

TESTIMONY OF
LAWRENCE LESSIG
ROY L. FURMAN PROFESSOR OF LAW AND LEADERSHIP
HARVARD LAW SCHOOL

SENATE COMMITTEE
ON HEALTH, EDUCATION, LABOR AND PENSIONS

HEARING ON
“THE HIGH COST OF HIGH PRICES FOR HIV/AIDS DRUGS
AND THE PRIZE FUND ALTERNATIVE”

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INTRODUCTION

Mr. Chairman, and Members of the Committee, my name is Lawrence Lessig, and I am a professor of law at Harvard Law School. I also direct the University’s Edmond J. Safra Center for Ethics. I am honored to testify in support of Senator Sanders’ important legislation.

I have been asked to address §9 of Senator Sanders’ bill, concerning “open source dividend prizes.” My work studying innovation and creativity on the Internet, especially as it relates to “open source” and “free software” licensing, provides the background that informs my view of this provision. In light of that work, I am strongly supportive of the effort to experiment in alternatives to create the necessary incentives for scientists and researchers to produce the knowledge that progress in science requires.

INCENTIVES TO DISCOVER

Since the beginning of the Republic, there has been a fierce debate about how best to create incentives for scientists and innovators to discover and bring to market advances in science that would address important public needs.

On one side of that debate has been supporters of exclusive rights, secured by the government, in the form of patents and copyrights. The Constitution, for example, expressly gives Congress the power to secure to “Inventors” and “Authors” such exclusive rights. Since the earliest days of the

Republic, Congress has by law established mechanisms by which such exclusive rights can be secured.

On the other side of this debate have been skeptics about exclusive rights, at least within some domains of innovation. These skeptics have not doubted the need for incentives. They have instead worried that the costs of the system of incentives secured through government granted monopolies would outweigh the benefits. Such monopolies are, of course, just property rights. But as Nobel Prize winning economist Ronald Coase wrote in 1959,

All property rights interfere with the ability of people to use resources. What has to be insured is that the gain from interference more than off-sets the harm it produces.

These costs are many, and too often simply ignored. They include not only the costs of administering any patent or copyright system, but also the costs imposed upon the environment of discovery itself. Many have worried, for example, that one unintended consequence of the Bayh-Dole Act has been to inhibit the sharing of scientific knowledge, as technology transfer offices at universities have instructed researchers that secrecy is necessary to protect the patentability of inventions. We have no certain way to measure the significance of this effect, or its prevalence. But skeptics of an exclusive rights strategy for creative incentives worry that we systematically ignore these important costs, and thereby interfere with crucial discoveries.

It is my own view that the patent system has provided essential and critical support to drug development in particular, and innovation more generally. But it is also my view that Congress should experiment with alternatives to the traditional patent system, and evaluate more carefully the conditions under which those alternatives might create more incentives at less over all cost.

The idea of a “prize fund” as an alternative to an exclusive reliance on patents has a long historical pedigree. From the birth of the Republic, both private and public institutions have experimented with prizes as a less costly way to induce important innovation. In the 18th Century, both in Britain and in the United States, private societies “for the Encouragement of Arts, Manufacturers, and Commerce” were established to offer prizes for named innovations. Sometimes these prizes were given in lieu of patents. Sometimes they complemented patents. But the urge to experiment

was driven by the recognition that no single, simple system of incentives would produce the optimal amount of innovation. And that innovation about the system of incentives is just as important as the innovation those incentives create.

The innovation contemplated by this bill would, at a minimum, teach us a great deal about the utility of the prize fund alternative to patents in the context of medical research. More importantly, it would incentivize discoveries that then would be available cheaply to patients in desperate need. I strongly support this limited experimentation, both because of this important benefit to patients, and because it might well promote the progress of understanding about how best to induce this class of medical innovation more generally.

THE OPEN SOURCE FUND

Senator Sanders's bill also includes a critical innovation to create incentives to support "open sourced" knowledge. This too is an important change which I strongly agree with.

Since the birth of the Internet, scientists have been experimenting with alternative ways to create and share scientific knowledge. The traditional scientific journal has no doubt served science well. But the process and constraints of traditional journal publication were grounded in the technology of physical printing. The significant investment in producing published work justified the strict control on its distribution. Vigorous enforcement of copyright and access restrictions were thus essential tools to create the revenue necessary to support even non-profit journal production. "Free access" was simply not feasible.

But as this traditional mode of scientific publication has moved to the Internet, the temptation of at least some has been to exploit market power to radically increase the cost of access. In one study, for example, the Association of Research Libraries calculated that between 1986 and 2004, while the CPI increased just 73%, the unit cost for serial publications increased by close to 190%. Likewise, in a study published in 2004, Theodore Bergstrom and R. Preston McAfee found that the average cost per page of a for-profit journal was 4.5 times the cost of a not-for-profit journal, and that the cost per citation in a for-profit journal was 9.2 times the cost in a not-for-profit journal. These differences do not reflect the relative inefficiency of for-profit journals. They reflect instead a business model

that seeks to exploit the inelastic demand that at least some have for scientific journals. Whatever the cost, Harvard University will pay it. And for many publications, the benefit from increasing the price to elite institutions more than outweighs the loss from institutions that can no longer afford access.

The Internet could change this dynamic dramatically. By offering a free digital platform for distributing creative work of any kind, the Internet enables “open source” models of scientific publication. Journals such as those supported by the Public Library of Science produce high quality publications, licensed freely on the Internet, with the same rigorous peer-review that marks traditional scientific publications.

Because this work is licensed freely, it is accessible to any researcher around the world. And because it is licensed freely, innovative technologies for “machine processing” the work and extracting data for further scientific analysis can occur without any cloud of illegality. While the business model of many artists is restricted access to their work — so as to secure, rightly and properly, the necessary revenue to support their creativity — the business model of scientists is free access to their work. Open source models of publication support this business model of scientists, and advance the spread of knowledge and innovation generally.

It is important to emphasize that such open source methods do not reject the idea of intellectual property in general, or copyright in particular. Indeed, to the contrary: “open source” publication properly understood depends upon intellectual property. When PLOS licenses its articles under a Creative Commons Attribution license, it is relying upon the copyright that the law automatically gives to authors of creative work, but it is deploying those rights in a way that fits with the business model of the creator — here, the scientist who wants her work distributed freely. This desire is not inconsistent with copyright. It is instead a perfect manifestation of the objectives of copyright: to secure to authors a benefit that helps them achieve their creative objective, and thereby helps the public too. It is for this reason that the late Jack Valenti, former President of the Motion Picture Association of America, endorsed the Creative Commons project upon its was launched in 2002. [As he said then](#), the licenses simply secure to the author more easily the freedom the law of copyright intends the author to have. They do not deny the freedom of other authors to restrict access to their work. Neither does the existence of “open source” models of publication deny the freedom of others to license their work in a more restricted way.

But open source publication does not eliminate the need for revenue. It simply shifts the source of revenue, so as to secure free and open access to research results. Journals such as PLOS Medicine make the published work available for free. But authors are asked to support the publication of the work by paying a publication fee. And while these fees are often subsumed within the research budget of the scientists whose work is being published, they point to a more general need to secure alternative sources of revenue to support this more freely accessible mode of publication.

The “Open Source Dividend Prize” described in §9 of Senator Sanders’ bill is an innovative way to support this more general need. By creating a fund and a mechanism for rewarding scientists who make their work freely accessible, the bill could increase dramatically the range of work accessible freely. Most scientists prefer that their work is easily accessible. Giving them even a chance at a fund that might compensate for that free access is likely to induce many more to make their work freely accessible.

This is especially valuable for HIV/AIDS research, and for those who depend upon it. The burden of this disease is not exclusively born by those who can afford the high cost of journals. It is instead primarily born by people living in the regions with the least access to medical information. Creating incentives for free distribution of HIV/AIDS related research will have a dramatic impact on those regions most heavily burdened by this disease, and could provide a model for further innovation in research incentives for other critical diseases.

The same point is true of other open source resources in science — including data, materials necessary to replicate funded research (cell lines, model animals, DNA tools, reagents, and the like), and patents. These resources too can all be licensed in a manner consistent with the principles of open science. For the same reasons such licensing of publications would benefit HIV/AIDS research, open licensing of these resources would as well. Between 2000 and 2011, for example, the USPTO granted more than 2000 HIV/AIDS related patents to Universities, colleges and foundations. Incentives to free access to these inventions might be incredibly important to new discoveries.

THE IMPORTANCE OF THIS LEGISLATION NOW

The importance of this bill is that it would create incentives for scientific innovation where insufficient incentives exist right now. But in a criti-

cal way, the bill itself represents an innovation in legislation where there are insufficient legislative incentives existing now.

It is commonplace to note Congress's attention to matters that involve significant gains or losses to well funded special interests. But it is likewise rare for Congress to act in contexts in which there is no clear, well funded interest that benefits from Congress's intervention.

This bill contradicts that cynical rule. There is no "open source" industry that would support, either through lobbying or campaign contributions, the experiment that this bill envisions. There is no well funded interest group that is likely to make this its number one cause. Instead, this bill is a response to a type of market failure in government policy making — the tendency to legislate only when strong private interests push — by proposing a substantive reform that responds to a market failure in the translation of scientific discovery — the failure to price innovations close to their marginal cost.

Much of my own work over the past four years has pointed to, and criticized, this cynical rule about the behavior of Congress. But I am happy to testify in support of bill that weakens my own argument for that cynical rule. I don't know of anyone who would predict that a bill such as this could pass a Congress whose elections are funded as this Congress' is. But it would be wonderful for such a prediction to be proven wrong.