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FEDERALIST SOCIETY'S

INTELLECTUAL PROPERTY PRACTICE GROUP AND ITS STANFORD LAW SCHOOL CHAPTER

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OPEN SOURCE AND INTELLECTUAL PROPERTY RIGHTS

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FEDERALIST SOCIETY'S DEBATE ON OPEN SOURCE & INTELLECTUAL PROPERTY

INTRODUCTION BY PROFESSOR MARCUS COLE OF STANFORD LAW SCHOOL, MODERATOR

PROFESSOR COLE: Good afternoon, and welcome to the debate. On behalf of the Federalist Society for Law and Public Policy Studies, my name is Professor Marcus Cole from Stanford Law School, and I'd like to welcome you here to our debate. It includes two experts on the relationship between open source and traditional notions of intellectual property rights.

The open source movement has debated the traditional notions of intellectual property rights, and proponents of it have suggested that it is the bedrock of a new business model that is going to stimulate innovation and creativity and create a world that we want to live in.   Traditionalists with respect to intellectual property rights say that we've seen this before and . . . infractions of property rights do anything but stimulate innovation and creativity. In fact, to the contrary, in order to have innovation and creativity, you have to promote property rights.

Today, we have two experts on both sides of this issue. My colleague Lawrence Lessig is the C. Wendell and Edith M. Carlsmith Professor of Law, Stanford Law School, where he's also the founder of Stanford's Center for Internet and Society. Professor Lessig teaches and writes in the areas of constitutional law, contracts, comparative constitutional law, and the law of cyberspace. Most recently, Professor Lessig represented website operator Eric Eldred in the ground-breaking case of *Eldred v. Ashcroft*[1] in the United States Supreme Court in his challenge to the 1998 Sony Bono Copyright Term Extension Act.[2] He is the author of *The Future*

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[1] 537 U.S. 186 (2003).

[2] Pub. L. No. 105-298, Title I, 112 Stat. 2827 (1998).

of Ideas[3] and *Code and Other Laws of Cyberspace*,[4] and he also chairs the Creative Comments Project. He's also a board member of the Electronic Frontier Foundation and a board member for the Center for the Public Domain.

Scott Kieff is Associate Professor, Washington University School of Law and National Fellow at the Hoover Institution here at Stanford. Professor Kieff also teaches and writes in the area of intellectual property and is the author of several publications, including *Perspectives on Properties of The Human Genome Project*[5], *The Case Against Copyright - a Comparative Institutional Analysis of Intellectual Property Regimes*[6] and a textbook on the *Principles of Patent Law*.[7] He is a graduate of the Massachusetts Institute of Technology and the University of Pennsylvania Law School.

Now, the way we will all proceed today is that we'll lead off with Professor Lessig, and he'll talk for several minutes followed by Professor Kieff. And then we'll have brief rebuttals and then an opportunity for you to ask questions. With that, I give you Professor Lawrence Lessig.

I. THE OPEN SOURCE MOVEMENT, PRESENTED BY PROFESSOR LAWRENCE LESSIG OF STANFORD LAW SCHOOL

PROFESSOR LESSIG: Of course, consistent with Federalist principles, he's actually sold you Professor Lessig. You haven't

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[3]LAWRENCE LESSIG, THE FUTURE OF IDEAS: THE FATE OF THE COMMONS IN A CONNECTED WORLD (Vintage 2002) (2001).

[4] LAWRENCE LESSIG, CODE AND OTHER LAWS OF CYBERSPACE (Basic Books 2000) (1999).

[5] F. Scott Kieff, *Perspectives on Properties of the Human Genome Project*, *in* 50 ADVANCES IN GENETICS, (Academic Press, 2003).

[6] Kieff, F. Scott Kieff, The Case against Copyright: A Comparative Institutional Analysis of Intellectual Property Regimes, (October 2004). Stanford Law and Economics Olin Working Paper No. 297; Washington U. School of Law Working Paper No. 04-10-01 (October 2004)., *available at* SSRN: http://ssrn.com/abstract=600802 or DOI: 10.2139/ssrn.600802

[7] F. SCOTT KIEFF ET AL.,PRINCIPLES OF PATENT LAW, University Casebook Series, Foundation Press (4th ed. 2008).

been given the *et al.*, and then I'm going to exact a price for this infraction here, which is that you follow me in thinking differently about this issue around open source.

When I was asked to talk, I was told actually that I was going to talk about open source and Scott was going to talk about IP. And that of course is consistent with most people's view in the bar about my understanding about IP, which is that I have no understanding of IP, so it's better if I don't talk about it. First, I want to frame the open source part of the debate, and I'm then happy to respond to some of Scott's views about IP, although it turns out, I think, we both think pretty much the same thing about the issues in IP.

What I'm going to start with are some characterizations of the issues around open source or free software as a way to reorient a debate that has a too-familiar left-right component to it, and I think unhealthily left-right components of it. So here are the submissions to this.

In October of 2002, Congressman Adam Smith wrote a letter to, then, Richard Clark, who was in charge of these matters, telling him that the GPL, which of course is the license under which most free software projects are licensed, including the GNU Linux Operating System, is a threat to both "innovation and security." GPL 'prevents companies from adopting, improving, commercializing and deriving profits from software." That's point one.

Here's story two. July 2003, a group called CP Tech asked WIPO the World Intellectual Property Organization to hold a meeting to address "open and collaborative model for developing public goods." It had in mind things like science, which is an open collaborative model for developing public goods. The public good is knowledge, open and collaborative in the sense that you share the knowledge and other people add to it or criticize it as a way to advance that production of public goods.

But in the context of the request, CP Tech made a list of examples that they thought were emblematic of the type of resource that they were thinking of: the IETF and open network protocols that produced the Internet; the development of free and open source software; the worldwide web, which was built on protocols which are themselves in the public domain; the

Human Genome Project; the SNIP Consortium; the open access in scientific journals that make work available under free licenses; and my favorite example, the gift of Ronald Reagan to technological innovation in the 1980s and 1990s, the Global Positioning System, which Ronald Reagan turned over to the public for whatever use they'd like to make on top of it, including commercial and non-commercial use. And that, of course, engendered all sorts of innovation around that technology.

Now, the mistake of CP Tech in making this request of WIPO, a strategic mistake, was that they included free and open source software in their list, examples of great collaborative projects for producing public goods, because that inspired the Microsoft lobbying machine to kick into gear and succeed in achieving a veto on the United States' participation in this meeting, and then a veto of the meeting itself.

Lois Boland at the PTO had this to say about the idea behind the meeting. She said, "Open source software runs counter to the mission of WIPO, which is to promote intellectual property rights." She said, "To hold a meeting which has as its purpose to disclaim or waive such rights seems to us to be contrary to the goals of WIPO."

That's story two. Here's story three. In December 2003, a guy named Darl McBride, who was running the SCO Corporation, wrote an open letter to Congress and the public asserting that the GPL violates the United States Constitution. SCO argued that the authority of the Congress under the United States Constitution to promote the progress of science in useful arts inherently includes a profit motive, and that protection for this profit motive includes a constitutional dimension. Those who designed the GPL readily admit that they created this license to have the effect of "freeing software," taking it out of the realm of copyright protection by placing it in the public domain.

These three stories reveal extraordinarily important mistakes to which we need to develop antibodies in response. Let's start with the second of them, Lois Boland. She says, "Open source software runs counter to the mission of WIPO, which is to promote intellectual property rights."

Obviously, the mistake here is that open source and free

software is software that licenses intellectual property rights. There is no possibility of the free software movement or the open source movement without the underlying IP under which the software is licensed. So, it's not counter to IP. In fact, it depends on IP for the systems of innovation to be supported. If these bits of code were in the public domain, then there would be no capacity of the GPL or any other open source license to restrict how people used or developed that software.

Secondly, notice her characterization of what we think WIPO's goal is. Remember, she says, "To hold a meeting which has as its purpose to disclaim or waive such rights seems to us to be contrary to the goals of WIPO." To "disclaim or waive such rights?" One should ask, whose property is it? Why does WIPO care what holders of intellectual property rights do with their rights? Do people who defend physical property rights complain when Bill Gates gives $20 billion to help children in Africa? The idea of property is that the property holder gets to choose how to license his or her property rights. And the idea that an organization -- worse, a UN organization -- would have a right to object to how property rights are deployed is anathema to the nature of what a property right should be.

Now consider Mr. Smith's view. Smith says, "GPL prevents companies from adopting, improving, commercializing and deriving profits from software." There's a conflation here, which is the suggestion that the only way to commercialize software is for that software to be proprietary. There are plenty of companies which commercialize GPL software or build businesses on top of GPL software. The distinction is not between commercial and non-commercial activity; the distinction is between proprietary and non-proprietary software. And to the extent there is commercial activity built on non-proprietary software, the battle against non-proprietary software is something other than a battle against anti-commercialism.

Finally, my favorite -- Darl. Again, to the extent Darl thinks free software is about placing stuff in the public domain, he simply doesn't understand the way open source and free software functions. It's not in the public domain. And to the extent he says that the Constitution mandates a profit motive, what he's really saying is that there's a profit motive of a

particular kind: namely, a profit motive that is driven by exclusive control over the distribution of copies or deliberative rights associated with a particular bit of IP. It's not profit motive in a broader sense because again, IBM, which is a strong supporter of free software, is certainly motivated profit.

And finally, of course, to the extent he says that a license could violate the United States Constitution, there's of course no possible way that a private license can violate the United States Constitution. So here are the principles that I think we should be able to extract about the way free and open source software functions, and then I want to quiz you by applying it to a particular argument that Microsoft has advanced in this context.

First, free and open source software is property, the owners are exercising their property rights as they see fit, and there should be no systematic objection of that exercise of property rights.

Second, free and open source software is inviting a particular kind of innovation. It's not trying to control access to the underlying code but it's inviting innovation really at a different layer of a stack of innovation. We see lots of innovation, for example, in the embedded systems market where you've got computers embedded in chips to be embedded in telephones. The operating system for many of these is the GNU/Linux Operating System, but one wouldn't say that there's no innovation in the cell phone market or innovation in the embedded systems market. There's a ton of innovation; it's just a different kind of innovation.

Third, free and open source software can offer values that proprietary software cannot. First of all, it can offer things to government that proprietary software cannot. For example, many of you have probably heard of the Carnivore System, which the FBI had commissioned to develop to make it possible to search emails. The theory of Carnivore was that you could get a court order that would say I want to collect emails to and from a certain person, and the Carnivore system attached to an ISP's email server would only collect those emails. It wouldn't read any of the content. It would just collect emails based on the header information.

Well, people said, how do we know? The government said,

we're the government; trust us. Obviously, people said, no; we'd like to know how you're going to prove to us that in fact this is doing what you say it's doing, and the government said, well, what do you want us to do? And they said, show us the code. And the government said, well, we have a contract with the people who wrote the Carnivore, that we won't show you the code.

Of course, what that meant is nobody could trust what the government said the product was. If it had been free and open source software, perhaps they would have had to pay more for the code, but by paying more for the code they would have avoided extraordinary, lengthy, and costly proceedings around trying to demonstrate whether in fact the code did what the government said it was doing.

And secondly, free and open source software is providing a value to developing nations that proprietary code is not. Governments like Brazil are, of course, pushing free and open source software. They believe it's going to be not only less expensive to them -- although Microsoft claims it would be more expensive -- but their response to that is even if it's more expensive, it's producing a kind of knowledge within our economy which will have externalities for the growth of the economy generally.

So, rather than people being trained in technology to update the latest Windows patch to avoid the latest virus that spread in the Windows operating system, we're training people on how to actually manipulate and do things with code; that's what they need to do to be able to implement the new GNU/Linux operating system. So, the knowledge that's being produced in the system is actually more valuable. And when countries like Brazil can report, as I heard one report in a meeting in Portugal just two weeks ago, that they spend $1 billion in licensing fees every year while spending $471 million in a critical category of poverty programs, you can see what's driving these countries to try to find a different way to allocate their resources so that an extraordinarily large amount isn't being sent out of the country in ways that aren't actually inducing innovation or knowledge inside the country.

And finally, I want to resist a characterization that's framed this debate -- the idea that there's a traditional way of thinking

about IP in the context of software. There's no tradition here. There's a history -- actually, the longest period of history -- of the development of software where software was not really a thing that was sold or commercialized as separate from the machines that it was run on. In the original period of software development, software was a free add-on. It's uncertain what the licensing in that context was, but access to the source code was taken for granted. Then there's a period of software where software's commercialized, proprietary software development.

There's no reason to privilege one view of software development over the other. One view made sense at a certain stage of economic development, and another view makes sense at a later stage. And the question we ought to be asking is, what business model makes sense given the particular kind of innovation we're trying to support in a particular market? It would be different, depending upon the market, depending on the values at stake in each of the markets. And rather than having the idea that there's the traditional Federalist way to do it and then a leftist, radical, crazy way to do it, we should recognize that there's just different business models here for how to support innovation in these fields.

Finally, here's the quiz: an application of all this to a particular case. I'm going to report an "argument" that Microsoft has made about the GPL, and the basic conclusion of this argument is that GPL software, the software licensed under the Free Software Foundation's new GPL license, should not be supported as part of the ecosystem, at least when it comes to government. This is what they say. "The primary stimulus for innovation under the commercial software model is intellectual property protection. The GPL forbids the commercial licensing of software that includes or is derived from GPL covered code." And three, finally, "Thus, if code is developed in a government-funded lab as derived from or licensed under the GPL, the private sector would be foreclosed from using or building upon this code to develop commercial products." I want to convince you why those claims are just not true and how subtly carefully you have those claims to make them sound convincing, but they are fundamentally untrue.

The first one -- "The primary stimulus for innovation under the commercial software model" -- the more accurate statement

here is, of course, one stimulus for the innovation of the commercial software model -- "is intellectual property protection." "One" is not "all." IBM is the clear example of a company that's innovating without this form of IP support behind it.

"The GPL forbids the commercial licensing of software" -- it's not commercial licensing of software the GPL prohibits; it's proprietary licensing for software. Commercial licensing is not the same as proprietary licensing. There's lots of commercial licensing that's not proprietary. IBM and Apache are two clear examples of that.

And finally, "Thus, if code is developed in a government-funded lab as derived from or licensed under the GPL, the private sector would be foreclosed"? But that's not correct: "the private sector"; one part of the private sector. Not all are foreclosed. Only some are foreclosed. For example, Microsoft might be foreclosed, but IBM is not foreclosed. So, this is a model which might cause some exclusion, but it's not exclusion of the private sector, it's exclusion on some parts of the private sector. Now, if you take that argument, though, and you try to identify the principles standing behind that, the principle that says we should not be supporting this form of software development because it forecloses this part of the marketplace, I think there's a principle here.

The principle is the government shouldn't support models of development that foreclose some business models. The question is, does Microsoft really believe that? If that's true, then the government shouldn't support proprietary products because that of course forecloses non-proprietary, open source development. It shouldn't support patented products because of that, which of course forecloses those who can't use patented products in the context of their development model. The only thing the government under this principle should support is work within the public domain. Now, do they really support that as a principle behind how government should be funding innovation in this space? The answer, I think, is obviously no.

Instead, what Microsoft should recognize is what the government should recognize and what should unite all discussion here: this form of innovation is one business model, and we should be evaluating business models as business

models compete, not evaluating a business model on the basis of incomplete ideological characterizations of what's at stake in these different business models. I'm a total believer in free and open source software for many applications; I'm not a religious believer in the context of all applications, and neither should you be as well. Thanks very much.

II. A PROPERTY RIGHTS PERSPECTIVE ON INTELLECTUAL PROPERTY RIGHTS, PRESENTED BY PROFESSOR SCOTT KIEFF OF WASHINGTON UNIVERSITY SCHOOL OF LAW AND STANFORD UNIVERSITY HOOVER INSTITUTION

PROFESSOR KIEFF: Great, thank you very much for a very helpful overview, and let me try, if I may, to give a slightly different cut at a similar set of issues by giving what I hope is an IP perspective. It's a perspective I want to give that looks at IP, and looks at open source through a particular lens, an economic lens, from the field of economics people sometimes call "law and economics", other people call "new institutional economics". This is a take on economics, a group of economic works, that led to North and Fogel's Nobel Prize in 1993.

The idea of new institutional economics is to look at the impact that institutions have on economics. When we talk about institutions, what we're thinking about is the whole set of laws and rules and norms, all the human imposed constraints that we have to deal with and the enforcement characteristics of those human-imposed constraints. When we talk about the new aspect of new institutional economics, we're simply identifying that — unlike the old institutionalists who identified this effect — the new institutionalists try to characterize this effect, try to understand the effect.

For those of you who are familiar with other areas of law and economics literature, this is also connected to the theory of the firm work and transaction cost work that led to Coase's Nobel Prize. And the point of institutional economics is to recognize that no matter what institutional arrangement we deal with, we're going to have problems. We just are. There ain't no such thing as a perfect institution. And so what we want to do is compare the problem sets and solution sets of different institutional arrangements, and what we want to do is pick the

problems we most want to solve, pick the solutions we most want to have, and recognize that in the end, we're still going to be stuck with a whole set of problems and we're going to have to pick those that we can best bear or mitigate, but we're always going to be stuck with a set of problems.

So, what we really want to do is think about all the different problems that are on the table. Many of these are problems we all should be familiar with from our law school or basic economics training, right? These are problems that people have. People have to deal with incentives. People engage in rent dissipation. People have to process information in order to make decisions. And no matter how much we try to be rational, we are not Spock, and so we engage in a variety of what people have called behavioralism problems.

As people try to interact with each other, we have transaction costs and agency costs. People also have to coordinate with each other, and a big part of the open source movement is a story about coordination and cooperation. And then at the institutional level, of course we recognize there are a variety of market failures, there are government failures, there are problems of public choice, problems of commons, anti-commons, public goods. Let's talk about some of those in more depth.

First, though, what we ought to think about when we think about IP is, what really does IP do for us? Most people talk about IP -- and this is true in the kind of popular rhetoric, but it's also true in the academic literature -- this overwhelming dominant view is that you've got to give IP rights as some form of targeted incentive to specific people, inventors or creators, to engage in a specific activity, and then you have to monitor these people very closely because otherwise this right to exclude is going to restrict access unduly. And so, we think of what we call the incentive access paradigm. You have to give an incentive, and then you have to modulate it carefully in order to get access. It's just not clear, though, that this is right.

First of all, it's not clear that incentives in this area really make sense as the dominant story. So one of the stories about incentives is that if you don't give people incentives to do an activity that creates what you think of as positive externalities -- good for the rest of us -- they might not do enough of that

activity. So you have to give them an added incentive to do that activity. Yeah, but every time you walk down the street and look at somebody's private gardens that you can see, you realize that person created this positive externality for you without charging you a ticket price for seeing the garden. They were able to figure out some industrial organization model, some way of getting through their day without charging you that price. It turns out, if you go through life, you'll find that there are lots of positive externalities that occur without the need for these special targeted incentives.

It's also not clear that targeted incentives are effective because we often don't know what complex set of incentives an individual is dealing with. For some people, all other things being equal, if you give them an extra buck, they'll be more responsive to you. But all of the things aren't equal, and some people respond much more seriously to things like fame or leisure or power or you just don't know what drives them. But without knowing for sure what that person's going to respond to at that time, providing what you have identified in the abstract as a positive incentive may in fact have no incentive effect.

One of the other problems with these direct incentive stories is then you have to develop a theory of merit about these incentives and IP rights. Well, that's a difficult problem. If you think about how you will then decide who gets IP rights, you'd have to develop a theory of merit. And that blends into this last problem, which is that if you look at any of our positive law IP regimes, we don't ask whether a copyright author is really creative, whether she did a neat painting or a boring painting. And we don't ask whether an inventor was really bright. We just care whether the copyright owner fixes in a tangible medium of expression some creative expression, and we just ask whether the inventor has filed an application that describes something that is new and non-obvious. And so, this incentive story turns out just not to explain IP law.

It's also not clear that access really is helped. One of the interesting things about this incentive-access paradigm is that property rights in IP can be very useful in increasing access to the subject matter covered by the IP right because IP rights allow the many complementary users of that asset to coordinate with each other.

Think about an invention. I have the idea in my head. I may write it down, publish an article in *Science*, but that doesn't do very much for you. You want to go to the store and buy a new product. You want to buy a new service. A lot of people have to coordinate with each other to get that product out of my head and into your hands onto the store shelves. Investors, venture capitalists, manufacturers, marketers, laborers, managers, etc., all have to engage in this complex coordination-commercialization dance, and the property right does a very good job of serving this coordination function.

Now, before you think of this coordination story as something new that I thought up, or something new-fangled that theoreticians generally have created to after-the-fact explain the patent system or IP rights generally, one of the things we see, if we go back to the history of those people who wrote at least the patent and trademark system in this country, is that they were not thinking about targeted incentives. In fact, all they were focusing on was this commercialization-coordination effect.

Now, there are a lot of ways to coordinate, and one of the important parts of the IP open source discussion is about different institutional structures for coordinating. Families or norm-set communities and religious communities, other close-knit communities, can do a very good job coordinating with each other. There are a lot of benefits to coordinating through these groups. You get some centralized control so you coordinate, you can rely on a whole set of informal norms rather than these formal legal rules so that transaction costs can be lower. It turns out it can be cheaper to both administer, when you're within a small community, and it also can be much more effective. People don't like to be ostracized from their communities and so enforcement in some ways is much more effective.

But there are a lot of problems when you coordinate within a community only. Only people in that community get the benefit from that coordination effect. They're closed to strangers. Those people who are inside the community have a whole set of other problems. All of their assets that make them a part of the community are specific to that community, there's a lot of asset specificity, which leaves these community

members more open to problems of strategic behavior and opportunism. This makes up a whole body of literature in law, economics, and political science that people generally call crony capitalism, and that's the problem with relying only on small communities.

Firms can coordinate, too. This is part of Coase and Williamson's 50-year debate about the theory of the firm. The firm gives you centralized control. It decreases transaction costs by bringing inside the firm what otherwise has to be done across the open market. But there are a lot of costs to coordinating within a firm. You start to get agency costs within the firm between the shareholders and the directors, between the directors and the managers, and between the managers and the other employees. You also get another set of opportunism, and asset specificity problems for those who are locked into the firm. And then of course hierarchy itself is a problem for innovation. You tend to see decreased innovation any time you see hierarchy. You see this within universities and within firms -- there's a generally recognized hit with hierarchy and innovation.

Government can coordinate. You avoid a whole set of market failures. In fact, this was the early work by Pigou on why you want to have government do things. But again, you get all the same costs as firms plus a huge set of public choice problems. We can talk about those in more depth later, if you want.

You also can try to engage in activities across the open market. But that really is the core coordination problem.

And then lastly, you can coordinate with fame, right? Because any type of beacon effect will allow coordination. We'll see that Linus Torvalds does this with Linux. But there are problems with relying on fame. Who's going to be famous? Hard to know *ex ante* -- not everybody can be famous by definition, and you can't trade fame very well.

Property rights offer a whole set of benefits that each of these institutions don't offer. And the argument here is not that you want to have property rights and not have those other institutions. The argument is simply: you have property rights and have those other institutions.

When we think about property, there are going to be a whole

host of problems with it. We recognize that there are problems with property rights. We've seen a large body of literature that talks about how IP rights in particular can frustrate exchanges among people, interfering with downstream development of ideas. This has been most carefully studied in the science area. Becky Eisenberg and Arti Rai have talked about it. They talk about how you get the risk of decreased innovation and decreased development. The argument is that people who try to engage in transactions over IP assets when doing basic development work will have to spend money on lawyers. There'll be transaction costs, there'll be cognitive biases and hold-outs, and overall more time, more money will be spent on the transaction and less time and money spent on doing science and doing development.

But it's also true that IP rights can help development and help science. One of the things -- if you think about this as a basic economic problem of market failure, the idea here is that as people exchange assets, there will always be some market failure. One of the things that we know is that those market failures are likely to be worse in markets that are thinner than in markets that are thicker, where we think of thin and thick as a function of how many players there are in those markets, how diverse those players are, and how many assets are in that market and how diverse those assets are.

If you think about the basic science world without patents, it's a world in which you've got kudos. Promotion, tenure, fame, publications, grants, chaired professorships -- when you add patents to that market, it becomes kudos plus cash. One of the things you do when you add IP rights to basic science is, in fact, you make the market thicker, not thinner. You ought to be decreasing the number of market failures in that market, not increasing the number of market failures. So, in fact what we would expect is that IP rights are both increasing the amount of wealth in the market and the diversity in that market.

Another story that gets told by Michael Heller and by Becky Eisenberg is the story about a kind of too many property rights leading to what some people call an anti-commons or other people call a patent-thicket. But we have to think again about what is the true anti-commons problem. In fact, Michael Heller characterized this problem and did wonderful work in this area,

but the true anti-commons problem is the small kiosk storefronts that were being used in the post-Socialist economy. Lots of members of the apparatchik class get to say, no, you can't use the empty storefront without asking me for permission. That's why the venders were standing outside in the cold at kiosks instead of renting the empty storefronts.

When we start thinking about the "no" that's at play in that game, it's a "no" where there's no residual claimant. You can't openly sell a "yes". I mean, you can do it under the table, right? If you're a member of the government, you can offer that you'll be available for a bribe but you can't openly advertise, hey, come to me for a "yes". There's no clarity because a potential user doesn't know who to see to get a "yes", you don't know what to say to get a "yes", there's no certainty that once you get a "yes", you won't need a "yes" from another apparatchik. Some of the no votes of course are only of value as long as they're no. And one of the things that we see is that the true anti-commons problem is really a problem of what we've seen in several different other areas of essentially permits or licenses. It's not a problem of openly tradable property rights.

Think about the story this way. If it were true that the need to get a thousand or two thousand IP rights bundled into one asset made it so expensive and the transactions so hard that I would never get that asset, then you wouldn't be able to buy a laptop computer for one click on the Internet for $1,500. It would both cost a lot more money and in fact you wouldn't be able to do it with one click. You'd have to talk to a lot of other people. So, clearly someone has figured out a way around what are the several thousand IP rights in a laptop computer or a car or lots of other things we buy, and there hasn't been an anti-commons problem at least for those assets.

Another example we might think about, of course, is what are the transaction costs associated with going to a Coke machine and buying a can of Coke? You drop your 75 cents in; you get your can of Coke. Right? Well, if you look at basic science, people have figured out ways to do the Coke machine example as an even lower transaction-cost activity, which are the reagent freezer programs. You don't even need to carry to the freezer your 75 cents like you need to carry it to the Coke machine. You just go to the freezer, get your reagent, and then

at the end of the month, the reagent distributor comes by and counts the number of reagents that are missing and issues you a bill. That's an even lower transaction-cost activity for the user than the Coke machine. So again, in basic biological science, we've seen low-transaction cost solutions.

There's also the story of monopolies and the problem that somehow property rights are going to lead to monopolies. Larry talked about the example of how software used to be sold — well really, bundled with hardware as it was sold. And of course, one of the interesting questions is, who came up with that idea? Back in the late '60s, IBM came up with that idea and went to the U.S. Government and said to the government, you've got to get rid of these patents on software. IBM's general counsel was Nicholas de Katzenbach, who had been Kennedy's attorney general.

The Johnson Administration, of course, was just a continuation of the Kennedy Administration, so he went to his friends and he said you've got to take this case to the Supreme Court. Get rid of these patents on software, because when we sell people hardware we don't want them to have to pay later for software. Now, that worked for IBM -- at least it worked for IBM at the time.

But the point is that was IBM's business model. It was not necessarily everyone's business model. And at least it's possible that had there been meaningful IP protection for software in the '70s and '80s, we'd have seen not Microsoft in the '90s as the single large player in the industry, but rather Microsoft as just one of a medium number of medium-size players in the industry. The point here is that IP rights can in fact be associated with making industries diverse and thick and competitive, and it's the lack of IP rights in the software industry that led to Microsoft.

Well, that's a strong claim. We certainly have seen that, though, in biotech. We gave IP rights in biotech in 1980. We didn't have them before 1980s, at least in basic biotech. Before 1980s, the U.S., Europe, and Japan had Big Pharma; after 1980, the U.S., Europe, and Japan still had Big Pharma. Capital markets in the U.S. are open to the rest of the world and biotech is open to the rest of the world. But only in the U.S., and only after 1980, you have a pool of about 1,400 or 1,500 small and

medium-size biotech companies. So only in the one institutional structure where you have IP rights do you see a hyper-proliferation of competition. And in the regimes where you don't see IP rights, you see just Big Pharma.

So, what are some lessons from all this for the debate between IP and open source. Well, one of the arguments that open source people have made is that open source contracts are, in a sense, said to ask for less and in that way create more. This is a story about property rights owners saying no too frequently and demanding too much in exchange for their yes. These are absolutely great lessons, but at least it seems to me that they're lessons that we all already know. This is what a good lawyer or a good business woman does when she goes to the table to negotiate. She doesn't say no just for the sake of saying no to whatever her opponent requests. Instead, she thinks seriously about making the pie bigger before she tries to think about carving it up because she knows that creating value for the person on the other side of the table may be a way for her to extract more value.

This strategy for licensing, which is central to the open source licenses, is a strategy that is not at all inconsistent with property. And Larry points that out, too. These, in fact, are tied often closely to property, but they rely on property rights and contract rights that are clear, that are fungible, that are divisible, that are bundle-able. They have to be findable, and they have to be held by residual claimants who are themselves findable. And one of the problems we had seen with at least some of the open source licenses is that as they start to stack, it becomes harder to find a resulting block of code that meets all of those criteria. In fact, what you start to see is your own version of the anti-commons problem.

Open source is said to be a system that is fundamentally free for control, that it's distributive, that it's non-hierarchical, that it's democratic. But one of the things we see when we look at open source is that it's richly associated with a variety of different forms of property, and different forms of property that may not function as well as IP. Trade secrecy may be a big part of the game, in part because people won't give away as much as they say they're giving away, but in part because even when you give away, you have a problem of hiding in plain sight. I

mean, if I give you a million lines of code, have I really given you information, or have I simply given you an information overload problem? What's the chance you're going to read my million lines of code and get out of it the important information you want?

We also have the problem with fame, which we talked about early, which is that the Linux model is a model that is very tightly controlled. Linus Torvalds and a set of his own lieutenants, or bishops or whatever metaphor you want to go with, control development of that kernel. And they do so through a property right in fame -- a property right that is far less fungible, far less tradable than IP.

And then you see the bundling problem, which is that IBM recently decided that they're going to give away a lot of its patents in this area. But of course, IBM is making its money today consulting, not selling software, and so it's totally rational for IBM not to care about patents. Indeed, it might actually help IBM to have more uncoordinated development than otherwise because if you sell consulting services, you don't want a well developed software system. The more frustrating it is to use the code, the more you hire a consultant. IBM likes that.

Now, I very much agree -- and Larry made this point, too -- that ultimately this is not a story about all or nothing. This is not a story about open source versus IP. But it is a story about why you really need to think about having both of these types of approaches on the table. It's going to be very hard to know *ex ante* which one is going to be useful, and so at least I'm a big proponent of avoiding both laws that are against or laws that require. I think that each of the individual players in this game is going to figure out what's best for him or her at the time she engages in her transaction.

Let me just follow up by saying, there's a group of us who are working together on a project called the Hoover Project on Commercializing Innovation (www.innovation.hoover.org) that looks at the role that institutions have in technology development. We look at it from the law perspective as corporate lawyers, IP lawyers, and contract lawyers. In economics, we look at it in the fields of finance and IO. We look in both the public and private sectors. Most importantly,

we do basic research, we do consulting work, we both give and receive grants, and what we're really looking for is other people to play with. And so we welcome your ideas, comments, and questions, and we'd love to collaborate. Thanks.

III. REBUTTAL AND RESPONSE SEGMENT WITH FOLLOW- UP QUESTIONS FROM PROFESSOR COLE

PROFESSOR COLE: So, Larry, would you like to respond to what Scott said?

PROFESSOR LESSIG: I don't really think that there are many things we would be disagreeing about. There's one very important idea that I want to make sure you focus on in what Scott was talking about. This is what Scott called the anti-commons problem following the work of Michael Heller. Michael Heller's work was picked up by James Buchanan, and James Buchanan has made a lot out of it. But the anti-commons problem is typically spoken of in the context of patents, where I think what Scott was saying in response to it is often very effective, that even though you've gotten many overlapping patents, there are markets that deal with that quite well.

It's actually much more interesting to imagine the anti-commons problem in the context of copyright-related issues. If you think about film, there's no such thing as a single copyright associated with film.   There are all sorts of copyrights associated with film. There are some non-copyright rights associated with film, for example the residual rights that actors might have in their own persona or right of publicity in a film. Through most of the history of films, those never created problems because through more of the history of film, the only thing you'd do is produce the film, display it in a certain predictable way, and sell copies in a predictable way. And the markets took care of that very well.

But then came a radical change in technology -- digital technology -- and the way people wanted to get access to use these bits of content is very different. And so now, if you want to go back and imagine licensing the rights as an ordinary consumer to take clips of film and use it in new ways or restore

films in digital form and spread them in lots of different ways. The transaction costs, the IP rights, associated with it are extremely high, and it is exactly an anti-commons problem because anyone in that whole project can veto the whole project.

So, in this context what's interesting is to see how new technology can produce problems that didn't exist in the original context in which the IP regime was set up, and therefore to be flexible about how to adjust the IP regime in response to these new technologies. And when people call for the adjustment, we should resist calling them Communists because this is a claim about how to adjust an IP regime to changing circumstances. It's not a claim about how we need to eliminate IP regimes. This is a problem in the current debate that anybody who questions IP is, as Bill Gates referred to a bunch of us a couple months ago, a "communist".

PROFESSOR KIEFF: Maybe just a small follow-up, which is that on this anti-Communist issue I very much agree with you that the problem is much worse with copyright and rights of publicity. I think to summarize or make the point as sharp as possible, I don't think the anti-commons problem is a function of the number of people you have to talk to. So I think it's not a function of the number but the nature -- the nature of the rights that are at stake. So the more clear those rights are, the more divisible they are, the more they are associated with a single residual claimant whose identity you can find, who's a living and breathing person that you can, you know, talk to. The more that is true, the less likely the problem is, and it's not just a function of numbers.

PROFESSOR COLE: Let me ask, Larry, why would Microsoft engage in the kind of -- I mean, it appears that you might even characterize it as straightforward deception -- why would they engage in this? Are they simply misguided, or is this rent-seeking? What stake do they have in preventing open source?

PROFESSOR LESSIG: Many of us thought that without the government stepping in, there was no way to stop the Microsoft monopoly. I think the success of the GNU/Linux operating system is proof that many of us were wrong. I mean, what we're seeing is this powerful spread of this competitor to Microsoft's platform. And their response to this competitor is

exactly identical to their response to every other competitor, just through different means. So their objective now is to find ways to convince people not to buy their competitor. They can't compete on price, but what they can compete on is ideologies -- they get the government not to support it because it's Communism -- or they can compete on what's called "FUD", fear, uncertainty, and distrust. For example, they go out and claim that if you use the GNU/Linux operating system, you're going to face all sorts of patent infringement suits because the patents associated with free software are terribly underspecified.

It turns out, you know, the most heinous example of that was SCO. It turns out that SCO was funded by a lot of money from Microsoft, so this is the implementation of that strategy, to create uncertainty around this platform. So, I just think it's competition by a different mode.

They historically have said — they historically only ever used software patents defensively. But Craig Mundie, in a bunch of speeches about two years ago, said we should not expect that we will use software patents just defensively. We're beginning to use them offensively. We've got one of the most powerful, second only to IBM, patenting services going now -- patented absolutely everything, and it will be patented as the next line of defense of monopolization.

PROFESSOR COLE: Well, Scott, you've explained the role of how useful intellectual property can be, but your description doesn't seem to tell us where to draw the line. Do we support the efforts of Microsoft in these types of activities, or how do we draw the line between the usefulness of open source and the usefulness of intellectual property?

PROFESSOR KIEFF: So, maybe a couple of answers. To most directly answer the question, I think that you don't need to draw the line in the sense that -- and this is territory where Larry and I, I think, both agree and have already plowed, which is you need assets over which you're going to engage in trade and open source is just one type of trade. So, in that sense, allowing people the option to select for themselves something that works, you know, is something that seems to make sense for everybody.

But on the question of how you decide what rights -- how to

ultimately shape the positive law regimes around different IP rights, one of the things that you see: so the government spent a year of hearings on the set of interactions between IP and antitrust, the Justice Department and the Federal Trade Commission. And many of us testified about these issues over the course of a year, and at least the FTC issued a several-hundred page Volume I report, which tells us that Volume II will come some day, and maybe more than Volume II. And the National Academy of Science published a big report. There had recently been a set of proposed changes to the positive law regimes trying to answer this question of what should be protectable and what shouldn't be protectable.

If you look at the set of recommendations in those proposals, one of the things you see about them is they happen to match almost perfectly with a survey that was done at about the same time by two economists, Iain Cockburn of BU and Rebecca Henderson at MIT. Cockburn and Henderson went and talked to the top IP people at the top IP companies. Now you know what that means -- vague topic -- but you can think of that as kind of the senior IP person at Hewlett-Packard. And it turns out that the survey result matched perfectly the recommendations.

So, one response is, well, - the government got it right. The government is doing exactly what the experts want. And if you think of those people as experts, that's a reasonable conclusion. But those people might be experts — I mean, I suspect they are expert in their training — but they also happen to be people representing specific business interests at that time. And this is very consistent with the kind of public choice or agency capture theory of government, which is that what government has done is exactly what a few of its largest customers have asked it to do. But why would you ever think that that's good for everybody else?

In fact, one of the things about these recommendations is that they almost universally create a set of IP regimes that are devoid of strong IP rights. They kind of create a system that is very much like the Japanese patent system, which has large numbers of low-value assets. Keiretsus, large companies in Japan who compete with each other regularly, love the idea of large numbers of low-value assets because it's a great way for

big players to play together, and it's a great way for them to make sure that no small players enter the market. Strong IP rights are a great way for David to beat Goliath.

But Goliaths who often fight against each other don't mind, and in fact do enjoy, fighting regularly against each other over small-value assets. Why, you might ask; what's so good about litigating regularly over IP? Well, what's good about it — you might say that's a transaction cost, but it turns out to be a very useful cost to spend. It's useful because it's a great way to communicate across firms. If I pick up the phone as chairman of Keiretsu One and talk to the chairman of Keiretsu Two — I have a serious trust problem. How do I know, when I say that I'm going to go left that he's going to believe me, and how do I know when he says that he says he going to go right that I should believe him? But if we actually are fighting regularly with each other, we can learn a lot more about which way we're going.

If I pick up the phone and call him, that is also a serious antitrust problem. I'll take the left side of the field; you take the right side. That's an antitrust problem. But if we just fight with each other a lot in court over low-value assets and it just so happens I go left and you go right, that's not an antitrust problem or not as much of an antitrust problem. Or if it is an antitrust problem, at least it's one that avoids treble damages.

And then lastly, in fact during the IBM settlement, one of the things that a lot of regulators in the U.S. and around the world have started to do is start to say to large companies, the more IP assets you have, the more we'll let you charge. And so it becomes rational for these big companies to have large numbers of low-value assets rather than low numbers of high-value assets simply because the antitrust regulators let them charge more. So, this is at least a set of responses to a set of proposals about these basic questions about how you shape these IP rights.