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SENATE

BILL	DATE	PAGE(S)
S.1201	MAY 16 '84 (64)	S5833-38

ACTION:

Semiconductor Chip Protection Act: Senate passed S. 1201, to provide copyright protection for the imprinted design patterns on semiconductor chips, after agreeing to a committee amendment in the nature of a substitute and Stevens (for Mathias) Amendment No. 3067, of a technical nature.

Page S5833

SEMICONDUCTOR CHIP PROTECTION ACT OF 1984

Mr. STEVENS. Mr. President, I ask unanimous consent that the Senate proceed to the consideration of Calendar No. 833, S. 1201.

The PRESIDING OFFICER. The bill will be stated by title.

The legislative clerk read as follows:

A bill (S. 1201) to amend title 17 of the United States Code to protect semiconductor chips and masks against unauthorized duplication and for other purposes, reported with an amendment.

The PRESIDING OFFICER. Is there objection to the present consideration of the bill?

There being no objection, the Senate proceeded to consider the bill, which had been reported from the Committee on the Judiciary with an amendment to strike all after the enacting clause and insert:

That this Act may be cited as the "Semiconductor Chip Protection Act of 1984".

DEFINITIONS

SEC. 2. Section 101 of title 17 of the United States Code is amended by adding at the end thereof the following:

"A 'semiconductor chip product' is the final or intermediate form of a product—

"(1) having two or more layers of metallic, insulating, or semiconductor material, deposited or otherwise placed on, or etched away or otherwise removed from a piece of semiconductor material in accordance with a predetermined pattern;

"(2) intended to perform electronic circuitry functions; and

"(3) that is a writing, or the manufacture, use, or distribution of which is in or affects commerce.

"A 'mask work' is a series of related images, however fixed or encoded—

"(1) having the predetermined, three-dimension pattern of metallic, insulating, or semiconductor material present or removed from the layers of a semiconductor chip product; and

"(2) in which series the relation of the images to one another is that each image has the pattern of the surface of one form of the semiconductor chip product.

"A 'mask' is a substantially two-dimensional sheet, partially transparent and partially opaque to preselected radiation. A mask embodies a mask work if the pattern of transparent and opaque portions of the mask is substantially similar to the pattern of one of the images of the mask work. Masks and mask works shall not be deemed pictorial, graphic, or sculptural works. The copyright in a mask work shall neither extend to, nor affect, limit, or impair any copyright in any other work of authorship embodied therein or in a semiconductor chip product.

The provisions of sections 109(a), 401, 405, 406, 501(A), 503, 506, 509, and 602 of this title, applicable to copies of a work shall apply also to a semiconductor chip products.".

SUBJECT MATTER OF COPYRIGHT

SEC. 3. Section 102(a) of title 17 of the United States Code is amended—

(1) by adding after paragraph (5) the following:

"(6) mask works;"; and

(2) by redesignating paragraphs (6) and (7) as paragraphs (7) and (8), respectively.

EXCLUSIVE RIGHTS

SEC. 4. Section 106 of title 17 of the United States Code is amended—

(1) by striking out "and" at the end of paragraph (4);

(2) by striking out the period at the end of paragraph (5) and inserting "; and" in lieu thereof; and

(3) adding at the end thereof the following:

"(6) in the case of mask works, only the following rights—

"(A) to embody the mask work in a mask;

((B) to distribute a mask embodying the mask work;

"(C) to embody an image of the mask work in a semiconductor chip product;

"(D) in the manufacture of a semiconductor chip product, substantially to reproduce, by optical, electronic, or other means, an image of the mask work on material intended to be part of the semiconductor chip product; and

"(E) to distribute a semiconductor chip product made as described in subparagraph (C) or (D) of this paragraph.".

LIMITATION ON EXCLUSIVE RIGHTS AS TO MASKS

SEC. 5. (a) Chapter 1 of title 17 of the United States Code is amended by adding at the end the following:

"§ 119. Scope of exclusive rights: Right of reverse engineering with respect to mask works

"(a) In the case of mask works, the exclusive rights provided by section 106 are subject to a right of reverse engineering use under the conditions specified by this section.

"(b) It is not infringement of the rights of the owner of a copyright on a mask work to reproduce the pattern on one or more masks or in a semiconductor chip product solely for the purpose of teaching, analyzing, or evaluating the concepts or techniques embodied in the mask or semiconductor chip product, or the circuit schematic, logic flow, or organization of components utilized therein.".

(b) The chapter analysis for chapter 1 of title 17 is amended by adding at the end thereof the following:

"119. Scope of exclusive rights: Right of reverse engineering with respect to mask works.".

(c) Section 106 of title 17 of the United States Code is amended by striking out "118" and inserting in lieu thereof "119".

DURATION OF COPYRIGHT

SEC. 6. Section 302 of title 17 of the United States Code is amended by adding at the end thereof the following:

"(f) MASKS.—Copyright in mask works endures for a term of ten years from the earliest of first authorized—

"(1) distribution;

"(2) use in a commercial product; or

"(3) manufacture in commercial quantities of semiconductor ship products made as described in subparagraph (C) or (D) of paragraph (6) of section 106.".

INNOCENT INFRINGEMENT

SEC. 7. (a) Chapter 5 of title 17 of the United States Code is amended by adding at the end thereof the following:

"§ 511. Innocent infringement of mask works

"(a) Notwithstanding any other provision of this chapter, an innocent purchaser of an infringing semiconductor ship product shall not be liable as an infringer or otherwise be liable or subject to remedies under this chapter with respect to the distribution of

units of such semiconductor chip product that occurred before such innocent purchaser had notice of infringement.

"(b) The remedies of the owner of a copyright on a mask work against an innocent purchaser shall be limited to a reasonable royalty upon each unit of the infringing semiconductor chip product that the innocent purchaser made or distributed after having notice of infringement, if the innocent purchaser establishes the applicability of all of the following circumstances:

"(1) the innocent purchaser, before first having notice of infringement, committed substantial funds to the use of the infringing product;

"(2) the innocent purchaser would suffer substantial out-of-pocket losses (other than the difference in price between the infringing product and a noninfringing product) if denied the use of the infringing product;

"(3) the innocent purchaser's use of the infringing product is and will be for substantially the same purpose that initially gave rise to the innocent purchaser's immunity under subsection (a);

"(4) in the case of an innocent purchaser who, after having notice of infringement, makes the infringing semiconductor chip product, or has it made for him, the copyright owner and the owner's licensees, if any, are unable to supply the infringing semiconductor chip product to the innocent purchaser at a reasonable price; and

"(5) it would be inequitable in the circumstances not to permit the innocent purchaser to continue the use or proposed use of the infringing product.

"(c) The immunity of an innocent purchaser and limitation of remedies with respect thereto shall extend to good faith purchasers for him.

"(d) For the purposes of this section—

"(1) 'innocent purchaser' means one who purchases an infringing semiconductor chip product in good faith, and without having notice of infringement;

"(2) 'notice of infringement' means actual knowledge that, or reasonable grounds to believe that, a product is an infringing semiconductor chip product; and

"(3) 'infringing semiconductor chip product' means a semiconductor chip product which is made or distributed in violation of the exclusive rights of an owner of a copyright in a mask work.".

(b) The table of sections for chapter 5 is amended by adding at the end thereof the following new item:

"511. Innocent infringement of mask works.".

IMPOUNDING AND SEIZURE

SEC. 8. Sections 503(a), 503(b), and 509(a) of title 17 of the United States Code are each amended by inserting "masks," after "film negatives," each place it appears.

SAVINGS CLAUSES

SEC. 9. Nothing contained in this Act shall be deemed to add to or detract from existing rights of owners of copyrights in works of authorship listed in section 102(a) of title 17 of the United States Code, prior to its amendment by this Act. Nothing contained in this Act shall be deemed to detract from any right of the lawful owner of product purchased from the copyright owner, or from a person authorized by the copyright owner, freely to use, distribute and resell the product without liability therefor under the copyright laws.

EFFECTIVE DATE

SEC. 10. The amendments made by this Act shall not create liability for any conduct that occurred prior to the date of enactment of this Act, but shall apply to all acts of manufacture or distribution of semiconductor chip products that occur in the United States after such date, to all acts of importation of semiconductor chip products into the United States that occur after such date, and to all violations of the exclusive rights of the copyrights owner under section 106(6) of title 17, United States Code, as amended by section 4 of this Act, that occur after such date. Notwithstanding the provisions of this section, no alleged infringer shall be liable under this Act with respect to the continued manufacture or distribution of any semiconductor chip product that the alleged infringer commercially distributed in the United States prior to January 1, 1980.

AMENDMENT NO. 3067

(Purpose: To make technical amendments to the committee substitute)

Mr. STEVENS. Mr. President, I send to the desk an amendment on behalf of the Senator from Maryland (Mr. MATHIAS) and ask for its immediate consideration.

The PRESIDING OFFICER. The amendment will be stated.

The legislative clerk read as follows:

The Senator from Alaska (Mr. STEVENS), for Mr. MATHIAS, proposes amendment No. 3067.

Mr. STEVENS. Mr. President, I ask unanimous consent that reading of the amendment be dispensed with.

The PRESIDING OFFICER. Without objection, it is so ordered.

The amendment is as follows:

On page 12, strike out lines 11 through 14 and insert in lieu thereof the following:

"(3) manufacture in commercial quantities of semiconductor chip products made as described in subparagraph (C) or (D) of paragraph (6) of section 106.".

On page 13, line 23, strike out "infringing".

On page 15, line 7, after "owner of" insert "a".

The PRESIDING OFFICER. The question is on agreeing to the amendment of the Senator from Maryland (Mr. MATHIAS).

The amendment (No. 3067) was agreed to.

Mr. MATHIAS. Mr. President, today the Senate turns to consideration of S. 1201, the Semiconductor Chip Protection Act of 1984. This bill, which is cosponsored by the Senior Senator from Colorado, Mr. HART, and by 22 of our colleagues, would provide copyright protection to the intricate patterns that make up the design of a modern technological marvel: the semiconductor chip.

This bill is not controversial; it has been called up for consideration by unanimous consent of the Senate, and I anticipate that there will be no opposition to its passage. But the fact that this legislation excites little controversy should not lead us to underestimate its importance.

In my view, the Senate's passage of this bill is a momentous event. It marks our recognition of the importance to our economy and to our society of continued technological progress in the field of microelectronics. Furthermore, it exemplifies our willingness to adapt our intellectual property laws to meet the challenges of technological change, change that transforms both the way that creative thinkers express themselves, and the way that others can copy and misappropriate those expressions.

With the passage of this legislation, we express our confidence in the future of a nation whose citizens are as creative and as inventive as any on Earth. As the tempo of innovation in microelectronics continues to accelerate, encouraged by the copyright protection provided by this bill, Americans will reap over greater benefits from technological progress. History may well judge that the passage of this noncontroversial bill was one of the more significant achievements of the 98th Congress.

Mr. President, Senator HART and I introduced S. 1201 just over a year ago, on May 4, 1983. Since then, this bill has been the subject of hearings in the Subcommittee on Patents, Copyrights and Trademarks of the Committee on the Judiciary. Those hearings were a revelation of the marvels of modern microelectronics.

The first integrated circuit semiconductor chip was produced about 25 years ago—within the lifetime of every member of this body. Since then, these devices have become almost unbelievably sophisticated. Today, engineers have managed to pack hundreds of thousands of electronic components onto a flake of silicon-based material measuring less than one-sixteenth of a square inch. In the space the size of a baby's thumbnail, a microprocessor—a "computer-on-a-chip"—can outperform the room-sized computers of past decades, at a miniscule fraction of the cost and energy consumption of its ungainly ancestors. A memory chip can store, in the same area, more than a quarter of a million bits of information.

These advances in miniaturization make possible the portable personal computer, designed around a single microprocessor chip. But the computer field is not the only one that has been transformed by the semiconductor chip. More than half of all integrated circuits find their way into end uses other than computing. These devices have made possible many of our modern conveniences, from kitchen appliances to fuel-efficient automobiles to video games. The progress in chip design and capability is revolutionizing the way we work, the way we play, the way we travel and communicate—in short, the way we live.

The chip is also transforming our economy. It has given rise to new industries, and to new ways of manufacturing existing products and delivering existing services. The semiconductor chip production industry itself has become an important component of the economy, a sector that is highly competitive in world markets. According to the recent study by the Office of Technology Assessment entitled "International Competitiveness in

Electronics," U.S.-based firms in 1982 produced an estimated $9.7 billion worth of integrated circuit chips. That amounts to nearly seven-tenths of the total world output. Since a growing share—now estimated at roughly one-half—of the world market for chips is outside the United States, it is easy to see the importance of the semiconductor industry to American international competitiveness.

While several factors underlie the dominant position of American firms in many sectors of the semiconductor industry, the U.S. edge in chip design is certainly paramount among them. Packing the greatest amount of circuitry into the smallest amount of space is only the beginning of the chip designer's challenge. There are other goals: To maximize and diversify the functional abilities of the chip; to allow signals to travel faster; to consume less electricity; to generate less excess heat. The designer's task is to find the most elegant and practical solution to a complex set of overlapping problems. It is no wonder that the design and layout of semiconductor chips is a costly, time-consuming, and expensive process. And it is also not surprising that, although computer-assisted design techniques have made dramatic advances, no computer program has been able to supplant human creativity as an essential tool in the layout of the most complex and sophisticated chips.

Chip design is a fine and costly art that is indispensable to progress in the microelectronics field. Much of the semiconductor industry's heavy investment in research and development has gone toward improvements in design. The reward for the firms that make these investments is the ability to manufacture chips of unparalleled quality and power. Through the sale of these chips that are on the cutting edge of semiconductor technology, the firm can recoup the enormous R&D investment—sometimes as much as $100 million—that is required.

No single semiconductor firm has a corner on the market of skilled chip designers, and the breakthroughs embodied in one chip are often surpassed by the product of another company within a year or two. That is standard operating procedure in this highly competitive field. Through a process called reverse engineering, engineers can analyze a competitor's product, then go back to the drawing board to design a chip that can do the same job better, more cheaply, or more efficiently. Reverse engineering, like the original development process, requires a big investment in designing the new chip.

But in recent years, the astounding technological advances in the chip industry have been threatened by a different phenomenon: chip piracy. The chip pirate is not interested in reverse engineering. He does not build on the design advances embodied in new chips. The pirate firm simply rips off the design that has been so painstakingly created through the investment of thousands of hours of engineers' and technicians' time. It is an easy matter for the pirate to make a photographic copy of the different layers of a chip, and reproduce those intricate patterns on new stencils. A family of chips that cost $100 million for the innovator firm to design can be copied for as little as 1 percent of that cost. Because a pirate firm has only a minimal investment in the chip it has copied, it can flood the market with chips at prices far lower than the innovator firm, with its high front-end costs, can match.

As chips become more sophisticated and intricate, the problem of piracy worsens. The technical challenges the chip industry is now tackling are more daunting than ever before, and more expensive and time-consuming to solve. But the resulting breakthrough chips are not much more difficult or expensive to copy than simpler ones. The cost ratio in favor of the pirates thus increases dramatically.

The long-range effect of chip piracy is not hard to predict. The threat of piracy will discourage innovation. Funds for research and development will dry up, for no business wants to sow what others will reap. The growth of the industry will be blighted, and the benefits that all of us have gained from advances in microelectronics—new products, greater reliability, lower prices—will start to disappear.

Under existing law, the semiconductor industry is powerless to halt chip piracy. Copyright law does not generally protect the duplication of utilitarian objects such as semiconductor chips, and copyright protection for the layout drawings made by the designers does not, under settled copyright principles, extend farther than to forbid duplication of the drawings themselves. Patent protection is inadequate or inappropriate, because innovations in chip design are generally not sufficiently inventive to satisfy patent standards. Besides, it takes years to obtain a patent, thus nullifying its usefulness in a dynamic industry in which product lifetimes are often measured in months. Thus, current law offers no practical way to protect the prodigious investment of time, effort, skill, and money that underlies every innovation in chip design.

Mr. President, the Semiconductor Chip Protection Act of 1984 is intended to fill this gap in the law. It does so by extending copyright protection to a new category of creative expression: A "mask work," which is the series of related images embodying the pattern of the surface of a layer of a semiconductor chip. The owner of the copyright in a mask work is given the exclusive right, for a limited term of 10 years, to embody or reproduce these images in a mask—the stencil used to etch the pattern on a layer of the chip—or in a chip itself, and to distribute the resulting mask or chip. The effect of conferring this exclusive right on the creator of the chip design is to make chip piracy a copyright infringement, and to bring the power of civil and criminal copyright enforcement procedures to bear on chip pirates.

Mr. President, I believe that there is a consensus within this body, and in the House of Representatives, on the need for legislation to give legal protection to semiconductor chip design. That was not the case when I first introduced legislation on this subject, late in the 97th Congress. I am gratified that there is now general agreement on the nature of the problem. It is not surprising that there is some diversity of opinion on how best to solve it. That is to be expected, particularly since we are venturing into uncharted territory.

In deciding how to fashion the needed protection, we do not tread familiar ground. On the contrary, the challenge is to adapt the framework of our existing intellectual property law to contemporary conditions. These conditions compel us to rethink some of the basic assumptions on which our patent and copyright systems rest.

There is general agreement on the kind of protection that chip designers need. They should be able to obtain protection quickly and inexpensively, without a protracted period of examination of the design for novelty or innovativeness. The protection should accord the owner of the chip design the exclusive right to make and distribute the chip embodying that design. The protection should not be inconsistent with the accepted and beneficial practice of reverse engineering. And the protection should be for a relatively short term. The harder questions concern the method of providing this protection. Should an existing form of intellectual property protection—such as copyright, which already shares some of these characteristics—be adapted to the desired end? Or should an entirely new species of legal protection be called into being to cope with this new form of expression?

The sponsors of this legislation are well aware that it calls upon the copyright system to shoulder a burden that heretofore copyright has not been asked to carry. We expand the bounds of copyright when we use it to protect exclusive rights in chip design. Some of the witnesses before the Subcommittee on Patents, Copyrights and Trademarks agreed that copyright was the most appropriate approach, while others argued forcefully that copyright protection ought not to be expanded in the manner proposed by this bill. The subcommittee gave careful consideration to the arguments on both sides of the question. It concluded, and the Judiciary Committee agreed, that the copyright system is well suited to the task at hand.

Mr. President, I will not review here all the reasons that led the committee to that conclusion. They are treated in

some detail in the committee's report on this legislation. I only wish to emphasize that the burden of persuasion on this question ought to rest with those who advocate the creation of a new form of intellectual property protection.

Our copyright system has proven to be amazingly flexible and adaptable. It has persisted throughout nearly two centuries, during which technological change has continually thrown up new challenges for the legal protection of creative expression. We ignore history if we simply assume that copyright could not be adapted to cope with this latest challenge.

The Constitution authorized Congress to enact copyright laws "to promote the progress of science and useful arts." The first Congress passed a copyright statute within the first months of its existence. That Copyright Act of 1790 protected only books, maps, and charts. Today, copyright protects a long litany of works of authorship: literary, musical, dramatic, choreographic, pictorial, graphic, sculptural, and audiovisual creations are covered, along with motion pictures and sound recordings. Each of these rubrics covers a broad range of works: computer programs are classed as literary works, for example, while many objects of almost purely commercial character enjoy protection as pictorial or sculptural works. The protection accorded each of these types of works, while similar, is far from uniform; the Copyright Act is peppered with provisions modifying the general scope of protection in order to accommodate the particular characteristics of one or another type of creation. While it has lagged behind at some points, the copyright law has, to a great extent, been able to keep pace, or at least to catch up, with changes in technology. We make no break with history when we propose that basic copyright principles, with some modification, provide appropriate protection to semiconductor chip design as well.

Furthermore, if we are serious about the task of providing effective protection to chip design, we would do well to act cautiously before jettisoning the copyright approach. The semiconductor industry needs protection now. It cannot afford to wait the years and years that would probably elapse before the courts had a chance to put a definitive gloss upon the words of a statute creating a new, sui generis form of protection for chip designs. Those who consider copyright protection an inappropriate means for encouraging innovative chip designs ought to consider whether there will still be innovation to encourage by the time the alternative is likely to be effectual. Certainly it would be profligate to toss aside the accumulated precedent of two centuries of copyright experience—including several years under the omnibus copyright revision enacted in 1976—simply because some of that heritage is not opposite to the case of semiconductor chips. Similarly, it would be anomalous if, at the same time that we consider strengthening protection for other forms of intellectual property, such as trademarks, we were to give chip designers less than the full arsenal of civil and criminal remedies available under copyright to deter and punish piracy.

Critics of the copyright approach must also consider that many copyright concepts must be transformed in order to accommodate new kinds of works that are undoubtedly covered by existing copyright law. Will the addition of mask works to the list of protected forms of expression add substantially to these challenges? Given the difficulties of applying settled copyright principles to automated data bases or computer programs, will it be that much more difficult to apply them to semiconductor chip designs?

Finally, I must address briefly one related concern. Some of the witnesses before the subcommittee argued against copyright protection, not because it would be inappropriate for chip designs, but because they perceived that the inclusion of chip designs within the scope of copyright might dilute the full strength of protection for works that are now covered by copyright. For example, it was suggested that to call reverse engineering a form of fair use under section 107 of the Copyright Act might encourage a more expansive interpretation of this limitation on exclusive rights in the case of literary works. Similarly, since a variety of works subject to copyright may be programed into a read only memory semiconductor chip, some have feared that the limitation to 10 years of the term of exclusive protection for chip design might whittle away at the term of protection accorded a computer program or other literary work embodied in such a chip.

It was never the intention of the sponsors of the Semiconductor Chip Protection Act to diminish in any way the rights of existing copyright proprietors, or of future proprietors in the kinds of works now protected by copyright. This bill targets a limited problem—piracy of semiconductor chip design—and proposes a limited solution—copyright protection for mask works. Outside the narrow scope it addresses, its provisions will have no effect on any aspect of the copyright laws. The bill has been amended to make this intent as clear as possible. To cite but one example, S. 1201 as reported would not include reverse engineering within the rubric of fair use; instead, it would treat reverse engineering in a separate new section of the Copyright Act. In sum, while the argument can still be made that copyright protection is not appropriate for semiconductor chip designs, I do not think it can seriously be maintained that coverage for mask works will have any harmful effect on the existing categories of copyright protection.

This legislation has been greatly improved by suggestions received during its consideration in the Subcommittee on Patents, Copyrights and Trademarks. As these changes are summarized in the report of the Judiciary Committee, I will mention just a few of them here. The amended version of S. 1201 does a better job of defining the scope of exclusive rights in mask works than did the original bill. Its provision dealing specifically with reverse engineering, along with the accompanying report language, will clarify more precisely than the original bill where the line is to be drawn between the plagiarism of the chip pirate and the paraphrase of the true reverse engineer. Its effective date provisions are more uniform, and more carefully crafted to provide the maximum justifiable breadth of protection. In these and many other respects, the Semiconductor Chip Protection Act of 1984 owes much to the work of the junior Senator from Vermont, Mr. LEAHY, who, as a valued member of the Subcommittee on Patents, Copyrights and Trademarks, took a lively interest in this bill and made many helpful suggestions for its improvement.

Mr. President, the consensus in support of legislation protecting semi-conductor chip designs is not limited to the Senate. The Judiciary Committee of the House of Representatives recently reported a bill that gives mask works protection generally parallel to that provided in S. 1201. There are some significant differences between the House Judiciary Committee measure and the bill before us today. The chief distinction is that the House bill does not accord copyright protection to chip design; rather, it creates a new form of protection, with similar but not identical characteristics, that applies only to mask works. However, the differences between the two bills, while important, should not be unbridgeable. I am confident that there will be sufficient common ground between S. 1201 and whatever bill the House passes to make possible a speedy resolution of these differences. If I am correct in this estimation, then the chances are very good that before the end of the 98th Congress we will place on the statute books the kind of protection that is needed to encourage further innovations in semi-conductor chip design. The Senate's action today brings that salutary result one step closer.

Mr. LEAHY. Mr. President, a few weeks ago IBM announced one of the latest products of American ingenuity. In Essex Junction, Vt., IBM produced a 1-million-bit chip, a chip which is capable of storing more than four times as much information as the highest density chips now on the market.

The story of this giant step forward was well reported in the press and ex-

cited all of us who know that American technology is still the best in the world.

But what I find equally significant is that few Americans are amazed any more by such news. We routinely expect new breakthroughs in technology, and we are rarely disappointed.

The spacelab mission completed at the end of 1983 experimented with growing silicon crystals far larger than those grown on Earth. We can only speculate where this technology may lead.

The most important news story growing out of our ingenuity with small chips of etched silicon is that they have forever changed the way information is gathered, transmitted, and stored—and perhaps even the way we will think in the future.

With space-age improvements, the computer chip may bring changes that were only science-fiction plots a few years ago.

It is hard to overestimate what a great impact the computer and related technologies have had on our agenda in the Congress. It might be easier to try to name the areas that have not been affected.

But the communications revolution has not been brought about by Congress, but rather by the innovative spirit of our people. You will hear many argue that the best role for Congress is to keep its hands off this revolution—that the deregulation of the communications industry and the vigor of the free marketplace will produce the best social and economic results for the United States.

I wish it were so simple. The marketplace is the engine of our future success in information technologies. But there are many issues where Congress will be indispensable. The Semiconductor Chip Protection Act of 1984 is an important step in demonstrating that Congress is willing to match the scientific and technical innovation of our people with strong and innovative legal protections.

The issues we faced in the bill were formidable: If we failed to provide meaningful protection for those investing millions of dollars each year in the microchips that lie at the heart of the worldwide computer revolution, we risked falling far behind our international competitors; if we ended up with protection that was too broad, we stifled the use of know-how that should be available to everyone.

Defining a clear line between these two extremes in a field that is close to brandnew has been a great challenge.

As I have stated previously on the Senate floor, under the stewardship of Senator MATHIAS, I believe we have met that challenge.

Both the language of the bill and the report offer abundant guidance to industry experts, to attorneys, and to the courts as to what constitutes an infringement and other related issues. No practitioner should be at a loss in building a case that a product resulted from reverse engineering, as opposed to copying. Similarly, opposing counsel should have a clear idea of how to prove infringement—the kinds of evidence needed, the degree of proof, and the key matters at issue.

I am convinced that the bill, as now written, will not result in undue litigation. It will serve as a guide to industry as to the extent of an innovator's reasonable expectations, and in that sense the bill should help to avoid an undue reliance on the courts to settle questions relating to potential infringement.

While I am pleased that the Senate is today passing this important legislation, our challenge is not over. Significant differences exist between S. 1201 and the House version of the Semiconductor Chip Protection Act introduced by Congressmen EDWARDS and KASTENMEIER, H.R. 5525, which was recently approved by the House Judiciary Committee.

Clearly of greatest importance is the House committee's rejection of traditional copyright protection in favor of a sui generis approach. The Senate Judiciary Committee opted for traditional copyright protection after carefully considering the pros and cons of each approach. The arguments which led the committee to adopt the approach embodied in S. 1201 are outlined in the report on the bill. Of particular importance to me is the potential that American semiconductor chip designs will be afforded greater international protection under the Senate's approach than that of the House. It is abundantly clear that we can no longer afford the luxury of worrying about legal protections within our borders with the hope that the rest of the world will take care of itself. We must be prepared to use established conventions and bilateral negotiations to protect America's intellectual property in all of its forms. I believe that traditional copyright protection for semiconductor chip design will greatly enhance our chances of securing international protection in an area which is so vital to our economy.

There are additional differences between the House and Senate versions of this bill which will have to be bridged.

The Senate bill incorporates the Copyright Act's criminal offenses for certain acts of infringement. The House bill rejects this approach.

The House bill does not give protection to those designs which are staple, commonplace or familiar in the semiconductor industry. This additional condition of innovation, which seems to be borrowed from the patent law, is not contained in the Senate bill.

Finally, the bills diverge on the question of where the equities lie with regard to chips developed during the last couple of years, while the Congress was working on this legislation, but before it had a chance to complete its action.

All of these matters are important. None of them should stop us from completing our mission, which is to give this country's innovators legal protections commensurate with the great contributions they make to America. Both committees have put in a lot of hard work on this effort, and I am confident that we will not allow our differences to stand in the way of an effective piece of legislation in this Congress. I am pleased that the Senate is passing this bill expeditiously, so that we can get on with that effort.

In closing, I want to again thank my distinguished colleague from Maryland, Senator MATHIAS, for his great skill in steering this legislation through the Senate. Senator MATHIAS has led the effort in the Senate to recognize and reward America's greatest asset, her authors, artists, and inventors. The Senate and the American public owe him a great debt of gratitude.

The PRESIDING OFFICER. The question is on the engrossment and third reading of the bill.

The bill was ordered to be engrossed for a third reading and was read the third time.

The PRESIDING OFFICER. The question is: Shall the bill pass?

The bill (S. 1201) was passed, as follows:

S. 1201

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Semiconductor Chip Protection Act of 1984".

DEFINITIONS

SEC. 2. Section 101 of title 17 of the United States Code is amended by adding at the end thereof the following:

"A 'semiconductor chip product' is the final or intermediate form of a product—

"(1) having two or more layers of metallic, insulating, or semiconductor material, deposited or otherwise placed on, or etched away or otherwise removed from a piece of semiconductor material in accordance with a predetermined pattern;

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"(3) that is a writing, or the manufacture, use, or distribution of which is in or affects commerce.

"A 'mask work' is a series of related images, however fixed or encoded—

"(1) having the predetermined, three-dimensional pattern of metallic, insulating, or semiconductor material present or removed from the layers of a semiconductor chip product; and

"(2) in which series the relation of the images to one another is that each image has the pattern of the surface of one form of the semiconductor chip product.

"A 'mask' is a substantially two-dimensional sheet, partially transparent and partially opaque to preselected radiation. A mask embodies a mask work if the pattern of transparent and opaque portions of the mask is substantially similar to the pattern of one of the images of the mask work. Masks and mask works shall not be deemed pictorial, graphic, or sculptural works. The copyright in a mask work shall neither extend to, nor affect, limit, or impair any copyright in any other work of authorship

embodied therein or in a semiconductor chip product.

The provisions of sections 109(a), 401, 405 406, 501(A), 503, 506, 509, and 602 of this title, applicable to copies of a work shall apply also to semiconductor chip products.".

SUBJECT MATTER OF COPYRIGHT

SEC. 3. Section 102(a) of title 17 of the United States Code is amended—

(1) by adding after paragraph (5) the following:

"(6) mask works;"; and

(2) by redesignating paragraphs (6) and (7) as paragraphs (7) and (8), respectively.

EXCLUSIVE RIGHTS

SEC. 4. Section 106 of title 17 of the United States Code is amended—

(1) by striking out "and" at the end of paragraph (4);

(2) by striking out the period at the end of paragraph (5) and inserting "; and" in lieu thereof; and

(3) adding at the end thereof the following:

"(6) in the case of mask works, only the following rights—

"(A) to embody the mask work in a mask;

"(B) to distribute a mask embodying the mask work;

"(C) to embody an image of the mask work in a semiconductor chip product;

"(D) in the manufacture of a semiconductor chip product, substantially to reproduce, by optical, electronic, or other means, an image of the mask work on material intended to be part of the semiconductor chip product; and

"(E) to distribute a semiconductor chip product made as described in subparagraph (C) or (D) of this paragraph.".

LIMITATION ON EXCLUSIVE RIGHTS AS TO MASKS

SEC. 5. (a) Chapter 1 of title 17 of the United States Code is amended by adding at the end the following:

"§ 119. Scope of exclusive rights: Right of reverse engineering with respect to mask works

"(a) In the case of mask works, the exclusive rights provided by section 106 are subject to a right of reverse engineering used under the conditions specified by this section.

"(b) It is not infringement of the rights of the owner of a copyright on a mask work to reproduce the pattern on one or more masks or in a semiconductor chip product solely for the purpose of teaching, analyzing, or evaluating the concept or techniques embodied in the mask or semiconductor chip product, or the circuit schematic, logic flow, or organization of components utilized therein.".

(b) The chapter analysis for chapter 1 of title 17 is amended by adding at the end thereof the following:

"119. Scope of exclusive rights: Right of reverse engineering with respect to mask works.".

(c) Section 106 of title 17 of the United States Code is amended by striking out "118" and inserting in lieu thereof "119".

DURATION OF COPYRIGHT

SEC. 6. Section 302 of title 17 of the United States Code is amended by adding at the end thereof the following:

"(f) MASKS.—Copyright in mask works endures for a term of ten years from the earliest of first authorized—

"(1) distribution;

"(2) use in a commercial product; or

"(3) manufacture in commercial quantities of semiconductor chip products made as described in subparagraph (C) or (D) of paragraph (6) of section 106.".

INNOCENT INFRINGEMENT

SEC. 7. (a) Chapter 5 of title 17 of the United States Code is amended by adding at the end thereof the following:

"§ 511. Innocent infringement of mask works

"(a) Nothwithstanding any other provision of this chapter, an innocent purchaser of an infringing semiconductor chip product shall not be liable as an infringer or otherwise be liable or subject to remedies under this chapter with respect to the distribution of units of such semiconductor chip product that occurred before such innocent purchaser had notice of infringement.

"(b) The remedies of the owner of a copyright on a mask work against an innocent purchaser shall be limited to a reasonable royalty upon each unit of the infringing semiconductor chip product that the innocent purchaser made or distributed after having notice of infringement, if the innocent purchaser establishes the applicability of all of the following circumstances:

"(1) the innocent purchaser, before first having notice of infringement, committed substantial funds to the use of the infringing product;

"(2) the innocent purchaser would suffer substantial out-of-pocket losses (other than the difference in price between the infringing product and a noninfringing product) if denied the use of the infringing product;

"(3) the innocent purchaser's use of the infringing product is and will be for substantially the same purpose that initially gave rise to the innocent purchaser's immunity under subsection (a);

"(4) in the case of an innocent purchaser who, after having notice of infringement, makes the infringing semiconductor chip product, or has it made for him, the copyright owner and the owner's licensees, if any, are unable to supply the semiconductor chip product to the innocent purchaser at a reasonable price; and

"(5) it would be inequitable in the circumstances not to permit the innocent purchaser to continue the use or proposed use of the infringing product.

"(C) The immunity of an innocent purchaser and limitation of remedies with respect thereto shall extend to good faith purchasers from him.

"(d) For the purposes of this section—

"(1) 'innocent purchaser' means one who purchases an infringing semiconductor chip product in good faith, and without having notice of infringement;

"(2) 'notice of infringement' means actual knowledge that, or reasonable grounds to believe that, a product is an infringing semiconductor chip product; and

"(3) 'infringing semiconductor chip product' means a semiconductor chip product which is made or distributed in violation of the exclusive rights of an owner of a copyright in a mask work.".

(b) The table of sections for chapter 5 is amended by adding at the end thereof the following new item:

"511. Innocent infringement of mask works.".

IMPOUNDING AND SEIZURE

SEC. 8. Sections 503(a), 503(b), and 509(a) of title 17 of the United States Code are each amended by inserting "masks," after "film negatives," each place it appears.

SAVINGS CLAUSES

SEC. 9. Nothing contained in this Act shall be deemed to add to or detract from existing rights of owners of copyrights in works of authorship listed in section 102(a) of title 17 of the United States Code, prior to its amendment by this Act. Nothing contained in this Act shall be deemed to detract from any right of the lawful owner of a product purchased from the copyright owner, or from a person authorized by the copyright owner, freely to use, distribute and resell the product without liability therefor under the copyright laws.

EFFECTIVE DATE

SEC. 10. The amendments made by this Act shall not create liability for any conduct that occured prior to the date of enactment of this Act, but shall apply to all acts of manufacture or distribution of semiconductor chip products that occur in the United States after such date, to all acts of importation of semiconductor chip products into the United States that occur after such date, and to all violations of the exclusive rights of the copyrights owner under section 106(6) of title 17, United States Code, as amended by section 4 of this Act, that occur after such date. Notwithstanding the provisions of this section, no alleged infringer shall be liable under this Act with respect to the continued manufacture or distribution of any semiconductor chip product that the alleged infringer commercially distributed in the United States prior to January 1, 1980.

Mr. STEVENS. Mr. President, I move to reconsider the vote by which the bill was passed.

Mr. BYRD. I move to lay that motion on the table.

The motion to lay on the table was agreed to.

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