Open Source: Old Wine in New Bottles

The concept of "open source" has been touted as counter-force to the promotion of innovation through the use of intellectual property rights such as patents and copyrights. I don't think that such either-or posturing is helpful – in particularly where it affects future developments in areas of critical importance to the economy such as software and biotechnology. Nor do we think it is helpful to suggest – as some have done – that the development of drugs and vaccines for developing countries should be pursued on a basis that specifically rejects intellectual property protection. I think it is time to begin a dialog that introduces a sense of reality and proportion into this discussion.

A starting point for this discussion – for any discussion – has to be language. What is the "source" in "open source?" Source Code is the text that programmers use to produce programs that can run on a computer. To change a program, a programmer changes the source-code text and then generates a new version of the program from it. Without the source code one generally cannot modify a program beyond narrow bounds allowed by the original programmer. Anyone can distribute a program in source code. What makes source code "open" is the way in which intellectual property rights are licensed. "Open source" is source code that is distributed under a license that allows free use and modification of the source code. That is, programmers can read and modify the software at will and can distribute – even sell under some licenses – the program without having to obtain permission of previous programmers. The open source software (OSS) movement has taken this concept one step further by requiring those that use and modify software that is open source to allow others to do so as well. The there are many types of OSS licenses, but they all generally require that the software be freely licensed to others to use.[1]

The original motivation behind the open source movement was a desire of programming enthusiasts for peer recognition or personal accomplishment rather than profit. A sub-text was a rejection of a traditional proprietary model. Though some would like to believe otherwise, the open source movement has not suspended basic economic realities – there is no such thing as a free lunch. Thus, as the OSS industry has matured, what was once a social movement has evolved into a business model. The main benefit of the OSS model is that it allows any programmer to advance the ideas of the original developer, and global "communities" of programmers have emerged to contribute to OSS projects. For consumers, of course, a significant attraction is that OSS is free. So, how does do OSS developers pay for *their* lunch? Since they cannot make a profit based on exclusive rights in the software itself, they have to make a profit through other means – including through the sale of ancillary products or services such as hardware that runs OSS, non-OSS software that uses or works with the OSS software, support services and reference manuals for the software, and so forth. There is a business in OSS. Established companies like IBM and HP, and relative newcomers like Red Hat, have made

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[1] For example, there are over 50 types of licenses listed on the web site of the Open Source Initiative: http://opensource.org/licenses/gpl-license.php. Perhaps even more telling of the growth and complexity in the open source arena are the growing number of courses offered to lawyers that represent software developers and procurers. An example is the seminar entitled "Open Source Software: Risks, Benefits & Practical Realities in the Corporate Environment" offered by the Practicing Law Institute – an organization that offers mainstream continuing legal education for lawyers. http://www.pli.edu/product/program_detail.asp?ptid=511&stid=3&id=EN00000000018333.

lots of money on the sale of equipment that runs open source software, related services, and software that runs on top of open source software. Because they cannot make a profit off the sale of new, innovative software products through the OSS model, such companies will not make investments in such products that will be open sourced. For such new and innovative products, such companies – and others – rely on the proprietary model.

Under the "traditional" proprietary model, the developer bears virtually all burdens and risks of converting original ideas into practical solutions, often investing heavily in research and development in hope of realizing a profit through sales of resulting software products and related support services. Source code access usually is limited because the value for the developer lies in having unique knowledge of the source code. The traditional proprietary model has produced true innovation in the software industry, particularly for most business and individual consumers who do not care to understand source code and who will pay a premium to leave such technical concerns to the developer.

So, who is right and who is wrong? The answer is neither. When a developer decides to place code under an open source license, he or she is making a perfectly legitimate choice. As outlined above, in some cases that may be a quite rational business decision. Similarly, a developer placing a truly innovative software product in the market may maintain proprietary rights in that product as the most efficient way to capture the value of what he or she has created and to generate income on the basis of that value for future developments. The intellectual property system – in particular copyrights and patents – are a proven tool for capturing that value. An economic system that provides for the necessary contract and intellectual property systems to enable either an open source or proprietary model will most clearly enable software developments that are sensible. In a similar vein, the November 2004 issue of Wired magazine included a CD with songs licensed by the artists under a license scheme developed by the Creative Commons[2] which allows the songs to be shared – including through peer-to-peer networks – but not sold. Thus commercial exchange or reproduction of all songs is prohibited. Such sharing begs some important questions – including whether and how to allow sampling of songs and how artists and their producers can make money if their songs are freely shared. As in the case of the open source movement, it is an emerging model for the use and exploitation of works that is a legitimate use of intellectual property laws and licensing. Both the OSS movement and Creative Commons have two important features in common. Both are based on the licensing of intellectual property rights in works (whether software or music) and both are based on decisions made by the creative talent and producers as to how best to exploit those rights. This element of choice is important to underscore as some state and municipal governments in the United States and elsewhere are tilting the playing field in favor of open source over proprietary software by government preferences for the former. That is not a choice that governments make – it is first in the hands of the creators and producers as to how they want their works to be licensed. It is second in the hands of the consumers based on price and performance as to what they want to buy and how they want to buy it.

How does the open source concept apply to other areas of human scientific endeavors – such as pharmaceuticals and biotechnology? First, the terminology does not fit – there is no

[2] http://creativecommons.org/

counterpart to source code in the fields of pharmaceuticals or biotechnology. Perhaps the closest analogy is the human genome. The Human Genome Project[3] is an international effort that completed determination of the complete sequence of the 3 billion DNA subunits (bases) of the human genome in 2003. This included identification of all human genes and making them accessible for further biological study. All genome sequence data generated by the Human Genome Project were deposited into a public database freely accessible by anyone with a connection to the Internet. The human genome data is, however, just that. It is data that has no practical application until it is used. It is fully anticipated that the information made available through the Human Genome Project will be targeted and applied by companies in the private sector for applications in medicine and agriculture. Indeed, in a joint statement by then-President Clinton and U.K. Prime Minister Tony Blair on March 14, 2000 they made it clear that "raw fundamental data on the human genome, including the human DNA sequence and its variations, should be made freely available to scientists everywhere. Unencumbered access to this information will promote discoveries that will reduce the burden of disease, improve health around the world, and enhance the quality of life for all humankind." Equally clear to Messrs. Clinton and Blair, however, was the need for intellectual property for gene-based inventions to "play an important role in stimulating the development of important new health care products." Thus, open access to basic information and the tools of scientific inquiry does not require an abandonment of the intellectual property system.

It is also unclear as to how the concept of "open source" applies to medicines. Again, open source software reflects a business model that is offered as an alternative to the proprietary model. To work and be sustainable, any model has to have a basis in economic reality. A direct application of the open source model from the software sector to medicines quickly breaks down. Once a medicine is developed and is in the market, there are no ancillary services or other products that a pharmaceutical company could offer that would be profitable. There are few opportunities to offer proprietary products to "run on top of" an open-source platform as in the case of open source software. Thus, the analogy does not hold. Rather than trying to force a square peg in a round hole, serious attention should be given to ways that technologies are being used in ways mutually consistent with private sector needs and the public interest. A recent comment in the Lancet cited to a number of public-private partnerships that are working towards the development of new drugs and vaccines for developing country diseases.[4] These are all partnerships of companies in the private sector (including large and small pharmaceutical companies and biotechnology companies), government laboratories, and universities. None of the partnerships makes a distinction between technologies that are freely available – in the public domain – and those that are protected by intellectual property. No one can rationally suggest that patents alone will provide sufficient inducement for companies in the private sector to invest in therapies for developing country diseases. Neither do patents stand in the way of such developments but have proven useful as a tool around which to organize disparate partners towards a common goal of the development of medicines and their access in developing countries.

[3] http://www.ornl.gov/sci/techresources/Human_Genome/home.shtml
[4] Comment, "Not-For-Profit Drugs – No Longer an Oxymoron?", The Lancet, Volume 364, Number 9444, 23 October 2004.

The debate between the open source and proprietary models for the software industry is a false one. Each of the models is, at core, an intellectual property licensing scheme driven by the nature of the product licensed and the choices made by the parties involved. While proposals have been made to extend the OSS model to other areas of technology – such as biotechnology and medicines (especially for developing countries) – it is not clear whether such an extension is apt. More importantly, it is not clear that the effort of making such an analogy or extension is worth it. Rather, I believe that the focus should be on the to goal in an individual undertaking – whether to create new, innovative software, improve existing software, produce drugs or vaccines for developing countries – and then to construct the right arrangement (including intellectual property licensing) to achieve that goal. Efforts by parties to artificially force parties or projects into a particular model or efforts by governments to force models on whole industries are bound to fail. The necessary tools are available, creative people and consumers are smart enough to decide what is best for them and they should be allowed to do so.