id. at 249.

2/ See Appendix II, at 254; Götz Hartung, Die Vergütung der Verbesserungsvorschläge 1 (Köln, 1979).

3/ The detailed rules on compensation for employee inventions in the ArbnErfG apply to those that can be protected by patent or as utility models. The Law also contains some rudimentary rules on compensation for other innovative proposals.

4/ G. Schaub, Arbeitsrechts-Handbuch 608 (München, 1980).

5/ K. Grefermann, "Patentwesen und technischer Fortschritt," in Hundert Jahre Patentamt 42 (München, 1977).

sufficiently aware of their rights. The substantial degree of compliance with the Employee Inventions Law can be ascribed to its mandatory nature. As stated in section 22, the provisions of the Law cannot be changed to the detriment of the employee by an employment contract or collective agreement.

The Employee Inventions Law promotes technological progress in two ways. First, the expectation of reaping sizable financial benefits and personal recognition from an invention is an incentive that spurs employees on to greater efforts; 6/ second, since the Law has the effect that most inventions actually are patented, the ensuing publicity of the patent application creates an impetus for further research and speeds up the development of new technologies. 7/

An empirical study undertaken in Germany in the early 1970s shows that in the most patent-intensive industries (chemical, electrotechnologic, and mechanical engineering) only 5% of the inventions that can be patented are kept secret; all others are patented. The study also shows that the Employee Inventions Law is one of the major factors that encourages patent applications. Although the rule requiring the employer to apply for a patent for a claimed service invention permits of certain exceptions (sec. 13 of the Law), the employer in most cases is faced with the choice of either releasing the invention to the employee or of applying for a patent. 8/

6/ Id. at 49.

7/ Ifo-Institut für Wirtschaftsforschung, 1 Patentwesen und technischer Fortschritt 45 (Göttingen, 1974).

8/ Supra note 5 at 41.

Although the Employee Inventions Law places the German industry at a competitive disadvantage in comparison with the industries of other countries 9/ (none of which are by law subjected to as far-reaching an obligation of compensation to its employees 10/) and although this Law creates frictions for German enterprises engaging in joint ventures with foreign firms, 11/ German industry, nevertheless, has a very positive attitude toward the Employee Inventions Law. This can be seen, for instance, from a statement made in 1979 by the Employee Inventions Committee of the Federal Organization of Employer Associations. In discussing the possibility of unifying employee inventions law within the European Communities, the Committee expressed the hope that unification would not lead to changes in the German law to the detriment of the balance inherent in the German system. 12/

Employee inventions law is a complicated subject matter, as can be expected from its position at the crossroads between labor law and patent law. Among the difficult issues that must be resolved in each case is the adequacy of compensation for a claimed service invention. These computations are usually made by reference to the Guidelines of 1959. 13/ In

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9/ W. Kremnitz, Das Arbeitnehmererfinderrecht in der Praxis des Unternehmers 1 (Köln, 1977).

10/ H. Schade, "Arbeitnehmererfindungen," 28 Recht der Arbeit 159 (1975).

11/ H. Schippel, "Die Grenzen der Parteiautonomie im Internationalen Arbeitsvertragsrecht und die Arbeitnehmererfindung," 62 Mitteilungen der deutschen Patentanwälte 229 (1971),

12/ Jahresbericht der Bundesvereinigung der Deutschen Arbeitgeberverbände 33 (1979).

13/ See Appendix I.

essence, compensation depends on the "invention value" and the "participation factor." The latter represents the ratio between the employee's achievement as compared to the resources provided by the enterprise. In assessing the invention value, a license analogy is often used. In determining the participation factor, many circumstances are taken into account by a point system, such as the initiative of the inventor, his employment duties, and the resources, expertise, and assumption of the risk provided by the enterprise. In practice, the participation factor may lead to awarding the employee 13 to 21% of the amount that would be payable to an independent inventor. 14/ Although the Guidelines are complex and have in some instances been further developed by the Arbitration Board, their application, in practice, has worked out well. 15/ In larger enterprises, the compensation calculations, as well as the other paperwork required by the Law, are handled routinely by experienced patent departments. 16/

The Arbitration Board has played an important role in the successful implementation of the Law. The submission of disputes to the Arbitration Board before resorting to judicial recourse has the effect that less of an adversary relationship is created between employer and employee. However, the statutory provisions are flexible enough to permit the parties to forego arbitration if they feel that an amicable settlement cannot be

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14/ See Appendix II

15/ These percentages have been awarded in arbitrated settlements. In undisputed cases, the percentage for the participation factor may be somewhat lower: E. Reimer, Das Recht der Arbeitnehmererfindungen 327 (Berlin, 1975).

16/ Supra note 10 and B. Johanneson, Arbeitnehmererfindungen 65 (Weinheim, 1979).

reached. The Arbitration Board, however, is called upon in most disputes because it enjoys a great deal of authority and respect because of its objectivity, realistic attitude, and technical and legal expertise. 17/

Most employee inventions are compensated without controversy, as can be seen from the statistics of the Patent Office. During the period from 1957 to 1981, the Arbitration Board in Munich was invoked in 1,730 cases; it proposed 1,073 settlements, 763 of which were accepted. In 1981, 72 applications were received, and 65 proceedings were pending at the end of the year. These figures have to be viewed within the context of the patent and utility model statistics: in 1981, 49,002 patent applications and 36,333 utility model applications were received by the German Patent Office; of these, 64% of the patent applications and 79% of the utility model applications were submitted by German applicants. 18/

The Employee Inventions Law has generated a large body of legal literature and case law, and these developments have served to provide uniformity and legal certainty in the interpretation of the Law. Some minor problems persist, however, and some proposals for reform have been made. 19/ Among these problems are the observation that employees in smaller firms are sometimes not aware of their rights or do not pursue them; 20/ also, the

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17/ Id. at 102.

18/ Deutsches Patentamt, Jahresbericht 1981. Another Arbitration Board operates in Berlin. On the average, it handles 2-5 cases per year.

19/ H. Danner, "Die Behandlung der zu einem geltend zu machenden Monopol führenden Arbeitsergebnisse von Arbeitnehmern -- Das ArbEG, wie es ist und wie es sein müsste," Gewerblicher Rechtsschutz und Urheberrecht 91 (1983).

20/ See Appendix II.

institution of a limited claim to the invention by the employer has not proven successful in practice. 21/ Furthermore, employers have recently suggested that many of the so-called "reserve patents" lack usability and therefore should not be compensated. 22/ On balance, however, the Law on Employee Inventions has been successfully implemented and has made a significant contribution to technological progress in the Federal Republic. Moreover, a curtailment of the compensation benefits granted to employee inventors would not be politically feasible and is therefore not contemplated by anyone.

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June 1983

21/ Supra note 9, at 13-19.

22/ Jahresbericht der Bundesvereinigung der Deutschen Arbeitgeberverbände 30 (1980).

West's ANNOTATED CALIFORNIA CODES

LABOR CODE

Sections 1 to 3200

Volume 44

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ARTICLE 3. OBLIGATIONS OF EMPLOYEE

§ 2855. Enforcement of contract to render personal service; time limit

Law Review Commentaries

Emancipation of professional athletes. Lionel S. Sobel (1976) 3 West.St.U.L.Rev. 185.

Employee emancipation: Seven-year itch under this section. Henry I. Bushkin and Rauer L. Meyer (1981) 56 S. Bar J. 20.

Statutory minimum compensation and the granting of injunctive relief to enforce personal service contracts in the entertainment industries. (1979) 52 So.Cal.L.R. 489.

The use of negative covenants in employment contracts: Resolving conflict between employer's desire to prevent abuse of valuable trade information and relationships and personal freedom and mobility of employees. (1972) 47 S. Bar J. 318.

§ 2856. Compliance with employer's directions

Notes of Decisions

1. In general

Trial court's determination that demoted employee's refusal to comply with her employer's order to train her new successor and superior was reasonable possessed substantial evidentiary support, and the court of appeal would not reinstate determination of the unemployment insurance agency that instruction was reasonable and employee was guilty of misconduct in refusing to comply, even though the latter had equal evidentiary support. Lacy v. California Unemployment Ins. Appeals Bd. (1971) 95 Cal.Rptr. 566, 17 C.A.3d 1128.

2. Compliance with orders

In absence of any evidence as to why employee's beard was objectionable to employer for whom employee served as assistant manager of pizza parlor, employee's constitutional right was infringed by employer when employer told employee that he was fired unless he would shave off his beard and employee requested that he be allowed to work his shift and defer decision about beard until next day and such request was refused and employee was not allowed to continue working. Thornton v. Department of Human Resources Development (1973) 107 Cal.Rptr. 892, 32 C.A.3d 180.

§ 2860. Ownership of things acquired by virtue of employment

Law Review Commentaries

Guarding against unfair competition and business piracy through preventive law. Allan Browne (1975) 51 Los Angeles Bar J. 153.

Notes of Decisions

1. In general

Performances of radio station's former mascot, who appeared in chicken suit developed by the station but who developed his own changing routine of antics, was not engaged in radio broadcasting, for purpose of injunctive relief, as his performances were too fluid and changing to be a servicemark of some other service, such as broadcasting, and they could not be owned by anyone, other than pursuant to a valid contract. KGB, Inc. v. Giannoulas (1980) 164 Cal.Rptr. 571, 104 C.A.3d 844.

6. Competition by former employees

Although contract whereby defendant was employed to appear as radio station mascot dressed in chicken costume provided that costume, concept and the "KGB chicken" were exclusive property of the station and that the chicken was a registered trade name and valid copyright and that the employee would not take any action inconsistent therewith and although contract provided that any ideas developed during employment were property of the station, such did not create a contractual monopoly of all appearances by the employee in any chicken costume following employment, especially in a costume not bearing the station's logo or coloration. KGB, Inc. v. Giannoulas (1980) 164 Cal.Rptr. 571, 104 C.A.3d 844.

ARTICLE 3.5. INVENTIONS MADE BY AN EMPLOYEE

Sec.
2870. Employment agreements; assignment of rights.
2871. Conditions of employment or continued employment; disclosure of inventions.
2872. Notice to employee; burden of proof.

Article 3.5 was added by Stats.1979, c. 1001, p. 3401, § 1.

§ 2870. Employment agreements; assignment of rights

Any provision in an employment agreement which provides that an employee shall assign or offer to assign any of his or her rights in an invention to his or her employer shall not apply to an invention for which no equipment, supplies, facility, or trade secret information of the employer was used and which was developed entirely on the employee's own time, and (a) which does not relate (1) to the business of the employer or (2) to the employer's actual or demonstrably anticipated research or

development, or (b) which does not result from any work performed by the employee for the employer. Any provision which purports to apply to such an invention is to that extent against the public policy of this state and is to that extent void and unenforceable.

(Added by Stats.1979, c. 1001, p. 3401, § 1.)

Library References

Master and Servant ⇐62.
C.J.S. Master and Servant §§ 73, 74.

§ 2871. Conditions of employment or continued employment; disclosure of inventions

No employer shall require a provision made void and unenforceable by Section 2870 as a condition of employment or continued employment. Nothing in this article shall be construed to forbid or restrict the right of an employer to provide in contracts of employment for disclosure, provided that any such disclosures be received in confidence, of all of the employee's inventions made solely or jointly with others during the term of his or her employment, a review process by the employer to determine such issues as may arise, and for full title to certain patents and inventions to be in the United States, as required by contracts between the employer and the United States or any of its agencies.

(Added by Stats.1979, c. 1001, p. 3401, § 1.)

Library References

Master and Servant ⇐62.
C.J.S. Master and Servant §§ 73, 74.

§ 2872. Notice to employee; burden of proof

If an employment agreement entered into after January 1, 1980, contains a provision requiring the employee to assign or offer to assign any of his or her rights in any invention to his or her employer, the employer must also, at the time the agreement is made, provide a written notification to the employee that the agreement does not apply to an invention which qualifies fully under the provisions of Section 2870. In any suit or action arising thereunder, the burden of proof shall be on the employee claiming the benefits of its provisions.

(Added by Stats.1979, c. 1001, p. 3401, § 1.)

Library References

Master and Servant ⇐3(1).
C.J.S. Master and Servant § 6.

ARTICLE 4. TERMINATION OF EMPLOYMENT

Sec.
2929. "Garnishment", wages, defined; prohibition against discharge for threat of garnishment or for garnishment for payment of one judgment.

§ 2921. Notice of death or incapacity of employer

Notes of Decisions

1. In general

Because of its personal and fiduciary character, agency to sell real estate on behalf of owner is terminated by the death of or renunciation by the agent, or by the death of or revocation by the principal, unless the agent has an interest in the subject of the agency. Charles V. Webster Real Estate v. Rickard (1971) 98 Cal.Rptr. 559, 21 C.A.3d 612.

§ 2922. Termination at will upon notice; employment for a specified term

An employment, having no specified term, may be terminated at the will of either party on notice to the other. * * * Employment for a specified term means an employment for a period greater than one month.

(Amended by Stats.1971, c. 1580, p. 3186, § 1; Stats.1971, c. 1607, p. 3459, § 2.)

Asterisks * * * indicate deletions by amendment

MINNESOTA STATUTES ANNOTATED

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