

FEDERAL TRADE COMMISSION

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FEDERAL TRADE COMMISSION

In the Public Hearing on)  
COMPETITION AND INTELLECTUAL )  
PROPERTY LAW AND POLICY IN )  
THE KNOWLEDGE-BASED ECONOMY. )  
-----)

February 20, 2002

Room 432

Federal Trade Commission

6th Street and Pennsylvania Ave., NW

The above-entitled matter came on for hearing,  
pursuant to notice at 9:00 a.m.

SPEAKERS:

James Langenfeld, Director, LECG, LLC

Professor Wesley M. Cohen

Professor Robert E. Evenson

Professor Edmund W. Kitch

Professor Maureen O'Rourke

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## SPEAKERS (Continued):

Philip Nelson, Economists Incorporated

Professor Shane Greenstein

Professor Josh Lerner

Professor Janusz Ordover

Professor Lawrence White

Margaret E. Guerin-Calvert, Economists Inc.

Professor Stanley Liebowitz

## P R O C E E D I N G S

- - - - -

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2  
3 MR. COHEN: Good morning. My name is William  
4 Cohen. I am Assistant General Counsel here at the FTC  
5 and I want to welcome you to this morning's session in  
6 our hearings on the intersection of antitrust and  
7 intellectual property.

8 We have now moved through our keynote speakers  
9 and through a set of panels that discussed some of the  
10 nuts and bolts of both the antitrust and patent law, and  
11 we are now in our third day of these hearings and we are  
12 ready to move into some of the analysis. We felt that  
13 the way to start would be to bring together a number of  
14 outstanding panelists who can help us bring to bear some  
15 of the best economic thinking on some of the key issues.

16 This afternoon we are going to have a panel that  
17 will deal with economic perspectives on the relationship  
18 between competition and innovation.

19 This morning we will be doing sort of a flip  
20 side of that. We'll be looking at economic perspectives  
21 on the relationship between intellectual property and  
22 innovation.

23 What we will plan to do is divide our session in  
24 half. We will have three panelists make presentations,  
25 have some discussion, take a break, come back for our

1 final two panelists to make presentations, and wrap up  
2 with what I hope should be a very good discussion.

3 During the first half, we're going to try to  
4 cover some of the core issues in economics and the  
5 economics of intellectual property. And in the second  
6 half of this morning's session, we will give particular  
7 emphasis to problems raised by innovation's nature as a  
8 continuous process.

9 We have some terrific panelists. Before I begin  
10 to introduce them, though, I'd like to introduce the  
11 others who will be participating from the United States  
12 Government. We have, also from the Federal Trade  
13 Commission, joining me is Hillary Greene. From the  
14 Department of Justice we have Sue Majewski. And from the  
15 Patent and Trademark Office, we have Ed Polk and I  
16 welcome all of them.

17 Turning now to our first speaker, our first  
18 speaker will be James Langenfeld from -- he's a director  
19 at the Law and Economics Consulting Group, with extensive  
20 experience in antitrust, intellectual property, and  
21 strategic consulting.

22 His work includes, I guess, 11 years at the  
23 Federal Trade Commission. During the last six of those  
24 years, he served as Director for Antitrust in our Bureau  
25 of Economics. And it is really my pleasure to turn the

1           lectern over to Jim Langenfeld to start us off.

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1 MR. LANGENFELD: Thank you, Bill. Thanks,  
2 everyone.

3 I was very pleased to be invited to be a part of  
4 this particular panel because of research that I've done  
5 and some articles I've written and cases I've been  
6 involved in, both in terms of patent protection and  
7 competition, and the intersection between the two.

8 What I was asked to do today was to provide a  
9 framework, an economic-style framework, to consider what  
10 the impact of intellectual property and innovation might  
11 be. And I'm going to talk a little bit -- I'm going to  
12 eke over a little bit into this afternoon's session  
13 because I'm also going to talk about some of the  
14 tradeoffs with competition, and to provide just the  
15 framework to begin to think about what the key issues  
16 should be here.

17 My experience, and with all respect to my former  
18 employer, although I really only worked for the FTC for  
19 ten years, so -- but my --

20 MR. COHEN: But it seemed like 11.

21 MR. LANGENFELD: Yes. It was that enjoyable and  
22 fulfilling, yes.

23 So one of the things that -- from my experience,  
24 looking at both competition and innovation issues, one of  
25 the -- what I consider to be the key fallacies in doing

1 these type of -- in weighing what intellectual property  
2 does for innovation and what competition does for  
3 innovation is that from the antitrust side, at least,  
4 what you have is a feeling that innovation or  
5 intellectual property should be treated just the same way  
6 as tangible -- tangible goods. Tangible property.

7 If you look at the intellectual property  
8 guidelines that the two agencies have developed, although  
9 they -- they make some mention it might be a little  
10 different, but by and large they are going to treat it  
11 just the same. I think that actually sets back the  
12 analysis for understanding what type -- what the  
13 intellectual property does to stimulate innovation, and  
14 on the other hand what competition does to stimulate  
15 innovation.

16 And let's think about some of the basic  
17 differences and some of these I discuss in an article,  
18 which some reprints are outside.

19 But first of all, intellectual property can  
20 create certain social benefits because -- and an inventor  
21 will generally not get all of the returns from an  
22 invention. So there tends to be, unlike building a



Also intellectual property by itself just

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1           Also there is a risk for follow-on innovators.  
2           If patent protection is as broad as it can be interpreted  
3           and sometimes the Federal Circuits are going to -- are  
4           pretty broad, pretty broad areas of defense, there is a  
5           risk to follow-on innovators. That is to say, you have  
6           the initial idea. Someone else may come up with an idea  
7           to make it better. And intellectual property patents can  
8           prevent that from happening, depending on how much  
9           protection is associated with that patent.

10           Now I'll talk about what the tradeoff of that is  
11           in a second. So there's a tradeoff here, depending on  
12           how strong the intellectual property protection is.  
13           Let's think about what that is just to an economist.

14           If you have very strong intellectual property  
15           protection, you have the ability to basically kill other  
16           innovations. That is to say, follow-on or developmental  
17           innovations. So if you take a very strong stance, you  
          could actually -- you have a tradeoff. You're not

1 possible that the innovator could end up taking,  
2 literally, all of the surplus, no consumer surplus, no --  
3 no net benefit to other people.

4 If you have weak IP protection, you've got a  
5 tradeoff on the other side. You will encourage a free-  
6 rider problems, which will kill the incentive to, at  
7 least initially, innovate.

8 You will have more price competition, which can  
9 benefit consumers, at least in the short run. But you  
10 also have fewer externalities for society, fewer  
11 benefits, because fewer initial patents will come out.  
12 People won't receive the benefits from them.

13 So there is a tradeoff here for these two types  
14 of intellectual property. And the way the economist  
15 thinks about it, and this is hugely simplifying it, but  
16 -- these points were made -- this sort of sums up the  
17 literature here, but you might think about it this way.  
18 You have abstracting to give a -- in a sense so that  
19 patent protection can be seen as a degree of protection  
20 on the horizontal axis here.

21 And on the left we'll say it's complete patent  
22 protection. You have an idea. It's automatically  
23 patented. It's yours. You don't have to share it with  
24 anybody else.

25 On the other end, there is no patent protection.

1 You come up with an idea, somebody else can just copy it.  
2 And I'm going to -- as an economist, because I can do  
3 these things, I'm going to say that there is a continuum  
4 here. And some of the other speakers are going to talk  
5 about different ways, even more specific items within  
6 this continuum, the different ways to try to move the  
7 continuum back and forth. But for my purposes, I'm just  
8 going to assume that the continuum exists. What does  
9 that mean?

10 Well if you have complete patent protection,  
11 you're still going to have an effect on -- on developing  
12 a certain number of innovations. And that's what's over  
on the left. That's the blue line there -68.25 innovations. says  
ne n, toaif hfure othw spenete paton,11

1 to get -- and inventors are not going to get the full  
2 returns on their investments, then you're going to see  
3 the number of innovations fall off.

4 The interesting thing from an economist's point  
5 of view is what would be the optimum, though. The second  
line here is basicallyac'5 0e second

1 don't want to -- if you're trying to maximize society's  
2 welfare, you don't want to maximize the number of  
3 innovations, necessarily. What you do want to do is, you  
4 want to have standards where you are maximizing consumer  
5 welfare and that's not going to be designing things so  
6 you get the maximum number of innovations, because there  
7 are these other gains that society can get with lower  
8 pricing and more competition.

9 I just want to talk briefly about this. This is  
10 important and I'm not an attorney, and I don't plan on  
11 being one, but as economists we look at some of the --  
12 some of the court decisions and try to tease out what the  
13 economics is. And one of the problems that I think that  
14 the Department of Justice, and the FTC, and the courts  
15 face, and business face right now, is there's a lot of  
16 uncertainty as to exactly what the tradeoff between  
17 competition -- that is to say antitrust laws -- and  
18 intellectual property -- patent laws, copyrights -- what  
19 that tradeoff exactly is.

20 Now these are patent cases, not that long ago,  
21 and depending on which case you read, it's unclear what a  
22 firm can do in terms of protecting its intellectual  
23 property.

24 Certainly with the Federal Circuit, since 1998,  
25 taking responsibility for all of the cases that have a

1 patent kicker in them, and offering dictum copyrighting,  
2 they have really made themselves the focal point for at  
3 least unilateral actions to enforce patents. And  
4 competition cases that involve patent allegations, that  
5 involve patent --

6 And if you look here, you look at the Ninth  
7 Circuit's decision in Kodak. That was a case where  
8 antitrust won over, at least asserted intellectual  
9 property rights, at least asserted patents and  
10 copyrights.

11 And the older -- well not that much older, but  
12 older FTC Intel consents were once again one where the  
13 antitrust agency said, look if you have -- you cannot  
14 just use your intellectual property, your patents to --  
15 to prevent unilateral behavior that we believe it is  
16 anti-competitive.

17 On the other hand, though, if you look at the  
18 Xerox case and the Intergraph case, in the Federal  
19 Circuit, pretty much unless it falls into a tie -- a  
20 tying claim, a sham litigation, or a fraud on the Patent  
21 Office, and it's not clear how broadly any of those will  
22 be read, the Federal Circuit has said antitrust  
23 competition doesn't have -- intellectual property is the  
24 key.

25 Now whether that's going to stimulate innovation



1 or not, we can look back and think, well, it will help  
2 stimulate innovation, depending on how strongly that is  
3 read.

4 And then there are other cases like Nobelpharma  
5 which is -- which is a Walker Process case, fraud on the  
6 patent -- and Bard, which is a predatory design case. So  
7 looking at those cases where actually antitrust or  
8 competition issues were upheld, even though patents were  
9 at issue, looking at those two cases -- and I won't talk  
10 about them in detail, but looking at those two cases,  
11 it's unclear where -- whether those cases in the future  
12 would end up being -- whether antitrust violations would  
13 be found in the future, given a similar set of facts by  
14 the Federal Circuit.

15 So what I see here, in my opinion, is the way  
16 the laws -- at least the laws involving unilateral  
17 actions by patent holders are going, there is an  
18 increasing amount of protection that is being given to  
19 patent holders. And I'm not sure that it's actually  
20 balancing one way or the other correctly, given the  
21 tradeoffs that exist.

22 The last thing I want to mention is and why we  
23 have someone from the Patent and Trademark Office -- is  
24 enforcing this. Now if -- there's always an issue, if  
25 the courts are going to give so much deference to a

1 patent, an ex parte patent that's been put out, then  
2 obviously -- and say that there is not going to be any  
3 antitrust or any competition issues here because this is  
4 -- this is the patent law, and these are the patents, and  
5 people can do whatever they want with them. The problem  
6 here is that that means that that really puts the Patent  
7 and Trademark Office on the spot because, gosh, you'd  
8 better be getting those patents right. You better be  
9 sure that the -- bar is incorrect. You better be sure  
10 that -- you know, that obviousness has been dealt with.  
11 You better make sure that the information you're getting  
12 from the firm that wants to have the patent is accurate.

13 And as you can see here, what we have, since  
14 1996, is over a 50 percent increase in patent  
15 applications being put at the Patent and Trademark  
16 Office. That's a lot of work. By my count, that's about  
17 1,000 patents per working day that are submitted each  
18 day. And you have a beautiful building over in Rosslyn.  
19 You have a lot of people working hard. But, you know, if  
20 the courts are going to assume that you've pretty much  
21 gotten it right in most instances, save for the lengthy  
22 litigation that could take place over the existence of a  
23 patent, you guys have to have enough bodies and enough  
24 people to do this accurately. And that's not -- and  
25 that's something you can talk to. I can't.

1                   But I just know that that type of increase, and  
2                   given the increasing importance of what the Patent and

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1           MR. COHEN: Our second speaker this morning will  
2 be Wesley Cohen. He is a Professor of Economics and  
3 Social Science at Carnegie Mellon University. He is  
4 published widely on the economics of technological change  
5 and he is currently engaged in NSF-funded research on the  
6 effect of patenting on innovation. I turn it over to Wes  
7 Cohen.

8           PROFESSOR COHEN: I would like to begin first by  
9 thanking the Federal Trade Commission and Department of  
10 Justice for holding these hearings on what I think is an  
11 extremely important topic, which should be apparent -- at  
12 least my views should be apparent, given that I've spent  
13 years working on them.

14           Today I really want to report on essentially a  
15 series of papers that I've written over the past few  
16 years and I want to highlight that this has been done  
17 collaboratively with a number of folks -- Ashish Arora, a  
18 colleague at CMU; Marco Ceccagnoli, Akira Goto, and Akiya  
19 Nagata, both in Japan; Dick Nelson, who many of you know;  
20 and John Walsh at University of Illinois, Chicago. And  
21 this work has been supported by many sources, but the  
22 major ones are Sloan, NSF, and the Center for Global  
23 Partnership of the U.S./Japan Foundation, at least the  
24 comparative dimension of the work.

25           I think you should all be fairly familiar with

1 the background to the subject, that over the past 20  
2 years we have witnessed a strengthening and broadening of  
3 patent protection in the United States. And, in fact, we  
4 are witnessing the same with a bit of a lag in Europe and  
5 now in Japan as well.

6 In the U.S. the most visible kickoff event to  
7 that process was the '82 creation of the Court of Appeals  
8 for the Federal Circuit. We've seen pro-patent trends as  
9 well in court decisions.

10 We've also seen the expansion in '81 of what can  
11 be patented, notably life forms, software, both in key  
12 decisions at that time. And then, more recently, as Jim  
13 referred to, business methods as well in the late '90s.  
14 And even an expansion of who can patent, in the form of,  
15 particularly, of Bayh-Dole and related legislation that  
16 permitted essentially universities and even government  
17 labs and other thoroughly sponsored institutions to go  
18 out -- to patent their inventions.

19 We've also seen a significant change in private  
20 practices, reflected particularly in a dramatic growth in  
21 corporate patenting over the past two decades. Jim  
22 showed some recent data, but patent rates have almost  
23 tripled in a period of about 20 years.

24 Okay. There is, however, cause for questioning  
25 both the public policies and private policies. There, in

1 fact, exists in economics, largely, though not  
2 exclusively, based on survey research, a 40-year  
3 empirical legacy, starting from say the work of Mike  
4 Scherer in '59 and extending through the work of Ed  
5 Mansfield and particularly a precursor study to my own,  
6 the work of Rick Levin and his colleagues at Yale,  
7 Vaborik, Nelson, and Winter, that suggest that patents  
8 are, in fact, not central to the protection of inventions  
9 in most industries.

10 And though there are important exceptions -- I  
11 use the word "most industries." The drug industry is  
12 reliably and robustly an exception to that -- to that  
13 trend. We've even had recent theoretical work that  
14 suggested that the effects of particularly broader  
15 patents on R&D is unclear, especially in industries where  
16 innovation is cumulative. That is, innovation builds on  
17 -- importantly, on prior innovations.

18 The work -- particularly the empirical work, but  
19 also the work in theory, casts some doubt on the presumed  
20 role of patents in stimulating invention in most  
21 industries. And so what I want to talk about today is  
22 patents, their effectiveness and role in the  
23 manufacturing sector of the U.S., with some reference to  
24 experience, particularly in Japan.

25 So the overview of what I'm talking about, I'll

1 provide a brief, brief review of survey based evidence on  
 2 the effectiveness of patents in protecting inventions in  
 3 the manufacturing sector; the uses of patents; how are  
 4 they used across different industries in the  
 5 manufacturing sectors; what I call the quid pro quo.  
 6 That is, in exchange for the legal ability to exclude  
 7 others from using, commercializing, et cetera, an  
 8 invention that is receiving a patent, patent holders are  
 9 supposed to disclose the technical information standing  
 10 behind that invention.

11 Then I will end up by talking about, in the  
 context of some recent work, the impact of patenting on 1  
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1 for protecting firms' inventions. Patents are obviously  
2 one.

3 Firms also, though, use secrecy, lead-time.  
4 They will also exploit complementary sales and service  
5 capabilities or complementary manufacturing capabilities.  
6 Okay.

7 It's in that context that my colleagues and I  
8 evaluated the effectiveness of patents across the  
9 manufacturing sector. And specifically we asked  
10 respondents -- and this is important. Our respondents  
11 were actually R&D lab managers. They weren't the patent  
12 attorneys. We didn't go into the IP departments for  
13 these responses. They were directors of R&D labs, R&D  
14 units, in manufacturing firms.

15 We asked the respondents to report on the  
16 percentage of their firm's innovations for which a  
17 mechanism -- secrecy, patents, lead-time, et cetera --  
18 was effective in protecting the competitive advantage  
19 from that innovation.

20 Briefly, what did we learn? Well before I tell  
21 you what we learned, let's be careful what we mean by  
22 this term "effectiveness" and the response scale.

23 Mind you, the use of these mechanisms are not  
24 mutually exclusive. Indeed, many of them are often used  
25 together. You will use even secrecy and patenting

1 together, though not at the same time. At least, I'm  
2 putting it a bit simply.

3 So given that, I would suggest the way to  
4 interpret effectiveness of a mechanism and notions that  
5 one mechanism or means is more effective than another,  
6 not that that's used and the other isn't, were really a  
7 judgment on the part of firms of which of these means of  
8 protection are more central to firms' strategies in  
9 protecting their inventions.

10 With that said -- and we do this separately for  
11 product and process innovations, but I'll -- for brevity,  
12 I'll focus largely on product. The top mechanisms  
13 overall were secrecy and lead time. Which was, actually,  
14 a bit of a change from when Levin and his colleagues did  
15 their survey. Secrecy was not nearly as important in the  
16 early mid '80s as it apparently is -- is in the mid '90s.  
17 That, in fact, patents were the least effective overall  
18 which, in fact, though, obscures a lot of cross-industry  
19 variation. And particularly we found patents to be  
20 relatively effective, as compared, again, to these other  
21 means in a small number of industries, particularly  
22 drugs, again, but also medical equipment, and I'd be  
23 happy to go into more detail. And detail -- industry  
24 level detail is provided in the papers that we've done.  
25 And we find patents to be a relatively less effective or,

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1           I want to highlight, though, at the bottom of  
2 the slide an interesting observation that might be of  
3 interest, particularly concerns over competition. What  
4 we observed is negative within industry correlations  
5 between firm size and, other reason, defense costs, okay,  
6 regarding reasons for not applying for a patent. In  
7 other words, your smaller defense cost looms larger.

8           That's interesting because what we also found is  
9 that larger firms reported -- again, within industries --  
10 reported patents to be more effective. And I would  
11 suggest that those two facts are related. That, in fact,  
12 the access to legal resources on the part of larger firms  
13 lead them to suggest that patents are more effective,  
14 which is consistent with the initial negative  
15 correlation.

16           Well, listen. How are patents used? In fact,  
17 the way patents are used depart a lot from the way I  
18 think we conventionally think about them. And we need to  
19 consider how patents are used across industries and the  
20 difference in those uses to help understand how they  
21 affect innovation and, possibly, competition.

22           These are our aggregate results. These are  
23 actually simple averages. We have patent weighted  
24 averages, as well, that I can talk about.

25           A little clarification. These are the different

1 reasons that we inquired about. They, again, are not  
2 mutually exclusive. We asked our respondents to -- to  
3 tell us why they patented their most recent innovation  
4 that they patented. Again, product and process  
5 separately. Which of these reasons motivated that  
6 decision to apply.

7 Prevent copying. Well that's sort of like  
8 mother and apple pie.

0.. e2e8e Patent blocking. What's patent blocking?

1 the reasons to patent, because I think this gets a little  
2 interesting. It builds on a key observation, an  
3 observation that came out of interviews.

4 By the way, these data, this study, was  
5 supplemented by quite a few interviews in the U.S. as  
6 well. I found that very, very helpful.

7 The key point is to think about what's the  
8 implications of the number of patents that it takes to  
9 protect a commercializable innovation, a product. Forget  
10 this one patent/one product relationship. Even in the  
11 simplest of worlds where that mapping is pretty direct,  
12 that often doesn't apply. Even in industries like drugs  
13 and chemicals, it often doesn't apply. Sometimes it  
14 does.

15 But in other industries -- electronics  
16 particularly, telecomm, computers, et cetera -- what I'll  
17 be calling complex product industry, it can take hundreds  
18 -- hundreds, sometimes over 1,000 patents, are associated  
19 with a commercialized product. What's the implications  
20 of that? And that's what's interesting.

21 When that number of patents per commercializable  
22 innovation are great, it's unlikely that any one firm  
23 will hold all the necessary rights, essentially fostering  
24 a condition of mutual dependence across firm's patent  
25 holdings. What does that lead to? It leads to a lot of

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1 negotiation.

2 For example, essentially in what we call a  
3 player strategy, because what it does is, it makes -- by  
4 having a strong portfolio, you assure yourself of  
5 inclusion -- you're not excluded, but you're actually  
6 ensuring your own inclusion in such negotiations and  
7 interactions of an industry. And that permits you,  
actually, erv Inc.



1       distinction between SIC industries that I talked about  
2       before. Does it map true responses?

3               Well we, in fact, find negotiations to be much  
4       more prevalent in what we called -- the patenting --  
5       applying for patents for their use in negotiations to be



1           Now that kind of behavior might yield patent  
2 harvesting. Why? Well let's say what harvesting is.  
3 It's essentially where firms are patenting innovations  
4 that they would have generated anyway. And why does that  
5 occur? Essentially it's a -- game. You know, like a  
6 prisoner's-dilemma-like game, where everybody is trying  
7 to match, build, to come to the table from a -- and  
8 negotiate from a position of strength.

9           Okay. Now what that -- the possibility of  
10 patent harvesting suggests is that perhaps in such  
11 settings, patents are not having as much incentive effect  
12 on R&D as we might like. Now that's -- we don't know  
13 that. And I will try to address that portion a little  
14 later on.

15           Why else might we be concerned in these  
16 settings? Portfolio races and the pervasive cross-  
17 licensing of large portfolios, et cetera, in these  
18 industries may also deter entry and associated  
19 innovations. Do we know if that's actually happening?  
20 No. Is it a concern? Sure.

21           Hey, not so fast, though. Is it all bad news,  
22 the use of patents in these settings? No. Because there  
23 is some up sides to extensive cross-licensing. It  
24 promotes information sharing and we'll talk about the  
25 benefits of that in a few minutes. It also can avert

1 license stacking and the possible breakdowns in  
2 negotiations over rights due to large numbers of  
3 claimants.

4 How does it avert that? Well it keeps the  
5 number of claimants pretty small by deterring entry.

6 I want now to shift gears a little bit and focus  
7 on the quid pro quo of patenting. That is, the  
8 information that patent disclosures are supposed to  
9 provide and that tends not to merit a lot of -- or it  
10 hasn't received a lot of attention. It merits more  
11 attention in the U.S. And patents are supposed to  
12 promote innovation in two ways -- appropriability, and  
13 we've been talking about that. The appropriation of  
profnTj p45nvf attentiBg above also viaTD (12) Tj 6Tecns 9D of

1 productivity of firms in the industry, incentive. It may  
2 promote entry.

3 But, again, watch out because it can also  
4 diminish appropriability and associated R&D incentive due  
5 to appropriability.

6 I don't have a lot of time. I'll make this  
7 brief. What we observed, using a variety of measures, is

1           There is also automatic disclosure of patents  
2 after 18 months in Japan. That was not the case in the  
3 U.S. in the mid '90s. It is now the case for -- except,  
4 for firms that patent only domestically.

5           Moreover, there was an opposition process in  
6 Japan and back then it was pre-grant. Now it's post-  
7 grant since '96. But what that means is that Japan, you  
8 have the opportunity, prior to the issue of the patent,  
9 to oppose it, for anybody to come up, a rival say, "Hey,  
10 this is not valid." But you only have a limited window  
11 to do that. Several months.

12           What did that mean? That meant that rivals had  
13 a lot of incentive to look very closely at those patents  
14 early on because that's where patents were challenged in  
15 Japan, typically not so much in the courts.

16           Another reason for more disclosure via patents  
17 in Japan. Compared to the U.S., in essence, there are  
18 more patents per commercializable product. Why? There  
19 are fewer claims per patent and the claims are  
20 interpreted more narrowly. Consequently, more claims --  
21 I'm sorry -- more patents per product.

22           What does that do? That implies that mutual  
23 dependence across firms' patent holdings, that we talked  
24 about in the context of complex product industries in  
25 Japan -- or in the U.S., are more pervasive in Japan.

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1 astounded us. But that is the result that we -- we  
2 found.

3 Implications. The Japanese experience suggests  
4 that patent policy may, indeed, significantly increase  
5 R&D spillovers.

6 Also, you'll say, well, hey, watch out. That  
7 means R&D incentives may be diminished as well. Again,  
8 not so fast. Indeed, average R&D intensity in Japan is  
9 greater than in the U.S., particularly in the less R&D  
10 intensive, more mature industries, which was interesting.

11 So the suggestion here is that patent reform  
12 efforts more generally in the U.S. should give, we would  
13 suggest, at least equal time to their disclosure  
14 function.

15 Let's get back to the question that I deferred  
16 before then, reflecting on a recent paper that is nearing  
17 its end stage now, but this is a work, nonetheless, in  
18 progress on presenting, with a little trepidation, some  
19 preliminary results. But I think they've been -- let's  
20 put it this way. They've been robust -- they're getting  
21 banged around a lot for about a year now.

22 In light of the finding that R&D is relatively  
23 unimportant in protecting inventions across most U.S.  
24 industries, does patenting stimulate R&D, even in such  
25 industries?



1           In this recent study with Arora and Ceccagnoli,  
2 we look at this question. We evaluate the impact of  
3 patenting on R&D in U.S. manufacturing, using our survey  
4 data, exploiting a number of the unique data elements  
5 there, particularly our questions of patent effectiveness  
6 and particularly the percentage of innovations that firms  
7 patent, which we call patent propensity, which is a  
8 little different from the conventional notion of that.

9           And in the paper we do two things. We estimate  
10 what we call a patent premium, which is the proportional  
11 increment to the value of inventions realized by  
12 patenting. So a patent premium of greater than one means  
13 you're getting a return to patenting. If it's less than  
14 one, you're losing by virtue of patenting, perhaps to the  
15 disclosure effects of patenting, because -- and because a  
16 patent perhaps can be easily invented around.

17           Then we look at the impact of that patent

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1 et cetera.

2 But then I wanted to highlight the results for a  
3 couple of our sample industries -- semiconductors and  
4 biotech -- where you can indeed find similar results for  
5 semiconductors, really quite -- clearly the minority of  
6 inventions are worth patenting there. But in biotech, as  
7 in drugs and medical equipment, that is greater than one.

8 But then let's look at the right-hand column.  
9 What's the premium if you patent? The premium is  
10 strongly positive, conditional on patenting. And what's  
11 interesting is that the return to patenting seems to be  
12 fairly comparable across industries, once that decision  
13 to patent is made, though I would suggest, again, for  
14 different reasons because patents are used in different  
15 ways.

16 Then what's the effect of the patent premium on  
17 R&D? Sort of the bottom line issue. What this table  
18 presents is the percentage increase in R&D on the one  
19 hand and patenting on the other in response to a  
20 simulated doubling of the patent premium. So we use our  
21 our empirical estimates to generate these results. What  
22 we find is that across the whole sample, if you doubled  
23 the patent premium, and we can talk about what that --  
24 that might mean concretely, R&D spending would increase  
25 by 33 percent.

1           So there is a stimulative effect of increasing  
2           the patent premium, of increasing, if you will, patent  
3           effectiveness across -- for the whole manufacturing  
4           sector, and 28 percent in semiconductors. So even where  
5           patents are least effective, among high-tech industries,  
6           relative to other mechanisms, even there we find a  
7           stimulative effect. Unsurprisingly, in biotech, much  
8           higher than semiconductors, 48 percent increase in  
9           response through a doubling.

10           Now what's the effect of increasing the premium  
11           on patenting itself. And there we measured patents per  
12           million dollars of R&D. Unsurprisingly, how much you  
13           patent increases more than proportionately than any  
14           increase realized in R&D itself. So patents per million  
15           dollars of R&D increased 59 percent overall.  
16           Semiconductors, a lot. R&D increases there, you know, in  
17           response to an increased premium, but patenting increases  
18           more than proportionately.

19           Biotech, that relationship is actually reversed.  
20           R&D will increase more than proportionately than will --  
21           well, no, that's not reversed, because it's already  
22           normalizing for R&D. You get the same relationship in  
23           biotech, that patenting increases a bit more than  
24           proportionately than R&D, but certainly nothing like it  
25           does in semiconductors.

1           Implications. So we find a positive effect of  
2 patenting on R&D overall, even in semiconductors where  
3 patents are much less effective than other mechanisms.  
4 Though we find some degree of -- again, I referred to  
5 this before -- of harvesting. That is, the patenting of  
6 inventions that would have been generated anyway -- in  
7 all industries, but especially where the patent premium  
8 is lowest.

9           Overall conclusions. There are many ways to  
10 protect inventions. While patents are not as featured as  
11 other mechanisms, they do stimulate R&D broadly, though  
12 more in some industries than others, unsurprisingly.

13           Moreover, patent disclosures can contribute very  
14 importantly to R&D information flows, to R&D spillovers,  
15 okay.

16           Where I would highlight a policy concern, but  
17 there are a lot of open questions here, is the pervasive  
18 player strategy raises issues of cost, and issues  
19 concerning entry. Those are open questions requiring  
20 more -- more study, though. We really don't know.

21           Moreover, reflecting the point that I made  
22 earlier on, that we should be concerned about the  
23 possibility -- and this is suggested by other -- work by  
24 Lerner and others, that litigation costs, as well, may  
25 particularly disadvantage small firms.

1 Thank you, very much.

2 (Applause.)

3 (Time Noted: 10:32 a.m.)

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23 MR. COHEN: Our third speaker this morning will  
24 be Robert Evenson. He is a Professor of Economics at  
25 Yale and he has done significant research in the area of

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1 technology and productivity, especially in agricultural  
2 markets.

3 PROFESSOR EVENSON: Thank you for the invitation  
4 to appear and summarize some of the studies that we've  
5 done. I come from the same tradition that Wes Cohen  
6 comes from, the Yale incubator for studies of invention  
7 and growth. But I am tackling an international  
8 dimension.

9 And the international dimension is important,  
10 even for -- for a lot of reasons, but even within the  
11 United States, simply because we have -- we are part of  
12 an international set of intellectual property rights with  
13 the -- and particularly with the TRIPs negotiations and  
14 with world trade organizations, firms in the United  
15 States are very much looking into international markets.  
16 And the size of the markets that they're looking for in  
17 their technology is -- is much greater than it would be  
18 -- than is the case if you sort of -- is only marketing  
19 their buying and selling technology in the U.S.

20 What I'm going to do is, I'm going to make a few  
21 comments about growth convergence. Then I'm going to  
22 look at some invention patterns between developing and  
23 developed countries.

24 And my main concern here is to report the  
25 results of two studies. One is an international study of

1 R&D investment and intellectual property, and the  
2 strength of intellectual property rights.

3 And the second is a study of the R&D  
4 productivity which asks the question as to whether the  
5 productivity of R&D, in terms of the inventions produced  
6 by R&D, is itself a function of the recognition of  
7 foreign intellectual property rights and essentially the  
8 experience with foreign -- with foreign inventions in  
9 your country.

10 And I'll say a few -- I'll come back at the end  
11 to say a few more words about the intellectual property  
12 rights.

13 What do I mean by convergence? I'll just make a  
14 quick note. I want to come back to this at the end.  
15 But, basically, among all of the OECD countries, we  
16 essentially observe, over long periods of time and also  
17 over -- since 1960 -- this one actually happens to be  
18 over a longer period of time -- we've observed that if,  
19 for example, if you take the per capita income in the  
20 beginning of the period and compare it to the growth  
21 rates over the period, we get this kind of a  
22 relationship. The highest per capita income at the  
23 beginning of the period grow slowest, and the lowest per  
24 capita income at the beginning of the period grow  
25 fastest.

1           Now this is a pattern that holds remarkably  
2 strongly for all OECD countries, but it doesn't hold for  
3 Socialist countries and it doesn't hold for developing  
4 countries. So it holds only in a subset of the world's  
5 economies, the OECD market economies. And I'm going to  
6 come back and try to say that that has something to do  
7 with the -- with intellectual property and with the  
8 technology markets.

9           Now I'm going to show you some invention  
10 patterns to begin with here. And for simplicity, I've  
11 reduced these and we have a lot of data on these. But,  
12 basically, this is essentially the invention patterns  
13 from OECD countries, and in this case I've just got the  
14 U.S., all the European economies, and Japan. And the --  
15 so that the U.S. -- U.S. indicates that in 1990 there  
16 were 59,000 U.S. origin patents. Of those, 12,000 were  
17 patented in Europe and 14,000 in Japan. And across all  
18 of the developing countries, we also see a steady flow of  
19 -- or essentially a fair amount of U.S. inventors  
20 obtaining protection in these developing countries.

21           So that we get a steady flow of selling  
22 technology from the high-income countries into the  
23 developing countries, as well as a tremendous amount of  
24 selling technology between the high-income countries.

25           Now when we look at that same figure for the



1 inventions that originate in the low-income countries, we  
2 find that -- we find quite a different pattern and I'll  
3 just summarize it briefly. We find that Korea, in 1990,  
4 was already able to export inventions into the U.S.  
5 economy, and into Europe, and into Japan. But almost all  
6 of the other countries have very limited exports of  
7 patents or of their inventions, in a sense, obtaining  
8 protection, even though it's easy to get protection in  
9 other countries, and for the countries, they do quite a  
10 bit of invention, but almost all of it is domestic  
11 invention only.

12 Now I'm going to come back and argue that this  
13 -- and there isn't much cascading. In other words, the  
14 high-income countries don't modify any technology that  
15 originates in -- or the middle-income countries don't  
16 modify the technology that originates in the high-income,  
17 and then modify it and sell it in the low-income  
18 countries. There is virtually no exchange of  
19 intellectual property assessment between the developing  
20 countries.

21 Okay. Now let me turn to my two studies. And  
22 I'm going to try to put a technology market focus on  
23 this. Intellectual property should do three things for a  
24 country. It should increase and stimulate domestic R&D.  
25 And Wes Cohen has given us some insights into the way

1 this is happening and the degree to which it is happening  
2 in the United States over recent years.

3 It should also facilitate the purchase and sale  
4 of technology by making it clearer and by providing  
5 licensing components and so forth.

6 And it should have disclosure effects. And, in  
7 particular, the availability of technology produced  
8 outside your country ought to have an effect on the  
9 productivity of R&D in your country.

10 So I'm going to do two studies to look at these  
11 and I'll just -- I'll summarize them fairly quickly. But  
12 they do represent international ways of looking at the  
13 question of does intellectual property actually stimulate  
14 R&D.

15 That's a question that can be asked  
16 internationally because in many ways it's very hard to  
17 tell in a country that has had strong intellectual  
18 property rights for a number of years whether you're  
19 actually -- it's very hard to tell within a country  
20 whether you're actually stimulating R&D. And it's -- Wes  
21 Cohen's work is quite ingenious, using this patent  
22 premium methodology.

23 But in this case we're looking at several  
24 components and, basically, I'm simply trying to look at  
25 -- my variable is R&D as a percent of the GDP in

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1 somewhat less. Surprisingly, Canada does not have a very  
2 strong intellectual property protection by this measure.

3 But the question is, are we -- can we get any  
4 predictive power from this measure by looking at  
5 comparison over time. And what we're doing here is we're  
6 using what's called a random effects model, which is kind  
7 of a mixture of a fixed effects, which takes out -- which  
8 essentially looks at only the within country effects and  
9 so forth, and there are some econometric issues  
10 associated with that.

11 But, basically, what this study is showing is  
12 that intellectual property indicators have a strong --  
13 that's the IP number -- have a strong impact, increasing  
14 R&D investment. And we've got four different  
15 specifications here in the paper. We have another  
16 several more -- dropping some countries and so forth.  
17 And that result is robust.

18 In other words -- now there is still -- there's  
19 a little bit of an issue here in terms of the  
20 simultaneity of R&D investment and of the intellectual  
21 property investment, but we've tried to take out most of  
22 that and we have tried to address it in many ways. But  
23 this study essentially says that when you look at  
24 international data, our intellectual property -- stronger  
25 intellectual property, much of it coming through the

1 administration of intellectual property and the  
2 effectiveness of courts in enforcing it -- does stimulate  
3 R&D.

4 Now we have tested this a little bit with -- by  
5 dropping some countries and including different  
6 countries, and so forth, and it seems to hold -- it's a  
7 pretty robust result.

8 So the second study is the one that -- once  
9 again, I'll just summarize it here. The second study is  
10 a study of -- more or less from the same countries,  
11 slightly different period, but essentially 1980, '85,  
12 '90. And this study essentially asks the question, does  
13 the -- does a country -- or does the foreign patent  
14 recognition of a country actually make your own domestic  
15 R&D more effective, in terms of domestic inventions.

16 So the -- variables, domestic inventions -- this  
17 is modeled on -- there are some modeling issues  
18 associated with this. But basically the story here is  
19 that the elasticity, which is -- which is, essentially  
20 the -- if you were to increase your R&D by ten percent,  
21 you would get about six percent more inventions.

22 If you increase your foreign R&D, even your  
23 foreign payments of royalties, you will get -- because it  
24 complements your domestic R&D, you get another four  
25 percent, or five percent more R&D. And this is what

1           essentially enables countries to double their R&D and get  
2           double their inventions.

3                       It is the foreign -- it is this foreign germ  
4           plasma and that's mostly -- it's mostly disclosure  
5           effects. Disclosure effects internationally, but they  
6           are -- they are a different type of disclosure than some  
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1 now, particularly in Africa, and that's a whole episode  
2 where the -- okay.

3 But the methods of convergence says that many --  
4 many times it is said, why should developing countries do  
5 any R&D at all. Maybe they can simply mimic. And if you  
6 really just mimic or copy, why should you put yourself in  
7 a position of having to pay the U.S. and European  
8 intellectual property holders for the protection.

9 Well you might not do this if, in fact, you've  
10 got a lot of location specificity, and there are a lot of  
11 other issues, as I've noted. If you look at developing  
12 countries, by and large, you'll find that the bulk of  
13 them have very weak intellectual property rights, and  
14 they don't give much invention. They don't have much in  
15 domestic invention either, but we saw some of it, some of  
16 the data.

17 Well the people who have studied the convergence  
18 looked at several mechanisms here. One mechanism is a  
19 paper by Coe and Helpman, which essentially says that  
20 imported capital goods convey a huge amount of the  
21 intellectual property or the invention spillovers and  
22 disclosures that essentially affect these markets and  
23 contribute to that foreign invention story.

24 There is some alternative work that Wolfgang  
25 Keller and others have done, which essentially points to

1 more inventions, direct licensing of inventions.

2 And there is now increasing recognition that the  
3 foreign direct investment in developing countries is a  
4 huge contributor to the technology flows and to the  
5 technology market that is being realized in these  
6 countries.

7 Now just briefly, location specificity. When it  
8 comes to agriculture, and soil, and climates, and so  
9 forth, the story is pretty simple. No region in the  
10 world that has not got an R&D capability suited,  
11 producing crop varieties for that region, no region in  
12 the world has had any success in producing or copying  
13 inventions at all. It is so location specific that,  
14 literally, you can just say that if you don't have R&D,  
15 you don't have anything. You don't have productivity and  
16 you are part of the world's poorest economies.

17 For the industrial technology, there still is a  
18 great concern that you don't really need the R&D, but the  
19 evidence just points all against it. Even the World Bank  
20 does not push R&D for developing countries very heavily.  
21 As I say, they do it for agriculture because it's so  
22 obvious there that there is no spillovers into regions  
23 that -- unless they have their own capacity. Once they  
24 have the capacity, you bring in spillovers and it's that  
25 same spillover mechanism that we saw in the production.



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(Applause.)

(Time Noted: 10:54 a.m.)

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1           MR. COHEN: Thank you. Well I think we have at  
2           least a few minutes available for discussion here. And I  
3           thought one item we could begin with derives from Jim  
4           Langenfeld's graphs where he showed a distinction between  
5           the level of protection where you might maximize  
6           innovations, and level of protection where you might  
7           maximize total welfare. In part I know this is derived  
8           from considerations of competition and the -- the price  
9           effects there.

10           I'm wondering if embedded in this is some form  
11           of assumption that the intellectual property at issue is  
12           creating market power, and whether that is the normal --  
13           should be our default assumption, or whether we should --  
14           I think Professor Kitch, at times, has written on the  
15           idea that a better default assumption would be that the  
16           -- in the instance of market power stemming from  
17           intellectual property is more rare.

18           Perhaps Jim and Professor Kitch might want to  
19           both comment on this.

20           MR. LANGENFELD: Why don't I just start. At  
21           least in my opinion, I think it's generally reflected in  
22           the economics literature. I mean, if you have, by  
23           definition, a unique product as a result of a patent, a  
24           defended patent, and it's actually differentiated from  
25           other products offered in the market, even in direct

1 competition, what you're going to find, typically, is  
2 that, whether you call it a market power or a monopoly --  
3 that you're typically going to find some type of power.  
4 You've identified, even for the broader market, a niche  
5 that's yours.

6 And, by definition, if someone else can  
7 completely duplicate that, it will go head-to-head, even  
8 in a broader market context and prices will fall. That  
9 will generate additional consumer surplus, at least in  
10 the short run, abstracting away from the reduced  
11 incentives to innovate.

12 So, yeah, there is an assumption built in there  
13 that I think is a reasonable assumption, and I don't  
14 think that's that an unusual perception in the economics  
15 profession. That's not to say, though, that by having a  
16 patent, that gives you necessarily anything along the  
17 lines of monopoly power that would allow you to do -- you  
18 know, to do anticompetitive tying arrangements or  
19 anything along those lines.

20 It is going to eliminate direct price  
21 competition for comparable products, otherwise the patent  
22 is truly not --

23 PROFESSOR KITCH: Well it depends. Sort of the  
24 important case in what class -- if you define patents in  
25 the way you're defining them, then it's true by

1 definition.

2           The only point I make is that if you're trying  
3 to evaluate the social impact of the very large number of  
4 patents that are issued and enforced in the United  
5 States, then you have to look at the characteristics of  
6 all of the patents that are issued and outstanding. And

1           And by itself -- and I think several speakers in  
2 their work quite clearly have picked this up -- they --  
3 they don't correspond with a product, to a competitive  
4 offering. And one or more, as was said, in many cases  
5 thousands of patents' rights are involved before you get  
6 to the stage of actually having a competitive product on  
7 the marketplace, like a PC.

8           So you really can't analyze these rights by  
9 using the kind of standard classification and  
10 conceptional system that commonly is used to talk about  
11 "products." And of the thousands, and thousands, and  
12 thousands of patents outstanding, my judgment is that a  
13 very small number of them, in fact, infer a market power  
14 position in a traditional sense. Some do, but in a  
15 traditional sense that economists think of that -- that  
16 concept.

17           If the objective is to talk about the social  
18 effects of the patent system as a whole, then it seems to  
19 me, given this large number of patents, predominant  
20 number mind you, that don't have this characteristic,  
21 then it seems to me that that dominant number ought to be  
22 the focus of your attention. Then you can deal with the  
23 outliers. I think to look at it the other way is to turn  
24 -- to really turn it around unrealistically.

25           PROFESSOR COHEN: On the question of -- agreeing

1 with Ed Kitch, few patents confer product market power in  
2 a product -- in a market. Again, drugs are an exception.  
3 Often economists -- conventionally, when they thought of  
4 patents, have thought of drugs as being representative of  
5 the way patents work. They are absolutely off the scale,  
6 an exception, in the way that patents work. There are  
7 some industries that approach it, but again they are very  
8 different.

9           Number two, let me make a broader suggestion.  
10 If you think that actually some of these industries --  
11 semiconductors, telecomm, et cetera -- amass enormous  
12 patent portfolios and, indeed, they -- that improves the  
13 ability to cross-license, and often really the freedom,  
14 essentially, to design and freedom to operate without  
15 worrying about getting sued. Why? Because the other guy  
16 knows that you're going to sue them and everybody is  
17 going to lose in the process.

18           Now given the way that patents are used in that  
19 -- that setting, what are patents doing? How are they  
20 generating rent? Are they generating rents -- is a  
21 patent generating the rent on the invented invention, of  
22 the invented item, per se, or is it rather becoming a  
23 vehicle for sharing oligopoly rents?

24           Now clearly there is a return to the patent  
25 because at the margin it -- it increments your portfolio.



1 But in the main, are you really deriving the profits from  
2 the patented product. In fact, when you have these  
3 cross-licensing deals, there are firms, as we've heard in  
4 the past from Paul Ziedonis, firms will have a lot of  
5 these patents that they have acquired the rights to from  
6 other firms, they don't touch them. They don't work.

7 Okay. So, in other words, they can become  
8 vehicles for simply R&D sharing in industry, as opposed  
9 to protecting the rights to a specific invention.

10 MR. LANGENFELD: If I can continue. Okay. If  
11 there are a lot of patents out there, which there are,  
12 that aren't used and they are used in a way that Wes is  
13 suggesting, then the graph is still accurate.

14 PROFESSOR COHEN: I wouldn't disagree with that.

15 MR. LANGENFELD: It is still perfectly accurate  
16 because what you're saying is they are used to prevent  
17 competition from other people coming into the market, if  
18 Wes' findings are correct, which we have no reason to  
19 doubt them. So the -- the key point of that graph is,  
20 one, that maximizing the number of innovations, whether  
21 they are used or not, is not necessarily, from an  
22 economist's point of view, the optimum.

23 Now you can argue and maybe this is where some  
24 of the -- some of the disagreements with the FTC and some  
25 firms out -- and their policies in the economy, is if the

1 -- the interesting graph that's not up there, the one  
2 that I thought, is -- okay, let's -- for the moment let's  
3 say we're trying to maximize total welfare, returns on --  
4 to the patent for the innovator -- patent over to the  
5 innovator and returns to consumers. If the FTC takes the  
6 position or the Department of Justice takes the position  
7 that they only care about consumer surplus, they don't  
8 care about any producer surplus, they have to be taking  
9 an extremely long-running view because if -- because that  
10 graph would mean, to take it to the next level, if you're  
11 only concerned about consumer surplus, you will -- it  
12 would put further space between what is the optimum, the  
13 maximum number of patents, the optimum for society, and  
14 then the optimum for consumer surplus in the short run,  
15 because you're going to be subtracting out the gains to  
16 the innovators.

17 So that graph actually would be heightened if  
18 you were taking a pure consumer protection point of view,  
19 consumer surplus point of view, which the FTC often has.

20 MR. COHEN: You're saying the peak would be  
21 moved farther to the right on that graph?

22 MR. LANGENFELD: Yes. So there -- I mean, you  
23 can justify it in terms of if the FTC takes a  
24 sufficiently long-run view, then -- and supply curves are  
25 perfectly flat, I mean, eventually they will -- you

1 should eventually curve them back to consumers.

2 But if the FTC takes the short-run point of  
3 view, then the logical result of that policy is that  
4 you're going to -- you're not going to maximize the  
5 number of innovations. You're going to come far short of  
6 that in determining the amount of intellectual property  
7 protection you're going to tolerate.

8 PROFESSOR KITCH: I have another problem with  
9 that graph. In its own terms, I don't have any problem.  
10 I agree with the basic proposition that, in theory, there  
11 is going to be some optimum level of innovative activity  
12 and you can have too much innovation, where the cost of  
13 it will exceed the benefits to society. And you can have  
14 too little, and then the same way that there's -- I agree  
15 there is some relationship between the patent system and  
16 the amount of innovation and, indeed -- and that can work  
17 both ways.

18 But my problem is with the definition of the  
19 bottom dimension. That is, you talked about something on  
20 the horizontal dimension of the graph as being stronger  
21 and weaker patent protection. And the problem is, to  
22 implement the conceptual structure in actual policy  
23 terms, it's necessary to understand how -- what stronger  
24 and weaker translates to, in terms of actual rules,  
25 conditions, and provisions of the patent system and

1 antitrust rules. And unless you can define what is  
2 stronger and weaker and explain the connection between  
3 the graph and the strengthening or weakening of that  
4 particular provision, then there is no -- there is no  
5 sort of implementable policy bite in the insight. It's  
6 kind of -- it's a nice heuristic and it sets up kind of a  
7 general conception, but it doesn't help us answer  
questions like should the time bar be three years or one

1 has seemed to soften the non-obviousness test, and that  
2 is argued to be generally, you can just say, a move in  
3 the direction of strengthening the patent system.

4 For some reason, little is made of the fact that  
5 the Federal Circuit has quite strenuously pushed in the  
6 direction of narrowing patent claims, the scope of patent  
7 clients, and has had a lot of trouble with the doctrine  
8 of equivalents and other doctrines which broaden the  
9 effective scope of claims in particular patents.

10 Well if you put the two together -- that is, you  
11 -- and you assess all other changes that the Federal  
12 Circuit has made, has the U.S. patent system gotten  
13 stronger or weaker over the past 20 years, or do we know?

14 MS. GREENE: And the answer to that is? Because

1 think in the -- from a larger perspective, I don't think  
2 we have moved very much in the last 20 years. We've  
3 probably moved a little. But we're still sort of in the  
4 same ball park.

5 Now that still begs the question as to whether  
6 we were in the right place 20 years ago. And I don't  
7 think the economic analysis at least provides a clear  
8 answer to that question.

9 MR. LANGENFELD: Well I think it's -- it is  
10 true, as I said, I simplified the analysis in trying to  
11 -- actually, I used -- I used part of that from some  
12 research done by Landes and Posner. I thought that was  
13 an appropriate assumption for the copyright analysis.

14 I think it's a useful tool. I agree that it's  
15 multi-dimensional, but most things in the world are. And  
16 I do think that you need to look at all those dimensions,  
17 like in the hedonic type of analysis, to find out whether  
18 it was actually, you know, stronger or weaker.

19 My sense of the areas that I have looked at is

1           But, you know, you're right. There is an  
2           offset, if the claims are being read more narrowly. I  
3           don't think anyone has done that type of quantitative  
4           analysis. You know, we're all looking at it  
5           qualitatively. And that's one of the reasons why the  
6           work, such as the work that is being done by -- by the  
7           other academics on the panel here, is quite helpful,  
8           because they are providing some quantitative insights to  
9           what's going on here, and I think that's really an area  
10          that -- that we should all be exploring.

11           MR. POLK: Can I jump in?

12           MR. COHEN: Go ahead.

13           MR. POLK: Clearly there has been a  
14          strengthening in the sense of the expansion of patentable  
15          subject matter over a couple of decades. You're saying  
16          no. Life forms, biotech, software -- you're not going to  
17          find that -- okay.

18           PROFESSOR COHEN: However, I think the general  
19          point that you make, which is right, which is often  
20          discussions are cast, you know, just for purposes --  
21          purposes of simplicity, in terms of strength of patents,  
22          that that can sometimes obscure some key issues. So one  
23          needs to be mindful, when you talk about strength, what  
24          you mean. You mean, presumably, enforcement. You might  
25          mean, presumably, scope. You mean life. That is, the

1 duration of the patent life.

2 And then, when you push that, you say well does  
3 an expansion of scope really advance innovation. The  
4 literature suggests maybe not, even in a very simple way,  
5 that if -- if the scope of claims is in some sense  
6 broadened, what that means then, for example, is that  
7 there is some expectation that if your rival gets to an  
8 invention, your domain, before you, that actually  
9 restricts your rights and might, in fact, dampen your  
10 incentives to do -- to invent.

11 So what I want to suggest is that, albeit the  
12 utility and simplicity in talking about strength of  
13 patenting, you really should talk -- you do, when it  
14 comes to policy discussions, probably break it down into  
15 fairly concrete dimensions.

16 MR. COHEN: Go ahead, Ed.

17 MR. POLK: I tend to agree with what he is  
18 saying here, as far as the terms of strengthening and  
19 broadening patent protection being thrown around without,  
20 necessarily, a good firm basis of what exactly that  
21 means.

22 Now as far as the comments that the non-  
23 obviousness standard is somehow being lessened, I think  
24 that's wrong. The non-obviousness standard was set forth  
25 in 1960, Graham v. -- in the '60s, Graham v. John Deere,



1 and that standard has not changed. Now maybe the Federal  
2 Circuit has made it more uniform, so you can't go around  
3 and -- shop, and in the Ninth Circuit you have one  
4 standard of interpreting obviousness, and in the Second  
5 Circuit, a different standard. Maybe if they were more  
6 uniform -- but I don't necessarily say making them more  
7 uniform, is somehow making it stronger or broader using  
8 the patents claims. Coming from the standpoint of a  
9 former litigator before I came over to the Patent Office,  
10 I don't think they're going into a courtroom and being  
11 interpreted in a manner that may have been -- may be is  
12 suggested here. I mean, I think courts are still -- are  
13 not just looking at it and giving the patentee, you know,  
14 what everybody they want when they get in the courtroom.

15 I think the bigger problem, and something you  
16 have to address here, maybe is the doctrine of  
17 equivalence, the way that is being used right now. I,  
18 wholeheartedly, agree that that is a problem right now.  
19 And the case of Festo right now is before the Supreme  
20 Court, and maybe the Supremes will finally, at this  
21 point, come in and put a little more clarity into the  
22 scope of patent claims under the doctrine of equivalence.  
23 But I think a lot of that has somehow been shifted to the  
24 PTO that we're doing wrong, and we don't have anything to  
25 do with the doctrine of equivalence. That's purely a

1 court-made doctrine and we don't have any way to rein  
2 that in.

3 And as far as the Patent Office, when we are  
4 issuing patents, and the company thought is now that  
5 we're just issuing these broad patents, and we get -- we  
6 do have the examiners there who have to look at the  
7 doctrines. And the Federal Circuit has been just as hard  
8 on us in denying patents to applicants and saying, you  
9 know, that we're -- just for instance, there is a case  
10 that just came up a few months ago that said that the  
11 Patent Office can't rely on their common knowledge to  
12 reject something. There may be element of a plain  
13 language that any examiner would look at and say, "Yeah,  
14 this is obvious to me. I may have done this in -- you  
15 know, in industry, yeah."

16 But the Federal Circuit is saying, no. We need  
17 a textual basis. Go find this reference that says that.  
18 And the examiner, for whatever reason, it may be some of  
19 the most obvious stuff, just can't find something that  
20 says it. And we are not allowed to reject something if  
21 we don't have a textual basis, something to show the  
22 Federal Circuit, here.

23 I mean, and that's part of what my job in my  
24 office is, what we do. We represent the Patent Office at  
25 the Federal Circuit. And we get slapped down quite a bit



1       pretty tough thing to do. Where there has been sui  
2       generis protection, for example, outside of issues of  
3       patents, like design registration and semiconductors,  
4       that's really not been that -- that productive.

5                But that sort of sidesteps your direct question,  
6       which is -- I think what you're -- the issue isn't so  
7       much should the standards differ, but how difficult is it  
8       to apply the standards to different settings. And there  
9       there are remarkable differences and, indeed, you know,  
10      business methods, which is perhaps the most challenging  
11      -- or one of the most challenging domains right now,  
12      although even in biotech, you know, it's often -- it can  
13      be pretty tough, so even in a domain where patents  
14      clearly are having a very strong and critical incentive  
15      effect as well as effects on the viability of what Bob  
16      called technology markets.

17               So I think I did not answer your question.  
18      Maybe someone would like to step into --

19               PROFESSOR EVENSON: Let me just make a comment  
20      that Japan is always -- for a long time Japan had a  
21      restriction of single claim in their patents. They've  
22      changed that now but -- and that was designed in part to  
23      provide a weaker -- a weaker level of protection but, in  
24      fact, it wasn't very effective in doing so because, as  
25      far as I understand, the U. S. and European inventors

1       wanting to obtain protection in Japan were able to,  
2       pretty effectively, get around that single plain  
3       limitation by getting several patents and so forth. And  
4       the reverse was also the case that Japanese patents were  
5       condensed when protected in the United States.

6                So that was not -- that does not seem to have  
7       been a very effective mechanism for playing with this  
8       optimal degree of protection.

9                MS. GREENE: What empirical evidence would it be  
10       helpful for you all -- you all, the economists -- to have  
11       to get at that question better? And what, if anything,  
12       can the federal government do, in terms of assisting in  
13       the process of gathering the data and understanding it?

14               PROFESSOR COHEN: Can I take a shot at that?  
15       Some years ago, I, unhappily, moved upstream into data  
16       collection. It's always nicer to be able to use other  
17       people's data. Okay. Because it's really a lot of work  
18       to collect it yourself, without that much of a return, in  
19       case of a very long run.

20               But I had specific suggestions. First of all,  
21       the R&D data for starters collected in this country is  
22       terrible. Okay. It is way, way too aggregate. Okay.  
23       In fact, the best -- the best data on R&D ever gathered  
24       in this country was collected by the Federal Trade  
25       Commission through what's called their Line of Business

1 Program and that data exists for 1974 through '77. In  
2 fact, my early work, early in my career, relied very  
3 heavily on those data. And you could see things and do  
4 analyses using that -- those data that cannot be done  
5 with R&D data that's subject, for example, to primary  
6 industry assignment or the -- almost sometimes the  
7 whimsical responses of firms to the still too aggregate  
8 NSF product field data requests, via census on -- you  
9 know, please break up your R&D, if you so choose.

10 Then, of course, you need to complement that  
11 with other data on -- again, broken down clearly by line  
12 of business, but data which can correspond to your R&D  
13 data on things like, you know, sales and margins, et  
14 cetera.

15 I would then -- I would suggest that the Federal  
16 Trade Commission go back and look at some of the work  
17 that you folks have done years ago. Okay. And I think  
18 Mike Scherer was at the origin of a good part of that  
19 program.

20 Then you have other data, which is not the R&D  
21 data, not the nuts and bolts data, but the -- some of the  
22 data that are collected and that I did through my survey.  
23 Would it be useful to collect it and revisit it? Sure.  
24 Not every year. But -- rateables would be very useful.

25 And my feeling is that data -- the R&D data,

1 even data of the sort that I just talked about, and not  
2 just on patents but broadly -- once you're in that  
3 business, be careful. Because you don't just collect  
4 data on patents or patent effectiveness at R&D because to  
5 understand the effect of patents, to understand incentive  
6 effects, et cetera, you have to then be able to control  
7 for a bus load of other things. Okay. So it is also a  
8 slippery slope and a very ambitious undertaking, so let's  
9 not trivialize the cost.

10 Also, let's not trivialize respondent burden.  
11 Okay. It is hard for these guys to respond and they  
12 didn't like it back then. In fact, waged a battle that  
13 went right up through the Supreme Court back then, around  
14 the FTC's Line of Business Program, particularly their  
15 right to make the data available to non-FTC employees, in  
16 a formal setting.

17 So is it worthwhile? I think so. Is it easy?  
18 By no means.

19 MR. COHEN: I think this is probably an  
20 excellent time to take a break. We should try to  
21 reassemble here in ten minutes and we'll try to start  
22 promptly at the deadline point.

23 (Whereupon, there was a brief recess taken.)

24 - - - - -  
25

1           MR. COHEN: The next speaker is going to be  
2 Professor Edmund Kitch, who teaches law at the University  
3 of Virginia. He is currently visiting at Georgetown. He  
4 is the author of a seminal 1977 article entitled The  
5 Nature and Function of the Patent System and he is just  
6 the ideal person to give us additional background in this  
7 area. Professor Kitch.

8           PROFESSOR KITCH: Well thank you for inviting me  
9 titled to participate today. I've been asked to give an



1 lack of fit and with some effort to try and take into  
2 account the actual features of the patent system and then  
3 try to relate them back to how one would understand the  
4 economics.

5 Now the basic insight is simply a positive  
6 observation about the structure rights conferred by the  
7 patent system and that is that the rights conferred by  
8 the patent system are -- have important forward-looking  
9 elements.

10 The traditional discussion by economists have  
11 focused on patents as rewards for inventions made and  
12 completed and now the patent enabled the inventor to  
13 exploit that invention in his marketplace.

14 My observation was that an important dimension  
15 of the rights conferred by the patents, in fact, affect  
16 future inventions and future developments in technology.

17 And in the article, trying to explain my  
18 unfamiliar ideas to my audience, I used a kind of tag  
19 line. I described this aspect of the rights as  
20 "prospects." Now, what are examples of these prospect  
21 rights? Well the generic proposition is a claim with a  
22 few limitations will cover improvements or changes that  
23 include additional elements.

24 Specific examples. You can patent a specific  
25 compound, a chemical compound, based on a single utility,

1           and the claim will then, for the life of the patent,  
2           cover all subsequently discovered uses of the compound.  
3           But the fact that the next inventor has found a new use



1 applicant's contribution, and even if there were others  
2 who had a near miss, and indeed you can lose a priority  
3 contest by even days, even though your science was  
4 superior, your investment greater, and when you lose, you  
5 lose all of the rights. You don't get some share of the  
6 resulting patent rights.

7           Then to try and make this idea more familiar to  
8 my readers, I offered an analogy to the mineral claim  
9 system, where -- behind schedule, due to computer  
10 problems and other things, and so I'll just skip over  
11 that. But, again, my use of the term "prospect" -- it  
12 fit the idea of prospector and the rules governing  
13 mineral claims on the federal public domain in the West.

14           I then asked what -- what could be the possible  
15 benefits of these features in a patent system if they are  
16 -- if they are not explained by a reward or incentive to  
17 make investment type theory. And I -- I identified the  
18 following benefits.

19           One was that once a prospect is created by an  
20 issued patent, it makes it possible to have centralized  
21 management of the flow of investment into the  
22 exploitation of the prospect. That is, investment in its  
23 improvement and perfection and, hopefully, the production  
24 -- eventual production of a commercial product.

25           Second, better appropriability of the

1 implementation investments required to bring the  
2 invention to market.

3 A reduction in transaction costs. And I think  
4 this is probably the most important insight. I compared  
5 a world with these prospect patents to a world in which  
6 only trade secrecy was available, and pointed out that it  
7 is extremely difficult for firms to engage in  
8 transactions which -- with each other, conveying  
9 information held in the form of trade secrets, and argued  
10 that since trade secrets are not going away -- that is,  
11 secrecy will be something that the system has to live  
12 with, that patents improve the ability of firms to  
13 contract and transfer information between themselves.  
14 And I think some of the earlier presentations this  
15 morning, the empirical presentations, demonstrated the  
16 very important flow of transactions between firms holding  
17 patents, in forms of cross-licensing and licensing, and  
18 so on and so forth, in order to bring the invention into  
19 use.

20 Again, I proceeded to speculate -- or attempt to  
21 speculate about a possible on the ground policy  
22 implications from this view. And I argued first that  
23 there were some possible implications for the test of  
24 invention, and argued that a substantial novelty approach  
25 under this approach could make sense, as compared to a



1       that the ability of firms to license and exchange and  
2       rearrange these rights among themselves is extremely  
3       important. And this, of course, relates to my  
4       transaction cost point. The existence of patents makes  
5       this process less costly.

6               This is the -- I think the implication with the  
7       strongest implications for antitrust policy, and the  
8       implication is basically this. Whatever the welfare  
9       effects of the patent system as a whole -- and we talked  
10      about some of the difficulties of understanding exactly  
11      where we are and what the applied policy implications are  
12      for that question earlier -- once you have a patent  
13      system, interventions which increase the cost of  
14      licensing, increase the cost of transactions between  
15      firms with different patent positions, is very likely --  
16      is probably going to work to, indeed, to increase the  
17      social cost and the social cost of the patent system that  
18      you have. It's very important, if you have a patent  
19      system that the holders of the patents then be able to  
20      transact about the patent rights between themselves after  
21      the patents and even before the patents issues.

22              And so I'm a great fan of the 1995 intellectual  
23      property guidelines. I think they do start off in the  
24      right place. I think it is important that when antitrust  
25      comes to intellectual property, it brings the same tools

1 and methods of analysis to intellectual property that it  
2 brings to other forms of property. And I disagree that  
3 you can make kind of a sharp distinction between  
4 intellectual property rights and rights in what is  
5 sometimes called tangible property.

6 Another implication I said was, in terms of  
7 government patent policy -- this is before Bayh-Dole and  
8 the issue, however, was alive -- as to whether recipients  
9 of government research subsidy should themselves be able  
10 to obtain patents on inventions resulting from the  
11 subsidized research work. And from the reward  
12 perspective, of course, this makes absolutely no sense.  
13 You've already been paid to do the research. Why in the  
14 world should you have a patent as well.

15 If, however, you are looking forward to the  
16 process by which inventions are further developed and  
17 exploited, then I argued that in order to provide for the  
18 orderly and efficient further development of those  
19 inventions, it would make sense to permit such entities  
20 to obtain patents. And of course that has been a clear  
21 change in U. S. law and practice.

22 So the bottom line is a -- of this prospect  
23 approach, the bottom line is the contrast with the reward  
24 approach. The reward approach conceives of the  
25 innovation process as a single cycle. You have



1 investment, invention, patent, and then exploitation, and  
2 not a continuous process in which each innovation is an  
3 input to successive innovations. That is a multi-  
4 generational approach, an approach which does, I must  
5 admit, make the analysis far more complicated, multi-  
6 variate and difficult to follow and even to trace  
7 empirically.

8 The reward conception looks backward. The  
9 prospect consumption -- conception looks forward. I  
10 think you can see this contrast in things like the  
11 important Levin, et al. study, the survey of managers  
12 about the importance of patents. The central question  
13 asked there was are patents important in terms of  
14 obtaining financial reward and appropriability of  
15 research results. That is a question that is consistent  
16 with the traditional economic approach to the patent  
17 system. The question did not ask the managers and did  
18 not focus on the role of patents in the subsequent  
19 management of the invention process, and in the  
20 contracting process that goes on between firms working in  
21 the same or related area of technology. And that's the  
22 overview.

23 (Applause.)

24 (Time Noted: 12:04 p.m.)

25 - - - - -

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1           MR. COHEN: Our final speaker this morning will  
2 be Maureen O'Rourke who teaches intellectual property and  
3 other courses at Boston University. She is now  
4 researching the antitrust implications of patent  
5 settlement agreements. She brings some real world  
6 science and real world experience to the table to us.  
7 She received a Bachelor of Science in Accounting and  
8 Computer Science and she spent three years working at  
9 IBM, dealing primarily with software licensing issues.  
10 So we will turn this over to Maureen O'Rourke.

11           PROFESSOR O'ROURKE: Well, first I want to thank  
12 the staff for inviting me here today and for the  
13 opportunity to speak to and also listen to my fellow  
14 panelists.

15           The theme that I want to talk about is really  
16 reflected in this whole series of hearings, which is that  
17 we tend to think of intellectual property law and  
18 antitrust law as discrete bodies of law, but rather as  
19 part of an overall system that includes all the sets of  
20 legal and extra-legal tools that we use to try to achieve  
21 the optimal level and insight to innovate, which  
22 unfortunately we can't define.

23           But generally I would say that we, in the U. S.,  
24 have always believed that the optimal level is one where  
25 we've got some balance between the exclusive rights of

1 the inventor and those of the public, where the public  
2 would also include second-generation creators. So I  
3 guess in my conception I would say I kind of envision the  
4 exclusive rights as still leaving something meaningful  
5 unprotected.

6 So I think antitrusts are a part of that system  
7 that includes other things like contract and extra --  
8 devices like technology protection measures that regulate  
9 access and copying. And so when we think about that  
10 system, we need to think about whether it has any gaps in  
11 it. Are our bodies of law doctrinally equipped to  
12 achieve their goals, or are there some improvements that  
13 we can make that would be cost effective?

14 And so I'm going to talk today about providing  
15 patent law with an additional doctrinal tool that I think  
16 would help it achieve its goals, help it fit within this  
17 broader system that I spoke about, and particularly maybe  
18 make its fit with antitrust law an easier one. And so  
19 I'll talk a little bit about the idea, followed by an  
20 explanation of how I got to it, and mix in some talk of  
21 pros and cons and some alternatives, and what more we  
22 need to know.

23 I should say at the outset that this idea is  
24 widely reviled, so I guess the only point there would be  
25 to say, while your initial reaction might be one of

1 revilement, if that's a word, maybe on further reflection  
2 it won't seem quite so odd.

3 All right. In a nutshell, my idea is that  
4 patent law may lack the doctrinal tools, at least as they  
5 are currently interpreted, to excuse certain literal  
6 infringements that are socially beneficial and wouldn't  
7 adversely impact the patentee's incentives. And one way  
8 to remedy that gap would be to adopt some variant of  
9 copyright law's fair use doctrine.

10 Now why would you want to do that? I mean,  
11 patent law has never had a fair use doctrine, so what's  
12 different now? Well to a certain extent, nothing is  
13 different and yet everything is.

14 We've always had this fundamental assumption and  
15 a number of the speakers today have referred to it, which  
16 is that patentees would efficiently license their  
17 inventions. They are not going to use them to suppress  
18 innovation or to leverage whatever power the grant would  
19 happen to give them into another market. And if they  
20 did, antitrust law could deal with that. So there is  
21 really no need for a doctrine like fair use that in  
22 copyright law, at least in some commentators' views,  
23 exists at least in part to correct market defects that  
24 lead to licensing failures.

25 And also, to the extent that copyright failures

1 deals with First Amendment type issues, it's not a  
2 doctrine we need in patent law, where those issues are  
3 generally absent. So why would a doctrine like that make  
4 sense in patent law?

5 I thought it would be helpful if I sort of gave  
6 you an explanation of how I got to it, which means we  
7 start with a narrow, but economically important, context  
8 and then kind of broaden the view and raise some of the  
9 pros and cons here. And that narrow context is really  
10 one that came out of my experience with IBM, which is the  
11 evolution of IP protection for the connectivity  
12 components of operating systems software, application  
13 programming interfaces, or APIs for short.

14 Originally we thought these connectivity  
15 components were copyrighted. But then in 1992, it became  
16 clear, at least in the Ninth Circuit, in the cases on  
17 video games, that they were not copyrightable subject  
18 matter. And, in effect, the courts turned them over to  
19 patent law and, indeed, the major video game  
20 manufacturers have patented their APIs and so certainly  
21 have the major computing software manufacturers,  
22 including Microsoft.

23 Now why would the courts have done this,  
24 basically sort of take something out of copyright  
25 protection that formerly was there. Well it seemed like

1 part of what they were saying is that the market for  
2 operating systems exhibits network effects. And you have  
3 some feeling that these manufacturers were leveraging  
4 small bits of code into a much larger market. And so we  
5 thought it would be a good idea to kind of open up the  
6 standard for connectivity to give consumers more choice.

7 So we turned APIs over to patent law and I would  
8 just note that that seemed to be in accord with  
9 economists' recommendations. And just briefly the  
10 argument is that network markets make a case for weaker  
11 IP rights because of their externalities. An IP right  
12 allows price of marginal cost, with a network effect. A  
13 person's failure to join a network, because the price is  
14 too high, imposes negative externalities on those already  
15 in the network, which seems to translate into a policy  
16 recommendation that weaker IP rights might make sense.

17 And as we've seen -- really I think Microsoft is  
18 probably an example -- IP rights can be especially  
19 powerful in network industries. The problem is, though,  
20 at the same time you know there is probably some  
21 incentive required to produce APIs, but at the same time  
22 we know that strong IP protection may produce a regime  
23 where you have one dominant player and then less than  
24 optimal innovation, again, if we could define it, after  
25 the standard is set.

1           So patent law would make sense because its  
2 threshold requirements are higher than those of  
3 copyright. So it would make sure that only those APIs  
4 that represented a technological advance would receive  
5 protection and possibly weed out those whose success  
6 stems not so much because of their technology, but  
7 because consumers happen to adopt the particular  
8 operating system.

9           So rather than weaken the right directly, what  
10 the law really did was achieve basically the same effect  
11 by raising the bar for protection. My problem is,  
12 though, that a patented interface can become a standard,  
13 as much as a copyrighted one, and strong patent  
14 protection may frustrate efforts for compatibility at a  
15 point when we think that would be desirable.

16           For example, you can't offer a competing  
17 operating system that implements the same patented APIs.  
18 Depending on how the claims are written, an application  
19 developer won't be able to write to the API. They're  
20 going to have to reverse engineer to get at the API.

21           Patent law scope-limiting doctrines generally  
22 don't allow much literal infringement. You might be able  
23 to contort some of them, but it would be a real stretch.  
24 I think it's pretty clear current law wouldn't allow  
25 this.

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1 Julie Cohen and Mark Lemley came up with the idea that  
2 patent law codify a right to reverse engineer software  
3 for research purposes. Now that's a narrower solution --  
4 it's an industry specific solution -- than mine.

5 What it won't do, though, from what I can figure  
6 out from what they said, is it won't protect a new  
7 product that literally infringes. So you'd never have  
8 the chance to actually offer a competitive operating  
9 system that implemented the same APIs.

10 Additionally it's not clear to me again -- it  
11 depends on how the claims are written, but if it's a  
12 process of using the API, it's also not going to shelter  
13 the application. So that's one alternative. And, you  
14 know, my argument is that sometimes exactly what we  
15 should do is permit some amount of literal infringement  
16 in the end product.

17 Now Professor Merges has a different view or a  
18 different suggestion, which is that patent law should  
19 adopt a doctrine of technological genericide. And he  
20 bases this idea on an analogy to trademark law and don't  
21 laugh. And the basic idea is this, when a patented  
22 invention becomes a standard, basically you lose your  
23 patent rights then, just like a trademark owner loses its  
24 rights in the market when it becomes generic.

25 Now that idea is both narrower and broader than



1 a product. And Professor Rebecca Eisenberg for a long  
2 time has argued that researchers who infringe a patent in  
3 the course of verifying the functionality of the patented  
4 invention should be exempt from infringement liability.  
5 And she also argues that a patentee should not be granted  
6 an injunction against a research use that leads to  
7 improvements or alternatives to the invention. And she  
8 goes through a number of economic reasons -- high  
9 transaction cost, difficulties of valuation, and some  
10 desire to maintain whatever market power you have -- that  
11 may prevent a license. And she also makes the point that  
12 sometimes a licensee -- a potential licensee can't pay  
13 the cost because they can't capture the diffuse social  
14 benefit of moving clients forward.

15 Generally, you know, we might have a use for a  
16 doctrine like fair use in any industry where some broad  
17 basic patent threatens follow-on research. And this is  
18 where I refer you to the work of Rob Merges and Dick  
19 Nelson, where they go through a number of different  
20 industries and they talk about how even a modest threat  
21 that an infringer will be excused from liability has a  
22 salutary effect on pioneer improver bargaining.

23 The point really is that there seem to be some  
24 recurring themes. You know, one could adopt piecemeal  
25 industry specific legislation, like a reverse engineering

1       exception for software, but there seems to be a common  
2       core of issues that tends to recur across industries.  
3       And sometimes they evidence motives that really don't

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1 bit. And so increasing uncertainty would not necessarily  
2 be a bad thing. They proposed to do it through a system  
3 of probablistic patents and that's where my understanding  
4 broke down.

5 But -- and so the idea was just that this  
6 uncertainty would constrain sort of the power of the  
7 patent, whatever amount of power that is, and also  
8 encourage licensing. And to go back to sort of the real  
9 question is -- you know, as Ed quite correctly points out  
10 -- most patents don't give you market power. And so the  
11 real question is whether sort of adding a new doctrine  
12 that would do this is worth it for the number of patents  
13 that it would affect.

14 MR. COHEN: One question which I think I'd like  
15 to take up with you, since this is very much a  
16 foundational data, is one concept that I think was  
17 lurking in what you were talking about, you talked a  
18 little bit about -- it was suggested the idea of the  
19 blocking patent doctrine. And maybe if you could just,  
20 you know, explain that briefly and then try to amplify a  
21 little bit as to why you felt that that fair use would  
22 help some industries move toward licensing solutions.

23 PROFESSOR O'ROURKE: Sure. The blocking patent  
24 doctrine is generally the idea that if I have a patented  
25 invention and someone invents an improvement to it, they



1 can get a patent on their improvement, but they can't  
2 practice my invention, nor can I practice their  
3 improvement. And so there is an incentive for the two of  
4 us to license because, as the original inventor, I can't  
5 use this hopefully better enhancing improvement, and if  
6 I'm the improver, I can't use the underlying invention.  
7 And so we both have a mutual interest in licensing.

8 Interestingly, it's not clear whether this  
9 doctrine actually results in a lot of licensing. Because  
10 it seems -- it apparently seems that there is a lot of  
11 valuation problems, that the original inventor tends to  
12 over-value its contribution, and the improver likewise,  
13 which actually can make bargaining somewhat difficult.

14 I'm not sure that I would say, sort of, you  
15 know, in every context that the patented improvement  
16 should necessarily have a sort of fair use right to the  
17 underlying patent. The threat of fair use might make it  
18 easier to overcome the bargaining impasse, whatever  
19 bargaining impasse you achieve or you're at. You know,  
18 I'm just kind of thinking out loud here.

1 underlying patent. You know, copyright has traditionally  
2 viewed fair use as basically a compulsory license with a  
3 royalty of zero. And there is no necessary reason why it  
4 has to be that way.

5 I mean, I think actually Judge Kozynski said,  
6 "You know what we should do? We should never grant an  
7 injunction. We should just always basically assess  
8 continuing royalties for infringement in the copyright  
9 context." And so one could do that in patents. I don't  
10 think you want to do it as a matter of course, but I  
11 think as early as in the '60s and even before the  
12 Scherers' work, they did conclude that compulsory  
13 licensing would, you know, sort at the margins, not have  
14 an adverse effect on innovation.

15 The question is whether you can reliably  
16 identify situations where that would be appropriate and,

1 narrow scope of the experimental use exception in patent  
2 law. And it seems to me that the structure of the  
3 statute suggests that you at least ought to be able to  
4 fully investigate your competitor's patented technology,  
5 which requires that you engage in infringement of a  
6 patent and that clearly ought to be all right.

7 There is no reason why the infringement  
8 doctrines have to be as clear edged as they are and why  
9 you wouldn't invite the courts to consider more factors.

10 It does relate to a general problem, which goes  
11 far beyond antitrust and patent law, which is the nature  
12 of U. S. judicial procedures and the costs of litigating  
13 in the courts, which affects the costs of enforcing  
14 patents, the costs of defending patents, the costs of  
15 arguing invalidity to courts. I am of the view that our  
general procedures allow kind (1 y'TD yoyRif'lnliEhnyoy2au4 TD

1 facilities doctrine applies to patents, as to any  
2 tangible property, and that they should be treated the  
3 same. Antitrust itself does have a problem exactly  
4 classifying what is an essential facility and it would  
5 have that problem in the case of patents. But I assume

1 that basically -- what I thought they said was that you  
2 couldn't require -- exercising your patent rights could  
3 not be an antitrust violation, and so that's where I  
4 picked it up from.

5 And what brought it to mind was with the whole  
6 software API thing, it just struck me a long time ago  
7 that one of the ways to treat those would have been under  
8 an essential facilities doctrine, because that's sort of  
9 what they are. They are the gateway to the second  
10 market. So that opens up a whole another set of problems  
11 because the Microsoft problems, to the extent you think  
12 it's a problem, wouldn't be solved, actually, by patent  
13 fair use. It would have to be solved more along an  
14 antitrust line because the system specifications for  
15 connectivity are so complicated, and there are so many of  
16 them. There are like 50,000 API calls in Windows. There  
17 is just no way that you could rely on anything other than  
18 Microsoft's help to clone a system or to --

19 MR. COHEN: Turning a little bit to the prospect  
20 theory, I know one -- one issue that you -- is that --  
21 this sounds fine in theory, but there are a lot of  
22 practical impediments to somebody being able to develop  
23 prospects early on. There are difficulties in  
24 identifying the right -- the right firms to license to,  
25 and to turn development over to. There are a lot of

1 transaction costs. There may be differences in valuing  
2 the yet-to-be-developed subsequent innovations. And all  
3 of this can stand in the way of successful prospect  
4 development. Would you like to comment on that?

5 PROFESSOR KITCH: Yes, indeed. There are  
6 transaction costs and -- for instance, to give the  
7 example of blocking patents. Yes. Patent owners are not  
8 always going to be able to agree.

9 Licensing is a costly process. But the fact  
10 that there are some cases of failure doesn't tell you how  
11 well the whole process works over all and its approach,  
122 as compared to some other approach.

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1           Well, I think one of the consequences of  
2           creating an environment of uneasy communication is on-  
3           the-ground executives get the message that -- just to  
4           avoid that trouble. Don't do it. And some -- it's  
5           actually social -- socially useful communication may be  
6           lost.

7           PROFESSOR O'ROURKE: May I just ask a question?

8           MR. COHEN: Go ahead.

9           PROFESSOR O'ROURKE: Thank you. My question  
10          was, does the prospect area work better for some  
11          industries than others? Because I'm thinking of the ones  
12          where there are -- cross-licensing arrangements are sort  
13          of standard in the industry. Because I know at IBM, and  
14          this may be -- it may not be, actually true. But the  
15          story always was that IBM was first to patent the risk  
16          technology. And they sat on it and they sat on it  
17          because they wanted to protect the high-end mainframes  
18          where they were making all their money. And apparently  
19          somebody forgot that they had these cross-licensing  
20          arrangements with the entire industry and so HP -- or I  
21          guess Sun came out with a risk machine before IBM.

22          So I guess my question would be, it seems like  
23          prospect works well where there is a lot of cross-  
24          licensing in the industry. But when there isn't, you  
25          sort of run the risk that the firm actually -- they can



1 block rivals and also they can -- they're inactive  
2 themselves on developing the technology.

3 PROFESSOR KITCH: Well I don't know what works,  
4 but it certainly -- you seem to be able to come up with  
5 pertinent on-the-ground examples of this process as being  
6 more central in some industries than others. But the  
7 legal system faces a very basic choice as to whether to  
8 try to create a framework which is not industry-specific  
9 and is not technology-specific, or whether you try to go  
10 through and create a kind of industry-by-industry,  
11 technology-by-technology set of rules.

12 And I would argue that one of the great  
13 successes of the patent system has been to choose  
14 generalized principles over context specific rules. And  
15 the great advantage of it is that, one, it reduces kind  
16 of industry specific lobbying, rent seeking, by trying to  
17 get -- I want better rules for pharmaceuticals because  
18 that's human health and that's important, than they get  
19 over there in electronics, because that's just tools, or  
20 -- I mean, it can go on endlessly.

21 And really more important is that the framework  
22 doesn't have to anticipate shifts in the technological  
23 opportunities, and changes in sort of the technological  
24 possibilities in the future. So the outsider who shows  
25 up with an idea contrary to conventional wisdom and



1 under the radar of top management, and attorneys, and so  
2 on, and -- quite consistent with his earlier findings.

3 Number two, I want to -- on that broader point,  
4 economists have long been concerned with the expected --  
5 the anti-market power due to -- hence, not just the fact  
6 of a reward for invention. In fact, you cite Levin.  
7 Well distinguish -- and the survey distinguished between  
8 the need for a measurement that reflects on past  
9 effectiveness and experience, and you have to do that.  
10 You need something that happened as the subject of  
11 measurement, versus the more theoretical conception and,  
12 indeed Levit, and I, and folks well before that are in  
13 print talking about the importance of patents as  
14 conferring "X" anti-market power that is before the fact  
15 of innovation, and as an inducement to the future  
16 innovation. That's absolutely essential to the way  
17 economists have thought about it. And like you, I think  
18 that's very important and that's where really patents  
19 have their force.

20 MR. COHEN: Okay. We've run a little bit over.  
21 I'd like to get just one more question out. It takes us  
22 all the way back to our very first slide. We've been  
23 talking a little bit about the overlap between a first  
24 generation and a second generation of innovation. The  
25 first slide, I think, suggested something that there

1           could be some overlaps in innovation between industries.  
2           I think Jim talked a little bit about the -- the flow of  
3           social benefits from one industry to another. And I  
4           wondered if that leads you to make any comments about the  
5           way we've dealt with some antitrust principles at times,  
6           when we've tended to look at both harms and benefits only  
7           within a single market.

8                       MR. LANGENFELD: Yes. I have strong views about  
9           this and I had strong views back when I was at the FTC.  
10          I can't say the FTC always agreed with me, but I always  
11          was willing to share those --

12                       I think one example to keep this focused, the  
13          FTC has expressed interest in taking consents in certain  
14          drug cases recently, between agreements, for example, on  
15          where one firm has the intellectual property right and  
16          there is a disagreement. Commissioner Leary and I were  
17          on a panel awhile ago where we had some discussions about  
18          this.

19                       I think one thing that's a problem with  
20          antitrust that handicaps -- that creates a real problem  
21          here in the area where intellectual property patents are  
22          an issue, if you think about it in terms of an agreement  
23          between a generic and a branded firm, making agreement to  
24          perhaps keep the branded firm off a branded firm's  
25          product, the generic firm's products off the market for a

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1 other type of agreement while there is a patent dispute  
2 going on, without taking into account the long-run  
3 benefits that settling that might mean for the next  
4 generation of products that are coming out, that may not  
5 even -- it may not even be with the relevant market, I  
6 think you're taking way too narrow -- way too narrow a  
7 view.

8 And so that's another way in which I believe  
9 very firmly that -- that looking at some of the typical  
10 antitrust analyses, dealing with tangible property, with  
11 tangible businesses, really to the extent that makes  
12 sense and it may or may not make sense, but to the extent  
13 that makes sense in the -- in the tangible markets, it  
14 really doesn't make any sense to have a narrow focus or  
15 an efficiency defense limited to the specific set of  
16 antitrust -- to a specific antitrust market. You're just  
17 always going to get more.

18 MR. COHEN: Okay. I'd like to thank our  
19 panelists. They did just an outstanding job. You've  
20 laid some important foundations, I think, in this session  
21 and many of the topics which have come up are going to be  
22 topics which will be explored in greater depth as we go  
23 forward with the hearings. But I think we've made, you  
24 know, an excellent start this morning.

25 Thank you.

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(Applause.)

(Time Noted: 12:45 p.m.)

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## 1 A F T E R N O O N S E S S I O N

2 (2:02 p.m.)

3 - - - - -

4 MS. DESANTI: I think we saw this morning that  
5 that's a pretty tough goal to meet and it's really hard  
6 for people to resist getting into the nitty-gritty of  
7 these difficult and fascinating issues and making it all  
8 too abstract. I think you'll see some of that same  
9 phenomenon this afternoon when we're asking about the  
10 relationship between competition and innovation.

11 Early work in this area asked some fundamental  
12 questions about whether innovation is more likely in the  
13 presence of monopoly or competition. However, as our  
14 speakers are going to quickly make apparent, the issues  
15 are much more complex than that simple question suggests  
16 and they are prepared to educate us about some of the  
17 complexities at hand.

18 We're going to have basically two groupings this  
19 afternoon. We'll begin with presentations and a  
20 discussion panel that focuses on the relationship between  
21 competition and innovation, but that also brings in how  
22 intellectual property, patents in particular, can affect  
23 competitive dynamics and, thereby, innovative  
24 competition.

25 We'll have a short break after that. Then we



1 will broaden the discussion with presentations on the  
2 role of networks and network competition, and the  
3 particular issues for innovation and intellectual  
4 property that may arise in a network setting, including  
5 the particular issues that patents may pose. And we have  
6 different perspectives represented, so we can expect a  
7 lively discussion there.

8 I'm going to warn you ahead of time that despite  
9 the note that this panel is supposed to end at 4:30, I  
10 have some sense that it may go over some. So feel free,  
11 if your schedule requires you to leave earlier -- and I  
12 know Janusz Ordover is going to have to leave us early.  
13 But don't be surprised if it goes somewhat longer.

14 We're going to begin with a presentation by Phil  
15 Nelson. He is a principal at Economists Inc. He, too,  
16 has been a public servant, as some of our panelists this  
17 morning. He was Assistant Director for Competition  
18 Analysis here at the FTC. Now in the private sector, he  
19 examines, among other things, the competitiveness of the  
20 conduct of intellectual property holders.

21 Phil.

22 - - - - -

23

24

25

1           MR. NELSON: Well I was asked to get the ball  
2 rolling by doing sort of a quick overview of the  
3 economics literature that relates to market structure and  
4 innovation. And a good starting place is to talk a  
5 little bit about Joseph Schumpeter. Talking about these  
6 relationships without, at least, mentioning him a little  
7 bit is -- he says in his book, actually in a different  
8 context, it would be a little bit like talking about  
9 Hamlet without mentioning the Danish Prince.

10           And so to come -- to give you a little sort of  
11 graphical view of some of Schumpeter's ideas, I concocted  
12 a simple numerical example of a market which has sales of  
13 about \$1 million and hypothesized that there is a five  
14 percent static loss, so that you can see the red line or  
15 pinkish line at \$50,000. The monopolist takes over.  
16 There's a static loss of \$50,000 a year.

17           But because the monopolist might be more  
18 dynamically efficient, passing on cost savings at the  
19 tune of one percent a year, but that compounds because it  
20 is really a growth rate, so the first year the monopoly  
21 contributes \$10,000 in savings, because one percent of \$1  
22 million is \$10,000. And then if he continues to shed  
23 costs at one percent a year, I take one percent of  
24 \$990,000 the next year and so on. You then get a -- the  
25 line that is the yellow line.

1           And then if you adjust for the static loss, you  
2           get sort of the greenish line that is below the yellow  
3           line. And parallel, and you can see it about the 2004,  
4           on an annual basis, the dynamic growth has gotten such  
5           that you're better off with a monopolist in that year,  
6           but on a cumulative basis, you get the sort of curved  
7           line that crosses at about 2000 -- 2009.

8           And so it shows that, you know, a one percent  
9           dynamic cost saving could, you know, catch up with an --  
10          then from 2009 on, be a substantially preferable world  
11          than one that is competitive and doesn't have that  
12          dynamic growth or cost saving aspect.

13          And that is, to some extent, the heart of what  
14          some people call the Schumpeterian Hypothesis, that  
15          you're better off in a world of creative destruction,  
16          where you have dynamic large firms. And he went through  
17          various arguments to explain why large firms might, in  
18          fact, be better platforms for innovation and dynamic  
19          change.

20          But that's not the only relationship. We're  
21          going to talk about that in a second. Other  
22          relationships I'm going to talk about is obviously  
23          innovation itself is going to feedback and affect market  
24          structure. And then near the end I will talk about a --  
25          what I sometimes call the Yale literature and I coded

1       this blue to continue the Yale discussion from the  
2       morning session, since I was a student of Nelson Winter  
3       and Rick Levin.

4                But to talk about there might be underlying  
5       characteristics in market, like innovative opportunities  
6       and the appropriability of innovations that might  
7       simultaneously affect concentration and that  
8       characteristic of the market, as well as shaping how much  
9       innovation you observe.  And that is where we are going

1 output and if you, for example, have a -- the R&D is  
2 going to lower your production costs by some fixed  
3 percentage, you're going to capture more total gains and  
4 thus it might be worth more to you to undertake the R&D.

5 Richard Nelson and also Arrow, actually, in '62  
6 talked about the second one, which is, if you have a  
7 diversified business that might be in multiple markets,  
8 since research and development is somewhat random, you  
9 may have a better chance of gaining from your research  
10 and development effort if you have this diversified  
11 portfolio of business activities, which larger firms are  
12 more likely to have.

13 Third, large firms might be able to support a  
14 bigger portfolio of research and development efforts,  
15 meaning that they may take two or three tacks at solving  
16 a given problem and because they have the funding and the  
17 wherewithal to do that, their research effort might be  
18 less risky and they might have a bigger payoff as a  
19 result.

20 Another -- another thought that has been out  
21 there is large firms have scale advantages in the R&D  
22 process. For certain types of research and development  
23 efforts at least, you would like to have a big, you know,  
24 research lab, and that's a fixed cost and a large firm  
25 may be in a better position to -- to fund and support

1 that type of fixed cost.

2 Larger -- another point is that larger firms may  
3 be in a better position to finance large-scale R&D  
4 efforts. That was actually in Schumpeter's original  
5 book, but it has triggered a stream of research that  
6 tries to really profitability to research and development  
7 efforts and look at lag structures and you see some --  
8 some support for that, with small lag structures, but  
9 other people have come up with contrary results.

10 Then you also have the fact that -- you know,  
11 you come up with the innovation, but you've got to get it  
12 to market to get some money. And so there was some  
13 people that were suggesting large firms were better  
14 positioned to do research and development because when  
15 they came up with something, they were better -- in a  
16 better position to market it. And so there -- there is a  
17 thought like that.

18 And one of the connections that some of these  
19 later panels may be talking about are network effects and  
20 first-mover advantages, and we'll talk about that. But  
21 if you can market your innovation quickly, take advantage  
22 of the first-mover effect, and then get yourself to be

1           But the -- in addition to these sort of  
2 theoretical points and many of them are contested and  
3 people will say, their markets work. You can license  
4 your technology to others. But to the extent there are  
5 market imperfections, some of these theories, you know,  
6 are based on, I guess, an implicit assumption of market  
7 imperfections.

8           But there is also theoretical research that goes  
9 contrary to the Schumpeterian Hypothesis and I think  
10 you're going to hear some people talking a little bit  
11 about that. But early theoretical models by Arrow and  
12 then later ones that use Cournot or Bertrand, more formal  
13 game theories show that, at least in some market  
14 environments, a competitive firm, an entrant is more  
15 likely to have an incentive to innovate than a  
16 monopolist.

17           So the theoretical work that you've got is  
18 cutting both ways, even before you get to sort of more  
19 behavioral economic theories, which the last bullet on  
20 this page is trying to capture, which is the notion that  
21 large firms may be more bureaucratic and it may be harder  
22 for them to manage an innovative research lab. Or,  
23 alternatively, there is literature that's out there that  
24 suggest monopoly power makes monopolists lazy and they  
25 may take some of their monopoly rents through not being

1 as aggressive competitors. But even before you get to  
2 that, you have somewhat more formal models.

3 And so what does the empirical data say, given  
4 that you have these cross currents in the theoretical  
5 literature. There were some early studies that were  
6 looking at measures like concentration in Herfindahl  
7 industries, for firm concentration ratios, and research  
8 and development often proxied by things like R&D to sales  
9 ratios, inputs into the R&D process. Other ones started  
10 to try to use sort of -- some sort of measure of patents,  
11 or some sort of measure of output of the R&D process.  
12 But, you know, measuring those things, some of them  
13 looked at the size of the firm, as opposed to  
14 concentration.

15 And if you look at the literature reviews that  
16 are out there and, again, the Scherer textbook, while it  
17 is dated, has a fair amount of this early literature in  
18 it, you see that there is -- they were finding that  
19 higher concentrated markets tended to have more research  
20 and development to sales or some measure of innovative  
21 activity. But there are contrary studies even to that.  
22 And then it was a little bit less consistent with respect  
23 to firm size, but again some people found that  
24 relationship and other people didn't.

25 Now Scherer sort of started to argue that there







1 name Levin there, and he -- Levin offers us some of this  
2 data that Yale got, and then they also used a lot of  
3 business data and marry the two together. They start to  
4 try to build simultaneous equation models, do  
5 sophisticated modern econometrics. And they start to  
6 come up with a notion that is the prelude to where we are  
7 actually going to end up that, well, Schumpeter had many

1 know, the -- that the results are absolutely definitive.

2 Now turning quickly to innovation can effect  
3 market structure, I mean, this is what you've been  
4 hearing about. You've got the patent protection and  
5 trade secrets. You know, innovators can be insulated.  
6 That will obviously affect concentration.

7 What a lot of the other people are going to be  
8 talking about is -- and you heard a little bit from Wes  
9 Cohen and the others this morning, about other aspects of  
10 industries insulating people with intellectual property  
11 rights. And so people like Rick Levin were saying --  
12 have done studies that show that even if it's an  
13 unpatented item, there are going to be some substantial  
14 costs for people coming in and replicating it. And so  
15 even without a patent system, there could be some  
16 protection there that would give a first-mover an  
17 advantage.

18 Now innovation may also reduce concentration.  
19 That is probably self-explanatory, particularly to the  
20 antitrusters in the group. Because, you know, when you  
21 -- innovation can help support entry and there have been  
22 economic studies that have shown how when there are new  
23 products that are being introduced in particular, you get  
24 more entry than you get exit, and it has a  
25 deconcentrating effect. Nothing that's too surprising.



1 percentage of all R&D dollars that are in these different  
2 sectors.

3 If you divide things by their sales, you get  
4 more what you expect. You can see pharmaceuticals, as  
5 was sort of alluded to this morning as very different, a  
6 lot more, you know, of your relationship to your sales  
7 level, a lot more R&D dollars are going into  
8 pharmaceuticals, but again you can see quite a bit of  
9 variation.

10 The economic literature that's sort of been  
11 built up has come to sort of some ideas of what -- what  
12 these variations are, and what variations might be  
13 significant. And very quickly, you know, R&D is not a  
14 homogeneous good. There are different types. People  
15 talk about product innovation versus process innovation.  
16 Process is lowering the cost of production, something of  
17 that type of change. Product is coming up with a new  
18 product.

19 But you also have basic innovation versus  
20 applied, you know, R&D expenditures. I mean, that's  
21 another big difference. And you see funding differences  
22 and sources of where these things are coming through that  
23 vary quite a bit across the type of R&D and they are  
24 going to vary across industry, too.

25 The cost of R&D is going to vary. In some

1 industries you need that big lab; other industries, you  
2 don't. I mean, so that the -- the structure of the cost  
3 and how much it costs to do it is going to vary.

4 Funding sources vary. In some sectors, the  
5 government is important, not just as far as, say, like in  
6 military R&D they're bigger. In other sectors and in  
7 most sectors, though, it's private funding.

8 The risk is going to vary from sector to sector,  
9 but it's also going to vary over the innovation cycle.  
10 As you get further along, things become clearer, perhaps,  
11 and so different types of firms are going to be better  
12 positioned to handle the innovative activity at different  
13 stages of the innovation process.

14 You've got technical opportunity varies. What's  
15 gone before, what's passed is prologue in the world of  
16 innovation. So that you can have the ability to make a  
17 breakthrough, depending on what point in time you're  
18 talking, but that's also going to vary across industries  
19 just because of the nature of the technologies and what  
20 people have been doing in the different industries.

21 Complementary technologies vary. We were  
22 hearing a little bit of this this morning about needing a  
23 whole set of maybe thousands of patents to really get to  
24 market. So in some markets, that's going to be  
25 important. In other markets, you're going to have the

1 ability to go forward maybe with your one innovation.

2 Industry interfaces are going to vary. In a lot  
3 of industries, the innovation is done by some vertically  
4 removed level, an input supplier, who then is supplying  
5 to somebody that supplies the consumer product or is  
6 downstream, and you need to have coordination with that  
7 downstream supplier to get your innovation to market, and  
8 that's going to vary from industry to industry.

9 The technical challenges are going to differ.  
10 And they are, again, going to vary over the life of the  
11 innovation.

12 And then appropriability conditions are going to  
13 vary because of the first-mover advantages or other  
14 things that are characterizing the industry.

15 And so, given all these, you know, work that's  
16 been done, you know, it's clear that it's a really  
17 complicated problem because there are all sorts of  
18 endogenous variables that are related. You're going to  
19 need to control for exogenous changes in demand over time  
20 if you're doing time series data. So you have one set of  
21 problems if you're trying to go cross-sectionally, across  
22 industries. You have a whole set of different challenges  
23 if you're going across time, which makes it very hard to  
24 do. And while it is easy to criticize what's gone  
25 before, you know, there has been much to learn -- that



1 has been learned as sort of those -- and ideas of what's  
2 important.

3 And so, you know, the conclusion of where we are  
4 today I would say is that there is no simple  
5 relationship, despite those early efforts to track down  
6 the Schumpeterian Hypothesis. But, nonetheless, you  
7 know, we know a fair amount about the fundamental  
8 economic relationships that underlie innovation.

9 So I'll turn it over to the next speaker.

10 MS. DESANTI: Thank you, very much, Phil. That  
11 was a sufficiently daunting introduction to this.

12 (Time Noted: 2:27 p.m.)

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1 MS. DESANTI: Our next speaker is Shane  
2 Greenstein. He's a professor at the Kellogg School of  
3 Management in Northwestern University. His research  
4 focuses on the economics of high technology, and this  
5 year he co-edited a book entitled Communications Policy  
6 in Transition: The Internet and Beyond.

7 Shane.

8 PROFESSOR GREENSTEIN: First of all, I want to  
9 thank the FTC for giving me the opportunity to speak.  
10 And before we start, I need to say I don't have any  
11 financial interest in any present or pending antitrust  
12 case, nor any recent ones, either.

13 I have written remarks, if somebody would like a  
14 copy with the footnotes and so on.

15 So a central question motivates the literature  
16 I'll discuss now. Do large firms with market power  
17 deserve special scrutiny in markets characterized by  
18 robust innovative activity?

19 This question motivates a lot of recent  
20 thinking, as well as very -- very old thinking about the  
21 relationship between market structure and innovative  
22 activity. And I was asked to provide a brief synopsis of  
23 the recent literature in particular and how it relates to  
24 the traditional literature, and so that's what I'm going  
25 to do.

1           Let me foreshadow my main message. Public  
2 policy should distinguish between environments where an  
3 intellectual property is effective and where it is not.  
4 And particularly where it is not, competition policy has  
5 to be concerned when a dominant firm uses non-innovative  
6 tactics to move the locus of competitive behavior away  
7 from innovative activity.

8           Okay. So what's the setting? Well, first of  
9 all, the economic benefits from commercializing  
10 technology are essential for modern economic growth. And  
11 successful commercial innovation enhances welfare,  
12 especially when it leads to lower prices and new  
13 services, even when both threaten the established order  
14 of business.

15           In these kinds of markets, they are  
16 characterized by a great deal of uncertainty, both in the  
17 business environment and in the technical environment.  
18 And as a consequence, most experts will have differing  
19 market forecasts and views about the best commercial  
20 options. Hence, it's difficult to evaluate competitive  
21 behavior and especially in a market structure that's  
22 potentially ephemeral.

23           Altogether, it's a pretty cautious setting for  
24 competition policy. The topic is important to be sure,  
25 but you have to begin from a relatively humble position.

1           And to be sure it's not the same as forbearance, but  
2           that's -- when you start from that position, at the end

1 low incentives to innovate, and the intuition behind this  
2 concern arises if you compare an inventor selling an  
3 invention to a monopolist and you compare that with an  
4 inventor selling into an industry with competitive  
5 supply, where otherwise things are equal.

6 The monopolist will be concerned about the  
7 cannibalization of monopoly rents he enjoys today,  
8 whereas the competitive firms will not be. And according  
9 to this argument, firms with market power do not spend as  
10 much on innovative activity. And in line with extension,  
11 some arguments in the same spirit, you can also show  
12 monopolists do not commercialize innovations as quickly.

13 A contrasting and I would call a traditional  
14 approach focuses on monopolists' use of innovative  
15 activity to preserve their present position. In this  
16 view, a forward-looking monopolist, identifying a threat  
17 from an entrant, who can credibly buy the invention,  
18 will, in fact, innovate robustly, or theoretically.

19 In general, an incumbent monopolist has more to  
20 lose from falling from a position of monopoly than any  
21 new entrant will have to gain from entering, and so  
22 monopolist incentives are actually higher in that vision.

23 Many researchers have held up these two views as  
24 directly contradictory. And I think -- first of all, let  
25 me venture an opinion. I think, actually, it's more



1 market power from protecting themselves from threats.  
2 While this insight is in line with some of the spirit of  
3 antitrust law, it's also impractical in practice. Policy  
4 makers are required by this sort of line of thinking to  
5 find information about, (a) the presence of monopoly, (b)  
6 the potential for another entrant, (c) the incumbent's  
7 calculations about the threat from an innovative entrant.  
8 And these are just -- you know, when you put them into  
9 practice, they are just awkward and it's actually quite  
10 difficult to do.

11 Okay. Now recent thinking in this line has  
12 begun to reframe the central question, particularly as it  
13 applies to large firms and that's where I'm going to  
14 spend most of my time now.

15 But the foundations for the recent thinking  
16 presumes we live in a world of widely-distributed  
17 technical knowledge, where many small firms have access  
18 to some, if not all, of the technical assets necessary  
19 for inventive activities.

20 In addition, commercializing those inventions  
21 involves use of real assets from both disinterested  
22 parties, such as venture capitalists, and deeply  
23 interested parties, such as incumbent firms. Entrants  
24 must incur entry costs to compete with entrants or,  
25 alternatively, make deals with them.

1           The crucial point in the new thinking is that  
2 each of these choices requires distinctly different  
3 investments. And actually, in practice, most small  
4 firms, if you talk to them, will tell you that they will  
5 treat these as mutually exclusive decisions.

6           This approach to thinking about innovation leads  
7 you to two questions right away. First, if the two  
8 parties cooperate, do the incumbents have assets that  
9 significantly raise the value of the invention in its  
10 commercial form?

11           Second -- oh, sorry. And as it turns out, I  
12 should say, policy arises in markets where incumbents'  
13 assets are typically valuable, which is to say, most  
14 innovative markets.

15           Second, and then the especially crucial, if two  
16 parties compete, can entrants effectively exclude the  
17 incumbent from imitating their invention? Most markets  
18 lie between two extreme situations, those where entrants  
19 can exclude imitation by an incumbent or somebody else,  
20 and those where they can't. Now, to be sure, the  
21 effectiveness of intellectual property in a particular  
22 patent law plays a key role in which situation arises,  
23 and so that's going to be an important insight we'll come  
24 back to.

25           When an inventor can exclude imitation, then





1 entrant's incentive to compete, build their own business,  
2 or choose among those options.

3 Now it's important to understand that the  
4 literature has pointed out there is a wide range of  
5 economic behavior that arises during bargaining and so  
6 I'm not going to pick on anyone in particular in this  
7 case. I just want to give you illustrative examples.

8 So, on the one hand, some large firms have  
9 developed a reputation for not walking away from  
10 potential deals with proprietary information. So for  
11 some years now, Cisco maintains strict policies. So, for  
12 example, Cisco has maintained strict policies about when  
13 it would buy a firm and for how much. Such  
14 predictability had a large influence on venture  
15 capitalists and small inventive firms that viewed Cisco  
16 as a potential partner. And Cisco's policies certainly  
17 altered inventor entrant incentives to develop products,  
18 even when Cisco was the target buyer.

19 Now, to be sure, the late '90s would have  
20 witnessed much innovation in communication equipment  
21 markets under any scenario. But I don't think anyone  
22 doubts that Cisco's actions induced a lot of small firm  
23 entry on the margin, much of it favorable to Cisco, I  
24 might add.

25 Now on the other hand, negotiations can also be

1 confrontational and certainly that matters also. So, as  
2 an example, it is well known that in the Spring of 1995  
3 Microsoft threatened to withdraw API support from  
4 Netscape, if Netscape refused their cooperative deal.  
5 Now even though API information was readily given to  
6 others, it was well understood by all parties that this  
7 was one of several carrots and sticks for eliciting  
8 cooperation. And Microsoft typically offered such  
9 carrots and sticks to small firms.

10 It was also understood by everyone that  
11 withdrawing API support would slow down the pace of  
12 innovative activity in Netscape temporarily and delay the  
13 introduction of new features to Netscape's products.

14 Now notice what the recent thinking is doing.  
15 It's widening the scope of the analysis. At the same  
16 time, it's providing a lot more nuance about innovative  
17 behavior.

18 Okay. Well let me cut to the chase. There is a  
19 lot of literature here that I'm summarizing quickly and I  
20 can give you references if you like. But, you know, what  
21 are the implications that are coming out of the recent  
22 thinking?

23 First of all, recent thinking is focusing  
24 competition policy questions in a particular direction.  
25 For policy purposes, this view requires information about

1 both structure and conduct. It first asks whether  
2 conditions exist so that a smoothly-operating market for  
3 technology can arise easily.

4 If not, it then asks whether incumbents have  
5 access to a wide arsenal of strategic tactics during  
6 bargaining and whether these tactics have consequences  
7 for innovation. This view suggests that policy should  
8 encourage the use of intellectual property in the service  
9 of making technology markets work smoothly, particularly  
10 when incumbent assets are valuable. That raises welfare  
11 for all parties involved.

12 At the same time, it also raises questions about  
13 the competitive tactics of powerful firms in particular  
14 environments where intellectual property is weak. And,  
15 finally -- and notice it suggests that the two situations  
16 are closely linked.

17 Okay. So now back to the main question. Does  
18 this recent thinking suggest that incumbent firms deserve  
19 special scrutiny? And the answer, I think so far, is  
20 yes. But to be fair, the thinking is not fully worked  
21 out.

22 So let me illustrate with a modest proposal  
23 motivated by recent thinking and then we'll take it from

1           First, does the incumbent firm possess market  
2 power and use it when bargaining with entrants?

3           Second, are the scrutinized tactics closely  
4 affiliated with non-innovative behavior?

5           And, third, is there a rational -- a rationale,  
6 excuse me -- under which this action is in users'  
7 interests?

8           So let me illustrate the test with an example  
9 and this time I really am going to pick on Microsoft,  
10 just to get the point across. The point, however, is  
11 broader than this particular example and you should take  
12 it as a broad point, not a specific one.

13           So in the PC industry in 1995, the OEM -- the  
14 original equipment manufacturers -- in this case, Dell,  
15 Compaq, Gateway, and so on -- they served as both the  
16 assembler and distributor for many users. The dominant  
17 upstream supplier of operating systems insisted on  
18 restrictions in its contracts with the OEMs that, in  
19 effect, foreclosed placing logos on the desktop from  
20 other applications which were visible when users opened  
21 the box.

22           These so-called first screen restrictions on the  
23 out-of-the-box experience were in Microsoft's interest,  
24 to be sure. However, by the three-part test, they look  
25 like anti-competitive actions. The market power test was

1 satisfied. If there had been effective competitive  
2 alternatives for PC operating systems, then exclusivity  
3 like this would not have been at all worrisome. The end  
4 users, hypothetically, alter their purchasing decisions  
5 regarding OEMs, if they cared to. However, in this case  
6 there was no serious alternative competitive choice to  
7 mitigate the -- and Apple's recent comeback

1           Okay. So according to this test then, these  
2 contract restrictions were anti-competitive in the sense  
3 that non-innovative tactics diminished innovative  
4 behavior. And more to the point, it suggested that only  
5 minimal contracting restrictions were appropriate in the  
6 setting, the idea being that once the product leaves  
7 Redmond, it's actually in society's interest to make sure  
8 that Redmond cannot protect itself from the harsh reality  
9 of user choice. That's what gives them the incentives to  
10 innovate in the first place.

11           I might add as an aside these restrictions also  
12 include some negotiations with Microsoft by making  
13 competing firms -- or firms who -- application firms who  
14 were thinking of competing with them, think twice about  
15 doing so.

16           Now this is an illustration of a broader  
17 principle. Competition policy can encourage dominant  
18 firms to compete by innovating. It can do this by  
19 discouraging powerful incumbents from using non-  
20 innovative tactics, discourage innovation of other firms.

21           The open question then is how far does this  
22 principle extend. For example, should public policy --  
23 antitrust policy selectively intervene to discourage  
24 powerful incumbents from using innovative tactics, such  
25 as patent suits and patent blocking, to discourage

1 innovation at other firms. And I think the honest answer  
2 is the recent literature has not wrestled enough with  
3 this question to give a general answer, nor to provide a  
4 complete dichotomy of the tradeoffs.

5 So what was the main message here? The main  
6 message: These issues that I'm describing here arise and  
7 I believe will continue to arise. Information technology  
8 markets, in which I do most of my work, endemically



1 And the closer that this gets society to innovative  
2 competition, the better.

3 MS. DESANTI: Thank you, very much, Shane. And  
4 I think we'll stipulate that Shane not only has no  
5 financial interests in any pending or recent cases, but  
6 that Shane speaks only for himself --

7 PROFESSOR GREENSTEIN: Absolutely.

8 MS. DESANTI: -- and none of his views should be  
9 imputed to anyone else sitting around the table today,  
10 especially since we have no respondents from Microsoft or  
11 Cisco and the Department of Justice, which is here,  
12 already has some issues that are in -- still in  
13 litigation. So we'll stipulate that for the record.

14 (Time Noted: 2:46 p.m.)

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1 taken place appear to have yet a pretty significant  
2 effect in terms of the nature of competition in various  
3 innovative markets. And I'll try to highlight some of  
4 those -- some of those implications here.

5 Clearly we don't have a lot of time to do it.  
6 These are complicated and interesting issues. But  
7 hopefully this will at least be suggestive of some of the  
8 issues that we explore -- explore later on.

9 First of all, just to emphasize the backdrop,  
10 though this has been highlighted in the talks -- talks  
11 before, and particularly the economists have done this  
12 whole body of work on what might be called technology  
13 races or patent races, where we see competition between  
14 firms in high-technology industries, and highlighted how  
15 intensely this competition can translate into even small  
16 advantages leading to firms emerging with very dominant  
17 -- very dominant positions.

18 And, clearly, this is saying that it's not only  
19 true in theory, but also very much in practice. And one  
20 can sort of point to many situations where venture  
21 capitalists have been floated perhaps a dozen business  
22 plans, all working within closely-related areas, and  
23 where it's clear that only one or two of those are really  
24 going to emerge as dominant -- as dominant firms.

25 I mean -- sort of thinks, whether one thinks

1 about corporations or venture capitalists, trying to  
2 choose through these -- these competing proposals, what  
3 one often sees is that really, ultimately is very  
4 critical in the decision making process is the  
5 intellectual property holdings -- the intellectual  
6 property holdings is absolutely -- is absolutely  
7 critical.

8 Now the -- having established this sort of  
9 backdrop of very intense competition in numerous high-  
10 tech industries, I'm going to turn and sort of talk about  
11 some of the changes in patent policy, including -- this  
12 is issues which are very familiar to many of you -- many  
13 of you here.

14 Clearly and, you know, the sort of real sea  
15 change that took place in American patent policy was less  
16 a sort of outright legislative change of policies, but  
17 rather something that was presented at its time as being,  
18 you know, merely a procedural -- procedural shift. And  
19 in particular, as many of you know, prior to 1982, we had  
20 a situation where the patent cases were held -- treated  
21 like any other and essentially what -- because of the  
22 Supreme Court, which is very unwilling to handle patent  
23 cases, you ended up with a situation where there was a  
24 great deal of disparity between the treatment of the case  
25 -- of patent cases in various districts.

1           For instance, when you look at the win rate of  
2           patentees, it was -- it differed by a factor of two  
3           across various -- various districts. And there was a  
4           sense that this was sort of quite an unappealing state of  
5           affairs, and that the way to address this was to sort of  
6           create this unified appellate court that would hear all  
7           patent -- patent cases.

8           But, you know, as many people have discussed,  
9           and certainly Rob Merges is one of most articulate -- you  
10          know, the most clearest articulations of this point, well  
11          it was presented in a purely procedural kind of way. It  
12          was at least anticipated by some that this was also lead  
13          to a change in patent policy. And in particular, you  
14          know, the -- Rob's accounts and others have suggested  
15          that the staffing of the CAFC was, you know, by and large  
16          with judges who were very familiar with and sympathetic  
to patent policies.15t cdnous disa-24 cf W-ow, us disal8npurely

1       shortly thereafter.

2               And similarly, one saw not only simply a greater  
3       willingness to uphold patentee rights, but simply -- but  
4       also the extension of patent coverage in different areas,  
5       a sort of greater latitude in terms of calculating  
6       damages, willingness to have preliminary -- preliminary  
7       injunctions and a whole variety of other -- a whole  
8       variety of other shifts.

9               Now this is, of course, a very rich topic of its  
10      own, but what I'm going to focus on is, instead, the  
11      consequences and, in particular, the consequences in  
12      terms of competition and innovative in high-technology  
13      industries.

14              In particular, what one sees is a whole set of  
15      consequences taking place -- taking place here. The most  
16      obvious, of course, is just simply the resources that  
17      have gone into patenting. As Sam Kortum and I  
18      highlighted, the U.S. -- U.S. corporations roughly  
19      doubled their patent filings in the last -- in the last  
20      dozen years. And while we've argued that to a certain  
21      extent this reflects the rate of acceleration and the  
22      rate of technological change, it also appears to reflect  
23      the fact that, again, holdings are more -- more valuable.

24              Similarly, we have seen quite a dramatic  
25      increase in terms of litigation surrounding --

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1 and 1980s. And where they have established groups, often  
2 under the aegis of their general counsel, which have gone  
3 out and very aggressively litigated against -- against  
4 smaller firms.

5 And certainly, when one looks at some of these  
6 examples, you really have to be concerned, saying, you  
7 know, isn't this really in some sense innovation tax,  
8 where we have some of the youngest, most promising  
9 companies being basically -- being basically, in many  
10 cases it seems, being -- you know, almost sort of forced  
11 to -- forced to make these payments. Because certainly  
12 when one talks to many of the younger and smaller firms,  
13 the argument that one hears is that, you know,  
14 essentially the cost of uncertainty around litigation,



1 the way in which some of the largest and most established  
2 biotech companies have apparently used their patent  
3 portfolios -- Bronwyn Hall and Rose Marie Ziedonis have  
4 done work in the semiconductor industry and, again, sort  
5 of highlighted how a few well-established, but not  
6 particularly -- particularly well-established  
7 semiconductor firms, but whose innovation seems to have  
8 dramatically fallen off, have basically been able to  
9 succeed in, it seems very much, in a sort of holdup  
10 strategy, extracting a lot of rents from smaller firms  
11 within the industry.

12 The sort of second consequence I want to  
13 highlight is really on the other side of the coin, which  
14 has less to do with, you know, sort of an established,  
15 perhaps less -- you know, on this sort of downward glide  
16 path -- a firm, you know, essentially extracting rents  
17 from smaller, newer competitors, but rather with the sort  
18 of growth of individual inventors who have essentially  
19 tried to take somewhat of a holdup -- holdup strategy.  
20 In many cases they've been able to exploit the fact that  
21 while, for instance, one competitor would be reluctant to  
22 threaten another one with a preliminary injunction, lest  
23 they also have that threat turned on themselves, here  
24 they can essentially, you know, sort of perhaps  
25 unilaterally engage in scorched earth kind of litigation

1 tactics, simply because they don't have much to lose  
2 themselves.

3 And certainly again one can point to many  
4 examples where large firms have decided that, given the  
5 sort of uncertainty of litigation, particularly an  
6 environment where, you know, highly complex commercial  
7 disputes are often being tried, you know, in front of  
8 juries and one simply doesn't know what's going to  
9 happen, that it is sort of an economically rational  
10 response simply to settle in those cases.

11 I think you know, this is clearly an issue in  
12 many industries. I think it is particular severe, both  
13 these problems, in emerging industries.

14 When one thinks about what are some of the  
800) eg isse isssevere, both14

1 several times higher than that, that the Patent Office  
2 can -- Patent Office can retain.

3 It also seems the Patent Office has a lot of  
4 difficulties in situations when one has a lot of prior --  
5 art there that isn't patented, and where it is sort of  
6 searching for it and hunting it down is particularly  
7 difficult.

8 I'll just talk very briefly about one example  
9 and then I'll wrap up within my allotted 15 minutes. And  
10 simply I'll just highlight, you know -- we have pointed  
11 out many examples of problematic -- you know, this sort  
12 of way in which the lack of experience on the part of  
13 patent examiners is sort of translated into, you know,  
14 sort of distorting competitive effects. I'll simply  
15 point to this -- one example of financial patents. And  
16 this is a Daugherty patent, which has to deal with option  
17 pricing, which -- which is really the first in a series  
18 of three patents that have issued to date dealing with  
19 pricing of options.

20 Essentially what this is is a process for  
21 executing an expirationless option transaction. I'm  
22 pretty clear the argument is that they essentially value  
15

1           And, essentially, it is quite interesting to  
2 look at the sort of description of the prior art here.  
3 Because what they argue is that even though there have  
4 been -- that there have been options that have been  
5 covering -- you know, essentially, finite-lifed options  
6 -- in particular, the work of Myron Schultz, and Fisher  
7 Black, and Bob Merton, which got a -- which was in the  
8 early 1970s, and was honored with the Nobel Prize a few  
9 years ago, is, you know, sort of work that looked at  
10 finite-lifed options. They say that basically when you  
11 look at infinitely-lifed options, there has been no work  
12 done in this area.

13           And similarly, they sort of -- you know, and  
14 when one looks at the examination file, the examiner sort  
15 of dutifully typed in the word "expirationless option"  
16 and couldn't really find anything there, and basically  
17 sort of signed off on the thing.

18           Now it turns out, though, that there is this  
19 whole body of work on something called perpetual options,  
20 which are basically the same thing as expirationless  
21 options. It's just simply a different name for this  
22 thing. And it turns out that not only was this -- it  
23 turns out there's actually an easier problem, looking at  
24 an option which has an infinite life and a finite life,  
25 and basically people solved this problem in the 1960s.

1 Paul Samuelson and my colleague, Bob Merton, among  
2 others, did a whole series of papers that basically  
3 figured out how these things work. And now we suddenly  
4 see someone emerging with a whole series of patents on  
5 these things and they are basically now -- Mr. Daughtery,  
6 who is an individual inventor down in Americus, Georgia,  
7 has basically set up a little company and he's basically  
8 been knocking on various doors of Wall Street saying,  
9 "I'm going to sue you because I've got this infinite  
10 option pricing thing here."

11 And once again, it seems clear that it's not in  
12 any sense malfeasance on the part of the Patent Office,  
13 but simply just that the examiner didn't have the kind of  
14 experience of knowing where to look in these kinds of  
15 situations. It sort of introduced all these kinds of  
16 competitive distortions.

17 Clearly, this is a hard area to shift policy in.  
18 And I think we could talk -- there's far too much here  
19 and we could probably talk about some of the barriers, in  
20 terms of shifting patent policy. I think I'll hold off  
21 until the question and answers in terms of talking about  
22 these issues.

23 I think that if we were to say, what -- how can  
24 these barriers to change be addressed, I think, you know,  
25 certainly one of the sort of biggest steps is something

1 that's really taking place here as part of these  
2 hearings. Particularly, I think that when we look to the  
3 patent arena, it seems that there has often been lawyers  
4 talking to lawyers and economists talking to economists,  
5 and we really haven't had a chance to have much dialogue  
6 between us. So I sort of see this very much as sort of  
7 an important first step.

8 But, nonetheless, I think it is a challenging  
9 process. And in particular, the fact that in some sense  
10 patents have harmful effects to very many people, but in  
11 many cases it's sort of scattered around these  
12 industries. Clearly patents also have helpful effects,  
13 but the harmful effects, which are there are sort of very  
14 much dispersed and scattered. Clearly, you know, there  
15 may be a relatively small number of people who gain a lot  
16 from the litigation.

17 If I were to sort of recommend a first step as  
18 we start thinking about policy issues and areas to  
19 address, I think this whole question -- you know, clearly  
20 patents pose many complex questions in terms of how they  
21 impact competition policy. But certainly addressing some  
22 of the questions around patent quality I think is a very  
23 important first step.

24 With that I will just sort of wrap it up and  
25 head back to my chair.

1 MS. DESANTI: Thank you, very much, Josh. We  
2 certainly will want to talk with you and with Shane, as  
3 well, about additional research that you both have done  
4 in this area.

5 (Time Noted: 3:01 p.m.)

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1 MS. DESANTI: Our next panelist, of the first  
2 four that we're going to have -- we'll finish up with  
3 Janusz, then we'll have a discussion, and then take a  
4 break.

5 Janusz Ordover is an economics professor at New  
6 York University and a former Deputy Assistant Attorney  
7 General for Economics at the Department of Justice,  
8 Antitrust Division. He is published widely on the  
9 intersection of antitrust and intellectual property, to  
10 say the least, and we are delighted to have him here.

11 PROFESSOR ORDOVER: Thank you, very much. I  
12 have to apologize for being low-tech, but my dog ate my  
13 Power Point presentation.

14 PANELISTS: Yeah.

15 PROFESSOR ORDOVER: I don't even have a dog.

16 I was asked to speak on a question that I think  
17 is on everybody's mind, which is to say whether or not  
18 conventional antitrust policy is capable of meeting the  
19 challenges of the new economy. This is a very old  
20 question. I think probably many of us spoke about it  
21 over the years. And the usual answer that is given is,  
22 "Yes, but."

23 So what I'd like to do today is to just point  
24 out a couple of these "buts" that I think are  
25 interesting, at least given the kind of interest that I





1 just merely falling average costs is not enough to lead  
2 to the feared outcomes which may include a very small  
3 number of active participants or even some sort of  
4 monopoly marketplace.

5           Posner also speaks of modest capital  
6 requirements. I'm not certain whether or not this is  
7 true. In particular, I doubt that it's true actually in  
8 the hardware sector of the new economy. And, moreover, I  
7

1 of entry and exit across the range of industries that are  
2 normally characterized as being the new economy industry.

3 The point about which Margaret Guerin-Calvert  
4 will speak extensively and I will address also, but  
5 briefly is the fact that the new industries are  
6 apparently characterized by network externalities, and I  
7 hope that we can actually have some discussion as to  
8 whether or not these are critical to our understanding of  
9 how these various sectors do develop or not. And I think  
10 even at this table, there is a great deal of  
11 differentiated views on whether these network  
12 externalities are something that economists cooked up in  
13 order to raise their consulting fees, or whether or not  
14 this is, in fact, something that is real and the policy  
15 makers ought to address in the assessment of how -- how  
16 enforcement should imply this.

17 Nonetheless, given the network externalities

1 perhaps enhancing or prolonging the existing market power  
2 of the group of standard setters, or whether it can be  
3 hijacked by a single firm for the purposes of extending  
4 and prolonging its market power.

5           Posner finally identifies a feature that is not  
6 only -- that's important, I guess, in the high-tech --  
7 this new economy and many others, and that is the extent  
8 of vertical integration, as well as substantial incidents  
9 of transactions between firms which are both competitors  
10 and cooperators. And I think there is a nice book by, I  
11 think Barry -- Dick Sid called Co-option that tries to  
12 meld these two concepts together where firms both  
13 cooperate and compete, and how the role of co-option  
14 affects the way the market dynamics evolved.

15           Let me say a word or two about the point number  
16 one, which is these falling average costs and what does  
17 that mean for antitrust policy, as I see it.

18           The obvious fact that needs to be borne out and  
19 I think that all of you know about it is that in such  
20 industries with a falling average cost, equilibrium  
21 market structure is likely to contain new firms and the  
22 survivors should be likely pricing above some version of  
23 marginal cost.

24           In other words, in such industries with falling  
25 average costs, the standard benchmark for what

1 constitutes competitive price is no longer sustainable.  
2 Marginal cost is not the right benchmark and not the  
3 right floor and, therefore, the question becomes, well,  
4 what is it.

5 There are several possibilities that can be  
6 suggested, but one issue that I find more interesting  
7 than that is whether or not the new econometrics of  
8 market power that is being practiced here, as well as  
9 through the Justice Department and on the pages of the  
10 Rand Journal, in which an econometrician tries to  
11 estimate some version of the elasticity adjusted Lerner  
12 Index, i.e., the negation of price above marginal cost,  
13 is the kind of econometrics that's all interesting.

14 Let's say we identify a situation in which there  
15 is such a high deviation, and what do we make out of  
16 this. Does it mean that we have identified an industry  
17 or a firm -- a market power industry that behaves in a  
18 way that is somehow away from the competitive ideal.  
19 Well the answer may be yes, or it may be no. It's  
20 probably true, when we're talking about such things as  
21 steel. On the other hand, is it true when we're talking  
22 about such things as -- content or content industries.

23 So I would like to throw on the table or to this  
24 audience, who is adept at the econometrics much more than  
25 I do, probably, a challenge to see whether or not we need

1 to revise the way we do the market power econometrics to  
2 meet the -- the challenges of the new economy.

3 Moreover, when it comes to the more mundane  
4 issue that does not require such heavy -- heavy-duty  
5 mathematics and tools, if marginal cost pricing is not  
6 the correct standard, then there is also the case that  
7 unsophisticated pricing, pricing which charges a customer  
8 ten cents per widget, is not likely to emerge in such a  
9 marketplace. What is likely to emerge is what I call  
10 sophisticated pricing, which will involve all kinds of  
11 pricing arrangements, starting from the most simple  
12 quantity discounts, to bundling, to tying, to various  
13 ways of dealing with the fact that the firm confronted  
14 with the falling average cost and needing to recover  
15 substantial up-front investments will have to implement  
16 pricing principles that deviate from the standard price  
17 equals marginal cost precepts.

18 Well that's all fine and dandy, but for the  
19 simple fact that antitrust historically has taken a tough  
20 look at these kinds of sophisticated pricing strategies.  
21 Now I don't even want to refer to the Robinson-Patman Act  
22 because my throat constricts when I hear those two words  
23 -- or three. But obviously it is a problem and it could  
24 be an issue even more so as we begin to realize that the  
25 firms do have to, in fact, deviate from the standard

1 textbook pricing principles.

2           Moreover, when pricing is sophisticated, it  
3 could be the case that the perception of such pricing may  
4 lead the antitrust enforcer to infer market power. We  
5 heard many times over from such luminaries as Mike  
6 Scherer that the evidence of price discrimination of

1 lock in the customers, to create an immoveable installed  
2 base.

3 It's also the case, as Professor Lessig pointed  
4 out in some of his writings, in the new economy the  
5 pricing that can be used to extract value from consumers  
6 is likely to be enhanced by virtue of being able to  
7 control -- to monitor usage much more so than in the  
8 traditional economy. So that when the consumer tries to,  
9 for example, listen to music over the Internet, or when  
10 the consumer tries to read a book over the Internet, all  
11 kinds of new pricing paradigms can be implemented, which  
12 may or may not go beyond what has been intended in the  
13 intellectual property law as to the rights of the -- of  
14 the owner of the copyright, for example.

15 Let me quickly move on to the -- some other  
16 features that we have already identified. And, in  
17 particular, the interaction between falling average cost  
18 and network externalities. I won't say too much about  
19 it, but I must, by virtue of the fact that this subject  
20 matter came up in this very room some 20 odd years ago,  
21 and I always have to return to my youth, given my  
22 advanced age.

23 The issue is, in fact, of how one looks at  
24 predation, how one looks at these practices that may  
25 appear to be anti-competitive in a world in which the



1       apparent battle is for the market position, for the  
2       market, so the -- battle to be a market leader.

3               Some years ago Bobby Willig and I tried to model  
4       such a scenario and not necessarily successfully, in part  
5       because we really didn't quite understand how one deals  
6       with the issue of intertemporal scale and scope  
7       economies, which is something that, of course, is the key  
8       driver of the network effects, wherein the value of the  
9       network is profoundly related to the number of people  
10      that subscribe to the network.

11              In such a setting it appears that the incumbent  
12      firm or the -- the two firms that can try to fight for  
13      the market, has a very strong incentive to price actively  
14      and aggressively in the first period. Willig and I  
15      suggested that the one way to gauge whether that kind of  
16      aggressive pricing goes beyond the pale of what's  
17      permissible, is to ask whether or not a firm that where  
18      confronted with a viable survivor -- surviving competitor  
19      would, indeed, be willing to engage in that kind of  
20      aggressive pricing -- i.e., subject to a competitively  
21      viable rival, would pricing of that sort be, in fact,  
22      profitable.

23              And it's easy to calculate whether it would be  
24      or would not be. In the event in which the rival's  
25      ability to constrain, hypothetically even, to constrain

1 the entrant or the incumbent firm -- the incumbent firm,  
2 sorry -- is independent of the actions in the first  
3 period. You can hypothesize that a firm can always come  
4 back, as the Chicago school hypothesizes, at the same  
5 marginal cost or same cost level as it did prior to its  
6 demise.

7 But, in fact, in the case of network economies,  
8 a situation of that kind of network externalities, this  
9 is no longer the case. While, indeed, it's true that  
10 perhaps firms' costs do not change, the equality or the  
11 attractiveness of its product changes significantly. If  
12 the firm won no customers during the first period, then  
13 you will have to be extremely aggressive in order to  
14 capture the new cohort of customers to its offering.

15 And, in fact, the predatory pricing is not  
16 designed as much to raise the rival's costs, but rather  
17 to lower the perception of the quality of its product by  
18 really denying to it the customer base. And there are  
19 actually some ways of handling that problem by  
20 recognizing that the firm in the first period should be  
21 permitted to aggressively bid for the role of the market  
22 survivor, but at the same time it should not bid in such  
23 a way as to reflect in the prices that it's willing to  
24 charge the harm that it thereby inflicts on the rival  
25 firm.

1           Now it's easier said than done. What it exactly  
2 means in practice, perhaps what it means in practice is  
3 that pricing ought to be constrained in some way, but the  
4 recognition that when the second round of competition  
5 does arise, hypothetical entrant would be there still at  
6 the level of cost or quality of product that it would  
7 have had it actually won the first round of competition.

8           I have no idea whether this prescription  
9 actually generally conduces to higher social welfare than  
10 some other prescription, but it's not different from the  
11 proposal that is due to Gilbert and Newberry in their  
12 work on the incentives of the monopolies to preemptively  
13 bid for valuable intellectual property. So there is a  
14 link between that work -- it goes back, I think, a decade  
15 or two, and the modern set of issues that arise from  
16 battles for the market.

17           As I said, I believe that this particular  
18 proposal I think is consistent, both with the work that  
19 Willig and I did some years ago, but it actually tries to  
20 capture the issue of -- of the fact that the rivals may  
21 be disadvantaged merely by the fact that they cannot  
22 compete in the second period on the same footing.

23           Let me say one -- two words about two other  
24 things. One, because of the issues of vertical --  
25 vertical -- and vertical integration, as well as the

1 frequent transactions between buyers and competitors, and  
2 collaborators, the issue of access to the competitors or  
3 to the incumbent's assets becomes critical, from my  
4 perspective.

5 The fact that there is extensive vertical  
6 integration suggests that the -- one of the firms may  
7 have, in fact, control over scarce assets. Whether they  
8 rise to the level of bottleneck or somewhere below that  
9 is subject to debate in any particular case. But it's  
10 quite clear that access to the assets of the firm is  
11 absolutely essential, in some circumstances, in order to  
12 enable competition to move forward.

13 In such a situation, one can argue that some  
14 kind of open access may be the appropriate policy. Now  
15 this is a fool's errand because to use the word "open  
16 access" opens up more problems than it closes.

17 In particular, it is very hard to tell what  
18 exactly the open access means. It could mean a lot of  
19 different things, which may turn on the quality of the  
20 access being provided, the timing of the access that is  
21 being provided, the ability of the firm that controls  
22 these scarce assets to actually define what it is that  
23 the firm seeking access will be able to do with the --  
24 with the assets at issue.

25 Secondly, when one talks about open access, one



1 component of risk is introduced.

2 Finally, we have started by saying that in the  
3 new economy is the competition for being the leader in  
4 the market. This ex ante competition is so critical.  
5 Well that is true and I believe that the main role of the  
6 enforcers of antitrust in the new economy ought to be, in  
7 fact, to ensure that such competition for the next rounds  
8 of technology is fostered, facilitated, as opposed to  
9 distorted through the conduct of both the incumbent  
10 firms, as well as potential entrants.

11 Thank you, very much, and I look forward to the  
12 discussion.

13 MS. DESANTI: Thank you, very much, Janusz.

14 (Time Noted: 3:23 p.m.)

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1 MS. DESANTI: Now we'd like to turn to a  
2 discussion for a few minutes, bringing in Ray Chen from  
3 the PTO, and Sue Majewski from DOJ, and Hillary Greene,  
4 also from the FTC.

5 And I will use the moderator's prerogative to  
6 start out with a question. We have gone a long way in  
7 this discussion. We have covered a huge amount of  
8 territory, starting with early research on competition  
9 and innovation, and ending up with new models of  
10 competition and what does competition mean, and injecting  
11 some intellectual property concepts along the way.

12 I'd like to go back to Phil Nelson and ask you a  
13 question about some of the research that you were  
14 reporting on. Is it correct to say that R&D expenditures  
15 are used in that research as a proxy for innovation? And  
16 what is your sense of the extent to which that's a viable  
17 proxy for innovation?

18 MR. NELSON: The answer is yes. In the early  
19 literature R&D to sales was used as a proxy for  
20 innovation. There is substantial discussion and  
21 literature whether that's a wise thing to do because you  
22 really are more interested in sort of the outputs of the  
23 innovative process, rather than the inputs, and observing  
24 the inputs doesn't necessarily track the outputs, because  
25 people might be inefficient innovators.

And so it's a matter of trying to use the

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1 inconsistent with what Josh was describing. It seemed to  
2 me it wasn't.

3 PROFESSOR LERNER: I'll answer it somewhat along

1       again, some -- you know, some empirical evidence, at  
2       least from biotechs and semiconductors that suggests some  
3       real concerns about some of the very largest and most --  
4       you know, most aggressive patentees and what some of  
5       implications have been for innovation in those industries  
6       by newer and smaller firms.

7               MS. DESANTI: Can you speak more to that? And  
8       in particular I'm wondering if you could add something on  
9       the research I know you've done on competition for  
10      venture capital.

11             PROFESSOR LERNER: Well maybe I'll take a stab  
12      at that. First of all we can certainly see many examples  
13      where when you see a new emerging -- new emerging  
14      industries and where essentially there's been an effort  
15      on the part of established players to do a bit of a sort  
16      of land grab into that territory in the way of, you know,  
17      trying to assert property rights.

18             I mean, for instance, we did a case study a  
19      number of years ago, if anyone is interested in it, on  
20      essentially Unisys and their strategy regarding the  
21      Internet, in particular, you know, sort of taking an old  
22      set of patents, in terms of various kinds of compression  
23      algorithms and asserting it regarding the GIF format, and  
24      essentially -- you know, their sort of strategy is to try  
25      to use that as a sort of way to go after a whole variety

1 of smaller, less established Internet content developers  
2 and so forth.

3 More generally, I think that when we start to  
4 look at high-technology industries, what we see is that  
5 the fear of -- I mean, as organizations look for venture  
6 capital financing, venture capitalists are in a role of  
7 doing an enormous amount of screening. Typically we see  
8 ratios of somewhere on the order of 100-to-one in terms

1 capitalists being pressed for time, they're not even  
2 going to -- you know, the presumption is, when there is  
3 smoke, there must be fire there, or at least there's  
4 enough -- enough to sort of scare me away from even  
5 looking at and considering this company more seriously.

6 PROFESSOR ORDOVER: One comment or question,  
7 really. I'm perplexed by what I just heard. In view of  
8 the fact that -- it's my understanding if I have a patent  
9 I have the right to exclude those who likely infringe  
10 from enjoying the fruits of my innovation.

11 So when we talk about the -- when we talk about  
12 the effects of these concerns about litigation, do we  
13 have -- do you think that it's possible to formulate a  
14 rule or something that would say you can assert this  
15 particular piece of intellectual property in that way,  
16 but not in some other way?

17 What is it -- what is it that we can accomplish  
18 or are those adverse effects essentially built into the  
19 concept of intellectual property rights, as a right, or  
20 is it something that goes beyond the right and now  
21 assumes there is abuse of that right in a way that can be  
22 identified, that can be prevented, that the FTC can step  
23 in and say, "You can't do that"? I was trying to see if  
24 we could get some --

25 PROFESSOR LERNER: Can I answer that question?

1 I think it's an excellent question. And I guess, to a  
2 certain extent, you know, the sort of difficulties of  
3 really trying to police the litigation process is  
4 somewhat what I sort of went for in terms of emphasizing  
5 the -- the importance of trying to get patents right at  
6 the time that they are actually being issued. In the  
7 sense that if they can be -- you know, essentially,  
8 greater clarity and greater quality, in terms of patents  
9 being -- at the time that they are being issued, I think  
10 would forestall a lot of these problems.

11 Just -- if I can just go on for one more second.  
12 You know, I think back to an example of -- the example of  
13 a roundtable we had perhaps a couple of years ago on  
14 business method patents at the Patent Office, where  
15 Commissioner Dickinson at the time was sort of talking  
16 and saying, "Well my major goal, in terms of business  
17 method patents is going to increase the time that the  
18 average examiner spends in terms of examining them from"  
19 -- I forgot the precise numbers, but basically from  
20 around 11 hours per patent to 12 hours per patent.

21 And when one thinks about, you know, the sort of  
22 challenges that an examiner has, in terms of going to  
23 this very complex area and having, you know, sort of very  
24 tight time frame to really learn about it and really  
25 understand what's going on, it's just there's something

1 fundamentally problematic about the -- about the system.  
2 And I guess I've been much more supportive of efforts to  
3 try to bring in, you know, sort of much more of -- sort  
4 of information from third parties, in terms of through  
5 publication of the applications, as getting sort of third  
6 parties to make inputs, and sort of really opening up the  
7 review process. Because I think that even if you were to  
8 give an examiner 20 hours, their ability to really be  
9 able to, you know, assess what the quality of the patent  
10 is, is going to be -- is going to be quite limited.

11 MS. DESANTI: Stan.

12 PROFESSOR LIEBOWITZ: Yes. My question was  
13 actually related, but it wasn't clear to me, when you  
14 were talking about the deleterious effects of these  
15 patent pools that the older firms have, if you're saying  
16 that essentially they are bringing frivolous suits  
17 because they are big and the other guys are small, and  
18 they have bigger legal staffs and the other guys don't,  
19 and this is just a way to get them in court and make them  
20 spend money, and there is really nothing behind it, which  
21 I can see easily agreeing, yeah, that's definitely  
22 detrimental.

23 The reverse is the case that if it's really a  
24 legitimate claim, then we're just either saying that  
25 there is something wrong with the contracting going on,



1 where they can't seem to reach a reasonable agreement, or  
2 that we're just looking at the back side of a balance  
3 that we have sort of drawn, which is that you give people  
4 a restriction on use, which is a monopoly, and we hope  
5 that that provides more of the activity in the first  
6 place. And by focusing only on the restriction, you say  
7 it's deleterious, but we can't really do that when there  
8 is presumably a balance there and you have to look at the  
9 whole thing.

10 So is it the first one, that it's -- they are

1 quality of many cases, the patents themselves, as well as  
2 the sort of aggressiveness of many of these firms, in  
3 terms of seeing intellectual property as a business unit  
4 and essentially litigation as a business unit, is the  
5 real concern.

6 PROFESSOR LIEBOWITZ: So would you think  
7 something like having the loser pay and maybe -- you  
8 know, treble damages is something that might be a way  
9 around that?

10 PROFESSOR LERNER: Well I think there has been a  
11 big law and economics literature on this and it hasn't  
12 really come up with -- you know, it certainly doesn't  
13 imply that that's some sort of -- you know, sort of magic  
14 bullet that's going to solve problems of litigation. In  
15 fact, in some of the models, I think when you have this  
16 sort of English rule kind of litigation, you actually get  
17 more litigation, rather than -- rather than less  
18 litigation.

19 MS. DESANTI: Okay. Ray?

20 PROFESSOR ORDOVER: Much depends on the relative  
21 risk aversions of the parties.

22 PROFESSOR LERNER: Sure.

23 MR. CHEN: There's a lot of things that have  
24 been going on that have prompted me in my thinking to  
25 answer this question about nuisance suits or frivolous

1 lawsuits that are really an abuse of the patent by a  
2 patent owner. I'm pretty sure there is a line of case  
3 law by the Federal Circuit where a patent owner would be  
4 punished for engaging in that kind of unlawful conduct,  
5 under -- I believe in some type of unfair competition  
6 theory. So that certainly exists within the Federal  
7 Circuit.

8           Actually, there's a lot of points that I would  
9 like to bring up, but first of all, let me reassure the  
10 panel and the audience that an examiner doesn't spend  
11 only 11 or 12 hours in examining a patent application. I  
12 understand that it's not a lot of hours that they do, in  
13 terms of an exhaustive search, where they have perfect  
14 information of the prior art, but it's not -- it's  
15 certainly not that limited number of hours.

16           As to Professor Lerner's finance patent example,  
17 first of all, we would always, at the PTO, as I'm sure  
18 the professor did, first warn people that you need to  
19 look at the claims of the patent first and not just the  
20 overall specification, which can be much more broad than  
21 the claims itself, which often times the patent owner is  
22 forced by the examiner, through the examination process,  
23 to add several more elements and limitations into the  
24 claims.

1       about the re-examination procedures we have in the PTO,  
2       where this is basically a mechanism where, after a patent  
3       issues, the patent can be hauled back into the PTO, based  
4       on new prior art, that hadn't been considered by the  
5       examiner in the first instance.  And this is something  
6       that really any party can do and it seems like it's a  
7       relatively cheap and quick administrative way to review a  
8       patent and at the same time avoid the burdensome costs of  
9       litigation.

10               PROFESSOR LERNER:  I'm just going to -- I mean,  
11       think that -- you know, first of all, I should have  
12       admitted this far along -- far from now.  I'm not a

1           expressed about whether one is really going to be able to  
get a fresh -- fresh glance at some of these is so-5555

1 minutes before four, to be precise.

2 (Whereupon, there was a brief recess.)

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1 MS. DESANTI: Professor Larry White will speak  
2 to us some more on network effects and competition.

3 Professor White is an economics professor at New  
4 York University's Stern School of Business. He is a  
5 former Director of the Economic Policy Office of the  
6 Antitrust Division of the Department of Justice, and he  
7 has published most recently on antitrust economics,  
8 competition, and policy.

9 PROFESSOR WHITE: I'm a low-tech guy. I'm the  
10 wrong guy -- save the situation, please. This is the  
11 time I should have brought my overhead transparencies. I  
12 knew it.

13 MS. DESANTI: While we are waiting for this to  
14 come up, Ray, did you want to raise a couple of other  
15 issues?

16 MR. CHEN: Oh.

17 MS. DESANTI: We'll interrupt you. We'll  
18 interrupt you when this comes up.

19 MR. CHEN: I'll be very brief for purposes of  
20 the time. I know that, you know, Professor Lerner  
21 brought up the concern about emerging technologies and  
22 whether -- and how the PTO can be equipped to handle  
23 examining such technologies and all I can say is,  
24 although the perception is we're a slow moving dinosaur,  
25 there is something called the Business Methods Patent

1 Initiative that in 2000 Former Commissioner Todd  
2 Dickinson instituted, where there has been a lot more of  
3 an outreach within the industry for seeking out all forms  
4 of non-patent prior art literature, that examiners are  
5 required to review before they issue a patent in that  
6 category of applications.

7 MS. DESANTI: I'm sorry to interrupt. And I  
8 just will flag for the audience, we are going to have  
9 some remarks about that initiative next Wednesday, when  
10 we have sessions out in Berkeley, so we're looking  
11 forward to learning more about that.

12 Professor White.

13 PROFESSOR WHITE: Thank you. I'm Larry White.  
14 I'm very pleased to be here this afternoon and I was  
15 asked to talk about network industries and innovation and  
16 I will try to tie it into the intellectual property  
17 theme, as well. The hour is late and so I'm going to try  
18 to just move things along as quickly as I can.

19 First, what do we mean by networks? Well it's  
20 nodes connected by links. That doesn't convey a whole  
21 heck of a lot, so let me try to give you some more  
22 concrete examples.

23 And here is a stylized link. It's a very -- a  
24 stylized network. It's a very simple star network, but I  
25 -- when I start thinking about networks, this is one of



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1 networks connected by a trunk line, and this can describe  
2 a telephone system, two local exchanges connected by a  
3 long distance line; a railroad system, two local  
4 marshalling yards, where the freight is collected and  
5 then disbursed, and the long distance trunk line in  
6 between; airlines with hubs -- two hubs and you collect  
7 traffic at a hub and send it to another hub, and then  
8 disburse it. Electricity, as well. You could think of  
9 one of the clusters as a set of generating units and the  
10 other as a set of users, and you've got a coordinating  
11 mechanism, the high voltage transmission lines, the step  
12 down, and the -- and the distribution. And again, here  
13 you have two central switches. I've labeled them "S1"  
14 and "S2." Remember them.

15 All right. Now network industries are  
16 different. The number of the speakers in the previous  
17 hour and a half talked about network externalities. And  
18 going back to one of those stars, the more users you have  
19 connected to the network, the more value there is for  
20 everyone. Think of a telephone network. Think of a fax  
21 network. Think of airlines, railroads. Any of those I  
22 would describe as a two-way network in the sense that any  
23 of the external nodes can send or receive. And in that  
24 kind of network, the network of value, the extra value  
25 for an extra user is direct. When another user joins the

1 network, he or she is doing it for his or her own value,  
2 but his or her presence also adds value for the others.  
3 And so this is a direct network externality. It adds  
4 value, up to the point where congestion through, say,  
5 that central switch may start decreasing value because  
6 the congestion slows down everybody else, or otherwise  
7 decreases the value for others.

1 over here, which adds to the value over here. But that's  
2 an indirect value, indirect effect, rather than the  
3 direct effect that occurs through those two-way networks.

4 And, finally, a lot of discussion of networks  
5 has gone into discussion of things that don't really fit  
6 the standard notion of what a network is, the nodes  
7 connected by links. There is nothing physical and so  
8 they've been described as virtual or metaphorical  
9 networks, but hardware and software, operating system,  
10 applications software, connections, which will have these  
11 same kinds of properties as a one-way network. That the  
12 more users there are, the more value there is to other  
13 users. And the -- the extra value happens because the  
14 extra users encourage more providers, which gives greater  
15 variety, greater choice.

16 Other characteristics. High fixed costs, low  
17 marginal costs, economies of scale, advantages up to the  
18 point where congestion may be a problem.

19 Compatibility standards are important. And  
20 these compatibility issues can arise because of  
21 technological phenomenon, because of just pure physical  
22 phenomenon. Sometimes through pricing practices, through  
23 refusals to deal can create a de facto incompatibility.

24 When I think about issues of compatibility  
25 standards, one of the things I love to think about is

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1 turns out, the non-standard gauge was in the South and it  
2 was not compatible with the North.

3 Those of you who travel in Europe, if you take a  
4 train from Northern Europe and head towards Spain, you  
5 can't get past Barcelona. You have to change trains.  
6 Why? Because the Spanish rail gauge is different from  
7 the rest of Europe.

8 If you take a train and go east, you can't get  
9 past Poland without changing trains, because the Russian  
10 rail gauge is different from the rest of European gauge.

11 Another nice example of this compatibility  
12 standards thing, and in a sense, the path dependence, is  
13 electricity. And some countries have 60 cycles, 110  
14 voltage, like we have. Others have 50 cycles. Others  
15 have 220 voltage. We have incompatibilities, and I worry  
16 and ask the question, gee, did some of us go down the  
17 wrong path in terms of what would, with 20/20 hindsight,  
18 be a more efficient electricity set of standards.

19 All right. And now we get to the third point,  
20 potential losses from incompatibilities, from abandoned  
21 technologies, and the -- in the American rail case, we  
22 had freight being slowed down, off-loaded, reloaded,  
23 because the system was not -- was not compatible. And  
24 then in -- between 1861 and 1886, there were changes in  
25 rail gauges, literally tens of thousands of burly

1 individuals going out, lifting up rail, moving it  
2 slightly to make it compatible with the standard gauge,  
3 the 4' 8 1/2" gauge. Other burly individuals, with the  
4 help of a little bit of steam power, raising freight cars  
5 and moving the wheels around to make them compatible.  
6 Substantial costs because of this standards and  
7 compatibility issue.

8           And then, finally, remember that network, that  
9 star network with the central switch, the issue of  
10 bottlenecks being an important one. Janusz mentioned it  
11 earlier, a central facility, a bottleneck. Sometimes  
12 it's a proprietary technology, and again that brings in  
the IPj -61.5m 61.5 -24 TD0

1 And things were compatible then. They are now basically  
2 -- for better or for worse, they are incompatible.

3 Consequences number two. Entry is more  
4 difficult. Sampling is harder. Larger scale entry is  
5 required.

6 Now what about innovations, since that's the  
7 major topic here? It's complex, unfortunately. Now  
8 innovation within the existing technological standard can  
9 often happen readily, unless the dominant firm feels  
10 threatened and if the dominant firm sees the innovation  
11 as a threat to its core activity. That's the way I  
12 understand the Microsoft case. That's the way I  
13 understand the major legal decisions in the Microsoft  
14 case.

15 Or the dominant firm may see the innovation as  
16 undermining its ability to price discriminate. And we  
17 all know the welfare consequences of price discrimination  
18 are ambiguous, so who knows quite what to do with that,  
19 but it can be a damper on innovation.

20 And, once again, innovation outside the standard  
21 is harder. It requires larger scale effort and sampling  
22 is difficult. And the issue here -- again, take my  
23 railroad example. If you've got a freight car that fits  
24 the 4' 8 1/2" gauge, then you can do modifications on the  
25 rail car and everything is fine. But if you have this



1 great, wonderful rail car that requires a five-foot  
2 gauge, you're out of luck. And you can't get people to  
3 sample it because they're going to say there is no five-  
4 foot track around. You have to build a whole new five-  
5 foot railroad in order to do this. Now this is just of  
6 the nature of what we're talking about.

7 Contrast that with apples. Somebody comes up  
8 with a new apple and they say, "Try it" and you can  
9 sample it. If it's a good apple, people buy more.

10 Innovation in the women's clothing industry.  
11 You come up with a new design. You can try it. If  
12 people like it, you can -- you can produce more. It  
13 doesn't have this kind of innovation within the  
14 standard/outside of the standard type of dichotomy.

15 Policy implications. Well, first, you've got to  
16 be wary. There are problems of dominant firms making  
17 life excessively difficult for entrants and innovators.  
18 But on the other hand, you've got to be careful. Over-  
19 reaction may improperly penalize winners and reward  
20 losers. Over-reaction is anticompetitive.

21 The bottleneck problems are real. Standards  
22 issues are thorny. Again, this got brought up earlier  
23 and Chairman Muris has been mentioning this in some of  
24 his speeches. On the one hand, if you've got sole  
25 ownership, you may -- that by itself may create dominance

1 in market power. Again, that's an IP issue. But you get  
2 joint agreements. They may turn out to be unduly  
3 exclusionary, exclude, freeze out mavericks who threaten  
4 the incumbent firms.

5 If there is something called an essential  
6 facilities doctrine, if any, it would be useful to  
7 clarify it.

8 Last. Conclusion. There are no easy answers,  
9 unfortunately, and good policy requires good judgments,  
10 requires a long-run perspective. And that's true  
11 generally in the IP area. A number of times that's been  
12 brought up. The issues on IP, over and over again, are  
13 short run versus long run. Short run it always looks  
14 like, gee, we can get benefits by restricting the  
15 granting of intellectual property rights, or stuff would  
16 get into the public domain and we'd have more  
17 competition. Isn't that great? But over the long run,  
18 what does that do for the development of intellectual  
19 property, the incentives to invent, the incentives to  
20 create? And so, over and over again, we find the short-  
21 run/long-run conflict. And taking, I believe, the long-  
22 run perspective is the right one. It does require good  
23 judgment and that's why government employees are paid  
24 such handsome salaries.

25 On that note, let me turn the podium over to the

1 next speaker.

2 MS. DESANTI: Thank you, very much, Larry, for  
3 that exploration of the alternate universe in which  
4 government employees are paid extravagant salaries. I'd  
5 like to visit sometime.

6 (Time Noted: 4:15 p.m.)

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1 MS. DESANTI: We'll next hear from Meg Guerin-  
2 Calvert, who is a principal at Economists Inc. She was  
3 Assistant Chief of the Economic Regulatory Section at the  
4 Antitrust Division at Justice -- at the Justice  
5 Department. And she has also served as an economist at  
6 the Federal Reserve Board. Now she's in the private  
7 sector, and has been for sometime, and she specializes in  
8 health care, and financial, and network industries.

9 MS. GUERIN-CALVERT: Thank you, Susan. I would  
10 particularly like to thank Susan, and Hillary, and Gail,  
11 and others from Susan's office, as well as particularly  
12 the Commission for the invitation to appear. I have to  
13 start out with a disclaimer. As you can see from this, I  
14 do like blue. I do -- have tolerated really bad football  
15 teams, but I did not go to Yale, nor was I a cheerleader  
16 in high school, either, though.

17 But having said that, it's a great pleasure to  
18 be here today. What I thought I would do is really build  
19 on what Larry did and I will skip over some areas where  
20 his and my talk are largely complementary.

21 The first thing that I wanted to say as an  
22 outset and what this is going to be is a review of the  
23 economic literature in the network industry, particularly  
24 looking at two issues. What are the implications of it  
25 for IP issues and, alternatively, what are the really

1 thorny IP issues that are particularly relevant in  
2 network industries?

3 The first thing is, and this is kind of based on  
4 a general review, one of the things that I was surprised,  
5 as I went back to prepare for this session, is that the  
6 1995 IP guidelines really do not expressly have examples  
7 or applications in the network industries. A lot of the  
8 issues that are there, such as standard setting, cross-  
9 licensing, exclusivity, are all greatly relevant to the  
10 network context, both in the development of networks, and  
11 in competitive issues. But there really are no network  
12 applications.

13 Despite that, if you look at the history of  
14 major IP antitrust enforcement action by the federal  
15 agencies in particular, but also in terms of private  
16 litigation, between 1995 and today, there are a large  
17 number of them and the substantial number occur in the  
18 network industries. So we all have had a great deal of  
19 experience dealing with this overlap between standard  
20 settings in joint venture network context, exclusionary  
21 practices in cross-licensing and patent pools in network  
22 context. Almost anything that -- and as Larry mentioned,  
23 that is a virtual network, where installed base of users  
24 are relevant, as in computers, is really looking at a  
25 network issue. And I'll come back to that at the very

1 end.

2 The main thing I want to say and I did a sample  
3 bibliography that you can find outside, is there is a  
4 vast literature on network effects and it would include  
5 both economic literature that deals with general  
6 principles that apply in any kind of network context, and  
7 help us distinguish among networks, but also in terms of  
8 a lot of applications.

9 If you think back on Larry's presentation, the  
10 sets of industries that he talks about, there are  
11 substantial industry reviews in each of those areas,

1 issues are more relevant. So I wanted to flag it to your  
2 attention. When you go through that literature, you'll  
3 see that distinction drawn.

4 Again, just emphasizing what Larry said, largely  
5 if -- what I'm going to be talking about is that it's  
6 important, in terms of thinking about networks, and which  
7 issues are relevant to your inquiry, which things do you  
8 care about, when is something more likely to be  
9 anticompetitive, as opposed to more likely to be  
10 defensible, it's useful to kind of separate out mentally  
11 what a lot of us don't do, which is the demand side  
12 externalities, the things which make the value of the  
13 network increase as it is larger, which deals with  
14 critical mass issues, as opposed to supply side  
15 externalities, which are somewhat more standard vanilla,  
16 decreasing average costs over some range of production.

17 And, again, to be thinking about or having in  
18 mind that the nature and extent of these externalities is  
19 going to vary, depending perhaps on the industry context,  
20 or the technology that's being applied in a given  
21 industry. So just as Larry was mentioning, if you look  
22 at airlines at one point in time, and then revisit it at  
23 another point in time, you can't necessarily assume that  
24 the same phenomena that are driving network effects are  
25 in existence because the technologies may have changed.

1                   Briefly, what I'd like to be talking about is,  
2 obviously, that network entry and competition analysis  
3 which is fully developed gives a lot of perspective as to  
4 which kinds of IP issues we should care about in a  
5 network context.

6                   The second point is that if you look at  
7 networks, the elements and the attributes of the network  
8 largely determine what outcomes in the marketplace are.  
9 Different network attributes depending on which ones are  
10 more important, are more heavily weighted, is going to  
11 determine whether the result is a single network with a  
12 dominant firm, or whether it's a kind of structure that  
13 with open competition will allow multiple networks to  
14 flourish. And these outcomes determine whether we should  
15 be focused on the process of getting to the network as  
the key focus of concern, what Janusz called the ex ante



1 network that these are big stumbling blocks, although in  
2 some it is.

3 And there are two stylized fact patterns that we  
4 can focus on that have very different implications. One  
5 is the one that Larry mentioned. It's the competition to  
6 be the monopolist. It's to be the winner or to replace  
7 the incumbent monopolist.

8 The second is an outcome where you can have  
9 multiple networks and where competition really is inter-  
10 network to get the volumes, to get the users.

11 And in terms of looking at network entry, let me  
12 just pose this as a framework, that when you are thinking  
13 about the importance of intellectual property assisting  
14 network development, or intellectual property assisting  
15 network development or intellectual property impeding  
16 network development and innovation, the things to look at  
17 is look at your particular circumstance and try to  
18 identify what are the issues for this particular industry  
19 that are required to achieve the demand and supply side  
20 externalities.

21 What are the issues? Are there any about  
22 compatibility? Are there issues of switching costs or  
23 are there not? Not all networks have high switching  
24 costs. Most of us, I would suspect, have multiple credit  
25 cards, even multiple ATM cards, and can switch them on

1 networks. Probably not the case that we have multiple  
2 fax machines, but there is a common standard.

3 An important point, and this, again is for  
4 predation, what Janusz mentioned, is how important is it  
5 as to the perceptions of people as to what will happen in  
6 the marketplace.

7 And then, lastly, how -- what is the likely  
8 total size of the market and how big will you, as the  
9 innovator, be? This is the issue in terms of the  
10 railroad gauge example. It may be in railroads'  
11 interests to have a common set of gauges, or a common  
12 standard, because the total pie, the total demand for  
13 cross-country railroad traffic will be higher, although  
14 your slice of the pie will not be 100 percent. So that  
15 the pie may be bigger with common standards. Your slice  
16 is smaller, as compared to a circumstance where you have  
17 100 percent of a little tiny pie.

18 In terms of going to the main point, let me jump  
19 to some of the key policy conclusions, so there will be  
20 time for discussion. One of the things that comes up in  
21 network industries is the process of innovation. And  
22 this is work that's been very well developed by Carl  
23 Shapiro and Hal Varian, and also by David Teece. There's  
24 a number of sites in the bibliography, focusing on two  
25 kinds of innovation.

1           One is the incremental or evolutionary. That is  
2 taking the product as it is currently, making sufficient  
3 changes or improvements to it that you have a new,  
4 better, more attractive product, or network to offer to  
5 people, but it's sufficiently incremental that those  
6 users on the first network are not having to make a  
7 quantum change, are all the more likely to try your  
8 network for a period of time, and you, as a result, may  
9 find it easier with that kind of compatibility or common  
10 assets to evolve and grow.

11           The prospect for making a really big splash,  
12 gaining a really, really big share, may be more limited  
13 in this context, but we'd all say it has a higher  
14 certainty.

15           In contrast, in terms of if you look at radical  
16 or revolutionary, you have the problem that you  
17 potentially have very incompatible products. People have  
18 to make quantum leaps. There are substantial switching  
19 costs. However, there's a greater prospect perhaps of  
20 winner-take-all.

21           And so in terms of thinking about how you get  
22 all of those aids and what are the issues, let me jump  
23 right ahead to -- this is one of the problems that  
24 intellectual property or patents can raise in that  
25 context on innovation. If you have, by the incumbents,

1 substantial patents or, alternatively, as you get this  
2 new product together, you really need to have complex  
3 cross-licensing arrangements, or develop additional  
4 standards, it may be less feasible and less attractive to  
5 take the incremental approach. You may arguably be  
6 forced into the high-risk approach.

7 In the high-risk approach, you have the prospect  
8 of perhaps having a stranded product that you spent all  
9 the money on developing and then nobody is willing to  
10 switch, and no one is willing to experiment. So I just  
11 raise that as one of the issues in network industries  
12 where the gains, the likelihood of success are achieving  
13 relative to the incumbents huge demand side externalities  
14 and huge supply side externalities, and the presence of  
15 certain arrangements can make it more difficult to pursue  
16 the safer and easier strategies.

17 To go back up just for a moment, in terms of  
18 what network issues are relevant to intellectual  
19 property, the main one I'd say is -- what I had mentioned  
20 is, it's really worthwhile to look at the specific  
21 network you're dealing with, understand its attributes,  
22 its type, all of its properties, what's required for  
23 entry and expansion. This will inform you as to where  
24 the tensions are, particularly in terms of how important  
25 it is for there to be a standard setting, for there to be

1 common ownership of assets, or deployment of  
2 complementary assets, and where there is a real risk that  
3 without certain kinds of intellectual property  
4 protection, you just won't have the practice over the  
5 product.

6 Let me end, though, with a -- the other side of  
7 the coin is in circumstances where you have business  
8 practices that we also see in the merger and joint  
9 venture rule, which end up being exclusionary. On the  
10 one hand, putting in place exclusive practices for  
11 exclusivity could promote the incumbent network in a  
12 positive way. It may be necessary for success.

13 Alternatively, it could be entry deterring or  
14 foreclosing. And I think if you look at a number of the  
15 recent enforcement actions dating back to the Mac case  
16 and the ATM industry, to the early 1990s, they were  
17 focused on denial of access, in essence, or inability of  
18 members or users of a network to join other networks and  
19 to switch at relatively low cost.

20 Let me jump to the straight conclusion then.  
21 What we have is there is available to you a huge and  
22 extensive literature that deals with all of these issues  
23 in substantial detail. What is most relevant for the IP  
24 area, from the network context, is a lot of the thorny  
25 issues on coordination, standard setting, exclusivity,

1 other related -- have already been dealt with.

2 Similarly, in terms of the network issues, the  
3 IP issues that are relevant for networks, it really does  
4 come down to whether or not you can facilitate  
5 coordination and sufficient standards to allow certain  
6 kinds of networks to develop.

7 Thank you.

8 (Time Noted: 4:30 p.m.)

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1 and then it talks about other things on the Internet, as  
2 well. So that's my little blurb.

3 First of all, let me say that the term "network  
4 effect" versus "network externality," there is a serious  
5 difference and it's not always taken into account.

6 So that I guess it's a point that I've made in  
7 the past and I want to make it again. And network effect  
8 is defined here as when a product becomes more valuable,  
9 the more consumers there are that use it. That doesn't  
10 mean there is any sort of externality going on.  
11 Externalities are normally bad things. Externalities  
12 normally in markets don't work, particularly if they are  
13 technological externalities and not pecuniary  
14 externalities, another distinction that I'm not going to  
15 go into.

16 But a lot of things that are referring to as  
17 externalities may or may not be externalities, and we  
18 should be careful when we use the terms.

19 Okay. You've already seen networks, fax  
20 machines, telephones -- those are very clear. All right.  
21 The number of other people with those machines are going  
22 to be the keys, the whole ball of wax, so to speak. If  
23 there is nobody else on the other end of the line, your  
24 telephone is not really worth anything to you. And so  
25 it's obvious that in those industries, networks effects



1 will be very important.

2 Other networks industries, what we might call  
3 virtual networks, things like software, it's less clear.  
4 Now Margaret made the point and it's true, there is very  
5 large literature out here on network effects. But my  
6 reading of it is that it's to a very large extent  
7 theoretical. There is very little empirical work  
8 examining very simple things like how strong are network  
9 effects, and where exactly do we find them, and are they  
10 really in software, and if they are, how important is the  
11 network effect.

12 There are, to my knowledge, only a handful of  
13 papers, out of the hundreds that are available in the  
14 literature, that actually take a serious look to try to  
15 measure how strong the network effects are.

16 Now in the case of telephones and fax machines,  
17 we really don't have to there. It's pretty obvious that  
18 they are the basic element.

19 In the literal networks, where we have a lot of  
20 more interesting issues, because historically there was  
21 literature in the 1970s that took a look at telephone  
22 networks and had network effects, but that's before the  
23 modern literature, which started in 1985 came along. And  
24 in 1950 there was a paper on bandwagons, which was also  
25 about network effects.

1           The next literature in 1985, what makes it  
2 different, is that it talks about possibly getting stuck  
3 with the wrong network. And that's really what has been  
4 so interesting about it. And you don't really need  
5 network effects to tell that story to begin with. Any  
6 natural monopoly can lead you to the issue of do we get  
7 the wrong natural monopoly. It's just not a question  
8 that economists thought about all that much until 1985.

9           And at that time it was the network effect set  
10 of papers, particularly, you know, Katz, and Shapiro,  
11 Fowler -- and then a little literature with Brian Arthur  
12 and Paul David, and what not, that brought to the focus  
13 maybe we have the wrong network. But it could have  
14 easily just -- just as well been done with just old-  
15 fashioned economies of scale. Network effects are  
16 another way of getting to economies of scale.

17           I think the concept is overused. I was reading  
18 -- I talk about it in the book. There's this --  
19 something you may have read the first year -- first day  
20 of 2000. The Wall Street Journal ran a special section  
21 on what the economy is going to look like. And there was  
22 a paper called "Supply and Demand is Dead, Live With It,"  
23 or something like that. And in that article, he talked  
24 about various things, including network effects. And one  
25 of them he was talking about examples of network effects.



1       because if you had previously a Lotus 1-2-3 spreadsheet  
2       and you're buying a new spreadsheet, an upgrade either of  
3       Lotus or some other brand, you want to be able to read  
4       Lotus 1-2-3 spreadsheets, too, because you want to be  
5       able to read your old spreadsheets. And there is no  
6       network effect there. And, therefore, the only way to  
7       have tested it would have been to take a look at people  
8       buying spreadsheets for the first time, where there is no  
9       problems with compatibility with their old selves and  
10      their old software. And no one did that.

11                So, in fact, there is virtually -- I can say, to  
12      my knowledge, zero empirical evidence of how strong  
13      network effects are in any of these literal networks.  
14      Now I'm not saying that they don't exist. And I'm not  
15      saying that they're not strong. But I am saying that we  
16      don't know and we have a very, very, very large  
17      literature that's based on something that we presume  
18      exists and is powerful, that we have almost no interest,  
19      apparently in testing whether or not it really does exist  
20      in these literal networks. So a minor criticism of the  
21      profession, if you will, and I'm not as popular as I  
22      might be.

23                We know that if there were network effects, it  
24      gives us an economy of scale on the demand side, if you  
25      will. And that that might lead to winner-takes-all. But

1 network effects by themselves can't generate that result.  
2 Economy of scale of production, without network effects,  
3 can, but if you have just economies of scale in  
4 production and you haven't had network effects, no  
5 guarantee that we're going to have winner take all. It  
6 depends on which one is stronger.

7 And my gut presumption, since all we're doing is  
8 dealing with presumptions here, since no one is testing  
9 these things, is that in most cases that people talk  
10 about the new information economy, what's really going on  
11 is that we have very strong economies of scale in  
12 production, and minor network effects that play a trivial  
13 role in a lot of these industries. Now it's not clear  
14 that that changes much, okay, but still it's a different  
15 story.

16 All right. Whether we're talking about network  
17 effects or economies of scale, however, they both lead to  
18 the conclusion that we may have a just single winner or a  
19 small number of winners in the market. This has been  
20 talked about before, competition for the market or in the  
21 market. Who knows?

22 Is it harmful to have a single winner? Well it  
23 could be. And, as everyone has said, it's a difficult  
24 issue. I'm one of the few people that have taken a look  
25 with my co-author on much of this work, Steve Margolis,

1 and at particular industry, and whether or not it  
2 appeared to be the case that we were getting wrong  
3 winners, and whether or not the winners were getting  
4 stuck, and that they couldn't -- they were entrenched and  
5 were unable to be challenged by superior new firms. That  
6 was the software market that we looked at.

7 And what we discovered when we looked at those  
8 markets is that there was no evidence of entrenchment.  
9 There was evidence for winner-take-all. But there was no  
10 evidence of a lot of other aspects, such as tipping, a  
11 term you hear all the time. Try to go get an explanation  
12 or a definition of exactly what tipping is and it won't  
13 be that easy. But what it would seem to be is that two  
14 firms compete and then at some magic moment, one of them  
15 gets a large enough market share that the network effects  
16 take over, and it then becomes the winner very quickly.  
17 There was no evidence for a tipping point in terms of  
18 market share.

19 There was no evidence for lock-in. And what we  
20 found were very rapid changes in market share that went  
21 to the firm that was getting the better product review.  
22 Now this is for a single industry which is software, over  
23 a single period of time, which was like, essentially,  
24 1985 to 1995 - '96. It was an unusual time in the  
25 history of that industry. It was still very young.



1           Similar stories for Betamax versus VHS. And so  
2 this idea of getting entrenched, getting locked in, it's  
3 a nice story and it certainly plays a large role in a lot  
4 of people's thinking, but it's still a story that -- now  
5 I should be a little more careful here. If Carl Shapiro  
6 were here, he'd say, "Well my book -- Information Rules,"  
7 because he did this once before at a conference several  
8 years ago. He was just -- he had an advertisement for  
9 his book at that time. That was several years ago.

10           He said, "My book has hundreds of examples."  
11 But the difference was, his examples were examples where  
12 the incumbent has an advantage over the challenger  
13 because there's a cost in people switching and it may not  
14 be efficient for them to switch.

15           The lock-in that I'm talking about here is a  
16t strong form of lock-in, which the -- would be a story of



1 take. And I presume you could take it either way, but my  
2 answer is that if you follow this literature and all  
3 this, well what were you doing for the last 15 years with  
4 your students? Why were you bothering coming up with  
5 these examples if you didn't need to in the first place?

6 But at any rate, let's see. That's the story on  
7 lock-in. So I don't know that it exists. So what does  
8 that tell us about antitrust?

9 Well, first of all, when we were talking about  
10 network effects, which I'm not denying exist, and in some  
11 instances might be important, or economies of scale,  
12 which I think are probably quite important in the new  
13 economy, we're going to have a different type of  
14 competition. What we do need to know is not whether it's  
15 an economy of scale, not whether it's a winner-take-all,  
16 that's not so important. What we really need to know is  
17 whether or not once you've won, that somehow there is  
18 going to be less competition in the future, that you're  
19 not going to be vulnerable to competition. That's the  
20 real danger.

21 And of that we have no evidence that I'm aware  
22 of to say that we should be worried. Now perhaps we will  
23 get some and maybe we should be worried. I think it's  
24 premature to start putting forward rules based on  
25 theories when, even though it may be a very large

1 literature, it doesn't have any support for the idea that  
2 we have incumbents who are getting locked in, who really  
3 should have been replaced by challengers. All right. So  
4 that's one thing that I think we should be very careful  
5 and avoid putting in into the current thinking until we  
6 know more.

7 And the government goes around and asks people  
8 to do studies. NSF does this all the time. That would  
9 be very useful, I think, for the NSF to go out and ask  
10 people to actually try to measure how strong network  
11 effects are and whether or not we really do get stuck  
12 with the wrong products.

13 Okay. The other thing is that it does seem to  
14 me that there is potentially a place for intellectual  
15 property to talk -- to play some role in this literature,  
16 or this literature to play some role in intellectual  
17 property. And that is, if we do have a fight between two  
18 competing standards, it is fairly important in most cases  
19 that either they both be owned or not owned, and that if  
20 they are both owned, you would expect the market to work  
21 better than if only one is owned. And that's a rationale  
22 for ownership here of a standard. That's quite different  
23 than the normal patent for -- ownership. It has nothing  
24 to do with trying to provide a reward for the inventive  
25 activity. It's ownership in the same way that we would

1 want fisheries to be owned, if we want efficient use of  
2 the fish, and we don't want them to be over-fished.

3 And so, there is a potential use for  
4 intellectual property in a completely different way, if  
5 we believe that there are these networks where there may  
6 be real externalities, and where there may not be an  
7 owner who puts the proper resources into fighting the  
8 other network. And so that's something that somebody  
9 might want to think about and some government agency  
10 might want to look at. And how that would work, as  
11 opposed to the old-fashioned intellectual property, I'm  
12 not entirely sure, but it is something different and it  
13 is something that arises here. But I don't know that  
14 it's due to network effects. It's due to any network  
15 where you're going to have a winner-take-all result,  
16 which just may be a network where you have economies of  
17 scale.

18 That's my four slides.

19 MS. DESANTI: Thank you, very much, Stan. We  
20 appreciate it.

21 (Time Noted: 4:50 p.m.)

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23

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25

1 MS. DESANTI: Well the hour is very late, but  
2 I'm sure there are some people who want to have comments  
3 made. Did you want --

4 MS. GUERIN-CALVERT: I just want to make a  
5 couple of quick comments. One is that I did, for a  
6 little bit, Stan, get a view as to the empirical  
7 literature that is out there on network effects. I think  
8 a little bit of it is it depends on how one is valuing or  
measuring.

1 than you otherwise could, and that, in fact, drove the  
2 need for proprietary networks to share.

3 But I think you raise an interesting issue that  
4 I think is very pertinent in terms of the lock-in issue.  
5 It is, because I think that my view of the whole vein of  
6 literature looking at network effects, is that there are  
7 certain circumstances in which the best outcome for  
8 society is to have a single firm, and that acting  
9 competitively -- or a single standard. That is what is  
10 going to happen. That we are better off, ultimately,  
11 with competition, but who is going to be the standard,  
12 and VHS might be better than Beta. And that then, as  
13 long as there is the prospect and no significant  
14 anticompetitive behavior that would keep DVD's from  
15 coming up and delivering fundamentally the same product,  
16 in a completely different technology, you can have the  
17 leapfrogging that doesn't happen in every industry.

18 But it's the anticompetitive lock-in, as opposed  
19 to the existence of lock-in, that is a problem. So it is  
20 an industry that otherwise would have gone to two or more  
21 competing products, that ended up with one because of the  
22 fact that anticompetitive games were played.

23 The last thing is, I think you're right in terms  
24 of ownership of standards is an issue. One of the things  
25 that's most intriguing in a lot of industries, we've



1 a few others. I can say lots of things about it. It's  
2 hard to --

3 The other thing is that on the airlines, I'm not  
4 sure what it is that is the network effect that makes  
5 that an industry that we would talk about to have network  
6 effects in the first place. I don't even know whether  
7 we're talking about hubs or spokes. Yeah, it's network  
8 in the sense that it has hubs and spokes, but is there --  
9 what is the network effect where somehow the more uses  
10 there are, your utility goes up or down? Are we just  
11 talking about prices changing?

12 MS. GUERIN-CALVERT: I guess I would have a  
13 couple of responses. One is, it's a physical network and  
14 that in terms of getting greater volumes of users that  
15 demand the product, and find it more convenient and,  
16 hence, offer greater quality of service, would be what  
17 the value is.

18 And, again, I think it goes back to Larry's  
19 diagram and he can probably say it more articulately than  
20 I can, it's the idea of you do not necessarily have to  
21 have the value as in the phone system, where I need to be  
22 connected to you for the value to occur, but that the  
23 presence of a substantial additional volume of passengers  
24 makes more service possible than could be sustained if  
25 there were not such a comprehensive network.

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1           So I think that that's sort of the first case  
2 you gave of all the empirical work. It is empirical work  
3 that doesn't have anything to do with network effects,  
4 which doesn't do anything too much to reject my claim  
5 that there isn't much of a literature there.

6           MS. GUERIN-CALVERT: Yes. We can agree to  
7 disagree. Now the one thing that I would say is -- and I  
8 think you raised an important point. Whether or not you  
9 end up with a single firm supplier depends substantially  
10 on the scope of the overall marketplace. One of the  
11 things that has happened in the airline industry, for  
12 example, particularly if you look at transcontinental  
13 travel, is you have competing networks.

14           And so, you know, I think it again, looking at  
15 the big picture issues, in some industries you'll end up  
16 with one. In others, you could end up with multiple.  
17 And those, I think are the key issues.

18           PROFESSOR LIEBOWITZ: We do agree on that.

19           MS. DESANTI: We have time for one last comment  
20 and, Shane, you're it.

21           PROFESSOR GREENSTEIN: All right. I was going  
22 to say something provocative to try to generate  
23 discussion, but maybe -- I'll generate thought as you go  
24 home. And this is sort of two comments and it's for all  
25 three of you who talked about networks.

1                   First of all, I would like to offer the opinion,  
2                   I don't find it at all useful and I don't think  
3                   competition policy would at all find it useful to focus  
4                   antitrust policy on avoiding inappropriate designs or  
5                   directing industry to avoid inappropriate technological  
6                   designs. I think that is a waste of government policy  
7                   and time and effort.

1                   And I think the central question that we should  
2                   be asking is if you see a firm at the center of one of  
3                   those networks, the question you have to ask, okay, a lot  
4                   of innovation is going to be to their benefit. That  
5                   seems to be fine. Most of the time we actually think  
6                   that's just fine. So then, is there -- you know, is  
7                   there a competition policy question there? And I think  
8                   the answer has to be it depends on the actions they take  
9                   and what effect it has on the incentives of other firms,  
10                  either within that network of economic relationships or  
11                  not. That's the central question.

12                  I really just don't give a damn whether, you  
13                  know, we get the wrong outcome or not, because I don't  
14                  think I know. I don't have enough information to know.  
15                  But I do really, really care, you know, what the firms at  
16                  the center of these economic relationships do when  
17                  talking to other firms, and what sort of deals they are  
18                  trying to cut, and what effect that has on incentives.  
19                  To me, that's where we ought to place our focus.

20                  MS. DESANTI: Thank you. Thank you all, very  
21                  much, for your patience. Could you please join me in  
22                  giving a round of applause to our speakers.

23                  (Applause.)

24                  (Time Noted: 5:00 p.m.)

25                  -           -           -           -           -

## 1           C E R T I F I C A T I O N   O F   R E P O R T E R

2

3           CASE TITLE:       HEARINGS ON COMPETITION AND INTELLECTUAL  
4           PROPERTY LAW AND POLICY IN THE KNOWLEDGE-BASED ECONOMY

5

6           HEARING DATE:    FEBRUARY 20, 2002

7

8                        I HEREBY CERTIFY that the transcript contained  
9           herein is a full and accurate transcript of the notes  
10          taken by me at the hearing on the above cause before the  
11          FEDERAL TRADE COMMISSION to the best of my knowledge and  
12          belief.

13

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DANIEL WILSON

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