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P R O C E E D I N G S

MR. BAILY: Okay. I think we're going to get started. I guess the mike is on.

My name's Martin Baily. I'm the Director of the Initiative on Business and Public Policy here a Brookings -- that provides, we hope, analytical research and constructive recommendations on public policy issues affecting the business sector in the United States and around the world.

And it's my pleasure to welcome all of you to this conference today.

Patents are of crucial concern to the business and policymaking communities, but moving into the digital era, patent law has suffered a lot of growing pains. Industries that were inconceivable at the passing of the first Patent Act in 1790 are now a major portion of our economy, most notably software, an industry with billions of dollars in revenue from an intangible product.

Our lawmakers seem unsure about how to use or not use patents with the new information products. In Congress, the Patent Reform Act of 2008 was recently introduced to the Senate, replacing the failed Patent Reform Acts of '07, '06, and '05.

But all of these bills have avoided the question of what should be patentable.

So that is the question that's not only of crucial concern to a large segment of U.S. business, but also very much unresolved in law in the policy community.

And we look forward to exploring these issues today.

I'd like to thank Brian Kahin of the Computer and Communications Industry Association; Ben Klemens of Brookings; and Arti Rai of Duke Law School for all of their work in organizing this important conference.

So, I'm now going to turn over to Arti, if you could introduce the first panel. Thank you.

MS. RAI: Welcome, everyone. I am Arti Rai. I'm a law professor at Duke, and I'm delighted to have all of you here to discuss this very important topic.

We are starting with a group of economists. Some of them are law professors and economists, but they're all card-carrying economist or not card-carrying, but certainly have delved deeply into the economic literature. And that's a very deliberate choice.

Although I'm a lawyer, and I suspect many in the audience are lawyers, it's important to start, I think, with economics because what we're concerned about is innovation, and especially in these grave times what we can do to promote innovation.

And the question that arises is to what extent do certain types of patents promote innovation. It's not about patents as an end in

themselves obviously. It's a question of whether the economic goal of innovation is being promoted through patents.

The empirical economic evidence on this is becoming remarkably richer, and that is a wonderful thing, thanks to the contributions of folks like these on the panel.

With respect to this evidence, it's pretty clear that at least for large firms, patents most directly affirmatively promote innovation in areas like chemistry and pharmaceuticals that involve technologies that are less abstract than some of the technologies we'll be considering today.

In other arguably more abstract areas, such as software or business methods, the empirical evidence at least again for large firms suggests that patents are not promoting innovation. And the reasons for this are multiple, but most recently much of the attention has been paid to the idea that patents in areas like software and business methods may have fuzzy boundaries; and, therefore, they don't work as property rights of the sort that we think of as promoting innovation.

But the story does get more complex. What about small firms? What role do patents on relatively abstract subject matter play with respect to small firms that need venture capital to get started and to enter markets? Do patents prevent entry or do they promote it?

And even if we conclude that patents don’t work well as an economic matter in relatively abstract areas, what are the economic implications of drawing lines around patentable subject matter? Is it

possible to do such line drawing in a way that is reasonably well tailored to the economic reasons we'd want to do the line drawing?

How well does the federal circuit decision in the Bilsky case respond to the economic concerns? Is it possible that attorneys will be able to game the system with respect to Bilsky in the way arguably did in the 1990s in the context of certain tests that were applied by the Federal Circuit during that time.

And then finally, last but not least, are there other approaches other than Section 101 patentable subject matter that might be used to tame these abstract patents.

In this panel, again, we'll be looking at all these issues from an economics perspective. And, again, we have deliberately placed the economics panel first, because we think that the economic issues are critical with respect to the question of patentable subject matter.

We have a wonderful panel to discuss these issues, and I will introduce them very briefly so that they will have more time to talk.

Their bios are rich in awards and books and the like, so I will be slighting them greatly by just giving name, title, and serial number.

But I hope you will speak with them afterwards and during the breaks today.

We start with Jim Bessen, who is currently a lecturer in law at Boston University School of Law, where he does research on the economics of technological innovation, including patents.

His research on software patents with Eric Maskin and Bob Hunt, another member of our panel, has been very influential in European policy discussions on software patents.

Most recently, he's the author of a much acclaimed book with Michael Meurer, entitled Patent Failure: How Judges, Bureaucrats, and Lawyers Put Innovators at Risk, Princeton University Press, 2008, available on the bookshelves. A wonderful book.

Iain Coburn will speak next. Iain is the professor -- a professor of Finance and Economics at Boston University, and he is an extremely prolific and well respected writer in the area of the economics of innovation.

His work historically has been very well cited, and he is a leading authority in pharmaceutical economics in particular. More recently, he has done groundbreaking work on the role of patents in promoting or not promoting entry in particular software markets.

Bob Hunt will speak next. He’s a Senior Economist at the Federal Reserve, who, as noted, has done groundbreaking work Jim Bessen on the economics of software patents that was very influential in the European policy discussions around software patents.

He continues to work in the areas of software and business method patents. And he has a particular interest given his location at the Federal Reserve in business methods patents, and has written voluminously and very instructively on those questions.

Next we have Ben Klemens, who is a non-Resident Fellow here at Brookings in Economic Studies and, in particular, in the Center on Social and Economic Dynamics.

Ben is an expert in computing technology, and he has also written extensively on patent reform issues. He is a computer scientist himself. He's currently working on a book about statistical computing, and he is the author of a wonderfully titled book that came out in 2005, "Math You Can't Use: Patents, Copyright, and Software," a critique of the application of intellectual property to software.

And finally, we have Peter Menell, who is an economist and a law professor at Berkeley. Peter has written for many, many years on the application of intellectual property to software.

He knows a huge amount about both patent and copyright, and, as many of you probably know, patent and copyright both covers software. And so he has a unique perspective, since he's also a prolific and very well-respected copyright scholar.

So, with no further adieu --

SPEAKER: Arti, just point of order here. I noticed -- you must be reading off the website, because, for some reason, Brookings took it upon themselves to put everybody's name in alphabetical order --

MS. RAI: Oh, I apologize. Okay. All right.

SPEAKER: That's the order we agreed on, which is actually -- there is a printed program; okay.

MS. RAI: I do apologize. So, the -- we have the introductions.

But the order in which people will present is as follows: Peter will go first, then Bob, then Ben, then Iain, and then Jim.

So without further adieu, Peter.

MR. MENELL: Well, thank you, Arti. I thought I was batting cleanup, but I'll play leadoff.

So, I'm going to try to be a little provocative. I want to begin with what is taken as sort of an article of faith by I think economists and lawyers, although not necessarily the people in this panel.

But I think in general it's remarkable how accepted the idea that the patent system should apply to everything in an equal way is kind of the baseline. And, in some ways, there is a burden of proof that has to be surmounted in order to take issue with that proposition.

I will say, though, that when I started working in this area -- and I'll confess that I recently received a letter from AARP, so I've been around longer than I'd like to admit -- but certainly in the 1980s, 1970s, there was, I think, a very opposite presumption regarding at least software and the industries in which we think abstract patents are arising.

The software industry itself did not view patent protection to be in their interests. In fact, it was in some ways, you know, very much outside the industry that software patents came to be accepted.

If you go back even earlier to the 1960s, IBM was an ardent opponent of software patenting. And so it's an odd position we find

ourselves in today, where we're trying to deal with the pattern that has emerged without an industry forcefully, directly seeking protection.

And the story that I would give is really a peculiar political economy story. And usually political economy emphasizes important economic interests of the major market participants, using their powers to effectuate different legislative or regulatory regimes.

But the best I can tell -- and this is somewhat anecdotal, but I've been around sort of the Silicon Valley for much of my career, the story is really one that lawyers can take credit or blame for. I think lawyers became -- they insinuated themselves into certain parts of the industries in ways that eventually spread the gospel of patenting.

One can go back, and I won't name names, but there were evangelists of sorts, who came to unsuspecting business leaders and suggested, you know, if we were able to patent certain things, we could perhaps not have to compete on certain fronts.

Perhaps more importantly were people who were outside of the industry or at least not part of the major entities, and they obtained patents and that kind of created a lot of chain reactions.

I mean, one of the most famous stories relates to the patent battle in the early '90s, in which Microsoft was sued and lost a major judgment, and Bill Gates wrote a letter, which apparently was leaked to one of the bay area newspapers in which he says, you know, we're never going to let this happen again. We're going to have patents should we ever get into this situation.

I was in a unique situation as an expert in a tax case in which I had to look at all of Microsoft's portfolio of intellectual property during this period, and, in fact, they did have patents going back to the mid-‘80s, but they were very hardware-oriented patents. And there were only about half a dozen up until the time that they were sued.

But after that lawsuit and because of other activities in the industry -- IBM seeking royalties for licensing and such -- the whole sort of industry change character.

Another story that kind of adds to this picture is you have Oracle, which was opposed to software patenting and trying to really organize the industry to some extent, but eventually they gave up, and now have a very substantial patent portfolio as well.

Cisco is another story. I know Mallun Yen is expected to talk later. I work with -- oh, she’s not going to make it, so unfortunately.

But I worked closely with Robert Barr, who was the principal patent evangelist at Cisco, but he didn't go in with the goal of obtaining patents for offensive purposes or for the kind of conventional ideals of the patent system, which is we’re trying to sort of create exclusivity around our business.

It was mostly a defensive move that there were reasons that they needed to start accumulating patents at a very rapid rate, and he succeeded in doing so. But all of these chain reactions, if you think about it, are so different from what we see in the more conventional industries, in

which patents are developed for the purpose of building research and development directly.

In some ways, this is a very odd story, and I've only traced some of the outlines of it, but you can see that it's driven by a counterintuitive influence.

The other thing that I see, because I train people who go out and work in the patent world, is that there is now this kind of self-fulfilling prophecy of patents. There are companies that have large patent departments, and so when internal discussions happen in companies, those people are at the table, and they're playing a role, and they're saying, well, we need to be building these portfolios. We need to be doing all of these things, but that, in some ways, just feeds on itself.

So the story here, at least from more of a political economy economic standpoint, is not one in which I think speaks well of a society trying to solve the economic problems. I think it's largely a path-dependent story, and it's an unfortunate path-dependent story.

So, I'll end my introductory remarks with one alternative perspective, because at this point I think it would be very difficult to derail or reroute this engine. I mean, I think that notwithstanding the Federal Circuit's decision in Bilsky, there is, I think, going to be a long time before anyone rethinks this issue fundamentally.

And so what can we do or what are some ideas for thinking about solving these issues. And I'll point to I guess Jim Bessen and

Michael Meurer's work as having gotten me to think about another type of externality that helps to frame the issues that abstract patents raise.

In the main patent area, and in most areas of intellectual property, we think about appropriability as the problem, as the externality. The inability to earn an adequate rate of return on investments in information that are easily imitated by others.

And that is, I think, the core of intellectual property. That's how we begin a course on intellectual property.

But we have, in some ways, a countervailing externality that I do thank Michael and Jim for helping to identify, and we could call it the notice externality.

When I buy a piece a land and build a house, it doesn't really have significant notice costs on anyone in my neighborhood, because they can easily figure out my boundaries and plan their activities without significant costs. I mean, there are minor costs. They might have to actually have a surveyor come in if they're a neighbor in building a fence, but that's pretty manageable and relatively small potatoes.

But in the patent world today, particularly in abstract patent areas, what we see is that for every patent that issues, there is a hidden cost on everyone else in the system. And that cost, in some ways, it's not a linear cost. It's -- it grows faster than linear with the number of these patents that emerge.

And so we can use that basic idea of trying to internalize these external costs and thinking about this problem. We might be able to

think about using tools that will try to either reduce those extra costs, perhaps by having better maps, better ability to determine who owns what, because, as we know, it's almost impossible to determine the boundaries of these intellectual property rights; or perhaps to raise the cost of getting some of those patents in such a way that reflects this differential cost.

The cost is not the same. Just as the appropriability problem is not the same, the notice cost is very different in cross fields. And in certain mechanical fields, certain chemical fields the boundaries are very clear, and there is essentially modest notice externality, if any.

But in the areas that we're focusing on today, I think those are very essential costs. They're hidden costs, and we only see them if we're able to look very comprehensively at the overhead associated with innovation.

MS. RAI: Thanks, Peter. Next we have Bob Hunt. He's going to speak about well, I think you have a bunch of slides; right?

MR. HUNT: Actually, I'm not going to use slides.

MR. RAI: Not. Okay.

MR. HUNT: Can you pour me some water?

SPEAKER: Sure.

MR. HUNT: My job is to bunt Peter over.

I have to start with a disclaimer. These are my views, not those of the Federal Reserve Bank of Philadelphia or the Federal Reserve System.

Just to give you some background, since 1998, ’98 is the year of the State Street decision that made clear that business methods could be patented, the United States has granted about 12,000 of these patents.

Now I’m just counting using the Patent Office’s classification system, Class 705. The current grant rate is about 2,000 of these business method patents a year.

The application rate, although, is running at 11,000 a year. And we have about 40,000 pending business method patent applications right now.

Now I did an analysis in this paper that I left copies out for anyone who's interested. I did an analysis of business method patents granted in the five years ending in 2007, and here's some rough characteristics from this data.

First of all, only about one in 10 of these granted patents are obtained by financial services firms or a payment system company.

Amongst those firms, they’re essentially obtained by the very largest financial institutions. And it is the case that a handful of those have 50 or more pending applications.

So the financial services share of these patents may be rising over time, but at least until recently it's been fairly small.

Now the bare minimum, more than a third of all of these business method patents are obtained by firms that are in the information and communication technology industries. And I think that if I get a more

careful analysis of all the assignees, it would easily be a majority of all of these patents being derived from that industry.

If you use the definition of software patents that Jim Bessen and I developed in earlier work, you would also find that four out of five of these business method patents would be a software patent.

Now in separate research based on his own data, Josh Lerner finds that business method patents -- or I should say financial patents -- are litigated very frequently relative to patents in general, in fact, 27 times more frequently than patents in general.

And even if you think about pharmaceutical patents, which tend to be litigated frequently, business method patents are litigated 14 times as often.

Josh finds that the defendants in these cases are typically large financial institutions, financial exchanges or payment systems. Typically, the plaintiffs are either an ICT firm or what looks to be a patent holding company.

Now in my paper, I have a couple dozen examples of recent litigation involving patents in financial firms. In some of these cases, damages or licensing revenues have run in the tens of millions; and, in a few cases, hundreds of millions of dollars.

So we're past the point of financial patents being an academic curiosity. These are things that have economic effects on firms. It behooves us to make sure that the vast majority of these patents are

valid and that we can actually determine the meets and bounds of the claims in these patents.

But let me take a step back for a moment, and ask the question that Arti mentioned in her remarks: how is it that financial institutions actually protect their innovations in the first place?

There's not a great deal of research on this. But what research out there says that three factors are very important: lead time, reputation, and complementary assets.

And what's very curious about each of these factors is they're exactly the same factors that 30 years of survey research on manufacturing firms tells us are typically viewed as being more important than patents in protecting the incremental profits that are associated with innovations.

So in that sense, financial services firms don't seem to be all that different than many other industries. But it does call into question, then, what is the incremental contribution of patents for innovative incentives amongst financial institutions.

Now the literature reveals that there is some additional mechanisms that are important in financial services that are not important for many other industries. I can think of counter examples, and I'm sure you can, too.

These are regulatory barriers to entry, network effects, and joint ventures that involve standard-setting.

Now just consider the example of network effects that arises from the trading of securities. The general rule is that you want to trade where everybody else trades. And there's a lot of reasons for that. You have more rapid price discovery. You have more efficient pricing. Big to ask spreads are smaller. You have more market depth, which means you can make larger sales and purchases without prices moving against you. And you can economize on collateral, something that's very important these days.

Now what this does is it creates a tendency to trade a security on just one or two exchanges. And the empirical research has shown that the exchange that first introduces a security or a derivative will enjoy a long-lived persistent advantage in market share and in the profits that are earned on trading of securities.

So this is, in fact, a mechanism for appropriating returns to innovation, at least in financial instruments.

Now consider the case of standards-setting. Now this is extremely important in financial services. You cannot have a payment system and you cannot have trading of securities if you don't have interoperability, and this is generally establishes standards setting.

Now standards-setting is an important source of increasing returns in financial services, but it also causes technological lock-in. Having coordinated and having sunk all of these investments, firms are loathe to abandon those investments. When they do, they want to move to a new standard in some coordinated way.

And it’s this dependence on standards setting that can make financial institutions vulnerable to hold up. So this is just a variation on the Research in Motion problem, where a firm’s stranded investments can be held hostage to an injunction; that is, if it’s not mitigated by a court.

It’s possible to extract more than the incremental benefit that the patented technology confers.

Now a court could mitigate this problem, but it's not going to be easy, because calculating what an appropriate royalty will be in the presence of network effects is not easy to do.

Taking another step back, what can we say about the effects of 10 years of business method patenting on actual innovation rates by financial firms in the United States. This is actually a difficult question to answer for a variety of reasons that I go into in the paper.

The first problem is we actually don't have systematic information about financial innovation. In other words, we don’t regularly count these things. Europe actually does a better job of this than we do.

Second, it’s very difficult to measure quality-adjusted output of financial services. There are actually probably some people in this building that have made advances on this, but I will simply say it's a difficult problem, and I'll leave it for future research.

So instead, what I do is I look at research inputs, in particular research and development spending and the composition of the workforce; that is, what proportion of the workforce consists of employees

that have occupations that you would think would be related to the development of new products and services.

And I do this in intensity form; that is, I calculate the ratio of R&D spending to sales, or I calculate the share of the entire workforce of financial services that consists of these potential research workers.

It doesn't matter which of these measures you use, the answer is going to be the same. There is no evident trend in the research intensity of U.S. financial services over the last 10 years, nor is there evidence of a trend break.

So the conclusion is that there is no obvious effect of State Street on the research investments of U.S. financial institutions.

Now it's possible that State Street has affected research incentives outside of financial services, and I haven't explored that in detail, because sorting out cause and effect arguments, in particular in ICT, which is where we should be looking for these things, is going to be extremely difficult. And it's also possible -- this also raises a point that Arti mentioned in her remarks -- is that State Street may have encouraged entry by new startup firms. This is a very intriguing question, but, in fact, there is -- it's just conjecture at this point. We have no measurements to know whether this is an important mechanism in financial services. And I'll end my remarks here.

MS. RAI: Thank you, Bob. Next we are going to go to Ben.

MR. KLEMENS: Okay. And I do have slides. I guess. The first slides of the day. Here we go. I guess while I'm trying to find full-

screen mode, I want to thank Arti and Bryon for all their work in putting together this conference. Thanks, guys. And also thank the Initiative on Business and Public Policy for hosting.

And now, in no way speaking for Brookings, let me present to you some examples.

A lot of these presentations start off with exciting lawsuits, and so I'm going to give the same.

So here are some software patent infringement lawsuits. And I'll read to you some of the defendants. There's the Green Bay Packers, Kraft Foods, J Crew, Oprah Winfrey. And you'll notice none of these defendants are software companies, which is kind of interesting.

It turns out that everybody produces software, all across the world. Software innovation is not centered at Microsoft, or IBM, or places we think of as software companies.

Here at Brookings we have a full floor dedicated to information technology over in the next building. Upstairs, on the sixth floor, at the Center on Social and Economic Dynamics, we write software to answer questions about how kids teach each other to smoke or the causes of civil violence.

I could give you millions of examples and you could give your own original software being written at -- not at a software company. Some people condescend to this and say, well, you know, if you're not at Microsoft, you're just downloading stuff from Microsoft or Cisco, and you just hit run, you hit upload; and that's all these guys are doing outside.

But the guys at J Crew and the guys at Oprah's IT departments, they did something innovative enough to actually run into a patent. You know, if they had been doing this five or six years ago, maybe they could have gotten a patent themselves.

So they're definitely not just clicking upload and run.

So that said, that produces problems. Industry size matters. I don't have a little striptease here, so I can't build upon this. But let's start with the percentage of U.S. businesses that are implementing pharma methods. That's about zero percent, by account. There's about a thousand places producing new pharm -- producing pharmaceuticals.

Brookings, for example, we've got a computer in just about every room, and yet we have absolutely no pharmaceutical synthesizing equipment, just nowhere on premises at all.

So I'll distinguish here between those who actually make these pharmaceuticals and could infringe patents and distributors, users, et cetera, et cetera.

If we talked about the whole world of the use of drugs in the production of drugs, that would be much larger than a thousand companies.

Whereas, the percentage of businesses implementing, I don't know, business methods, it turns out that's the entire U.S. economy. That's 25 million businesses. And the same with businesses processing information; right?

They -- every business has information and process. They all have money to handle and so on and so forth.

And so for me, that's the fundamental difference. Information is universal and physical endeavors are not.

And that's just a fact about information. And that's what produces the economic problems that we see with these information processing, information handling patents.

And for me, the rest is commentary.

So for -- now I'm going to give you a couple examples of how this creates problems. You might think from the first slide I'm going to talk about patent trolls, but I actually really dislike the definition of patent trolls. I think it's stupid.

The -- I'm sure you're all familiar with this. The story is that you have a non-producing entity of some sort, who they don't produce what's listed in the patent, but they sue others over the patent anyway.

I think this has been a canard. I think we waste a lot of time talking about this. The validity of a patent doesn't depend on whether you're producing. There are a lot of valid reasons why somebody would sue somebody, even though they're not producing themselves.

I tried to change the definition, but I had very limited success. So let me propose instead the patent gnome. The patent gnome is one who unfairly takes advantage of the information asymmetries by suing agents who are ignorant to the fields of patents in which the gnome works.

So the procedure: get a patent on an information processing method. Wait for someone to independently reinvent whatever it is that you have a patent on, and profit. Once somebody's invented whatever it is that you have a patent on, it's an easy lawsuit.

Step two is easy in some industries and hard in others. It would be very difficult to run this sort of scheme in pharma, because, well, there are only about a thousand companies. Maybe they just wouldn't come up with whatever it is that you thought of. And few, if any, of them are patent naïve. If they're going to put out products, they're good to think hard about how to make sure that that product is clear.

It's easy for information. There are millions of websites out there. There are millions of companies like, you know, Harpo Industries for Oprah, who really are patent naïve. And there are so many of them that, you know, something will turn up eventually.

The key here, of course, is that independent invention is not a valid defense against claims of infringement.

So that's a fundamental fact of patent and that's not going to change. I'm not recommending that a change.

So we add -- add to that the fact that there are millions of businesses out there independently inventing methods for information processing and we're going to have problems.

I feel that it's just an inevitable, logical conclusion that we're going to have issues with these sorts of information processing patents.

So that's the patent gnome story, but there are other considerations to be had as well.

First there's the basic logistics that kind of goes back to what Peter was talking about with notice.

Okay. So once we get a patent, once a patent exists, everyone needs to be notified of this. In pharma, you only need to notify a thousand parties.

In software, there are 186,727,854 websites all of which need to be in compliance, all of which need to know what they can do -- use for free and what they need to license.

So from a logistic front, that's already, you know, hard. There aren't enough lawyers to go around.

And then, you know, once a website decides okay, we're going to clear our website. We're going to find out what we need to license. Well, yeah, we have the notice problem again. And does this become a burden when there are millions of agents who need to track millions of other agents?

Then there's the sort of standard cost-benefit analysis, where we say -- and you're all familiar with this -- we say we grant patents, which are a monopoly and they cause a dead weight loss, because we believe that they promote innovation, and, you know, innovation is, of course, a good. We want to get people who otherwise would not be doing research doing research.

But if there are millions of others who could be inventing a given concept, then perhaps if we hadn't granted this sort of ex-post research grant, and somebody said, no, I'm not to worry about this problem, somebody else might come up -- might come by and take over.

So the odds on that change, and the expected benefit might be different perhaps. And when there are millions who could be sued or, you know, if pursued for licensing after a patent is granted, perhaps a dead weight loss is much larger than in an industry when there are only a couple of players.

So it's not enough to just say, well, you know, the cost benefit analysis in pharma works great, and we're happy with patents to say, no, well, now we can scale this up and say, even though there are 25 million agents in the system, the same cost-benefit analysis works.

We can also talk about copyright little bit.

Copyright is -- I've heard people actually tell me that copyright doesn't work for software because, well, if I write a program in C and somebody else writes it in Fortran, then that's not copying, and I don't understand where that comes from, because if I write a book in French and somebody translates it to Spanish, that's a derivative work, even though no literal copying happens.

So there's a lot of overlap between copyright and patent in terms of software or even a lot of business method algorithms.

However, copyright does allow independent authorship. When you've got 25 million agents out there, they don't need to know what

every -- what the other 25 million agents are doing. They can write by themselves. If somebody produces a website that, based on their own ingenuity, you know, sitting in their office, then you can't infringe someone else's copyright unless they've actually actively copied.

So there's the added power of patent law, because patents to cover a little bit more than copyright in the software sense. Does that provide sufficient added benefit over -- to justify all of the costs that I've been discussing to this point?

So the conclusion slide: patents fundamentally don't work for decentralized industries. There are a huge number of problems. The cost-benefit analysis falls apart. This patent on concept came into existence because of software patents -- but because of software and business method patents.

So, you know, and this is because information processing is massively decentralized. There is no information industry.

And so, yeah, so the intent of this presentation was to serve as a reminder that patent law serves the economy at large, not individual patent holders.

If we write a patent law around and in order to benefit Microsoft and Cisco and IBM, then we've failed. We need a patent law that benefits Microsoft and Cisco and IBM and Red Hat and Oprah Winfrey and J Crew and who knows who else. And so, I'll leave it at that. I won't even talk about the last two bullet points.

And thank you.

MS. RAI: Thanks, Ben. I suspect we will be talking about the line drawing (inaudible)

MR. KLEMENS: Yeah. Yeah. We can save that for the next panel.

MS. RAI: Well, a little bit in this (inaudible) MR. KLEMENS: Okay.

MS. RAI: But I do want to get an economic perspective on the question.

Next we will hear from Iain.

MR. COCKBURN: I too will use some slides, if only because I appear to have written my speaking notes in Thai or Sanskrit or some other language which I do not speak.

MS. RAI: But you do write?

MR. COCKBURN: But I do apparently write. And let me echo a thanks to the organizers for putting on this conference.

I think it's a fascinating and important issue.

Let me begin my remarks by addressing the question of, you know, what we know and what we don't know in the sense of empirical economics in terms of the -- which informs us about the impact of the footprint of these changes in patent law and practice since State Street.

You know, as has already been observed, I think one of the first things we think about or talk about in addressing the patent system is the idea that a patent is supposed to preempt or exclude or block competitors or afford the patentee, you know, some right which translates

into higher economic returns, and that’s the -- you know, that's the purpose of the patent system in Economics 101.

You know, over the years, as I've been interested in this question of patents on software or business methods, I tried sort of harder and harder to find evidence saying goes -- have they had any sort of measurable impact. You know, as a small software company or a large software company, you know, does obtaining a patent had any material effect on your business?

And I think the -- you know, this is a very difficult question to determine. One of the problems, you know, being ex ante looking at many of these patents, you know, the scope of the claims that have been granted is actually very difficult to figure out.

You know, this has, you know, rightly received more and more attention over time, but when I sit and read as an economist rather than as a patent lawyer, you know, the claims in a patent by Priceline or patent by folks like this, you know, it just becomes, you know, it's a real struggle for me to think about, you know, where does this apply and how.

You know, we sort of hope that if these become sufficiently controversial or important, they end up in court where, you know, typically, the court is going to trim back or, you know, try to get more concrete about what types of activity are covered by a patent or not.

But again, that’s something if we’re placing in the hands of juries or judges who may not be obviously well-qualified to determine this kind of stuff without a lot of work on their part, it causes me some concern.

As I said, I've been interested in this and gone to various places to look for evidence that, you know, does possessing or not possessing these patents have a visible economic impact.

Some years ago, I did a little study with Stefan Wagner. We looked at, you know, 600 dot com IPOs from around about the time of the State Street decision and, you know, the last two years of expansion of the Internet bubble. And we looked out, you know, was there any evidence that these dot coms, you know, almost all of whom were out of business, you know, five or six years later -- you know, did possessing a patent, you know, delayed their inevitable demise or not.

And then, you know, specifically did having a business method patent help them or not. And what we found in this was that, you know, many of these companies, you know, went to the public markets, raised lots of money without, as far as we could tell, having any patents at all.

Those who did appeared to have some kind of survival advantage, but, you know, those are the ones who possess what I would think of as being, you know, technical and specific patents, you know, relating in a very sort of deep level to, you know, operation of software platforms on networks or so forth.

The possession of a seven or class 705 patent really seemed not to do these companies very much good at all.

The thing where we did find some evidence is, you know, what was your mode of demise. I mean, we thought about demise as

delisting from the NASDAQ. It turns out that having patents is a pretty good predictor of going out of business by merging or being acquired by another entity as opposed to simply going bankrupt and disappearing. But, you know, these -- the magnitude of these effects were not big.

So whether or not having a patent protected business model is a guarantee of economic success I think is something which is not obvious to me.

A second place where we might expect to see the footprint of these rights is this question which has been brought up of the externality imposed upon everybody else by a proliferation of patents whose reading on any particular invention is difficult to determine.

There's a lot of discussion and a lot of interest I think amongst my friends in economics about trying to understand, you know, what is a patent thicket? How would you measure it and so forth.

There are a little bit of work done on this with a colleague of mine at BU, Megan McGarvey -- we've been looking at, you know, do we see more or less entry into software markets which have a bigger or a more dense patent thicket. You know, the answer seems to be yes, but, again, it's not a huge effect.

Trolls is an interesting question. Opportunistic behavior by non-producing entities, I'll direct everybody's attention to the forthcoming issue of Les Nouvelles, which reports some results of some survey work I did in conjunction with LES. The interesting fact from there to think about is that, you know, the kinds of businesses who are concerned about trolls,

who regard them as being, you know, the threat of litigation by trolls as being something more significant than, you know, a routine slip or fall, slip and fall type of legal harassment is essentially confined to only very large firms in the ICT sector.

Nobody else seems to care. And furthermore, if you ask the people has the threat of troll litigation cost you to actually change your business, you know, not launch products, you know, reaching R&D projects, do things differently. Again, you're not seeing much evidence that there is a substantial real economic effect of this.

Other areas where we see, I think, increasingly these types of patents being important is, you know, a new literature emerging on thinking about the role, you know, the puzzling fascination of venture capitalists with patents, you know, many of which I think are -- don't have very much value, difficult to determine; you know, why should you -- why should this matter. You know, it does seem, however, that as especially small enterprises go to the capital markets looking for money that having or not having a patent appears to tell venture capitalists something. You know, as the -- as there are more and more of these issues, however, I think the signaling value, the information value, you know, is likely to get smaller and smaller.

And finally, the last point on this slide, which I think is the $64,000 -- $64 trillion, I guess, -- that's the unit of accounting in this town these days -- the $64 trillion question is, you know, what has been the

effect of extending, you know, hadn't into this area of technology on the rate of technological change?

When I look at, you know, software, financial services, you know, business services in general, you know, it's very difficult to believe that, you know, these haven't been extraordinarily innovative for 50 years, and, you know, in the case of derivative contracts, we might argue they've been excessively innovative.

I don't think that the, you know, one can only hypothesize here, because you don't really have a counterfactual. You know, would the development of e-commerce have been different, you know, but for State Street? You know, would the development of the software industry have been different but for changes in patent doctrine in the 1990s?

That's very hard to answer. I have a few remarks about these questions of should we be drawing lines and including or excluding certain domains of technology.

You know, it's clear when we think of -- if the purpose of the patent system is to secure the progress of science and the useful arts, you know, patents may not be necessary. You may have a perfectly acceptable rate of technological change in areas where, you know, where, you know, we don't really seem to need patents. There are other ways of appropriating returns from innovation -- the problem of, you know, inventors don't need to put up ex ante large unrecoverable investments in R&D and physical capital and so forth.

But there are other ways of governing or organizing inventive activity, such as, you know, open source, or in situations, as we see I think, in business services and e-commerce that, you know, and industries operate on Internet time, have products come and go very quickly; in fact, much more -- you know, much faster than the pendency period for patent applications, and that the interest in the business is gone by the time that any rights or issued.

I mean, these are places where you have to be skeptical about whether we need patents are not.

Another question which occurs to me is, you know, looking at this as an economist is when we think about trying to restrict the purview of the patent system, you know, what are we trying to do? Are we trying to quarantine the bad patents which annoy everybody and, you know, create a lot of fury and pages in law journals? Are we trying to quarantine bad patents or are we really trying to make a statement about, you know, some technologies just should not belong in the patent system?

And I think that, you know, if we just try to decide to rule out domains of inquiry, you know, what is the long-run impact on the allocation of innovative effort in the economy? You know, that's a hard question to answer, one which I don't really have an answer to.

The Bilsky case, I think, raises some kind of, you know, interesting specific questions for me. You know, are we to limit intentions to those which are, you know, implemented in a particular machine?

You know, still requiring greater specificity on something which is a fairly general and abstract claims strikes me as being a very good idea, but its impact on the behavior of patent lawyers and of innovative companies is -- can go in many different directions.

You know, reducing returns, you know -- requiring people to only ask for or be given exclusive rights over a very specific instantiation of a general idea, you know, may have the effect of reducing returns to people who are real pioneers, who are breaking a new field.

So, you know, Samuel Morse and telegraphy, you know, surely he should not have been given -- awarded rights to the use electromagnetism to transmit information over a long distance. That has probably been a bad idea. But getting it to be really concrete, let's be clear, sort of, you know, restricts Samuel Morse's exclusive rights to narrower and narrower domains, you know, reducing the innovator's return.

But I don't know whether returns to pioneers are too high or too low. You know, requiring greater specificity and limitation to specific implementations, you know, does that just generate a thousand or a hundred applications or a thousand or a hundred claims from a particular invention, does that just, you know, exacerbate problems of, you know, thickets composed of thousands and thousands of patents.

On the upside, I think limitations to a particular machine may, in fact, be a good idea in the sense that, you know, this is to let a thousand flowers bloom principle, that opening up, you know, many

avenues to commercial exploitation of a basic idea, you know, if that promotes diversity in modes of exportation, you know, that might be good. On the other hand, you know, there can be too much of a good thing.

The requirement to try to limit the scope of the patent system by requiring, you know, some transformation, a particular physical transformation, you know, strikes me as being an interesting way to try to limit patentability, but, you know, should the domain of the patent system really be manufacturing?

You know, at this point, it's very small fraction of our economy. Most of what we do in an economy like the United States and most of the sort of creative human effort goes into broadly defined services. We -- you know, taking that large fraction of the economy out of the patent system by, you know, taking away this tangibility requirement -- imposing a tangibility requirement is tricky.

When I look around areas which are, you know, of commercially -- commercial scientific interests, many of them seem to spam this border between tangible and intangible or physical and virtual. You know, digital biology I think is a very good example.

There's a lot of effort done on bioinformatics and, you know, insilico research; a lot of, you know, creative thought going in how to rethink models for not just inventing new drugs, but, you know, personalized medicine, the distribution chain which emphasizes, you know, diagnostic technology research over that type of thing. You know, if we just decide that well, these don't meet a tang -- you know, there's no

physical transformation, and these shouldn't be protected, well, we're going to have to rely upon some other mechanism to support, you know, commercial research in this area.

So to close, let me just, you know, I've thought for more than 10 minutes, but less than a week on this question of what should we do here if we are -- as I think they're very good grounds for being concerned about abstract patents. And what are the alternatives.

One which I have some sympathy, which I think was better expressed by the "law professors" amici brief in the -- for the Federal Circuit was this idea that well, other parts the patent law will work perfectly well here, you know, if only we got serious about them. So if were to, you know, give the patent office sufficient resources or come up with other ways of making sure that, you know, other requirements for patentability than subject have some bite, then some of the patents which are, you know, annoying and socially costly just would not get issued in the first place.

You know, we could, I suppose, think about a sui generis regime for protecting, you know, abstract or algorithmic inventions. Precisely what that would be composed of, however, I think is very difficult.

So with that, I will thank you for your attention.

MS. RAI: Thank you, Jim.

MR. COCKBURN: Iain.

MS. RAI: Iain. Sorry. Thank you, and we will next go to Jim.

MR. BESSEN: I also have some slides. So I'm going to give a little bit of an overview and maybe some of this overlaps with what some other people have said.

But I'll start with the proposition that all property systems have limits. All property systems draw lines in some way. Think about land.

In Roman law, the owner of a plot of land he radically held everything under the earth and up to the heavens.

But in reality, we've restricted. We drawn lines based on technology so that the owner of a plot of land does not own the oil in the gas that flow beneath the land; might not own the water that flows in the stream across that line; doesn't own the migratory foul that land in that stream; doesn't own or have rights against the airplanes that fly over the land.

Why do we have limits like that? Mike and I argue that -- Mike Meurer, my co-author -- that there's a persistent problem of fuzzy boundaries. If the purpose of a property rights system is to provide incentives to invest, and I invest in a multimillion dollar building and only afterwards find out that it's on someone else's property, I'm going to have litigation disputes. I'm going to face some hold ups, some extra costs, and that risk will actually have the effect of discouraging me.

So drawing lines can reduce that. The oil and the gas, the migratory fowl, these are all mobile aspects of property. They can't be pinned down. The ownership is hard to determine, and they have fuzzy boundaries in that sense.

So looking at patents, Mike and I, in our book, argue that there is a similar issue with abstract patents. And I should start by saying what we mean by abstract patent claims.

What we mean by this is not specifically a vaguely worded claim, which is really an indefinite claim. So there -- that's a problem, too. And that creates fuzzy boundaries, too.

But there's something else where a claim can -- a patent claim can claim, by way of abstract words, unidentified technologies, technologies that the inventor doesn't own or even know about.

So in Morse's telegraph that Iain -- patent that Iain referred to -- Morse's famously claimed more or less all communication of information using electromagnetic means. While Morse didn't understand or know about radio, which is an electromagnetic transmission, but facially that claim would have covered radio. It would have covered fax. It would have covered lots of things that he didn't invent.

What that implicitly means, especially as technologies change over time, that the boundaries of what he had would grow over time, would change over time, and were, therefore, fuzzy. And what that meant was that it made it difficult for other inventors to really know what

they would run into as they were going about their invention and ultimately face risks of disputes, litigation.

Here's an example. A software patent, a famous Karmarkar linear program algorithm, which scientist at AT&T developed in the 1980s; got a patent on it. There was a lot of publicity. Here was a new, efficient way of doing -- solving linear programming problems. Only it turned out a couple years later that computer scientists were able to identify that this was really a specific instance of techniques that were known earlier, in the '60s.

One of the problems with algorithms, mathematical inventions, computer science is that there are well know problems of multiple representations, that I can describe something one way, and it can also be described in an entirely different way, and it may not be obvious, not only to a computer scientist, but more so to a judge and a jury that these are same thing or perhaps different things.

That indefiniteness, that uncertain scope is a problem of abstraction, which makes the lines difficult to draw. That's not the only sort of abstract problem -- or problem of abstract claims.

There are also problems in the interpretation of the law. It's not just the technology. Patent law has evolved a number of doctrines that are specific to things like software. I think one of the perhaps critical ones in this area is enablement doctrine. There are very, very lax restrictions on enablement so that -- this means that there are many patents out there that are considered to be enabled under current

doctrine, but, in fact, get to claim much, much more than the inventor invented; and, therefore, have fuzzy boundaries.

Well, some people will claim that, well, software patents are really no different, that, you know, these problems of abstraction exists in all technologies. And they do. They've been around since the 18th century.

You know, software patents are just going to be like anything else, and there's really in empirical evidence that this is not so.

Bob mentioned litigation rates with business methods, but if you look more generally, software patents in general have higher litigation rates. Business methods have even higher litigation rates, and financial patents have even more -- even greater litigation rates. So that -- there are high litigation rates.

Not only are there high litigation rates, but if we look at the relative frequency of appeals to the Federal Circuit on claim construction and interpretation of the claims, there's real evidence that software and business method claims are not clear and get appealed more frequently.

So there is -- there is a difference based on technology in the workings of the patent system as it is today.

Some people say, well, yeah, that's true, but that's because this is a new technology, new area of coverage. The patent office really has to get its act together. It has to hire examiners who know this field, which they didn't for many years.

Of course, this has been going on now for a decade roughly, and, again, there's some pretty strong evidence that things are not getting better, that the system isn't adapting, but they're getting worse.

So these two lines show the probability that a patent will be in a lawsuit within four years after it is granted. The blue line shows all patents. And so there's been a modest increase. The red line shows software patents.

So in the mid-'80s, the probability of a patent being in a lawsuit after -- in the first four years after it was issued was about the same for all types of patents. These diverged in the '90s and the divergence seems to be growing or at least not decreasing.

So the problem isn't getting better by its own.

So do we draw lines? One of the arguments why we don't draw lines is that if we try to draw lines about technology, people say this is a Jaffey-Lerner argument.

Well, people will just figure out ways to get around this. And there was clear evidence in the 1980s, for instance, that people would word their patents in certain ways so that what was a software patent, the claims didn't sound like a software patent.

Well, you know, if you take that argument -- well, you shouldn't have taxes, because people will figure out ways to avoid paying their income tax; right? We can come up with inductions.

Obviously, there is a more sophisticated calculation that has take place. We have to understand what are the costs of the avoidance

and what are the -- what is the effect of the unpredictability or uncertainty that might be introduced by drawing a line, if people are able to get around it.

So there's some -- there's some experience that there have been lines, based on technology, drawn in the patent field that have worked.

So for -- many countries for many years, there were restrictions on pharmaceutical compositions. And there were -- it wasn't very much evidence that pharmaceutical companies were able to get around those restrictions by craftily wording their patents.

Similarly, there's a restriction in the current law not on granting a patent, but on damaged proceedings for medical activities -- surgical patents typically.

This doesn't seem to have caused a big problem with people evading the restrictions of the law of getting patents on surgical methods or activities and somehow phrasing them as something else that they could enforce.

So it certainly seems feasible that -- I guess my -- the opinion Mike and I come to -- that it doesn't seem to be a clear reason to take subject matter restrictions off the table.

We don't see convincing evidence of that. There might be reasons why we might want to do other things first, but it's not clear to us that simply taking those restrictions off the table is a good idea.

Here's another piece of evidence from a paper Bob Hunt and I did. We looked at the -- at the -- let's -- we call the patent propensity to get a software patent. The idea is after taking into account all sorts of things about a company -- how much, you know, how many programmers it has, how much R&D it spends, how many patents would you expect them to get in soft -- how many software patents would you expect them to get? And what we found was there was a sharp increase in the '90s when the law changed.

So what this says is that or our interpretation of it is at least that during the 1980s the restrictions that were in place on software patents were significant. They did have an effect on reducing the numbers of software patents, even though it was quite clear that there were ways to get around the wording of a patent and make a patent on software sound like a -- something else.

Well, on the other hand, subject matter restrictions might not be the best or the -- or certainly not the only solution to the problem of -- the problems raised by software patents.

We can go back to the 18th century, and, I mean, all you have to refer to here is history. In the 18th century, the concerns about extraction were really phrased by a prohibition on patenting principles of manufacturer as opposed to actual application of those principles.

So, for instance, Richard Arkwright who was one of the early textile pioneers, obtained a patent that really claimed very broadly

principles of spinning cotton, and his patent was invalidated, because it was, in effect, too abstract.

But if you look at the law, the law has grappled with the problem of abstraction in a variety of ways. Subject matter restriction is one. And then there are longstanding restrictions on things like scientific discoveries or mathematics. But also the enablement law; also law on functional claiming -- means less function -- claiming are all ways and techniques that the law has grappled with dealing with the problem of abstraction.

And that suggests to me that A, this is a difficult problem. They're throwing lots of different ammunition at the problem; and B, that's probably going to be the story with software patents as well; that we need to think about a belt plus suspenders approach. There's not going to be one simple solution, but this is a complicated and difficult problem. I'm not smart enough to know what the true answer is. I'm done. Thanks.

MR. RAI: Thank you very much, Jim. We are running almost exactly time, which is wonderful. I thank you to our presenters for being so provocative and also terse.

I have only one question as moderator and then we can open it up to the audience.

And since I was a member of the law professors amicus brief that counseled against using --

SPEAKER: You okay?

SPEAKER: I'm okay.

MS. RAI: -- subject matter as the line to draw in this arena, I'd like to push you a little bit more on that point and maybe Ben and Jim and certainly everyone else can comment on this as well.

One of the reasons subject matter might be more difficult in the context of software/business methods than in the context of medical devices is that, as Ben pointed out, information is pervasive. Software is pervasive.

Everyone uses it, and so to draw lines based on subject matter as a consequence gets harder. And I think this is also true when we do the legal panel, they'll be people talking about diagnostic information. So it's not just information that's used in the business context, but also used in -- information used in medical contexts and so forth.

Once you get, when you're talking about zeros and ones bits, it gets hard to draw lines as opposed to when you're talking about things that are, in fact, tangible as medical devices.

So that's raising the question.

MR. BESSEN: Yeah. I mean, so, in a sense what you're saying is that because these -- this technology is fuzzy in a sense, it's hard to draw lines to exclude it.

MS. RAI: Right. And it's everywhere. Well, and this is going to Ben's point that, you know, you've got 187 million websites. It's everywhere. SPEAKER: It's a general purpose technology.

MS. RAI: It's a very general purpose technology.

MR. BESSEN: Yes, yes. On the other hand you know –- so we have Benson and Bilski, which is this test of the does the algorithm preempt -– does the patent claim preempt all uses of the algorithm and this –- I'm always puzzled by this, and wonder whether this really provides some degree of clarity. Is this some –- just because something is general purpose in its nature, doesn't mean we can't have a general purpose prescription on it as well perhaps, but I don't know.

MS. RAI: Are you suggesting then the preemption idea is a good one or a bad one I guess?

MR. BESSEN: I'm just saying, I wonder whether that works.

SPEAKER: Well, I don't like preemption myself, because of the point Iain made that if we have -– if we say no, no you need to be so specific that you're applicable one specific technology out of 20, then that just means we're going to get 20 patents instead of one. You can cover the same ground, so it doesn't prevent much I feel.

Me, I'm more of a fan of sort of making more of an effort to separate what is innovation in information, and innovation physically. I find that the innovation on the information side has all the problems, and as I was describing before all of these you know all of these people throughout the economy, who are trying to solve the same problems. There is the reapplicability of one thing to another.

You may have seen on the slide, that I also work at the National Institute of Mental Health actually doing these biometric problems, and yes, I use basically general purpose statistics and general purpose database systems to answer these problems, but in the long run the eventual product of this is perhaps a drug or what have you, and that's very specific. That physical invention is you know specific to one industry.

MS. RAI: So you're suggesting then that we should wait until you do get the physical tangible thing?

SPEAKER: So, so -–

MS. RAI: That would exclude a lot more than even the Bilski decision does.

SPEAKER: To use a catch phrase – what my favorite catch phrase is, insignificant extra solution activity. I love this phrase; I think it's great. It pulls from Rehnquist and it appeared in Bilski a few times, and the story there is that we say, okay we've got some claimed invention and in many, many cases it is a work of software that is original in novel and it's being loaded onto a stock computer, like the one on the podium there. So it's physical, there's novelty but there's no novelty on the physical side of it. And you can describe it using this term where you say, well there's -– we have original information processing and insignificant extra-solutional activity. I find that that's effective to fix a lot of the problems that I see,

although yes I agree with you Belton (inaudible) this is not the solution to all of our problems.

For example -– and yes, getting back to how yes the information side of it, everyone deals with that everyday. If there's physical innovation the odds are very good that that's going to be specific to an industry.

MR. COCKBURN: One way to I think is a very old fashioned motion of enablement, which is show me the model. And I think that requiring some specific instantiation, which in the old days was the beautiful little working model. You know I think is very good at getting rid of this set of, you know things which are the very annoying kinds of abstract patents generated by, you know lock some people up in a room with a microeconomics textbook and have them generate 200 business method patents, or the I'm going to sit around and think you know what's the best way to shake down City Bank? Well, okay I could file some applications on –- the bank sends me an email when something happens to my bank account, you know these things, which involve very little kind of concrete research. There might be ingenious and new ideas, but many of these applications that I've come across seem to have that feature. They didn't actually require the inventor to do very much, other then think

very hard about drafting their claims. They didn't discover very much that was new, it didn't take them the kind of effort.

And having the idea of you know a co -– I claim, I claim a method of generating energy you know at room temperature by combining you know tap water with a planned electrode. You know you can think up all kinds of ideas, I mean what's sort of distinctive I think about you know non abstract inventions is somebody actually worked very hard to develop, to test, and to you know these kind of software ideas, which are easy to think up, may be actually very hard to put into place in terms of a working you know product or platform, which is actually does what it does reliably and consistently. And so the show me the model –

SPEAKER: Yes, so I – it sounds to me like you're presenting a kind of a to be Marxist about it, a labor theory of value with that. After we have an idea, then there's the implementation step, which is very difficult and I entirely agree with you having a, you know dealt with this stuff. But that's the sort of thing where we don't need patents right? That's the sort of thing that the folks at the New York Times they put a huge amount of effort into their website, and it's got all sorts of neat tricks and so on, and so forth. But that's entirely not appropriable.

SPEAKER: They wish it was.

SPEAKER: How –- what do you mean?

SPEAKER: Well, they're hurting right now. They could use -

–

SPEAKER: Well, yes they are hurting, but its -– a patent is not going to save them right. There is nothing that they –- yes, I mean they have a lot of great products on that site, and none of them can really just be copied and pasted elsewhere.

The same holds I don't know for Google for example. They've put huge amounts of effort into their search engine. All you see is a little box that you can just type into, and then magic happens. Something turns up.

If we found out you know many of their key algorithms we still wouldn't be able to come up next week and say, okay here's Oogle, which works just like it. Because there's millions of man-hours that went into making that thing work.

MR. COCKBURN: I guess that's precisely my point. You know I wish at some point in the mid 90's I'd filed a patent application claiming Google like functionality, you know. So, I claim a computer system, which integrates many disparate databases with a clean and simple user interface, which some patent examiner in the early 90's might have found novel, and I could've gotten a claim to, and could I then go and shake down Google and extract money, from which is the results of their

sort of enormous application of innovative effort in building the thing which does what it does.

MS. RAI: But then your (inaudible) enablement can do the trick, because if there were robust enablement doctrine, you couldn't have gotten -–

MR. COCKBURN: Right.

MS. RAI: The patent.

MR. COCKBURN: Show me the model.

MS. RAI: So, which would be my argument. Will enablement do the trick, or I mean –- Jim you seem to be saying that you need Belton Suspenders; you need subject matter and enablement.

SPEAKER: Well, I -– possibly. I wish I knew. Enablement seems a good idea, and it – enablement is one of those areas where the legal doctrine really is tailored specifically by technology, as it is you know already. And it seems to be perversely tailored in the case of software. So, that very little is required, it's a very low threshold. So, I think it would be great to see enablement increase, and let's see if that fixes the problem, and then you know but on the other hand I can see where that's not going to solve the problem entirely.

SPEAKER: Now, you know part of why we have such a weak enablement requirement in software is from I believe the case was

Northstar. A judge ruled that after the initial concept, the sort of mathematical algorithm underlying software, everything else is “a mere clerical function.” And this seems to present an attitude in –- among judges that yes, after the folks at Microsoft wrote some interesting algorithm, then everyone else was just downloading and clicking, and it’s just runs itself.

And that belittles all of the work that we -– that Iain was talking about that you know that the guys at the New York Times and so on have been putting it to implement and making this happen.

MR. COCKBURN: Yes, the standard enablement every software patent that I’ve looked at has some you know a flow chart describing in very general terms you know –- and then there’s some verbal description of you know, well my invention interrogates a lot of databases in a way which is you know can be accomplished by typing the words in a box. Well, you know it’s very easy to come up with, with good ideas you know my limited experience at trying to write computer programs is extremely difficult. The mere clerical part is actually where the, you know the substantial amount of effort and creativity goes in.

And even in you know the requirement to build a prototype software application and you know go to the examiners office and show them, and say look you can click on here and it does this, and click on

there and it does that, and here's my toy implementation. That I think substantially raises the bar to people trying to obtain these types of patents.

SPEAKER: Yes, I guess where enablement is not going to be sufficient is something maybe like the E Data patent where yes, somebody could go into the patent office, showing their Kiosk -– this was a patent that was basically for a music Kiosk, where you go into a retail store and it was –- the language in the patent was at a point of sale location, which was computer industry jargon for essentially where the cash register used to be. You'd you know swipe your credit card, dial a few buttons to select some music features and it would download a tape. And I think at that time it was eight-track tape to give you a clue, but that patent was later interpreted to cover essentially most E-Commerce.

So, you know yes it -– I mean if you restricted enablement just to what had been shown, then you would have been okay. But there's more then just – that's it.

MS. RAI: Well, why don't we turn to the audience because I think we have Brian how are we doing on time?

SPEAKER: 23 minutes.

MS. RAI: Yes, so 23 minutes is a good amount for I think for a robust discussion, so questions from the audience. I believe Wayne has his hand up?

SPEAKER: Yes, I just have a question about –-

SPEAKER: Excuse me. Excuse me.

SPEAKER: It seems pretty uniform your – the panel's sort of underlying assumption that the rise of software patenting seems a problem for our economy. But I haven't really heard any real solid evidence about why that is, other then looking at increased litigation rates, or the problems of searching or the difficulties of examination.

I'm sure litigation rates for wheelchair ramps went up after the ADA was passed, but that doesn't necessarily equate to social net loss. And so I'd be curious to understand exactly why it as you admit, during the rise of software as a pervasive to our economy and the importance of it as a technology and the general purpose computer is as central to our whole world, why patenting those technologies is –- has actually caused harm.

MS. RAI: Jim. Jim's written a book on this.

MR. BESSEN: Yes, so I'll just summarize the argument of the book. In the book what we looked at – we looked at one aspect; we ask what are the incentives that patents provide. What are the key values that patents are providing incentives to do RND? And so one of the things

that we find, is that outside of the pharmaceutical and chemical area the positive incentive are the profits and what Congress calls Rents that are obtained from patents. The profits beyond what other profits they would've gotten.

The downside that we look at are the cost of litigation, and what we find are that the cost of litigation during the mid 90's in these other industries, started to exceed the benefits. And by the late 90's had really -– were several times as large as the benefits. And a very significant part of that was software.

SPEAKER: I would add, when we're looking for positive contributions from the patent system, in some of these new areas of the economy, and we don't find very big effects. One of two things is going on. It's either that IP is irrelevant, it's not the important margin, or that we have tailored these rights in such a way that we have dissipated most of the benefits for those sectors of the economy. And we can argue about which of those is true.

What we do know is that the patent system is a high fixed cost technology to use. And so if you're going to adopt it and you're going to have litigation, which indicative of a whole lot of things. Then you would like to see measurable benefits from it. And if you don't you really want to spend some time figuring out why you don't observe measurable benefits.

SPEAKER: So, yes my answer to this, which build upon what you guys are saying, is that yes, we have a couple of folks who are kind of playing the game. I need the hand gesture. A couple of folks are playing the game over here, and we're not even sure if these guys who have already spent the fixed cost to get their patent attorney's an so on, if we're seeing benefits there or not. We definitely see the cost.

Then there's the larger information economy. The people who engage in business methods and information processing because they exist. And those guys are doing most of the work anyway, and when you see innovation on the web, when suddenly you have rounded corners on your favorite website. It's these guys over here that made that happen anyway. So, for the first answer would be that yes, you're not going to see a sudden decline in the entire system. I certainly hope that patents don't suddenly shut down every business in America. But they might create problems for those who are sort of playing the game as it is.

And it's possible that if we -– if nothing -– if things continue, then yes perhaps 20 years from now, yes you will need to license patents just to go into business, regardless of the business you're going into.

The second way in which we've seen problems, which perhaps others will touch on later, is that patent laws are a unitary system, and therefore we see – in the last decade I would say that we've seen a

watering down of patent law, in order to shoehorn software and PhRMA and mechanical engineers, and everyone else into one and only one law. And so, perhaps we're not looking in the right place. Perhaps we should be looking at changes in innovation and you know productivity in electrical engineering, or in PhRMA production. Because those guys are seeing an influence of shoehorning all this stuff in.

MS. RAI: Yes, over here. If everyone could identify themselves. That was Wayne Sobin.

SPEAKER: I'm Tim Lay, with Cato Institute, and Princeton. And I'd like to ask sort of the flip side of the previous question, which is a lot of the discussion here has been focused on the fact that software patents are problematic, because it's hard to draw clear boundaries.

But, I'd like to comment on the economics of the slightly more fundamental question, which was if we could magically come up with clear boundaries that everybody agreed you know these are software patents and these are not software patents. Is there evidence that there was any need for software patents you know in the 1980's when you started to -– when the (inaudible) started to allow more patenting on software. Is there any evidence that there was a need that was being filled, or was this purely something that was pushed by patent lawyers or whoever, but was not actually helpful to industry, or the broader economy?

MR. COCKBURN: Ask the question like kind of factual you know. I don't think we can answer this to a standard of proof, but I can certainly tell you my gut instinct on this. You know, is it the case that the you know transformation of the use of information technology by business and E-Commerce and all of the things we've seen since the late 1990's. We're all sitting there pent up waiting to happen, it's just that every time that some ambitious you know set of MIT graduates sat down and thought, well you know we could – you know we could do such and such an online business. The trouble is we can't make any money out of it, because we can't patent our business models. So instead we'll do something else.

I mean I think that's just preposterous, so the idea that State Street suddenly enables and explosion of innovation and E-Commerce you know, because after State Street we see a lot of activity, which is coincident with a lot of patents trying to claim it. I think that's just preposterous.

I think in the large, I think there is this kind of interesting question about well, you know at the margin you know innovation does kind of you know follow the money, if it's the case that you know access to capital and the ways, you know sort of interaction of intellectual property, the capital markets, the entrepreneurship you know gets focused on a

fascinated by the ability to get or not get patents. I mean you know you can expect to see over time, it does have some impact. But we might expect to see some impact, but I think you know whether it be business methods, E-Commerce or just looking at you know, software in general, I think it's really financial services. That's an excellent example here.

It's not like there hasn't been enormous innovation in the modern theory of finance and huge progress in of some sort in the way financial markets operate. That's you know, started in the 50's and 60's and that's where people got Nobel Prizes in finance for. You know, the idea that you know we needed a patent system or the prospect of a patent system or putting patents in place on durative contracts, you know somehow affects that powerful motors of innovation elsewhere in the economy where you know that presence or absence of patents really seems to be immaterial.

SPEAKER: I did always think it odd that we need to provide a government incentive to get people to develop methods of making profits. It seems that that one runs itself.

MS. RAI: Well, let's just to play out his applicancy. The argument would be, of course you're going to get some innovation in that area. The question is do you get additional innovation with the additional

incentive of a patent? I mean it's not -– it's a little bit of a (inaudible) to say --

SPEAKER: Here we can put it this way. If your method of making profits, depends upon a government granted monopoly to function, then yes it's probably not very good, and probably you know doesn't -–

MS. RAI: No, no it doesn't necessarily depend on it, but at the margin there would be some additional innovation that might depend on it, yes.

MR. COCKBURN: There are good grounds for believing if we took out the patent system for Bio Pharmaceutical's. I think it's pretty clear that much of that –- there will be a profound effect on that industry, there would be much less RND and what was being done, will be done in different ways, by different people.

I think Congress is very hard to argue, if we came up with a legal ruling or a patent reform bill, which took business methods and software out of the purview of the patent system in definitive way. Now, would that change the volume of investment, would that change, you know, the progress of technology in business services? I just don't think so.

SPEAKER: Well, we do have data from the 1980's that does suggest that patents were not seen as an important business asset in the

major software companies that emerged in that period and well into the mid ‘90’s. And I do think that there was, you know, a perception that patents would complicate those businesses, and there was no need for them in the sense that companies like Apple and Microsoft and Cisco evolved without them.

We’re now in a very different economic milieu in which the proliferation of software patents has, in some ways, made it imperative that all players have them, because it serves an important defensive role, and it’s leading, I think as Ben is suggesting, that we’re going to face some anti-competitive issues, and we probably are already now as a result of that.

So, you know, it’s a complicated story. Whether we can reverse the clock is, you know, that’s a harder policy question, you know. We might not have set up the system this way, but I do think that we can’t make the strong case. The other fact, I won’t say fact, the other sort of phenomenon that I think is pretty important in distinguishing where you would want to have patents and where you would not want to have patents, whether we can draw on that line perfectly or not, is not, I think, the issue, it’s, you know, can we identify the regions.

And what distinguishes the pharmaceutical industry as kind of the quintessential patent dependent industry is that the patents are a

big part of the early development process, that until the patent rights are secure, and that's why there's so much debate over utility, when utility is met, because you can't proceed to make the big investments until you feel relatively confident that you will have exclusivity.

You don't see that on the software side. You don't see companies, you know, sort of waiting, oh, we got the patent so we're going to proceed. I mean they're pretty much done with the patent part of the process before the – I mean – well, let me just say, I mean the implementation is where they're spending money, but the patents are usually secure before that. So I just think you see a very different pattern. The patents are not sort of playing an essential role in directing the R&D, its people just getting together and saying, you know, where can we perhaps make some important claims.

SPEAKER: Okay. I think we have time for a few more questions. Yes, sir, in the blue shirt.

MR. O'NEIL: My name is Don O'Neil.

SPEAKER: Don O'Neil, I'm sorry.

MR. MILL: President of the Center for National Software Studies. My name is Don O'Neil, President of the Center for National Software Studies. My question is, was there any economic impact or market behavior change noticed when IBM withdrew

its outsourcing of services patent application? We're assessing this as delta for an action taken, how about a delta for a removal of something from the system; was there anything noticed by the panel people?

SPEAKER: It sounds like a patent on outsourcing.

SPEAKER: What was the action that you're talking about?

MR. MILL: You're aware that IBM had a patent on outsourcing, it was called outsourcing of services. It created a huge – hue and cry. Pardon me if I'm sort of out of the context here. And they withdrew that patent application I think to ameliorate the, you know, the concerns that the community had. But having done that, was there any impact on the behavior of the community, or was there any economic impact? Is there anything to be learned about that action?

SPEAKER: I'm not aware that that's an event study that could be done.

SPEAKER: Does anyone else want to respond to that question?

MR. CARTER: Andre' Carter; I just had a question on the last segment you were talking about, the impact of patents on companies and how they – how product development occurs. And if you're true at a services or if you're in-house in a large organization dealing with their internal IT, it's exactly as you state, but if you look at the development of

products that are shipped, you know, well over 90 percent of all of the great stuff out there is by small companies that, from personal experience, really depend on this notion of having some way to create exclusivity or some sense that what they're working on is worth the time investment and risk. And I'd like to maybe get the panel just to try to include in the statements, because as I hear you talk, you always go back to Microsoft, Apple, and IBM, who arguably don't need a patent system, they can outspend, they have the mass, they have the resources to effect something. But for the small one – single developer or three guys literally in a garage, the notion that they might have some way to show that they've got something that they can control is the key to access to funding, to hiring new people, to gaining distribution channels.

I've never had a conversation with a BC or distributor or a person that was hiring that didn't ask about the IP portfolio, I've just never had that, so I just would love to hear some comments.

SPEAKER: I think that's a good point. I'd like to hear more about – and you mentioned this in talking about the fascination of BC's with patents. I mean it is the case that – I mean clearly in all of the life sciences, patents are a – What about in information technology, what is the evidence there?

SPEAKER: I think it's the case – there is, you know, increased interest by venture capitalists or other investors, you know, whether new enterprises arrive, you know, looking for funding, you know, with patent applications in hand. You know, there are a couple of interpretations of why they might be so interested, you know. One is that, you know, really they're looking at, you know, does this business going to have some market exclusivity and protection for its invention. I'm somewhat more skeptical, I think they're just looking for, you know, do these guys know how to play the game, and you know, are they big enough and smart enough to realize that, you know, either they're going to have to have a patent or they're going to get sued over some IP issue and are they just, you know, a mature enough business to understand that part of their activity now involves playing the game in this extra dimension rather than just having a good idea.

I think an example of Microsoft is actually a very interesting one. I mean recall, Microsoft is the, you know, was at one point the prototypical garage scale entrant into the software business. And so one interesting question to ask is, you know, when Bill Gates was a teenager, you know, had he looked at a world in which there were, you know, 40,000 patents covering operating systems and programming languages, you know, would he have decided to go do something else, or would he have

decided to try to, you know, fight his way through, you know, a huge thicket of patents, you know? On operating systems, even though he may have had some very good ideas about how to write, you know, a basic interpreter.

SPEAKER: Yeah; in fact, slightly to build upon the last question that – yeah, it goes both ways in that IBM, for example, famously has a, you know, a large operation that gets royalties for its patent portfolio. This has often been described in terms that I would get sued for using now.

So how much – so if we as, you know, private individual developers have patents, then that means IBM also has patents, right. And, you know, if you have some idea about, I don't know, hooking up phones between yourself and Canada or what have you, then yeah, in the current regime, you could easily, you know, have to pay rents and licensing to any of a number of other parties.

So there's this question of what it was like 15 years ago. Other studies have been done. Ronald Mann, for example, interviewed University of Texas, interviewed a lot of venture capitalists, and there were varying – I think he was hoping for a lot of enthusiasm about software patents, but that was not forthcoming. And, you know, back then, basically your venture capitalists were looking for, as Iain describes, you

know, a knowledge of what's going on, a step ahead of the competitors and so on and so forth. In fact, the venture capitalists that he interviewed, as I recall, none of them did patent searchers before hand. None of them really, you know, seriously got their hands dirty on the patent question. So it could just be modern custom, it could just be that, well, we're playing this game now, so venture capitalists have to play it, too.

SPEAKER: Jim and then Peter.

MR. BESSEN: So one statistic that relates to this is, at least by the late '90's, only 15 or 20 percent of software firms would get patents before they went for venture funding, before they had an IPO, you know, basically it was a small selection of them.

Now, I used to run a software company and in contact with a lot of people and I think that's changed now, it's different now, because every single software company that I'm involved with has had patents asserted against it or expects to. So they're all getting – they're all getting patents now at some point in the process, but I'm not sure that's necessarily helping them. And I think the earlier statistic is the one that indicates, you know, at a time when it could have helped them, it was only in some very limited areas that many of them saw this as a real source of help.

SPEAKER: And Peter.

MR. MENELL: I'll say there are not a lot of sort of poster companies, you know, poster child like companies where patents are what led them, you know, out of the wilderness to the success in the market place. I mean was Facebook driven by a patent? I mean there are a lot of ways in which you can build those businesses. Others have talked about the multiple appropriability mechanisms.

Venture capitalists were not in the dot com boom period. That focused on this issue, and they didn't have a firm understanding of how patents worked, I think that's changed quite a bit, I think there's a much higher degree of sophistication.

But what we've done is, we've basically created a very high level of armament. I mean we've made it very important to have a lot of assets, but the total social benefit of that is highly speculative. It may be that people are just cuing up earlier and paying more people to support these businesses, but that can be viewed as a negative. That means that, you know, you have to worry about many more things, the due diligence is now part of being an entrepreneur in the software industry, it was not in the 1980's. But when I talk to people pretty broadly in the industry, they say that, you know, it is important today in ways that it wasn't important before.

We're now focusing on the question, can we de-escalate. And one of the proposals that I've made is that we could move in that direction prospectively, that the issue isn't necessarily that we have to wipe away what's there, I think that would be politically impossible at this point, but we could move, perhaps collaboratively, towards some solutions that will, over time.

I mean if we abolished software patents today, okay, it means no one is going to lose anything based on the investments they've made, maybe even allow it to go another two years in the pipeline. But if we did it – well, in 2025, or my math is wrong, I had the idea it would have been 2005, so you know, in 2029, we would have that world in which something which would have – problems, but would I think change the whole culture of these industries.

But, you know, as I look at it today, we are so built up with the lawyering surrounding this, and the lawyers are often the people probably in this room and on Capital Hill that that's another set of vested interest, and that vested interest is, I think perhaps the biggest impediment. I think if you got, you know, the major captains of industry together, they would realize that we're spending as much defending, building up defensive portfolios as the benefits we're getting. I think that

would be on the top of their minds. But the lawyers who are at the meetings in their stead don't see it that way.

SPEAKER: Peter is clearly from the left coast.

SPEAKER: I think that the point you're making is extremely important, and I can think of some examples that are pretty strong, and that would be the independent semi-conductor design firm that doesn't own its own fab. That business model probably couldn't exist without the kinds of patents they get.

I also think it's extremely important when you think about the national innovation system that we have in the U.S. compared to a number of other countries. We literally have millions of companies doing some form of research and development. In other countries it's 1,000, or even just a few hundred. One of our strengths has been this ability to develop new products and services out of businesses that didn't exist a few years before. That said, it's a – for a wide – of the economy, it is a wide open question about whether the patent system is especially useful for the smallest players relative to the larger players that already have other natural advantages. Something that I'm working very hard on is trying to answer this question in financial services, is the important margin entry by new innovative firms that could not have existed before state

street. And I think that's a fantastic question to ask. But the fact is, we don't have a lot of evidence at this point.

SPEAKER: Iain.

MR. COCKBURN: Quickly, yeah. Just a complimentary issue to this is, it's not just, you know, new enterprises getting access to capital, it's the – a mode of innovation which emphasizes deal making and division of labor and specialization. So, you know, by -- you know, this feature that, you know, there's many more companies upstream than there are downstream, and historically in financial services, many more companies, you know, maybe – different in financial services. So I mean there's a lot of interesting work in economics going on these days, looking at this market for technology, and you know, technology being contracted over or traded, produced by specialists and sold to downstream firms who can more efficiently do distribution service and so forth. And, you know, to the extent – having, you know, clearly defined property rights, you know, encourages those kinds of transactions makes them crisper, cleaner, easier to do. You know, that may be a benefit from, you know, bringing in property rights into this area, which may not be necessary in the – small organic growth mode.

SPEAKER: -- counsel in favor of a strong enablement requirement as opposed to just taking out the patent system all together – the plug for –

SPEAKER: Show me the model.

SPEAKER: -- that I participated in. One last question from – we have to – oh, okay. I apologize. All of our panelists, who are just wonderful – will be here, obviously, to engage with the audience in coffee breaks. So thank you very much.

(Pause)

MR. KAHIN: Okay. We're going to get started. This is the legal prospectives panel. They're going to zero in on the questions that Arti was posing at the beginning. These guys are the masters of line drawing. Then we're, just to give you a sense of the progression, the panel that follows immediately after lunch is concerned with independent invention. And the problem with inadvertent independent invention was raised at a couple of points this morning. So you can see what we're doing as we're looking at the two disciplinary prospectives and then zeroing in on a particular problem that some people believe could solve the tension over subject matter. And then we zoom out to a roundtable at the end of the day. So if you didn't get it – if you don't get to ask questions

on the particular panels earlier in the day, you'll have a last shot in the afternoon, and that will be wide open.

Okay. Let me first introduce the panelists very briefly, and I'm going to do this even more briefly than Arti did it. My theory is that there is public wifi here, but probably nobody has figured out how to do it. It's an unbroadcast network, so you have to get special instructions about the name of the network and configure it yourself. I learned this yesterday.

But anyway, my theory was that if you really cared about who these people were, you could look them up on the web as we spoke. So very briefly, to my right, Bob Armitage, Senior Vice President and General Counsel for Eli Lilly; Dave Kappos, Vice President and Assistant General Counsel for Intellectual Property Law at IBM; John Duffy, Professor of Law at George Washington University School of Law; Rochelle Dreyfuss, Professor of Law, Pauline Newman, Professor of Law at New York University Law School; and Josh Sarnoff, a Practitioner and Residence at the Washington College of Law, American University, and also Assistant Director of the Glushko Samuelson Intellectual Property Law Clinic.

And I'm Brian Kahin with Computer and Communications Industry Association, also affiliated with the University of Michigan. Now

we get down to the real nitty-gritty business of drawing lines that we wrestled with a little bit from an economics prospective earlier.

I want to ask straight off by wondering why is this problem so hard. I mean this is what judges are paid to do, right, and lawyers tell them how to do it, and this gets done all the time.

So I want to suggest that one reason that this is so difficult is because, you know, when I learned how to think like a lawyer in law school, you had one situation dealt with one way and another situation dealt with another way, and the challenge was often to try to figure out what went on in between. Here we're trying to figure out from within what are the boundaries of the system. Can we use patent law to understand what its limits will be? That gets a little problematic. Now, we also have this phenomenon, which I remember from my instruction on legal realism, that judges don't like to make policy or at least like to think they don't make policy and like to say they don't make policy, so they reluctant to engagement policy directly, and they may not have the information to make policy.

They basically have information that the two parties bring before them. They don't have a sort of fact finding apparatus in – that sits behind them – can use special masters.

So what the problem is, they tend to think of policy problems should go to legislatures. Well, legislature, we haven't had a good wrestle with this subject matter issue in the United States. Congress has not dealt with subject matter patents except very peripherally and as the occasion presented itself. For example, prior user rights provision in the last round of patent reform, but that wasn't really directed at business method patents. Business method was a way of salvaging prior user rights. Well, in Europe, they did try to deal with the limits of the patent system. There was an intense three and a half year debate over a software patent, with a directive on computer implemented inventions, that went down in a spectacular outburst of flames, 648 to 14, not so much because the European Parliament hated software patents, but because it was very divided, and the process had been set up by the European Commission, which has to propose legislation, and there was a lot of discontent about the way it was handled.

But it may be that this is just inherently too difficult a question for legislatures to deal with. There are too many sides to the problem, there's too much – there's too little information about the economic aspects, which is what we ultimately care about.

So let's take a look at the line drawing problem and see if we can sort of figure out what the different aspects of it are and whether

there's – certainly Bilski gives us an anchor of sorts, it is a way of dealing with the line drawing problem that both resurrects old Supreme Court language, going back into the 19th century, and it tries to move out of this categorical focus that we all talk in terms of, business methods, software, diagnostic information, and tries to draw the line in terms of particularity or in terms of physical transformation, broad categories that should apply across the board, is that a useful way to think. We're not trying – this is a policy conference, so we're not trying to recreate the oral arguments around Bilski, we are trying to look at a bigger picture and hopefully tie it back to some of the economic issues that were talked about earlier. It would be nice if we could discover in the various formulations of the line in law some deep economic insights that judges are trying to apply. So with that said, let me ask Dave Kappos to lead us off here, Dave.

MR. KAPPOS: Sure, thanks, thanks very much, Brian, and thanks to Arti also for your efforts in setting this conference up, and to the Brookings Institute for hosting it. It's really quite a pleasure to be able to have a very, very grounded expert discussion about abstract patents today.

So I'll try and touch a little bit on Brian's line drawing point. I would start out by saying I frame the debate a little bit differently than what I've heard so far, I frame it really around abstract patents, per se, whether

they happen to be abstract software patents, or abstract computer hardware patents, or abstract patents involving the transmission of electrical signals, whether it's Morse code, or in more modern times, microwave signals or other kinds of signals, or abstract patents really in any other field. I think really the root of the problem that we're dealing with isn't so much technology based as it is based on the claiming of results rather than ways those results are achieved, the claiming or problems rather than specific solutions to problems, and that's all just those – just different ways to say that abstract patents are coming up really all over the place, and there are, in my view, a number of root causes for them, but it's not so, in my view, not so simple to say, you know, we should get rid of software patents or we should get rid of patents that have some business component to them, so I'll come back to that in a few minutes.

So we're about ten years into the state street era, if you will. The U.S. experiment in that area, in the profusion of abstract patents that's come after state street, we know a lot more now than we knew ten years ago. A lot of patents have issued, as the previous panel pointed out. There have been lots of disputes, I think someone mentioned something like 27 times the number of disputes as in other areas, so some really noticeable statistics. And a lot of us, including myself, and including my employer, IBM, has, for most of that period, maintained neutrality and

tried to just observe the experiment, in fact, participate in it. If anyone is guilty of getting lots of software patents and lots of business method patents, you know, I should be close to, if not at the very front of the line for that.

MR. KAHIN: Learning by doing.

MR. KAPPOS: That's right. Well, however, though, you know, at some point in every experiment it's time to declare success or failure. And so for us it was about two years ago or so that we declared, as a matter of our corporate policy, and I became convinced that the abstract patenting experiment that the U.S. undertook needed to be declared a failure and not a success.

And so as a company, we declared that we would essentially stop filing for business method related patent applications, and we have essentially done that, so we're sort of unilaterally disarming in that sense.

And what I want to talk about is really the reasons for it, why I became – why we became convinced that there's really more harm than good to come from the patenting of abstract – of abstraction, mostly in the business method area, but again, not exclusively in that area. I would start by saying just a few comments on the line. We don't want to get into a lot of details with the case law. I view the Bilski decision as being a good piece of work on the part of the federal circuit and an important step

in the right direction toward clarifying the appropriate scope for patentable subject matter and the exclusion of abstract ideas, so a good step in the right direction.

Of course, only certain things constitute the articles that are sort of the – one of the main points of that case. And while there's some, in my view, some good language in that case that makes it clear that things like legal obligations and business risks and other such abstractions don't meet the test, because they're not physical objects, not substantives, and not representative of physical objects or substantives, nevertheless, there's lots more that needs to be done, okay.

And my view, where the law needs to move further, building on Bilski, is in the direction toward further clarification along the lines of a technological contribution. So an approach that is, in my view, more consistent with what's already being done in Japan and in Europe, where there are – there's much more of a focus on a technological contribution or some nexus between the technology and the essential features of any invention in order to confer patentability and I think that that goes a long way to solve the problem with the patenting of abstract ideas.

So I'm not going to go at all into Supreme Court precedent because, as I read those cases going back well over 150 years, and as I read both sides of the argument, looking at the Supreme Court cases is a

lot like looking at a Rorschach Blot Test. You can see whatever you want to see in those cases, and for every good argument on the side, four business method patents, as an example, or four software patents, there's argument on the other side. So I think that equation just does not close, in my view.

However, I think the real issue, and this is really the point I want to make, is that the decision as to whether abstract patenting is okay comes down to innovation or industrial policy, and one's view of what it is that causes innovation and industrial policy to move in appropriate directions. I would say we need to be asking ourselves, do we believe there's so much need to incent abstract innovation, you know, caption, business method innovation as a major example, that we are compelled to hand out patents, which are long term monopolies, in order to incent that kind of innovation, right. And my conclusion, after participating, as Brian says, participating in this experiment for the better part of a decade, and our company's conclusion was that there really is not any sound innovation policy that supports having patents on non-technical abstractions, especially those like business methods.

And so, you know, we can start -- others on the previous panel have talked about this delicate balance that the patent system strikes between public disclosure, on the one hand, and encouraging the

creation of new ideas, of course, on the other hand, rewarding exclusive monopolies, we all know that, it's a really important balance, however, we also know that because of the power of the rights that are handed out with patents, the patent system is vulnerable to abuse and to over reaching if it is extended too far.

And it's the grant of non-technological exclusive right, in my view, untethered to any particular practical application, that winds up creating one of those forms of over extension. As one author put it, and now I'll quote, "no where in the substantial literature on innovation is there a statement that the United States economy suffers from a lack of innovation in methods of doing business. Compared with the business practices of comparable economy, we seem to be innovators." Some might wonder at this point whether we didn't become too innovation, given what's going on in the global financial system right now. But anyway, I really do subscribe to that view, that there is no evidence that we're not innovative in this economy in the sense of creating new methods of doing business, and there's tremendous evidence that we are very, very innovative.

So I would point also to some of the factors on a policy basis that I believe, on the one hand, lead to the conclusion that there's really no need for this kind of incentive, for a patent incentive that extends into

abstraction, and the points that I believe lead one to the conclusion that there are good reasons why not to extend that far.

So I won't repeat what people on the previous panel said, but I just want to echo a few comments that I heard about the existence of both federal and state legal regimes, unfair competition law, trade secret law, copyright law, et cetera, et cetera, that go a long way toward policing the kinds of problems, the free writing kinds of effects and other behavior that has allowed business pioneers to be very, very successful in this country. So if you take that and then add to it the market based incentives, first mover advantage, learning curve advantages that the economics panel discussed and know a lot better than I do, I believe you conclude that there is plenty of other legal and market based incentives for business methods to be created as they have been for many, many years.

And so, you know, you get to there really is no plausible support for the view that patent protection for non-technological business methods is needed in order to solve some kind of a market failure problem or fill a legal void or enhance social welfare or any of that.

And then on the flip side of that coin, you know, I ask, so do issuing patents on non-technological abstract ideas cause some kind of a problem, does it raise significant competitive concerns, can it and might it even be diminishing social welfare, and I believe, after watching and

participating in this experiment for long enough, the answer is, it probably does, it probably is causing bad things to happen. And that's where I get back to the point I made at the beginning, the patenting of abstractions, especially business methods, has driven a real ends justifies the means kind of philosophy in the patent system, whereby we're approaching patents in a way that's covering the results, right, not how the results are achieved, and that I think is very, very dangerous.

Patents that aren't restricted to any specific application of technology effectively appropriate all possible solutions to the problem, not just the solution that was created. And in doing that, I think they have the tendency to discourage and not to encourage innovation actually aimed at technological implementations.

Those patents wind up providing very broad monopoly rights, covering all technical solutions to a given problem rather than the single solution that was invented, in effect, right, patenting the problem rather than the solution. And that also, and I'm going to quote again, contradicts a principal that I've always thought was quite important in the patent laws, and the quote is, "it is for the discovery or invention of some practical method or means of producing a benefit, a beneficial result or effect that a patent is granted and not for the result or effect itself"; that's from the Deer opinion. And I think those words, to me, have always rung

true and have always provided a kind of an analytical dividing line. Once you cross over and start patenting problems rather than solutions, you've got a real problem, a new kind of problem on your hand.

So just in concluding, I would ask that we also consider a global perspective, right. Hopefully we're moving into a new era here where we can actually learn from others and look outside of just what's happening within the shores of the U.S. and ask what is the experience in the rest of the world and what do we have to learn from them.

And so as I mentioned at the beginning, if you look to Europe, right, you see that they have a strong technological contribution requirement, and it seems like no business related innovation there, and the same thing in Asia, particularly in Japan and China.

And so if you want to ask questions about harmonization, right, it's not an end in itself, but harmonization is a very good thing in a world that has globalized in which we need to think of our patent system in a more global way. We can move toward harmonization by adopting an approach to patentability that keys off of technological contribution. Most importantly, we can line with what I believe is appropriate industrial and innovation policy. Thanks, Brian.

MR. KAHIN: Thanks, Dave. Rochelle, you're next.

MS. DREYFUSS: Oh, I'm next, all right, if you say so.

MR. KAHIN: It's on the official program.

MS. DREYFUSS: Oh, it's on the official program.

MR. KAHIN: If you read it off the web site, it's alphabetical order.

MS. DREYFUSS: Okay, sorry.

MR. KAHIN: We have some logic to this order.

MS. DREYFUSS: All right. Well –

MR. KAHIN: I'm not disclosing it.

MS. DREYFUSS: I'd, nonetheless, like to thank you, Brian, for inviting me to the conference, and also Arti, and to Brookings for making the trip possible. So, Brian, you asked me to talk about the abstraction problem in the biomedical context.

MR. KAHIN: Turn off your cell phone if you have not.

SPEAKER: Those tend to be Blackberries that create that noise.

MS. DREYFUSS: So principally, I take it I'm asked to discuss the diagnostic or association patent problem, patents that identify some fact in nature and state how to associate that fact with the property of a system or system defect.

Some examples would include associating an elevated level of a particular amino acid with a vitamin deficiency, or a BRCA gene

mutation with a predisposition to cancer, or a given blood level of medication with a need to alter the dosage of medicine the patient is given.

So I'll start there, but I'll also touch on another key biomedical area, and that's the patentability of genes and other polynucleotides. My conclusion is that there's a good case to be made that none of these advances should be patentable either. So I'll end also with that normative question of whether that's good or bad for the health sciences.

So starting with a diagnostic question, in some ways it's a tough assignment to be I this conference because I'm not so sure that abstractions are a good way to talk about the problems in this particular sector. A process for diagnosing a disease is not, as Joe Drader noted in his separate opinion in Bilski, an abstraction in the same sense that we're talking about. True, a diagnostic test typically starts with a relationship found nature, and that sounds kind of bad, but it uses that relationship to achieve a defined result, figuring out whether a patient has a problem, which is, of course, the first step to fixing it. And that sounds a lot like the physical transformation that the Bilski majority was looking for, and it appears to create boundaries much like the kind of boundaries that you see in the pharmaceutical context.

But as I said, I don't think that abstractions or pre-empting the alga rhythm is a fruitful way to think about this problem. There's another thrust to Bilski and to the Supreme Court opinions which led up to it, and to the concerns I think we heard this morning, and that's skepticism about patenting pure information, especially information about how the world works and the mental processing of that information.

So the Supreme Court actually had a case about a diagnostic before Bilski was decided, and that was Lab Corps against Metabolite, which was about a patent on the amino acid vitamin correlation. The Supreme Court dismissed – in that case as – granted, but Justice Briar wrote a separate descent in which he made the point that patents can "discourage research by impeding the free exchange of information." Specifically he noted the diagnostic patents can threaten to leave the medical profession subject to the whims of the patentee, inhibit doctors from using their best medical judgment, divert resources from the medical task of curing the patient to the legal task of clearing patents.

And you can actually find such cases in practice. There have been problems with the BRCA gene, patients don't get second opinions because Myriad the patent holder, won't permit anyone else to sequence that gene. The test also can't be put into a panel that simultaneously tests for other forms of breast cancer. And that kind of

problem is particularly difficult in areas where doctors need to know the specific genetic cause for the disease.

So, for example, hearing loss is such a case. There are many genetic causes. Doctors would like to test for all of them simultaneously, but patients just can't afford that test because there are so many gene patents that the royalties stack up, and so, instead, the doctors test sequentially until they find the one that's causing the hearing loss in a particular patient. To put this another way, the problem in this sector isn't just that there's a bunch of patents that have fuzzy edges, the real problem here seems to be that the patents are just too broad. They dominate a broad swath of downstream uses, and it's so broad that we can't be sure that the patentee is going to mine its territory efficiently. So even if the edges were crisp, we'd have that problem.

So I was posed the legal question of asking whether Bilski kills diagnostic patents, and that seems to me to be clear and to be clear for a good reason, that Bilski didn't mean to abolish them. And even if it wasn't clear when Bilski was decided and when Brian put me on this panel, it is now because recently the federal circuit decided Classen against Biogen, which was a diagnostic case, the opinion is only four lines long, basically it says these claims are invalid.

The opinion by Judge Kimberly Moore is even denominated as non-presidential, meaning that the court regarded the conclusion as so obviously the outcome of Bilski, it wasn't worth publishing. So as a matter of law, that's where we are on diagnosing natural conditions, which is what Lab Corps, Classen, and the BRCA tests are about. There are, though, a couple of harder questions in this sector. First, what if the condition being diagnosed is artificially induced? There's a case pending on that right now, Prometheus against Mayo, that's the patentability of a method for determining whether a patient who has Crohn's Disease is receiving the right level of medication.

Because the diagnostic looks at the blood level of an artificially induced substance, there's arguably a physical transformation there of the type that Bilski requires. We'll have to see what the courts do with Prometheus, but my sense is that the same rule should apply.

Even when a substance is artificially introduced into the body, how it's metabolized by the body is information about how the world works. The immediate problem of diagnostics is that patents intrude on medical treatment decisions, that would be true there. The larger concern, as I said, is about patents on information and thought processes about fundamental truths, that they are too broad, and that would be true of that kind of a case, as well. An even harder question is whether this means

anything for natural information products, including, as I said, DNA and RNA sequences, and perhaps even protein structures. To be sure these patents cover molecules, and Bilski is about processes, mostly we're talking about process patents and not product patents, and, of course, claims on molecules would seem to have crisp edges, although we could argue about that, too.

But these products are not valuable for their physicality, for say their chemical reactivity in the body, what they're valuable for is the information that they convey. Sequences and structures control how the body operates and how traits are inherited, so they are the body's alga rhythms, if you will.

And their patentability creates problems very similar to the ones that we've been talking about. There's the ability to hold out, to prevent others from engaging in research, to better understand the ideology of disease, or to treat patients. As I said, the BRCA breast cancer gene can't be sequenced by anybody but Myriad, and that means that no one can develop quicker, cheaper, or more accurate tests, no one can – out BRCA tumors in order to work on other causes of breast cancer without getting Myriad's permission.

Now, some patentees do this for commercial reasons, that's a Myriad story, but others do it for moral reasons. So the development of

prenatal tests could be a problem when the patentee is opposed to abortion. Some patent landscapes are so complicated, compromise such a thicket of rights, it may not even be possible to figure out which gene patents need to be licensed. So consider personalized medicine, the goal of the $1,000 gene. The hope that the cost of sequencing someone's entire genetic makeup will eventually be so inexpensive, it'll become routine. That's not yet feasible as a technical matter, but when it is, it'll be a pity to discover that the complexity of the patent landscape makes it impossible to bring such text to market as a legal matter.

Finally, some markets are so small that commercial patent holders simply aren't interested. So preserved tissue samples, people would like to know what their near relatives died of, but most patentees aren't interested in getting those tests developed.

Canavan's Disease, sort of a stranded community for a while, because the patentee wasn't interested in working with the gene patents that he held. So given these difficulties, it's easy to see why we might want to devise another test for determining patentable subject matter for informational products that are found in nature. And that brings me to that last question, is barring patents in the biomedical area going to be a problem? Judge Newman, who I see is sitting in the back of the room, certainly thought that as she wrote a very persuasive opinion in Bilski, and

I take it Iain Cockburn is also worried about that same thing since the mentioned it earlier. Judge Newman said that in a knowledge economy, we can't tolerate uncertainty about the protection of information products.

But I do have to disagree with some of that. First, it's important to remember what these cases don't do, and that's that they don't take all of the incentives out of the system. And Lab Corps, for example, Justice Briar pointed out that the patentee also had claims on the methods for measuring the amino acid levels, claims his validity nobody doubted.

From 1991 to 1998, Lab Corps paid the patentee 27.5 percent of its revenues on those tests, likely enough for Metabolite to have earned a decent return on its investment. Morse, which Iain mentioned, I believe also had claims on – apparatus claims on the telegraph, and he was exploiting those and making money off those. So there are actual incentives that are in the system, and in the genetics area, that's true, too. A research project isn't finished when you find a correlation between the gene mutation and a vulnerability to some condition, there's still a need to develop cheap, speedy, accurate tests, and also to develop treatment options. So competitive development increases the likelihood of finding these tests and finding these treatments, while patents on the downstream fruits of that research creates the incentives to compete.

Another thing, and that echoes things that Bob Hunt said, that David Kappos just said, as well, patents aren't the only incentives to engage in research. We can point to many fields where there's not a patent incentive to engage in research; software is one, fashion is another. There's sort of a little cottage industry in finding these areas. And there are also other reward systems other than pure monetary benefits as a result of having – selling the innovation that you've made. So in the academia, there's tenure, there's chairs, there's Nobel prizes, there are reputational interests that can be converted into money in the form of government grants for your research, and medicine as opposed to pharmacology is another such area.

True, the genetics field presents a complicated picture with lots of overlapping, and therefore, worrisome patent rights, but there are many genes that are, in fact, not patented, and diagnostic tests are nonetheless developed, and there are also many diagnostic tests that have been developed even without patents. People innovate for many different reasons, including for the simple reason that they are users, that they need the inventions and so they develop them.

Software is a classic example of user innovation, and diagnostics are also an example of user innovation. Doctors discover diagnostic tests because they're in it to help their patients. And as such, I

think this does bring a tie to the earlier panel. Because people innovate for their own particular reasons, they often are going to run into Ben Clemens – they're going to run into people who have patents which they didn't know anything about because they were busy independently inventing.

So you could imagine independent diagnostics being developed and finding out – and the doctor finds out later that somebody has a patent on them. Finally, even if economic incentives are needed to encourage biomedical research, I think the real message from the morning session, from some Supreme Court cases, I'd include also Microsoft against AT&T, which also expressed some reservations about patents on information. I think what the real message is is that the patent system, at least as currently constituted, might not be the right vehicle for protecting information products. I think, Iain, you said that you were worried about developing some new method of encouraging innovation in these kinds of areas, but we do have another system for encouraging innovation, and that's the copyright system.

The copyright system has always protected information and information products, and it differs radically from the patent system in that it contains a whole slue of exceptions and compulsory licenses that are specifically intended to deal with hold-outs, with stacking royalties, with

thickets of rights, all of the kinds of – independent invention, with all of the kinds of issues that we've been talking about.

So if after Bilski we find that biologic innovation isn't advancing fast enough, there's always the possibility of revising the patent system to deal explicitly with its new job of protecting information products, by enacting – licenses, experimental use exceptions, all those kinds of things that we've long seen in the copyright system. So I'm very much looking forward to the independent invention panel, because I think that's one area where patent law might be able to make a change that will help on a lot of these areas, so thank you.

MR. KAHIN: Thank you, Rochelle. Bob.

MR. ARMITAGE: I don't think I can take this sitting down. I'm glad you all realized that was a joke. I have slides, but I'm –

MR. KAHIN: Slides, but no screen.

MR. ARMITAGE: The screen is coming, but the password is a secret, right.

MR. KAHIN: Okay. Let's see if we can –

MR. ARMITAGE: Okay. Well, I'm going to sit down for a second. So let me see if I have this right. If you don't like the patent system the way it is, and you have certain types of technology you don't like patented very much, what do you do? Now, I notice the title says

Limits of Abstract Patents. I actually, on my copy, crossed out Abstract and put in, after the word Patents, we don't like very much, limits on patents we don't like very much, okay.

What you do is, you explain that the patent system can be over reaching, it can extend too far, it can cover things when it's not really needed. Once you've done that, I'm going to stand up again.

MR. KAHIN: You're – now.

MR. ARMITAGE: Okay. Once you've done that, your life becomes very simple. You say, well, how about adding a new requirement for patentability. Let's say there has to be a technological contribution. I'm sure this panel is going to be long enough, so we will wrestle to the ground how complicated and abstract that might turn out to be.

The other thing you could do is lament the fact that in all of human history, except for a very tiny period of time, there was a lot of genetic testing we couldn't do because we didn't understand what the genes were. We could, instead of lamenting the fact, that for a very brief period of time, there will be gene patents that will have issued, could relish in the fact that in a very short number of years, we won't be able to complain about gene patents, they'll all have expired, and all of that

knowledge that was built on those patents will be freely available, the common heritage of all mankind for the rest of human civilization.

But we're here today, when IBM decides they don't want anymore business method patents, so they've taken the abstinence pledge. And we had this too soon before all the gene patents expired, so I guess we're going to have to deal with the issue of gene patents. What I thought I would do in the very few number of minutes I have is, because I'm really not in the fight with respect to software, and to some degree with respect to diagnostic products, give you sort of an outsider's view, a patent lawyer outsider's view on some of the issues here.

And I've asked myself three questions, what makes patents abstract, how can we fix it, and who needs to do what. Now, I notice that we talk about business method patents, software patents, and diagnostic information as being abstract subject matter as though that was definitional.

What I think we're really trying to say is that we believe sometimes there are patents that are bad patents, they just shouldn't have existed in the form they existed at least. And so what I like to do is go back to the beginning of what a patent system is all about, it's supposed to be like a property right system, where the meets and bounds are predictable and determinable, and if it were truly a property right system,

what you would want is the determination of those property rights using objective criteria, transparently determinable. And we know that our patent law operates with a little more complexity, a little more subjectivity, and some standards for patentability that require basically access to things that sometimes are only known to the inventor. Now, I define abstract patents as those whose import and reach can't be readily determinable from reading the patents. And I must say that I grew up as a physicist, and I got into the pharmaceutical business by accident, and I've been unable to escape. So I do pick up software patents.

I've written any number of software programs. The last software program I wrote was a few weeks ago. And I can tell you that I read the claims, in other words, what's claimed in some of these patents, and I'm clueless.

I do, however, believe that abstract patents affect all fields of technology. They're issues, and I think these were alluded to by Dave Kappos, where patents are on the desideratum and they're not on the discovery itself.

Unitary patent system, which I think is critical to maintain, we need to find a way to find a unitary solution to these so called abstract patents. Let me tell you what I think the rules of the road are, that if my friends here from the United States Patent and Trademark Office would

now start taking notes, would really help solve the problem. First of all, you can have bad patent simply because they shouldn't have issued at all or issued too broadly. You've got to reply patentability requirements rigorously. If you misfire on one patentability requirement, you can end up producing overly broad patents. And you distort the patent system if, indeed, you force one requirement for a patentability, say subject matter eligibility, to take the place of another patentability requirement on which you're not getting rigor and application.

Now, my view is, most of the issues the first two speakers have lamented over could be solved if we could get the patent system to fire rigorously on all existing requirements for patentability. My view on this is that Dave Kappos hit the nail on the head when he said some patents shouldn't issue in his field of technology because there's not an adequate written description for the claims, the breadth they were determined to be.

Remember that a patent claim need not only reach subject matter eligible for patentability, it must contain only subject matter eligible for patentability or it's not patentable at all. You can't claim in a patent an invention so broadly that some of what you claim is obvious and some isn't. You can't claim so broadly so that some of your patent has a clear enabling disclosure, a clear written description, other parts of that broad

claim doesn't. By the same token, you can't have subject matter eligibility unless the full complete reach of that patent, given its broadest reasonable construction, which is what the Patent Office is charged with doing in examining patent applications, fully meets the requirement for patentability.

We've, over the last few years, complained a lot about the reach of broad patents by trying to say the non-obviousness requirement isn't being rigorously applied. We're at risk now I think, frankly, of overworking the non-obviousness requirement because we're under working written description, and in particular, subject matter eligibility requirements.

Again, my friend, Dave Kappos, hit the nail on the head, and I applaud IBM. If they truly believe that there is a requirement for patentability that requires a technological contribution, you have got to stop seeking patents that you don't believe are valid. I think part of the solution to the issue that we're facing is that a company like IBM, according to my Blackberry email this morning, got 4,136 patents last year. Eli Lilly and Company probably got 80 patents last year. Because years ago we decided that we were going to seek patents, that we were going to respect, and where we believed that patents were too broad or weren't adequately supported by a disclosure or represented subject

matter that we believed was not patentable, as being obvious, we don't seek those patents, and frankly, we go after those patents of others. We go after those patents by taking cases to trial, to judgment, on appeal if needed to establish those patents aren't valid.

We are on the lookout for cases where we can file amicus briefs, because we believe that we need to help the courts and the Patent Office get patentability rules right. And it wouldn't surprise me if a company like IBM, that gets 4,000 plus patents a year, faces maybe in order of magnitude more patents held by others, that if they're entitled to those 4,000, they're in a position of potentially respecting many of that maybe ten-fold more patents of others.

We also absolutely can't run a patent system that doesn't allow the public to come in after a patent issues and promptly relitigate, if need be, those requirements for patentability, go back to the – in fact, I was having a conversation with a gentleman this morning who's proposing that, in fact, maybe all pharmaceutical patents should be tested in this way to avoid litigation in which we in the generic drug industry seem to be mire.

My view on subject matter eligibility is very simple. It is very difficult for a patent examiner to examine a claim, particularly a process claim, that has any step in it, that's so broad that it encompasses the mere

exercise of human intellect. In other words, what in the old jurisprudence at the CCPA and some other old jurisprudence was called a mental step.

If you can't write a process step claim that's confined enough so it's clear that it doesn't cover the exercise of human intellect, you don't have patent eligible subject matter. You certainly can't claim that kind of a step as a means plus function, where clearly under Section 112, sixth paragraph, you have to have disclosed a supporting act, and if you do, your claim is limited to that supporting act.

We have an enormous complication of Supreme Court and other precedent talking about the ways in which to reign in claims that are broad enough to cover mere information that I think will be very complicated to apply. We need simple bright line jurisprudence. I agree with Dave Kappos, a good first step was Bilski, but you can't say that I infringe a claim if I think one thing, but don't infringe a claim if I think something else. Patent law was never designed to cover information, and it was never designed to cover mental processes.

Written description works the same way. Rochelle doesn't know how good we have it because the Federal Circuit imposed a rigorous requirement for written description that prevented little bits and pieces of genetic information from being patented in the thousands, if not tens of thousands, if not hundreds of thousands of patents.

If the written description requirement had not been rigorously applied to biotechnology inventions, we would be awash in the same sea of patents that today much of the IT industry complains about. Misfire on one requirement for patentability, broad claims issue, the patent system just doesn't work right.

How do we fix this? We need a property right system. One way to get a property right system that functions that way is to go back and read the 2004 report of the National Academy of Sciences and get busy implementing what's in that report, transparent, objective requirements for patentability based on publicly accessible information with a post-grant review procedure to go back and re-examine patents that have issued so that patentability requirements are clearly and precisely defined by jurisprudence both within the Patent Office, and if need be, at the Federal Circuit.

And users of the patent system, if they want 4,000 patents of their own and believe they have 4,000 patentable inventions, need to be of a mind that those are the patents of their competitors, they need to respect. And the patent system can't be about let's love certain patents and let's hate other patents, and then the patents we don't like, let's find a way to gerrymander the patent system, so somehow, either through a new requirement for patentability or a requirement for, if it isn't needed, the

patent system overreaches and shouldn't extend that far, those kind of notions we disabuse ourselves of, and we live happily ever after.

MR. KAHIN: Thank you, Bob. John.

MR. DUFFY: Thank you very much. I also would like to thank the organizers of the conference, Brian and Arti, for including me in this conference. I'm going to make, I think, just relatively five simple points about this area. And first, I'm going to start off with the title of the conference, which is Abstract Patents. And I want to say pretty clearly that I'm against abstract patents, completely against abstract patents, and I think the law – the patent law tries to be as clearly as can be that the patent system for 200 years is against abstract patents. To the extent that we think that you can't determine what the invention is from reading the patent by in large the courts have tried to say that's a bad thing, and we want to hold those patents to be invalid.

Now the –- I think one question here is that we get an equivalence here between abstract, and then people go to non-technological, and then people go to either business or software. And I think all of those things are not synonyms for each other, okay? That's the first thing that if you take nothing else from this -– don't leave this room and say, "Oh, I went to this conference on either abstract patents or

software patents. I can't remember which, but it's the same thing." Don't say that, those things are completely different I think.

And for example you know I think you can look at tangible patents, which is a lot of what I've done in terms of you know I look through history and you know if I go back a hundred years, there really aren't too many software patents. But there are patents like the Wright Brothers patent, and it had a very – it had some very interesting questions about how it would be construed; it had some significant questions associated with claim interpretation. And it is a difficult boundary-drawing problem.

So, simply because we're in the tangible -– if you think that just because we're in the tangible world we don't have an abstraction problem or that doctrine's irrelevant, and rarely a problem in patent law, you're dead wrong. Okay, so tangibility doesn't help us on that, I can guarantee you that. There's a tremendous amount of litigation about that –- about tangible patents, about whether they're abstract or not.

Now, maybe a lesser claim, which –- a more modest claim is Jim Bessen's claim that, well maybe tangibility correlates with –- or non-tangibility correlates with abstraction. And I think that you know, maybe that's the case in the current patent system and if that's the case, then we need to become -– we need to enforce existing restrictions on -– to

prevent abstract patents. We need to be more vigorous if we don't yet have a very good language to define patents. So, if we see a lot of problems with software patents that should be a signal to the patent office that they have to be more clear, or the patentees have to be more clear, and they have to have a stronger either written description requirement, or claim definiteness requirement. Things that are in existence in the law to try to weed out or narrow these patents or focus them in some ways.

So, I think there are existing doctrines, existing doctrines that involve -– that are trying to prevent abstractions, and we should enforce those. And if we see data like Jim Bessen's, we should say well, maybe they're not being enforced vigorously in one industry, but we -– I'm not so sure we should say it's of its nature, that is a problem. Abstraction's a problem in one industry and isn't a problem in another industry. I don't think there is any a priori reason why we should think that should be true.

The second thing I want to talk about is rules. Because Brian introduced the panel by saying you know these are the lawyer panel, and can we really draw rules in this area? And I want to talk about two things; again I try and take a little bit of a broader view. Since I'm a lawyer I try to give perspectives –- legal perspectives from experience in other areas and other periods of history. So one thing I want to bring is the experience that the Federal Communications Commission and

communications law has had over the last half century or so, with trying to find rules. The Federal Communication –- the communications area of law is historically well known if you talk to any communications lawyer in the 1950's and 1960's they tried to divide up the world according to technologies.

And what they found is within 20 or 30 years those rules that they had divided -– that they'd sort of divided the world into nice, neat categories. Those categories were falling apart. So in other words the idea of cable and over the air transmission just became hard to do, or television versus cable, or satellite versus cable, or phone service versus television service became something that didn't really make any sense, because the technology was not respecting the lines the legal lines that had been drawn.

And I think that that is a good experience, because it does teach us that if there is a problem with –- or pardon me, there might be a problem with trying to draw rules, especially on the forefront of technology. If we try and draw rules on the forefront of technology, we might think that technological innovation has a way of breaking down those barriers, and blending things together that we would not have thought could be blended together. Just like now software and biotechnology are blending together in bioinformatics.

So, I think the project of trying to create specialized law for a particular area is something we should approach with a great deal of trepidation. We shouldn't think that the history shows that that's something that's very easy to do and that we can easily implement those rules. In the particular area of patentable subject matter you can also look throughout history. And in fact I'm writing a paper on this for another conference.

If you look throughout history you see a lot of times when the courts have tried to create rules in this area. And what you see is they have a really relatively short half-life, they have been universally failures. So, someone mentioned earlier about the early 19th Century rule that you couldn't patent a principle. Well that was absolutely true, that was sort of one of the major doctrinal developments in the early 19th Century you could not patent a principle. By the end of the 19th Century it was a joke, the leading commentator at the end of the 19th Century said, you know the courts have stated with absolute clarity that you can not patent the principle. And they have stated with equal clarity that what you get when you patent is your principle, so that doctrine sort of went by the bye.

Another major option was in the second half of the 19th Century, was that you cannot patent a new use for an old machine, or an old process. That was stated extremely with great clarity by the United

States Supreme Court as clear as clear can be. Within 17 years it began to backtrack and say, well actually it's a harder question then that. It depends on how new it is and you know it depends on other factors. And that's actually one area of patentable subject matter that the Congress explicitly reversed in 1952, when it codified the rule that a new use is patentable. And in fact actually I think that that codification of this that you can patent a new rule is something that has some significance for some of these diagnostic patents, because in many of those diagnostic patents what you're doing is using existing measuring techniques for new uses.

So, it would be odd to find out that after Congress has explicitly said, those sorts of things are patentable that the courts come back within a half century or so and say, guess what we're revitalizing the 19th Century doctrine. The only one that Congress has explicitly singled out and overruled. It would be at least, as a legal matter that would seem a little surprising from my standpoint.

The prohibition against life, patenting life this was actually a significant prohibition. Most commentators thought you could not patent life. There's substantial evidence of that. And the problem was that the technology in some ways outstripped that, we began to realize that you can engineer life. Software prohibitions, I think we have experience of what a prohibition against software patenting would look like. The

European Patent Convention has a pretty doggone explicit prohibition against patenting software programs –- computer programs and they have been for whatever reason –- people can argue, well they've just been bad judges or they haven't followed the law. But they haven't been able to hold that line in Europe.

So we see over and over again, these examples where people have come up -– courts have tried to come up with relatively clear rules on this patentable subject matter area and they've fallen apart. And I'm pretty sure because I'm you know reasonably young that I'll outlive Bilski's Rule. I'm pretty confident of that. Indeed, I'm pretty confident especially because the Supreme Court considered it in the exact same words. The government made the exact same argument in Benson. They said, this is the rule, this is the rule we think you should apply and Benson Court said, no I don't think we're going to hold that to be the rule. The Federal Circuit has now adopted that rule, I'm pretty confident that that rule is going to fall apart. If it doesn't, it will be, you know extraordinary. It will be the first event in history that we've seen that. Okay, so that's the rules I think.

Third, is and I'll go through the last few quickly, is technological. I think this is important, I think that one of the things about the patenting system is the patenting system tends to follow engineering.

It tends to sort of follow the science and the -– what we think we're trying to patent. And if you look out at engineering departments today, one of the things that they include within their curriculum is financial engineering and software.

So if we get rid of software or business method patents, it will be a real first in the history of the patent system. It will be the first time that we've had something that engineers sort of feel like they should of include within their schools of thought. In other words, people who they want as colleagues, who they recognize as doing work that's similar to their work. It will be the first time that you know that sort of entire branch or entire endeavor is excluded from patentability. I tend to think that because that's never happened before in history that in the long run these things will become a -– these things will become or remain patentable.

And I also want to say that a financial engineering or business method engineering, yes there are some abstract patents, but there are also some patents that are awfully not abstract. One good example that I've used in a few other talks is a patent that was issued Josh Lerner. Josh Lerner's this sort of well-known business school professor because he's written on the patent system. It was just issued in September of 2008, his first patent he ever got. So if you ever wondered

why he's interested in patents, we now know because he filed his patent like eight years ago and it's finally issued from the patent system.

Now, you can read through the specification, you can say a lot of things about this patent but it's very hard to say it's abstract. It's got incredibly detailed mathematical formulas that you're supposed to apply in a way to evaluate a –- evaluate the value of a private equity instrument. You can say a lot of things about that, but if you say it's abstract and you say, well you know if I just go in and open up a business selling sodas, I might be infringing that patent, I really don't think that's a very persuasive argument. So there are business method patents that look a lot like hard core engineering and that don't really have fuzzy boundaries, and that's a good example.

All right, well I'm going to stop with three points, and I will just say that in terms of the engineering if you don't have incentives, even without patent incentives you will get innovation. You see that in the fashion industry, you see that in diets there are fad diets. People innovate all the time; you know I innovate with cold remedies, so every time I get sick, I've got a new one.

The thing about innovation is that it's hard to measure. What we really want to know is not how many patents you get as the debate between IBM and Lilly here says, but how important those innovations are,

how well tested they are. And I actually draw the opposite conclusion from the financial crisis. I look at the financial crisis that we're currently experiencing and say; we had a lot of untested innovation there. It was like building a complex structure, like a giant bridge without doing all the science and testing that's hard and difficult, but can be done with our technology, with our economics technology. We didn't do it, and we find out that that kind of innovation without good rigorous testing is not such a good idea. But in order to get the investments in testing, in order to get $800 billion invested in a new drug, rather than just a little you know new form of snake oil, you might need some significant intellectual property rights. And I'll leave it at that.

SPEAKER: Thank you. Josh?

MR. SARNOFF: Thanks to Brian, and Arti, and to Brookings for having us, and to all of you for coming to listen to such an interesting subject.

Let me start with the question you asked right at the beginning Brian. Why is this area so hard? And I think it's because we just don't have agreement on any theory of why a patentable subject matter exclusion exists.

First, you could look at it well, certain areas don't need patents to provide adequate incentives for technology. That would be one

reason why we would have a patent subject matter limitation. Another is, if we give patents in these areas it would do more harm then good. Another area is that if we give patents for these kinds of inventions they'll be overbroad relative to disclosure, or relative to the sweat of the brow that went into it, or relative to the sequential invention that it would –- some sense of do more harm then good, if we granted patents in this area.

Yet another, which I think is getting a little bit to what John and Bob Artimage were talking about, it is you know it either would make problems for examination, or there is no such category we need to worry about because if we just properly apply other examination criteria, then there is no abstract patent to worry about.

I actually have a totally different reason why, and it's based on history that we have patentable subject matter exclusion, but the important point is we just don't have any agreement. And until we get agreement on what it's trying to accomplish we're not likely to reach any clear sense of how to apply it.

My -– I'll come back to the history in a second. The basic reason is highly disputable and it may change over time, but that is we have affirmative reasons of some sort, whether they're economic or moral

to say certain areas should be free from property rights period. That's the history, but it's obviously highly contentious.

Secondly, I guess I want to distinguish what we mean by abstract, and again I want to really draw a clear line between abstract in the sense of a certain kind of invention, from indefinite or overbroad. Clearly some things that are abstract may also be indefinite, may also be overbroad. The question of indefiniteness we can deal with in various ways, there are various doctrines to address it.

The question of overbreadth is much harder; the best work I've seen is the work of Merges and Nelson on this. But I don't think we have any again clear agreement of what the appropriate breadth of a claim is. At least in theory we think that we should have a broader scope of protection for fundamental inventions and this is the theory of what are called pioneering inventions.

And this goes back to the point Jim Bessen made earlier that, if we define abstract as unidentified technologies, the whole premise of granting broad claims to pioneering inventions, is so that they will apply to a whole range of unidentified technologies. This problem as John says, has been around for a very long time but that's not what I want to distinguish as abstract meaning. That's a question of breadth, not a question of abstractness.

Ben Klemens made the point also that you know millions of people might be able to invent this kind of information, and if they have a motivation to do so we could try to address these things through obviousness. I'm also not dealing with obviousness, I'm not dealing with enablement, I'm not dealing with a whole range of things we're saying. What does it mean to be an abstract patent?

So, the first thing I thought was well, let me look at the dictionary, Random House. Abstract means, thought of apart from concrete realities, specific object, or actual instances: an abstract idea. Expressing a quality of characteristic apart from any specific object or instance, as justice, poverty, and speed. Theoretical; not applied or practical: abstract science. Or, difficult to understand; abstruse: abstract speculations.

Again the difficult to understand captures the reason why we tend to conflate indefinite with abstract. But it's only one of the possible definitions. So, the definition I want to go back to is the one in history. I'm just going to read straight from that ancient text called *Diamond DeVere* from 1981. Excluded from such patent protections are laws of nature, and natural phenomenon, and abstract ideas.

I think we have some intuitive sense of what a law of nature or a natural phenomenon is. It can include scientific principles it can

include natural materials. But I don't think we have a very good sense of what we mean by an abstract idea.

Again, a little bit more history from I guess it was Leroy versus Tathe, and now we're going back to 1853. "A principle in the abstract is a fundamental truth, an original cause, a motive. These cannot be patented as no one can claim in either of them an exclusive right." The main point here is that what we're talking about is some type of a concept, and a concept of both great breadth, but also of a certain kind of a character. And the two aspects that I'll give to the character are the following: First it is either preexisting in the world or second it is fundamental.

And the reason that I take that approach to those categories is again coming from history. And this goes to the same commentator John mentioned, William Robinson *Law of Patents For Useful Inventions of* 1890 right? "To benefit by the discoveries of his fellow men, is thus not only a natural right it's also the natural duty, which every man owes to himself and to a society and the mutual universal progress and it's result is the form of the earthly destiny of the human race."

We had a concept of a public domain of certain kinds of information that was to be freely accessible. In fact, freely turned over by the discoverers for the benefit of society not subject to property rights.

Now, if that is the premise, at least historically of what we are trying to exclude then we have to trigger why do we -– how does the legal doctrine interact with it. Well, again it had three categories. Laws of nature or natural phenomenon abstract ideas and we don't have a particularly good sense of what a natural -– I'm sorry an abstract idea is, but the idea was something fundamental like a law of nature or natural phenomenon, it's like preexisting or possibly not preexisting, but really important. Again, going back to the definition of expressing a quality of characteristic. One doesn't really think of justice as preexisting in the world before humans engaged in activity. But preexisting in the sense of being fundamental.

Given that approach, and assuming that that is both the law and the reason why we're trying to keep stuff out of the patent system, then we have difficult line drawing problems, which is how do we protect the applications of that information, which can't be propertized? That's where we had two things come up. First, again thanks to Ben Klemens for previewing the idea it's a point of novelty question. Where is the inventive creativity? Is it in the discovery of this information not patentable? Or is it in some new concept or principle applying it?

If it's just the application to a particular area it's not patentable. Bilski recognizing earlier Supreme Courts said, field of use limitations don't make something that is otherwise excluded patentable. Insignificant

post solution activity doesn't make some otherwise unpatentable patentable. We have this area that's going to be free, and it's for good reason we want to keep it free. So, we can't simply hook up a few more things to it, and then claim that it's patentable.

With that background, I'll then just say a few things about line drawing. Line drawing is incredibly difficult, and it's particularly difficult because I have a feeling that most of what I said, most of the people in the room just don't agree with, right? You know then where are we going to get the agreement to actually have a theory that's going to make the right decisions.

Second, no one in the room has talked about whether there are actual Constitutional limits. You know there is this language called useful arts promoting part of the useful arts. Does that impose a technological sector limitation or a type of activity limitation on what can be patented? Possibly, I actually for various reasons think that given the history it's better to look to the word of what inventors meant, and go back to this history of fundamental information shouldn't be patented. And then just try to do the difficult line drawing, which John says hasn't been very effective. Actually, I think it was quite effective over many years. I think the problem was kind of like the war on poverty that we never really fought it properly and therefore don't know why it didn't work very well.

So, we've got to find someway to distinguish abstract from non-abstract. And if you think about software, software doesn't preexist in nature, so that can't be the way we're going to distinguish software. But we do have a sense of some software as fundamental, or express certain fundamental ways of doing things. That's a way we could say this kind of software or at least that level of software is protected, and then the question is if you have some other concept in it's application, would that then be patentable? The -– you know the question of whether it should be patentable, is again a question of significant post solution activity. Bilski does almost nothing to give us any sense of what kind of post solution activity is going to be significant although it does do this funny stuff with the data transformations, from which you're supposed to infer that some things are significant and some things aren't without any theory behind it.

The one thing that I want to just point out though, is that Bilski was addressed to process claims, but the fundamentality issue is not limited to process claims. This issue goes to all sorts of claims, and as any good applicant knows they can write a software claim in the terms of a machine and then you get a -– and as the Beauregard claims go, it's as an article of manufacture. This is silly, right? Just plain silly that we should say software as an abstract idea is unpatentable, but then reducing it to a tangible machine readable medium now, somehow makes it patentable.

There's certainly no novelty, except for the first person who thought of reducing someone's piece of writing and that could be read. In transferring the software onto a floppy disk. With that, I'll conclude.

SPEAKER: Thank you. Let's have some discussion now. Let me lead off with a particular question. Dave you raised the technical contribution issue and harmonization with the European Standard. John I believe you referred to it too and said it didn't work there either. Of course there there's this ambiguity -–

SPEAKER: I was talking about their software exclusion.

SPEAKER: Right, right. So, it's actually an exclusion for computer programs, but then the next section of the convention says, this only applies to computer programs as such.

SPEAKER: As such.

SPEAKER: So there's this -– it's explicit but there's this --

SPEAKER: It also says that only for business –- it excludes business methods, but only as such.

SPEAKER: Yes.

SPEAKER: And the courts –- Europe has interpreted those two things completely differently.

SPEAKER: It's software and business method?

SPEAKER: Yes.

SPEAKER: Yeah, so I -– let me ask the rest of the panel whether they think that is a viable way to draw lines. We do –- are fortunate enough to have Konstantinos Karachalios here who will be on the Roundtable. He is from the EPO and he may have something to say about that, either now or then. Josh?

MR. SARNOFF: Just before I go on, I just wanted to add that I agreed with everything Rochelle said too. So the as such as -–

MS. DREYFUSS: Thank you.

MR. SARNOFF: Yes, you're welcome. I mean it was right. The -–

MS. DREYFUSS: You said, nobody here agrees with you so now it's nobody agrees with me either.

MR. SARNOFF: The as such defines an area that's not protectable. What's missing from the as such definition is what is sufficient as a different concept to then make that a patentable invention. That's why there's been a tremendous problem in terms of its application. There's just no agreement on the theory.

SPEAKER: Konstantinos, Europe has this sufficiency of disclosure requirement correct? In addition to their technological contribution requirement and if I understand it, they both work the same way in a patent examination process you get a rejection because you

have not satisfied the sufficiency of disclosure requirement. So it's a way of rejecting patents they don't like as too broad. What is the requirement; do you need a sufficient disclosure? What if your disclosure is insufficient? You don't get a patent. But what is the requirement? What is the requirement for a technological contribution? It has to relate to technology. Technology relates to what is it? Some form of human endeavor that's part of an organized filed of collecting knowledge? In other words, is there a field of human endeavor that isn't technological in character?

SPEAKER: Rochelle?

MS. DREYFUSS: Yes, I'd just like to make a couple of points, just in reaction to what other people have said. One is I mean I agree that you could press harder on a lot of the other requirements of patentability, and you go a long way to solving many of these problems. But I'm not sure you'd solve all of them that way, and in particular the written description requirement I don't think is going to solve all of these problems, because people will just get lots and lots and lots of patents. You know in the gene area you can get a -– the written description requirement you say has helped a lot; I'm not so sure that's true. What's happened is that you can only get a patent on a specific genetic sequence, but you can get lots and lots of them. And that just increases

the patent thick; it increases the number of things that you've got to look at to decide whether or not you have freedom to operate. So I'm not convinced that we can just abandon the need to get some kind of a handle on what's patentable subject matter and what's not.

On the question of gene patents are all going to expire, yes all the gene patents will expire, but then all of the RNA patents are going to come up, and after that we're going to find you know -– we're wired in very, very complex ways and we've only discovered the tippy top of the wiring and as we drill down we're going to find lots and lots of other things about the human body that are also going to be patentable, and are also going to raise these questions. So I think it's a question that has to be answered. It's not sufficient to say, well you know a bunch of people will die, but hey in 20 years these patents will have all expired.

On the question of specialized law, I think maybe the technique would be to find solutions to particular problems. Not just to particular problems in a particular sector, but to particular problems. And they were cross sectors and some sectors don't have those problems right now, but they might have those problems in the future, and if we solve the problem for a particular sector that has the problem now, well maybe we'll actually be doing something for the future as well.

So, you know I think the line drawing problem might in some ways be overstated, because there might be ways that we can ameliorate these problems to respond to problems in a particular sector but without making them sectorial.

SPEAKER: If we simply said no software that's –-

MS. DREYFUSS: Yes, that's a problem.

SPEAKER: Hard to -–

MS. DREYFUSS: But you know if we could find someway of thinking about what the software problem presents, and saying none of that. Then we will have solved the problem, not only for software and perhaps not only for biology, but for whatever it is that's coming next that we don't know about at all.

SPEAKER: Can I just make one comment on or two points on this technological contribution issue? So, you know without question it gets right in the line drawing and it's -– it can be a challenging thing in the margins right, to distinguish that which is technological from that which is not.

I would say though that whereas the Europeans have struggled with software distinction, I don't believe the Europeans or the Japanese have struggled at all with the technological contribution distinction, the examiners there are actually pretty good. And as a you know an entity

that files a lot of applications all around those boundaries we see all kinds of rejections, and it's a little bit like the "I know it when I see it" kind of issue, and that I believe is a rubric that winds up working in the technological field.

SPEAKER: I'd say that you know actually the technological distinction I don't think is -– I think it might be a pretty good distinction, but not as the Europeans have necessarily interpreted it. I think if you look to what an engineering school does, that probably does define what is technology. And you know the major change, and the change that really led to business method patents is not State Street, because after all those patents and even Bilski's patent, predated State Street. It's instead the rise of you know putting business concepts into engineering schools and putting them into the rigors of mathematics.

So, I thought that you know good distinction that this is in the Amicus Brief I wrote in the Bilski case was you know if you have a book called *How to Win Friends and Influence People in Business*, well you know you could call that a process. But I don't think that should be patentable it's you know how do you search the prior art? There's no rigor at all involved in that you know you say, well it's a warm handshake, and looking people in the eye, and not disagreeing with them in public, or

some other, you know combination of steps to be successful in business. There's no way that gets taught in the engineering department.

On the other hand you, know Josh Lerner's method for evaluating a private equity instrument, which is all math and all hard, and all very specific. That does get taught in things that look like engineering departments. But then you know the Europeans say that's not technical, I think they're just wrong on that.

SPEAKER: Well, is there a role for self-determination here? I think you're financial engineering example is very intriguing. But shouldn't we ask the financial engineers whether they want the patent system or can this be left to patent attorneys, and patent scholars to draw the line?

SPEAKER: Oh, I completely agree that if you find a field and they say, look we don't need it and we don't want it and we don't like it. I think that presents a very serious objection. And I always take quite seriously that software people say we don't like software patents. I think that's a serious problem.

I think actually the specific problems that they raise, indeed the ones that Ben Klemens has raised this morning. I think they have identified serious and real problems in existing doctrine. I don't think it leads to exclusion, I would actually agree with Rochelle that actually it

involves articulating more –- new doctrines that will handle some of these problems. Indeed or resurrecting in one case resurrecting an old doctrine we used to have and that we abolished in the late 20th Century.

SPEAKER: Okay, let's open it up. Tim Lee?

MR. LEE: I've got a question mostly for John Duffy, although I'd be interested in other people's reactions. You said that all abstract or patent – software patents, which I think is clearly true there are clearly a lot of abstract patents that are not software patents.

But it seems to me that the reverses may be true. That all software is abstract in the very fundamental sense that if you drill down to what software actually is. It's a sequence of one's and zero's that represents a mathematical algorithm, it's you know it's just like the Pythagorean theorem only more complicated, and the computer is just following you know basically evaluating the results of some very complicated mathematical formula.

And so the example that comes to mind is the AT&T v. Microsoft case, which is not specifically whether a software is patentable, but it was very clear that the "invention" was the strings of one's and zero's that had been pressed on a disk and shipped to people. There was no pretense that there was any kind of physical machine, and isn't that just

definitionally an abstract invention, because it's something you would just write down on a piece of paper if you had a big enough piece of paper?

MS. DREYFUSS: That's why I said that AT&T against Microsoft is another indication that there are some concerns here, and there are other cases in the Federal Circuit were the same thing. If it's information that's being transmitted there's –- the Federal Circuit has never said, not patentable but they have put limits on your ability to use old remedies. So --

MR. DUFFY: Well I think you could -– it depends on your definition of abstract. If by abstract you mean it's not physical in the way a steam engine is physical, then I would -– I don't think that's the right definition of abstract, but I think that then you could say, well yes it doesn't have the same type of physicality. I would describe it as physicality that steam engines, and airplanes, and cars have.

But in terms of it being abstract in the sense that it's hard to define, I'm not at all sure that that's the case. I mean there are a number of software patents like Google's patents or this Lerner patent, which is actually claimed as software that you can read through and you can say, well I -– you know there might be a few things on the borderline here, but I can pretty much tell what's in and what's out of this software patent.

And in so in that sense, in the sense of you know do we have good boundary lines, and can I write my own program and not -- be pretty certain I'm not infringing these other claims, I think you know many software patents are not abstract not abstract in the least.

SPEAKER: I guess I agree with you John that there's nothing necessarily abstract there –

MS. DREYFUSS: Right, I guess –

SPEAKER: It's concrete, the question's what's the invention, and the invention is simply the voice codec process, which is a mathematical algorithm. The question then is are mathematical algorithm per se not patentable subject matter? They're the wrong kind of thing to want a patent system for. If the answer to that is yes, it's not patentable, then the question is, is does reducing it to a signal, or reducing it to a piece of reproducible code on a, you know some type of medium make it patentable? Where's the invention or creativity there? Not much, so you know what I think would be helpful is to go back to the some of the discussion –- I don't know if it was Jim had been talking about it about or Ian. Where is the actual degree of creativity involved, and what kinds of creativity do we want to use the patent system to protect?

And the thing that I've been trying to say is we don't want it to protect discoveries of basic ideas. The basic idea of the codec or even

and maybe this is in the voice codec situation, it's not such a basic idea and therefore maybe we should have a patent on it, but there's nothing abstract about it then. Then it's a concrete thing that we want patented even though it's just an algorithm.

MS. DREYFUSS: Abstraction is one problem that we want to solve, but it's not the only problem is I think the way I'd put it.

SPEAKER: Okay, there have been a number of hands. I think this gentleman was first. And --

SPEAKER: Thank you, my names John Lothum from the Patent and Trademark office. My question is, the first -- the Bilski case basically set forth a test and said, you know we give you some guidance here, but we're going to wait for other cases to come up to be more specific.

The Kaminski case yesterday kicked back to the PTO for determination, one on one determination some method claims and also on an apparatus claim. The Congress has been dealing with issues about whether tax methods should be patentable, whether surgical procedures should be patentable, and they've come up with some controversial, I guess if you would say solutions to that problem.

So, my question is who should be making these policy decisions? Should it be Congress, the Courts or the Patent and Trademark Office?

SPEAKER: I've got an answer for that, all of the above. No, all of the above I think. I mean look all of the above right? I mean that's the history right? I mean Congress clearly can make policy calls. They overturned the no new use for an old machine rule that the court had articulated they overturned that in 1952. The courts have always made policy in this area because the statute is more –- it's closer to the Antitrust Act. In other words a sort of common law what us lawyers call, a common law authorizing statute it authorizes the courts to develop doctrines. It's closer to that then to the tax code, and frankly I'm happy it's not like the tax code. Because I think courts in general might be able to make -– I have some faith that they can make policy at least as well as Congress in some areas. And I think that they are trying to do a good job, in what's a hard field.

And the Patent Office, you know you all are making policy every single day, in terms of how you're interpreting –- indeed you know I just -– I've got a draft paper with co-author John Spires who's in the back and one of the things we looked at to try and figure out how Bilski would be applied, is that we looked at the last 100 financial patents that you've

issued in the –- over the summer of 2008. And it was very interesting, because you know you are already applying Bilski, even before it came out. Because that was your legal position that was being tested and Bilski and it was very interesting to see which things you were letting out of the patent office, and which things you think complied with Bilski. And that's your role too, you help make policy.

SPEAKER: So, I'm going to add to that. I think if we look 50 years down the road, we'll see a big shift to the Patent Office, because this area is so complicated that the only way we can get any kind of intellectual handle on it is to localize –- aggregate and localize some real expertise.

SPEAKER: How's that work with the Federal Circuit? You know we need to concentrate into a single court so that we can get expertise? I mean is that -–

SPEAKER: But they don't –- they will say they don't do policy. Nobody does policy that's the problem. Congress can't do policy in this area. We've got them paying attention to the economic crisis.

SPEAKER: I don't know if all judges on the Federal Circuit will say they don't do policy.

MS. DREYFUSS: I want to say the Supreme Court has weighed in here, and I think the Supreme Court's talked with a fairly broad

brush and has actually – has made several policy statements over the last few years, that could be implemented by the PTO you know in the sort of granular level, and by the courts as well.

SPEAKER: Well they're certainly getting a lot of benefit from dozens of Amicus Briefs that's one way to aggregate information.

SPEAKER: To John for the –- I would take John's question and John's answer one more level within the Patent Office. I think it's important both at the examination level writing the guidelines and the MPEP and you know everything that examiners use everyday. And at the Board of Appeals level for the Patent Office to be playing a leadership role in applying CAFC Law, and driving it forward in the interstices that are revealed, right, as new cases come up and to me the Patent Office can be very effective at enacting what I would call sort of leading edge guidelines and MPEP that interprets. It doesn't just explain right or mechanically lay down but actually interprets what the Federal Circuit has put out as its law, and further drive the law forward through the Board of Appeals decision. I think there are really two important roles that the office plays inside.

SPEAKER: Let -– we need to move on. We've got too many hands up here. Rainer.

SPEAKER: Well I'm a European, I'm (inaudible) at Maastricht University. I'd like to comment on the idea of the technical

contribution. At first sight it looks sympathetic and opponents of the European software patent directive have strongly emphasized the need for technical contribution. Still I have to say it's complicated it's a problem more or less. There are basically two problems, the first problem is legal certainty, and the second problem is whether it puts an appropriate boundary in. And actually currently there is some questions, I refer to the enlarged Board of Appeal of the European Patent Office to assess the proper boundaries.

To give you some insight of the problems that exist in this field is that it should be technical but there is a technical contribution, or is it a technical effect, or is it a further technical effect, or is it the technical considerations. And with that respect, it's also useful to know that the technical contribution idea stems from German patent tradition, which dates back to at least 1933. The British never accepted this tradition, and pretty recently British courts said really this reference to the technical contribution is a restatement of the problem and more imprecise language.

So, the issue is there is something behind it. Now, there would be another question to go into the details but I think in my perception the fundamental question must be answered, whether a patent is a reward for any brain work cogito ergo sum like Descartes said, no he never said that. I think that the patent is not just a reward for any useful

work for society by some brilliant Americans or Europeans, so that there must be another reason behind it. I think so that basically technical contribution is indirect it gives major problems to legal practice. I know it when I see it is the phrase that is often quoted, but I don't think it works. It is a major problem for practice and we have to look beyond this requirement to make the thing actually happen. Thank you.

SPEAKER: Konstantinos did you want to talk about –- yes, okay. Could –- I --

MR. KARACHALICOS: I work for the European Patent Office. I don't work exactly in this field but I am aware of what is going on there. And I would talk at the end, there is a closing panel where I would expose a little of position of European Patent Office. I would like to express my opinion of what has been disclosed here. It is very interesting the whole palette of opinions and I think that following the cybernetic turn in the 80's things have changed in industrial landscape, and I listened very well to what you wanted to say. We cannot cope with let's say with the terminology we had for the past to cope with the developments now. It doesn't fit anymore the paradigm has changed.

The problem is whether the patent system can follow the new paradigm and whether it is the right solution to the new paradigm. (inaudible)the day before yesterday convincingly to my opinion that a

system with fits in a certain fit of innovation may not fit to the others. So the consideration beyond the patent system it is about its usefulness for the innovative fit itself.

So, you draw an abstract boundary or a complete boundary? Does it fit there or not? It –- with what kind of criteria, and I think this goes beyond the logic of the patent system and to let a system decide it's own boundaries it is very dangerous. Because I think it fits for up to now historically, so it fits everywhere let us expand it.

This is a kind of hydra expanding; this can be dangerous for the innovative fields and for the system itself. So this is a more general, and the question, which came from my colleague from the U.S. Patent Office, should we decide our boundaries? Are we capable of doing this? And, a way that Europe tries desperately to define the boundaries was explained by you and I fully sympathize with you.

This is a metaphysical criterion technicality. It is not technical at the end, it is metaphysical. We think it is useful but at the end it may not it may -– it is so elusive. It is very abstract this technicality. But we have another approach and I was very pleased to use this, being an examiner, so I know what it is about, and all these things I was a Mechanical Engineer in nuclear reactor safety, very concrete. But I faced all these

problems of abstract patents there. So they are not linked to software, I think they are everywhere as you said.

And so our, let's say salvation there, and the tool that we had as examiners to cope with this was our, let's say, problem to solution approach that means we tried. And this you don't have in the U.S. this tradition, that means we tried to understand the objective problem to be solved by this invention. Not a problem which was brought forward by the applicant, but the objective one, which resulted from the state of the art which he didn't know.

So we constructed a new problem, which was solved by the invention. And we had a lot of debate with the applicant because she could not understand this. She said, no the problem is this. We said, no no, looking at the state of the art the objective problem is a different one, so your contribution to solving the problem is this, and you deserve a patent on not according to this objective assessment. It was very useful for us, I don't know whether they said you do it, I'm not an examiner anymore active. So –- and there you don't have these problems and of course it is difficult to asses it and to define it, but it is the best thing I have ever seen, I must say. This goes beyond all technologies and it deduces a lot for instance -– and I close with this in the field of business methods and software and so on, by using this criterion we eliminate about more

than 90 percent of the applications, by using this criterion. So, we don't (inaudible) a formalistic approach, but by using this approach we grant only 5 percent of them. So this maybe –-

SPEAKER: Two comments, on both of the last -–

First, clearly understanding what the actual inventor contribution is and how it distinguishes the claim from the prior is really helpful to understand what it is that you're trying to decide on. Okay, no question about it.

The more important thing, whether it is technical contribution or whether it's machine you know general purpose versus particular machine, the question the PTO is soon going to get, the most valuable thing and whether it's from the PTO, whether it's from our Judiciary or whether it's from the Congress is just unclear not just what the rule is, but why it is the rule. That helps you to understand its application.

And it seems to me you know if Congress weighs in, they could do a lot better job even if they delegate this entire issue to PTO to bounding it with policy by articulating what it is that we're trying to accomplish by creating whatever the rule is going to be to draw things in or outside the line, because some things are always going to have fuzzy boundaries and then you have to go to the policy to decide why it's (inaudible) .

So, let's assume for a minute the PTO now has the opportunities, say we don't think a general purpose machine is enough to make something patentable. Why? Just tell us why? Right? And then if you're going to say it has to be something that's particular, what makes that particularity sufficient? What's the theory behind it that will help everyone?

SPEAKER: Jim Tupin last comment.

MR. TUPIN: I'm trying to confess I found the discussion pretty abstract. So, I thought I'd take it down to a case, which is Lab Corp, and it seems to me that Lab Corp is a case where a number of the principles the different panelists have articulated could have been applied, and weren't particularly.

In Lab Corp you had a Homocysteine Test and a correlation step. The PTO's position, which was reflected in the United States brief in that case was that that meant the deer criteria because you had a transformation in the Homocysteine Test. And from our prospective therefore we weren't in 101 territory, we were in 102 territory because Homocysteine Test had been used for prior things, but what the patentee was arguing is that the mental step, the correlation is met now every time you use the Homocysteine Test.

So that gets to Bob's point that a step, a crucial step in that case that distinguishes from the prior art if it's only mental, covers too much. But that is also a case where what John was talking about in terms of a new use of an existing process, would have been a policy to apply and –- no – to whether you could have actually written the claim so that it would be limited to the new use and not cover the old use. Might have been problematic, but that was the issue that could have been presented in that case.

The Supreme Court dissent from the dismissal of the cert petition went to preempting the application of law of nature, and I think it jumped to that higher level or more fundamental criteria because these other issues weren't faced, and then and only then do you get to the question say that Rochelle and Josh are talking about. Is this so fundamental that it shouldn't be eligible for patenting at all? I think my personal concern with that is that what fundamental is, is going to be the subject of a lot of economic interests and may or may not be the right kind of question to ask.

But I think we're talking about a lot of different things, and if we don't sort of take them to concrete cases, we tend to mush them together.

SPEAKER: Well, we'll have a conference on fundamentalism the next time. Okay, we are running ten minutes behind schedule, so let's break for lunch and we'll see you at the Independent Invention Panel.

(Recess)

MODERATOR: Hello everybody, I'm not knowledgeable at all on this topic so I will be a consumer rather than a producer. So this is a session on Co-Invention and we have three scholarly presentations of law and economics or economics and law. I think I prefer that. And then a summary comment by Emery Simon.

All right so our first Suzanne Scotchmer who is now joint with Economics, Policy and the Law School, three appointments. Suzanne and I went to graduate school together and probably few of you know that Suzanne is actually from Alaska and I do know that she wants to cap her stellar academic career with some experience advising a Presidential candidate hopefully from Alaska. So with some luck maybe that dream could come true.

MS. SCOTCHMER: I like to say I'm the second most famous person, woman, from Alaska.

Well, I feel like we're coming down from the sublime to the specific in this panel. The discussion of the morning being about, you

know, these kind of deep questions of what deserves protection and what are abstractions and we can't define these things, never mind make legal rules about them. As I understand it the purpose of this panel is to discuss a particular legal rule in light of that discussion.

So the first thing I would like to do is thank the organizers for having those panels. I thought they were really excellent panels and raised many issues far beyond their states purpose.

I feel like I need to embed discussion of independent invention or the independent invention defense in a slightly broader discussion, because I think for me the set of arguments about it are a set of arguments that go to a broader set of legal tools than just independent invention. So that's why I'm doing this. And I want to start as some of the panelists did this morning with some basics about what is it we expect from our patent system. So let me just put up three simple things, over simplified, easy to quarrel with but basically three simple things.

First, reward should never be to no affect. You shouldn't give rewards where the rewards aren't necessary to innovation because they create deadweight loss and other kinds of inhibitions on use that are a drag, not an asset to society. And, you know, what is that rule telling us? It's telling us for patents, look if the patent applicant didn't invent it, don't protect it because if he didn't invent it you're giving the reward to no

effect. You're not rewarding an invention. So I think we all agree on that basic principle.

But the next two are where, you know, they've been with us forever and we have still not resolved them. So rewards should not exceed social value. Most people agree with that because then you get too much investment in R&D. On the other hand, it's hard to get rewards, give rewards that exceed the social value contributed except that it's a little hard to describe social value in context where there is rivalry in doing R&D. You know if some other firm would have achieved the invention absent this one. What's the proper reward? You know, what exactly did he contribute to the fact that somebody else would have otherwise achieved it?

There are questions of preserving options. It's a little bit of a complicated subject, but the principle I think is clear.

The more difficult question is, the one I put in italics there, should rewards be as high as social value? Okay, we agree they shouldn't exceed social value. Should they extend to social value should they reach that high? Well, there are clear dangers, for example, duplication of costs in patent races. But to the notice is that intellectual property protection gives rewards that maybe don't reach as high as social value, but they are clearly linked to social value.

If you are getting rewarded in the market and the market value is related to the social value of the innovation, clearly the benchmark that's establishing the level of reward is the social value. As opposed to what? As opposed to cost?

So the other idea that pops up is the third point, should rewards be linked to cost instead of social value? And of course, the argument for that is it avoids the dangers of over-reward. It avoids the dangers of duplicated costs. Having two firms instead of one doing what one firm could do. Keep the rewards low enough just to cover the costs. It has the additional benefit of minimizing deadweight loss. There are lots of kind of reasons you might want to do this. But notice that IP law probably can't manage this and that's because intellectual property rewards are linked to the market. By being linked to the market they are linked to the social value and not to the cost of achieving it.

And so, there are a lot of economics papers that come to the conclusion in one oblique way or another that come to the conclusion that rewards should somehow reflect cost, not value and lawyers typically respond to this by saying that's just nuts. How are you going to do that? That's a really hard thing to manage. Okay. And the basic problem of IP, of course, is one size fits all.

O what I want to argue, actually, is that there are some

levers in law that have something to do with that idea of bringing rewards more into line with the costs of R&D. But before I get there, let me point out that the economic lever to manage rewards is in fact something to do with costs, but not the costs of the innovator. An economic level to manage rewards of the innovator is to manage the cost of entering the protected market of some rival not yourself.

So for example, if you can enter a protected market by bearing some cost, why doesn't that bring reward to the innovator down? Well, one thing if it entry actually happens it introduces competition that reduces the reward, it reduces prices, reduces deadweight loss, it reduces the reward of the innovator because he now has a rival.

And what determines that? It's determined by the cost of the firm that enters the market, the cost of entry. So the question is how do firms get into protected markets? What's the cost of getting into protected markets?

If the cost of entry, the second bullet point there, if the cost of entry is commensurate with the cost of invention what's the consequence of that? The rewards to the inventor are going to be brought down to something that looks sort of like the costs of entering the market, therefore the rewards are going to be brought down to something that looks like the cost of R&D. So that's a back door way of bringing down the

rewards to the inventor to look like the costs of invention. Hmm, okay.

And then the third bullet point, something to notice here is if you're going to bring down rewards to inventors by allowing entry, you would rather have it down by licensing rather than by somebody actually incurring the costs of entering because that's just duplicative.

Okay, so that's the basic economic lever. That's an economic lever that says we have a way to bring down rewards so that rewards look more like the cost of R&D than they do like the social value of the invention. And you're all thinking how do you do that? Well, we have policy levers. We are coming back to independent invention.

There are some legal levers that actually manage the cost of entry and that's my main point here that I want to make.

These legal levers were all brought up in one way or another this morning. The breadth of the patent right, independent invention actually wasn't brought up very directly, and reverse engineering wasn't either. But these three legal policy levers have something really important in common in how they manage protected markets. All of them are ways of governing how costly is it for a rival to get into a patent holder's market.

So for example, the breadth, that came up this morning. If you have narrow rights it's easy to find, relatively easy to find an invention that gets you into the market. And if the cost of that is, for example, more

or less the same as the cost of having opened that market in the first place; entry into the market – the competition that results from entering into the market is going to bring down the rewards, not just to the entrants, but also to the innovator and thus reducing deadweight loss and the other harms that are attendant to property rights that are too strong.

Reverse engineering does the same thing. If you can get into a market by reverse engineering, say in trade secrets or sometimes in patents, computer software. It does exactly the same thing. The reward to the innovator will end up in the end being more or less the cost of getting into the market, which will be what? The cost of reverse engineering.

Independent invention is another way, so in my view of this, these policy levers, these legal policy levers are all serving the same function. Independent invention, depending on how you construe that concept can do the same thing. If you are allowed as a rival to come into a protected market by independently inventing something already there, now we all know that patents don't allow this. Patent law doesn't allow independent invention. But in other forms of intellectual property rights, copy rights. Copyrighted commercial products, independent invention will get you there.

The reward to the first entrant to the market, the protected

entrant to the market will in the end be reduced as other rivals come in with independent invention.

Okay, so there are some issues here in thinking about how to apply these tools. For example, what is the cost of inventing? What is the cost of getting in under these legal rights? And in thinking about what is the cost of inventing, what do you do about dry holes? There are some difficulties in doing this.

But my main point is just to say the economic idea here, which is that you want to let rivals into the market. The only way you have of severing the link between intellectual property rights reflecting value, not cost. The main economic way you have of severing that link is to bring rewards down in a way that reflects costs by allowing entry into the market. That's basically the point and we have legal levers to do that.

And one of them is independent invention and the reason I'm not speaking about it in isolation is that we have a whole suite of policy tools that do exactly the same thing.

Okay, so Policy Implications One and Policy Implications Two. Independent invention is a very confusing concept so when I speak of it in the breath as the other design instruments of intellectual property law such as patent breadth, I'm assuming that independent invention is willful and known. The independent inventor knows that he or she is doing

independent invention.

And in that case it's just a question of design. There's just a question of how much design independent invention or entry into the market do you want to permit? And so, in that context I have some, I think that this perspective can give some, at least, maybe some insight into the conundrums that were raised this morning.

But I want to distinguish this form of independent invention from inadvertent independence. So sometimes when we speak of independent invention, what we really mean is somebody out there reinvented it because they didn't know there was a patented thing out there. Why? Because disclosure failed or because the notice function of patents failed.

That's a different form of independent invention. For one thing, if that's the form of independent invention that we're approving of and we're going to allow all of those kinds of second inventions into the market that has a much more ambiguous set of consequences.

So independent inventors can be either prior users or second-comers. For prior users there arises the question, why didn't the prior user disclose? And shouldn't they have an incentive to disclose? So if there is a right to independent invention that looks like inadvertent independent invention, it has an affect on disclosure. I'm not clear that

that's a good thing.

If you're the second-comer independent inventor, the question is did they know of the prior use? And do they have an incentive not to know? Do they have an incentive not to search? And if they have an incentive not to know and not to search, that completely undermines the teaching function of the patent system.

I mean, whatever we want of the patent system, surely we want to preserve its teaching function. If it doesn't have its teaching function then there is a deep sense in which its not behaving as intended.

So I distinguish the inadvertent uses from the design uses. And in the design uses, in those cases where we are letting rivals into the market, whatever we call it, you know, letting them in because patents are narrow and they can come in in-parallel, because patents allow independent invention that's another word in a sense for the same thing.

What is it we would want to do? We are using it to reign in rewards in that version of independent invention. What might it tell us for policy? It might tell us, for example, that process patents are better than product patents. It might or might not tell us that. But for product patents there can be a threat of huge over rewards because you might make some invention – you're Google.

You're the Google guys. You invent this whole search

engine market and you make billions of dollars, well gee, what did it cost you to do that? Would it? Maybe not. Would it or would it not be a better world if you brought down the rewards to that invention in some way to a level more commensurate with the investment required to make it.

Research tools is another area where the reward to the invention could be to open the whole market, you know the whole social value of the research tool. Gee, wouldn't it maybe be better to bring those rewards down and not close off so much further use.

Patenting medical pathways versus diagnostic tools, implementations, you know, patenting the pathways may constitute too much reward. How can you avoid this? Let the rivals in with some kind of, by making it the patents narrower. Not patenting the pathways, just patenting the tools. What's the purpose of that? Let the rivals in at some cost. Bringing the rewards down, bringing the deadweight loss down and so on. You can apply that analysis to all of these complicated subject matters we've discussed this morning.

Thank you.

MODERATOR: Great. It's usually helpful if there are clarifying questions right after the person's speech. I thought it was clear, but if anybody needs clarification.

Okay. Great. So then the next presentation will be by Chris

Cotropia who is an Associate Professor of Law at Richmond School of Law. You're there.

MR. COTROPIA: Thank you. This is fine. Thank you so much John. I want to thank Brian and Arti and the Brookings Institute.

MODERATOR: --tion.

MR. COTROPIA: Institution, that's right. Sorry. I don't want to make it sound like it's a – maybe I'm a committed –

(Laughter)

MODERATOR: Save Bob Litan. That's how he got out of the draft in Vietnam. He said he was at the Brookings Institution. They thought it was a mental institution.

(Laughter)

MR. COTROPIA: I said that just to prompt that historical lesson.

My talk today, I'm going to talk about some research that Mark Lemley at Stanford and I have done, in some ways on the question of what would the – let's try to play out what might be the implication of an independent inventor defense. And really we were inspired by Suzanne and Sam's work on, and others, talking about the idea of well, what if we kind of gave a free pass to those who independently invented?

And so we said this is interesting because patent law is

unique and that other areas of intellectual property requires some kind of copying for there to be liability; right? Copyright law. You have to copy trade secret law. You have to misappropriate. Patent law is the true area where at least on the face to infringe it's okay if you're inadvertent you're still going to fall into the purview of liability.

And so the question we had was well, how do we get at this? How do we get at a sense of how much copying or non-independent inventions being done, mainly because if it's not an element to a patent claim, there might not be any kind of window into this and so we had to look for some patent doctrines where copying has some relevance. And I think this is something that is sometimes passed over.

It's not that independent invention is irrelevant to patent law. There are actually a lot of patent doctrines where I get some benefit if I've independently invented. Willfulness is a good area as an indicator for this. Copying is an indicator that you were a willful infringer. So if you didn't copy that's good evidence that you were not a willful infringer.

We also sometimes look at copying to determine whether the invention is non-obvious or not. Right? So if I've independently invented that might be an indicator or would rebut an indicator of non-obviousness. And we actually have a specific area of patent law that deals with abbreviated new drug applications where you have this

bioequivalence requirement. In some ways I have to, not necessarily that I've copied. Although I think a lot of these cases are copying cases, but I've got to affirm that my drug is a bioequivalent of this drug that is covered by one or more patents.

And so, what we decide to do was kind of use these windows where, while yes, in general copying is irrelevant to the claim of liability in patent cases but it can come up in certain cases. And say, well let's take a look at complaints.

Mark and Stanford have put together this amazing clearinghouse of filed intellectual property complaints, I think from 200 forward. Take a look at complaints and also take a look at issue cases and try to look for two things. Look for instances in which copying is actually alleged and also instances where copying is found. So obviously, the complaints don't have that copying found part but the cases do.

Knowing that we're not going to be able to capture the full universe here, but maybe we'll get some kind of a window in to what's going on. And we were, I think Suzanne's point of there's a differential between different types of independent inventors, we were trying to be as broad as possible. In a sense that if you were copying a commercial embodiment of the patent we were labeling that as copying. If you said you were copying the patent then we were labeling that as copying. We

also took terms that maybe weren't just being used in passing in terms of copying as he took the design from me. He referenced the patent when designing what he was doing, right?

So these are instances where maybe there really wasn't copying in this instance, but it still could of maybe been in independent. But we went and coded these as copying. So in some ways we could over compensate or over count for instances of copying that was out there.

And in the end the results to me were not that shocking, although in some ways they may have been so shocking of how low they were. We found in the complaints and also in the cases, that only about 10 percent of the cases involved allegation of copying. So 90 percent of the cases didn't include an allegation of copying. Now we could say right, well the reason there's no allegation of copying there is because it's irrelevant to the litigation. It's not relevant to the claim of liability.

And so, what we did was we said look, let's try to take a look at just a universe of cases where copying is relevant. Cases that allege willful infringement there's an instance where I would want to allege copying because that would help me with my willful infringement claim. That only kind of increased the number of allegation, I think, up to 17 percent in that case.

So it was a fairly low amount of cases in which copying was alleged when you got to instances where copying was actually found, the numbers dropped dramatically. I think it was just a little bit over a percent. I think in 1.5 percent of the cases was there an actual factual finding of copying.

And then we decided to say, well let's take a look at this data and let's take a look at it by industry. This is, you can see again, thematic with today. Right? This discussion that patent law, you know, all this one size fits all can affect different industries in different ways. And here it was fairly dramatic the differential. There was a majority and this would be in a sense of gosh, I would say about 70, 80 percent of the cases where you had copying allegations were pharmaceutical or chemical cases.

In some ways this was built in the way we coded because we were coding cases as instances of copying. So in some sense if I had a generic drug and a patented drug litigation that was indexed as an evidence of copying but on the flip side you had just south of 10 percent of these cases were software or electrical cases where there was copying.

So you had this fairly stark breakdown that where at least the copying was being alleged or copying was being found, was occurring heavily in pharmaceutical and chemical industry and very infrequent in the software and the electrical industry. And what was heartening was there

was a fairly nice link up between the numbers that we found with regards to the complaints and with regards to the cases.

Now Brian told me not to get into the numbers and I won't and the paper is linked, I think, on the website if you want to search for the specifics.

What we thought was kind of interesting though was the implications of this data. And I know we're only looking at a subset here, we're only looking at litigated patents. But it has some interesting implications.

I think one of the first implications and this is what we've found a lot of and I think you hear this a lot. I think a lot of the rhetoric that surrounds patent law and patent infringement is rhetoric of theft and copying. I think a lot of times people say, well, look. I'm an infringer. You're an infringer so you're a copier, you're a thief, et cetera.

Actually and I bring this not to show off Aerosmith's – there's actually an article in the new IP Law and Business talking about how and a lot of these eastern District of Texas litigations. What you want to do if you're the plaintiff is make sure you peg the other person as a copier. Right? Because it sells well with the jury.

And so in some senses there needs to be kind of an educational campaign, not necessarily just to jurors but also to legislators,

et cetera, that this at least the way the game is played now, it's not a game of thieves. Right?

It's a game in most cases of an independent inventor who has as Suzanne points out, invested a lot to get to where they are, right. And I think a lot – the rhetoric is not true. And there's a feedback here with regard to the rhetoric.

The rhetoric might also mean that out counting is even higher than it is, because when people were using the terminology copy, et cetera in the opinions they might have just been using it rhetorically. Right? When we were still coding for that as evidence for that, so there's the rhetorical front.

The other thing that we thought that was interesting is it has a big indication, at least in some ways, on kind of the disclosure theory of patents, right. There is this view and there's a lot of kind of theoretical threads. That one of the benefits and Suzanne points this out is that there's this disclosure function of patents, right.

Patents educate people about what's going on. And we even kind of push that theoretical basis further where it's supposed to push improvers, right. People are supposed to read patents and try to improve. And there's also kind of a line of saying well, patents also prompt designing around. Right? People will reference patents and we'll

get these extra innovations because they will be trying to go around the outside of a patent claim, et cetera.

At least with regards to litigations these are not failed attempts at using the disclosure in a way that doesn't infringe, right. So these are not instances where there was a technological transfer that went bad or I was trying to design around and I failed, right. Because those would be the cases where you would see allegations of copying. So these -- 90 percent of these cases are cases where the disclosure functions really aren't operating how we say it operates.

Which we found is interesting because a good portion of kind of our theory is kind of based a little bit on this. And kind of leading from this, we also thought it was interesting with regards to the way – kind of patent remedies are going. That the idea that patent remedies some way are supposed to be deterring, taking out the kind of willful context doesn't seem to ring true because if we don't have copiers there's nothing to be deterred. Right?

I'm just independently inventing. I don't know that there's a patent out there. So this remedial regime, and I'm cabining aside willfulness, because willfulness does play a role in this because when I finally do find out about the patent maybe I should do something about.

But the idea that we should set royalty rates in litigations to a

level to where we are trying to provide some kind of deterrence, et cetera, doesn't seem to ring true with the fact that there is this independence there.

The final, this kind of links in with the conference that at least should justify why this kind of fits in with these abstract ideas at least the idea of kind of soft rights – the other interesting thing about our research is the fact that you have that big deviates between kind of pharma and chem and software and electrical side of things. Not to say that these were abstract versus non-abstract patents, but it clearly shows at least in litigations said that things are very different, right.

That most of these software and electrical litigations are between individuals who have not overlapped before and interacted before. These are two independently designed. While a lot of the pharma and chem and notably it's probably mostly, it is mostly in litigation or ones in which there is an interface between the two. One is the kind of generic – and we thought that's an interesting kind of take away when you come away from this and maybe it suggests that an independent – it does suggest. I think that an independent inventor defense, whether the very different impact depending on the industries that are affected, right.

And my final point is it also gives us an indication of how dramatic the impact might be of an independent inventor defense.

Now, obviously people will change the way they litigate if there is such a defense, right. I mean, I bet you some of these cases they would have alleged copying and tried to find copying if they knew that there was a requirement to prove liability. But I'm sure that probably a majority of these that just go away are not cases where liability could be found. And if we thinking it's 90 percent of these where there was no allegation of copying, it would mean probably we have a fairly dramatic – depending how we define the independent inventor defense, a fairly dramatic change in the landscape of patent litigations.

So those are some of the findings. Feel free to take a look at the paper if you want some of the specifics. But thank you very much.

MODERATOR: Any clarifying questions?

Did you want to comment briefly on any of the policy things that you pulled out of your findings? You don't have to.

MR. COTROPIA: Like take a position you mean?

MODERATOR: Yeah. All right. We can wait.

MR. COTROPIA: Let's wait.

MODERATOR: Okay. Fine.

MR. COTROPIA: I'm just going to put the logs and somebody else can light the fire I guess.

MODERATOR: Sure. Okay. Great. All right. So our next

speaker will be Sam Vermont who is a law professor at George Mason University, which is right near where I live and it's responsible for keeping my property values high.

(Laughter)

MR. VERMONT: Okay. So a couple of years ago I wrote about independent invention. I tried to come up with a practical implementation of the independent invention concept that Suzanne and a couple of others had come up with before.

So I started – I actually kind of got the idea through practice where I noticed that instead of representing legitimate inventors who were going after pirates it seemed like we spent most of our time going after parties that had independently invented. So I had this in the back of my mind and I had run across this economic literature suggesting that there was a sound basis for an independent invention defense of some sort.

But the Devil is in the details of how to apply it.

The notion that I came up with was that an independent inventor would be entitled to a defense against the first, against the patentee provided that the independent inventor reduced the invention to practice before finding out that someone else had invented it. In other words before receiving actual notice of the invention from the first inventor or before constructive notice.

And by constructive notice I mean clear publication of the invention by the first inventor in a way that would inform the relevant members of the art.

Now if the second inventor were entitled to a defense against the patentee this would create a duopoly-type situation in which the collective profits earned by the first inventor and by the re-inventor, the independent inventor, would be less than the monopoly profit. I'm going to call it monopoly profit that would have been earned by the patentee in the absence of any kind of re-invention defense.

So yes, the independent invention defense does from the ex ante standpoint, from the time before the invention has been created, it does reduce the expected reward and it does so to the extent that it is likely that more than one party will converge on the invention at roughly the same time. The rationale -- I didn't fully understand the economist model, so I thought in my own terms how to justify the independent invention defense, and it occurred to me that convergence, multiple parties coming to the same thing at roughly the same time, is itself evidence that a somewhat lower reward or the prospect or the promise of a somewhat lower reward would have been sufficient to incentivize creation of the invention.

Okay, so why are we doing this again? Why do we want an independent invention defense at all? In a case in which there is a timely independent invention and therefore both the patentee and the independent inventor can produce the item in question, then there's some competition between them, and the price for the items is lower so there's less of what's called monopoly laws. In a case in which because the promised reward is lower from the XNE standpoint, some inventors will drop out of the race. In those cases, then the benefit of an independent invention defense is there's not duplication of effort. It's not multiple parties doing the same thing -- duplicating each other's efforts. Rather, it's one or a smaller number of inventors.

Now, of course, the danger is that everyone will drop out and the invention will get made, but what's nice about the defense, at least the way I've constructed it, it seems to be somewhat self-correcting and that if everyone jumps out -- everyone drops out of the race, then the reward -- the promised reward seems to be it's this monopoly. So, whoever the one party is that goes back into the race and proceeds forward can get the monopoly.

Now, there's multiple dynamics that can play out between rival inventors in a variety of games that could be played, but it seems that at the end of the day what would be most likely to happen is that the most

efficient inventor -- in other words, the inventor who can make the invention at the lowest cost -- would be the far more likely inventor to stay in the race and to actually make the invention.

Because of the way I've set up the rule whereby which -- under which the reinvention defense -- the window for reinvention gets shut when the first inventor publishes the invention, this creates an incentive for early publication. So, if you're a first inventor or if you think you might be, you have a greater incentive if there's this independent invention defense available under law. To immediately publish your invention and let others know, there -- because when you publish it you then create the bar date. You shut the reinvention window, so there's no -- it -- there's no more time left for someone else to reinvent it.

At the time I wrote the paper I wasn't focused directly on what we might call patent failure cost or the externalities of patents, the transaction costs of patents. But I think the independent invention defense would also reduce these costs and might -- it might actually be -- it may even benefit -- it won't -- it can't reduce them entirely, but it does allow an independent inventor to be at least somewhat less concerned about litigation, because if you're independently inventing and you're diligent and you're doing what you're efficient at, the probability goes up

that if you're not the first inventor at least you'll be an independent inventor.

Okay, concerns. Chris and Mark's paper scared me a little bit, because I saw just how incredibly low the percentage of copying is. I thought oh, my gosh, you know. Well, that suggests on one end that an independent invention defense is a good idea, but on the other hand it suggests that it would radically transform patent law, and so, you know, I hope I'm right if this is ever adopted.

So, the -- initially it seemed that the independent invention defense would seem to swallow the rule of patent protection. But a little -- it's not quite as bad as it seems at first. First of all, there's this window, right? So, under the defense as I've constructed it, you have to get the defense. You have to have reduced your invention to practice before the first inventor gave you notice (inaudible) are actually (inaudible). So, this is going to dramatically reduce the number of parties that are considered independent inventors for purposes of the defense.

Some of the non-copiers in the study may have been inadvertent copiers, right? They may have not known they were copying. They may have gotten the idea from a non-patent source. Those parties would not qualify as independent inventors under my scheme.

Now, a criticism of the ideas that -- my ideas that -- well, the first inventors will just learn to immediately publish and immediately shut the reinvention window, and then you're just back to where you were before. You still have a race to be first to invent; it's just on top of being first to invent, you also need to immediately publish. And there is -- that is, I think, a real concern, but one response is well, that at least would result in earlier termination patent races, because we have really fast disclosure of inventions. And there are some reasons to think that first inventors won't immediately publish something as soon as they think they might have something, because if they're wrong, they may have given out the information and actually not done what they need to do in order to secure the patent right. And they may -- alternatively, they may create -- they want to be (inaudible) for themselves, so they may create prior art that would shoot themselves down.

So, let me briefly discuss some possible alternatives or additions to an independent invention defense. One is that we use independent invention as one of the secondary indicia in the -- in determining obviousness. Normally the secondary indicia are -- militate in favor of non-obviousness, and two of the -- those criteria are long-felt need and failure of others. Symmetry would seem to suggest that short-felt need and the success of others -- i.e., independent invention or near-

simultaneous independent invention -- should be factors militating in favor of a finding of obviousness.

This is a little volatile actually, because if there's a finding of obviousness, then that destroys the patent. It doesn't just create a defense for one guy out there; it blows the thing up, and traditionally anyone can argue obviousness, so a true pirate could argue that a patent is invalid because that guy over there independently invented it. So, that's a little perhaps problematic, something that should be thought through.

Mark Lynley suggests -- if I got -- probably I'm way over my time, right? I'll just stop.

SPEAKER: No, no, no. I didn't say anything.

SPEAKER: Finish your thought.

SPEAKER: Finish your thought.

SPEAKER: All right. I can finish in -- very quickly. All right, so he suggested that we use the fact of independent invention as a -- that willfulness damages be reserved only for pirates essentially, for copiers, so if you're -- maybe that's overstating, but anyway if you're an independent inventor, then you would be exempt from willfulness damages. This -- I think overall this is a good idea, although I think its effect would be much smaller than people think probably because willfulness damages are only a minority fraction of all of the damages that

are awarded, but the main reason that it wouldn't be very important is that my guess is that under -- most of the time parties that have to pay willfulness damages tend to not be true independent inventors anyway. So, de facto it's already part of the law.

Lastly, Mark suggests the possibility of using independent invention as one of the factors in determining whether or not to grant a preliminary or a permanent injunction.

That's it.

SPEAKER: Any clarifying questions?

Great.

SPEAKER: (Inaudible)

SPEAKER: Well, you can be inadvertent.

SPEAKER: (Inaudible)

SPEAKER: I did mean to distinguish between inadvertent copying and outright piracy. Right at the end I think I did complete the two, but --

SPEAKER: Is there a difference?

SPEAKER: Between copying and piracy?

SPEAKER: Piracy? Yeah.

SPEAKER: What difference do you have in mind?

SPEAKER: I beg your pardon?

SPEAKER: What difference do you have in mind?

SPEAKER: Well, the way he was describing it, copying is inadvertent.

SPEAKER: Oh, I see.

SPEAKER: Piracy is not inadvertent.

SPEAKER: That's correct.

SPEAKER: It's willful.

SPEAKER: Well, there could be willful copying.

SPEAKER: Well, you could copy and know that you're copying. You can copy and not really know that you're copying, at least not know that you're copying from a patent.

SPEAKER: So, you did indicate there's some -- there can be distinctions between the two.

SPEAKER: Yeah.

SPEAKER: Okay.

SPEAKER: I have a question.

SPEAKER: Those who pirate know what they're doing.

SPEAKER: Yeah.

SPEAKER: (Inaudible)

SPEAKER: Right.

SPEAKER: Somebody could be accused of copying and it can be similar or maybe even identical but the guy didn't copy, he just did it independently.

SPEAKER: (Inaudible)

SPEAKER: You don't call it that.

SPEAKER: (Inaudible)

SPEAKER: All right. Make sure you call it copying.

MS. SCOTCHMER: But I'd like to invite discussion on the difference between granting formally a right to independent invention and simply tolerating inadvertent independent invention, because it can be used as a policy tool. We don't have a defense of independent invention in patents, and we do have in every other form of intellectual property. That's a matter of design. It's a matter of intellectual property design, and my interpretation is that it serves a purpose. Where we have it, it serves a purpose, that it, you know, mimics the rewards to an inventor hopefully not to an extent that invention doesn't happen where it's inadvertent. So, I'm interested in Sam's idea that we should only grant that defense if in fact the second comer was unaware, that is ignorant, that is inadvertent, not intentional, because that's a very different idea, and it does carry with it the danger that many people obliquely referred to this morning, which is that rivals have an incentive to be ignorant. Why would

you want rivals to be ignorant? You want the patent system -- wouldn't you want the patent system to serve its intended function either of putting rivals on notice that this thing exists so they can go to the inventor and find the technical details or directly to learn from the patent.

SPEAKER: (Inaudible) told that went up to discuss it (inaudible).

MS. SCOTCHMER: Sorry?

SPEAKER: Yeah, (inaudible) before getting reactions. We'll get to the final speaker, but --

MS. SCOTCHMER: Oh, sorry.

SPEAKER: No, no, no, no, no, no, no. It's a good point to raise. It was a good -- no, definitely we're going to talk about it.

Okay, let -- I want to get Emory in here just in case he was going to make that point. So, just is -- Emory Simon who will do an overview right now -- okay, perspective from the industry.

MR. SIMON: So, I'm speaking personally, not on behalf of the Business Software Alliance or any of the hardware/software companies that we're -- whose names were much thought about this morning who I represent. So, these views are mine.

I should also confess that I served out my professional life as an economist, but I have reformed and I'm no longer an economist. I

spent six years of my life doing macroeconomic modeling; I now function much more as a lawyer and policy person. But I'll talk both about the economics and the policy issues that all of you have raised.

So, the underlying assumption behind this discussion is that an additional defense will somehow do a good thing for the economy. That's the underlying assumption. I am not convinced yet that that is so, so let's kind of take maybe a step back, and again I'll talk a little bit from the context of the information technology (inaudible), which is what I know best, and how patents sort of function in that industry.

So, again, taking a step back, traditionally when I learned my economics there were three factors of production. There was land, labor, and capital. Today economists probably think that there are more than three factors of production. Information is clearly one of them. So, if information is one of those factors of production and information is important to the economy and its activity, which we think it is, and information dissemination and use and utilization and tools for managing it are important for promoting our economy, which it probably is, then the question is whether or not these important economic activities are going to be advanced by patent law. And much of the debate this morning was about the fact that the patent law does not necessarily easily process information technologies and has not integrated them yet in a way that is

straightforward and simple. I would suggest to you that that's not surprising since the patent law has been dealing with these issues for about 20 years, 25 years, and the law tends to evolve slowly. That doesn't mean it hasn't evolved and it isn't evolving (inaudible) a process of adjustment. So, focusing on the abstract notions or the ill-fits exclusively and sort of losing track of that for me kind of does not complete the picture.

So, turning to the economics of patenting. The presumption behind this discussion is that a lot of the discussion is that patents are not terribly relevant to technology companies. That's a lot of the analysis; that's a lot of the economic analysis, which is it's very important in pharmaceuticals, substantially less important in other areas. I would suggest to you that there's a reason for that which I'll get to in just a second.

The presumption behind this discussion is that the principal factor in whether or not people obtain patents or invent is money. Then I would suggest to you that it's certainly a factor but it's certainly not the only factor. The passion to invent -- glory -- a whole variety of other things, even testosterone, right? So, Facebook came about because boys in school wanted to meet girls in school. Whether Facebook is patentable

or not -- I don't know the answer to that, but I would suggest to you there's lots of reasons why people patent.

Once the patents are created, there are two basic ways to approach that patent, and it depends on the nature of your business. One is an exclusivity model, which is generally what the drug industry follows. And the other one is a cross-licensing model, which is what virtually all other segments of the economy follow. I would suggest to you that if you look at the exclusivity model and if you do the analysis of whether or not the patent law is generating investment and innovation, you'll find the data that it is, which is why all the economic studies show patents matter to the drug industry and don't matter terribly well -- terribly much else. If you accept the proposition that I'm about to posit, which is for a lot of other industries the patent law performs a very important economic function, which is risk mitigation. If you are -- whether you are in making mattresses or software, there are a lot of patents that float around in your world, and part of the role your patents play is a cross-licensing role. If you look -- if you analyze the economic value of patent law from a risk mitigation perspective, I think -- I mean, I don't know that anybody has done it actually -- but I think you will get a result that shows that patent law is relevant to a much larger segment of the economy than just pharmaceuticals.

So, turning to the issue that we've been discussing, which is defenses and independent invention, and the basic notion really is not so much independent invention or copying but whether or not there should be an additional defense in the patent law like there is in the copyright law. And I'll suggest here there are dramatic differences between the patent law and the copyright law, differences which justify the approach of the copyright law but don't justify the approach in the patent law. So, in the copyright law, what you get protected is not your ideas, your expression; in the patent law your idea is protected. In the copyright law there is no examination; in fact in the copyright law there is no particular requirement for dissemination or disclosure of your copyrighted work. Once I write my code and stick it in my drawer it's copyrighted. The patent law requires teaching dissemination as a precondition. So, these are some basic differences.

A plaintiff in a copyright case would have to show that the so-called independent inventor, the independent creator, had no access to the copyrighted work. In the patent law, the access is assumed, because it's published. So, the notion that you can somehow transpose these notions because they exist in the copyright law into the patent law -- they're very different structures with very different underlying conditions that you have to meet in order to get the protection of the law.

The basic points that Suzanne made were essentially that money is the reason why people invent, and I would suggest to you money is one of the reasons that people invent, not necessarily the only one, and in fact in many instances they do it for positioning of business, for positioning of products, for positioning themselves with respect to competitors, for a whole variety of additional different reasons, which may or may not be relevant to the social rate of return (inaudible) we derive from granting the patent but the amount they probably -- in many instances as relevant if not more relevant than that.

So, the last point that I want to make is that a fundamental issue in the technology field is that many staple ways of doing things are neither published in magazine articles or journals or otherwise, nor are they the subject of an issued patent. There is a lot of stuff that happens, particularly in the software industry. That's just the way people do it. They write code. They do a blinking cursor one particular way. Nobody has (inaudible) a particular patent on a blinking cursor. Maybe they have. But there's a lot of behavior which is not necessarily documented.

One of the problems that you run into by just creating a broad independent invention or a broad non-slavish copying exception is that you open up the entire breadth of the law to a lot of assertions of innocence, a lot of assertions of "gee whillikers, I didn't do anything bad" in

a body of law which is a strict liability law where a precondition to obtaining rights is a disclosure. So, I -- it's a very dangerous thought in my mind to create this particular defense in the patent law.

Last thing. One of the issues that Congress is considering actively is switching to a first-to-file system. Then one of the things that I would be interested in hearing from you all is how does your thinking change, if at all, if the rule were no longer a first-to-invent rule but a first-to-file rule.

SPEAKER: Okay, I have one clarifying question to Emory, and then I have a general question, and then you can react to all your other --

Now, you said that you didn't think that this independent invention defense would be helpful for the economy. Could you just distil your argument? What exactly --

MR. SIMON: Well, I said the opposite of that.

SPEAKER: Oh.

MR. SIMON: I said I think it would be very harmful.

SPEAKER: Very harmful. Wouldn't be helpful.

MR. SIMON: Right.

SPEAKER: Wouldn't be helpful. I didn't quite grasp the -- what's your argument. What's -- why are you arguing that it would be harmful?

MR. SIMON: Well, the reason why you would excuse behavior is because of one of two things, and it turns on the question the gentleman asked before, which was is it being done advertently or inadvertently? If it's being advertently, the patent law deals with it, as I guess several of your papers discuss, which is you've got willfulness and other kinds of punishments where you get up to triple damages. If it's being done inadvertently, there's lots of behavior in the law. If I speed and I don't know that the speed limit in the area is 35 miles and I do 65 miles, ignorance is not a defense. I don't see why ignorance should be a defense in this area either. So, it's -- for the same reasons that general lack of knowledge of the law does not excuse prohibitive behavior elsewhere in the law, it should not excuse it here either, which kind of brings me to one last point since I'm sort of on this one.

One of my personal pet peeves -- and I'm speaking personally -- is that patent law has developed into this core key thing that drifts away from other bodies of law. One of the things the Supreme Court has been doing recently -- for example, in the eBay case -- is it said despite a hundred years of injunctions being granted automatically, you

guys are not special under patent law, you're just like everybody else. I think this independent invention notion would be a way to perpetuate that special nature of the patent law, which I think is a bad idea.

SPEAKER: Sorry, but is that one measure -- I mean, is it like output will be less? Do you think there'd be less invention? I mean --

MR. SIMON: I think there's a lot more litigation, and I think --

SPEAKER: A lot more --

MR. SIMON: I think there's a more confusing litigation.

SPEAKER: Okay, so you're (inaudible) actions costs.

MR. SIMON: That's part of it. And if you're -- except my proposition, which is for a large segment of the economy, the patent law is most important as a risk management tool. What this will do is increase that risk, which will create as an economic business sector.

SPEAKER: (Inaudible)

SPEAKER: I'll get to you

SPEAKER: Her question is -- I had that thought, too, but I wasn't going to ask it, but I'll ask it since you're asking it.

What risk mitigation? The problem -- you use the term risk mitigation. What risk are we mitigating?

MR. SIMON: So, if you are in the business of making products or services which are the subject of a multiplicity of patents and

you are trying to come to market in that space because you've got something good, and you're trying to figure out what your risks are, then your patents play a role in that risk mitigation exercise. Again, it's not the definitive factor. I'm not suggesting that it's more important in all situations than the profit motive. I'm suggesting it is a factor that has to be considered.

SPEAKER: Oh, you mean as a -- in a defensive use against someone else's patents, right? It's only -- it's the other patents that are creating the problem and your patent --

MR. SIMON: Well, patents have always been used as both defensive and --

SPEAKER: But this is the -- but that's the risk that you're mitigating, and in the industry is where you're not relying on exclusivity per se. Then the only thing left is the defensive weapon against patent suits.

MR. SIMON: But other than the drug industry, where do you rely on exclusivity, and that's what your data shows, which is that's the place where the copying comes up.

SPEAKER: Or at least what it seems like. I mean -- and this --

MR. SIMON: The economy is much bigger than just drugs, right?

SPEAKER: Okay. Let me -- I'm going to ask my question, because I read these papers and I only had one reaction to them when I read them. Okay. And I wrote -- okay. So, if this is -- all of you can answer this one or just say, you know, go on to the audience. If independent invention is a desirable defense, I kept on thinking well then why do we even need the patent system? It was clearly there's somebody else who's innovating. You know, why don't we go further and just say the hell with patents? I mean, that's your justification. Presumably you're trying to encourage innovation. Well, apparently you can get more than one person to do it. Why don't we go further? It seems to me this is sort of a second-best type argument. Let's just get rid of the patent system. Okay.

MS. SCOTCHMER: Well, one answer to that is if you don't have a patent it's harder to license, so you don't actually want -- why you're using -- I think there are radically different answers to these questions depending on whether you conceive of independent invention defense as being for chosen ads a design variable where everybody knows they're doing it as opposed to inadvertency. I think those are really different. But let's take the first case where you're providing access to the market, you're giving a legal right into the market just as if it were patent breadth. I mean, it's the same argument. You're letting rivals in. They

can either think of themselves as independent inventors or entering under a narrow patent. You don't want that actually to happen in (inaudible), because it's duplication. You don't want the costs being borne twice. What you want is the patent to be licensed, and that will happen with a patent. It's harder to happen otherwise without a patent. You want them -- you want entry to come in. You want the price to be brought down by the patent holder to avoid further entry. However, you can do that either by permitting entry or by licensing entrance. But you would rather have them as a social matter. You would rather have them license the entrance to avoid the duplicated cost of invention.

SPEAKER: Right, then you're trading off the cost of the duplication versus the cost of the patent, and you're claiming that the cost of the duplication would outweigh the cost of the patent.

MS. SCOTCHMER: Look, if the cost of entry -- in all of these legal levers, if the cost of entry is very low relative to the cost to get the original patent, the system will disintegrate, so the costs have to be high enough for entry to protect the patent holder. So, there's a tricky matter there.

SPEAKER: Okay, let me just get the audience -- let me get the other panelists. Do you guys want to react to that or --

MR. SIMON: Well, I agree with the -- I mean, the question -- I agree with the question, which is that I think an independent invention defense would not necessarily destroy the patent system but it would essentially dilute it and create additional different risks.

SPEAKER: (Inaudible)

SPEAKER: Right.

MS. SCOTCHMER: It could be a bug if it diluted the --

SPEAKER: That's -- it answers the question.

SPEAKER: (Inaudible)

SPEAKER: But it answers the question. It's a perception question here, and I think that's all you need. At least a patent -- even if its for against copyists, I would let even -- maybe even in some of these -- if I'm in the semiconductor industry, I'm Intel, I do not want somebody to be able to copy my chip right out of the gate (inaudible) I have a patent. I mean -- and patent law's the only thing, I mean other than (inaudible), you know, that's going to give me at least that kind of exclusivity out of a direct copier. I mean -- so, I can see that you need patents at least against those direct copiers to give me some of that advantage you're talking about. And then the next empirical question -- this gets back to Emory's point -- I always wonder -- it's going to vary -- of how much -- and this is only -- I think Suzanne's great about this -- it's just a -- it's a patent scope

question -- how much exclusivity do I need to recoup the cost that I think I need to recoup to just embark on this venture to begin with, and if I think I need to be able to exclude even those who are independently going to enter my market for some unknown -- which sounds like -- we say the pharmaceutical industry might be one of these where I need to, right? Then that's the empirical question and can we say that for certain for the semiconductor industry? I mean, I don't know. I would think there are some semiconductor ventures where the cost is so high that, you know, maybe I wouldn't venture into it. If I said to you well, if somebody independently comes in there, you know -- it's a perception question.

SPEAKER: Sam, do you want to explore this?

I'll get to you.

Sam, do you want to --

SPEAKER: I have the (inaudible) tomorrow night, so I'll --

SPEAKER: There's a seat right over here.

SPEAKER: I take questions.

SPEAKER: All right, do questions, and if people have an immediate follow-up to something that's said, put two hands up. That's a two-hand thing, then it's serially correlated.

SPEAKER: We have a line-drawing problem here.

SPEAKER: So, I think it's a follow-up (inaudible). So, I think, Suzanne, that your approach works well in the holdup situation. It creates a remedy for holdup so that you don't get holdup scenarios essentially, which is one reason it may not work as well in the pharmaceutical context because pharmaceuticals don't generally involve hold-up whereas, Sam, I think -- do you go by Sam or Samson, by the way?

MR. VERMONT: Sam.

SPEAKER: I was just thinking about your approach of constructive notice. I mean, your way is sort of a backwards way of just getting better patents, isn't it, in the sense that if we have good patents with good notice, your independent invention defense wouldn't apply in most cases.

MR. VERMONT: No. I mean, in the scheme I set forth, a publication, not necessarily a patent, will serve as constructive notice.

SPEAKER: Right, so as long as the patent application is published and it has --

MR. VERMONT: Well, if you're the first inventor and -- or you think you are -- you want to shut everyone else's window of reinvention, so you want to publish immediately. You don't want to wait 18 months. You're going to publish something in an article or a website or

some place where it's publicly accessible. You'll publish a disclosure. If it's a high stakes invention --

SPEAKER: Right.

MR. VERMONT: -- you'll publish a disclosure to shut everyone else's reinvention window. I don't know that that necessarily ties in with the quality of the patent that's eventually filed.

SPEAKER: Hmm, but I think --

MR. SIMON: But I mean it's more information dissemination early, which adds the quality, right?

SPEAKER: Right, exactly. I mean, it seems to me that you're really getting it noticed in a kind of circular way. But we can we talk about it more. But I see --

SPEAKER: But I'm going to switch sides, though, if I can --

SPEAKER: -- suggest. I just need to address some very different questions.

SPEAKER: Okay, let me -- I'm going to go from side-- you wanted one, this person here.

SPEAKER: Yes, I would like to ask Mr. Simon. You posed a relevant question and nobody reacted to this. I mean, if the system shifts from first-to-invent to first-to-file, that's the (inaudible) this debate then? Is this debate very much related to the first-to-invent to the

specificity for the U.S.? Because I have not seen this discussion taking place in Europe.

SPEAKER: Well, we're already basically a first-to-file system. I mean, the data shows that most people who are first to file are the first ones to invent here. There's not that -- I mean, so --

SPEAKER: There's no --

SPEAKER: I mean, how many times can we mention Mark Lynley's name in a panel I guess. Mark Lynley and Collin Chen have an article where they go through this, and most of these interferences were trying to determine first to invent. It just goes to the first one to file. So, even if it has some kind of potential implications, I think in practicality it's not. It's just not, because usually the first person who files is the first to invent, at least under our standards.

MR. SIMON: Yeah, I mean, that is the practical result, which is most people are --

MS. SCOTCHMER: But -- can I make a comment about --

SPEAKER: Yes, please, please -- I mean --

MS. SCOTCHMER: You know, a danger with data in general -- I'm sorry to jump in, but I wanted --

SPEAKER: I know.

MS. SCOTCHMER: I want you to address this in answering something else.

SPEAKER: Yes, yes, yes, yes, yes.

MS. SCOTCHMER: So, this is a question both with respect to first-to-file/first-to-invent and also with respect to what you see about copying in the data.

SPEAKER: Right.

MS. SCOTCHMER: The problem is you're looking at litigation data.

SPEAKER: Oh, no, there's no question about that.

MS. SCOTCHMER: If you're looking at -- look, here's a story that I would like to hear the answer to actually, which is suppose the patent system works great and everybody knows that when the notice function of the patent works, all the rivals are very well behaved and they go out and they do something else. They don't infringe the patent. They just do something else. The patent system works. So, what would you expect to see in infringement cases? You would expect TO see inadvertency, because everybody's who's a good actor didn't do it. So, there are real dangers. There are real dangers looking at litigation data to come to conclusions about what's going -- about whether and how the system works.

SPEAKER: Ah. No, I think you're exactly right, and we say this in the paper. I think -- and that's why --

SPEAKER: Point.

SPEAKER: Well, you said do I have a position -- I don't know how much -- you can take some away, but you're right, you can't take all away from what's going on with the data that we have. And this even goes for pharmaceuticals, because let's say we assume that pharmaceuticals are very copying intensive so we're going to go to a independent inventor defense. I can still go into the end of process having independently developed my drug. It just turns out to be a bioequivalent to someone else who already has a patent, right? I'm not a copier, and so maybe if we adopt an independent invention defense, you know, those generic companies shift the way they operate, all right, and they can still operate in a way where they start popping up in the space of -- I mean, (inaudible) -- they'll stop popping up in that space and now we've eroded some of the incentive structure we have for pharmaceuticals. So, that's the other thing. You know, like I say in the paper, we're afraid, you know, we won't be able to intake -- just say well, look, you just -- now you just adopt a whole fledge independent inventor defense. The area that needs strong incentives keeps it, because they're all copiers over there in the

pharma place and in IT, etc., we solve the problem. That's -- like you said, that's not necessarily the case, and it's a very good point.

SPEAKER: Yeah, the person with the beard. Yeah, you. You've been a lot.

SPEAKER: That's Bob Hunt.

SPEAKER: Bob who?

SPEAKER: Bob Hunt.

MR. HUNT: Yeah, Bob Hunt. If we're going to hang our hat on --

SPEAKER: Nobody else.

MR. HUNT: -- outside of pharmaceuticals and chemicals on the idea that the value of patents is in completing contracts, does that suggest that we should redesign what the patent rights are for that particular purpose and maybe get away from other things?

MR. SIMON: Heresy. All I was going to say -- I mean, that suggests going away from the unitary system, which generally is rejected as a heretical notion. But, I mean, it's a fair question, which is we know that patent law does not work the same way for all kinds of inventions, and that was actually going to be sort of a question to those of you who have been arguing for the defense, which is what are your -- or would it make sense to have the defense available in some areas and not in others, and

the corollary to that is inadvertency is not an excuse in other bodies of law, why should it be excused here?

SPEAKER: It is an excuse in other bodies of law. Independent invention is an excuse in copyright and trademark, and in general --

MR. SIMON: Just -- what you're getting in copyright and trademark is a mitigation of -- is a reduction in damages. You don't get off without liability, so.

SPEAKER: Okay. Normally, proof -- the reason that we hold parties strictly liable or we say that ignorance is no excuse is because we have a hard time proving that they were ignorant. We have a hard time proving states of mind. So, yeah, you said before well, the problem with the independent invention defense is that infringers left and right are going to say oh, I did it on my own. But if we have a hard standard, which is you have to have reduced it to practice prior to this date, the only way that they're going to be able -- they would require outright fraud and perjury to trade records (inaudible) out of nowhere and everyone get on the stand and perjure themselves. As long as you're at it, you might as well say you're the first inventor and get the patent, all right? So, it's not done under -- it's not -- we don't do that. We don't see that kind of stuff commonly today, so when the stakes are higher -- in other words, the

entire patent you get if you're willing to backdate records and say you were the original inventor -- we don't see a whole lot of that. At least we don't know that we do. So --

SPEAKER: (Inaudible)

SPEAKER: Yeah, that's all.

SPEAKER: Yeah, I'm going to point to you, but let me make a quick observation just if any economists later want to get into this. Just as an economist, I find it fascinating that you lawyers and law professor types seem comfortable justifying a particular policy just, quote, "That is the way we do it" or "That is the way we don't do it." What I'm keeping -- I'm thinking -- I could care less about any of that. What are the welfare consequences? What should be doing? Anyway, that's for later.

You're up. This person.

SPEAKER: One question is where the problem is. In the world that Emory is describing, there probably is a lot of unlitigated inadvertent infringement, and people take out patents and make their disclosures because they know they're inadvertently -- they're likely to be inadvertently infringing and it's not being -- and that's a way of making sure they don't get sued. So, you don't have a problem in that space except the transaction costs it gave a patent, which has a social benefit of the disclosure.

So, one question is whether you have a problem that you're trying to solve except in a relatively rare case in relation to actual economic behavior.

The second question is are you ignoring a different problem that Professor Scotchmer referenced but didn't discuss, which is a massive underutilization of the PTO's database. If in fact we are making lots of disclosures but nobody's consulting it and there's evidence that it's massively being looked at overseas, we may be shooting ourselves in the foot and the real problem is how to incentivize use of the disclosure, not how to protect the rare person who gets sued for inadvertent infringement.

Panel?

SPEAKER: I mean, it's a broader question also of willfulness. There's a lot of dynamics involved with regards to trying to -- either the incentives for reading or not reading of patents that are published. I think, you know, this is one question of whether having a defense like this causes people to go -- depending on how we define it, right? -- causes people to go underground and just not read, even though they're not reading that much to begin with. I think that also willfulness doctrine does a lot to this. In inequitable conduct does a lot to this, because I know a lot of times internally you say to your -- don't read any patents because I don't think -- you know, the more you guys read

internally I've got to disclose all these to the office, you know, and so it's -- the disclosure function in a relation is not just with regards to this. I think there's a lot at play, and I have -- my gut feels -- I think that these other doctrines -- willfulness and equitable conduct -- changing those (inaudible) that would do more than fiddling with this, although maybe fiddling with this would lead to less reading. I'm not sure. Those are my thoughts.

SPEAKER: Was there anybody -- this person.

SPEAKER: This question is for Professor Cotropia, but anybody else can jump in on it. Your data as I understand it -- and I'll get the figures wrong -- was something like 85, 90 percent of the defendants were not accused of copying. That is to say, they chose to commercialize an innovation presumably without any patent incentive whatsoever. Is that a fair interpretation of your data, and what does that say to us about the overall concept that the patent system fosters innovation?

MR. COTROPIA: That's a good -- (inaudible) a kind of a springboard from the question we just had, but is this an indicator that we don't really need the patent incentive if all these individuals are going forth not thinking there's a patent and not patenting on their own. I mean, we tried to code to see whether we had kind of cross-complaints or cross -- you know, cross-complaints or cross-claims (inaudible), and there weren't many, all right? So, these are instances where at least again there's a

choice issue. They might not choose to assert these patents, but clearly these are instances where someone has developed, gone to market, done at least something or is about to go to market, done something to get the eye of a patent holder and done all this at least without a patent, right? So, that's another interesting point, good point.

SPEAKER: This side, this individual.

SPEAKER: Samson, you briefly related the topic to the inventive step now that the height of the inventive step that's magic language most of all. Shouldn't patents be grounded in the first place that -- patents that are likely to be susceptible to independent reinvention? Don't they have too low inventive step in the first place that shouldn't they have been grounded at all because this (inaudible) people do it anyway so that they are to some extent trivial?

MR. VERMONT: So -- all right, so I guess one more then. Toby, your question is if multiple parties converged on an invention at the same time you would think that the -- you wouldn't have been able to get the patent on that thing, because it would have seemed obvious if multiple parties (inaudible) come to it. I suppose the response is that -- first of all, in part, that is correct I think, but a partial response is that someone has to be first, right? There's always someone who's going to be first, and there's not always prior art that you can point to, right? You -- I mean, I

guess the sort of the default practice is to be able to find all the elements of the invention in two different references for obviousness finding, and you can't always show that. Although a lot -- sometimes you can't show that you still -- intuitively you still have a pretty strong feeling. You're concerned about acting on that, because you're aware of the hindsight bias there. Things look obvious after the fact, so you're -- you know, you're looking for something else a little more objective to help you with your decisions to whether or not something's obvious. We have these secondary indicia which are somewhat more objective, you know, commercial success and so forth, and it does -- it seems to me that if we're going to say that the long-felt need and the failure of others, which is really the reverse of something -- invention -- we're going to say those are indicia of non-obviousness. It would seem at least logical to suggest that the opposite is an indicia of obviousness.

MS. SCOTCHMER: But notice that those are very legal arguments. They're not economic arguments. And they don't go to the question of what is it we're trying to, you know, reimburse cost -- when do we have to reimburse cost, when is it required really to give these rights in order to bring forth the invention? I mean, that's a missing step in that conversation.

SPEAKER: But there --

SPEAKER: We have talked -- I'm sorry.

MR. SIMON: There is a key economic concept in the patent law, which is a precondition for getting a patent, which is disclosure, all right? -- the dissemination of information which then others can use to build on. What you're assuming here is there's been an imperfect disclosure or the inadvertent inventor has either turned a willful blind eye or by accident or by some other act simply not chosen to take advantage of that information that's been made available. So, the economics of the patent law worked pretty well, because the condition for (inaudible) patent is telling the world what it is that I know. If you choose not to learn that, why should I let you off the hook?

SPEAKER: Okay, I think that --

MR. SIMON: What economic purpose is served by that.

MS. SCOTCHMER: That seems -- that's a slightly different issue, though, than the one that I wanted to raise here. Suppose, for example, that everyone knows that by spending, you know, $500 million you can achieve an HIV vaccine with some high probability blah-blah-blah, choose your favorite technology for which that might be true. We know how to do it if we're just willing to spend the money. Malaria. We could solve malaria -- Bill Gates is banking on this -- if we just spend the money. The reason it hasn't been solved is that there hasn't been a market. If

that's true and every pharma company in the world knows it, in that sense it's obvious. But that doesn't mean it doesn't need a patent most people would say, because you still need to give some wave for the firm to reimburse -- to recover their cost, and so those secondary, you know, criteria for non-obviousness -- they all get kind of built into the law, because in the context where they arise they may make even economic sense. But in a broader sense I think one has to be a little more careful about it.

SPEAKER: You were -- in the front. Could you -- you. You had your hand up. No. You.

SPEAKER: I know you. I think we're -- I want to draw attention to the problem of people in the IT sector basically not reading patents, and I think it goes much deeper than the risk of willful infringement, and we've seen -- I mean, industry's reluctant to talk about this for obvious reasons, but when they do -- and Nathan Merefold has said some very correct things about this -- it's not just a matter of overlooking the value in the patents. Some of these patents just really aren't worth looking at. There is a real cost to processing information, so, one, I had the question for Suzanne. I think the point you raised about what would the affect of this be on the disclosure function? Well, I think that looks -- you answered that one way depending on whether the

disclosure function is currently working even if only after a fashion. If we're starting from the base that it's not working at all in software, then, you know, this independent invention actually becomes a way of mitigating risk. So, when Emory divided the world of patents into the two models, one of which being cross-licensing, the problem with cross-licensing is it ended up driving large volumes of patents, which created more opportunities for surprise, for trolls, for arbitrage, because there was too much -- there was basically too much information there. It couldn't be absorbed. The disclosure function failed. So, I don't understand what you're saying about mitigating risk, because it seems to me the independent invention defense would work primarily against trolls in the IT sector.

SPEAKER: And there's a two-handed follow-up.

SPEAKER: There's a two-handed --

SPEAKER: All right, there's going to be two two-handed follow-ups.

SPEAKER: Three-handed there by proximity.

SPEAKER: There's some follow-ups. We have some two-handed follow-ups. Go on.

SPEAKER: This sort of links this conversation to earlier discussions about stretch in a very important sense. You know, why is it

that software patents don't get read? Well, because, you know, often I think by purpose they're written in a, you know, that -- you might label it abstract. It's actually obfuscatory. There's no compare to say biotechnology patents or chemistry patents. There's no standardized vocabulary. They can make up, as far as I can tell, any terminology or language they like to describe what it is that they're doing, you know, so this may appear abstract. It also makes them formidably difficult to search or understand. There's no standardized way, easy way to search existing software patents.

SPEAKER: Well, just --

SPEAKER: Let's get the two-handed ones.

MR. SIMON: Well, but that statement they don't get read is an assertion which is increasingly less true, so --

SPEAKER: (Inaudible) disturbing --

MR. SIMON: No, I mean, one -- it -- all right, Rochelle, you go ahead.

MS. DREYFUSS: One thing you want to know is whether the cost of looking for earlier art is more expensive or less expensive than the cost of reinventing, and when the cost of reinventing is higher than the cost of searching, then you actually would rather have people reinvent. So, if these patents are written really badly or if, you know, the fact of the

matter is they can't be expressed in a way that enables other people to decide whether to learn enough from them to know whether or not they're going to solve their own problem and in fact it's cheaper to reinvent, then that's what you want. You want reinvention. That's what the -- why the copyright system has an independent invention defense, because it's cheaper to reinvent than it is to search, and I think for some of these abstract patents it might be better not to have them in the system, but if you do, it's not inadvertent infringement in the classical sense; it's inevitable infringement perhaps.

SPEAKER: And I would just also add my two-handed comment. I still think it's important to figure out what is the deterrent effects of this independent invention. I mean, is it deterring innovation?

SPEAKER: This to me is --

SPEAKER: I mean, if this transfers through the firms, what do I care?

SPEAKER: This debate right now is actually literally academic. The reason why the software industry has not historically searched patents is not because they're complicated or because they're difficult to read or understand. We have 30 years of litigation that works very -- actually very, very smoothly and very well in terms of interpreting patents and litigating software patents. We can read them. It was all an

issue of willfulness. And to a great extent, with some recent court cases, the CJ case, a number of companies are feeling a lot more secure about reading patents that may -- they may find -- inadvertently read on some of the things they're doing in a way that actually accommodates some of the purposes of the patent code than they were before. And so I would argue that almost entirely the reason why software patents were not read was because there was a lot of them and people were scared about what they might find based on prevailing willfulness doctrine, and now that's being resolved and I think a lot of the companies are now starting to have active landscaping and examination programs just like other mature companies like pharmaceuticals or mechanical --

SPEAKER: So, when you say that -- what's your basis for saying the system works very well? It maximizes your profits or promotes invention?

SPEAKER: Well, I'll be -- I'm coming on the panel -- I'll be talking a little more about why I believe that's true.

SPEAKER: -- disclosure function works well --

SPEAKER: The disclosure function --

SPEAKER: -- talking --

SPEAKER: The disclosure function works well, and actually the patents are actually reasonably definite, and there -- people -- you

know, juries, judges, and the courts have been able to adjust to -- for the most part, just as effectively as all the complications on any other area of patenting to figure out what patents mean and how they can be read on -- or not -- on --

MR. SIMON: They're actually -- there are at least three factors that are going on here. One is this is a relatively new area of patenting, and as with all new areas they go through transitions. So, whether the patents are read or not, willfulness is clearly an issue as well. The third one, which we discussed briefly -- I don't want to get into -- too much into -- is the quality of the examination, right? And it's not because of the ill will or bad; it's because it's hard to examine in new areas. These are, in my opinion, transitional issues as the system adjusts to this technology. The question I ask is once -- if you create a defense of the sort that you're arguing, which then becomes a permanent feature of the law, do you think that maybe at some point later in time when the economics -- the factors change you then withdraw the defense so it's -- the defense becomes a transitional helper, or is it a permanent feature?

NS. SCOTCHMER: Am I --

SPEAKER: Anybody?

MS. SCOTCHMER: Am I being asked that? Well, actually, what I -- with respect to inadvertent infringement, it seems to me -- Sam's

persuasion notwithstanding -- on balance I think I would not favor that because of the disclosure issue and, you know, if the -- we -- as Brian -- none of us answered Brian's question, which was look, if nobody can find stuff in patents and it's not serving either a notice function or a teaching function, then we have to rethink the patent system completely from the ground up and what does the patent system then look like if we understand it to be a reserve body of knowledge that will be called for if only in the event of litigation? That's basically what it comes down to.

MR. KAHIN: -- modify my question.

SPEAKER: Okay.

MR. KAHIN: Because that's a very good point. It may mean that lawyers can make sense of the patent (inaudible) but, I mean, this is the problem. Patents are written by lawyers for other lawyers.

SPEAKER: Um-hmm.

MR. KAHIN: And you have the patent functioning at two different levels.

SPEAKER: Right, what --

MR. KAHIN: One is --

SPEAKER: -- you say what was accurate would not be massively being hit on our website (inaudible), because they wouldn't care --

MR. KAHIN: Well, you don't know if they understand that there --

SPEAKER: Well, let me get --

SPEAKER: You're making a series --

SPEAKER: Let him make his point, then you guys can respond.

SPEAKER: Okay.

MS. SCOTCHMER: And this is all preparatory to my answering.

SPEAKER: We'll get everybody in.

MR. KAHIN: So, the real problem is that, yes, we may be becoming more sophisticated at managing information, but we have two different kinds of information in this document -- one legal and one functional -- and if it isn't possible to become sophisticated about it, there's going to be a great difference in who can take advantage of that. Maybe the Chinese are learning from Microsoft and other large companies how to do real knowledge management. The PTO itself has a very difficult time doing knowledge management. But knowledge management costs money.

SPEAKER: (Inaudible) what's the incentive we want to create? Let's suppose that overseas our patent system is being used to

help invention and domestically it's only being used for litigation avoidance. That is a massive trade problem --

SPEAKER: Yeah.

SPEAKER: -- economic (inaudible) problem in the United States. So then the question becomes not how to help people avoid looking at our patent database but rather how to incentivize them to look at it so that (inaudible), and we've got to understand that. We have no clue about how to answer the question you just posed (inaudible).

MR. SIMON: Well, but the question to you, Brian, is creating additional defenses, would that solve the problem? I don't think so.

MR. KAHIN: No, no, I am not arguing that --

MR. SIMON: Okay, so -- but that's what this panel's all about, which is do we carry an additional defense, and I think the answer is no, it's a bad idea.

SPEAKER: All right, Suzanne, do you want to --

MS. SCOTCHMER: Okay, I want to come back --

SPEAKER: If you don't have --

MS. SCOTCHMER: (Inaudible) question.

SPEAKER: I've got the god clock over here.

MS. SCOTCHMER: I --

SPEAKER: We're going to have to -- I'm going to be the party pooper and cut off the discussion formally here, and we can move the conversation to an informal discussion so we can keep on schedule.

SPEAKER: -- this panel.

SPEAKER: All right, well --

SPEAKER: So -- okay, Cliff, do you want to --

SPEAKER: All right.

SPEAKER: All right, well, thank the panel. That was good.

SPEAKER: Thank you all.

SPEAKER: Yeah, it was fun.

(Recess)

MR. KLEMENS: I'm going to be a very terse moderator today and I'm not going to go into too much detail of the life stories of the people here. I am really just going to stick to names and ranks and affiliations. We have John Squires. Raise your hand, John. Vice president and chief patent counsel and associate general counsel of Goldman Sachs. Tim Lee is an adjunct scholar at the CATO Institute and is also a member of the Center for Information Technology Policy at Princeton. Joe Matal, judicial counsel from the office of Senator John Kyl from Arizona, as well as counsel for the Senate Judiciary Committee. Mr. Love is the director of Knowledge Ecology International. Wayne Sobon,

the associate general counsel and director of IP for the legal group of Accenture. Rob Tiller is Red Hat's vice president and assistant general counsel for IP. Dr. Konstantinos Karachalois works at the European Patent Office in the field of external relations and he is co-author of an enthralling work entitled "Scenarios for the Future." Raymond T. Chen is the associate solicitor at the U.S. Patent and Trademark Office. And of course we have my co-organizers who are going to sit in on this, Brian Kahn and Arti Rai whom you've already met. We're going to give everybody 6 minutes to say whatever they want to say. Mr. Squires, I've talked enough. How about you?

MR. SQUIRES: Thanks very much. I want to thank Arti and Brian and the Brookings folks for the invitation and a great conference. Just a little bit to update. Since the agenda came out, I'm in practice now, but the Goldman portfolio and management of it has moved with me. So the roll-up of all that is that my disclaimer that the thoughts are my own are really now on behalf two organizations rather than just one.

But I'm going to start where John Duffy started and that is patents on abstract ideas I think have no place in patent law and that notion to me transcends industries. You heard from Bob Armitage, Dave Kappos, and you'll hear from me that I think the notion of patenting of abstract ideas is industry independent. To set the stage for this I think that

the financial services industry found itself on opposite sides of this debate most recently in Bilski is really completely unremarkable from the standpoint that our industry is not necessarily looking to patent abstract ideas, but what you have really is an industry that has the convergence of many innovative forces and also information technology software and a lot of applied math and financial engineering. So this is really I think the newest discipline to refresh the issue much as I think people saw from the software industry debate in the early 1990s.

But taking a step back. What's the impetus for a financial services company to patent? I would disagree a little bit with Peter Menell and say that not so much because we can or that I'm there, but it really solves a particular problem and a problem that may be symptomatic in particular to financial services institutions and that is really there is a drive and a regulatory requirement often times for transparency. So with the transparency you are immediately by disseminating information and publishing it losing any ability to trade secret and thereby putting at risk your proprietary rights immediately by publication of the information. Transparency is a good thing. There's not enough of it and there needs to be more. But in terms of proprietary rights, it can be fatal. So a bit impetus and a fit for patents for the financial services industry has been

the ability to get transparency on innovation and also maintain proprietary rights and control over its dissemination into the marketplace.

Drilling down a little bit further and if you peel away the layers in Goldman Sachs our organization and a lot like other institutions, you peel away the banking layers you find a very large and robust technology organization. At Goldman the technology division is the largest in the firm, upwards of 7,000 people of a 30,000 person firm. We build more software than we buy. Interoperability is critically important. We compete in the war for talent with folks who otherwise go to IBM or Microsoft or any number of leading-edge technology firms, but we want them to come to our organization and work on our systems and platforms. So we look a lot like a technology organization behind a lot of the banking layers and there is a technology driver and footprint that behave like technology organizations do to patents. So that's I think an important context to understand some of the underpinnings of why you see patenting taking hold in the financial services industry.

There are a lot of reasons to do it. It's not that folks have designs on blanketing the skies with patent infringement lawsuits, but it really comes down to maintaining control of the proprietary rights that you create through investment and innovation and having a manner of getting those into the marketplace in a manner that you can maintain some

control over and just not have it blast out and all of a sudden create a massive and instantaneous free-rider problem.

One other note of context. I think Bilski was a great case to highlight the divide amongst the financial services industry. You had on one hand Goldman through RDC where we came in in the Bilski case as -- Accenture and American Express really advocating a pro-business method platform if you will. And you had Bank of America, Lehman, Morgan Stanley on the other side as more of a very narrow subject matter window to get through to be able to patent. That frames the issue. How am I doing on time?

MR. KLEMENS: You've got 2 minutes.

MR. SQUIRES: So one notion I wanted to just carry through and it was discussed a couple times today but I think it's worth highlighting. If you look at Bilski, one of the notions that's very important and helps I think frame and maybe understand some policy drivers on this is the notion of preemption. Abstract ideas again I think should not be patentable because you don't want friction in their application throughout different end industries. Once you apply an abstract idea in a very specific manner, society I think does want some friction in that and you don't want to create instantaneous free-rider problems. You heard about the Morris -- which is Morris's patent claim that was disallowed because he claimed

electromagnetic forces. Morris did get a claim allowed and that was claim eight, his alphabet. So there is a specific instance and I actually would invite anyone who would like to work on a paper to examine Morris's claim eight which is the alphabet in light of the Bilski decision and see if it stands up because I think it might not stand up. Taking a step back and taking a walk through the financial services industry, many of you may have heard about the concept of the BRICs, shorthand for Brazil, Russia, India, and China, and that believe it or not was a concept and phrase coined by our head of research Jim O'Neill. When you look at it from an intellectual property standpoint it's a concept. It connotes the four countries' economies that are linked through emerging metrics as a way to analyze research information. Not patentable not trademarkable. Have a BRICs fund. Maybe now you're getting down the road of trademarking it, what to call it and you're going into exposure in a fund and you can name if that. Move down further. If you have a method that helps you examine and identify participation in a fund at cost in a turbo BRICs if you will. You may be getting down the road to patentability there because you've applied it in a specific manner. So I think it has a lot to do with being able to define and understand notions as abstract ideas, maybe as unfinished inventions, maybe as claiming results or stating problems, and differentiating that from a lot of the hard work, sweat of the brow, even

thinking through and filing a well-written patent application of applied ideas, applied solutions. Thank you.

MR. KLEMENS: Thank you. Next we have Tim Lee.

MR. LEE: Thanks, Ben. I've got a good friend a couple of years ago who wanted to start up a software start-up and he worked as a programmer for a couple years, saved up several months' worth of living expenses, quit his job and started working on this start-up. He's the quintessential kind of garage start-up entrepreneur. He was worried about patent issues so he started looking at patents and he found half a dozen that he thought might be related to his invention. They were written in legalese. He wasn't a lawyer so he wasn't sure and they were kind of vague about what exactly they covered. He was really not sure what to do because he only had a few thousand dollars of savings, maybe a few tens of thousands of dollars in savings. He could hire a patent lawyer which would mean eating up a significant chunk of his savings to have him examine those patents. The patent lawyer would probably say we're not sure if these apply to your invention or not. If he tried to actually to and license some of those patents, he might have trouble even getting the companies that are holding them to return his phone calls. He certainly wouldn't have the sophistication to negotiate half a dozen patent licenses. It would probably take several months for him to conclude the

negotiations. He would probably run out of money by then. So he did what most people in his situation did. He decided to simply ignore the patent system, build his device and hope for the best. For unrelated reasons, this was not a successful business, but I think it illustrates I think a kind of culture gap between forums like this that are dominated by scholars of patent law and grassroots ordinary programmers who are actually interacting with the patent system from the bottom up. I also write for a number of publications that are read by software engineers and people who interact with the patent system from the other side and I get a very different vibe. Obviously I don't want to speak for all of them because there is a huge diversity especially among computer geeks. They don't agree about anything. But there is a general sense that patents are a nuisance, that really there is not very much useful information in them, that they're hard to understand, and that for the most part you should go about your business and hope that the patent system leaves you alone. So their goal from a policy perspective to the extent that they thought about it at all which most of them haven't is just that they want the nuisance to go away.

Obviously here at the panels today we've had some very learned scholars who have made some very reasonable arguments for various patent doctrines, but they've been arguments about patent doctrine and at least from a nonexpert, which I'm not an expert on patent

law, they've been very esoteric and it's not clear to me. It's possible that any one of the many proposals that have been aired will fix the various problems, but the bottom line is that most of them will still require that before you can start to innovate you have to hire a lawyer. You have to examine a bunch of patent documents. You have to do a bunch of negotiations. And that is simply going to be -- at least for this admittedly fairly small corner of the economy that's simply not going to be practical for a large number of really grassroots entrepreneurs who may be the ones who come up with the next great example. So I think when we're thinking about these policy issues it's important to remember that lawyers are expensive and any reform that requires more involvement of lawyers, more complex legal doctrines, is not necessarily going to solve things.

So a couple of specific observations. One is I think the difficulty of finding patents is greatly underappreciated. There are now tens of thousands of patents. They're written in legalese. And even if you can find all the patents that seem -- say you can afford a patent lawyer to tell you whether he thinks something is infringing, the federal circuit is constantly overturning claims instructions so you don't necessarily even know what the actual -- even if you get a very talented lawyer, he's not necessarily going to tell you what that patent requires.

Emory Simon analogized it to speeding, but I think a better analogy is if you imagine instead of having posted speeding signs, every town had a thousand page book in city hall with descriptions of the speeding limits of every street in the town written in very complicated legalese, maybe not organized in any particular fashion. And I guess theoretically you could say ignorance of the law is no excuse, but the reality is you would have even more casual speeding than you do today and I just don't think that's a reasonable analogy.

I also want to reiterate a point that Brian Kahin made which is there seems to be this assumption that disclosure is a very important function of the patent system. I have to tell you at least from a software context, I have never heard of a programmer going to a patent to get information about how to accomplish some technical task. It just does not happen. And it's partly because it's written in legalese, it's not understandable, but it's also because they really disclose very little useful information. If you look for example at the Google page patent, there is no way you could take the information in that patent and even create a usable search engine, to say nothing of a search engine that would actually be as useful as Google.

What makes a software platform effective is all the little implementation details, all the technical complex engineering tradeoffs,

that you really can't describe in a legal document. It's something you have to have experience, you have to have experimentation. And in fact, if you really wanted to have real disclosure, if you wanted to disclose how you implemented some invention, programmers have a language for doing that. It's called source code. And if you really wanted a requirement that programmers actually disclose what their invention is, you would require that they put the source code in patent law but of course that would make patent law redundant because you already have the copyright protecting your source code.

So in conclusion, my point is that I think it's important to remember is that the goal is not to fix patent law, the goal is to ensure that the benefits of patent law outweigh the costs and many of the costs I think are the mere fact that the legal system gets involved. If I want to rent an apartment, I don't have to hire a patent lawyer to go down to city hall and interpret the deed for my landlord because we have very clear boundaries, we have a well-functioning legal system, and I don't think any of the reform proposals that I've heard are necessarily going to make it so that the average entrepreneur can go about his business building great software rather than having to worry about legal complications.

MR. KLEMENS: Thank you, Tim. Next we have Joe Matal from the office of Senator Kyl and the Senate Judiciary Committee.

MR. MATAL: Thank you. I'm going to start out with when you talk to patent lawyers their basic principle is often that inventions are patentable if you come up with something novel, useful, not obvious as patentable, and I think this is maybe one of the perverse effects of creating the federal circuit not making patent law a subset of broader law that the circuits do because the general principle really should be that we don't have monopolies and patent law is an exception to it. This is really how it started out. The Statute of Monopolies in 1923 in England stated a general principle that we don't allow monopolies but then created an exception for new manufacturers. It's really how the U.S. law should work if you reconcile the Sherman Act and the patent laws. Patents have always been an exception to this broader principle and the definition of an exception is that it's limited and that some things just aren't patentable and are outside that exception.

When you get to the question of how to define exception, this conferences on the word abstract, I think the word abstract is just frankly too abstract to really set useful boundaries in litigation so people like Tim's programmer can know whether they're operating in the field of patents are not. Frankly, I think it comes down to certain subject matter areas just should be regarded as not patentable, and the main one I'd make that argument for is business methods. A lot of people have talked

about software and the problems with software. I agree there are a lot of bad patents in software that shouldn't have been granted and that are creating all kinds of problems, but even people who make the most hardcore case against patenting business software are patenting software do concede that if you had a really novel programming technique or a really powerful equation, the example I've heard used in the past is the karmakar algorithm which is useful for organizing airplane fights between continents, et cetera. One of the earlier panelists made the case that karmakar was actually based on prior knowledge, so I'll have to find another example, but still you can have really novel patenting techniques. It seems like the problems with software stem from the fact that the patent office was basically forced to start granting these after 30 years of resisting it and didn't have the database, wasn't really experienced in the field and for a long time the federal circuit has used way too low of an obviousness test so too many incremental things get a patent and it really should be the path-breaking change.

The area of business methods, the notion of patenting that I'm going to be much less charitable about. I think it's clearly outside the historical exception. There is a fair amount of case law just saying flat out that business methods aren't patentable. And the reason they shouldn't be patentable is simply that they don't need the reason why we created

the exception to the Statute of Monopolies and everything else. It's not necessary to give people a limited monopoly to spur innovation in that area. It doesn't really matter why that is. Society or specifically Congress doesn't need to have some grand theory of this. If it's just clearly the case then we're entitled to set the policy that way.

Folks have talked about boundaries. I think the boundary that distinguishes business methods and things like it that don't deserve patent protection is that they're in the social sciences. There is something where the operation of these laws and principles is all mediated through human consciousness. How the principle works depends on someone's reaction. Professor Duffy earlier cited an example of financial equations that are very complex, a lot of math. I had a political science professor in college who came up with this really complex, a lot of math equation, for predicting the outcome of presidential elections by looking at economic data and he was predicting a Bush reelection victory for sure in 1992. I'm sure his equation was perfectly mathematically correct but he's operating in the social sciences in this field where how do you account for Bill Clinton's charm, for example, or other factors that go into voters' thinking?

But in the end though the reason business methods shouldn't be patentable isn't because they're social sciences, just not some inherent nature of it, it's just that it's the field where the general rule

in favor of free competition should apply and the benefits of giving someone -- the costs of giving someone a limited monopoly outweigh the benefits you'd get in increased innovation. As other speakers have made the case, there's plenty of innovation going on in this area.

Business methods are something where it's not really some law of nature that you're applying. Whether you succeed in business is all really about the execution in how you do things. It's the same things politics. And there just aren't these iron laws that apply. In the end it depends on how people do things. But again, the reason doesn't matter just from hard experience and frankly centuries of experience with this. We should really just defer to the past that this stuff wasn't patentable in the past. It's the stuff where the Sherman Act and the general rule against monopolies applied and we should frankly just stick with that tradition. Things haven't changed.

As to what should Congress do about this, the Bilski case had a big effect and I suspect that people will say Bilski will solve everything in the future. It's a good excuse for not doing anything for a while frankly which -- and Congress likes to do that. The courts seem like they're working this out. It's kind of an exhaustion doctrine for legislating. But will Bilski really solve this problem? I'm kind of skeptical. This idea of tied to a particular machine. What does that mean? Does this mean that

when you take your business method and turn it into a software program or a software program that's really mainly driven through hardware, does it suddenly become tied to a particular machine? That language either means it has to be in a technological engineering field or that business methods are still patentable. It either means one or the other. If it means business methods, something where the innovation is methods of doing business, if it means it's not patentable, why not just come out and say that? Bilski certainly isn't the last word. It's not going to be the case that people cite in the future to say this was how this question was finally settled.

Could Congress do something? Frankly, I don't see why not. In fact, if the patent bill had happened in the last Congress, there's a good chance this issue could have been addressed. Chairman Leahy was very skeptical, I'd say down right hostile to business method patents. Chairman Burman in the House, his record is well known on business methods. The Senator I work for, Senator Kyl who was heavily involved in the patent bill was also a skeptic of the patentability of this whole subject matter. And frankly, one thing that makes me nervous about Bilski is hearing John Squires praise it. That makes me suggest that he's figured out that this isn't going to be death of business method patents. I don't mean to single you out.

The main reason Congress probably wouldn't be inclined aside from Bilski and the problem has been solved, probably the biggest reason beyond that why it wouldn't be inclined to address this legislatively is you have a lot of other industries actually that are nervous about amending 101 in any way or wiping out any subject matter as patentable even if it's done prospectively. People in pharmaceuticals and all kinds of other legitimately patentable areas just don't like the precedent. The case I've made to some of those folks is business methods are a real problem. Through business method patents you're creating all these industries out there whose only experience with the patent system is through business methods and you're making them hate the patent system. I regularly run into people in other fields who when I ask them about patents -- just recently I spoke to someone, some retail type industry, I won't say which company in particular, who said they came across a guy who had patented the business method of selling power tools by demonstrating how they work on the internet and this company has to pay this guy a license for the privilege of doing this. You've all heard your little horror stories about business methods of different ridiculous patents. These stories get out there. Ninety-nine percent of what patent lawyers discuss, doctrine of equivalents, never filters out into the nonpatent lawyer universe. But this stuff does and it's really bringing the whole system into

disrepute and you're seeing a buildup of companies that are coming to Capitol Hill and lobbying to weaken damages, create alternative mechanisms for challenging patents, restrict venue, all these things that make it harder to enforce all patents and a lot of those people are motivated by business method patents. They can see on their face that it's outrageous that we're giving someone a patent on using the internet to sell power tools and all of these other things.

If this problem isn't dealt with, hopefully it'll be just dealt with through Bilski and the next decision will say we meant no more business method patents and that's it and the problem will be solved, but if it's not you're going to see more and more industries who are targeted by these kinds of suits and who really come to loathe the patent system.

MR. KLEMENS: Thanks, Joe.

MR. MATAL: I'll stop before there's a riot.

MR. KLEMENS: We're a little over time, but it was so interesting. We must press on and make sure everyone has a say. Next up is Jamie Love from Knowledge Ecology International.

MR. LOVE: I work for an NGO, a group that represents poor people on issues about intellectual property rights. I used to work in the financial sector and I used to work for the Frank Russell Company back in the era when business method patents weren't really out there and one of

the problems we had is more esoteric on behalf of pension funds, the financing scheme, more likely the fundamentals were kind of funky on investments usually. It was sort of a lipstick on a pig kind of a problem.

I'd like to talk about a couple of different things. One is on the topic people where talked about patentable subject matter or the discrimination between sectors. There's a provision in the TRIPS agreement and a lot of people refer to Article 27 which says that you have to have patents in all industrial sectors without discrimination and that was a lot of people thought was a big mistake about the patent system. We asked OMB a couple of times, and I think Mitch Daniels was going to do this before he left for Indiana, to do a cost-benefit analysis on the extension of patentable subject matter in different fields so that you would treat the IP system like regular forms of government regulation and you wouldn't have like a religious belief that it was good or bad but you'd kind of let the evidence drive the argument a bit. And you'd accept the fact that there is always some benefit to some patents and there's always some cost to some patents and you'd kind of narrow it down and you wouldn't say we have an economy, you'd say we have several aspects of the economy and you'd kind of decide, and you'd have three kind of possible outcomes. One is a sort of surgical patents kind of story where you say where business method patents should be which is no. It's just not worth

it. Don't go there. You have another area where you'd sort of say it's a soft patent area which is to say you have patents but it's not a strong exclusive right. There's kind of a way around through the various forms of compulsory license or liability rules that are evolving where you get money and it's a significant amount of money but it's not a monopoly. And then you'd have the third area where the presumption is it's a strong exclusive right and even there you'd have a system of dealing with abuses and things. That's what we would like. I'm the co-chair of the Transatlantic Consumer Dialogue, consumer groups, and I think this kind of reflects a lot of where things are going within that community.

The WTO hasn't really stick with the nondiscrimination. The Doha Declaration on TRIPS and Public Health is for pharmaceuticals. It's not for everything. I mean there are special rules now within the TRIPS that deal just with pharmaceuticals and without other fields of technology. So as Pascal Lamay said, discrimination by field of technology after the Doha declaration was dead, a dead letter basically in terms of how you have to think about it. What you really have to think about is what is sort of good policy or what's not such good policy. Briefly to the pharmaceutical sector an area where I do a fair of my work in, it's our position, and I brought some T-shirts here, this little symbol here says I Plus A and it has a bunch of small stuff you can't read here, and it says

"Innovation Plus Access." It's kind of a platform of a bunch of NGOs in the public health community. What they want is a system that does both innovation and access at the same time. In the pharmaceutical sector, the basic idea is that you reward drug developers with money and I mean like lots of money. I mean like billions of dollars. So you actually pay for innovation, but you don't grant monopolies on the products, and it actually solves all sorts of problems about access where you have different people of different incomes in different countries and people of different incomes in the same country and it basically allows you to have partial cost pricing of the products in a robust system. I'm going to a meeting Friday and Saturday in Geneva that we're co-sponsoring with Doctors Without Borders and Oxfam International and other groups to talk about this in the context of a WHO negotiation on this topic. The general counsel for Gilead will be participating, Johnson & Johnson. They both endorse basically a lot of the thinking about paradigm shifts in the context of tuberculosis and some other areas where markets are -- nobody really thinks they're working very well. But it's actually being road tested in the U.S. Congress in terms of the Medical Innovation Products Fund and there will be I think a lot of talk about that in the next year.

I want to cover a couple other fora and then I'll conclude. One is another couple things you should probably know about is that the

Standing Committee on Patents at the World Intellectual Property Organization, I think their next meeting is in March, they'll be talking about patents on standards, access to medicine, I think lawyer-client information and patents like the whole problem of nobody wanting to search patents because of the -- that issue, and the fourth issue I guess is information from patent systems. There will be other topics, but those are the four that have kind of risen to the top. People should just be aware of that. And the issue of patents on standards will include at certain points discussions about -- and the WTO has proceedings where they're looking at the trade related aspects of insufficiently high standards for patents as a trade barrier in the same way that bad standards for the quality control of food are considered a trade barrier. I mean, like standards for patenting is becoming a trade issue and the issue of standards on patents is itself -- the EPO is going to talk, but the European Patent Office has been like doing scenarios of different patent possibilities, much more creative than my own patent office. One of the scenarios they have is what's called the Blue Sky Scenario where they say the differentiation of the patent systems between different sectors, I thought it was the most appealing of the four scenarios, is one wave of a possible future where you have these hard IP, soft IP, no IP, different regimes, and they're kind of suited depending upon what the evidence suggests would probably work the best as sort of a

more pragmatic thing. So I think I'll stop here just with that information about what we're up to and some of our views. Thank you.

MR. KLEMENS: Thanks, Jamie. Next up is Wayne Sobon from Accenture.

MR. SOBON: Thanks. My opening reaction, this has been a fascinating day and I thank you for letting us participate on this. Maybe -- my reaction to this, but I find this a bit extraordinary today, the discussion we're having especially given the near collapse of our financial markets and the cratering of our overall economy tied with the fact that the United States in particular is clearly moving to a services postindustrial and information based economy and to be debating in a sense to dismantle the protection on so much of that which actually now is the mainstay of our industry for the country to me has a bit of a fragrance of Nero, that we look at the walls of the ancestors of our ancestors built around our city and we wonder now what the value of those walls ever was and we think why don't we just dismantle those because we have better uses, we can build some palaces, and besides the Huns and Visigoths seem very nice and we should just let them in and we'll have a much more peaceful world. I think that folks share my concern that the debate here we're having here is a debate that happens with rapidity and prediction throughout the history of any technological or socioeconomic upheaval. It's happened since the

1600s in the antecedents in England and the beginning of the United States in the formation -- the inclusion of the patent provisions in the Constitution and then the debate around our patent code. But I think to the largest extent the United States -- I think the genius -- I would say the genius of the United States system has been to have a very neutral and very open approach to the protection of technological innovation in our patent code and that the statute means, and I think the Supreme Court has said this repeatedly, exactly what it says, any new and useful process, period, is protectable.

We of course are debating this balance between private right and public good and so there's always this same tension that happens in every one of these debates and the debate happened -- the same debate about software and about software patenting in particular happened 30 years ago and the (inaudible) case was in 1981 and we've had 30 years and that's why I raised the comment before, we've had 30 years of really having this work out in our system and I see no evidence that this has actually led to any real significant economic harm. I know that we have economists here who are arguing for the harm, but I really don't see anything very persuasive to say that the harm that certain technology companies are facing in terms of increased (inaudible) suits is anything more significant for their business than the fact that Wal-Mart has a certain

predictable amount of slip and fall suits that affect its business. Those are costs of business that are usually properly imputed into the cost of operations.

I think that if you look at, for instance an issue was raised about litigation rates and that litigation is increasing. The overall litigation rate for patent litigation actually has been fairly steady in terms of its relationship to the real growth of our economy. In fact, in the last 40 years our economy has grown about three times in real growth and the rate of patent litigation is actually 2.7 times overall. You can quibble about the data around software patenting or business method patenting being now more extreme, but I have not yet seen the studies to really adequately and completely compare those to other times of technological upheaval. There was no doubt a larger number of patents in telephone cases in the 1880s and 1870s when that was ascendant than probably barbed wire or railroad tie patents in those periods because that would be the technology that was replacing prior technology.

Especially the focus on software I think it's an interesting -ology -- I think in psychology about why patents cause the concerns among the software industry above other industries because I look at this, and like Rob Armitage I came from a physics background, and I look at the interchangeability of so much of this as all sort of the same thing and

even in reality when you look at the early information technology patents in the late 1800s and early 1990s sort of Babbage like machines, the Hollerith machines, were mechanical machines but they used mathematics. All those things used gears and wheels and simple machines to use mathematics to achieve certain mathematical results, practical results, calculating results, and I think no one thought those were not patentable. And then from there we moved to special purpose machines and IBM played a very large role here in the history of this in creating special purpose machines to do similar calculations using electronics and vacuum tubes, what I think is one of the greatest inventions in the last 100 years which is the general purpose computer.

The same programming, the same modules, the same development that can happen now with general purpose computers could be built in terms of (inaudible) and in terms of special purpose transistors and circuitry. But should one way of developing that, special purpose machines, be more patentable than what is actually a much more productive machine which is a general purchase machine that you can reprogram for new results? BMW doesn't have to invent new brake shoes to create new braking functions for its cars. It can just change the programming of how the braking works in the car and that actually literally creates a new machine. But under a lot of the prevailing theory we've

been talking about today, that version of events is no longer patentable. If we tinker and build new brake shoes that might create the same effect in a much poorer way, than that would be protectable. I don't get the harm. I don't get why there has to be a distinction between those two sets of events.

For my company, I shared this with John Squires and I think we shared this in the Bilski debate as well, to get to the point about business method processes, we spend hundreds of millions of dollars every year in hiring the best thinking, the best engineers who don't just think of applications of Carnegie smiling to impress people or even selling tools on the internet by demonstrating those. Those things I think are very readily handlable and there are examples of poor patent quality generally like this with standard issues 101, 103, 112. That patent shouldn't exist. I think we all agree with that. But for our industry, we hire the best statisticians and games theorists and technicians to figure out better ways to improve how companies and people perform their operations. Take a very simple example. How you load your circuitry in your assembly line to assemble the circuit boards and make that more efficient using deep algorithms and mathematics and finding better ways to do that and sort those things and reduce the time leads to real value to everyone in this room. That's why computers have gone from price points of $2,000 to

$600, because we can do that efficiently and that's due to I would argue very concrete business method processes.

So I think that the genius of the system has been that we don't draw lines, we don't create more litigation around what's in, what's out. We have a system that encompasses this, all innovation that's practical and has a real world effect. And I would agree with most of the comments earlier that you want to avoid patents that involve some sort of subjective step like I just thought that that was beautiful or I think that the result is good. You want to have something that's concrete so you can know when you're infringing and you can know when the patent was preceded by prior art. But I think that any other kind of line drawing is just industrial policy by another name and I think again at this juncture when this matters to much to our economy to suddenly junk software and business processes and processes in general in the name of unspecified potential risks is extremely dangerous.

MR. KLEMENS: Thank you, Wayne. Next is Rob Tiller of Red Hat.

MR. TILLER: Thanks, Ben. I have some to you as a participant and emissary from the free and open source software business. That's what Red Hat does. It's a leading provider of free and open source software for the enterprise. That does give me a particular

perspective on the questions that we've been talking about today, and I want to talk a little bit about how open source in particular is affected by the patent system.

But before I do I'd like to start by re-posing a question that Arti Wright posed at the very beginning of this conference which is whether software patents and other abstract patents contribute in any meaningful way to the overall goals of the patent system. I take those goals to be principally to promote innovation, and so the question is in innovation promoted in any meaningful way by the patent system that we have? If it is not, then we're in a terrible mess and we need to revise that system.

I think in many ways the system we have is hindering innovation, and the primary reason I say this has to do both with our industry experience and history. Software was generally thought to be unpatentable even in recent memory. Most of the software case law from the Supreme Court dates back to the 1980s. Then we have (inaudible) in 1994 and the State Street Bank decision in 1998. And in the 1990s, a rapidly changing, dramatically changing landscape for business method and software patents, to the point where today we go from relatively numbers of what we would think of as software patents to more than 200,000 such patents.

The fascinating thing about this is that many of the innovations that we think of as fundamental and that are part of our daily lives both as consumers and in industry in the software area took place before software was generally recognized as being patentable. I'll give you just a handful of examples. Lotus 1-2-3. It was first released in 1982. Microsoft Word was first released in 1983. Oracle Version 3, the database program was also -- 1983 release. Windows 3.0 was 1990. The Linux operating system was first released in 1991. So what does that tell us? Plainly much innovation in the software area happened without any incentive whatsoever or much if any from patents. Since the software was generally thought to be unpatentable, the inventors of these programs weren't inspired by the hope of monopoly profits from patents. It shows also that the normal incentives for creativity including the hope for profits in a capitalist system were sufficient to drive innovation forward in that period.

As was observed earlier, we can't really know for certain whether that system would have worked differently if there had been general recognition of software patents back in the 1980s and early 1990s, but it's hard to really imagine that the inventors of these programs would have been more creative if they had thought they were going to be given patents.

But we have another example today that supports that supposition that is the free and open source software movement. Generally what free and open source software is about is the innovation through collaboration by dozens or even hundreds of participants often times scattered around the globe in an individual project where they share the source code generally over the internet. This is a process that results in rapid innovation for particular projects and it's also a rapidly expanding area of our economy, said to be doubling now every 14 months. A fundamental precept of open source is that source code is freely shared. That has to happen in order for the different participants to understand the code, communicate back and forth and improve upon it. In that regard, free and open source software faces exactly the opposite direction from the patent system where the objective of the patent is to exclude others from making, using, or selling newer inventions. So what we know then is that in the open source area that the incentive of a patent and the hope of monopoly profits from a patent plays no role whatever in that particular kind of innovation.

So what is the net effect of more than a decade of general recognition of business method and software patents? Again this is hard to tease out in detail, but I can tell you from an industry perspective in the software business, at Red Hat we view patents primarily as a costly

hindrance to innovation. Let me give you the way the world looks a little from my perspective. If there is a new software invention, we know that there's a possibility that that invention infringes dozens or hundreds of patents. We know also there are tens of thousands of patents potentially in a given area of technology and that clearing the invention with regard to those types of patents is practically economically impossible. The vague boundaries of even one of those patents depending on the patent of course may make it difficult to interpret whether or not that patent is infringed, multiple that by hundreds of thousands and the test is truly impossible. And we only have to infringe one patent to face a costly lawsuit. That lawsuit could cost many millions of dollars in attorney's fees alone. So the system has many detrimental effects. It saps energy. It's a distraction when there is a lawsuit. It's a constant worry when there is not a lawsuit. So I submit that there are all kinds of reasons to think that in fact the patent system is not achieving its goals and that reform is important to consider.

It's possible that it's closer than we think. Bilski has sketched out a possible roadmap for subject matter exclusion of certain kinds of abstract patents. If indeed the case law plays out in this direction we could go back to a situation similar to that prior to (inaudible) and the

State Street Bank case, and I believe that that would be better for innovation in the software area.

MR. KLEMENS: Thanks, Rob. Next up, and somebody has to get a mike to him, is Dr. Konstantinos Karachalois.

DR. KARACHALOIS: I have to decide now whether I speak on behalf of -- patent office or express my personal opinion. I prefer the second because of the -- of the debate. I have also a text expressing the official position of the European Patent Office which I will send to the organizers who can post it on your website. But I have a unique opportunity here to address yourselves personally -- give my personal of this I will make use.

First of all, I cannot make this artificial distinction between software business patents and patents. I think Professor Duffy is right that the paradigm has changed and now we are in a different time and era so we will not get rid of the problem. It is very difficult to draw a line there. But as Mr. Matal expressed, there is a real issue of the reputation of the patent system and we experience it. If you talk to lay people, then you ask their opinion about the patent system, what they express is not the patent system but a latent system, something which is nontransparent, latent, unclear, so we came from patency to meet latency and this is a problem. Not only a perception problem but a real one because if disclosure is at

the core of the original bargain, otherwise -- does not make sense, then quantity, not quality, quantity plays a role. If there are millions of patents out there, there is millions of unexamined patents and nobody knows exactly what is their scope or what is in there, so you have a latency, a huge latency -- invest as the people mentioned -- what are you going to do? You just -- you just don't care about the patent system and then it has lost its real purpose because it works only because people don't care and this is not -- this is not a tenable situation.

So the way we try to act, there are two different levels. One is the internal boundaries of the system, below the inventive step, and the other is the outer boundary. The outer boundary must be drawn by the legislation I think. You should not let the system decide itself for its outer boundary. And the inner boundary, we tried by improving quality. For instance, you can reverse the tide but if there is a more general discourse in society and this has started in the 1980s with the Washington Consensus and the hegemony of intangibles. If innovation is a goal of our time and patents are its proxy indicator, the more patents the better for innovation, then refusing a patent is a sacrilege. As a patent examiner, you're not only an opportunist going after points or whatever, but why should you go against innovation? Give this poor guy his patent in case of doubt, and this was the beginning of the decline of the patent system in

my opinion. It would not reverse this cultural shift which happened, then we will never solve these problems of the patent offices. So it is we have to establish the dignity of the examination body so that they serve first public interest and not private interests, and you can do it.

For instance, the European Patent Office grants double points, double rewards for refusing an application. We have departed from the principle of neutrality. It is not the same. Filtering out bad monopolies should be rewarded. So this is a clear sign for examiners and we see in certain fields that the refusal rates have doubled. They are encouraged now really to look more closely to these things.

I think this is my opinion, and following this paradigm you can filter out a lot of let's say things causing harm in particular in the field of abstract patents where more often the problem to solved is patented, not the solution, because this is the abstract thing at the end. I remember when I was an examiner I was confronted with such a case (inaudible) nuclear physics. But there already we had people who wanted to patent the problem, and we said no, you cannot have it. It must be a very innovative problem that nobody has thought of. Otherwise you don't get it. But this is a little the situation also the business methods field I think, a lot of problems are patented and not the solutions. And (inaudible) has described it very nicely in his book "The Patent Failure" the clear cases

where this is evolving with time the scope of the patent and this is a bad sign if the boundaries are evolving with time.

So this is what I have really to say. So as a patent system we have to establish our good reputation and our honor by going back to what patent really means, disclosure, openness, and reliability and as long as the public thinks exactly the contrary, nontransparency and closure and secrecy then we fail and there is nothing that we can do in this. I have a last book on the scenarios if anybody is interested.

MR. KLEMENS: Thank you, Konstantinos. Finally, Raymond Chen from the U.S. Patent and Trademark Office.

MR. CHEN: Thank you. First of all like my EPO brethren, I have to give the initial disclaimer that the statements I make -- not necessarily should be attributed to the PTO. They're my own just in case I say something that's inconsistent with the USPTO's position.

First of all, thank you to Arti and Brian for inviting me, and thanks to Brookings for having this forum. We're the PTOs. We're the ones in the trenches and we're the ones that are going to have to draw the lines and the more voices that we hear and opinions, the better off I think we'll be in trying to make an informed decision.

Our plan is to write some final guidelines in light of Bilski, and we're also seriously considering requesting comments from the public

on which way we should go in terms of implementing it, where the lines should be drawn. I know we've talked about line drawing, can it be done, should it be done. I think it does have to be done in the sense that Section 101, and I said this at the argument, it's not just a mere warm-up act, it is its own stand-alone condition for patentability and as it's in the statute and it has been interpreted by the Supreme Court, we at the PTO are obligated to follow that. And in terms of how good of a line can you draw, I think the Bilski decision is a very, very good start and it gives us at least a nice baseline of what you have to be to be a statutory patent eligible process.

I think it's important to note that the PTO, we didn't set up this Bilski case in an attempt to try to strike down any particular field. So from our perspective this is not a business method case. This is not a software case. I know so much of today's discussion, it's interesting, it's all been about software, but at the very least you could say that all those inventions, all that case law coming from the 1960s, the 1970s, the 1980s, and the 1990s, those were all machine implemented claims. Whether they were framed as a machine or whether they were framed as a process, at the very least they were machine implemented and in that sense they were all consistent with the decision the federal circuit came out with in Bilski. So what we were really dealing with in this particular

case was what we saw was a drift in claim drafting over the past decade. I don't want to necessarily attribute it all to the State Street decision, but you can see a consistency there where you could say that was part of the issue.

And so to us I guess one perspective is maybe it's not necessarily a question of is it abstract or not abstract. Maybe that's too hard of a way to look at it. It's a little too opaque. Another way of looking at it is is it too broad a claim or not too broad. Every day the struggle of the patent examiner, we have 5,000 patent examiners. We issue close to 200,000 patents a year now. So even though we're rejecting lots of things under 101, we're not the antipatent office, we are the Patent Office. But in any event, every day the struggle is trying to find that right place for where the scope of the claim should be. So that's true under Section 102, 103 for prior art purposes. I think KSR went a pretty long way to help us deal with some of the more kind of egregious inventions we see. Every year in the "New York Times" magazine on the back page at the end of the year we'll give you a listing of some of the more stranger patents that the U.S. Patent Office issues. Hopefully things like KSR help cleaned that up at least to a certain degree.

But anyway, going back to claims scope, there's prior art and then there's Section 112 where the claims scope has to be measured

against your specification, and I think there is still work that can be done there in the law. And then also though Section 101 matters when it comes to claims scope. If your claim is seeking to appropriate all different ways and implementations of achieving a given result, that's what the Supreme Court has told us going all the way back to the 19th century is a nonpatent eligible abstract idea and that's the genesis of this term abstract idea: Is your claim so broad that you're essentially trying to lock up all ways of achieving a given result? The problem we saw with State Street was that it seems to really narrow down the 101 inquiry to whether or not there was a useful result. Do you have a useful result? Yes. Then you're off of 101 and you're on to 102, 103, 112, et cetera. And then you can obviously see the tension there between that and these other older notions of what is an abstract idea. If all you're doing is essentially claiming the result then you are unpatentable.

So what happened after State Street, at least what we saw in the agency were lots and lots of applications that were trying to be written very, very broadly that ultimately had arguably useful results but didn't really have any nuts and bolts as to how that result was achieved. So you can just look at Mr. Bilski's claim as an example where essentially he was claiming all ways of hedging the cost of a commodity by selling that commodity at a first price, buying it at a second price, and then

keeping the margin in between without any further details and to us that sounded like a 101 problem. And at the same time there wasn't any kind of computer implementation or transformation of subject matter. And when we went back and looked through all the case law we never found a case that ever gave an example that under 101 a process claim didn't need to either be machine implemented or transformed subject matter. So even though the State Street rhetoric and dicta sounded very strong toward anything with a useful result is good enough, we felt like it was time to come back to the federal circuit and bring a test case to get this clarified once and for all, and I think that's consistent with what the agency's mission is which is to resolve uncertainty in the law. The in re Nighten case is an example of that where for about a decade we were issuing patents on signals assuming they were novel, nonobvious, and there was written description support, but then the question really was did that meet the manufacturer's standard as that term is used in Section 101 and there's good argument that it did not although there is also some good argument for saying why a signal is okay under 101 because there is some obviously technological component. In any event, we brought that case to the federal circuit and the federal circuit ultimately agreed that that should not be eligible under 101 and then *cert*. was denied by the Supreme Court. So that exercise shows that it's better for the agency to

bring some of these more controversial issues, some of these more leading-edge issues, where no one has really resolved the question of whether it should be patented and bring that to the courts earlier rather than later, rather than waiting another decade for a private party to bring that issue to the federal circuit to resolve and then us as an agency just issuing patents on that all the time when ultimately they could all very well be struck down at a later date. I think I'll just stop there for now. Thanks.

MR. KLEMENS: Thanks, Raymond. Do you guys want to --

SPEAKER: I'm going to pass for now.

SPEAKER: I'm just going to make one comment which I find -- one new thing that I observed during this conference, was a little bit a factual disagreement about the extent to which software patents really do provide good disclosure. In other words, one conventional argument one has heard and this was the basis for a position that I took in an amicus brief was that 112 really was not being used properly in software cases so disclosure wasn't particularly good. The terminology in software patent claims wasn't standardized. And I think perhaps that's changing and I thought the debate at the end of the independent invention panel was really quite interesting and I would like to hear a little bit more about that maybe in the more general exchange about are we getting better

disclosure in the software context in terms of the enablement standard and the indefiniteness standard.

MR. KLEMENS: Would anyone like to pick that up?

SPEAKER: Arti and I had a brief discussion about this. I think that there are a couple of points here I think that are important. I don't think the system was ever intended that the patent itself was necessarily supposed to be something like a peer reviewed publication that you went to directly for learning what the technology was. It was meant to facilitate other forms of probably better dissemination of information. So in the biochemical or in the biology fields or the chemical fields you look to papers, but if you're a company, before the scientist publishes their paper which is actually the primary area they're going to be talking about and what people learn, you file a patent to protect your rights. So it's a protection of the right that facilitates another form of dissemination of information. I would argue like for instance if you look at Google, we know more about Google and how they do their searching and facilitate possibly Google primes down the road because the patent system exists for the Google -- now it may not be that it's easy to read the Google search algorithms from their exact patent, but the fact that they were able to patent and then publish what they did allows them both to form their company and get capital at a time when at the time there were

other much bigger giants like AltaVista and others that I remember and then now have died that could have swamped them if they learned how exactly they were doing page rankings.

MR. KLEMENS: Tim, you seem to be shaking your head.

MR. LEE: I think there's a couple of problems with that. It's been a couple of years since I've looked at those patents and my memory might be faulty, but number one, I'm pretty sure that the application for the patent was a year or two after they went public with the search engine and they didn't get the patent until like 2003. The other point is that we don't know how page ranking works. We know broadly speaking that they link some website to another as -- but the details of Google's page ranking are still a closely held secret and you could not go out -- in fact, Yahoo and Microsoft have tried for years to duplicate the functionality of Google and I think the consensus is they've gotten pretty close in 2003 or 2004 but it's not a question of once the information was out there immediately editors could copy it because the trade secrets and copyright gives you very robust protection. The patent is kind of just window dressing. It's mostly there so that if Google gets sued they'll have some ammunition to respond.

SPEAKER: But that's true of almost any technical field, that companies file patents on some of their core stuff and keep some things

as trade secrets. At least we know more than we would have in a world without software patenting where they might have kept everything secret and no one would have known at all what Google was doing behind the surface. And so in the chemical fields you have the same issue. You publish the main chemical but you keep exactly how you treat the processing to get that chemical a secret and that's exactly how the system was intended to work. I don't see any real harm in that.

SPEAKER: In the chemical field, once you publish the structure people can pretty much reconstruct it. That's how generic companies do it. They don't get trade secret information.

SPEAKER: But all the processing is often the most critical thing of how you got to that chemical. You may not actually publish everything --

SPEAKER: How do you get generics then?

MR. KLEMENS: Jamie, did you want to chime in here?

MR. LOVE: Was it Al Engelberg -- he was talking about -- in the break he was explaining to me that he worked on this process patent 1988 amendment where I think (inaudible) or something like that where if there was a product that was being imported -- that had a process patent that you could ask -- you could pay money -- you could get the person to disclose what the patents were on their product so that you could

determine whether and certify whether or not getting it from an alternative supplier didn't violate the process patents. I mean I think what I was interested in is that in the area of standards I think discussion in some -- I don't know how big they are, but the idea that the obligations to work your patent through being more transparent about what you think your patent portfolio actually covers is just -- it just needs to be fixed. I mean, in the pharmaceutical area, the World Health Organization and the Global Fund and PETFAR (?) and MSF and groups like ours have no clue what the patent landscape is in AIDS drugs and neither do the generic drug companies from country to country and the countries that hold the patents refuse -- on the one hand they're saying don't violate our intellectual property, but it's a god damn secret what our intellectual property is from country to country. They won't disclose it. It's just completely outrageous.

SPEAKER: That's a different issue, Jamie. The generics know how to make the molecule. They're just worried that they might be violating somebody's IP on the molecule.

MR. LOVE: The landscape country by country is a trade secret. They won't willingly disclose it. They've been asked by the World Health Organization, and it shouldn't be tolerated. And I think that the same thing happens with -- you ought to be able to approach people with a patent portfolio and say I'm planning to do this in a certain

circumstances and you ought to be able to get an answer, like do you have a problem with this? And if people won't do that, it's not because they want to protect their intellectual property, it's because they want to game the system and they want to sue people that have already committed and made investments without even understanding what intellectual property they're violating. And that happens in software, it happens in the tech sector, it happens in pharmaceuticals, and it happens because people don't want to grapple with those sorts of issues. But there are things that have been kind of done in some sectors in the area of (inaudible) disclosures and other areas that if they were done differently would really be helpful.

MR. KLEMENS: John Squires?

MR. SQUIRES: I was going to say to Arti's point, I tend to agree. I think particularly if you look at chemical and financial engineering -- a lot of similarities, but one difference, one big difference is there's accepted convention and language and expression in the chemical field. The (inaudible) that we use to express chemical structures (inaudible) you can look in the microscope and not see that, but that's become accepted as the way to express that structure or that -- the existence of that phenomena as well as the international naming convention. So there's a much more accepted way to express what's there than there is in financial

engineering or software and we can talk a little bit about functional claiming and things like that. But at the heart of what's going on here is the reason copyright protection is not enough is because it protects the expression and not the function that you're instructing the machine to perform and there's a lot of play in the joints as to how that's done in a patent context right now in financial engineering and software. So I think that's a root of lot of these problems.

MR. KLEMENS: Raymond?

MR. CHEN: Here in the United States the standard for definiteness or indefiniteness for a patent claim is is the patent insolubly ambiguous to one of ordinary skill in the art and only if you meet that very high standard can that claim be struck down. That's a pretty high standard and that's the kind of standard that would make a patent examiner sort of shy away from imposing that kind of rejection because it would be pretty difficult to make that argument in the face of a patent applicant. But at the same time I think that the agency may want to take a look at the possibility of whether or not during patent prosecution maybe a slightly different standard could be imposed rather than this very, very high standard for insolubly ambiguous which might make more sense in a patent validity context in a district court challenge rather than a patent prosecution sense where at that time you're still trying to really figure out where the claim

scope really ought to be and there is this other policy for the Patent Office to try and make these claims as clear as possible.

SPEAKER: I would argue it's the standards like that that make the system so opaque to people trying to get useful technical information out of it.

MR. CHEN: That's a legitimate reason.

SPEAKER: The Osaki decision should help with that. Right? That was saying that in the patent prosecution context if the claim, correct me if I'm wrong, was subject to more than one plausible construction it's indefinite.

MR. CHEN: Right. So we'll see if that --

SPEAKER: Holds up.

MR. CHEN: -- is another opportunity for a test case that can get to the federal circuit.

MR. KLEMENS: I'd like to ask one last question and then we'll open it up for a couple of questions from the floor. I'm going to be direct and blatant and ask how can we draw the line? To be a little more specific, I'll go back to John Duffy's example from the last panel where he knew somebody who had written basically a very, very concrete and direct mathematical algorithm which is in a certain sense completely abstract of course. Currently math is not patentable in its purest form. I wrote a book

entitled "Math You Can't Use" of course because I felt that math was becoming increasingly patentable. But I want to ask you guys, math is not patentable. If we change variable names the Pythagorean theorem would not be patentable if it were applied to surveying. This appeared in Parker v. Fluke and I think it was repeated in Bilski. So given those limits, how do we say that math will be patentable or whatever you guys advocate to be patentable will be? Or of the (inaudible) maybe or not it should be patentable. Anybody want to draw a line here?

SPEAKER: I'm not a technical expert but I'd suggest that it's all -- it's the adaptation. It's not really the pure science that creates the patent, it's the engineering, it's figuring out a way to make it useful and apply it to solve some problem. And although the equation as a whole isn't patentable and it can always be used for research, one of the more extreme examples is again the karmakar algorithm which is useful for basically finding the shortest distance between two points or the ideal path when you have way too much information to process otherwise. It doesn't just apply to the aircraft controller, it applies to a zillion situations, but you should still have to apply it to something for it to be patentable.

SPEAKER: I think I sort of agree, I think. But the real issue is in the details. So I think everyone agrees that pure algorithms or pure math is not patentable, but it's the taking of a concrete step into the real

world that is and I think there's a big gulf between what I thought was the prevailing standard in State Street Bank which I thought meant that if you have concrete tangible steps in the real world that you can measure, that you've done something that affects something in the real world, it doesn't have to involve a machine, it doesn't have to transform an article, it could be anything that is measurable in the real world that applies that algorithm, that should be within the realm of patentability. It if just purely happens in your head or purely through mathematics, it is not. I think the problem with the current Bilski is it just carves back a huge swath to sort of get some certainty of all the other kinds of things that can happen in the real world but are definite and that are specific. And I think to the other prior panel it's entwined with this issue of preemption. We were talking about in one of the breaks that Bell Telephone when they came up with the first transistor, are they entitled to every single NPN and PNP junction after that for 20 years or whatever the time frame would be? Or are they only entitled to one specific germanium with a little whisker attached to it? Those are always the hard problems that we pay the Patent Office a lot of money for and the federal circuit a lot of money for and all of the courts to debate a lot of money for to figure out, and those are insoluble across all technology fields. How broad is your pioneering invention and how much are you entitled to?

MR. KLEMENS: Tim?

MR. LEE: (inaudible) I feel like I've been reading a different Diamond v. Deer case than a lot of the people here because my reading of Diamond v. Deer and I think the reading (inaudible) is that basically you had two sides. You had a minority that said this is a software patent and therefore it should be invalid, and you had a majority that said this patent is valid because it's not a software patent. They said look, there is a fairly minor software element to what is a rubber curing machine and the mere fact that there is a software element does not exclude the broader invention from patentability. I'm not totally happy with that line, but certainly there is a line, the line that Ben likes about insignificant (inaudible) solution activity. If what you're talking about is you run a piece of software and then you display the results or you sound an alarm or do some trivial thing as a result of that computation, that is clearly -- from my reading of the Supreme Court that is clearly not eligible for patent protection. And so when you get these claims like the ones in AT&T v. Microsoft where the invention is you take some software in a CD, you put it in a totally normal computer and double click on the icon, I don't see how that can possibly be reconciled with the Supreme Court's clear holding that software as such is not patentable. And so there's like a whole chapter where Ben lays out how that would apply to specific cases, but

basically the patent has to cover a physical machine rather than a mathematical algorithm being executed on a general computer.

MR. KLEMENS: Thank you very much. Next John Squires?

MR. SQUIRES: I would say as John Duffy argued effectively in the Bilski oral argument, I don't think line drawing efforts have been successful or will be successful. The Supreme Court question shows that. I do think the answer lies in the 102, 103, 112 novelty, obviousness, and written description infusing the 101 determination. The problem that Mr. Bilski had is his claim had a nature of it would be good if you could do this. There's a Supreme Court case, and I just don't remember what it is, but it says that you shouldn't be rewarding the hunt, but you should be rewarding the successful conclusion. 102, 103, and 112 can help you along the determination. If you can adequately describe it in a written form, maybe you have something. If you're not (inaudible) concept of hedging which has been around a long time, a difference between buying and selling price has been around a long time, kind of a 102, 103, that gives you a notion that you may have some 101 problems.

MR. KLEMENS: We have time for a couple of questions. Your hand came up fastest. I have a mike here so I'm going to walk back.

SPEAKER: I know you're going to give me a great answer. I'm going to ask Mr. Sobon if you don't mind. I think this might be most

relevant to you. I just recently checked the internet and it says that Sergey Brin and Larry Page are the richest young guys around. So I wanted to get your perspective on not only -- obviously their algorithms have a lot to do with the development of Google and et cetera, but what about the patent process? They must have had a patent process that got them to where they are. Do you have any perspective on how they went about doing what they did?

SPEAKER: Can I interject for a second? One thing we might want to bear in mind regarding these Google patents, the Google patents are owned by Stanford. These guys were grad students when they did their work, and I didn't sign mine when I was at Cal Tech, but there is a form you always have to sign that says I hand all over all of my intellectual property rights to the school. So I'm not sure of the extent to which actually Page and Brin are benefiting from this.

SPEAKER: As far as I understand it, Stanford like most universities -- and you can debate this. I mean, to some extent I know we're in the Brookings Institution and I'm a Democrat, I'll say that, but some of this fight was I thought won in 1989. We have a property rights system in the United States and so universities benefit by having grad students and professors invent, but I think Stanford had a fairly good deal with Google. They got stock and they got value back for -- they probably

could have gotten more. They probably could have negotiated a bigger deal, but I think they finally paid down the rights to Google fully for Google to use the rights that were invented while they were grad students and now Google has a very big program of patenting new innovation that they are protecting and I think good for them and they developed a world class search engine that trounced the existing field because of its capabilities so it's a success story of software patenting.

SPEAKER: It's kind of interesting because presumably a lot of their research was publicly funded since they did it at Stanford. And you're right that Stanford does have the patent. They gave an exclusive license to Brin which is the standard thing and they took an equity share in the company, but Stanford has the patent.

SPEAKER: I forgot to show something which I found very interesting. This was in "Business Week" on December 1st. This was a study of about 600 venture capitalists around the world about where the best innovation happens in the world and the argument would be we've had a 30 year experiment about patents and software in the United States and still this is -- you can't really see this, but these huge spikes show in both the software and in the bioengineering fields (inaudible) and Diamond v. Deer basically, the United States still huge out numbers across the world in the view of where innovation that still is relevant is happening.

And so at the very least you can't say that our very clearly pro-patent economy has damaged innovation versus these other countries and if anything you can possibly make -- and it's very tenuous, make some contradictory arguments.

MR. KLEMENS: Tim Lee?

MR. LEE: Another data point on the Google situation. It's my understanding they want to I believe it was Yahoo in 1997 or 1998 and said we have this great search engine. Are you interested? And Yahoo said, no, we're kind of a portal company now and we're happy with the search engine we got. Go away. And so Google went off and did it on their own. So the counterfactual, the question -- if there hadn't been software patents, what would have happened to Google, I just cannot see the scenario where Sergey Brin and Larry Page are not billionaires. There has been no -- as far as I know no licensing between the major search engine companies, no litigation, and so as far as I can tell, and I'm not inside Google so maybe there's negotiations that have not been made public, but as far as I know, the patent system has just had no connection to Google's success.

SPEAKER: Just a question. Do you think Google's strategy is more defensive patenting or is it something different?

MR. LEE: That would be my guess. I mean, I haven't talked to the people who did it, but that would be my --

MR. KLEMENS: I know John loves to talk about Google, but we have time for one last question so I would like to pass it off to --

SPEAKER: I just want to make two observations. One is that when we point to all of these sectors of the economy that are really innovative, that's a great thing and it means a lot of things are working well in the economy. If the patent system is not functioning particularly well in those sectors of the economy, that means we're leaving a lot of money on the table. We just don't see it. The other point is separate what we actually do from what we aspire to do in the patent system in terms of disclosure. If we're going to take a step back and say that substantive disclosure is going to be optional in the patent system, I think that's a really amazing statement. I know I wouldn't be comfortable doing that.

MR. KLEMENS: Does anyone want to comment on that?

SPEAKER: A quick comment to Bob's observation and comment. Think about if you're Sergey Brin or Larry Page and come into John Doe's office on (inaudible) Road and have this great idea to search and I just need you to invest $50 million into my company and the conversation goes something like, that's interesting. How does it work? And then you could say I can tell you but I'd have to kill you. Or you have

a robust intellectual property program, some patent protections in the works, trade secrets and the like, that you're going to be more likely than the next guy to get that initial seed investment, get the resources -- so there's an overall role that patents play in intellectual property -- or software intellectual property schema plays in attracting initial investment and getting companies going and off the ground.

MR. KLEMENS: Jamie?

MR. LOVE: I think there should be a real serious inquiry into how you can increase the transparency of the system and I mean all sorts of things like if you get a legal monopoly from the government and you're licensing that legal monopoly, I don't think it would be unreasonable to have some reporting back sort of statistical information about your licensing fees and things like that even if wasn't publicly available in the same way your tax returns are, the IRS can generate data and researchers could generate search requests (inaudible) but there's a lot of things that could be done to increase the transparency of the patent landscape, about the economics of the system so you could begin to kind of understand a bit what's going on. And there's other ways you could use economics to sort of certain things more transparent. For example, if you had a system of self-assessment of the value of a patent where you said for an amount that I announce on my patent you could have a license to

the patent and you can pick any number that you want, but that there was a property tax associated with that self-assessment which was used to fund the patent system and so that the really valuable patents with high values would be paying more than the lower valued ones. You'd learn a lot from that self-assessment system, particularly -- and you could make it easy. You could say announce any price you want and you can change it after you (inaudible) any license before you get a second license. But what you do is you generate a lot of information about how people value their inventions and you might find an interesting way to finance the Patent Office which is independent of the current dilemma of trying to generate product to generate fees from renewals and things like that. But I think if you just had a more open mind about how you manage disclosures, around standards, how you manage transparency, you can end up with more public confidence that you have a system which is about us as the public for innovation as opposed to just something that the patent (inaudible) it's just generating more litigation and just is beyond everyone's sort of understanding as to whether it's helping anyone or not.

MR. KLEMENS: Jamie, you get the last word. It's unfortunately 5 o'clock and the building really does turn into a pumpkin at some point. It's amazing. Thank you all for coming out. I can't thank myself, but thanks to the other organizers, Brian Kahin and Arti Rai, and to

the Initiative on Business and Public Policy for hosting, and for Brookings of course. So thanks.

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