FEDERAL TRADE COMMISSION

THE EVOLVING IP MARKETPLACE

THE OPERATION OF IP MARKETS

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Federal Trade Commission

FTC Conference Center

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FEDERAL TRADE COMMISSION

I N D E X

P R O C E E D I N G S

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WELCOMING REMARKS

MS. MEYERS: Good morning. If you could please take your seats, we will get started.

Thank you all for coming. My name is Erika Meyers and I'm an attorney with the FTC's Office of Policy and Coordination. Welcome back to the second day of part three of the FTC's hearings on the evolving IP marketplace. Hello to everybody watching on the webcast.

Today we will continue to explore the notice function of patents. This morning, after Herb Schwartz's keynote address, we will have a panel considering economic perspectives on IP and technology markets and this afternoon we will hear the perspectives of law professors and legal practitioners.

Before we get to that, let me make a couple of requisite security announcements. In the unlikely event that there is an emergency in this building, we will be told whether to stay or go. Please follow the instructions. If we're asked to leave the building, we have a rallying point across the street at Georgetown Law School. You'll see lots of FTC people scurrying around. Your name will be on a list if you are here, so please check in at the security point so that emergency personnel will know that you have gotten out

of the building safely. Also, if you spot any suspicious activity, please let one of the FTC staff or security personnel know.

Now conference-related announcements: as we said yesterday, we will be accepting comments until May 15th. So, please, if you have any written submissions you would like to make, we'd love to hear from you.

With that business taken care of, it is my honor to introduce our keynote speaker, Herb Schwartz. Mr. Schwartz is currently an Adjunct Professor of Law at the University of Pennsylvania Law School and New York University Law School where he has taught courses on patent, trademark, trade secret and unfair competition since 1981. He is coauthor of the case book Principles of Patent Law, and coauthor of Patent Law and Practice. And he has served on the advisory board for BNA's Patent, Trademark, and Copyright Journal.

He earned a B.S. in electrical engineering from MIT, and an M.A. in applied economics, as well as an L.L.B. from the University of Pennsylvania.

Mr. Schwartz has been practicing intellectual property law since 1964, and has represented clients in trial and appellate courts throughout the United States in all areas of intellectual property law. He is of counsel to and a retired partner of Ropes and Gray. He was a former

member and managing partner of Fish and Neave, which merged with Ropes and Gray in 2005. Additionally, he has served as a special master in federal court patent litigation, and he has received numerous awards, including Litigator of the Year awarded by *Managing Intellectual Property Magazine* in 1999.

With all of his accomplishments and experience on paper, it's easy to understand why we are lucky to have Mr. Schwartz with us today. From my perspective, we are fortunate for another reason. I've only known Mr. Schwartz for a short time. I came to know him when I contacted him about his 1964 article "Injunctive Relief in Patent Infringement Suits" that is published in the *University of Pennsylvania Law Review*. With a shameless plug for my own topic of injunctions, I recommend this article to anyone working on injunction matters as a look back at the injunction case law before the Federal Circuit created its automatic injunction rule and a good starting point for the post-*eBay* regime.

The short time that I have known Mr. Schwartz has been valuable. He is a generous and consummate teacher with an incredible memory. And every time that I've had the privilege of talking with him, I have learned something important about patent law that I would unlikely have learned from another source. Having heard the preview for

his keynote address, I know that he is about to share his experience, scholarship, and wisdom; and we are all about to learn some things that we might otherwise be considerably slower in figuring out. So, with that, welcome, Mr. Schwartz.

KEYNOTE ADDRESS

MR. SCHWARTZ: Thank you. I'm not sure that that is me who you are referring to, but I'll take it anyway.

What I'd like to say at the beginning is, first of all, I really feel honored to be invited here to give this address and I also want to make plain that all of my comments represent my own views. They don't represent the views of any of the clients I've represented over the years or my current affiliated law firm of Ropes and Gray.

Yesterday I sat here and I listened to the industry roundtables. And, as we know, there were four different groups, universities and entrepreneurs, IT and electronics, diversified manufacturers and life science. And the thing that struck me was the sharp diversity of views between these different groups. It was almost startling to hear some of them when you were wondering whether you were talking about the same patent system when you heard the different groups. And one common theme from all of them, which troubled me a bit, is the thought that a number of them expressed that the combination of recent decisions, more than legislation, was creating or had created, in the common vernacular, a tipping point in intellectual property, and if things continued this way, bad things would happen. And I must admit I don't share that view.

I find that to be an extreme view looked at by a lot of these groups, more through their own periscope or monocular, rather than looking at the system broadly. I think the recent Supreme Court cases have gone different ways and done different things. In some ways they've strengthened the patent system, I have in mind *Festo*, for instance, which took a doctrine that might have been eliminated, the doctrine of equivalents, and made sure it has a proper place in the patent system.

Other decisions, I believe, put into perspective some doctrines that might have gone too far during the recent years at the Federal Circuit. And in particular I have in mind both *eBay* and *KSR*. Where if you go back over history, there was a large amount of flexibility in injunctive relief before the Federal Circuit, and I think the Supreme Court has really sort of put that back into place. If you look at the patent statute, the patent statutes say injunctions can be -- may be granted in accordance with the principles of equity. It never was the law that injunctions were always granted, and it shouldn't be the law and it's not the law now. The question really is what is the proper applicability of *eBay*, and what is the proper applicability in the current times. So, I think the response is extreme.

And I think again in *KSR* that is really a return

to the roots of the trilogy of *Graham v. Deere*, and it's nothing extreme, and it's just really refocusing the whole community on what the statute is and what should be done. So, I, for one, don't have the pessimistic attitude. I view this to be evolutionary and helpful.

Now, going beyond that, it was interesting to hear certain groups being troubled by what they've now given the label, interesting to me, of NPEs. I suppose that is less pejorative than trolls. To me it has the same connotation. And again, some industries think that, quote, what they call NPEs are the end of the world, other major industries think it's a non-event, it doesn't even exist. It's hard to imagine that there is such a diversity of view. And how, if at all, the patent system ought to be accommodated to deal with that is a nice question.

Certainly the current legislation, proposed legislation, which proposes to change the venue rules or at least to make it more difficult to litigate in certain states, which would appear to be unduly patent-friendly, is one way to deal with it. Obviously *eBay* has dealt with it to some extent. But after a point, it becomes throwing the baby out with the bath water, and, therefore, it seems to me there is a limit to how much that ought to be looked at.

Another issue and one of the issues that I think we're here today to talk about, is the question of notice.

And more importantly, in the question of notice, the question of how, if at all, do people become aware of what is pending in the Patent Office, and how do they deal with it in the real world. And basically, one piece comes out in the question of notice, which I heard very little disagreement about yesterday, and which for reasons, interestingly to me, did not appear in the new patent bill is 18-month publication.

In listening to the issue about notice, one thing comes through loud and clear to me. That if a patent is published in 18 months, in the current situation, that gives the whole world a lot of opportunity to follow what is going to happen to it regardless of what the length of the continuation practice is and, in fact, some people made claim yesterday that anybody who is really good with a publication can at least make an educated guess and try to follow through on what is going to happen with that patent some day, assuming the Patent Office does its job.

And interestingly enough, 18-month publication was taken out the very last minute. If you look at the Congress -- what Congress says is that they took it out because of concerns by the unions and individual inventors. And I must admit I'm not sure what the unions have to do with any of this. But in any event, that is what the Leahy report says. And I, for one, would urge that that be

reconsidered and be put back in. As I think that if there would be 18-month publication, I think that ought to be helpful to, really, an awful lot of the patent community and I don't see the big harm of it.

Going on from that, I'd like to talk some more about continuation practice, which is something that is not in the current statute or the proposed statute. And continuations have been around for decades. And it's interesting that if you go back in time, as long as 40 years ago, there were legislative proposals attempting to limit continuation practice. That goes back to the 1967 President's Report on the Patent System. There was a proposal to limit continuation practice. And so you find this coming up over and over again.

To me, one of the greatest problems with continuation practice has been cured. And that is the 20-year term. During the many years of my practice, I became personally familiar with what were called summary patents. Certainly spent part of my career involved in the litigation of the Lemelson patents which, I guess, were the high water mark of that. And ultimately those were held invalid and unenforceable and I think also had a lot to do with the ultimate institution of the 20-year term.

But if you have the -- with the 20-year term and if you have 18-month publication, I think you've gone a long

way to try to deal with what people call the continuation issue. So the next question is on continuations of what else do you do? And on one side, you have the life science people saying, well, we have to have it throughout the life of the -- of the application because we need to keep our writing new claims to new things that are in there, and on the other side you have people say, well, it's basically a vehicle for hold-up, namely, you let people go along and when they see something new on the market, they write a claim to cover it. And the question is what is the middle ground?

Now, if you go back through it historically, let me give some history on continuation practice and on capturing so-called new devices. Years ago, in the distant past, even before I practiced, there was a case called *Muncie Gear Works vs. Outboard Marine Company* in the Supreme Court. And in the *Muncie Gear* case, the Supreme Court took the view, at least some people think it took the view, that if you filed a continuation application and there was an intervening public use more than two years before the filing of the new claims, and it was a two-year statute then, basically that intervening use defeated the patent. There was some cases that followed that. One of the most well-known was *Kahn* in the Second Circuit.

And there was a concern, at least it wasn't

crystal clear in the world, as to whether or not there were ways, judicially, to deal with the question of continuation practice in its most pernicious form, which is writing a claim to cover something that was on the market and somebody thought was actually free to do.

Now, when the Federal Circuit came along in *Kingsdown*, the Federal Circuit made it very clear that it was perfectly proper to write claims to cover a known competitor's product in the marketplace. And ever since that decision, it's been taken by all practitioners that this is basically a free shot, you're entitled to write claims to cover products that are in the marketplace, whereas if you would have had to file a new application, you probably would be barred because they were actually out in the field and in commercial use.

And I think that that is an issue that needs to be looked at. And I'm not so sure how to ultimately deal with it. I'm not so sure that it would ultimately be amenable to a judicial solution or whether a legislative solution, but it's an example of an old doctrine that had vitality and had, in a sense, dealt with a problem -- but doesn't exist anymore.

I should mention as a footnote, again, going back to *eBay*, that, as a practitioner many years ago, I was involved in a case called *Foster v. American Machine &*

Foundry, in which we persuaded the Second Circuit that what is now euphemistically called an NPE shouldn't get a injunction because it was only used to extract a large royalty and had no business purpose. And that was affirmed by the Second Circuit and there was law out there that injunctions were not absolute. The Federal Circuit made them absolute and the Supreme Court has now moved things back to where they were or where they could have been.

And I would suggest also, if you look at continuation practice, that that is worth considering what the other options are. What has happened in continuation practice is that there has been proposed legislation first, in effect, to stop it, then, after that, to leave it up to the PTO, then it all died, then you had the patent office rules. And then you have the recent case involving the PTO under new rules, which is now on appeal in the Federal Circuit and which I believe was argued in December. And, so, really, it's pretty much a standoff.

Now, to me, one of the good touchstones in this area is the FTC's statement that they put in, in support of the rules, when they were put in. And that, and I'm not sure exactly when that was put in, but it was in connection with that -- the institution of those rules a few years ago. And what the FTC focused on were three issues. They focused on what they called uncertainty, holdup and pendency. And

they all have different policy applications.

Uncertainty is something that troubles everybody because the longer you don't know what the claim is going to cover, the more trouble you are in. And that cuts across, it seems to me, all fields. It gets help by the 20-year term and it would be helped by 18-month publication, and I don't know what else you could do to move it along further.

Hold-up, I think, is a different problem and calls for a different solution, and I'm not so sure what the different solution is. And as I say, there was a judicial solution, namely, *Muncie Gear*. What the solution ought to be now isn't crystal clear.

And the last issue is pendency and that is a serious problem. Pendency means that the Patent Office is swamped by an additional magnitude of continuation applications, which keeps it from doing its job. And, therefore, in some ways, allowing a lot of continuations does harm to many other people who would like to get their patents out properly.

So, I think that there -- that that is a good framework for considering the issue and what ought to be done isn't crystal clear. I think there is a lot to be said for the middle ground of legislation, which didn't get enacted -- which was for Congress to give the PTO the authority to form its own rules. This is something that got

close to getting passed and didn't make it. And I'm not a predictor of judicial outcomes, but it strikes me that probably the PTO is going to have a tough time sustaining its petition on appeal in the Federal Circuit, and that takes us back to where we are now, which is a need for some legislative relief, if someone wants to do something about judicial practice. So, that is one area I think needs some adjustment.

I was going to talk a little bit about prior user rights. The more I think about prior user rights in the greater scheme of things, the more that I think that it's not a major issue, or not that major of an issue, and it's hard to devote a lot of legislative thought to it right now. What Congress has done is punted by putting in a provision that says, we'll study it for two years. Maybe in the greatest scheme that is as good as you can do right now, I'm really not sure. But that is where prior user rights are.

Two last topics I'd like to talk about are that the *Markman-Cybor* situation and where it has led to, and also some 112 issues. But as far as *Markman-Cybor*, it's interesting to note as a matter of history that before the Federal Circuit there was no such thing as claim construction. Having participated in numerous patent trials and appeals in the dark ages before such a new organization existed, claims were just dealt with by the court during a

trial, and you ended up having a decision with it; and if it was a jury trial, the jury ended up dealing with it in their instructions.

When the Federal Circuit came along, one of the major things it did as part of its belief that it needed to take control of the patent system was to make plain that claim construction was a distinct entity that needed to be dealt with by the court, needed to be considered, to be a question of law, and needed to be reviewable *de novo*. And this, as a practical matter, put the Federal Circuit in a position of being able to decide every patent case, since in almost every patent case claim construction was what drove the result. And what came out of that ultimately was *Markman* in the Federal Circuit.

Now, when *Markman* went to the Supreme Court, part of it got affirmed and part of it didn't, at least it seems to me. When it went to the Supreme Court, the Supreme Court decided that claim construction was to be something to be reviewed by the court. Namely, it wasn't a jury question. But, on the other hand, *Markman* decided that claim construction was what Justice Souter called a mongrel or a mixture of law and fact. And he said, based on that, he didn't deal with what the standard of review would be. Left it as an open question.

The Federal Circuit in *Cybor* closed that loop by

saying they thought claim construction was reviewable *de novo* without having to reverse the Supreme Court, which they can't do. They nevertheless said, since it's open, we're going to take it *de novo*. Well, though, I don't believe that that is in any way driven by the Supreme Court and probably not even suggested by it.

Ever since then, as far as I can tell, that what I call the *Markman-Cybor* regime has led to the unpredictability and has wreaked havoc with speedy resolution to patent litigation. It's been one of the major problems. To me, it's interesting that in the *Amgen* case, Judge Michel, who I think had more moderate views on the subject before, spoke out and raised what the four problems which he saw with *Markman*. And he said we really need to deal with this. There's an unreasonably high reversal rate, there is a lack of predictability, there is the loss of all the work by the district judges, and we're going to be inundated with appeals, we are inundated with appeals. And he was joined by three other judges in separate opinions, Judges Newman, Rader and Moore, and there it sits, and the Federal Circuit has refused to go further.

I think that the frustration with it has led to the newly introduced provision in the current Patent Act which seeks to require the Federal Circuit to take on appeal any question of claim construction that was certified by a

district judge. I view this to be a terrible idea. Because it just seems to me that it's going to play out in ways that are really unfortunate and unhelpful. What's going to happen is that it's going to flood the Federal Circuit with appeals, it's going to delay the reasonable resolution of any patent case two more years, which people don't need. It's going to force an early review of claim construction before, in a lot of cases it really isn't ripe, in some cases it isn't even ripe until you get to a pretrial conference. And so if you start having district judges send these things up early on and go back and forth like a ping-pong, I just don't see anything really good coming out of it.

It seems to me that what really needs to be done is the Federal Circuit needs to get on to what a lot of the judges think, which is to deal with the standard of review and to deal with the way in which appeals would be more predictable. And so I would hope that the current provision wouldn't pass and that there would be more pressure to take care of this within the court system.

The last item I'd like to talk about, which relates to disclosure, are certain 112 issues, and to me those were written description, enablement, and indefiniteness, and I'd like to talk especially about written description and enablement. And what is interesting

to me about those is that they come up in the situation of people writing new claims, usually to cover somebody else's product. And when you look at the practicality of how they come up, once the claim gets added and you get involved in litigation, which I've had -- have done numerous times, written description is a question of fact. It's a jury question. Under the current state of law, the burden of proof is clear and convincing evidence. Historically, whether that is sound is a nice question, but that is the burden of proof in the Federal Circuit. And so that means that you've got -- as a trial lawyer, you've got to persuade a jury by clear and convincing evidence that what the patent says isn't adequate in terms of putting the inventor in possession of his or her invention.

Strangely, when you get to enablement, enablement is a question of law. And it's a question of law with underlying factual components which go to the jury. And so what you have is a situation where the jury, it's like obviousness, the jury decides what the facts are, the court decides whether it's enabled, and then it goes up on appeal on clear and convincing evidence in the same way, and you have the same problems.

Now, you may wonder, does the burden of proof really mean anything? And I would say the burden of proof means an awful lot more than most people realize. You

really realize it when you're in a court and have to deal with burdens as a trial lawyer.

Let me give you one current and important example. That was the recent litigation involving Amgen and TKT, which I admit I was involved in. Maybe that makes me a little prejudiced. But nevertheless, on the issue I'm talking about, it's fascinating to note it was tried to Judge Young in Boston. And Judge Young decided that on the ordinary standard of evidence, preponderance of the evidence, the patent there was neither written description nor were the patents enabled. However, he decided on a higher burden of proof, namely clear and convincing evidence. The defendants were not able to make out the defense. What devining rod he had to draw a distinction between winning on preponderance and losing on clear and convincing is one of those things that one wonders about. But certainly when one got to the Court of Appeals the Court of Appeals split 2-1 on the same issue. And Judge Clevenger dissented. And so you have really, to me, a very, very important issue decided really on what I would say procedural grounds.

And I think there is very little dispute in that case, that there were big differences between what the patent disclosed and what the proposed alleged infringers were going to do. One, the patent disclosed EPO, which is

very well known, and disclosed the use of exogenous DNA to grow it in host cells. The proposed new work by TKT and Aventis was going to turn on the EPO gene in human cells. And there is no dispute that that wasn't discussed in any specific way in the initial patent. And the real question is how do you tease that out of the original patent to a written description and enablement. And lots of fancy professors on both sides opined on that sort of thing.

But to me, what comes out of that is that they were enabled to do that because of the continuation practice we have and because of filing numerous continuations, putting in claims when they saw what was coming along. Going in the Patent Office to persuade them to allow it when the patent examiner doesn't have a clue as to what is being fought about because there is no discussion in the Patent Office as to why this sudden new language appears in the claims, it was never in the patent spec or anywhere before. And, so, it goes through the Patent Office, arguments are made in the Patent Office that don't deal at all with what ultimately comes out in the court. And then you ultimately have the patent issued and then you are in litigation with the burden of clear and convincing evidence.

So, I find that troubling and complicated and one of the issues that bears on continuation practice. It doesn't say to me that you throw out continuation practice.

And it doesn't tell me exactly how, if at all, you limit it. But to me, it ties them together to some degree.

But what I'd just say in summary, beyond all of this, that I take the view that the patent system is alive and well. And that sure, some changes need to be made. And they're happening in the courts a piece at a time. They probably happen in the legislature a piece at a time. It's interesting to me to note and it is important to note that all current patent legislation for a number of years has been proposed on a bipartisan basis, and I think that is a very helpful and important thought that people don't focus on. And that, regardless of who's in power, both sides try to get together and try to come up with what they think the patent community and industry needs for innovation, and it's not done in what I would say the ordinary political sense. So, I think it's very important for people to continue to speak to Congress to put forth their views and to try to come up with what benefits the system, as a whole, because I think Congress is interested in seeing that happen.

And the last thought I'd put in that is some of my own recent experiences with the medical profession where my doctor at Mass General reminded me that the most important thing that he does as a doctor is to have in mind the Hippocratic oath of do no harm in terms of what treatments to use or what to do, and I think that is a maxim that would

do very well for the patent field and for the current legislation, that we should look at what we need to change and move ahead, but we really want to be careful to do no harm. Thank you.

(Applause.)

PANEL 1: ECONOMIC PERSPECTIVES ON IP AND TECHNOLOGY MARKETS

MR. SCHRAG: Good morning. My name is Joel Schrag, and I'm an economist with the Bureau of Economics here at the Federal Trade Commission. And it's my pleasure to introduce our panel today on economic perspectives on IP and technology markets. We are delighted to have the opportunity here today to hear from an outstanding group of scholars who have spent a great deal of time thinking about how technology markets operate and the role that patents play in these markets.

Economists generally believe that well functioning markets are absolutely essential to promote economic growth and consumer welfare. And that is certainly true with respect to IP markets and technology markets as it is with respect to markets for commodities and services. So, given that perspective, it's natural to ask whether these markets are currently functioning well and whether there are policy adjustments that could be made to enable these markets to operate more effectively. It's perhaps a cliché to say that we live in a knowledge-based economy, but to the extent that is true it's probably more important than ever to address these questions, which is what we hope to do today.

So, I'd now like to introduce our five panelists, each of whom will have an opportunity, first, to give a short presentation before we open up the discussion to a more question and answer format. And I could spend a great

deal of time enumerating the many accomplishments of this distinguished group, but in the interest of maximizing the time for the discussion, I'll keep my introductions brief and just refer people to the more extensive biographies you'll find on the conference website.

So, our first panelist is Ashish Arora. He is currently a Visiting Professor of Strategy at the Fuqua School of Business at Duke, and he is on leave from Carnegie Mellon, where he holds the H. John Heinz, III, Professorship of Economics, Innovation and Economic Development. He's a leading researcher on the economics of technology and technical change.

Next, we have Scott Stern who is at the Kellogg School of Management at Northwestern University. He is also the co-organizer of the NBER Innovation Policy and the Economy Working Group. And he is a senior fellow at the Searle Center on Law, Regulation and Economic Growth.

Next is James Bessen who is Director of Research on Innovation, which is a nonprofit organization that conducts, sponsors and promotes research on technical innovation. He's also a lecturer in law at the Boston University School of Law. And he coauthored a book many of you are familiar with, *Patent Failure*. It is a recent book that examines shortcomings of our current patent system.

Next we have Bob Hunt, who is an Assistant Vice

President of the Payment Cards Center at the Philadelphia Fed, where he previously was a Senior Economist in the bank's research department. He's published a variety of papers on the economics of innovation and intellectual property and he has examined, among other things, the effect of patents on computer programs, business methods and financial services.

And last but not least, we have Scott Kieff, who is a professor at the Washington University School of Law with an additional appointment in the school of medicine's department of neurological surgery. He also is a senior fellow at the Hoover Institution at Stanford where he directs the project on commercializing innovation. And he is serving a three-year term on the Patent Public Advisory Committee at the Patent and Trademark Office.

And finally, I should introduce my co-moderator, Suzanne Michel, of the Bureau of Competition at the FTC, who is leading this project. So, with that by way of introduction, I think that we'd like to get started with our presentations, and first up is Professor Arora.

MR. ARORA: Thank you, good morning. Let me begin by recounting of a brief anecdote. I was teaching at Carnegie Mellon, and one of the bright young students said in response to the question, I don't remember the question, I remember the answer, and the answer was "because we live

in a knowledge economy." Which, of course, put my hackles up because I said, "You mean my ancestors lived in an ignorance economy?" Which, if you think about it, you know, it's a gigantic conceit for us to say such things.

But what I want to try and persuade you is, at least the last 100 years, if there is something distinctive about them relative to the earlier 100 years, is the role of knowledge as an economic commodity. And that is sort of the launching point.

I'd like to say that IP markets are new, but they're not. So, this is research by Ken Sokoloff and Naomi Lamoreaux, that is the graph on the right on the side. The point of the graph is twofold. First, there were a lot of patents transacted early in the 20th century and late 19th century in America, and more so America than Great Britain. And if you're interested in the reasons, you can read their excellent work. The short answer is because patents were cheap in America, you could get them without paying a lot of money.

It's claimed, and I've certainly been one of the chorus of voices claiming, that we've sort of gone back to the future in the sense of an increasing amount of transactions in IP and technology, broadly defined. My perspective is sort of straight from the book, as they say. This guy, if you recognize him, was a Scotsman who lived

with his mother. And he wrote this book called The Wealth Of Nations. The book begins by talking about the division of innovative labor. And what is remarkable, if you grew up as, you know, in terms of sort of as an academic in the seventies and eighties, is the complete and utter absence of a division of labor in innovation. It was taken as granted that the person doing the innovation would be doing the commercialization.

In 1776, Adam Smith says, well, why should that be so and, of course, the reason you don't see this division of innovative labor, or we did not until recently, was because of an absence for the market for technology. And, of course, like generals, economists always fight the last war so the world changed and then the economists started to catch up and we discovered that, in fact, there were transactions taking place right under our noses. And Scott and others and I have documented some -- some of these.

This is the first time that the government took this seriously, so these are estimates of technology licensing in the United States produced by the Bureau of Economic Affairs, the Department of Commerce, Carol Robbins, you can see the citation. Basically what she finds using confidential data is that IP licensing revenues, receipts, were of the order of $66 billion, which compares favorably to things like car rentals and licensing of other things.

And this number sort of seems right. And I confess, I'm prejudiced, because for the mid-1990s I produced an estimate with colleagues using much less precise sources, publicly available sources, and we came up with a number of 30 billion, 30 to 40 billion for the mid-1990s.

And, so, you know, if you think about how things have changed and the economy has grown, this seems sort of roughly right. It's, you know, we're well within shouting distance. So, I'm heartened both by the fact that the government has produced these estimates and because these estimates up significant but not crazily high. Right? If this was $1 trillion, we would look askance at it and say it, you know, this doesn't sound right. But it sort of sounds right, it passes the smell test.

Right. What does this have to do with patents? This doesn't prove anything but at least suggests, the first chart, I don't know how to point to this, this guy. This one here is the chart of patents issued, and you can see there is a substantial uptick circa 1982, if the chart was more precise.

The second graph is the trend in overall licensing royalty payments and receipts globally using UN -- I believe this is UN data but from the IMF. And you can see a similar uptick around the same time. Again, this is coincidence, we spend all our time beating our students

saying coincidence doesn't mean causation, but at least it's prima facie, that means there is something to look at.

Right. I'm going to show you now a smorgasbord of evidence from other academic studies which try to demonstrate the link, each in its own particular narrow way. The first study shows that patents stimulate IP transactions, particularly when the patents are held by small firms. That's that stuff in the blue. This was an indirect study. Alfonso Gambardella and colleagues did a study based on where they surveyed patentors, inventors in the European union and they asked them about what had happened to the patent. And they found that, you know, some fraction of the patents were licensed. And the biggest driver of licensing was the size of the entity that held the patent. Small firms are much more likely to license the patent. Again, it's not -- none of this should be surprising, but it's always good to get systematic confirmation.

This is a chart produced by Rosemarie Ziedonis. And what this, the red area, is the percentage of firms in our sample which are -- which specialize in design, in other words, they don't make stuff, the non-manufacturing entities as they're called somewhat pejoratively at times. For me, these are the heroes. The only thing I want you to take away from this slide again, again, is the coincidence and

time of when these guys start, you know, becoming significant and it coincides again with, you know, an early eighties, with the changes in the patent system.

Here is evidence from an older and cross-sectional study, which looks at the role of the analogue of these non-manufacturing entities, these what I call specialized engineering firms, these are firms that mostly specialize in design and construction of chemical plants of all kinds, and frequently are responsible for minor technical advances and occasionally for very substantial ones. And the point of this slide, once again, is those chemical subsectors where you see a lot of patent activity are exactly the sectors where you see these small companies.

So, what I basically tried to -- tried to argue is twofold. One is there is a relationship between patents and licensing. And second, this licensing activity is correlated with this emergence of these companies that don't make things but are other technology suppliers. I like to think of them, in the value chain, these are the guys that are producing technology, perhaps small innovations, certainly diffusing it and certainly making it available broadly.

Why does this matter? Well, it matters because when you get these small guys, whose business model it is to sell technology in various forms, then you get downstream

entry into the product markets. So, the second chart, with the numbers, is the share of world exports of chemicals over 100 years. And what I'd like to do is draw your attention to the last row, and look at the tremendous share of exports from outside the traditional suspects, America, western Europe, Japan. It's huge. It's over a third.

And you say, of course, chemicals is a mature technology, who cares about chemical exports. Chemical technology is actually much more recent than automobile technology. Automobile, the basic internal combustion engine is over 150 years old. And ask yourself if you produced a similar chart whether you would get 33 percent, and this is circa 1993. So, you know, if I did, updated this table, that 33 percent would be a lot bigger.

Why is this relevant? Because this is evidence that when you get a market for technology operating, you're going to get a lot of entry, this technology will diffuse broadly, and this technology will find itself to customers or to users who would not be able to generate this technology themselves.

In this chart, there happens to be companies in the developing world, but I have other charts, and I can assure you it's true, it's also true for small companies in America. Okay. The same for information security software. Same with -- let me zoom through this. The same is true for

pharma and biotech.

Let me say a few words, since Scott is here, let me inoculate you against what he's going to say, which is there is a lot of fuss about how patents have been interfering in research. And that is probably true. That is probably true. There has been a lot of interference. But the first chart, which is the percentage of originated compounds, that should give us pause because what this says is biotech firms are less likely to seek outside partners, rather than more likely over time. That we're drawing from this market for technology. They're seeking to develop the compounds themselves, which could be the reason why pharmaceuticals are in trouble.

Now, let me say, quickly go through this other thing. It's true that patents in bio-pharma have created trouble, and I would submit to you, and we can take this up in the discussion, most of these patents, if not all, are held by universities, were originated by universities. So, the enemy, you know, we met the enemy and it's us. Or the guys on this side.

And last, let me submit to you that this whole fuss about anti-commons, that while it certainly could happen, it's an uncommon tragedy. That thing that you say is a "nail house" in Chongqing, China who refused to sell so that a mall could be developed. That is the anti-commons.

That is an example of the anti-commons, and that is really rare. Right? Where one guy is holding a veto.

So, let me just end on this note, which is I think we heard in the keynote, that bad patents can create problems. But in the spirit of not doing any harm and at a broader level, I think it's a really bad idea for policymakers to choose between business models. I think it's a lousy idea. This idea that you would privilege manufacturing because they make stuff versus because their business model is to sell technology is a horrible idea. And this prejudice in favor of market, you know, of material production is simply a prejudice.

Thank you.

MR. SCHRAG: Thank you very much, Ashish.

MR. STERN: Thank you very much for organizing what I think is a very, very interesting set of workshops and raising a bunch of, I think, critically important issues. And what I'm going to do is essentially build, quite directly, on what Ashish was talking about in terms of trying to understand, not in some sense the -- or I'll start with, in some sense, the discussion of the impact broadly of intellectual property on the market for technology, and then sort of divert over time to how the operation and rules that govern the patent system in actuality, the actual rules that govern the issuance and granting and allowance of patents,

and the rules governing litigation and enforcement, are affecting this evolving IP marketplace.

So, what I'm going to try to do in my brief time is first just raise up in a way that will be essentially, you know, second fiddle to Ashish here, you know, how do formal intellectual property rights impact the market for technology. I'm going to try to raise up and try to make a contrast on what are the key margins for welfare in competition policy that we might think about in the development of a market for technology. And, finally, how the operation, the patent system impacts each of those welfare margins.

So, let me just, kind of, start with where the model is going to be. Is essentially what we're talking about is a world where the commercialization environment, and I guess, you know, that is this over here. Okay. That is the green. The commercialization environment, the environment that determines and shapes the ability to figure out how to put -- take a nascent idea, take a nascent prototype and translate it into a value proposition that can be sold in a market. The commercial, the determinants of that commercialization environment, is a crucial driver of the structure and scope of the market for ideas and the evolution of technology itself.

I'm going to make the case that effective IP

rights facilitate transactions, facilitate in some sense a good match between the development of the technology and the way in which it is commercialized, in which it's commercialized enhancing commercialization. In other words, IP rights enforce the market for ideas.

Markets for ideas have many powerful and good ideas associated with them, but to be clear they can sort of undermine. One thing we might worry about is that they do have this potential to undermine Schumpeterian dynamics, where entrepreneurship and innovative entrepreneurship serves as a kind of dynamic check against the exercise of market power. And moreover so whether or not you have a market for ideas turns out to be quite crucial as a driver of the evolution of innovation-driven markets.

When you have a market for technology, incumbent competitive advantage can be reinforced rather than supplanted by technology entrepreneurship. As Bill Baumol, I think, has said, and quite eloquently, we've ended up in the David and Goliath symbiosis.

Once you have, moreover, how those innovation markets evolve, shapes over time the development of the commercialization environment. In part, that happens because things happen in the market. The fact that there have been lots of deals in biotech means there is a whole kind of industry that many of you are familiar with that

supports deals in licensing and activity in biotech.

Moreover, think about the panels that were here yesterday, the established industry activity participants are going to shape and try to influence the development of policy rules and institutions that support and reinforce the IP marketplace per se.

With all that, there is a body of research, and I think Ashish really -- and his -- and his coauthors and colleagues have really been at the forefront of kind of pushing forward the body of empirical and theoretical evidence in this area. What I want to do is, in part building a bit on that work, is kind of highlight one broad hypothesis that I think is worth keeping in mind. And I'm going to call that, for lack of a better term, the commercialization hypothesis. That effective intellectual property promotes trade in the market for ideas, and, therefore, enhances the efficient cooperative commercialization of new technology. And to be clear, once you have that hypothesis stated, you can see where the benefits come from.

On the one hand, if you have particularly these little guys, you know, right, if this technology is coming from these entrepreneurs, and smaller ideas-focused firm that Ashish referenced, you're going to end up with more rapid product market introduction. So, there is going to be

a dynamic benefit of getting innovative technologies to the markets more quickly, more effective product market positioning.

I always try to explain to my students with great care that if you have a great piece of software, selling it for free is not nearly as effective in terms of diffusing it as having it established in the Microsoft tool bar. Right? That something for free will have very little market impact relative to getting it incorporated directly into the monopolistic standard.

And then, finally, that the division -- that a third welfare gain, and Ashish has written about this quite eloquently in a number of ways, is that the division of innovative labor encourages experimentation and entrepreneurship particularly for emerging technologies. With that said, that very same commercialization hypothesis raises the concerns you might worry about from a broader competition policy and innovation policy perspective.

The first, maybe there is a little too much of a cozy relationship between our entrepreneurs and established firms as cooperation serves as a long-term alternative to product market competition. The second, I think was discussed quite nicely in the keynote and has been a longstanding discussion, is that the notion of the -- if it really is the case that intellectual property is somehow

being entered into this process, there is the potential for inefficient holdup and commercialization. I think particularly once you get the idea that the patent system as a practical matter isn't assigning property rights, it's assigning probabilistic property rights.

Just to give you a brief piece of it, I'm not going to go through this much, this just reinforces Ashish's broad body of evidence. Ultimately, when you go and look at startup entrepreneurs in the United States, and to I think a large degree as well in Europe, with a body of emerging evidence there, in areas where intellectual property rights are available for the innovations, the way that startup innovators tend to make their money is through some sort of cooperative arrangement between themselves and some downstream firm. When intellectual property is not available or is very weak for their innovations, they end up making their money through some cobbling together some broad market strategy that enters competition in those markets.

With that said, so, you know, and there is kind of a merging body of evidence, I think, that reinforces the basic predictions of this commercialization hypothesis. With that said, from a policy perspective, I think it's worthwhile to understand what those patents are actually doing. I think the work by, among others, Carl Shapiro and Mark L. Lemley on reformulating our discussion of patents,

particularly in the area of competition policy and innovation policy, is a probabilistic problem. That essentially rather than simply assume that the operation of the IP system establishes well defined and forcibly and timely IP rights, instead what we have is we end up with quite noisy rights that result in uncertainty over patent grant and scope. Are you going to get something and how much? How effectively are you going to be able to enforce this stuff? And how expensive is it going to be? And is this thing even patentable in a broad sense? In particular, is the subject matter patentable? And that is going to be particularly important for emerging technologies.

In the remainder of my brief time, how much time do I have? Okay. Okay. Can I take two more?

MR. SCHRAG: Okay. Two minutes.

MR. STERN: Okay. I want to describe very briefly how the operation in the patent system impacts the welfare arising from the marketplace of technology. The first point is we've got a body of relatively recent research that simply identifies in, I think, a reasonable way, that the patent system matters for commercialization, and the operation does. What this graph is is it's essentially how likely are you to achieve a license, your first license on the technology, relative to when the rights associated with the license are clarified through the patent allowance,

basically the notice of patent allowance. And what you can basically see is that in these markets where you see a lot of licensing by entrepreneurs, there is a dramatic boost right after the patents are granted. And, right, we all know from the facts about the patent system that is a very noisy process. And it suggests that shifts in that margin are going to shift the efficiency of the commercialization process.

Second, there is the impact of uncertainty over patent validity on the market for ideas. I'm actually not going to discuss, as I would in many other forums, this kind of contentious and ongoing debate that I think is well covered about IP enforcement by non-producing entities. Are these patent trolls, or is it the patent flash of genius?

The probabilistic nature of patents, though, suggest that litigation patents may reflect a significant loss of social welfare from the market or from technology. There's the potential for holdup. The potential for rational ignorance. Essentially production-oriented firms may just not worry about the patent system when they're developing their own ideas. And there is this strength of weak patents which raises, yeah, raises the potential to initiate a collusive agreement, to initiate a monopoly product outcome even when the upstream IP rights are weak.

So, what happens in the IP -- and so the

question -- so let me just -- let me make sure I say at least this. Is a key issue is that what Ashish and myself and this body of emerging evidence has mostly looking at ex-ante licensing of technology in commercialization, as emphasized, is that there is a very productive activity if an ideas or technology producer is able to enhance commercialization. But if everything is being done ex-post, what you essentially have is inefficient commercialization followed -- because the technology is not being transferred effectively ex-ante, followed by costly litigation. And I would raise that up that there is a difference between ex-ante and ex-post when you consider the efficiency and welfare consequences of the commercialization environment.

More broadly, an effective IP marketplace has tremendous potential for the creation of social welfare, and formal intellectual property plays an important role, and a causal role in the development of markets for these ideas. However, a principle constraint on the IP marketplace is the operation of the patent system, and the current system essentially fails to deliver timely rights, nor does it offer sharp incentives for ex-ante pro-competitive commercialization strategy and outcomes. Thanks a lot.

MR. SCHRAG: Thank you. Next up is Jim.

MR. BESSEN: Hi. Thanks for having me. So, I'm going to give a -- I'm going to talk more about patent

notice than the previous two speakers have. And maybe try to draw some connections to things that they've talked about and that Herb talked about earlier. I'm going to start with maybe just reviewing what I mean by a market for technology and I think it's important. Scott just used the phrase "market for ideas," and I'm thinking maybe about a broader concept. I think a market for technology is more than just a market for pure ideas. You have several different types of things.

One is strictly patent licensing. Companies form a license and what is transferred is the right to use the patent. Second, what is traditionally called technology licensing, which includes -- might include a patent but it -- or it might not include a patent, but it also includes everything you need to be able to use the technology. And that is more than just an idea. It's know-how. It might be access to laboratories, it might be training, it might be specialized equipment.

The third is, I come from the software industry. Joel didn't mention I was an entrepreneur and innovator. What is very common in the software industry is that these things are then blended together with a technology that is embedded in code or some other form, in our case code, and, actually, is sold as a product. And in software that works well because, A, modularity, things can be broken down into

little pieces, and B, trade secrecy is often very effective in the patent world. But all of these things are different types of markets.

We want to focus on what is -- if I can generalize what people have said about the benefits of why we want -- why we're concerned about markets for technology. It's that it allows heterogeneity. It allows the best technology to be brought to the best use. The commercializers may have assets that might are better at bringing the technology to market. The garage inventor might be the one who has the unique idea or the unique perspective for whatever reason to come up with it in the first place. And a market allows those, that technology, to be brought and brought to market in the best and most efficient way.

If you look at the different sorts of markets that we might consider under the umbrella of markets for technology, we're really talking, then, in terms of this best use argument, about the latter two. In the latter two, it's real -- it's a complete technology that is transferred, not just the patent right. There may be some social benefits, the pure patent licensing, in that it reduces litigation. That's a different sort of social benefit. It's kind of like the benefit of giving a robber my cash so I don't get shot. But I don't -- it's not really what we're talking about here. The real benefit in terms of bringing

technology to the best use, to the best sort of commercialization comes when there is a full bodied transfer of technology.

Okay, that said, what does that have to do with property rights, and in particular, notice? Well, the catch phrase that economists like to use is property rights need to be enforceable and well defined. And I'm going to focus on the well defined part, and that corresponds to what some scholars call public notice, or the public notice function of a property system.

To fix ideas, we can think of a real estate example. I have a plot of land. Scott wants to erect a million dollar apartment building on it. One thing that is going to matter a lot to Scott is, is that plot of land really owned by me, and if he buys it from me, is he going to have secure title to that land? If the boundaries of the land are questionable, if the title -- provenance is questionable, he faces a risk and that risk affects our ability to contract, and thus it affects the nature of the market.

That sort of risk and that sort of uncertainty we call notice. For a property system to function well, it has to have transparent public boundaries, all the information about what that deed covers has to be publicly available. The boundaries have to be predictably interpreted so I can

hire a surveyor and know with a great deal of certainty that the building that Scott wants to put up is really going to fall on my plot of land. Since possession is so much a part of the law, there have to be clear rules for possession and my ability to prove it. And fourth, and more generally, there has to be low-cost clearance search. Scott has to be able to, or I have to be able to, you know, very easily go and find out who has the title, what the boundaries are.

Herb mentioned a bunch of things in his introductory talk that really touch on these functions in the patent system. The patent system has all these things but some of them aren't working so well today. So, we talk about public boundaries. The issue of continuations and the ability to redraft claims means that the claims are in effect hidden from the public. We talk about claim interpretation, and that means that effectively, the boundaries of a patent are not clear and predictable until essentially the Federal Circuit decides what they are.

Rules of possession. We have written description, we have enablement. Herb pointed out some recent limitations in that. And more generally it has become very difficult or impossible to do an efficient clearance search in many technologies, especially computer software, ITC-type technologies, and as a result, firms don't do it. You basically do not have an operating notice system if

clearance is not done by the major players. It's very simple -- you know, you can look at that and say it's not being done. Cockburn and Henderson did a survey of the IPO and, you know, I believe it was 60 some percent of the respondents said that they did not always perform a clearance search before they brought a product to market. It's cut and dried. That says very clearly patent notice isn't working properly.

What is the significance of that? Well, we find a difference by technology. But I'm going to pull two graphs from my book with Mike Meurer. We estimated essentially the profits from worldwide patents and we estimated litigation risk, which is a lower bound on dispute risk. And the first chart shows -- these results were public chemical and pharmaceutical firms, and the blue line represents the profits, and it's much greater than the dispute risk. And we can say, you know, our interpretation of this is that for these industries the public notice function works very well, disputes are really a small part, although there is a worrying upward trend, but they're really much smaller than the benefits that derive from patents.

When we look at other industries, though, starting in the mid nineties, at about the time the Federal Circuit, some of its decisions took bite, we see that the litigation risk starts outstripping the profits from patents till by

1999 it's roughly triple. And our interpretation of this is that beginning in the mid nineties, the erosion of patent notice accelerated and this became a very significant problem.

Okay. So, what is the significance of this for markets? In an ideal market, say you have a competitive market where there are many buyers, the seller who might be a garage inventor puts -- puts their technology out there for sale, there are lots of buyers, the buyers express their value and ultimately the market will settle at a point where the price that the seller gets is what the buyer values the technology at. And that is what economists love to call Pareto efficiency, and it represents an efficient functioning in markets. And what it means in the story I'm telling you, it means that the seller is getting the value of the best use of their technology.

But when you add notice problems, the buyer has to take into account dispute risk. This is a simple point and it's widely misunderstood. That reduces the amount that a buyer is willing to pay in that market. What evidence do we see of that? Well, oh, no, no. I'm jumping ahead. I'm jumping ahead.

So, that reduces what the inventor can get for their -- get in the marketplace. It also reduces the efficiency of the marketplace. So, one thing to focus --

and this is particularly broad. For one, it means -- it even applies to technology agreements that might not involve patents. So, the two players might not -- you know, I might be licensing a technology to Scott, we're not worried about patents because maybe it's software, maybe trade secrecy is fine, but if Scott faces a risk of a patent suit, he's not willing to pay me as much. And we might not be able to conclude a deal because of that.

The second thing is it affects our ability to form an agreement at all. Basically, it means that the inventor has to be in the insurance business as well as the technology business. I've got to either indemnify my buyer that my technology is owned and that it is sufficient, and that they're not going to face significant risk. The fact of insurance markets is if you have a small player without deep pockets, they can't indemnify anything worthwhile and that means that some deals aren't going to happen, number one. And number two, there are problems of asymmetric information, moral hazard, adverse selection. Those are going to mean that deals don't happen that could happen. And there is some evidence that this is true.

So, there was a survey in Europe where, actually, 39 percent of the patentees who wanted to license couldn't. There are a number of studies which estimate patent value and one of the things they typically find is that small

entities have less valuable patents. One interpretation of that is that the large entities have the resources to commercialize their own patents. If the market were working efficiently, small entities would be able to license them to the large entities. If the market doesn't work efficiently, the value they can realize is less.

Carlos Serrano has done some analysis from the gains of trades from patents held by independent inventors and they're relatively small. A lot smaller than many of us think they should be or could be. All that he is saying that poor patent notice is affecting -- I'm going to skip that. We can maybe get into it later.

But basically the bottom line is improving patent notice will improve the markets for technology. Thanks.

MR. SCHRAG: Thank you very much, Jim. Bob is up next.

MR. HUNT: So, I want to thank the organizers for inviting me to participate in today's hearing. And I especially want to thank them for not asking me to talk about AIG. I have to do a disclaimer. These are my views. They are not those of the Federal Reserve Bank of Philadelphia or the Federal Reserve System.

So, I'm going to say a bunch of things that are probably very obvious to everybody in the room. Let's think about our objective here. What we want to do is maximize

the purchasing power of consumers through time. The way we do that is by maximizing productivity growth. And one of the best ways of getting productivity growth is to invent new goods and services. Now, sometimes we have a problem measuring these things, so a lot of times we'll be talking about measuring inputs like R&D which we have a better handle on.

Now, by most measures the U.S. innovation system works very well, but that doesn't mean it works perfectly. Okay. And I think yesterday's hearings probably made it very clear that there is a difference of opinion about how well it's working for various industries. The point here is that money is being left on the table, and the question is how much money is being left on the table. Now, I would argue that it could be a considerable amount of money for the simple fact that in the United States R&D is very productive. So, that R&D that is not done is a loss to society.

Okay. Now, why should we care about patents, litigation and licensing? Well, first of all, simply as a means to an end. That is, if that is how we get innovation and, therefore, productivity growth, then these are tools that get us down that road, and we've already heard a number of very interesting descriptions of the mechanisms by which these things work. Second, though, the data, these data on

these things tell us something about the efficiency of our innovation system. This gets us at quantifying the amount of money being left on the table.

I'm going to make a couple of simple points. First of all, can there be too many patents relative to the amount of R&D that is going on? And the answer, at least in a theoretical model, yes, but it's a very special case. It involves a certain set of factors. In particular, you have to have productive R&D, people have to be inventing regularly. Patents have to be cheap relative to the cost of R&D, and the revenues generated in the industry. Third, there has to be considerable overlap in the property rights that firms are obtaining.

Now, that may be an artifact of technology or it could be an artifact of the way we define property rights in the patent document. And fourth, there has to be a relatively weak relationship between the process of inventing something and the process of obtaining property rights.

Now, in such an environment, you can decrease the cost of obtaining patents, you could lower filing fees, or you could lower the standards by which we examine patent applications. And the result will be less R&D and not more. And it's very simple. What you're doing is, is lowering the cost of investing in a tax on the other guy's R&D. Now,

firms are going to respond to incentives. They're going to substitute away from their own R&D, and they're going to invest more in patents.

Now, you can ask, well, would licensing solve this problem? And, in fact, an ex-ante license, in other words, a license that the firms would agree to before they make their R&D and patent decisions, could quite likely sweep out a lot of these wasteful patents, and, so, you might be able to improve R&D incentives. But it's not so clear, as Scott was pointing out earlier, these kinds of contracts may also dampen the incentives to do R&D in the first place. And, so, you have to design these contracts very carefully.

But before we think about licensing, we might want to attack the environmental principles that make this possible in the first place. In particular, we might want to tighten the relationship between what an inventor invents and the property rights that he or she subsequently gets.

Another point, and this has been alluded to already a little bit today, in the United States, private R&D has become deconcentrated over the last 40 years. Okay. This is some work that Leonard Nakamura at the Federal Reserve Bank of Philadelphia and I have done. This is data on publicly held companies, and so take yourself back to the early 1970s. Focus on 70 large industrial R&D performers, firms that have been around a long time, that would be the

red bars in this figure, they would account for the majority of private R&D being performed in the U.S. economy. Just 70 firms, okay. And over time what has happened is that they have accounted for a smaller and smaller share so that by the turn of the century they account for less than a third of all private R&D amongst the publicly held companies.

Now, set aside measurement issues and some issues about exit and mergers and acquisitions, all stuff we have to deal with in our data. The point is we have a lot more R&D performers today than we did 40 years ago and, those firms perform a lot more R&D than they did 40 years ago. That's why we have this pattern in the data.

Now, I'm going to skip to the National Science Foundation data which has the virtue of including also the private companies in their survey. So, the first thing to observe in this figure is something I think we all know, which is that the private U.S. economy has gotten more research-intensive over time. Very long-run trend in the data.

Secondly, you'll notice that in the early '70s it was the very large companies that were more R&D intensive than the smaller firms. And what happened by the end of the 1980s is that the smaller firms caught up. Okay. And that is also true in the other data that I worked with with Leonard.

Now, another way of presenting this data is to decompose the R&D that is being performed by firms of different sizes and then ask what is contributing to this overall rise in the research intensity of the U.S. economy. So, that is the black line in the figure that we have up here. And then the colored lines are the breakdown by firm size. And what you see is that after about 1980, almost the entire rise in the research intensity of the U.S. economy is being driven by the increased research intensity of the smaller and younger firms in the data. Okay?

Now, Leonard and I do some modeling and some additional regressions to try and explain why you get these and some other patterns in the data. And the conclusion we reach is that there has been a structural change in the U.S. economy. It's a little bit different than the stories we've heard so far today. We think that the issue is falling barriers to entry. And in particular, it has to do with these costs that a firm has to sink in order reach the final goods market or the final services market, and these are costs that you sink after you do your R&D and after you invent. And so this is a structural change that is not necessarily about the R&D process, but it affects the returns to R&D, both for established firms and for firms that are contemplating entering the market. Okay.

Why do I go through all this detail? Well, it

means that we have to think a little bit about reverse causation. Now, Leonard and I are not taking a very strong stand on this, but what we are saying is that we don't think that markets for technology are the primary driver of the deconcentration in R&D that we have in our data. We think that that is more likely correlated with ubiquity of the personal computer. On the other hand, the deconcentration of R&D that we clearly observe in the U.S. data may explain the growth in markets for technology. Okay.

And there are two implications for that. First of all, one of the first order of questions that we need to be discussing today is whether our innovation system is optimized for this deconcentrated R&D. When we have tens of thousands or hundreds of thousands of important R&D performers, do our institutions serve that market well? And if not, what things do we need? Secondly, efficient markets for technology are more important than ever. Everything that Scott and Ashish were talking about earlier only becomes more important when you look at this kind of data. It influences the terms of trade between younger and older firms, a point that Jim was making a moment ago. And secondly, any dead weight losses that arise in this market mean less entry and they mean less overall R&D. Money left on the table.

Now, what I want to close with is an appeal for

more systematic data for the U.S. economy on licensing. Okay. What I would say is that at this point in time we can't really do a full assessment of technology markets in the U.S. economy. Now, we have in this room probably the expert on what we know about markets for technology and I think his work is great. This is not a critique of Professor Arora's work. I think what we know from his work is how these markets function in particular industries at particular points in time. My only criticism is we need a hell of a lot more of this kind of research. In particular, we need to know a hell of a lot more in the services sector. And Ashish actually gave an example of one small part of the services section in his slides. But we need a lot more of this kind of stuff.

And, so, I would say that at a minimum we should be looking at surveys like the Community Innovation Survey in Europe and some comparable surveys that are done in Japan and ask yourselves if we could at least do as well as those surveys do in gathering data on licensing activity or we could do even better. And we should be -- we should be doing these surveys systematically, and we should be doing them inside manufacturing, we should be doing them outside of manufacturing. And my last plug is and we should be doing these in financial services.

Thanks for your time.

MR. SCHRAG: Thank you, Bob.

(Applause.)

MR. SCHRAG: And Scott is our last speaker.

MR. KIEFF: It's very nice to be here. I thank everybody, especially Chris for her great help, and for inviting all of us together. It's nice to see so many colleagues, and, in particular, it's so -- such a treat to follow Herb Schwartz, who is a former teacher and coauthor and a friend. So, I think these are great ideas, great people. I happen to like to cook, so I figured I'd go with a cooking metaphor. Let's see if we can run with this.

I'm going to go quickly and, so, let me just begin by saying that all of the information that I'll discuss here is available for free download on our web page on our commercializing innovation project out at Hoover. It's just innovation.hoover.org. And, so, I invite folks, please, let us know if you have questions, comments, criticisms, we'd like to chat further. This is a great way, we find, to dialogue.

When you ask people why you even want to have intellectual property rights, Lord Justice Robin Jacob over in England, who writes a lot about patent policy, loves to tell the story of Mark Twain's Connecticut Yankee who goes to King Arthur's Court, who creates a patent system, it's going to move his country forward. And I think we're all

familiar with that story.

Robin also is a bit of a provocateur and, so, he likes to ask us are intellectual property rights really so good, and to use his phrase he asks whether they're just like a squirrel -- just like a squirrel is a rat with good PR, calling IP rights intellectual and property may be dressing them up. They may not be so well founded in intellectual theory, and to call them property makes them sound legitimate. Maybe they're just really private monopolies.

And I think if you compare those two slides, that really is the debate. Some people see these things as important for moving forward, and other people see them as holdups and ways to concentrate power.

I recognize that patents probably do create incentives to invent and, you know, putting a carrot in front of a rabbit, all other things being equal, will draw the rabbit to the carrot. But what I think we often overlook, and I think this is important in tying into the other talks today, is that patents really can be very important not just for getting inventions made, but more importantly for getting inventions put to use. And so, what's implicit, if not explicit in many of the prior discussions, are that in order to get inventions put to use you need many complementary users of that invention to dance

with each other, to coordinate with each other. And getting those people who are different from each other, specialization and division of labor, who act like modules, modularity, getting those people to plug into each other, to interact with each other requires coordination, and patents can be shockingly good at achieving that effect. A very good form of coordination.

When they do that well, and they can actually do that very badly too, we'll talk about that, but when they do that well, what they are doing is, in fact, serving as antimonopoly weapons. They help the Davids compete against the Goliaths, they bring new business marked -- new business models to market, they bring new businesses to market. That increases distribution and that increases competition.

I'm an academic and I should tell you that I figured this out. I just didn't figure this out. A lot of other people figured this out. In fact, the people who implemented our present patent system figured this out. I just happened to read their work and talk to them. So, when you go and read the writings by people like Learned Hand, Jerome Frank, Giles Rich, I never talked to Learned Hand or Jerome Frank, but I happened to work for Giles Rich for a few years, and when you read their writings from the forties, fifties, and sixties, leading up to 1952 Patent Act our present patent system, and after the 1952 Patent Act

implementing that system, this is what they were focusing on. And, so, this is not kind of post hoc rationalization. This is, in fact, exactly their goal, was to focus on commercialization.

Now, how is this going to happen? How is this good coordination story going to play out? And I think when you think about property enforcement you can think about it as not control mechanisms. Most people who discuss patents as good or bad because they're strong or weak, talk about them because they empower patentees to control downstream innovation. Some folks like that, some folks don't like that. I think that is a wrong way to think about it. It's not about control. It's about coordination. It's about starting conversations. And that is a much softer story. You turn out all the lights in this room, you close the blinds, the room goes black, you give one person a flashlight, and everybody else in the room knows exactly where that person is. And if they show up at the flashlight, they'll find not only the holder of the flashlight, who turns out in this story turns out to be rather inconsequential, by the way, they'll also find everyone else who is interested in the flashlight.

So, the venture capitalist will find the potential manufacturing partner who will find the potential manager, who will find the potential other licensees, they all find

each other because they gather at the beacon, and that beacon starts their conversations. And then you want them to have an incentive to have those conversations in a way that will facilitate reaching a deal, striking a bargain.

And what I think is so often discussed in the literature is the way in which property rules, strong enforcement, can stop people from forming deals. And I think that is right. Property rule enforcement can have that effect and there are important, well-known ways to mitigate that problem. But what we have almost totally overlooked in the literature is the way in which the opposite problem not only exists but is now very severe. Which is so-called liability rule treatment, weak enforcement, making it very, very hard for people to strike those deals.

You see, I think most of us, even in a post-crash world, are capitalists who like money. And most of us like money a lot, but we recognize that money is not everything. There are lots of deals, especially early-stage venture deals, that turn on assets that are hard to hedge, hard to diversify, hard to redeploy if the deal goes south. Those unique assets, money is a bad substitute for those assets, especially the probabilistic notion that seven or eight years later you'll get an objective measure of damages. You won't invest those unique assets if the only thing you're

going to get maybe later, maybe if you bring a lawsuit, maybe if you win the lawsuit is maybe a small amount of "reasonable royalty damages." Those damages are a good substitute for a direct cash investment, but they're a very bad substitute for these relatively unique assets.

And I think that these enforcement rules, called liability rules, relatively weaker enforcement, not only do they frustrate this good coordination story, but they facilitate, I think, a very, very seriously bad coordination story, coordination among large established players I call a Keiretsu effect, named after the large conglomerates in Japan, the Keiretsu. If you think about how the large, established players would like to coordinate with each other to keep out market entrants, I actually have -- we can talk in more detail about this mechanism, but these shifts in enforcement rules, I think, in fact, not only frustrate the good coordination, they facilitate the bad coordination, the anti-competitive coordination. And I think that actually may be explaining some of the behaviors in some of the other talks today, which we can talk about.

So, the property rules popular views today are that property rules are killing us. They are, you know, threatening the world with shutdown, cats and dogs will live together. We've all read the Op-Eds in both the New York Times and the Wall Street Journal. We have seen the

discussion. I think these terms are familiar to most of us.

Our response has been to change quite a bit. And I think to change in ways that overlook what we've already been doing. You see, it is absolutely true that property rules cause bargaining breakdowns in a range of ways and you need to build into your system so-called pressure release valves. It is true that I can be rationally biased, I can engage in strategic holdout, and so can you. We can have breakdowns in our deals. But what most of the literature has overlooked is that we have actually, as smart human beings, built into our system a set of pressure release valves to mitigate the dangerous effects that property otherwise can have.

First of all, we have corporate form which creates limited liability. We have bankruptcy. I can be an infringer, make a massive amount of money, okay, and as long as I pay myself non-fraudulent transfers, seven years later, when you beat me in an infringement lawsuit, I get to keep all the money I made simply by declaring bankruptcy and walking away. Corporate form limited liability in bankruptcy insulate me from your irrational biased or my irrationally biased holdout. Business models get done against the shadow of bankruptcy and corporate form, they're wonderful things. We also have government immunity in Hatch-Waxman, there are lots of other targeted areas.

What I think we've overlooked is we've drastically changed the system in the last 36 months, in ways that I think most of you are familiar with, so, I'm just going to quickly go forward. These are all recent cases and I think when you aggregate those recent cases, they interact in a way that, in fact, makes it meaningfully difficult for almost anybody, except a large, established player, to get an injunction. And that, I think, is a problem because they're the ones who probably have the least need for it because they have other ways to force people to have conversations.

So, let's talk about the way you transact with somebody. You see if it is scientifically true that property rules can cause too few transactions, and I admit it is, it must also be scientifically true that we can have too many transactions and yet we don't seem to recognize that in the literature. Put differently, a compulsory license is not a deal, it's a forced deal, a deal that one side didn't say yes to is not really a deal. In fact, if you intervene when you and I act irrationally, and I know that ex-ante, I'll poke you in the eyes and call you names and make darned sure we do act irrationally so that the court will intervene, that will be my strategically dominant game.

Now, it is very, very hard for property owners to

hold somebody in to a conversation because that person knows they can simply go ahead and infringe. And, so, while hold out is scientifically a problem, so, now, has become hold in, and we are almost not talking about that and we must talk about that.

We also have lost the ability to have exclusive conversations with other people and this particularly targets small firms. So, in addition, we can talk in more detail about *Quanta* and *MedImmune*, the ways in which the Supreme Court cases have, in fact, made it even harder to structure contracts.

So, let me just wrap up by saying this: A well functioning patent system is important, but I recognize and we have to recognize that bad process can gum up the works badly. We also recognize that. As Herb correctly pointed out, there is very odd pairing in the lobbying business today on both sides of this issue. Partners who used to be opponents are now partners and vice versa. But instead of focusing on striking a consensus and striking a balance, we should focus on coherence and problem-solving. Which is not to compromise among the loudest voices, but to think hard about problem solving.

Basically what we, I think, should think about is the following: We have to have predictable patents, but we also have to allow market actors a wide range of flexibility

to strike deals over that patent. And we have to have symmetrical mechanisms to cabin the abusive and harassing costs of both litigation and other legal procedures. And that is why I think today we can get more done by doing less. You see every good chef knows you have to let things marinate. We have really spiced up our patent system in the last 36 months, and I think with so many recent changes, we're going to do us all a favor by letting those changes marinate together for a little bit before we can continue to change further. Thanks.

(Applause.)

MR. SCHRAG: Thank you very much, Scott. And thank you to everybody for those very, very interesting and illuminating presentations. You have all put a lot of -- a lot things out on the table, so, I anticipate that we'll have a lot of good conversation.

Just so you know, if at some point you want to respond to something either that I ask or that someone else has said, just raise your table tent, and that way I'll know to call on you.

So, I think that just listening to the presentations people have laid out a lot of reasons why technology markets are important. You know, I heard people talking about specialization and fostering entry, new competitors, diffusion of technology, exploiting gains from

trade, lots of things there. And Ashish gave us some evidence about increasing volume of transactions in this market, and I'd be curious to know from Ashish and from the other panelists how you interpret that evidence. Is that a sign that this market is working well? Is there room for improvement? I mean, how do we interpret that data from a welfare and policy point of view?

MR. ARORA: It's a hard question. I think Bob Hunt put it well. We know a little about the industries where a lot of these transactions have been happening for a long time. So, I've studied the chemical industry and I think it works reasonably well there. How well it works in other industries, I'm not so sure. But I think the -- what I infer from that it does exist. We're not talking about hypothetical things. And, therefore, this is something that policy has to take seriously. We have to start thinking about -- and, in fact, DOJ and FTC have articulated policies about competitions in the market for technology, which I can remember when they first came along were treated with some skepticism, but are no longer.

And I think that is -- I have to say, there is nothing here that I heard say from Jim or Bob Hunt that I disagree with at all. I mean, I think anything we can do to make patents more predictable, clearer.

I mean, one of my big frustrations is -- is that

it's impossible to understand what the patent says for somebody who's not a lawyer. And this is, I think, a horrific thing. So, you know, the other part of the enemy is you guys. Lawyers write patents in the most horrific ways. Why that should be so, I mean, I can see what the private incentives are, but as a social system, it's just lousy.

MR. SCHRAG: Scott raised the issue of transactions that occurred *ex-ante* versus *ex-post*. From a welfare point of view, I got the impression that you would generally argue that it's the ex-ante transactions that are more valuable.

MR. STERN: So, right. So, Ashish wrote an article like 13 years ago now, one of your hidden classics in the literature but, you know, not as highly cited as others. You know, where one of the -- I think the -- a key piece is that, and I think Scott Kieff talked about this as well, is that you have these patents, and when it works well, as it does in areas, you know, by and large in some of the biotech contexts in chemicals, what you see happening is that the patent becomes the full, you know, kind of the center point by which a lot of technical information is being exchanged between experimental innovators and potential commercializers.

So, in some sense, whatever you see in terms of

the kind of top line number in terms of licensing receipts may actually, in fact, be an underestimate of the amount of productive knowledge that is being transferred, you know, across organizational boundaries and being sent from a locus of innovation to a locus of -- to the locus of application. When it works well, that is a really powerful thing.

And I think that, you know, when you see that done the right way you say, huh, this is a really cool system. If what is happening is that there are strategic incentives to -- to actually only enforce after somebody's reinvented the wheel internally, doesn't take -- not only are they infringing on your now disclosed patent that was maybe, you know, continuanced whatever, but even more so they don't benefit from all the other tacit knowledge, that complementary knowledge that the innovator community had.

So, we should be -- my sense is there has been relatively little analysis of the difference between the evolving IP marketplace as actually facilitating effective commercialization, as opposed to a bunch of ex-post payments that might have involved a lot of duplicative R&D and ineffective capturing of knowledge across boundaries.

MR. SCHRAG: Jim?

MR. BESSEN: So, let me draw a further connection with patent notice. Maybe this is obvious, but in theory, a license -- a licensee is going to be better off if they can

license ex-ante. Why? Because if they go sink a cost, then they're exposed to holdup ex-post. So, it's in their advantage. And they will do it if things are well defined. When there is poor patent notice, they can't do it. Either it's too expensive for them to search, it's too unpredictable for them to know, and so that is how we end up with these situations where there are ex-post settlements which are not necessarily socially beneficial.

MR. SCHRAG: Scott?

MR. KIEFF: Well, I think that that is true, but only to some degree, and so I'm worried. I'm worried about a few things with the notice story. First of all, the changes that I just briefly outlined in the law, but I think we're all familiar with, are changes that ironically I -- at least I, as someone who works in the field trying to do what Ashish would ask me to do clearly for my clients, I now can do only it in a more confusing way. Which is to say that all the changes in the law have drastically increased uncertainty, increased unpredictability, and made it much harder to transact.

In fact, I think the only degree of certainty you may now have in some of these areas after a case like Quanta and MedImmune, is that you cannot transact. And, so, at least in any way that both sides of the transaction would want to do the transaction. So, I'm very, very sympathetic

to the complaint. But I think what we're often overlooking in the literature, including in present debates, is that the particular institutional changes we're making, the particular changes to the little legal rules, are all having the effect of increasing the uncertainty.

MS. MICHEL: Scott, how do those recent legal changes increase the uncertainty surrounding claim scope?

MR. KIEFF: Sure. So, they may not increase the uncertainty in every dimension of the patent system. And you happen to have asked one where I would actually -- I have been -- long been a proponent of rather strict enforcement of the section 112 disclosure rules, the rules that govern both how you interpret the claim and how you cabin the claim's interpretation by the disclosure as originally filed. And I think those rules make great, good sense for two reasons. One, the patent drafter at the time she drafts is the lowest cost-avoider of ambiguity, and the lowest cost -- because she's the drafter -- and the lowest cost-provider of the information about which direction ought to be tapped in because she -- she is the one who is going to be the residual claimant of the asset. So, why not let her make that choice, and then why not generally hold her feet to the fire on that.

That's not a corner solution in the debates about more or less. That's an organizational or institutional

design solution that says how do you create a degree of flexibility but assign a particular person, the drafter, with the option and risk of choosing flexibility.

So, for example, she could say I claim an A and a B when they are attached together with a fastener, and then she could define fastener to include nails, screws, staples, chewing gum, spit, static electricity. Right? She could have a broad definition, but it would be a clear definition that all of us would understand today and tomorrow.

MR. BESSEN: It's another -- let me make -- I'm going to make a bunch of distinctions today. It seems to be what I'm doing.

There is a distinction between unpredictable boundaries and uncertainty, generally. So, there -- the -- the problems that I've been focusing on and I think relate to much of what we're talking about really have to do with the predictability of boundaries. Uncertainty may or may not be an obstacle to forming a contract. And in fact, some people, Ian Ayres, among others, argue that it can actually facilitate contracting in some circumstances. I'm not sure I necessarily buy that, but uncertainty is something that contracts deal with all the time. So, it's not just uncertainty. It's really do we have well-defined property boundaries.

MR. KIEFF: So, I totally agree with all of that

as well, but here is some different natures of uncertainty. We're particularly good at dealing with overall stochastic uncertainty, human beings, risk managers. We're particularly good at dealing with --

MR. STERN: That would have worked --

MR. BESSEN: AIG?

MR. STERN: -- better six months ago, Scott.

MR. KIEFF: But, I mean, you know, within -- within -- you know, within boundaries.

UNIDENTIFIED SPEAKER: We're used to dealing with that.

MR. KIEFF: And I have faith in my economist friends. But I think that, in addition, and I don't mean to beat up on my lobbyist friends, that is a form of uncertainty that we're especially bad at managing towards. Except in the way that it almost always favors large established players over small players. And, so, if you shift legal regime change to the power of K Street, then you have got a massively different form of uncertainty that I hope even you would be very uncomfortable with, and, I think, that ironically the legal hooks, the legal tools we've been using to change have been legal tools that are very, very, very responsive to political economy pressure. And what that means is that we are in a game that is either, A, horrible for market actors, or B, really, really

comfortable for very, very large market actors. And neither of those worlds is a world we want to live in.

MR. SCHRAG: Bob, do you --

MR. HUNT: I want to emphasize what Professor Aurora said maybe 45 minutes ago, which is that we do not want a patent system that selects business models. Even if we could pick the right business model today, it will be the wrong one in five years, and it will take us 30 years to change what we do today anyway.

We're in a process -- we're in such an incredible state of flux in terms of the organization of all of these different industries that this is just an issue that has got to be, you know, up front in all of these debates about the different margins by which we might change the patent system.

MR. SCHRAG: Do you think that there are no business models out there that should be unfavored or -- that is not a very elegant question. But I'm just thinking in terms of, you know, Scott's distinction of ex-ante versus ex-post licensing, obviously there are some business models that appear aim more at, you know, a royalty extraction.

MR. HUNT: Well, this -- this gets --

MR. SCHRAG: This is a knowledge transfer.

MR. HUNT: Right. This gets to this distinction about the nonpracticing entities and this debate about

holdup. If you can clearly articulate a position about -- I mean, holdup is about people doing investments at different points in time and this -- this creates all sorts of problems with getting to optimal investment. If you can articulate a clear position about what is the incremental value of a patented technology that is being introduced, so that you can protect the initial investments from this kind of holdup problem, then you don't -- you don't need to be talking about selecting business models.

If it turns out that you can't articulate that view in law, we can write this down in economics papers, but if you can't articulate that view in law, then you have a very deep problem and, you know what, we should spend a lot of time thinking about that.

MR. SCHRAG: Scott?

MR. STERN: So, I almost want to -- and this a little bit responds back to Scott but also to an earlier question you raised. I mean, I think we should be quite upfront and I think it's worthwhile to be upfront that, you know, so the website for this, you know, has the, you know, this Evolving IP Marketplace has this brain and some trade occurring around it. It's very inspiring. I want to, you know, kind of rip off your intellectual property and use it for the classroom because it sort of gets at the essence. But in some sense I think it's important to recognize that

we really -- there is this legal system that has a group of rules that is really, actually, very poorly designed for the thing that all the economists emphasized. Because we really don't have a marketplace for technology.

Those that do exist at some basic level, like Ocean Tomo, InnoCentive, which I think some, you know, I think of those people have come and talked to you guys, those are very small potatoes affairs. I mean, they're really tiny, tiny, tiny.

The kind of numbers that you see from the technology licensing piece is by and large bilateral transactions that are negotiated against tremendous uncertainty about scope. You know, I'm saying -- you know, I'm saying, lack of predictability/uncertainty both ex-ante and ex-post. And what is interesting -- and, you know, I just think that, you know, the patent -- it's not the Patent Office's job, I think, to come up and promote those institutions. But what's -- but I think the FTC, from a kind of broader perspective about welfare, could really, I think, promote and design rules that really encourage much more active actual markets.

So, I don't want to overstay the time, but one example I think is very powerful is that the biotechnology industry organization has really created probably the richest, most vibrant single market that exists around its

annual trade conference. Something like -- and I'm -- I don't want to over -- they have the number. They know that something, an absurd share of all deals consummated in the biotech industry are organized around the meeting, all the sellers are there, all the buyers are there. There is lots of trading. There is lots of thinking about what the alternatives are. And all of it is ex-ante, from my definition, ex-ante contracting. That powerful social mechanism is, I would bet you just going to Bob's earlier point about what was done in other industries, I think we know by design, because you have to know about it, you have to see it. We know that that sort of kind of active marketplace for ideas is -- or technology, is really not present in many other sectors where it could be incredibly powerful.

MR. SCHRAG: Yeah. And I think one thing we'd like to just throw out is people's views on why -- what are the impediments to that marketplace developing in so many contexts --

MR. ARORA: So, I mean --

MR. SCHRAG: -- Ashish, maybe you want to --

MR. ARORA: -- I just bought a house in Durham, and within -- within a few days anybody in the world could log on to the Durham County website find whom I bought it from, how much I paid, what the house looks like. If this

is truly property we, you know, how hard would it be to say, okay, register it. One way to do it is to charge a small tax. Charge a tiny tax. The reason the government does all this is because I have to pay them a tax when I buy a house. Charge them a tax. It won't, you know, it won't be prohibitive if it's a small fraction. And it will get the data going, and you get comparables.

And I know it's, you know, these things are not exactly like, you know, real estate, but you get a market in old masters. You know, there is some sense of what a van Gogh is supposed to be worth. I find it impossible to believe that we cannot, therefore, figure out what technology is supposed to be worth.

MR. SCHRAG: And, Ashish, maybe you can comment on what we would have to have in that registry from your perspective, and frequently technology licenses are very complicated animals.

MR. ARORA: You're right.

MR. SCHRAG: It can be hard to reduce them to --

MR. ARORA: Sure, I mean, so, you know, Herb Simon was the reigning deity at Carnegie Mellon, would always -- always say, "And what have you got?" And, you know, which is something beats nothing. So, we can have a discussion of what should be there, but something should be there. And let's not stop this idea that just because we cannot get the

perfect what should be there from doing something.

I'm a big believer of let's do it, let's figure out, you know, marinate. We'll see what works and we'll see, you know, which pieces of data are useless. It's hard to judge these things in advance.

MR. SCHRAG: I think Bob and then Scott.

MR. HUNT: I just want to follow up on something that Scott had said. The sort of marketplace definition you had in your mind is sort of like a central exchange.

MR. STERN: Yeah.

MR. HUNT: Right? Most of the transactions that go on are actually what I would call over the counter, these bilateral exchanges. It's not obvious that we want to direct this kind of activity from one of these forms of transfer to another. I mean, we observe both of these in financial markets. I can think of one over-the-counter market that failed dismally recently, but that doesn't mean that all, you know, contracts should be exchanged on a centralized exchange.

That said, if we're in the game of collecting data, we have to understand that the -- it's particularly hard to get the data on the bilateral transactions. And, so, something like Ashish's suggestion about a tax is kind of intriguing.

I think if you go about 10 years ago there is a

great paper to be written about when the Copyright Office had to set that fee for content, digital -- digital content, and there is all this debate about how high the fee would be. And I remember making the argument that if the fee was greater than zero it would create a market because somebody would have to figure out how to do the transactions, and before that there was no revenue to justify those investments. And it's, you know, let's follow up and see what happened. Even if we got the price wrong.

MR. SCHRAG: Just to make sure I understand before we go to Scott, when you talk about imposing a tax, you're talking about imposing the tax on the transactions --

MR. ARORA: No, on the property.

MR. SCHRAG: -- themselves or on owning the patent?

MR. ARORA: The property.

MR. SCHRAG: Okay.

MR. ARORA: On the property.

MR. SCHRAG: Okay.

MR. STERN: So, just to give you, I think, one example that I think actually has kind of worked, and you know, Scott and I have both debated about this before, but I think we'll agree on this part, is the evolution just in the last few years of much more transparent simple license approaches to university-to-university transactions over

patented biological and physical materials. That was, right, a bunch of years ago, was, you know, would have been 80 percent of the, you know, or some great share of debate would have been, you know, are we destroying our universities with too many patents? Right?

That has alleviated, in part, because there were real institutional responses in which a single contractual solution kind of overcame, and the fact that there was a bit of coordination at an institution-building level across the universities, really made for much more effective transactions. And I, once again, I wouldn't say it's completely solved, but it's much, much better. And we have a recent paper looking at some of the stuff that NIH did in that area recently.

Key point, though, I would certainly agree with Bob that we don't want to favor necessarily centralized exchanges over bilateral transactions in the broadest sense. But the fact that we're talking, if you believe the numbers, as best as I can tell, three order of magnitude difference in the propensity probably says there are just, you know, we really don't have these markets. We have -- we have something that is very different than an exchange system. We have very -- right? And exchanges require institutions, and last time I checked, maybe I'm very wrong, but it is the scope of activity of the Federal Reserve Board and the SEC

to manage our financial markets, just the amount of people we put in, the amount of institution we do is actually just scoped much bigger than what we, by orders of magnitude, to what we do around the innovation area. And you can imagine putting considerable public effort to doing that. To really helping build those regulations and helping build those exchanges, helping provide laws and tax treatment, helping provide registries, and all of those are very good public functions that would enhance the notice function and reduce that uncertainty and lead to more of that efficient ex-ante mode.

MR. SCHRAG: Scott, since Scott said that you agreed with him, I suppose we should give you the opportunity.

MR. KIEFF: Oh, no, I do. I mean, I didn't want to take time away, I do.

MR. SCHRAG: Okay. Perfect agreement, good. Okay. I guess one issue that we might want to think about, or talk about, is if -- if notifications are made mandatory, you know, if licensing terms are required to be revealed, does that potentially have any negative effects in the licensing world, and will that chill other, you know, gains of trade from occurring?

MR. KIEFF: Yeah, I mean, I think that ironically we're in a world now -- so -- so, you know, the Quanta case

is a case that talks about how -- well, one way to read the case is that it doesn't say anything about anything other than the contract in that case. I think then why did the Supreme Court take it?

So, if it really makes broad pronouncements about so-called patent exhaustion or for sale, then what it really is doing is the opposite of what you are saying which is saying a whole set of contract terms that people cannot strike, and that is only going to further shroud deals that people are striking.

So, I think MedImmune, for example, does that. What MedImmune does is it allows one side in a patent license to always renegotiate. Everybody knows that a -- if one side of a contract can renegotiate, it's not a contract. So, what you're going to do today after MedImmune is engaged in a deal that is not in any way connected to a patent and then a side deal that is a patent license, so that if that goes away, you still have your real deal on the table. Put differently, the need to increase transparency that I think is motivating your question is being frustrated by the changes we're seeing, I think that that having been said, rules that would require more transparency might also have problems because there are rational reasons why people don't want to reveal the complete details of their deals to their competitors, these are their legitimate trade secrets.

It's easy to imagine in a theoretically efficient world where everybody does the same thing. But no one would want to live in that world. And, so, those variations are the ways in which different business models exist. And you would take those away if everybody had to reveal everything they were doing to all of their competitors.

MR. SCHRAG: Bob, did you want to comment?

MR. HUNT: The one thing that I wonder about is take the example Jim was using where you're using a patent as a way of perfecting a know-how transfer. And by disclosing sort of the pricing information, you're actually disclosing some aspect about the know-how that is being transferred that's dissipating the benefits of this bilateral trade in the first place. These are the kinds of things that you have to worry a little bit about.

Especially if you're sort of tracking these things through time. Not just this transaction but the next transaction and the one after that, that this is where firms might -- there are issues about strategy through time that are going to be different when these things are disclosed and not disclosed, and you have to think very deeply about that, when the transaction is really about a lot more than just the underlying patent.

Because if it's just about the patent, well, the whole thing has already been disclosed in the document.

And, so, that is a relatively transparent example. But it's not obvious to me that that is the important example in all of this.

MR. ARORA: So, can I respond? I mean, typically where these sorts of concerns are the least because when -- when this is happening -- so, you know, let me think of the example that I -- that I know best is something like, you know, polypropylene process being licensed. Everybody knows it, everybody knows that, you know, there are three or four parties that have this kind of technology, that have this kind of know-how. They sort of know what the deals look like. And I don't think -- if you -- if you ask these people are you concerned about this, they say yes. But does it really matter?

You know, all the evidence that I've seen is people have a pretty good idea what those deals are and so you may not know to the last penny what was done or what exactly is involved or how they're going to supply the catalyst but, you know, I don't think there is that much. So, my guess is -- and just if somebody was really concerned, so, if this was another kind of deal what would they do? They say I don't want to discuss it, let me buy this guy out. If you're that bothered that is what will happen.

So, but we'll -- the plus side for me is you want

to get a market, you have got to get this information going. You've got to have some notion of, well --

MR. STERN: Price.

MR. ARORA: -- price. Some kind of price discovery mechanism.

MR. SCHRAG: Although, to the extent that the patent is functioning, you know, as a coordinating device or as a vehicle to promote the transfer of the know-how, is the price, essentially the price of a bundled -- it's the price of a bundle and it's hard to decompose or is that even important to be able to --

MR. ARORA: Well, my response would be the same happens when you see a house being bought. You know, how much was the land, was the house furnished, do they have this? You figure it out. I mean, you know, if it's important, people will figure it out. I don't think those are sort of big barriers.

MR. STERN: Right. I think probably the best information we have about what the prices of patents are are the patent pools. Right? There are many more of them now. And those are fairly -- right, those are, effectively, are fair -- to first order fairly transparent because they are essentially a price list for different types of users, for different types of rights, and basically it's a published list.

And I think that some the transparency is a policy issue, right, that to satisfy the antitrust concerns about the patent pool, there is some requirement that as a marketing tool, you have to sort of explain what it is and everybody has to know what it is presumably because of your review and others. I might be wrong. You guys --

MR. SCHRAG: Suzanne probably knows more about that than I do, but --

MS. MICHEL: Yeah, I think they have fairly transparent websites and the industry is pretty clear. I'm not -- not everybody -- if you're a participant, you don't necessarily pay the same price as others.

MR. STERN: But I want to say, I mean, you can see it in, you know, the research. Right? This is where the light shines down. It's for sure true that in the last seven and eight years, the numbers of papers written and the easiness of getting data about patent pools --

MS. MICHEL: Yes.

MR. STERN: -- is dramatically easier than everything else. And that is an area where you really do see something like a, you know, there is separate issues that you worry about the formation of the patent pool, let's put that aside for a second. But patent pools certainly provide a transparent pricing mechanism.

MS. MICHEL: And it's fairly straightforward in

that you're really just getting the patent license.

MR. STERN: Yeah. Yeah.

MS. MICHEL: You're not getting a lot of --

MR. STERN: There's a -- yeah. Yeah. This will be different --

MS. MICHEL: -- technology.

MR. STERN: -- than the know-how piece, right.

MR. SCHRAG: Yeah, Jim.

MR. BESSEN: Yeah. I mean, patent pools are all the very selective group because they're largely standard-setting organizations.

MR. STERN: Absolutely.

MR. BESSEN: But the point -- the point I wanted to make it just seems to me there is a big continuum. That -- that, you know, when we're talking about a market as opposed to a bilateral deal, we're talking about something that happens frequently, that there is some element of standardization.

When you talk about complex one-off deals, the notion of price may be highly contingent and complex, and there is no single number that is going to go with it. It's going to all depend on how different things work out. And, so, I -- you know, maybe the place to start looking is some of the more standard -- you know, standardized or commoditized aspects, and maybe that is why embedded

technology transfers, which I think, by the way, may make the market look a lot larger than some of the earlier figures, might be a place to start because, you know, there you've got more of the conditions where there is going to be a competitive market.

MR. SCHRAG: Okay. Scott, did you want to --

MR. KIEFF: Yeah. Two -- two kind of follow-ons to what some things Ashish has been mentioning that I recognize could be to some extent controversial, but I don't want to make the strong form of the point, which is to say that these prove a whole lot, but I think that they say something that I think is overlooked in the literature.

So, the first one is Ashish mentions the polypropylene in the industry, and it is worth remembering that that industry, I mean, it's, you know, as we all saw in The Graduate, that has been a big industry for a long time. And it was an industry with, I think, a 25-year -- Herb, you may remember, 25-year lag from filing to issuance, is that about right? Yeah. I mean, so 25 years is a long time submarining. Right? With continuation practice that was, you know, it wasn't Jerry Lemelson, it was a large company, but -- but it was submarining, continuing, changing, 25 years, shock and awe, surprise, hold-up troll, and yet the industry worked pretty well, and continues to work pretty well. So, that's just one kind of -- and that is true, by

the way, with polyethylene and that is true with gasoline cracking and, I mean, we can go through a range of industries where there may be, indeed, problems with -- with notice and shock from the submarine surfacing.

But as I think Herb correctly pointed out, 18-month publication goes a long way towards solving that problem. And in almost all of those examples, there was 18-month publication on the European counterpart. And every good patent attorney for a potential infringer was reading the European counterpart application that was filed, developing her own understanding of the eventual claim scope that was going to issue, and that was facilitating the bargaining between those parties. So, there are ways to solve those problems and actual human beings have been using those ways. So, that is the polyethylene, polypropylene build-on.

On the real estate build-on, I think a lot of people make a lot of hay about the difference between so-called tangible assets like real estate and so-called intangible assets like patents. And I think this is implicit in part of what Jim was using, was mentioning in his -- in his example of and maybe this is not your argument but certainly Peter Menell, for example, has made this argument that -- that boundaries for real estate, the cost possession is nine-tenths of the law, as everyone learns in

kindergarten, for stuff you can touch. Those tangible assets have a fundamental built-in advantage for transacting, and people can transact better with those than they can over these legally defined rights. So, I agree with that, that it's got to be true. It has palpable appeal to us all.

But then I realize -- and I'm in the process of moving to Washington and buying real estate -- I think everyone in this room who either owns real estate or has transacted over real estate has a set of easements on their deeds and I bet you none of us understands them. I know I don't. I didn't even read them. And I bet you most of you don't. And yet they're commercially hugely significant. I mean, power companies couldn't get their business done, cable TV companies, condominium units, co-ops. There's an immense amount of successful transacting over legally defined property rights called easements that are not tangible in any way and yet those markets flourish.

Now, they're hugely imperfect and the market for patents is hugely imperfect. There's an amazing amount of uncertainty in the market for patents, there is an amazing amount of uncertainty in the markets for easements. But they work. And I think that we need -- we need to really remember that. And I'll just stop by saying I think Adam Mossoff has done some writing on that point. And, so, he is

a professor at George Mason. You can read his stuff. But he's that -- that connection between markets for easements and uncertainty over easements and market for patents.

MR. SCHRAG: Jim, did you --

MR. BESSEN: Yeah, I would say there may be a generic point that tangible assets are easier -- it's easier to define the boundaries of tangible assets but there are plenty of markets for tangible assets that don't work. You know, a very large portion of the real estate of the entire world is possessed by squatters. You know, those are property systems that are -- that are not functioning well, you can look at.

MR. ARORA: No, they do. They work well. It's just not within the official ambit.

MR. BESSEN: The official, the legal property. Right. Well, and you have someone like DeSoto who will argue that it is really -- tremendously limits the potential because that is not being a legal property, it can't be used for collateral, it can't be used --

MR. ARORA: Sure. Yes.

MR. BESSEN: You know, you can look at other minerals where there is similar problems. But, you know, just because it's property doesn't mean it works.

MR. KIEFF: Yeah. No. No. I'm just responding to --

MR. BESSEN: Right. Right.

MR. KIEFF: I'm not making the point, I'm responding to the point.

MR. BESSEN: Yeah. Yeah.

MR. SCHRAG: Okay. I think Bob raised a question in his talk that I thought might be useful to turn to, and it sort of dovetails with some of the evidence other people have given. Namely, that R&D seems to be becoming more deconcentrated and, you know, there is more specialization, people who aren't necessarily planning on entering the product market. And you raised the question of whether IP rules are optimally structured for that kind of model. I don't know if you had an answer in mind and specific policy ideas, you know, for how to optimally adjust policy to -- to address that.

MR. HUNT: Let me make two points. One is that, you know, for a long time people have argued that patents are a big company game, that this is sort of a high cost property rights system to use and comprehend. And in some sense that kind of works against small companies. And if it's the case that we are getting more and more of our productive R&D from smaller firms, then we certainly want to think about whether, if that was true in the past, it's still true now, and we would want to try to mitigate that.

The obvious thing in my mind is that -- is this

issue of being able to read patent claims and know where the property rights begin and end. Because, you know, it would be nice to say, well, okay, I'm a small businessman. At least I could go hire a patent attorney and he can tell me or she can tell me, but as we were hearing earlier today when, in fact, we don't know until the Federal Circuit has rendered its opinion on these things. That does not strike me as a model that is particularly useful for small firms.

And if there is anything that we could do about that, and this really is -- this is, you know, the economists are really hamstrung here because it's not a language that we use, that we know very well. This is an area where we need to work.

MR. SCHRAG: Fortunately, we do have a lawyer on the panel.

MR. KIEFF: Well, I think these are great points. So, I mean, I think these are the right questions to ask. I applaud them but I think that when you look, for example, at the different ways the patent system and copyright systems address these issues you get some purchase on, I think, the question you're asking. So, for example, the copyright system has statutory fair use rules and statutory damages rules and jail time, criminal rules. That's the expected outcome from political consensus, right? That's the way you get the content providers to have comfort because they get

to use the big guns of the federal government, criminal prosecutors, and the big guns of the statute on statutory damages to give them comfort. And that is the way the so-called fair use people get comfort is because then they have written into the statute what is fair.

So, those two interest groups got exactly what they wanted out of that deal. But that is locked in a set of business models that now contracting parties can't contract around. So, if I try to say to you, please give me content that might be within my fair use rights, and I'd like to pay you 10 cents for it, or nine cents, or one-tenth of a cent, right, any business model where the value is greater than zero it's illegal because it's preempted by the fair use statute.

So, you lock in business models. That is the way fair use, right -- the way fair use works is there is a statute that says what is fair. And the way preemption law works is federal preempts whatever is state and contract law is state. So, I cannot, under state contract law, promise to pay you something that the federal government says I get for free. You're looking skeptical at that, but --

MS. MICHEL: I'm just thinking it would have to be the purchaser who would later move to invalidate his own contract. Nobody else.

MR. KIEFF: No. No. Remember, a competitor

business model can argue that those contracts are void as against public policy, and that would be the argument in an antitrust complaint, an unfair competition complaint, or any one of another -- a whole range of complaints that could be brought. And, by the way, the competitor may decide ex-post to make that argument, which is, in fact, why a lot of sellers aren't selling to those customers because they are not -- they're non-enforceable promises. So, it just gives sellers and third parties free options to challenge. So, that is the copyright approach.

The patent approach is very different. There's no fair use or very, very limited. But the costs of enforcement are borne entirely by the property owner. Right? The federal government won't put you in jail for infringing a patent, and nor are there statutory damages. The property owner has to bring suit, has to win the suit, and then has to prove damages. And what you see is radical under enforcement in the patent system.

Now, Scott and I debate, and others debate about the extent of this under enforcement. But Ashish and -- I'm now forgetting --

MR. ARORA: Wes Cohen.

MR. KIEFF: There's -- yes.

MR. ARORA: Wes Cohen.

MR. KIEFF: Wes Cohen, but then also --

MR. ARORA: John Walsh.

MR. KIEFF: -- John Walsh, thank you, have done ranges of study that show that, in fact, the fear that so-called basic academics would be sued for infringing patents has been the kind of fear that keeps people from flying airplanes in the commercial sector, an irrational fear. Right?

Because it turns out there is an incredibly small number of enforcement cases brought against anyone affiliated with the university even for commercial activities, let alone basic science activities. And on their basic science activities that is because the costs of enforcement are very, very high and borne by the property owner. And the benefit of actually bringing the suit are you'll prove your damages against, you know, a basic academic scientist and get 17 cents or $17,000. But the cost of the lawsuit is 3 to 5 million. No one spends 3 to 5 million to get 17,000.

MR. SCHRAG: Jim.

MR. BESSEN: Yeah, of course if that technology turns out to be useful, it's going to be sold to somebody downstream so, of course, it's economically rational for the property owner to not sue the academic but to sue the downstream user. But in that case we're getting typically an ex-post lawsuit.

MR. KIEFF: Yes, you do, absolutely, but then you raise the problem of Research in Motion where everybody looks at a case like that and says this is ex-post holdout. $600 million was the ultimate settlement, 620. That sounds like a lot of money. But early in the litigation, they were offered many, many times, not take it or leave it, but many, many times 1/100 of that amount, five, six, seven million dollars. And, so, that is a stickiness, it's a five million, six million, seven million dollar tax on society, I guess. But it's 1/100 of the so-called tax on society of the settlement, number one.

Number two, as Ashish mentioned, we must remember the market for corporate control and we almost always forget it in these discussions about the markets for patents. And, so, $600 million sounds like a lot. It's about half the market estimate of the settlement value of the case which was a billion, it's a third of the cash reserves Research in Motion had set aside to settle the case, which were 1.8 billion.

And, in fact, if you had done a hostile takeover of Research in Motion, by buying the entire public float of stock at a premium, settled the case for the billion dollar number, paid 100 million in legal and accounting fees, and then sold the shares back to the public at the 52-week high, which the stock went to the day after it settled and stayed

at for years, I mean, it's not at now, but no stock is, and stayed at, you would have made a 30 to 40 percent return on investment. Okay?

And, so, I think that while we recognize that there is stickiness, and while we recognize there is imperfections, we have to look at magnitudes. It's a $6 million dollar imperfection that then the alleged infringer took advantage of because they were ultimately happy to pay 100 times that because that was still less than what the market would have borne. So, you know, very, very complex settings here. Before we dive into what are admittedly problems on clarity and ex-post holdout, those are problems but they're tiny problems.

MR. SCHRAG: Scott.

MR. STERN: So, let me both comment but come back to your original question, which is, you know, if I get it exactly right, it's sort of what can we do as a policy matter to reinforce the opportunities from technology entrepreneurship? And, you know, what role does the IP system play in that?

And let me just make, you know, sort of two comments. The first is that if we weren't in this building but we were at the Venture Capital Association or the National Academies which is just down the street, right, every single time I go over there, they talk about this

valley of death. It's very easy to get things funded in a university, to max out your grandma's credit card, it's actually -- there is a certain amount of angel financing. The U.S. is way ahead of everyone else in that, but there seems to be some disaster there. There's pretty much still a disaster in series A financing.

And then once you kind of get going, you have a few patents issued, whatever, you know, in the work that we've done and a bunch of people around here have done, you know, things, you know, once you get up to where you've got, you know, 10 or $15 million of capital working for you, then things sort of get going.

It seems that that problem is general. That there really does seem to be this, in the data, problem of translating people from the very smallest level of they have an idea, they're in the garage, they've figured out their intermittent windshield wiper, to being able to get the set of corporate resources and institutions that get that, or, you know, make them viable entities either in the market for technology or has potential product market competitors.

I would think that the patent system per se, and this, I think, is consistent with what Bob was talking about before, will pay -- you could do a little bit on the pure patent side there, but I think more generally you need to sort of reform something around the corporate governance

forms for supporting those types of organizations and there have been a few. Right?

So, venture capitalists have sort of tried a bunch of models to make this more effective. The SBIR spends an absurd amount of money and time trying to encourage this type of activity to only probably limited effect. The question is, how do we nurture promising ideas and find their best application when the knowledge of what those best ideas are and the resources to bring them to bear are just -- are remote from the viewpoint of the invention?

The patent system will do a, you know, can do something there. But I think you would actually have to really grapple with broader institutional shifts. Let me just raise one, just as, you know, kind of one thing is, I'm not a huge, huge fan of science parks around universities as an investment for those universities. But at least they seem to do a bit of this. That, you know, I think some of the work the Kaufman Foundation has been thinking about, about really expanding how we think about the institutional design of the technology transfer function from universities. Not having this kind of monopolist, not particularly well working TLO, but sort of, kind of, maybe having competition among TLOs to work with the academics. That would be the sort of institutional shift that really is not the IP system in the narrow sense but is an

institutional response to this valley of death piece, which I do think is probably the single pain point on the highest loss of social efficiency from those two pieces.

MR. KIEFF: To just build on that, if I may. I mean, so, I -- I think that that is an exceptionally important set of points and, in fact, goes to address part of what Jim was correctly pointing out are anxieties about after you do your basic research and then want to go commercialize it, are you going to be worried about getting sued for patent infringement? Are you going to get your own patents? Are you going to be worried about raising your own investors? And I think that one thing that government could do is -- is really help coordinate information on those ideas, to talk about best practices, to encourage state legal regimes that might otherwise be antithetical to some of the institutional solutions that Scott is suggesting. You, as the federal government, could at least communicate and coordinate conversations among those states to see why they disagree and maybe to help explain to them why they might want to change their minds.

So, you know, one is the parks that Scott is discussing, another are the rules that might out -- outright prohibit or at least discourage lawyers from -- lawyers and other professionals from taking alternative fee arrangements with early-stage companies or teams which is basically what

you need to have happen because those early stage players often don't have the cash to pay regular legal fees, but there still are very valuable lawyers available to help work with them on what really will be an act of infringement and what won't be. What will be an act of infringement they're likely to get sued for, and what will be an act of infringement they're not likely to get sued for.

How they could get their own patents and whether it's worth spending that money or not. Whether it's better to get a big portfolio or a narrow but deep portfolio. Those are actually, when you talk to the valley of death people, the people who really suffer it and who really reach across it, those are almost all the solutions and then there are some others that are high purchase, high impact solutions, and none of those requires a change in the law, but they do require improving access to legal and business knowledge and legal and business skills. That's a role that you could play that would be wonderful.

MR. SCHRAG: Bob.

MR. HUNT: I think we want to distinguish between two things. One is that there is this selection problem that anybody in this business has to do, which is to identify the promising technology and the promising entrepreneur. And that is really about how you -- how you finance these things. I would think that in some sense the

U.S. is the envy of the world in how well we do that. And there is lots of countries that spend an inordinate amount of public money trying to replicate what we built and have had some success but not great success.

Then there is this sort of separate question which may be best put to the venture capitalists about sort of common risks to almost -- and they may vary by industry -- but common risks to all projects and entrepreneurs that may be created by the patent system, that maybe we can address somehow that lowers that hurdle rate for all of these projects and all of these entrepreneurs.

And if we had very good concrete answers about that, that is, you know, an area where -- that is what the public sector should be dealing with and then we can sort of -- we can let the financial innovators try and take care of the rest of that because that is an extremely, extremely hard problem, but fortunately one, I think, that we do fairly well in the U.S.

MR. SCHRAG: Yeah. Unfortunately, I think we're coming to the end of our time for our conversation. So, I guess people want to make a last comment, observation, any -- any final points?

MR. ARORA: Oh, I wanted to say one thing, a piece of information. There is a -- this is Bob Hunt's. We have been funded by the National Science Foundation and the

Kaufman Foundation to do a CIS-type survey.

MR. HUNT: Glad to hear it.

MR. ARORA: We're trying to get to some of these -- some of these issues.

MR. HUNT: Terrific.

MR. ARORA: It's nothing as extensive as CIS and participation is voluntary, but we're trying to get there.

MR. SCHRAG: Very good. Are there final comments?

MR. STERN: So, just, literally 10 seconds. It's like relative to the conversation we just had, I think that, I mean, she still needs to be, I guess, approved, whatever it is but, you know, Karen Mill's coming into the Small Business Administration, I think, really could -- right? So, the SBA, at least in my experience, has not been a player in these sorts of fights, either around VC or around certainly IP issues and Karen brings, I think, a wealth of experience around really thinking through the interaction between regional cluster policy, innovation, IP and entrepreneurship that is, you know, very unique for that agency and gives, you know, some opportunities, I think, for the agency, for our competition policy agencies, our intellectual property agencies to cohere with somebody who is thinking about the entrepreneurship piece in theory and practice.

MR. SCHRAG: All right. Other final comments?

Seeing none, thank you very much for participating. This was terrific and we couldn't do these kinds of projects without the contributions of people like you, so, thank you very much.

(Applause.)

MR. SCHRAG: And we will reconvene at 1:00 for a panel on notice.

PANEL 2: FULFILLING THE PATENT SYSTEM'S PUBLIC NOTICE FUNCTION

MR. ADKINSON: Welcome back to this afternoon's session, and welcome especially to those who are looking at -- us on the webcast, and who will be looking at the webcast in future dates. It's on our website.

My name is Bill Adkinson. I work in the Office of Policy Studies in the General Counsel's office. I'm really pleased to introduce this afternoon's panel. It's going to address the patent system, whether it adequately fulfills its notice function. For example, whether it assures that firms that are seeking to develop and introduce technologies can obtain clear and reliable information regarding the existence and scope of patent rights that might cover those technologies. They're going to look at legal standards governing things such as claim construction rules. And also the examination, practice and procedures that affect notice. And consider possible reforms to those processes.

We have an extraordinarily distinguished panel here today, and I'm going to introduce them very briefly. Bob Armitage serves as the Senior Vice President and General Counsel for Eli Lilly and Company, and he is a member of the company's Executive Committee. Prior to joining Lilly, Mr. Armitage was a partner at Vinson and Elkins, and before that, he was Chief Intellectual Property Counsel for Upjohn.

Among his many leadership positions in the patent bar, he is a past president of the American Intellectual Property Law Association, and he currently is a member of the council for the ABA's Intellectual Property Law section.

Rob Clarke is the Director of the Office of Patent Legal Administration under the Deputy Commissioner for patent examination policy at the PTO. Mr. Clarke began his career at the PTO in 1990 as a Patent Examiner and started his tenure at OPLA in 1999 as a Legal Advisor. In 2005, he was named Deputy Director and was appointed to his current position in 2007. Among his awards, Mr. Clarke has received two Department of Commerce Silver Medals, one in 2001 for his efforts in implementing the American Inventors Protection Act and the second in 2004 for his work related to patent examination in the electronic environment.

Then we also have Professor Chris Cotropia who is an Assistant Professor of Law at the University of Richmond Law School, and is a member of the school's Intellectual Property Law Institute. He teaches intellectual property law and related subjects. He has authored numerous articles and books on patent law and has testified before the Senate Judiciary Committee and the U.S. ITC.

We have David Kappos who is Vice President and Assistant General Counsel for Intellectual Property Law and Strategy for IBM Corporation. Mr. Kappos directs IBM's

intellectual property law function providing legal counsel over all facets of protecting and licensing IBM's intellectual property assets. And he leads IBM's engagement in intellectual property law policy issues, as well as setting legal strategy for the company's business units.

Steve Kunin is a partner at Oblon, Spivak, McClelland, Maier & Neustadt, where he serves as a patent consultant who advises clients on patent prosecution and policy matters, prepares infringement and non-infringement opinions, and serves as an expert witness on patent law. He previously was Deputy Commissioner for Patent Examination Policy with the PTO from 2000-2004. And he served in a similar capacity since 1994. He received many awards for his service at the PTO, including a U.S. PTO Career Achievement Award and the Vice President's Reinventing Government Hammer Award. Mr. Kunin also serves as the Intellectual Property Program Director at the George Mason School of Law, where he teaches patent law.

Michael Messinger is the Director of the Electronics Group at the intellectual property law firm of Sterne, Kessler, Goldstein & Fox, where he works with company managers, directors and employees to identify and leverage intellectual property assets. He has extensive experience prosecuting U.S. and international patent applications and developing strategic patent portfolios.

Previously, Mr. Messinger worked as a Patent Examiner at the PTO.

Professor Arti Rai is the Elvin R. Latty Professor of Law at Duke Law School, where she has taught since 2003. She is an authority in patent law, administrative law, and the law of the biopharmaceutical industry. She -- her current research on innovation policy in areas such as green technology, drug development and software is funded by NIH, the Kaufman Foundation and Chatham House. She is published widely and is currently editing a book on intellectual property rights and biotechnology. She is currently chair of the Intellectual Property Committee of the ABA's administrative law section.

And finally, we have Terry Rea, who is a partner at the Washington, D.C., office of Crowell & Moring, and is a member of the Intellectual Property Section. Terry focuses on complex patent litigation, as well as procurement and portfolio management. She focuses her practice on biotechnology, pharmaceutical chemistry and related fields. She has been named to the Best Lawyers in America for Biotechnology and currently is the president of American Intellectual Property Law Association.

So, with that, we will begin our panel.

MR. COHEN: Thank you, Bill. I think the way to begin is with a broad question. I'm going to ask you all

how you feel about how well the patent system is fulfilling the notice function. But before I do that, I've got to take advantage of this. I have been a competition lawyer, by background, and have never been able to use this word orally, but the patent system gives me this opportunity. I could be my own "lexicographer" here, and say that by notice systems, so we're all on the same wavelength, we're talking about enabling third parties to know what patents and patent applications cover.

So, I guess the opening question is, how well do you feel the patent system fulfills this function, and does your answer vary from industry to industry or from technology to technology?

As you go -- yeah, Stephen has been here before, he knows the drill. If you want to comment on something, turn your nameplate up. Steve? Stephen?

MR. KUNIN: I'd like to make three brief comments. I think that there are areas where the notice function really does fail. First, in the current situation at the Patent and Trademark Office, where we have a very large number of applications which are published at 18 months as unexamined applications, and because of the de facto deferred examination by virtue of nearly 800,000 unexamined applications, that with respect to the claims in these published applications, and the lack of certainty as to what

will be the fate of those applications and claims, I do believe that that is a severe notice function problem.

Second, where there are a very large number of commonly owned patents which have a very large number of claims, some people refer to as patent thickets, that the notice fails because of the extreme difficulty of having to navigate large numbers of patents that are related in conflicting claims, to try to figure out what your position is as a third party.

And then finally in some fields of technology in certain types of claiming, claims that are written in fairly abstract form, both as to pure functionality and written more from the standpoint of what the invention does as opposed to what the invention is, that those levels of abstraction in claims again make it very difficult to know what the claims cover and what you may have to do to avoid infringement.

MR. COHEN: Arti?

MS. RAI: So, I know you acted as your own lexicographer, Bill, but I will perhaps add to your definitional statements by noting that even though sometimes the issue of notice is confused with breadth, we should be clear that those are two distinct questions.

Breadth can often be -- or excessive breadth can often be correlated with lack of notice. But it's not the

same thing. And it's important to keep that in mind as we go forward because in biotech, for example, there can be situations of excessive breadth, with Markush claiming, for example, perhaps, arguably, but the problem is not lack of clarity, it's perhaps just excessive breadth. And I know that is an issue that the PTO has been thinking about of late, and so just to put that on the table.

The second thing that in terms of just definitional stuff that I want to note is that I think it's really important to focus also on sheer numbers. Now, you've talked about enabling a third party to know, which suggests that it's the -- the, as Steve suggests, and I think he is right about this, that it's the way the language is drafted. But as a practical matter, we're also talking about sheer numbers.

How much do we want to -- how much effort do we want to require parties to engage in to examine patents, and if it's -- if there are literally thousands and thousands of patents out there, even if they're terribly clear, there is a sense in which the notice function is not exactly failing. But there is something wrong if you have to clear thousands and thousands of patents for any given invention, I think, anyway.

And particularly because there is evidence that in some industries, at least, there is a tendency to file

patents, you know, by the thousands every year. And one of the very interesting suggestions that was put forward to me by somebody from an IT company, and I thought this was -- it was a Nixon going to China almost -- I thought it was very interesting -- would be some sort of system where the fee structure was explicitly set up to discourage the filing of more than say 1,000 applications a year. Or maybe perhaps it wouldn't be -- there would be no sharp distinctions between a 500 or 1,000, but it would almost be like a progressive taxation scheme.

And I thought that even though that is numbers as opposed to lack of clarity of claims, at the end of the day, when the numbers are so large, you're not going to -- even if -- even if the claim language is fairly clear, I don't think you're going to get much efficiency in the system unless you reduce the numbers. And that is it.

MR. COHEN: Mike?

MR. MESSINGER: Hello. I just wanted to sort of add a perspective. And I agree with a lot of what Stephen was commenting in terms of large numbers of patents that have to be assessed, and that is a part of large numbers of unexamined applications where the Patent Office needs resources. And that is part of looking at a notice. But I thought it might be helpful for the panel to also begin this discussion thinking about, with some insight on how these

actual patent portfolios are created. And I work with a number of companies, small, emerging, and large companies, that are basically looking at their product development, their research, preparing to commercialize and getting in the marketplace, and they're actually building these patent portfolios.

And what I find is with the existing -- a lot of the existing doctrines that hopefully we'll get into today on written description, enablement, claim construction, some of those kinds of issues, that there is some strong incentives in the current system to basically prepare a very well drafted patent, prosecute it very well, avoid ambiguity. The more certainty and clarity and specificity that is in the document, in the patent portfolio, which will put the public on better notice, it actually creates far more beneficial business situations where you're able to get the license you want, and that kind of thing.

So, what I find, with a lot of the companies, is these incentives are pretty significant. And in the regular course of business there are many situations where both parties are looking at groups of patents, often backed by very credible technology. And then they're sort of looking at the patents with a reasonable appraisal of the rights. With an understanding of where the technology came from, they're able to make appropriate business decisions on it.

And, so, I welcome the FTC looking at this -- this issue of notice and trying to come up with a good balance on promoting innovation, at the same time encouraging competition. And I hope we can go forward looking at sort of all the companies. The practicing entities, if you will, that are really relying on the patent system.

MR. COHEN: Bob, you have experience in the pharmaceutical area. Maybe you can talk about that.

MR. ARMITAGE: I might start maybe with a few more general comments, if that is okay. Because I think there is possibly one framing concept that is worth considering. We don't, in my view, and shouldn't, in my view, aspire to perfect notice. And let me explain what I mean.

We have a patent system that I think best functions when the notice requirement is analogized to defining the metes and bounds of the invention in the same way we, in a real property sense, think of defining the metes and bounds of a piece of land.

My wife, occasionally, takes me to antique shows. And sure enough this week we went to the Indiana state fairgrounds, went to an antique show. And I was looking at antique maps. And I was particularly looking at antique maps of Michigan. And I was noticing that the older the map was and the less charted the territory was, the less the State of Michigan looked like, you know, sort of raise your

hand and hold your thumb up. And I know today in the Midwest, being laid out in a perfect grid, that a place that is well defined topologically, a place that has been well surveyed, you can draw extremely accurate metes and bounds.

But by definition, when you're entering a new territory and you've got totally new ideas, it may be that like surveying tools don't work very well when the maps are not very good, that the most you can expect is a fair and reasonable approximation of what those metes and bounds are. So, I would urge us, as we talk about notice, and the idea of metes and bounds being well defined, for us to remember that innovation, by its nature, has some uncertainty associated with it.

Now, I'm going to make three points because it seems that is the norm everyone should make. So, that would be point one.

Point two, this -- this issue of whether the notice requirement is being well satisfied is not independent from the issue of validity of patents. And at least in my experience, which continues to the present day, even though I don't spend every day most of the day looking at patents anymore, if I pick up a patent and look at the claims and ignore the claims that I believe are invalid and could never be enforced, many of them are overly broad, others clearly are not designed in a way I believe that

rigorous application of all the requirements that patent validity would lead to their being sustained. If I throw those claims out and I look at the claims that are left that I believe are valid, then I think the notice requirement, by and large, is very well met in the current system.

And the difficulty we have in some situations is that you do pick up a patent. There was a time when I was Upjohn's -- Lilly's chief patent counsel, not that many years ago, that I picked up a patent on an emergency basis because I was being asked to go make some comments to the media about a patent that had issued that day. And I read through well over 100 claims, which takes some time, and I couldn't find a claim I ever thought a court would enforce. Now, I have no idea what those claims ultimately cover, but it's irrelevant.

In terms of multiplicity of patents, two weeks ago I picked up 10 patents that I needed on a very short notice to provide some guidance to our company. It was a patent owner who had decided to take one invention and patent it 10 times. There's nothing wrong with that. A huge multiplicity of claims. In a very short period of time, you can come to the conclusion that those claims that can be sustained, perfectly well defined notice requirement. Those claims that are abstract, exceedingly broad. Honestly, I perhaps don't know what they may cover, but if the patent

system works right, I shouldn't care.

Third point, and I believe Steve touched on this in one way, but let me touch on it in another way. I think, as technology has become more complicated, the 19th century model of patent examination needs to change. The patenting process today is, as Rob instructs his examiner, it's "patentable unless. In fact, I think that is the way Congress wrote the statute in 1952, it's "patentable unless."

We probably need to look at a patent as a petition to the government for the right to exclude others and at some point in the patenting process, there ought to be, incumbent on the petitioner, explaining the basis for the petition, the reason the patentability requirements are met. A "patentability because" paradigm is for patent examination.

And while this probably today is not a very popular view, I think looking at the crisis in patent examination today, the number of unexamined patent applications, the ability of patent owners to proliferate patents and proliferate the number of claims, rather than some exotic tax by those who get above a thousand or other mechanisms, simply having patent owners explain their invention is patentable, because I think it would be of enormous downstream benefit in analyzing those valid claims

and the basis for their patentability. And then it's when you understand the claim and the basis of patentability that I think the notice requirement is most easily understood for a novel invention.

MR. COHEN: David, would you like to contribute your perspectives?

MR. KAPPOS: Sure, trying to add comments beyond what has already been said here. So, I would take the discussion perhaps even a little bit higher than we have so far initially, at least from the viewpoint of the information technology industry, where -- where my practice is focused. And that starts with directly answering your question with the answer, yes, absolutely, very clearly, the notice function is not working as well as it should for the IT industry.

There is a significant problem in our industry with claims that come out of the U.S. PTO that are unclear, that are ambiguous. And those claims invariably lead to conflict, which -- undue amount of conflict which isn't good for the system, isn't good for clarity, doesn't lead to the ability to conduct business, forces all participants, at least in the information technology industry, to spend undue amounts of effort on dealing with conflict instead of employing people, investing in doing research and development to create more innovation. So, I think there

really is a problem, at least in our industry.

The second thing I'd say is that there actually is an incentive in our industry, at least -- in the information technology industry, there is an incentive to be as vague and ambiguous as you can with your claims. And it's really very well documented and, in fact, it's recommended by the folks who teach people how to write patent claims and who advocate in favor of producing patent claims that have the most ongoing downstream value. And so, you know, it shouldn't be surprising to us that when people are being taught to write vague and ambiguous claims, they're going to do that. When they're being told you'll get more value out of your patents if you write vague and ambiguous claims, they will do that. And it then, therefore, shouldn't be a surprise that we have the amount of conflict that we do in a system that works that way.

The last point I make at this juncture is to say that there really is, at the highest level, you know, a sort of enough responsibility to go around, where all parties who interact with the notice function of patents can and should play a role. And that includes applicants on whom, in my view, the, you know, lowest cost to avoid should be exacted. The U.S. PTO, obviously, can and should and needs to play a really important role, and I hope we'll get to talk about ways that that role can be improved.

And, then, of course, the court system, which has only recently, I think, started to focus significantly on the notice function, has a very important role to play. And in my view, it's when all three of the participants in the system are playing their role that the public will finally get patents that meet the metes and bounds requirements in the notice function at least in the IT industry that they don't now.

MR. COHEN: I'm going to pursue one of the points you made in just a couple minutes and that is the incentive to be vague, and how you extract -- how firms have been able to extract additional value from vagueness. But before doing that I want to give everybody else an opening opportunity to give their perspectives on the general question as to whether there is a notice problem. How about -- I see Chris has his sign up.

MR. COTROPIA: Yes, you know, first of all, I kind of second that I think the notice problem might not just be about being able to understand what claims mean, but the number of patents and the number of claims. So, there is another kind of aspect to that.

I do have two, kind of framing points and this kind of piggybacks off of Arti's point. There really is a real linkage between substantive rights and notice solutions. I think this is one thing that we shouldn't

lose, kind of, sight of is that while we try to perceive or get greater notice, you're going to also tinker with scopes of substantive rights. I think maybe there might be certain solutions where that doesn't happen, but I think we'll see that a lot of these doctrines we're talking about will have impacts on the scope of the substantive rights at issue.

And, so, kind of expanding that point to kind of what -- what Bob was saying, I think that is why we need to kind of figure out what is our main goal here. And maybe notice needs to be considered in the basket with, well, what kind of rights do we need to maintain the optimum incentive to invent? So, we're not just looking at notice by itself, but we're looking at notice in the context of its substantive effect.

The other kind of framing point, and I think this kind of goes with this idea, well, what do we mean by notice, if we're talking about notice to competitors, the assumption being kind of notice kind of prelitigation and, I guess, optimally, before they make giant investments that end up becoming burdens on them, then we need to think about, well, if we're going to have solutions for notice, where should they be? And I would make my push to say, well, I think ex-ante and upfront solutions, kind of front end solutions might be the better way to go, absent how costly they are, in a sense of being able to have a

situation where, when the patentee is able to provide more information, kind of Bob's idea of when during examination we can actually have some kind of feedback from the applicant, and you have a more, kind of a multiplier effect there in the sense of that would be information that would help everyone, as opposed to information that just gets produced during litigation.

So, those are just some framing points I'd like to make.

MR. COHEN: And Terry?

MS. REA: Thank you, Bill. I guess when I think of words, they're fascinating but they don't have the precision and elegance of numbers. So, in the notice world, I don't think we're ever going to have something, a hard and fast type rule. And I do agree with Mr. Armitage on that. We also have to keep in mind that words mean slightly different things to different people, and that our words are viewed from the perspective of one having ordinary skill in the art. And even that is subject to a level of flexibility.

And then beyond that, these patents have to survive for 20, 25 years in some cases, and the perspectives of one having ordinary skill in the art, even if they were originally defined and identified, as the art progresses, theories, attitudes progress, and words become even more

flexible.

One point that nobody has specifically addressed dead-on is there is very, very different perspectives in this panel when it comes to technologies. I'm actually a pharmacist, so I work in the life sciences, pharmaceuticals, biotech. Mr. Kappos works -- lives in a very different world from where I live. I don't -- when I do a clearance opinion, I don't have to look at a thousand patents and for that I am grateful. But for the most part I'm dealing with an oral tablet, where I'm looking at, you know, an active ingredient, a formulation, perhaps a method for administering that to a patient for a desired use. And there is not going to be very many patents covering that, anywhere from one to maybe 10, at maximum?

In the IT world, it's a very different world. If they're bringing a new computer to the market, the number of patents that would cover what they're working with is just phenomenal. There is no way you could have one patent examiner allowing you to put all the new inventions that were invented to bring that patent -- I mean, to bring that computer to market in one patent application. And therefore, maybe 1,000 patents do cover that particular application.

So, I do slightly differ from my respected colleague on my right that a tax on people who develop too

many patents and file too many patent applications perhaps is not the best and proper use of the system. But unfortunately, you have to look at the technology, you have to look at the product, you have to look at what is being protected. And so, the variations in our system is -- it's -- we're not going to come to any easy answers today. Different technologies are going to give you different answers, thank you.

MR. COHEN: Okay. Oh, we've got Robert. Bob.

MR. CLARKE: I just wanted to throw into the mix that this upfront petition process that a number of you have raised, we do have two very small-scale pilots ongoing at the Office, the pre-first action interview process, and the accelerated examination pilot where the applicants have an opportunity to provide quite a bit more detail upfront in the examination process. It would be, you know, interesting to see how the results of those pilots are perceived by the folks on the panel in terms of notice.

MR. COHEN: Good. As I said, I wanted to return to this idea of businesses having an incentive to be vague. And I even want to broaden that a little bit more into the whole impact on businesses. I'd like a sense, you know, if there is a notice problem, how does it affect the risks of a business operation? And what are its effects on business activity?

And if you could, drill down a little farther than saying you devote a lot of time to solving notice problems that you could direct otherwise. The more specific you can be, the more helpful you'll be on this. And who -- would any of you like to jump in? You started the -- started us in that direction, maybe you'd like to amplify.

MR. KAPPOS: Sure, I can get the discussion started, anyway. So, starting, you know, Bill, with the question of so how you -- I think you want to know specifically, you know, how is it causing us to change our behavior?

MR. COHEN: Yes.

MR. KAPPOS: The fact that the notice --

MR. COHEN: Yes.

MR. KAPPOS: -- function doesn't work well. Well, so, I would, in several ways.

Number one, we wind up spending, as a result, an inordinate amount of effort trying to understand that which is indecipherable, right. And because we're lawyers, you know, and our clients are asking us to give them answers, we put a tremendous amount of effort into that.

So, said more directly, we -- my view, we spend a lot of unproductive lawyer effort trying to understand claims that are inherently not going to lead us to a good solution.

Now, where does that lead? Right? So, it's not just the lawyers spending time on this. Of course, every time a lawyer is undertaking to make a legal judgment about technology, there is one or more technologists involved, too. So, you amplify the issue across the technology community, you know, all the companies around this table, I would think, or at least in the IT sector and in many others beyond that.

And when you go further down the stream, what we find is that despite our best efforts to avoid conflict, and in the case of IBM, we're both on the side of being a big patent holder that is trying to license our intellectual property, and we're on the side of being approached by others who have intellectual property. And in all of those cases, we seek to create a business-based solution and not a confrontation-based solution. It becomes very, very difficult to do that because we can't agree on value. Because the two sides of the equation see things from a different -- very different viewpoint.

It's just like the situation where you're shopping for any kind of a product, and you're not sure if you're looking at the genuine thing, right? Whether it's a watch or a car or whatever, you wind up in conflict over the value of it because you don't have confidence in its authenticity. Right? And how to value it. And it's the same thing we

find in patents. So, we end up investing then a tremendous amount in conflict resolution that we don't need or we shouldn't be having to invest.

And I'm not trying to point fingers at either side of the equation, either the patentees or people taking licenses. It's not productive for people on either side of the equation.

And then, lastly, when it comes to finally sort of come to grips with the problem, right, whether it's in the licensing context or whether it's in a litigation context, I feel like on both sides of the equation, we're either getting or paying the wrong amount for these things because they can't be valued accurately. And I think anachronistically, in many cases, it may be causing patents to become devalued by having significant problems with the notice function, since we can't tell the difference between the good stuff and the bad stuff. When we look at that watch we don't know whether it's really a Rolex, so, we're going to devalue that thing, right? And on both sides of the equation, if it's a genuine thing you're not going to get enough for it because of the devaluation factor. And on the other side, you're not willing to pay enough for it because you're concerned that it might not be genuine

So, ironically, I think sort of everybody loses in this equation. There is a tremendous amount of unproductive

effort spent. And then the result winds up being suboptimal at the very end of all of that effort.

MR. COHEN: One thing I didn't hear in your answer was that uncertainty about possible patent rights has caused you to curtail R&D activities or limit your operations. Was that an oversight or does that just not happen?

MR. KAPPOS: Yeah, Bill. That's a good point. That was an oversight on my part. It absolutely does happen. And the lack of clarity around patent rights, you know, routinely forces action to move away from technology areas, move into different technology areas, steer clear of innovations that we'd otherwise want to invest in. The business level problem is, you know, sort of at the -- you know, at one extreme of all of these dysfunctionalities in dealing with vague patent claims that I'm talking about. And it does cause both changes in R&D investment, and where you invest the R&D, and changes in where you take the business once you've invested the R&D.

MR. COHEN: Let's stay with the business perspectives for right now. Bob, you want to contribute?

MR. ARMITAGE: Let me perhaps give a pharmaceutical industry perspective that is a little different. We, actually, in a very deliberate and affirmative way, a couple of years ago, put together a process improvement team. Lilly's a six sigma company,

which is one methodology for improving business processes. And had a team of patent lawyers spend an enormous amount of time working on defining best practices for drafting patent applications -- and, in fact, developed metrics -- and we now have a formal review process where we in a very qualitative and quantitative way look at the quality of our patent applications.

And it became clear to us that if you want a high-quality patent, you need to have greater precision in your patent applications. And you needed to control the breadth of the claims that you are seeking. And you needed to have a specification that clearly exemplified the invention well relative to what you're claiming. And as time has gone on, we've continued to define those metrics in a way that would be the exact opposite of the advice that maybe is given, that the way to add value to a portfolio is by crafting large numbers of intentionally vague patents.

However, it's true that the cost to any of us of getting rid of, canceling, or invalidating otherwise a patent that never should have issued is enormous. And, therefore, there is some value, however vague the invention is, however unlikely the validity is to be ultimately sustained, to simply trade off the fact that if you issue enough patents, and each one of them costs enough to take out or invalidate, and particularly given the limited

mechanisms under current law for doing that, that you'll create a value to a thicket that is greater than the absence of potential value in any of the individual parts.

And, so, I think, again, when we talk about the notice function it really, in my mind, is not divorced at all from the problem of -- the notice function is just fine for patents that are valid. But patents that frankly won't ultimately be sustained, it's very difficult, in many cases -- vagueness is one, there are other reasons, over breadth another -- to figure out where those inventions might end.

MR. COHEN: We have a number still up, and I want to move us forward, but I know I didn't get to Arti last time when you had one up, so let's take you.

MS. RAI: Oh, and this is good because it was basically the same point as Bob has now reminded me of this once again. I think there -- actually -- it's very interesting to think about what economists call collective action problems and challenging bad patents. So, a bad patent where you know its boundaries are, you know boundaries are clear, but it's overbroad say, there is a collective action problem in challenging that because it is so costly to litigate, and there is no cheap administrative mechanism. And the benefits of invalidating the patents accrue to the world, whereas, you know, all the charges accrue only to you. So, that is the collective action

problem.

But with a bad patent that is vague, it's arguable that there is even more of a collective action problem, or at least more of a cost because -- Bob is nodding his head so I believe I'm right on this one -- because there is all the uncertainty about whether you're likely to win the case as well because you have no idea what you're challenging in the first instance. So, I think the cost is even greater. So, there is a cost to challenging an overly broad patent and there is a bigger cost, it seems to me, to challenging an ambiguous, perhaps overly broad patent.

MR. COHEN: Your response starts to take us a little bit into looking toward solutions, and I'd like to push us in that direction. For those of you who I don't get to right now, I'm going to say at the end -- toward the end of the panel, I'm going to give anybody an opportunity to come back to anything that they wanted to get into the discussion but weren't able to.

I'd say let's say if there is a notice problem, and this has come up from a couple people, is it best addressed up-front by making claims and potential claims clearer during the prosecution process, or is it best addressed after patent issuance? The reason that might be cited for after patent issuance potentially is that there are so many applications that get reviewed, you can't

perfect the notice for every one of them. Is there any way -- a possibility of sorting out what is commercially significant and making sure that notice is appropriate there? Do any of you have thoughts on this? Chris?

MR. COTROPIA: Yeah, and I kind of alluded to this in my opening comment. I think, again, you have to consider what is the problem with lack of notice, and if it's the problem that David points out that people are avoiding investing in areas because of patents they see. So, these are kind of prelitigation type of situations, right? Because litigation is going to arise, once you've had commercialization, et cetera. So, if we're afraid of somebody is doing clearance and says, gosh, I really don't know what this is, so I'm going to avoid it, well, then it seems like you need some kind of front-end solution, something that I can utilize. Maybe it's claim interpretation methodology changes. But really I think it's kind of more information from the applicant because the applicant's the one who knows about the invention, has information about the invention, is also engaged in a process where we can put something on record that is objective, that others can look at, which is the patent or the prosecution history, et cetera.

And, so, it seems like that is why you would want some kind of a front-end solution that I could use if I was

doing clearance work. One caveat, though, is that you have to consider, though, the costs of creating that information, right? Either from the Office's perspective or from the individual patentee's perspective and the substantive impacts of that, right? So, this is, again, kind of another drum I'm beating that, you know, we need to think of notice in the context of those things as well. Just saying -- not just saying, well, look, I just need to make sure there is enough information up-front so I can figure out what the rights are. Well, we also need to make sure that those rights are broad enough to create incentive but not too broad to kind of -- kind of hurt downstream innovation, et cetera.

But I think we -- a front-end solution is a better way to go.

MR. COHEN: Stephen?

MR. KUNIN: I would agree that a front-end solution makes the most sense. We've already heard from the panelists regarding the economics and the costs to the public and third parties in terms of having to, through opinions or through defending patent suits, having to establish invalidity or unenforceability of patents. You know, roughly speaking, it's perhaps two orders of magnitude to basically defend against the patent than it is to obtain a patent.

And, as Chris mentioned, one aspect of the file history is that the file history has an opportunity to help define, essentially through what was said during the course of the prosecution, whether there is, you know, issues of a disclaimer of claim scope and so forth and so on. But this is where I think the aspect of the PTO as a gatekeeper is important, and we'll get to this with respect to the 112 second paragraph Board decision.

But the PTO has had for decades and decades various provisions in its rules and the Manual regarding insisting on correspondence between limitations in claims and supporting written description. Probably in the overall analysis, PTO insistence on complying with the rule has not been, perhaps, very good. But I think from the perspective of the PTO insisting on the applicant demonstrating where there is, you know, 112 first paragraph support for claim limitations, where language, particularly added to new claims or amended claims provides antecedent support in the description, is very important in the examination process. Because, as the courts say, in the PTO, when the applicant has a right to amend and to create the record, that is fine. In a court of law where the patent owner doesn't have the ability to amend, you get a different approach taken.

So, I think that, you know, if -- if the PTO is serving as a good gatekeeper, things will get amended

appropriately and if the PTO is a little overzealous, then the applicant can seek the right of appeal and get redressed that way.

MR. COHEN: Well, that is where we're going to be heading next, right into 112. But I'll give both Michael and Terry a second opportunity to comment. Mike?

MR. MESSINGER: Yeah, I just want to comment about your point about moving it up-front in the process and wanted to challenge us to consider maybe moving it up even earlier in the process than the applicant and the role of PTO as gatekeeper. To what I'm seeing is the actual companies are evaluating their best practices for product management and accounting for the role of intellectual property rights of others. And I work pretty much exclusively with a lot of IT, software, high-tech communities, totally can understand some of the concerns that were raised so far. But what I'm finding is that perhaps for the last couple years there has been kind of a reactive approach where some of these overly broad patents are invalid and perhaps even deserving of a cancellation, as some people have said, or invalidations are raised with a company, and then it's a reactive approach. And that is kind of an expensive one-of situation where invalidity research is done, assessment is done, reviewing the record.

And what a lot of companies are starting to look

at is how can we incorporate the role of intellectual property throughout our company either like at a CIPO level, whether or not you have a chief intellectual property officer, as well as down at the product manager level. So that even in the IT sector, when new features are getting added to a user interface element, and assessments are being made on whether or not the company should do patent protection, even at that small feature level, that person responsible can also take on the responsibility of, well, would I be infringing the rights of others if I released this feature in this complex product?

If you talk -- it's interesting, if you talk to medical device companies, and as Ms. Rea said, if you talk to some pharmaceuticals, they, of course, assume you're going to do a clearance check or respect the rights of others. And for whatever historical reason, a lot of it has to do with the law of willfulness, and in just the numbers of patents, like people have said, there has been a sense of, well, maybe we'll keep our head in the sand, or maybe we can't take on this function. But now I'm seeing that a lot of clients are getting much more sophisticated and pushing it up and down the levels of their companies so that they can sort of have the best of both worlds. And it's a lot more efficient because they know a lot more about whether or not their feature is patentable before they file, as well as

is it the kind of thing that is going to survive scrutiny in the marketplace by the patent rights of others.

MR. COHEN: Terry?

MS. REA: Very quick. The notice function is the joint responsibility of the applicant, the PTO and the courts. And we want to avoid overburdening the courts and we want to avoid the cost of litigation. So, of course, we want to move it up as early as possible.

Things like notice, the reasons for allowance, everybody who litigates wants to see if the case was allowed, you get the notice of allowance from the examiner, did they give reasons for allowance. That's one of the first things that one looks for, what did the examiner see that was patentable? Some examiners give good insight, others it's very difficult to figure out why it was allowed. But the gatekeeper function of the Patent Office would be beneficial because that issued or granted patent is the foundation, and it's presumed valid from then on, so suddenly the hurdle has gotten higher. But the earlier the better, thank you.

MR. COHEN: Okay. Let's move into our substantive patenting discussion. And starting with 112, and I guess, you know, maybe a simple question to begin with that might get some interesting answers: is one of the goals of written description and enablement requirements to allow the public

to predict claims that will emerge from a patent application? Anybody have thoughts on that? Start -- I see Chris here.

MR. COTROPIA: I would -- and this maybe is a very law professor-type of -- I think written description, yes. I don't know about enablement. This is -- only I'm the only one that is going to say that I understand this division between the two. But I think that, I mean, enablement is the public disclosure, you know, something that I can use 20 years down the road to make the device, et cetera. I mean, I see, and I definitely know that there are courts and others that don't agree with me.

The written description, this idea of what invention are you in possession of when you file, I think that that does take a real -- I'm not going to say necessarily a notice role, but takes a very substantive role of cabining the scope of rights that you get. Right. Now, that is going to have an impact on notice if I use it as such, probably through the claim interpretation process more so than maybe validity.

And I think you're seeing courts try to use it as a notice substance limiter. And it seems like it's used more as a limiter in certain fields of art than others. The way I read the doctrine, it really should be kind of a case-by-case basis on the invention. A sense of how much do I

need to provide you to show kind of certainty as to what the possession is that I have there. And I think this is a nice kind of, I call it, front-end solution. It's not really a front-end solution. It's just a nice way to kind of package up an interaction between a validity requirement that has a notice side function, you know. What were you in possession of when you filed? So, I think written description could play that role.

MR. COHEN: Clearly, these issues are going to flow together, so I'll throw out on the table expressly, along with this one of the goals of these requirements, public notice, I'll throw out the question, do current written description and enablement requirements provide adequate notice as to the universe of inventions that an applicant might ultimately be able to claim? Arti, for either of those questions or both.

MS. RAI: So, let me just say one thing that is slightly in tension with what Chris is saying.

MS. MORLEY: Can't hear you.

MS. RAI: Oh. Oh, can't hear. Okay. sorry.

Let me say one that is slightly in tension with what Chris is saying. I agree with Chris that written description, as the courts seem to have interpreted it, or to be more accurate, as certain judges on the Federal Circuit seemed to have interpreted it, the goal seems to me

to be to play a notice function. However, that ends up creating a much narrower patent than one would get otherwise. And one has to think about whether that's, from a social welfare standpoint, a good idea.

And one of the criticisms of the written description line of jurisprudence has been that enablement is what gives the appropriate scope to a patentee. That's that, from a social welfare standpoint, gives appropriate scope to, for example, a pioneer patent. Whereas written description wouldn't give appropriate scope.

Now, I don't have a definitive opinion on whether that is true or not, whether written description gives scope that is too narrow or ends up resulting in scope that is too narrow, but that is a substantive impact of using written description.

What was your second question, Bill?

MR. COHEN: Well, the goals, and in the second one went to are they -- are they working, are these --

MS. RAI: Well, yeah, that is part of --

MR. COHEN: Are they giving adequate notice?

MS. RAI: So, well, it depends on whether notice is your only goal --

MR. COHEN: Yeah, because that's --

MS. RAI: -- you know, because --

MS. RAI: -- because we have to balance notice

with adequate protection. And that is a tricky balance to achieve because a lot of the doctrines we have actually in the context of claim construction are intended to perhaps detract a little bit from notice, but give adequate scope. So, we have this -- these -- these doctrines where, you know, as a consequence of the fact that you had a pioneer invention at time A, and what you claimed as a monoclonal antibody, for example, at time A ends up encompassing a lot more at time B; you get a lot more at time B than you originally made at time A, and that's deliberate, or so we argue anyway in the patent system.

Now, that may not be a good thing, but we'd have to change a lot of that doctrine if we were to rigorously insist upon the notice function.

MR. COHEN: Bob?

MR. ARMITAGE: Yeah, I mean, clearly because there have been so many cases now in the biotech arts and in the chemical arts, the written description art is fairly well-developed. But, you know, I would say there is a near-miss experience that could have been a near-death experience had that not happened. Because ESTs could have been patented, little tiny snippets of DNA. You basically could have just simply laid claim to huge numbers of genetic sequences by setting forth a desideratum. I would please like the proinsulin gene, and maybe I'll take all mammalian

proinsulin genes, for example, where you basically didn't know what any of the genes were. You simply knew that it was desired to have one -- there was one, and eventually using maybe a technology well enabled, you would fish one out of a DNA library.

I think the other concerning thing to me about focusing on a requirement is that you really need to focus on all the requirements to sort of elucidate all the issues with claims that end up being vague and claims that end up being very difficult to understand. And clearly in the last few years, I've spent a good deal of time on statutory subject matter issues.

And just to take a very absurd example, look at a combination invention where the combination is an apple and religious belief. Apple and religious belief. Well, I submit it's novel. Have you ever heard of anyone combining an apple and religious belief? It must be non-obvious. If an apple is useful the combination is useful. We all know --

MR. MESSINGER: The panel of us --

MR. ARMITAGE: -- what an apple --

MR. MESSINGER: -- would say Genesis against you, I think.

MR. ARMITAGE: Well, but my point is -- my point is you have to get all the way through enablement, written

description, indefiniteness, all of which it sounds like you meet the requirements for patentability until you realize that, you know, at least for combination inventions, you can't combine something that is the mere exercise of human intellect or at least broad enough to be so construed.

So, in many cases, particularly, I think in some of the information-science-related arts, you basically have technology that probably isn't a machine, manufacture, or a composition of matter. And it could be, it could be drafted in that sense, but someone has to develop the case law to hold the patent drafters rigorously to the requirement of patent eligibility.

MR. COHEN: Let's clear the table this way. We'll try David.

MR. KAPPOS: Okay, thanks, Bill.

So, I would add a couple of comments. One is that to answer the question directly, again, I would say absolutely the written description and enablement requirement should enable one to reasonably predict the scope of claims because, you know, quite simply the claims in the patent, whether they're in the original patent or added by amendment in the original patent, or in a continuation or divisional, should only pertain to what was originally disclosed. So, that is sort of a simple answer to the question.

But the problems are a couple here. One is that we're actually getting the opposite of that benefit right now in many cases in the IT industry, where we see claims that contain terms that were not only well-supported by the specification, they were totally undefined in the specification, they were totally unreferenced in the specification.

There's a great quote, I just will read it very quickly, if it's okay, from Judge Linn at a recent U.S. PTO society annual meeting. This is just last month in February. He said, "The last point I want to make is not to forget," this is he is speaking to the examining corp, right, "not to forget 112. It's not correct to trivialize or ignore these kinds of informalities," right. It's not an informality, but, "such as claims that are vague and indefinite or lacking in support and written description. Indeed these problems affect not only the applicant but the public as well in a significant way. In case after case before my court, the central debate revolves around the meaning of claim terms that, for example, were added during prosecution and do not appear anywhere in the written description." So, that's a pretty stark statement. Right? That -- that, to me, is putting its finger right on the problem.

The last comment I'd make in this area is that

it -- it turns out that it appears to me to be much easier to define claim scope in technology areas where there is a good, solid, consistent lexicon, where there is a dictionary of some form. For instance, in the chemical arts, where there is a language that's been developed that is very precise, you see, you know, my observation anyway, is a much better correspondence and much higher ease of complying with the written description and enablement requirements to having claims that correspond to them.

In other industries, for instance, IT, where there is no set dictionary, where the same word can mean very different things in different contexts, we're very burdened by an almost inherent imprecision that puts a big tax on us in terms of meeting the enablement and written description requirements.

MR. COHEN: This morning some of the panelists suggested that some of these problems that you're talking about in IT right now are a function of patenting in these areas being relatively new, and some of the technologies being relatively new -- that, over time, there will be more common ground as to what terms are used to describe what is being invented.

Do you think that is likely? Is this a transitory problem or is this one that is here to stay for a while?

MR. KAPPOS: Well, you know, unfortunately, I can

remember 20 years ago when we were saying, well, this is a transitory problem, as the computer and software arts grow up, it's going to get better. We've now got millions and millions of patents out there, and I don't know how many technical documents. I don't really think it's a transitional issue anymore. I think it's an issue of, you know, sort of inherent imprecision that is being carried on as we inject more levels of indirection into the discussion. Every time we create, you know, a new technology in the IT field, it involves imposition of another level of indirection, which creates a whole new level of terms, that in some way relate to the previous set of terms. And there is no one dictionary, no one way to define all these things. So, the situation isn't a transitory one in my view, and it isn't getting better right now.

MR. COHEN: Stephen?

MR. KUNIN: Well, I'd like to make a comment on what Dave just said based upon my own experience. If I threw out to the panelists the word iPhone, and asked them what they think an iPhone is, I would submit to you that many of the panelists would immediately be thinking of a product that is a smart phone, that is made by Apple. But if I were to ask you that question 10 years ago, you would have given me a completely different answer. Because 10 years ago, an iPhone was a system that was voice over

internet protocol where you could make telephone calls over the internet. It had nothing to do with a portable device. It had everything to do with sitting at a computer terminal and being able to make telephone calls over the internet. Same exact term. So, I don't -- I would agree with Dave that this type of situation I don't see is going to get better in the coming years.

As far as the specific question on the table with respect to the notice function through written description enablement, my initial reaction is this is interesting from a perspective of semantics. Because this question really points out to me that when you start even talking about semantics of notice function, it can mean completely different things within different contexts. For example, when you look at the narrow view of written description, it's basically nothing to do with putting the public on notice, but it's determining what the applicant was in possession of. The flip side of that is, with respect to the enablement requirement, is intended to put the public on notice on how to make and use the claimed invention so that when it becomes publicly available, they'll have the notice of how to practice the invention.

The interesting thing is I -- I agree completely with Bob Armitage with respect to chem/biotech area, relative to the law of written description and enablement.

But, in part, I agree with him because it's been an area where, here we sit today in 2009, where, through infringement litigation, the law of written description as it applies to original claims has been defined going back, you know, principally from Regents of California vs. Eli Lilly in 1997 to where we are today in 2009.

But I would submit to you that, as Dave was saying, if you look at a comparable body of case law in the IT area, the Fonar case, the Robotic Vision case, Hayes Microcomputer, and so forth and so on, systematically over that same time in the 1990s, the Federal Circuit was basically saying, you don't even need to have flow charts and you can satisfy description, best mode, and enablement. Now we've got, you know, cases like *LizardTech* and a few others that are coming out affecting electro-mechanical arts and are moving, perhaps, again, through litigation and having the Federal Circuit look at the applicability of these principles that they've had, you know, a dozen years of experience with in the chem-biotech field and trying to reapply it in the IT area.

But even with respect to, you know, cases like *LizardTech*, when you read *LizardTech*, *LizardTech* talks about how these discrete wavelet transforms were unpredictable technology, and -- and basically shoe-horned that in with -- with chem/biotech/pharmaceutical law.

But I would say that, in a nutshell, we still have a ways to go with respect to written description, the chem/biotech/pharmaceutical area, in terms of the notice function in the IT field.

MR. COHEN: I'd like to get other people's comments on these various issues that have been raised. I'll throw in, for those of you who do see problems with -- or think that more could be done with -- written description or enablement to give notice and that it would be appropriate to do so, how -- what do you -- what would you change? What would you suggest? So, all these questions are on the table together. Bob?

MR. ARMITAGE: You know, I think historically Steve has hit on probably the root cause of one of the biggest issues. And that is in the pharmaceutical/biotech arts, you had patent-holding entities who went after other patent-holding entities to reduce the scope of the claims of the patent they were getting. And, you know, the *Eli Lilly* case is one, we've got another case we've been fighting against another broad biotechnology patent. You have the *Pfizer* case involving Rochester, where we wrote an amicus brief. We filed amicus briefs in ex parte appeals where we were concerned the utility requirement would be under-applied.

And you basically need to be in a posture where

you say, look, this is how we define a high-quality patent, these are the kinds of patents we're seeking. We, obviously, will respect these patents of our competitors, but the ones we don't believe are valid patents, we will go after those who get them to make sure that the law develops in the right way.

That's much more difficult if you're an entity that files 1,200, 1,500, 2,000, 3,000 patent applications a year. Where if you make a strong enablement argument or a strong written description argument, your own portfolio could be cut by a factor of 10. I think I'm very encouraged in the IT space, seeing companies, as a matter of policy, saying we're getting too many patents, they're too broad, and perhaps have that symmetry between what we're now getting and what we're going to respect, and then how we're going to go about systematically removing the patents that we don't believe should have ever been issued.

And, of course, there is no mechanism right now to do that. There are no tools. The best tools come when you get two very sophisticated entities who have the very best legal arguments and the Federal Circuit gets the best the two can offer to define exactly and precisely how to limit protection so that it remains effective but not oppressive. And I think that is, my view, I said it once, I'll say it again, the beauty of the biotechnology industry you can get

very strong effective patent protection for your inventions in the biotechnology industry today. But you're not, in my view, in a situation where you're immobilized by huge fortresses of patents by others.

MR. COHEN: Arti?

MS. RAI: So, I do want to -- this is slightly against, you know, my usual stance about worrying about broad patents. But, so, but I do want to point that written description, as it emerged in the *Eli Lilly* case, was a shock to the entire community. That as applied to original applications, no one thought that written description was supposed to apply that way. Enablement was the standard for section 112, I mean, that was what section 112 was about. And, so, and in these days if you look at the follow-on biologics debate, the biologics companies are arguing that they need long-term data protection, 15 years or so because, as a consequence of cases like Eli Lilly, they have such narrow patent protection on their biologics.

So, let's be very clear here that for startup biologics companies, *Eli Lilly* was a disaster, I think. I mean, it was -- disaster is perhaps a little bit strong. But it was perceived as a very bad thing because it gave them narrow scope.

Now, as it turns out, *Eli Lilly*, it's pretty clear, has not been applied comprehensively by the Patent

Office. So, they -- the standard for *Eli Lilly* was supposed to be 95 percent homology and it's, the Patent Office, Chris Holman has a great article showing the Patent Office has let through 70 percent homology claims which are far broader and would not suffice under Judge Lourie's approach.

But be that as it may, I think it's -- I think written description as applied to original claims is a real innovation in the patent system of the last 10 years.

MS. MICHEL: But one question about that, Lilly was certainly a shock to the biotech industry, and there was a lot of concern, but has that concern played out? And you pointed to the Patent Office as a reason it might not have, but are there other reasons it might not have?

MS. RAI: Well, there are two reasons it hasn't thus far. The first is that we don't have follow-on biologics because there are a lot of hurdles to follow-on biologics that have nothing to do with patents. They have to do with the fact that we don't have a Hatch-Waxman for follow-on biologics.

But one of the arguments that the biologics companies are making in the current biologics debate is that if we were going to have generic biologics, patents wouldn't be sufficient for them because their patents are too narrow as a consequence of *Eli Lilly*.

MS. MICHEL: They are --

MS. RAI: And that's in the record. I mean --

MS. MICHEL: They're arguing that.

MS. RAI: They're arguing that. Yeah. No, whether that's the case or not, but the fact is that they are saying their patents are too narrow. And, so, it's on their therapeutic biologics. So, I'm not, in general, I'm not a fan of broad patents, but I'm just -- want to put in the record that written description is a very controversial doctrine still. It's not as if everyone has accepted it.

MR. COHEN: I see -- is that Chris? No, I thought it was Rob for a second but it's Chris, yes.

MR. COTROPIA: A couple of other kind of just comments about this discussion. I think, first of all, Arti kind of hits the nail on the head. I think while this has some notice kind of secondary effect, this is really it's a substantive question. I mean, and it's an important one, I think, in some ways in the sense of written description being a tool to -- to effect patent scope, and, to me, link it up with kind of actual inventive activity by the patentee in the sense of kind of what they've done and what they've described, et cetera.

And, obviously, there might be debates in the sense of, well, how costly is that amount of inventive activity? How broad are the scope of the needs? It sounds like Arti points out one area maybe of biologics where it

gives you too little. There are other areas where probably maybe it gives you too much, et cetera. So, I think the substantive debate needs to be there.

The one thing, though, about this kind of difference between, you know, kind of life sciences and IT, et cetera, kind of two points. One, I think, if you read the, quote, the case law, not as it's applied but at least as it's articulated, it is technologically neutral and actually has a high fidelity for the technology because it links itself up with the predictability or reasonable certainty to someone in the field.

And I think in some ways the the, quote, problem that people kind of just take it as a broad brush, oh, you know, bio stuff is unpredictable, IT stuff is not. And I think the one thing is if you think about who we're trying to provide notice to, these are individuals who should know what is certain or is not. Right? And, so, in some ways if we really stay true to the fidelity, which I think in some ways when you get these *LizardTech* cases, et cetera, you start to see people actually putting on evidence that, hey, guess what? -- this is a very unpredictable area, et cetera.

But the case law is actually written in a way that should lend itself to those in industry to be able to determine scope issues. And I'll piggyback onto that, I think this is where, I mean, I think the Patent Office and

maybe I'm going to really, I think, can play a really great role in the sense of this. Is if they stay true to the fact that this is technologically specific, then examiners would look in all cases to say whether I've got a 112.1 written description question, and not just a knee jerk reaction of, at least from what I hear my friends, if I'm trying to pursue a pharma, I always get 112.1 written description rejection, regardless, and if I'm in the IT area, I never see 112.1 rejection. It should be kind of across the board.

That if it turns out that something pops up, it seems like it's in a predictable area, then -- then we should have those kinds of rejection. So, I think that there can be evolution in the Office. Now, maybe some wouldn't trust the Office to do. So, I think there can be evolution in the Office as to what these requirements mean that would have notice impacts kind of going forward.

MS. RAI: Can I add one thing to that? But that's all -- that could all come under enablement, though, right?

MR. COTROPIA: Well, I think the thing is, there is a question of, again, purpose. And I see description as a nice way of linking up scope to what the applicant is actually doing. If the idea is that we've got this -- we've got a teaching function, we also have this idea that the patent is supposed to be assisting the applicant or whoever towards commercialization or licensing, et cetera. And when

you have this kind of disjointedness, right, I've done X but I get, you know, some protection that is completely kind of discrete from that, well, then it seems a description does a better job when we're dealing with the idea of possession, you know, what is -- you know. And so, that is why you see these knee jerk -- somebody has got knee jerk reactions in cases like *SuperGuide*. Well, that is just not what they invented. You have this claim determination. They said, well, you know, they just didn't invent, you know, DirecTV, onscreen TV guides. And really, the idea is, well, that is not what they were doing. The applicant wasn't doing that. They weren't going forward with that. And that is why I think written description is a better way, instead of kind of accidental enablement, kind of, in the other way. At least that is my view on it.

MR. COHEN: Before we leave written description and enablement, just to kind of sum up what I'm hearing, I don't think we've got, you know, clear agreement here as to whether these are the right doctrines to be pushing for notice. But if you do have an application out there which has been published, and you want to try, as a third-party, you want to try to determine what might come out of the patent prosecution process at the end, this is about all that you have going for you at the beginning. If we don't get notice here, the concern might be we're going to have to

look for other ways of getting it on down the line.

That said, two issues that come out of the PTO procedures, I'd just like to set out and see if we get reactions to. In the PTO written description guidelines, they state there is a strong presumption that an adequate written description of the claimed invention is present in the specification as filed. But then they go on to require that the applicant show support in the original disclosure for new or amended claims.

I guess the question that I want to get in here is is that adequate for notice purposes, if notice purposes are to be served through this doctrine? And secondly, in the enablement area, do the rules that place the burden on the examiner to advance reasoning inconsistent with enablement inherently limit the amount of notice that is provided, and is this the best way of structuring the enablement inquiry?

All this together before we leave written description, anybody? We've got two up. We'll try -- we'll start with David.

MR. KAPPOS: Sure, okay. I'm happy to comment on both of those. So, relative to the first point, the presumption that -- the strong presumption that the -- that adequate written description is given, you know, I don't have any problem with there being a presumption of that written description is adequate. I don't know about the

word strong. It, you know, it seems that it would be hard to have a system where what else would you presume? Would you presume that the written description was inadequate? Then you get into putting the applicant in the position of having to prove the negative. So, it seems like the system we've got is -- is about the best way to start out. You know, putting aside the word strong, whether that is exactly right.

What I would say, though, and this somewhat addresses your first and second questions, is that placing a strong burden on the examiner to advance an argument as to lack of written description and enablement, you know, puts the examiner also in a bit of a difficult position. What I would like to see is the examiner having -- examiners exhibiting or having more flexibility to use inquiry techniques, including rule 105, which is very much unused, but is a great way for examiners to reach out to applicants without necessarily interposing an objection or rejection, to say look, I can't find this term that you used in your claim stated or defined anywhere in the specification. Can you please point out to me where you defined it? I see that you used what looks to me like it might be means plus function, 112.6 language, in your claim. Can you please point out to me whether that is what you intended to do in the claim, and, if so, can you point out the corresponding

structure in the specification?

Those seem to me to be both very fact-based, straightforward questions that I would love to see coming out under 105 that don't put the examiner in a position of necessarily having to make a rejection, but do get much better file histories developed and much more precision on the record.

The one other comment I'll make, and then I'll stop is that, you know, I also don't have a problem with examiners being more aggressive about rejecting and objecting to claims that they don't think meet the -- or where the specification doesn't meet the notice requirement compliant with the claim. And putting the onus back on the applicant, right. The applicant created the invention, the applicant wrote the patent application, the applicant is the lowest cost-avoider of confusion and ambiguity. I see absolutely no problem with examiners shifting that back to applicants, using both objection and rejection practice.

MR. COHEN: We'll try Bob and then Rob, and then we'll move on to indefiniteness.

MR. ARMITAGE: You know, by and large, I think the written description guidelines the PTO put out were a very laudable effort. And I think there were two generations of them. And not to say that everything that came along with them I totally agree with, but they were really a

substantial advance. But, you know, this particular paragraph, I think, is not the guidelines at their best. There are really three written description issues we're talking about. If you have an original claim, they provide their own written description. Because if there is some defect in the rest of the application, you're entitled, before an original claim, to put the information in the claim back in your patent application so it's in both places. If you amend your claim, by and large, what you're supposed to do, what I was taught to do, is explain to the patent examiner why, for the amended claim, there was support. Even if the only thing you did was narrow your claim, explain why you're entitled to a claim less broad based on what you disclosed in your patent application.

The other issue we're talking about that was, I think, shocking to many, I won't say shocking to everyone, but shocking to many in Eli Lilly was the idea that you could claim something in words for what your specification disclose nothing about it that wasn't already known. So, for example, everyone knew there was a human proinsulin gene, but nobody knew what its structure was. Everybody knew that it was produced in the pancreas, but nobody had figured out a way to fish it out of the pancreas. The inventors at the University of California said it's time for us to patent the gene even though they disclosed nothing

more about the human proinsulin gene than had been known ever since it was clear that every animal had a proinsulin gene, mammal, at least, to produce insulin.

I used to give a talk at the Biotechnology Industry Organization meeting about broad claims, and I think you've all heard this before. The talk would start, broad claims are wonderful. Broader claims are even better. And infinitely broad claims are best of all. And you got great rounds of applause until you got to the, like, infinitely broad claims, and all of a sudden everyone in the room realized, well, that is not exactly what we want. What happened because biotechnology claims were limited is that you had startup companies with technology that was partnerable and licensable, without us having to sort through 10 people who claimed with these very broad claims to have patented the same thing. You actually held well defined rights.

The reason -- that the biotech industry is so adamant about 14 years of data protection in a follow-on biologics context is not necessarily only because some biotech products have very narrow claims. There are many biotechnology products who have no patent protection, no effective meaningful patent protection whatsoever.

And frankly, it makes no sense for the industry or the country to say, well, gee, the industry should only

develop new drugs with the best patents, rather than what might be the best medicines irrespective of patents. And that is why you protect the data in a balanced way to protecting a biotechnology invention if it happens to be patentable as well.

MR. COHEN: Because I asked a couple of questions that went to PTO issues, I want to give Rob the last word but also go to someone else with a big PTO background. Let's go to Stephen and then finish with Rob on this.

MR. KUNIN: Okay, very briefly, the issue that you raised, Bill, in part goes back to something that Bob Armitage said with respect to aspect of burden of proof, that in many the conditions of patentability, you're entitled to a patent unless the PTO demonstrates otherwise. And I think that philosophy is sort of reflected in the examination guidelines. But really what Terry Rea said earlier, I think, needs to be looked at again from the standpoint of what she said in terms of an examiner's statement of reasons for allowance.

One of the things that I hear quite a bit, especially from litigators, is that, wouldn't it be nice -- and, of course, this would make Rob Clarke cringe, but, you know, wouldn't it be nice if the examiner would systematically look at all the conditions for patentability and to make some assessments, including in the statement of

reasons for allowance, where the examiner did not reject claims on a particular statutory basis.

So, if the claims are subject matter eligible, they have utility, maybe they have adequate written description, they are enabled throughout their entire scope for their particular use, and the issue only is whether the claims lack novelty or would have been obvious, then in the, you know, wouldn't it be nice if there was a record which indicated that the examiner actually looked at that set of conditions of patentability for which there is no record and made some statement that, yes, I did look at subject matter eligibility, and it was eligible because dot dot dot, it did have utility because dot dot dot. And I know this, you know, would impose some additional burdens but it certainly would make a record more complete and, you know, perhaps address some of the notice function of complete file histories.

MR. COHEN: Rob?

MR. CLARKE: I guess I should start off with in view of the current make-up in the Obama Administration, I can't really comment on proposals for change in the procedures. But I am taking notes.

UNIDENTIFIED SPEAKER: And names.

MR. CLARKE: And names, yes. But my comment kind of dovetails with where Steve is going but in a different

direction. There are certain efficiencies in any system, in the examination system, litigation system, where you focus on disputed limitations or disputed aspects of a claim. And, so, when I hear the call to have a petition for patentability before any examination occurs, it seems like you would spend a lot of resources on limitations and questions that no one, you know, no party, even an accused infringer would ever raise. And that leads to a certain inefficiency in the system.

And it, you know, I hate to say it, but it seems like you would be best served by focusing on disputed limitations and just focusing better on them. And that would really be the focus.

So, you know, Mr. Kappos, when you said use 105 to, you know, elucidate a limitation, is it -- does it invoke 112.6? You know, that is an example of focusing on a disputed limitation. And, so, I'm kind of curious as the afternoon goes on, when folks are suggesting changes that we can make in the system, whether we should focus on using an examiner or some member of the public to dispute a limitation, or dispute whether a limitation is enabled, you know, has written description, is indefinite, renders the claim indefinite, rather than imposing an up-front cost on the patent applicant. And that's certainly how the current system operates and has operated for a long time.

You know, the examiner has the initial burden. He disputes whether a claim is patentable because of a particular reason, and the examination focuses on that. You know, it certainly is more streamlined and more efficient, lower costs, certainly lower up-front costs but, you know, it's kind of the opposite view of where Steve was going with a detailed -- or perhaps not detailed but an assessment as to each ground at the end. Because in many cases there would -- it wouldn't be in dispute and it would cause an inefficiency in the system to make those statements.

MR. COHEN: Just to let you know what I'm planning. We're going to go on into indefiniteness. I think we're definitely going to take a break probably around 3:00, maybe a few minutes either way. I would hope that we can break into claim construction a little bit before the break, and resume and talk in more detail about claim construction and then examination as we move on through the afternoon.

Let's talk about indefiniteness. It's an area where the Patent Board has recently issued an important case, the Miyazaki case, we'll talk about that. But preliminarily, I think maybe a place to begin is just to ask the panelists what you think is the appropriate reach of the indefiniteness doctrine? Does it have application to all forms of ambiguity that affect breadth? Anyone want to

start it off that way? Mike?

MR. MESSINGER: Well, I'll jump in. And it actually sort of relates to the other topics we've been talking about, so maybe it's a good segue of my thinking on this. Especially, at least, the predictable arts that we've been talking about, some of the IT software areas.

When we're looking at claim interpretation and all of that, we definitely are dealing with issues of breadth. We're often dealing with very common terms. But they're in sort of combinations of elements, different features drawn from different technologies and put together to create kind of a new result. And so, often we find that vagueness doesn't come up as much. In fact, my sense is the Patent Office internally made some very specific policy decisions to basically kind of call off the dogs, call off the examiners from -- from making rejections on 112 for vagueness in lieu of putting the effort on the art. And there was a sense that there is a balance there. It's a finite resource in the Patent Office, and it's better to make sure that the appropriate amount of resources are going on anticipation and on obviousness, the art, and not arguing about the claim language as much because that's going to be done in court anyway by two very, you know, by the adversaries, with more resources.

And so, my sense is it's interesting in the

predictable arts you look at written description, you look at enablement, and like many of these biotech pharmascience folks have commented on, they look at it very closely. We frankly, a lot of ours is predictable, and once you've described, oh, you've got a decoder on there, it could be this kind of decoder or it could be this kind of graphics processor, or whatever the element is, someone skilled in the art, the competitor, really understands it.

And, so, what we rely on is the claim interpretation and we have to have support in our specification. We want our claims to be definite. I disagree strongly with David's earlier point about some teaching out there for vague and indefinite patent applications. None of the clients I've worked with in real situations have ever seriously wanted legal resources being directed to that kind of endeavor. It's just they're too precious, they very much want clear patent applications, well drafted, that they can rely on.

And, so, there is a lot of incentives from the applicant, and it's not necessarily to please the patent examiner, but it's to please the court. And especially in predictable arts, tech software-related, when you're looking at claim construction issues, the noninfringer has many opportunities, the way the technology works, to sometimes do design-arounds that can be trivial design-arounds, but still

get around the little infringement of the claim. And we've seen some of this where method steps were moved to other countries, certain functionality can be moved out of one device and into another device. There is a lot of sort of flexibility, I think, compared to an oral tablet, for you have a reasonable, not vague, not indefinite claim, well-supported by the specification, and infringers have a lot more latitude in terms of trying to design around it. So, I don't know if that answers your question.

But I think the Patent Office has pretty much got it right the way the current setting is now on vague and indefiniteness, where they only raise it in extreme situations, where they really can't make sense of it and them seem to do it with pretty good judicious discretion.

MR. COHEN: Terry.

MS. REA: Thanks, Michael. I do agree with you that the appropriate reach of the indefiniteness doctrine should be broad. It should apply to all forms of ambiguity affecting the breadth. And I've seen it in so many office actions that in my art, you're right, it's a very common rejection. And I think it does provide a notice function that is important in making sure that you have clarity in the claims, so that at least we have a meeting of the minds at that point in the prosecution as to what is intended between the examiner and the applicant.

However, as I mentioned before, it's not a frozen point in time. It's not hard and fast, and we're dealing with words, and, so, we have to be flexible. But I do think that the indefiniteness doctrine is very valuable in terms of providing notice. I think that at least in my art it's very helpful in providing notice. I think giving it broad breadth is important. The Miyazaki decision actually surprised me because I wasn't used to dealing with the relative position of the user and the printer. So, I had a little bit of difficulty getting through that case because it's not part of my world.

But it actually was very, very good because the hurdle in the Patent Office with respect to indefiniteness, and this accuracy and the notice function, it is, the examiner can ask questions and inquire more and be more prodding and say, now, did I get this right? Whereas, the court looks at it after the fact, it's got that presumption of validity, and the place to be more proactive is within the PTO, when you do have that lower hurdle.

MR. COHEN: David?

MR. KAPPOS: Okay. Well, thanks, Bill. You know, I'd add just a couple comments. First, I don't think there is anything additional that is needed in the indefiniteness doctrine beyond what we already have in terms of the authorization. What's needed is to, you know, apply it more

or maybe question more along the lines of indefiniteness. What I'd like to see, again, something that -- where the -- the action could be taken in the examination phase along the lines of, you know, examiners putting statements in the record that indicate parts of claims that aren't interpreted to be limitations, and in appropriate cases, requesting that applicants remove those nonlimitations from the bodies of claims. And I don't have a problem, then, with a applicant responding to that and disputing it and having the discussion on the record.

So, for an example, statements that you see in claims along the lines of, you know, aesthetic kinds of limitations, something being aesthetically pleasing, subjective opinions, statements like that, no problem with the examiners. And I would really love to see examiners make statements in the record and ask that those kinds of subjective opinions be removed from the bodies of claims.

Limitations based only on effect, I think someone mentioned this before. This is a big problem in the IT arts with what is called results-based claiming or results-obtained claiming, claiming the effect of what was done rather than what was actually created. And that is another good place where objections can be interposed and examiners can be caused to take those limitations and say capable of doing X, take them out of the body of the claim because

they're not a limitation that affects patentability.

MR. COHEN: One of the common problem that comes up is when there could be multiple embodiments and perhaps the specification gives an example of one embodiment. And the question always comes up, well, is the claim meant to cover -- cover other embodiments that aren't in the specifications? Is this a question for indefiniteness, is this something that should be handled in that way or not? That's part of the issue that I'd be interested in.

Stephen, you want to talk about indefiniteness in general, and if you have anything on this latter comment, question add it?

MR. KUNIN: Yes, thanks, Bill. I wanted to come back to a point that Mike Messinger made having to do with what the PTO policy had been. One of the things that you have to recognize is that if the PTO doesn't take a measured approach, it can get back to the abuses of the past, where it was an excuse to perform piecemeal examination. Where the examiner basically, instead of doing a search of the prior art, would impose a pro forma set of 112 second paragraph rejections as an excuse not to search the case, and then use that as a way, basically, to make production and avoid having to do a search right up-front.

So, one of the things that the PTO did many years ago in a Board decision, Ex parte Ionescu, which was

essentially the PTO's answer to *In Re Steel*, because the Federal Circuit and the Board of Patent Appeals and Interferences uses In Re Steel for the following proposition. I got a claim rejected on art, and I have a claim rejected on 112.6, second paragraph. You can't have it both ways. If it's indefinite, how can you understand how to examine it so that the art rejection can't be sustained, and you sustain the 112? But if the 112 fails, then, of course, you go to the art rejection.

Now, what was happening in the old piecemeal examination is the examining court was using In Re Steel as the basis not to make both rejections. And the Board said no, no, no, no, we want to see both. We'll tell you which one you're right on, and we'll use Steel on the basis of, well, if it is indefinite, and you're right, we're not going to touch the art rejection.

So, the statement Mike made with respect to avoiding mere technical rejections is what we also have to look at in terms of going too far and the PTO overdoing 112, second paragraph. So, it should take a measured approach, and it should do essentially compact prosecution where, if an examination on the merits can be done concurrently, and there is still some language problems, do both. But don't substitute 112 second, as a way to avoid comprehensive examination.

As to your point, Bill, I don't really see that the aspect of readability of a claim regarding a plurality of species is necessarily a 112 second paragraph problem. Typically speaking, what the PTO does is it uses it as a way by which to look at -- particularly where there is going to be an election of species, and deciding which claims are examinable with which elected species, and then at some point trying to decide whether there is an allowable generic claim for which you can have rejoinder.

So, the aspect of reading on alternative embodiments or even reading on embodiments that are not disclosed, so long as I believe that there is adequate written description and enablement, it's not going to be a 112 second paragraph problem. We've seen, you know, what has happened with respect to the 112 sixth paragraph problem that becomes a 112 second paragraph problem where means plus function limitations are being used. But it seems to me, if we go back to, you know, whether there is a representative number of species to support a genus, then that is fine. You don't necessarily have to disclose all of the potential embodiments.

MR. COHEN: Chris?

MR. COTROPIA: And just kind of following on to the comments. My fear with indefiniteness is it's kind of this truly kind of this empty vessel that kind of the

problem that Steve is talking about this is a great way for me to say, well, look, this is a difficult -- I don't understand what the term means, it's indefinite.

I think it's better, in some sense, is getting back to Rob's idea of kind of efficiently, and Steve's comment, call back prosecution. I mean, examiners are doing claim interpretation when they're taking the claims and they're looking at the prior art and seeing whether these things are valid under 102 or 103. It just seems like you don't get a lot of that discussion, right. And since they're already doing that process, it seems like it should be, say, well, look, when you're involved in that you could make statements, or if it turns out that the applicant comes back and says, look, that is not disclosed in the art, there can be a discussion. Well, what do you mean by processor because I think there is a processor here?

And that is not necessarily an indefiniteness rejection. It's basically making explicit what is implicitly happening. The examiner is making an interpretation decision. They're just not putting that down on paper, or they're not forcing the applicant to engage in that level of discussion. It's just more kind of an element discussion or discussions focused on the prior art.

And one of my fears about this recent Board opinion is that either it leads to just a bunch of 112.2

rejections that don't develop a record that gives us any kind of understanding. It's more of a discussion of, well, what is indefiniteness case law, not what this term means.

And the other thing I'm afraid of, and this is combined with this idea that the Patent Office can do this broadest reasonable interpretation, is that I think that we don't want to sidestep interpretation during examination.

I mean, you know, let the examiners get in this discussion. Well, the specification has this limitation in it. And the applicant says, well, you're reading this, you know, limitations from the specification of the claim, and we can have that discussion on the record. We're producing information that is then going to be able to be used later. And I think this might be the sufficientness. You know, we're not going to interpret every term just for the heck of it. But you know what, if it's in the prior art and there are these questions as to what is process with regard to prior art, I bet you there is a high likelihood that that is going to be a flexibility kind of going forward. And there is not as much extra onerous being placed on the examiner because the examiner is doing this in her head. She is just not putting it down on paper. But putting it down on paper produces an information product that then feeds into claim interpretation later down the road.

Now, I'm sure applicants wouldn't like to have to

get engaged in this kind of process. But they're the ones that know what the claims mean, or have an idea of what the claims mean, you know, have them put it on paper. And, so, that is why I think, not necessarily indefiniteness, but that kind of discussion you're talking about, Bill, I think would be nice to be in the record.

MR. COHEN: Just so that we're all on common ground, we've been talking about this ex parte Miyazaki case by the PTO's Board of Patent Appeals and Interferences, which recently stated if a claim is amenable to two or more plausible constructions, the U.S.P.T.O. is justified in requiring the applicant to more precisely define the metes and bounds of the claimed invention by holding the claims unpatentable under 35 U.S.C. Section 112, as indefinite.

And what we've just heard is the suggestion that rather than perhaps a whole series of indefiniteness rejections, what you're going to have is more back-and-forth, or what could happen is more back-and-forth, to avoid that type of rejection.

Do people see this as the way things are going to go? What do we see as the likely reach of the decision and the likely consequences? Arti?

MS. RAI: Well, first of all, it's not law until the Federal Circuit decides what is the law. So, it's -- let's just put that on the record since the PTO doesn't have

substantive rule-making authority. So, that's A.

B, I'm a little bit puzzled by Chris' point because -- and perhaps a little bit by Steve's point as well because it strikes me that this is a good backstop in case a rule 105-type opportunity doesn't elicit the information you need from the applicant because maybe they're concerned about inequitable conduct or what have you, that this is a good backstop for having -- for then for ultimately producing the exchange. Because, as we all know, there can be several rounds of rejections in patent applications. There is no such thing as a final patent rejection.

So, this is -- it shouldn't be something that is used at the beginning, but it seems to me that it's a good threat to have in the background in case you don't get the information that you need with more soft mechanisms.

MR. COTROPIA: That's a good -- I think that is a really good point, you know. But I think you could also have this thing kicked back with saying look, I think this reads on the prior art, and if you're not going to give me another definition of that term, then you're going to get the 102-B.

MS. RAI: Oh, sure. Right.

MR. COTROPIA: But I think you're right --

MS. RAI: But this is another tool in the arsenal.

MR. COTROPIA: -- that's right. I'm just

afraid --

MS. RAI: It could be overused.

MR. COTROPIA: Yeah, that's right.

MS. RAI: I think that's right, yeah.

MR. COTROPIA: It's like a 101 rejection, you know.

MS. RAI: Yeah. Yeah.

MR. COTROPIA: Which is what people are seeing --

MS. RAI: Right.

MR. COTROPIA: -- you know, I could just say, well, it's just -- it's not subject matter, you know, and we can kind of move on. But it's a good point.

MR. COHEN: Let's try David and then Terry.

MR. KAPPOS: Yeah, okay. Thanks, Bill. So, you know, I would add that, you know, I would give my unqualified support to the general approach used in the Miyazaki decision. I think that during patent prosecution, it is exactly the right time to have the discussion that some of the other speakers have been talking about here. And it's much preferable to get claim limitations sorted out relative to indefiniteness issues while the applicant can still amend the claims, and before putting them in front of a court with all the extra issues that are involved there, and all the inefficiencies that are involved. So, that case, in my view, is exactly pointed in the right direction.

MR. COHEN: Terry.

MS. REA: I agree with Dave that it actually works out into applicants' best interest because they have an opportunity to easily amend their claims at that time rather than due to some -- use some other more elaborate, more expensive, more time-intensive procedure.

But also, I like Chris' idea. We're so focused on the public notice function today that all of this happens concurrently, all at one time, and in real time. It's not parsed out as distinctively as we would like. So, but that is the time when you want to communicate. That is the best communication you will get between the applicant and the examiner.

I do like the *Miyazaki* case. I was surprised how far the Board actually went with it. But the Board was, nevertheless, very clear. So, they also followed a good notice function, and I think they provide clarity.

MR. COHEN: I think we have a few minutes. Maybe we'll start claim construction, carry this about 10 minutes into it, and then take our break.

Judge Rich has stated the function of claims is to enable everyone to know, without going through a lawsuit, what infringes the patent and what does not. And, now, for purposes of full disclosure, I'll have to add that his very next sentence indicated that that was an ideal and really

questioned whether, you know, it really played out in practice as ideally set out. But I guess what I'd started out with is, measured by this standard, do you feel that claims today are successful?

MR. MESSINGER: Maybe I can frame a quick point as we get into it. The way I've always thought of patents is that the, you know, inventor has an idea, it's this amorphous kind of idea, and then it's carried out or implemented in some embodiments that are sort of the specific embodiments that are, you know, it could be in a product, could be in a service, something like that. And then what we're doing is we're putting these claims in the English language that are attempting to kind of bound that patentable invention. And, so, we're actually starting at a pretty amorphous place, we have some very specific products that have a lot of real meaning in the marketplace to a lot of people. And then we're, as people have noted before, we're dealing with language.

Given those difficulties, what I experience is we have a lot of case law that we have been dealing with that for a long time, and there is a lot of doctrines. There is tension between the two, and you can have lots of fun playing with these tensions in law school and all of that, but there is a lot of doctrines and tools available that carry us a long way to determining the metes and bounds of

the claims, and courts are pretty good at it.

MR. COHEN: Arti?

MS. RAI: So, I think that for all the reasons that Mike mentioned, what is more important is having a clear determination very early on of what a claim is and then deference by subsequent decision-makers to that initial determination. Because this is like statute interpretation. One can use canons to reach any result one wants, and on any term that is susceptible to more than one plausible construction, and nonetheless manages to survive Miyazaki.

So, it's much more important, I think, to get the decision-maker, make it clear that the decision-maker -- who the decision-maker is and then give deference to that decision-maker rather than spend a lot of time, as the Federal Circuit has unfortunately has done, trying to get the rules precisely right. And they can never get them precisely right. And then they keep on doing de novo review to get them even more right. And it ultimately is all just a useless exercise, as far as I can tell.

So, here I'd place the blame squarely on the Federal Circuit.

MR. COHEN: Let's try Bob.

MR. ARMITAGE: First and foremost, the patent system probably survives and prospers over the long-term, the more it acts like a property rights system. And the

only way we have today, like it or not, to define the property right is all the rules and regulations and doctrines and canons of claim construction. So, to me, getting this right is actually critical. For reasons I said before, we're never going to get this perfect.

And the -- as patent examination has become much more complicated because patent applications are longer and they are more complicated, and they have more claims, you run the risk that just by the sheer advent of technology, we're not doing enough to get it right in the first instance in the Patent Office.

As important as it is to get it right in the Patent Office, one of the other problems we have is it's counterproductive in a lawsuit to try to construe a patent when we do it early in a lawsuit. And I say that because you understand a claim in context. And you understand the context when you understand the invention, how it relates to the prior art, and what the inventor was trying to do with the words that are being used in the patent application in order to differentiate what I did from what had come before, if I'm the inventor. And, so, when you have a sterile exercise in a *Markman* hearing, before it's really understood what the infringement contentions are, and really what claim limitations are at issue, and how it is that those claim limitations relate to the inventor's ability to define what

came before, you're very likely, at a very early stage in the case, to make an abstract construction that when the judge later understands the case, he wishes he'd done it differently.

And, of course, and I think I've said this before, and I apologize for repeating, but when you use the Markman process to decide whether -- to give the notice of what a claim means, you're merely using a set of words to describe the words in the claim. And you are merely setting yourself up in many situations for the rest of that lawsuit to argue about the words used to describe the invention.

MR. COHEN: Stephen?

MR. KUNIN: Well, very briefly, I think I have to take the opportunity to be a little flippant here because, you know, following on to what Bob said, you know, there has been sort of this commentary after having read many of these articles written by famous law professors where you don't know what the meaning of the claim is until the Federal Circuit tells you. And, of course, we still see in S515 and HR 1260, you know, this provision to have this interlocutory appeal on claim construction.

So, here we are today and we're seeing this still in the legislation, we still hear the debate as opposed to -- as to whether the *Cybor v. FAS* case should be overruled so that maybe greater deference might be given to

reasonable analysis performed by district court judges. And, you know, we've seen the numbers flip-flop with respect to claim construction reversal rates. So, I think that, you know, the short answer is, we wouldn't be where we are today if everybody felt that measured by this standard are claims today successful.

MR. COHEN: And before we go to break, we'll end with David.

MR. KAPPOS: Okay, thanks, Bill. Yeah, following from that comment, I think the clear answer to your question is no, that Judge Rich's vision is not yet being realized in any real -- in any clear way.

I saw an article recently that tracked rate of reversal of district court claim constructions by the CFC are at 34 percent. With a reversal rate at that level, I don't think you can possibly say that we're dealing with anything except extreme uncertainty in claim meaning and -- and its effect on the notice function of patents.

I think that more needs to be done working off of the *Philips v. AWH* decision a number of years ago, which moved the law in the right direction relative to distinguishing between intrinsic and extrinsic evidence and giving preference to intrinsic evidence. But I think that the law needs to move forward to further reward the use of intrinsic evidence and discourage the use of extrinsic

evidence, even to the extent of interpreting those terms that can't be readily defined from the patent specification, interpreting them intentionally narrowly. The same way we look at contract interpretation where we very routinely interpret unclear terminology against the drafter, I'd like to see an approach like that used that builds off of the *Philips* case.

MR. COHEN: Well, a provocative thought to end our session. We'll return in 15 minutes. We'll try to start right at 3:18 or something like that. Thank you.

(Whereupon, there was a brief recess.)

MR. COHEN: We can resume. We had started claim construction before the break. We heard a little bit about the *Philips* case and about possibilities that some issues still remain. I thought maybe we should start by looking a little more deeply into this.

Philips addressed certainly some of the aspects of the choice between intrinsic and extrinsic evidence. Let's try to talk about any remaining problems that it didn't get to that are pertinent to notice. I'd try to organize it within intrinsic evidence, and then extrinsic evidence, and then perhaps other forms of issues.

Within intrinsic evidence, is it now, have we reached a point where resort to the specification and

prosecution history are reliably predictable, or are there still some issues there? Chris.

MR. COTROPIA: I think that probably still the big sticking point is: Read in light of the specification, but don't read limitations in from the specification. And not that this necessarily provides any kind of certainty beyond that, but, again, this is where, I think, notice and substance go hand in hand.

I think there needs to be, and you see some opinions recognized and others not, you know, the reason why we do that. The reason why we do that is because we've got these validity requirements under section 112. There's a reason the specification and claims have to link up together. And I think that if those who were construing had a better understanding as to why -- as to why am I looking at the spec, what am I looking for? Yes, I'm looking to see if they're their own lexicographer.

But I'm also looking to see, okay, well, look, they have this claim term. I know it needs to be enabled. Let's take a look at what the specification does enablement-wise. Let me take a look what these specifications do written description-wise. I think that that might help some. But it's not going to give you absolute clarity, but I think it's going to link the substance up better with the notice you get in a sense that, if you're construing claims

to be valid and looking at the specification because you have these 112 requirements, you've got a better linkage of the substantive goal and you'll get a little better notice in combination.

MR. COHEN: Anyone else with -- with thoughts on -- on the intrinsic evidence viewpoints? What about the issue of determining when a claim is limited to specific embodiments? I take it that is still something that will require further thought, that will continue to come up? I see people shaking their heads yes. Arti and Terry.

MS. RAI: Yeah. I think that this is one of the ways in which you've got a canon and a counter-canon.

MR. COHEN: Right.

MS. RAI: And both the canon and the counter-canon have reasons for existing. And, so, that is why as a consequence -- again, I'm a broken record on this. It's just important to figure out who your decision-maker is, who's going to be applying the canon and the counter canon. Because I don't think either of those are going to go away. And I don't think they should go away.

MR. COHEN: Turning to extrinsic evidence. How clearly did *Philips* resolve questions of when and how extrinsic evidence should be used in claim construction? I guess I'd start with, maybe with dictionaries because we've heard that idea suggested.

Are there significant uncertainties regarding when you rely on a dictionary or, if so, which dictionary you'd consult, or which definition to select? Terry.

MS. REA: Whether or not *Philips* is clear, I can tell you that in the everyday world of litigation, it's working. People look for, you know, the intrinsic evidence is much more important. The extrinsic evidence that people look at, it's very fact and case specific. And, so, which dictionary? Of course, if it's a commonly used dictionary in that art, that would be a preferred piece of extrinsic evidence.

The one thing with litigation is everybody wants to have belt and suspenders, so expert testimony is almost always there. Do you need it? Well, you've got the expert, typically, somebody already there hanging around, so, you use it. But I can tell you that this does seem to be functioning and people assume this is how it operates for good or bad, and it's a system that seems to be working right now.

If the notice function was better, would you be in that situation? Perhaps not. But this is just something that just seems to be working fairly smoothly, in my opinion.

MR. COHEN: Any other views? David.

MR. KAPPOS: Yeah. One other comment on

dictionaries. Bridging off of the *Philips* case, I believe there is an opportunity for dictionaries to play a clearer role than they currently do. Unquestionably, the *Philips* case has made the matter of use of dictionaries get better, but I think they can play an even much better role. And that is, if we can get some guidance and perhaps the PTO to play a role in establishing, at least for the IT industry, a kind of a hierarchy of dictionaries that will be used as a default to help define terms that aren't otherwise defined in patent specifications.

So, the way I would see this working is, of course, the applicant can be their own lexicographer, right?

MR. COHEN: Right.

MR. KAPPOS: And if a term is defined clearly, perfectly fine. The applicant can choose a default dictionary, so long as it's readily available, freely available to the examining court to be able to refer to it. So, if the examiner says I want all the terms in my claim construed according to the IEEE dictionary of computing, perfectly fine. Discussion done. Right.

If a dictionary isn't specified, wouldn't it be wonderful if the PTO had a hierarchy set up to say, if you don't tell us which dictionary to apply, we're going to apply the following dictionary, right? And if the term isn't in there, and it's in the specialty areas, we're going

to apply these other dictionaries to try and find your term, so that we can render clarity to it and understand what it means, and, therefore, not have to have a fight in court later on whether the IEEE dictionary applies or the ACM dictionary applies or some company's dictionary applies or whatever. That way you get clarity up front, again, at the time of the examination, as to what claim terms mean according to which dictionary.

MR. COHEN: Stephen.

MR. KUNIN: I hate to disagree with Dave on this, but I think it's complete folly. And I'll start from the premise that it makes a whole lot of sense when you're dealing with English language applicants and English language technologies. But when you start dealing with applications coming from all over the world with different languages, and translations, and dictionaries, lack of adequate thesauri, I think it's an oversimplification to believe that you could apply that type of process in a manner in which it is presented. I think it's good to try to work on the problem. I just think it's much more complex than it's been laid out to be.

MR. COHEN: Michael.

MR. MESSINGER: I just wanted to comment. It kind of relates to both intrinsic and extrinsic evidence, and just reminds all of us that, I think, some of the ways we

get the best clarity in a patent application in scope is when the best art is in the record. And some of the most frustrating situations we find, and Bob and David mentioned -- alluded to this earlier, is when you have a patent application that is filed. It's very broad and for whatever reason it was allowed on the first office action or very quickly with very little art provided, frankly, by the applicant or art provided by the Patent Office in terms of non-patent literature, and patents and other things.

Those are some of the most troublesome situations that people have been working on very hard recently. And to the extent we keep getting the best art in the record earliest in the process, my experience is examiners are very good at applying that art, and at the same time that almost necessarily forces the applicant to be far more precise with their terms. They can't get away with these sort of broad-sweeping terms that read on very expansive areas of technology.

MR. COHEN: Arti?

MS. RAI: Point with respect to *Philips* that loops back to what Dave Kappos was talking about with respect to dictionaries. *Philips* didn't praise dictionaries excessively because it thought of them as extrinsic evidence, which was to be relied upon secondarily.

But what Dave is pointing out, I think, is really

interesting because then dictionaries in his approach would become part of the prosecution history, and that is intrinsic evidence. And, so, you change the role of dictionaries entirely in the way that Dave is suggesting.

MR. COHEN: Bob.

MR. ARMITAGE: You know, if you look at a dictionary at the time a patent application is initially filed, what it tells you for any term that is defined is what historically that term meant. Because dictionaries evolve over time, and as new meanings develop and come into common usage, then the dictionary definition has to be modified to reflect what the usage has become.

So, if you actually wanted to do this, to understand, for example, what a word really meant, maybe you should look at a dictionary five or ten years later, which of course would then make it extrinsic evidence again. But, you know, I think the main point here is that -- and I'm going to -- this is, you know, the late afternoon, so we need a few radical ideas, so, I'm about to come up with one.

MS. RAI: Just to wake everyone up.

MR. ARMITAGE: So, you know, rather than having a new hierarchy and forcing patent drafters to go read dictionaries, and then write in terms of the dictionary based on what the term used to mean, or at least potentially used to mean, you could think of a patent examination

paradigm where Rob finally gave us the perfect examination process.

Or, really, as you say, Michael, all the prior art is there and all the Section 112 issues are examined. So, by the time you get through this process of torture at the U.S. PTO, you actually have a patent document that, without reference to the prosecution history, would clearly lay out what the invention is. And you can imagine using the rule used some places outside the United States where you simply look at the patent document itself and use that to construe the patent.

And I would urge you to consider whether or not, you know, that kind of a system, in other words, not only no extrinsic evidence, but saying let's look at the fewest possible words to understand what the invention is and how it's being claimed, might actually produce more predictability.

I'll say it for the third time today. You know, there is a tyranny of words. The notice requirement is the tyranny of words. And the more words we use to try to understand the words in the patent, the greater the opportunities for litigants to bring more words into the equation for more sources of more words, and I think the less predictability you have in the patent system.

MR. COHEN: Some have suggested that claims are

inherently ambiguous, and that the best way to think about trying to improve the situation is to move away from peripheral claiming, and to focus instead on -- on the core of the invention, and perhaps couple this with broader use of a doctrine of equivalents.

How would people react to that? I know it's a radical idea, but you started us on that path. What do you think about that? Arti?

MS. RAI: That scares me. Yeah. I mean, and I think there is a reason the doctrine of equivalents has been reduced in scope by the Federal Circuit, at least in the context of amended claims and probably should have been in the context of original claims as well. Judge Rader has suggested that, but he hasn't convinced anyone yet.

I think that that is just giving up the whole enterprise of the patent system, frankly.

MR. COHEN: Stephen.

MR. KUNIN: I agree with Arti that one of the big problems when you go in that direction is that when you look at the doctrine of equivalents, you determine equivalence at the time of the infringement, and you can essentially get a claim enforced for which you don't have your own 112 first paragraph support because it's later, unforeseeable technology.

So, it seems to me that when you start getting

down that realm, you're unraveling this aspect of perhaps the value of adherence to 112 first paragraph requirements to improve the situation.

MR. COHEN: Chris.

MR. COTROPIA: I'll go the other direction. And let me -- and there is actually -- I have a rationale. We'll see. I don't think that necessarily we should get rid of peripheral claiming. I think the claim gives us a nice lens to take a look at the specification. We need to know what parts do you think are the combination and it helps examination, et cetera.

I will say, though, if you look at a lot of claim interpretation cases, they're essentially substantive determinations. The judges are saying – they're looking and they're saying: You know what, should they be able to capture that variation or not? Right? And they couch it under this very kind of pristine -- oh, I'm very methodical process of claim interpretation -- when really my bet is, and you'll start seeing it, discussions like, well, that's not what they invented, et cetera. These are substantive determinations.

Should the limited claim to biologics get a later biologic or not? And the beauty of the doctrine of equivalents is it makes no debate about it. It is a substantive policy call. Right? Is this equivalent or not?

In some ways we kind of take the policy question, just throw it on the table.

I mean, I kind of feel like that this kind of modern death of doctrine of equivalents is, essentially, we're making equivalents determinations but under this guise that we're following this methodology to a T when really we're not. We're making substantive determinations all along.

So, that is why I think it would be nice to move a little bit away from, and I'm hearing this a little bit here, this idea that we're getting the correct claim construction, and this is what the claim means. And kind of take the emperor's robe off and say, look, you know what actually is happening is there are some substantive determinations. And that is why I would like to see maybe a little bit more of a role for doctrine of equivalents. So, then courts would have to sit there and make this determination. This is a variation, you know. Should they be able to capture or not? And we could have these discussions about whether they need that scope to provide an incentive, et cetera.

MR. COHEN: What would this do to notice for third parties?

MR. COTROPIA: Well, no, I think this -- well, this is the difference, right? Is that we have a notice

substance.

To me, one consensus I think we have here is that if I have a claim and we all engage in claim interpretation, that the idea that at that stage we get some definitive notice, at least for litigated cases, is unlikely. Right. We would all potentially go in with different interpretations.

And, so, notice would take a back seat, but it would expose the substantive determination that is being made. And, again, it's this question of -- well, what is your goal? Are you so notice-oriented that you'll give biologics smaller protection because I want really good notice? Or am I going to be very kind of standards driven? I want to make sure I give you the best protection you can get. And we'll use doctrine of equivalents in those kinds of cases.

I don't think we should get rid of claims, but it would be nice to have that discussion more out in the open as opposed to under the guise of, well, should they be limited to the specification embodiment or not? Which is really a discussion of, well, how broad a claim should we give them? You know, doctrine of equivalents might be a better way to do that.

MS. MICHEL: Does it affect your answer at all if doctrine of equivalents is going to a jury?

MS. RAI: Exactly.

MR. COTROPIA: Well, first of all, I've also heard this kind of -- claim interpretation should be a fact issue that should be decided. Right? So, let's say just in that way, right? So, say, well, claim construction is a matter for the court, but it's a fact determination. Well, then maybe doctrine of equivalents, kind of returning it back to kind of its equitable roots, would be a judge determination, right, that would be reviewable.

So, just as much as you would say, well, I'm willing to let a judge construe a claim and give them deference, well, then maybe the better middle of the road would be between the two of them. I don't know. I'm not saying that we should completely kind of reverse trend. I just bet that if you look at all these cases, there is in some ways a DOE-type of analysis that is going on. But it's going under the guise of: Read in light of the specification, or read limitations in from the specifications.

MR. COHEN: Bob.

MR. CLARKE: Yeah, I mean, the question of doctrine of equivalents is an interesting one because you could make the argument that if a jury decides it or if it's clearly outside the literal scope of the claim, is it just a free-flowing hunting license on the part of a patent owner?

And we know when it looked like there was an expansive doctrine of equivalents, there were lots and lots of infringement claims that were basically just DOE claims.

And the way I've always looked at this is for the limitations of just using language to describe inventions, you need something more than literal infringement for those relatively rare situations where it's clear it's just manifestly unfair, as a matter of equity, to deny infringement. And we've never, you know, got the jurisprudence to work out right so that you had that manifest unfairness requirement where the court would simply say, you know, there just wasn't plain a word or collection of words that was going to work but I'm going to find infringement nonetheless. I actually don't think that detracts from the notice requirement.

But as much as I think there is a tragedy in the DOE today, I think for the patent system and the integrity of the patent system, there was an equal tragedy when the DOE appeared like a hunting license for patent owners.

MR. COHEN: Arti?

MS. RAI: I think that to Chris' point that we should be honest about what we're doing, and let's assume for the purposes of argument that the judge would do this because I think the really scary part is having the jury do this, but let's just assume that we have a better scenario,

and the judge is doing this. I think that is a fair point. You know, it's fair because I suspect that sometimes judges are just at the end of the day doing that.

But as we all know, it's good to have rules to constrain decision-makers even when the decision-makers don't always abide by the rules, because if you just let them believe that they could always have discretion, then discretion would run amuck. So, this is kind of an institutional how you set up an institution properly point.

I think that people will always disobey rules, but it's good to have the rules there lest they disobey them too much.

MR. COHEN: Okay. Let's now say that we've issued the patent, we've dealt with what we could to resolve claims, but you're in court and there is still some ambiguities. To what extent -- well, I guess I'll just ask.

Should courts, in that type of setting, resolve the ambiguities by giving claims the narrowest reasonable reading? We heard this suggested earlier. Is that the way to go? And is that the current practice? Sometimes you see this in court opinions. Is that really what is done? Stephen.

MR. KUNIN: Well, actually, it seems, from my reading of the case law, that the more recent trend is to hold the claim invalid for failing perhaps 112, second

paragraph or some other requirement. I mean, one of the famous cases was that *Chef America case*, you know, with respect to are you going to, you know, cook the contents in the oven to that temperature or the air in the oven? And instead of interpreting it in a narrow way to save validity, the court said to hell with this, we're just going to say it's invalid.

So, you know, it's the applicant's responsibility to draft good claims. So, I'm not certain that that doctrine when you read the *Philips* case was endorsed as a fundamental principle; namely, that, you know, if last resort interpret the claim narrowly to save it from invalidity.

MR. COHEN: Anyone else about narrow interpretations?

MR. MESSINGER: Well, just in practice you see many cases where courts are leaning towards narrow interpretations for finding non-infringement. And to actually find have a finding of infringement is a pretty serious remedy for a court to issue. And they tend to be looking for some real substance to support that. And that is going back to what we talked about before with the specification, the intrinsic evidence and that kind of thing, to be comfortable to find infringement.

MR. COHEN: Yes, Bob.

MR. ARMITAGE: Yes, I guess I have a couple of concerns. One is we already have a doctrine of broadest reasonable construction for examination, whatever that means. And then we construe claims as a matter of law, which means they're supposed to have an appropriate -- a single, appropriate construction. So, this is kind of a third doctrine of claim construction, and, you know, maybe it's a doctrine too far.

There's also, I think, a profound difference between saying, okay, the patent owner had a chance to define and limit the claim to non-obvious subject matter. But, actually, the way the claim is drafted, as a matter of law, is broad enough so it's not valid. You know, you're not allowed to have both patentable and non-patentable subject matter in the same claim. You keep the claim around for the patent owner to be able then to bring a lawsuit against another party on slightly different facts another day.

And, so, probably the better public policy argument for ground one and ground two is not to create yet the other doctrine. And if the claim construed as a matter of law, whatever that means today, is broad enough to include subject matter that is not patentable, then the claim's not patentable, and that is the reason the case is over.

MS. MICHEL: Bob, when you say that, are you thinking not patentable under 103 or not patentable under 112?

MR. ARMITAGE: It could be either. So, for example -- I mean, let me give you an example, and it goes back to a case decided a long time ago, *Amgen v. Chugai*. Where GI, Genetics Institute, had a patent on a purified erythropoietin defined by bioactivity where the claim included the word "about." So, that, you know, I mean, how many patent claims have the word "about" in them? What, about a third? I mean, in certain areas it's a lot.

And, you know, the court said, you know, this simply could have two meanings. We could probably give it a narrow meaning, but in this case it has to distinguish over the prior art. It's not clear that it does. And, therefore, gone on indefiniteness grounds. That's probably better than giving that claim a very narrow reading and preserving its validity depending on how narrow you actually construed it because there wasn't a clear intent in that case, I think, to, at least according to the court, distinguish over the prior art.

MS. MICHEL: What about in the sense of written description requirement and enablement? To what extent do we let that body of law drive claim interpretation in order to preserve validity? Whether we give a claim term a broad

interpretation or a narrow interpretation, whereas the broad interpretation you're going to have an invalidity problem under written description requirement.

MR. ARMITAGE: You know, again, I'd have to say the better way to do this, for the long-term health of the patent system, is to invalidate those claims. You'll create a body of law on invalidity that will feed back into patent examination. That body of law is tools for examiners to help fine tune claims in the future.

But if you don't do that, you're going to -- I mean, let's say I'm a patent owner who's been vague and greedy, you know, the folks that you deal with, who want -- according to what you've testified to earlier, the people who have these aggressive patent claiming practices. If you don't have some strong disincentive, what will happen in litigation is they will actually go back to their own specification and start reading in limitations that really aren't in the claims that narrow their scope that then defines patentability. And the defense against that is to say, sorry, you know, you can't read -- I can't read limitations into your claims as an accused infringer to avoid infringement, and you can't do the same thing now that you've been caught red-handed with a claim that is not enabled or doesn't meet the written description requirement in an attempt to salvage it.

MR. COHEN: Arti?

MS. RAI: So, maybe I'm going to phrase what Bob is saying in a slightly different way, which shows why I think what he is saying is exactly right. That basically you're -- if you let the court save the patentee expost, you're encouraging them exante to act really badly. So, and I think that is what you're saying, that you were basically saying, okay, we're going to save you at the back end, so at the front end do whatever you want and create this horrible patent that you then can threaten people with and we'll save you at the end by rendering it valid by construing it narrowly.

MR. COHEN: The discussion has been in terms of whether the broad -- has been on the basis of the thought that the broad construction would lead to invalidity. Is that what you're likely going to be facing in reality, or are there going to be a significant number of cases where you could have either a narrow or a broad interpretation, both of which would be valid, one of which would lead to more infringement and might surprise third parties? In that instance, perhaps the narrower interpretation serves the notice function, but you're not dealing with a validity/invalidity choice. Or does that just not arise?

Are you always likely to run into prior art when you go to these broader interpretations? Stephen.

MR. KUNIN: I'll try to answer the question perhaps with a little bit of different framework than you put it in. I interpret, perhaps what you're saying is, and this goes back to an earlier question you raised. And that is, you know, let's assume for argument's sake that you have a claim that meets 112 first and second paragraph requirements, and you've got two embodiments. And the accused infringer is basically practicing one embodiment, but not practicing the other embodiment. And, of course, the accused infringer may be making an argument that, properly construed, the claim really only reads on one embodiment, not on both embodiments. And if it only reads on the one I don't infringe, then I'm a non-infringer. And, therefore, in terms of broad interpretation, it might be -- it reads on both species, a narrower interpretation only reads on one species.

So, within that particular context, my answer would be, well, if it meets 112 first paragraph, and 112 second paragraph, and it is reasonable to construe it as reading on both embodiments, and reads on both embodiments, and that that is just a spurious defense.

MR. COHEN: So, the burden wouldn't be on the patentee to have made it clear that it read on both, if it was claiming both.

MR. KUNIN: No, actually, I would review it in a

different light and this would go back to another aspect of intrinsic evidence. And that is assuming for argument's sake that, given the fact pattern that I just gave, add an additional nuance that during the prosecution history somehow the applicant, in making arguments, made arguments which were reasonably construed that the claim could only read on one embodiment, but not on both embodiments, and then was changing his tune in court, there, I think, you'd have perhaps a disclaimer of claim scope through prosecution history, and in that circumstance you hold it against the patent owner. But, again, it seems that you end up having to build up, you know, a record in order to reach that conclusion.

MR. COHEN: Any other thoughts?

Okay. Let's turn to examination and the source of this prosecution history that Stephen's relying on. Perhaps the place to begin would be asking would notice be meaningfully improved if applicants were required to do more? And let's lay out one possibility. What if they were required to provide claim charts? Would that be beneficial? Or would there be too many downsides to that? And would you get anything useful out of that? A whole set of questions. Terry.

MS. REA: I wasn't sure what you meant by claim charts. Was that like taking each recitation within the

claim and showing where support --

MR. COHEN: Right.

MS. REA: -- existed within --

MR. COHEN: And what --

MS. REA: -- this patent specification?

MR. COHEN: And some wording to give an explanation of what is meant by it.

MS. REA: So, you're almost being forced to come up with a definition on your own during prosecution.

MR. COHEN: On your own.

MS. REA: And, so, you would be forced to draft an application that would meet those requirements at the outset. You know, words -- I come back to how imprecise words are. And I think something like that could be done, but it would be -- would it be useful when you face the end game, when you actually have a product and you want to assert it against somebody else? Once again, I'm not sure if that would actually solve your problem.

MR. COHEN: Saying you need a context to get a meaningful result?

MS. REA: You know, if you had said --

MR. COHEN: Try to elaborate why --

MS. REA: Okay. I guess --

MR. COHEN: -- why it wouldn't --

MS. REA: -- because you're --

MR. COHEN: -- why it wouldn't work.

MS. REA: -- Assuming that maybe there is not support in the application as originally filed for all of the recitations in the claims and that maybe if you neglected to define or describe an element, that would be apparent if you were supposed -- if you were forced to do a claim chart. Is that sort of what you were thinking? But just coming up with your own definition, even a definition, it's not going to take away much of the vagaries that will occur with litigation, in my opinion.

MR. COHEN: And, again, but you're placing the focus again on the specification, on tracing back to support in there. I'm trying to suggest or ask about what if the focus is on third parties and whether useful additional information would be provided as to the intended scope of that claim through a device of this nature.

MS. REA: Just not relying on a dictionary necessarily or dictionaries?

MR. COHEN: Yeah. No, this would be the applicant's expression of what the claim means.

MS. REA: I don't think much additional notice would be provided to third parties via such a claim chart.

MR. COHEN: David.

MR. KAPPOS: Yeah. I tend to think that claim charts, if I understand what you mean, probably would not be

very helpful and add much to the notice function. I do, on the other hand, think that there are several things that applicants can be doing and they're really along the lines of providing more correspondence or a glossary, in effect, so that it's -- it's easy for the examiner to be able to find for each claim term where it was used or defined in the specification and not have to hunt around for it.

Or just, you know, later on the public learns that the term wasn't used or defined anywhere in the specifications. So, I think that kind of sort of factual, I call it a glossary of terms, is something that would be very helpful. I also think that it would be great to see applicants and even the Patent Office use some of the tools that are already available that could help in this regard, right? You know, technology-based tools that can be applied to electronically filed applications already exist that can identify terms that are used in claims and aren't found anywhere in the specification. So, that is a tool that, you know, applicants should be using so they can fix those problems before they put them over and lay them on the doorstep of the Patent Office.

And to the extent applicants aren't using them, the Patent Office can use those tools, enabling examiners to very efficiently say, hey, you know, you use this term in your claim, I can't find it anywhere in your specification,

what is going on here?

So, I would see a role for, you know, glossaries and tools that can do a better job of establishing notice.

MR. COHEN: Stephen.

MR. KUNIN: I'll go back to a point that Rob Clarke made earlier, and that is, I don't see the claim charts would be particularly helpful, particularly for the patent examiners. That when issues are joined during prosecution in terms of what I would call the significant interpretations of claim limitations for any given condition of patentability, that is an issue that the examiner is dealing with, that as to that particular matter, during the prosecution there is going to be an indication from the applicant as to what the applicant means. Particularly in relationship to -- if the examiner has a different interpretation, and the examiner's different interpretation is a basis for rejection.

So, to me, the aspect of focusing on the critical issues during prosecution and developing that record, at least from a perspective of my experience within the PTO, is more valuable to the examiner than having claim charts would be.

MR. COHEN: Could the examiner do more to elicit responses from the applicant that would create a stronger prosecution history as to what is meant?

MR. KUNIN: Oh, absolutely. I think that is supposed to be what the prosecution history is. I mean, the gist of it is, you know, the examiner is supposed to provide the reasons why he or she believes he or she is correct, both as to fact and legal authority in support of position taken. And the rule, the PTO has specifically a rule, 1.111(6), that puts the burden on the practitioner to specifically point out the reasons why the examiner was wrong and the reason why the applicant is right.

MR. COHEN: Rob.

MR. CLARKE: I just wanted to add in that in terms of adding tools for the examiners to use, we have kind of an ambitious but revenue-dependent project to go into more of a rich text file wrapper as opposed to an image file wrapper. And the rich text file wrapper would allow for use of many tools to look at, you know, claims, particularly added claims and go back into your specification and find where the support is, using the automated tools as opposed to examiner time.

And where that shows a problem, that gets into your disputed limitation. It makes it easier for an examiner to find the limitation that perhaps isn't supported and then to challenge the applicant as to where the support is.

So, you know, obviously, it's a funding issue on

whether or not, you know, whether and when we were going to go forward with more of the rich text format of a file wrapper.

MR. COHEN: Chris.

MR. COTROPIA: Kind of two points off of some of the comments that have already been made. I think, you know, maybe it's just that examiners need to know part of -- and they might know this or not know, part of the use of what they're doing is -- is going to be used in claim interpretation going forward. So, that when they make rejections, they don't just simply say all the elements. You know, they might make that next step, the processor is found on page X, so that starts to lay this foundation of kind of definitional type of linkage between -- there would be the claim term and the prior art, which then would force some reaction back by the applicant to say, well, no, that doesn't properly disclose our processor, et cetera. That would be used better in prosecution history.

The second thing, and this kind of goes to Rob's point, and back to this discussion about, well, should we invalidate the claims or should we simply just construe them narrowly? I think there is some feedback function, even if it's about interpretation. If I know that if I add claims that have terms in them that are not in the original specifications, and I know that there is an automated tool

that is going to kick back an automated rejection that says, you know what, there is no 112.P1 support for that new claim. You need to show it to me. What is the reaction going to be?

The reaction is going to be, I'm going to make sure I draft applications or use terms, because I don't want that friction in my prosecution history. And this is where I kind of push back a little bit with I think if you interpret, in light of validity, most people -- who are not the, maybe the bad, vague people -- are going to say, you know what, I want claims that have broader scope than narrower scope. And if it turns out I start getting hit in litigations where my scope is being narrowed because I don't have support, when I draft my next application, I want a successful litigation. I mean, I'd much rather capture the product than not capture it.

So, there is some kind of information-producing effect with this type of stuff. And, so, if I know examiners are going to do things that are going to influence my interpretation later down the road, presumably most rational applicants are going to react accordingly because they would like broad. They're the people in the bio meeting, yea -- yea -- yea. Broader -- broader -- broader claims, you know. And they'll react accordingly.

So, I think there will be a nice kind of cyclical

effect here if examiners kind of knew what was being created and how it was going to be used.

MR. COHEN: Bob.

MR. ARMITAGE: Yeah, I thought maybe for the benefit of the youngsters on the panel I would provide some early history of the patent system.

When I started work, examiners did have actually rich text tools because patent applications were shorter and prior art searches -- there was a lot less prior art in those days -- so the tool they used was reading the patent specification and knowing exactly what was in it. And as a result, the use of claim charts, at least by me, was ubiquitous, in this sense. I never -- I wrote hundreds of patent applications, and I never once wrote a patent application without taking exactly the claim that I was going to try to get. And I started by writing the claim, not the specification. And I put the claim in the patent application right under the summary of the invention.

And then I methodically went through all the terms in the claim and explained in the patent application what they meant, knowing that the examiner would actually be using his rich text tool to understand what it was the invention was. So, I am concerned that we artificially create this other extrinsic document to the specification. I think that is a make work project. But I do think we need

to perhaps go forward, to go a little bit backward in terms of how patent applications are drafted and how much fidelity you have to a written description and/or enablement requirement.

And when you amend your claims, I don't ever remember in the -- any of the amendments I ever did to a patent application where I didn't go back in the specification, find the part of the application that supported the amendment and put that in my amendment to the claims, largely because if I didn't do it, I was going to get a rejection from Rob's folks.

MR. COHEN: Just to pull together a number of the suggestions we've heard, and to get any additional reactions from any of you. We talked about claim amendments. What if applicants were required to provide written statements with the purpose of claim amendments? That's one possibility. Another might be reasons for allowance which we've heard talked about. What if examiners were required to supply reasons for allowance that are directed toward revealing what they understand the claims to mean? Would that be useful?

We've heard about the idea of the PTO selecting default dictionaries or setting glossaries. We've heard about the idea of applicants being required to define terms.

Just opening it up to everybody before we move on

from this set of questions, anything anyone would want to add as to whether these are likely to be useful ideas. Mike.

MR. MESSINGER: Yeah. Just to address those, the way it works in many situations at the Patent Office, and partly why I have some of the concerns with some of these suggestions, is you have a pending claim or let's say a term, and whether or not you add a definition in your actual specification actually makes a big difference. If you add a terminology section with a specific term just using existing practice, when the examiner starts applying art against you, you can point to that explicit definition and thereby have the patent -- have the claim as written with just the term in it issue without actually taking that definition and putting it into the claim itself.

Now, what often happens, in many cases, is for whatever reason the applicant has not provided an explicit definition. And in that case the examiners call you on that, especially if it's a disputed limitation, as Bob is pointing us to. And if it is a disputed limitation, the response to the applicant often is, well, then you're forced to actually put language in the claim itself. And for notice purposes it's that literal language, which is kind of the highest form of notice.

And, so, I would imagine we'd want to be

encouraging that literal language in the claims themselves to be strong. And my concern with the claim charts, A, it's a lot of work and it's kind of cumulative to what they already have. But it may actually defeat the incentives, now that we have to actually put those limitations in the claims.

And I actually started mentally thinking how I would write one of those charts. If I have a claim step receiving a message, I'm going to say, well, that element means receiving a message, including but not limited to, and then I'm going to list everything in my specification.

And, so, to get back to Bob's point about words about words, now when you go into a *Markman* hearing or something, you're going to have the word, then you're going to have my words about the words, which are self-servingly broad, and then I don't know. It just doesn't seem -- it's cumulative. You're not adding a lot.

Purpose of amendments, there is a part of it that seems very difficult because courts have recognized that it's very hard to do claim construction without an accused product. And at some point the more we're asking applicants to do in the absence of accused product, it's going to make it a little more like a lottery on whether or not what the applicants did at the time they're filing just happened to be consistent with whatever the accused infringer is doing

five years later.

MR. COHEN: Arti.

MS. RAI: So, this isn't what I was originally going to say. But it does worry me when I hear people say it's very hard to do claim construction without an accused product because I think that really does undermine the certainty rationale that we're trying to, you know, advance in this context, because there are all sorts of reasons why, you know, you don't want to have to wait until the accused product comes along before you want to have a pretty dispositive claim construction.

And that relates to the point I was originally going to make, which is, there is a question in paragraph six under Section 3 on will these questions like, for example, if the examiner made a statement regarding what a claim term meant and that was part of the prosecution history, would that be regarded as part of prosecution history and intrinsic evidence or would there be a deference piece to it? I think as a strictly legal matter, I would predict the Federal Circuit would only look at it in terms of prosecution history, because currently it views claim construction as entirely a matter of law to be determined de novo. Now, that may change, but I think that is currently the way they view things.

MR. COHEN: David?

MR. KAPPOS: Yeah, thanks, Bill. So, you know, I would identify a number of the sort of exchange of written comments that you've mentioned, and for the most part I think that the examining practice already handles them pretty well. The rules are already in place. So, for instance, the, you know, requirement for the applicant to provide written statements about where support is found in the specification for claim amendments. The Patent Office rules already do require that, and I think those are in good form.

My observation is they actually are pretty well enforced. Usually there is clarity around that kind of action on the part of the applicant.

Relative to examiners supplying reasons for allowance, I'm a big believer in good reasons for allowance and the value that they can provide. And, again, the clarity that they put in the record because, if the applicant disagrees with the reasons for allowance, perfectly fine, the applicant can then put in the record why he or she disagrees. And you've got a nice record in the patent file history then that people can later understand.

The trick with reasons for allowance is really getting them to be precise and to identify what it was that caused the applicant or the examiner to decide to allow the claim and what about the claim was found by the examiner to

not lend patentable weight to it or to be unimportant. And, so, the more precision that can be put in those reasons for allowance, the more value you're going to get and the more of an exchange you're going to have on the record, which all inures to the benefit of the public.

MR. COHEN: Bob.

MR. ARMITAGE: Yeah, just probably a little disagreement with Arti and the idea that the courts should really have an accused product in front of the court before doing really a determination of law as to what a claim means. Courts are there to decide cases or controversies, and you can't do that in an infringement suit without having an accused device in front of you to know which -- which claim limitations are relevant to that dispute and which aren't. And in most cases, you also need to know what the prior art is.

And, so, imagine a judge looking at a claim term like warped. And one party says it means contorted and the other party says it means really bent out of shape, and the judge is reading the patent specification and she can't figure out whether it means one or the other. But if she actually knew what the prior art was, why the examiner used the word contorted, you would have a much better idea of the context in which to decide it.

And then if it turned out that whatever it meant,

it didn't make any difference to this particular accused device, the case should be over there. I mean, there should be no -- the case not dispositive over, but the issue doesn't arise in that case. It shouldn't even be decided.

So, I think the more context you have and the more you assure that you're just construing those things that are necessary to understand, non-obviousness, novelty over the prior art and infringement, the better claim construction will work.

MR. COHEN: When Bob accepted the invitation to join us, he let us know that he had had a prior commitment. He's going to have to leave a little bit early. I want to turn into one more area while you're still here, of particular importance, and that is the issue of timing and how that relates to notice. And we'll pick up other issues after -- after you've left us.

As to timing, I'm thinking here in particular about a set of issues that would involve continuations, reissuance, provisional applications, deferred examinations, all of this. But starting just with continuations, let me throw something out and see if everybody agrees. Do all the panelists agree that there is some tension between continuation practice and public notice? I see everybody shaking their heads yes.

MR. ARMITAGE: My head was entirely motionless.

MR. COHEN: Oh, you're the -- one motionless head.

MS. RAI: No tension whatsoever.

MR. COHEN: But no -- no no's. No heads going back and forth with a no. If so, is the tension serious? Anybody want to jump in there? Stephen?

MR. KUNIN: Well, I think it's serious enough that a lot of people are writing about it. And I think where we see some of the, you know, the issues being joined has to do with particularly the issue of what I would call the broadening continuation, filed substantially years after original application was filed. And, of course, you have the tension on one side with respect to -- but if the claims have 112 first paragraph support, then, you know, what is the harm of writing claims that might read on what is in the marketplace that you hadn't thought about maybe earlier on?

And on the flip side, we're seeing a number of people who believe that perhaps in some time-limited circumstance, perhaps a form of intervening rights should be applicable for this so-called late claiming. And then there is everything in between. You know, when you have a situation where perhaps the applicant was seeking those claims all along, and was going through myriad appeals in order to successfully convince the PTO, the Board of Patent Appeals and Interferences, and maybe the Federal Circuit of the correctness of your position, and, therefore, it took a

long time to be vindicated. So, you know, in that circumstance, I think there is a lot of fact-specific considerations, but certainly I think under the broad issue of the -- I would say the broadening continuation late filed has certainly been a subject of discussion. It came up not too long ago at the PTO's roundtable on deferred examination that some of us participated in.

MR. COHEN: Let's go down the table this way. We'll get to Bob before he has to leave at 4:30. Terry.

MS. REA: Very quickly. I wanted to say that some continuations are filed because one was unable to arrive at allowable subject matter with the examiner in a particular case. And, so, a lot of continuations are not necessarily voluntary. Now, that does work, you know, adversely to the notice function because you're delaying identifying what you think you have a right to or right to preclude others from practicing. But in the area of biotechnology, in particular, it takes a number of continuing applications typically to arrive at allowable subject matter with the examiner. And, so, to get your first application allowed may necessitate, very easily, three applications.

And we're dealing in difficult economic times right now. Everybody, including the Patent Office, has rather extreme budget constraints. And, so, at least that is one art area or technology where there does seem to be a

delay in the notice function because it's a delay in getting an agreement as to potentially allowable subject matter in the PTO.

So, I just -- continuations can be filed voluntarily by the applicant. You can get allowable subject matter, and then voluntarily file a continuation and that is one scenario. But in some areas of technology, biotech, in particular, you need to do it just to get something that you think you have a right to allowed and hopefully you are successful.

MR. COHEN: David?

MR. KAPPOS: Yeah, so, I would add what I think is kind of an intersection between continuation practice and publication right, 18-month publication, which is of course not required. Most applications are published anyway, but not all of them. And one -- where the problem of the notice function gets to be acute is with those applications that are elected out of publication, and then potentially have lots of continuation practice. And it brings up the old issue that we used to call submarine patenting.

So, you know, putting another sort of a radical idea on the table here. Perhaps some consideration should be given to prohibiting the filing of continuations or at least, you know, some excessive number of continuations, at least for those applicants who elect not to publish. That's

the case where you have to put the patent application most in conflict with the notice requirement.

MR. COHEN: Bob.

MR. ARMITAGE: We know particularly in the era since the doctrine of equivalents fell into disuse that patent owners file continuing applications to use different words to describe their inventions, sometimes a little broader, et cetera. And the rationale being they're going to be stuck with whatever the literal language of the claims mean in all likelihood, and, therefore, they want as much different ways of expressing the language as possible. So, if we assume that magically -- magically somehow you had the perfect doctrine of equivalents that was used when it was needed, and erased the tyranny of language in that sense, then, you know, it's clear that the ideal patent system would, in a very rapid fashion, resolve the scope of the protectable subject matter.

And it would do so -- it would do so in a way that, for example, instead of when the examiner and you disagree about whether something is patentable, you have access to a timely appeal at the Patent Office Board of Appeals and Interferences. If I go back to the way the world was when I started, you know, there was a rare situation when I would file a continuing application. There was the common situation where if the examiner and I didn't

agree, I just took the case up on appeal, and that was the end of it.

And so, you know, I think this is a very, very hard issue for the patent profession. We've become really addicted to a continuation practice, to some degree. Throughout the 20-year term on some occasions, intemperately, called it the opiate of the patent profession, because you just can't resist one more continuation, one more chance to a few more claims.

But, you know, if we're really honest and we resolve the DOE issue, it's terrible for a property rights system. It's just absolutely terrible for a property rights system.

MR. COHEN: What is the case for allowing applicants to claim through continuations market developments that evolve years after an initial application? Would anybody want to state it? Anybody want to take -- anybody have that point of view that there is a need for that? Some of that, at least.

Stephen?

MR. KUNIN: Well, I'm not necessarily going to defend that, but I think there is -- there is longstanding case law that says there is nothing wrong with that so long as there is 112 support for the claims. So, in view of the fact that this is not an issue that the courts haven't dealt

with in the past, and that we've got case law, maybe Bob can correct me if I'm wrong. My recollection was the *Standard Havens* case was a case that in the opinion addressed this issue and basically said there wasn't anything fundamentally wrong with late claiming so long as it had 112 first paragraph support, even if it was reading on what was happening in the marketplace that, you know, the applicant was not aware of, without obviously letting the continuation practice exist and see what the market did.

MR. COHEN: Michael.

MR. MESSINGER: Yeah, I just want to bring us back to the world of practicing entities in terms of what often happens is, you know, you're the first to invent, and you're developing your product, and you're rolling your product out, and you're laying out your patent portfolio to sort of track that. And, so, in a way you've created the marketplace and you're following the marketplace. And so, I think the public policy analysis is different when you're sort of following the practicing entity as they legitimately hit the marketplace the first time with their invention and cover it.

And what I see in that situation a lot, and Bob touched on it, is you file your first case with what you think you're entitled to. They tend to be pretty broad claims, and then there is a negotiation. At some point

there is often a deal cut and -- and it makes a big difference to those early days of commercializing your product to have the issued patent versus the application. So, there is a lot of strong incentives to not just sort of go up to appeal on that first asset, so that you get one asset. And I would argue in other ways that is very good for the notice function, in that you do have one clear asset out.

People have mentioned, well, what do you do with a continuation? And often you file a continuation. In my experience, for the practicing entity, often they tend to very much go back, not necessarily broader than the original filing, but just further refinements. And in that sense, I think the public notice function is pretty clear. You still want fast patents, settled rights, and all of that, but we have many times been in situations we're monitoring this for competitors, and you're sort of watching what is going on at the Patent Office. The Patent Office has some pretty good tools, rich text or image, and you can sort of follow the continuation.

And sometimes on that broad continuation, it is still within the same scope of what they were originally asking for, and you've got that, you've been following it, and you're hoping the Patent Office is going to maintain its rejection, if you're sort of the third party, but you're

able to watch all that, and you monitor it. The difficulty is what other people have mentioned, when all of a sudden, it's either not published, or for some surprise turn of events, they go in a very different direction that is very broad compared to the original filing. And that is -- but there are some sort of issues.

I mean, they're only entitled to assert claims once it issues, and then it's the patent term, and maybe there is some intervening rights issues or remedies like Steve was suggesting for -- for very late claiming.

MR. COHEN: Bob, I want to get you in as much as possible before you have to go.

MR. ARMITAGE: Yeah. You know, I developed stronger feelings on this issue having one client in private practice that was a small company in New England, and they were infringing a patent, and they engineered around the patent. They were in litigation, engineered around the patent. And, you know, the damage phase of the trial was still going on. And then the patent owner issued a second patent, and sued them for infringement a second time. So, they reengineered the product the second time to avoid the second patent, and that case was still going on, even though it was, you know, validity and probably if the patent is valid, is there going to be infringement? And then the third patent issued in the continuation chain, and they were

sued for infringement on the second modified embodiment on the third patent, at which point they just gave up and got out of the market altogether and settled the case.

And you're right. You're right. As a matter of law, there is nothing wrong with doing that under the patent statutes. You're perfectly entitled to do it and follow the market, and claim your invention in as many ways as your original disclosure can support. But I don't think that that is good for the patent system. And I don't think, frankly, there are too many people who think it's good for the patent system if they're honestly looking at patents, and trying to respect them, and trying to understand what is going to be claimed and what is not going to be claimed.

In this particular case, I doubt that after the first patent the other two were really ever going to be upheld on validity grounds for many reasons. But there was never going to be an issue. At some point, we will have created a patent system that is so expensive to operate, continuations being one reason, that as for a determined infringer, they never have to worry about a patent owner of limited resources. And for a determined patent owner, they never need to worry about what allegations of infringement they make against a resource-limited infringer.

MS. MICHEL: We heard yesterday some panelists talking about they actually would look at a specification, a

published specification, and try to predict the claims that would come out of it and design around those to try to avoid what your client went through. Did your client try that? Is that a possible thing?

MR. ARMITAGE: Yeah. The difficulties, the one I alluded to, if you look at what might be validly patented, that was going to turn out to be irrelevant because you were never going to be able to afford to be in a relatively modest business with someone who simply was going to continue issuing patents and bringing new allegations of infringement. And they were not, you know, there wasn't a rule 11 issue where you could go back. The Patent Office issued the patent, presumptively valid.

They deliberately wrote the language to read on the device, so your defense would be the Patent Office doesn't know how to apply 112 or some similar defense.

MR. COHEN: Let me throw that more broadly. It's kind of a key question in this area. Does the 112 requirement -- or how do you feel about whether the 112 requirement -- does it adequately protect against broadening of claims over time in ways that third parties are unlikely to foresee? Arti, yours is up.

MS. RAI: Yeah, it is up. Although, could I --

MR. COHEN: For this?

MS. RAI: Could I make another --

MR. COHEN: Yes. Yes.

MS. RAI: -- comment because I think it's relevant to our discussion. I've been looking at data on continuations and requests for continued examination over the last -- post-'99, essentially when RCEs came in. So, we should distinguish -- we, thus far, have been talking about continuations, but the practice area where things have really taken off post-'99 is RCEs.

And RCEs, I don't, except for perhaps the argument that Tony is making that you have to go through three rounds of discussion with the examiner before you figure out what you really got, I don't see a good justification. And maybe in biotech there is a justification for RCEs. But what is really interesting is that in the data I've seen at least, the largest use of RCEs is in the IT industry. So, TC, to 2,100, for example, largest percentage of RCEs.

And, so, that does strike -- it does strike me that the notice function is being undermined by RCEs in particular. And that is something that, I think, is ignored in the discussion on continuations, or less emphasized, because there are more legitimate uses of continuations in there, I think, generally speaking of RCEs.

Does 112 -- I think this is where written description -- after having sort of denounced written description earlier, this is where written description was

supposed to really play a role, you know, in forcing you to -- if you were continually amending your claims to look at, to find, new embodiments in the market and get them, written description was supposed to help you or help the alleged infringer in that case. I don't know if it's been used vigorously enough, because now it's been conflated with the other situation of an originally-filed claim, where written description is now being used as well. And I think that conflation has made it a less tough requirement in the later-filed claim context, and probably too tough in the originally-filed claim context.

(At 4:37 p.m., Robert Armitage left the panel.)

MS. MICHEL: Inherent in Bill's question, I think, is the question of is the Patent Office doing a good enough job with 112, regardless of what the courts are doing? Yeah, Terry?

MS. REA: I think that it's frankly a little bit inconsistent. It depends art unit to art unit. And frankly, it depends examiner to examiner. And if you get a good examiner, somebody who gives you a good examination, who applies not only the correct art in the correct manner, but actually challenges you on 112 issues when appropriate.

So, the Patent Office is constrained by time. Examiners only have so much time to work on each application and that is the reality. And, so, you -- it's not

consistent right now. So, sometimes yes, sometimes no.

MR. COHEN: That would be part of the question. Certainly another part that floats in there is the basic question as to whether a doctrine that is -- do you find in terms of showing whether the applicant was in possession of the invention is an adequate doctrine for giving third parties notice of what could emerge when you're all done with the process? Do they line up well enough that third parties are protected? Stephen, you're up.

MR. KUNIN: Well, my short answer is no. Before I elaborate on that, I just want to make a couple points in response to what Arti said and what Terry said. I think there is really unevenness with respect to application of 112 first paragraph by technology.

Certainly from my own experience, some years ago there was a significant problem that was brought to my attention when I was the deputy commissioner having to do with the famous form factor patents. And for those of you who aren't familiar with form factor patents, it's basically disc drives in computers, where, generation to generation, you basically have the size of the disc, you take it out, you rotate it, cut it in half, and that is what the next generation is, and, therefore the form factor was extremely important.

Do you know what the issue was? It was 112 first

paragraph scope of enablement, because the issue was what the floor was relative to claim, because basically the whole aspect was the physics of being able to miniaturize. And the problem is the claims were issuing, but they didn't have the appropriate scope of enablement because they weren't enabled below certain sizes. And that was the whole aspect of where the technology was. And it was a significant issue.

Why? Well, because examiners, in the electrical areas really didn't have good training and guidance with respect to scope of enablement. It was considered to be chemical patent practice, and, therefore, until examiners' eyes were, awakened to the fact that, gee, you know, you could have this kind of problem in the electrical arts as well, it was, you know, moving on to a new page.

The thing that Arti says with respect to the RCEs, particularly in the electrical areas, I submit to you that part of the problem is the PTO, over, I'll pick a time, the last half a dozen years to ten years or so, with the large number of filings and the backlogs and the rapid hiring of patent examiners by large and large numbers, reaching a point where you have examiners who basically were not able to come up to speed fast enough. And the RCEs is because examiners were not doing good searches, and that it was really the examiner not really understanding, but using

second action final practice to not let the applicant move forward. And, so, part of it is essentially the whole problem with respect to getting new examiners properly trained in areas with large backlogs. So, I would submit to you that in your analysis, I would hope that you could get some insights in terms of that phenomenon of the examiners.

But I guess coming back to your point, if you could repeat. I apologize.

MR. COHEN: Is a doctrine that is focused on determining whether the inventor was in possession of that invention as of the time of the application a doctrine that will give adequate notice to third parties, as to what can emerge years down the line?

MR. KUNIN: Thanks. Thanks for repeating. My answer, as I said before, was no, and it's still no. And to a large degree, the reason why I believe it's no is not so much in terms of the chem-biotech area, but in other areas. And I submit to you that when I was involved in writing those written description guidelines that ultimately were published in 2001, much of what we did in putting together those guidelines was, in fact, trying to make sense of a mixed bag of case law.

When you look at enablement and you have got the *Wands* factors, you look at written description with respect to claims drawn to a genus, part of what we were doing is

making it up as we went along in trying to come up with the written description equivalent of the Wands factors, without having a coherent body of case law on written description from the court giving the equivalent of the *Wands* factors.

So, the reason for my answer being no is until there is a coherent set of factors for making that determination, it is going to be difficult to have the public have adequate notice on the written description requirement.

MR. COHEN: I think I should go to Rob, since we've been talking about the PTO.

MR. CLARKE: Well, I just wanted to point out that in September of '08, the office did issue two memoranda to the corps on appropriate use of 112 second paragraph in an attempt to arrive at a greater consistency in its application across the examining corps. So, you know, to say that the office has been deaf to that concern, I think, is over a little overblown. But it does show some recognition by the Patent Office that we could do a better job in that area.

MR. COHEN: Let's take David and then Chris.

MR. KAPPOS: Okay. Thanks, Bill. So, a couple comments. I don't -- I don't disagree with any of the criticisms that have been leveled against the doctrine, but I think at, at least, a theoretical level, I don't see

necessary tension between the doctrine that is keyed to the applicant demonstrating that she or he was in possession of the invention, and that requirement then being what we depend on to protect the public, so long as it's being -- as the doctrine is being policed well enough, and that applicants are being required to put enough information in the record. Because if the standard really is the skilled artisan, right, the person having ordinary skill in the art, I think you -- you inherently wind up with enough disclosure that it winds up not being a problem for third parties to read and understand and be able to make the invention.

I would add relative to the problem, though, just finishing on that thought, is, of course, the requirement, you know, isn't being policed well enough. And as others have pointed out, there aren't good enough rules, and isn't good enough law in place. Right? There isn't the framework within which it gets policed in the Office, so the Office is very disadvantaged in that respect.

112 enablement in the IT area is, most certainly, not being tightly examined. It's rare, you know, in our portfolio, which is individually about 3 percent of what goes on in the Patent Office. So, we've got an enormous base in one company, it's, you know, we rarely see rejections coming up in the enablement area.

And then -- and then lastly, you know, I do agree

that setting aside the biotech area that has got these, you know, sort of specific concerns relative to RCEs, there is a problem with RCEs and overuse of them in the IT area. And it was the recognition of, you know, long strings of RCEs. It's not one or two that is a problem. It's the five, six, seven, eight, nine, you know, sort of the asymptotic level that we were concerned about. That caused, you know, IBM to take the view, which we still hold, in support of limitations on continuation practice. And not one continuation, but some reasonable number. You know, we thought that two was possibly workable, at least in the IT area, with some reasonable ability for applicants to show that there was good cause to file more than that. And we still do believe that some limitation on practice, at least for the IT field, makes sense.

MR. COHEN: Chris?

MR. COTROPIA: Two comments. One on the direct conversation and one on an earlier conversation. I mean, I think 112 paragraph one written description, I mean, as formulated, I agree with David, is it should -- should work. I mean, I think it's -- it's a difficult doctrine. I mean, there are a lot of difficult legal doctrines to nail down.

I'm not sure necessarily, kind of, waiting for more case law is the way to go, because in some ways that is what has created some of this problem we have now. We have

got this idea that the Federal Circuit has told us one area is a predictable technology, one is not, so, apply 112 ¶1 in bio, don't apply it in electrical. And, I think that, kind of, people think of it, okay, great, there is just these two giant areas of technology, when really there is a lot of fidelity. And the more they really, kind of, would look at it on a case-by-case basis, maybe 112 paragraph one would actually do a better job. So, I don't know necessarily if more case law is the way to go or watch out for.

One, kind of, comment back, why we have continuations, and this is where I think kind of notice overlaps with kind of substantive effect. And I think this piggybacks off of Michael's earlier comment. I mean, we have an early filing system. We force you to file very early in the development of a technology. And in the end, if the goal is that I want a patent to create shelf space for my end commercialized product, well, things are going to change from the time when I file that product as I develop that product along, and eventually get out there on shelf space-wise. And in some ways, if I'm kind of -- kind of locked in early on, I might not get the shelf space room that I eventually want.

Now, that doesn't necessarily mean that continuations need to say -- stay to assure that it proceeds to that substantive function. But we should look at, well,

are there other things to maybe help out these individuals that have been forced to file early in development, but in the end would like a patent to give them the space they might have when they get the product to the market, such as, and this is one of those, deferred examination, or something that allows them to do that. Because I'm sure some people are filing continuations not to try to capture other people, but to change as their development changes, as they go along. There's a new feature. Well, I, you know what, I didn't know that was going to be important, so, I need to draft a claim for that.

So, that would be where, if you're looking for notice, and I'm going to knock down continuations, you have a substantive effect, the patent process is not as great for me anymore, and we should be, you know, kind of recognize that impact and take that into consideration.

MR. COHEN: Related to continuations, I'm going to raise the topic of reissuance. And I'm wondering, you know, if you see the same types of tensions with regard to notice that are -- that would be raised by a broadening reissuance. I'll throw out the whole package of questions at once.

Are there the same types of tensions with notice? Does the requirement that reissuance be based on some type of error significantly enhance any protections for third parties in practice? And does the ability to secure

reissuance lessen the need for continuations?

Let's look at that all as a package for a few minutes. Then we'll go on to our last subjects. Terry.

MS. REA: Well, reissue practice isn't very vibrant, in my opinion, in the PTO. So, while I do recommend it from time to time with my clients, they typically opt for other choices because it does require the admission that there was an error during the original prosecution and it can't remedy all sins. So, you have to find something that you could allege was an error. But I don't know the exact statistics on reissue applications, but it's not a tremendous number.

The second thing is, is you do have a body of case law on intervening rights. You only have two years in which to file that broadening reissue. And, so, there is already a notice function, fairness function factored into the reissue case law. All right? So, you can only get an expanded reissue within two years and there is intervening rights protection.

Does the requirement that reissuance be based on some type of error significantly enhance the protection for third parties? I think it's irrelevant. I don't think it makes any difference for third parties.

And does the ability to secure reissue lessen the need for continuations? In general, people don't look at it

that way. They think of reissue practice or reissuance of an application as not something that is not planned for or expected. It's a safety net you take advantage of. So, you don't plan on reissuing an application. I have been doing this since 1980 and I've never had a client that has had that philosophy. That doesn't mean it hasn't existed. And if Bob was here, you know, he could tell me what they did in the old days.

MR. COHEN: Mike.

MR. MESSINGER: I agree with everything Terry said. She had a good summary, I think, of some of the key differences with reissue. There is another aspect that also limits it in that there is kind of a strong doctrine of recapture that -- that very much limits your ability to kind of go back and do some maybe broadening that people would think was not in the public interest.

One thing, the situation, and I agree it's not a vibrant practice. I think the last time I looked, it was about two years ago, it was, like, running, like, 500 reissues a year or something. No, that's re-exam. Anyway, the -- 5,000, yeah. How many?

MR. CLARKE: Five thousand.

MR. MESSINGER: Yeah, 5,000. But I think there might have been a recent uptick in it. But where I see it getting looked at by third parties is when they're involved

actually in acquiring companies, and looking at patent portfolios that have already been obtained by another party. And, so, what they're doing is they're looking at it from the perspective of their business model, and looking at these issued claims, and deciding what makes sense to do with them.

And so, anyway, maybe some of the, in that context, some of the protections of intervening rights and all that that are even more important from the public policy perspective.

MR. COHEN: Stephen.

MR. KUNIN: Well, I think Mike hit it on the head in terms of the key issue, and that is the reissue recapture doctrine is the fundamental difference between the continuation practice and reissue.

The other thing is, which is sort of tangential to this discussion, and that is as Bob was pointing out, one way to address some of the problems with respect to the less than vibrant law of the doctrine of equivalents is actually to perhaps remove that two-year requirement on broadening reissue, and use that as an opportunity for people, subject to intervening rights in the law, to correct that which is a problem for them in -- in too much literal claiming, where, perhaps, instead of having to rely on a doctrine of equivalents, they would be able to broaden their claims and

not have to come under doctrine of equivalents, recognizing, again, you know, the recapture doctrine plus the intervening rights as a limiter.

MR. COHEN: When you talk about correcting something, is this -- have the courts policed that in a way that makes it any different than just seeking a broader claim? Are you correcting something other than, something beyond failing to claim as broadly as you ultimately would like to have claimed?

MR. KUNIN: Well, I think, you know, this, you know, goes into many of the issues that not only surround the aspect of the reissue/recapture doctrine, but also the case law like the *Johnson & Johnson v. RES* case, where you -- you left described but unclaimed embodiments on the table, and you're not going to be able to come back and get them again through the doctrine of equivalents.

MR. COHEN: Okay.

MR. KUNIN: So, I think that is more of this aspect of potentially being able to obtain a scope of protection, again, subject to recapture doctrine and the intervening rights that, perhaps, can address some of the problems that we see with respect to how prosecution history estoppel, and doctrine of equivalents work.

MR. COHEN: Okay. In the, you know, 15, 18 minutes we have left, I'd like to cover just a handful of

smaller topics, but still significant. Maybe we can get some -- some feedback on some of them. Provisional applications would be one.

Does the filing of provisional patent applications detract from the notice function? How has that turned out to work? Stephen, you're up.

MR. KUNIN: Very shortly, no. I think that the provisional application is nothing more than an internal priority document. It puts U.S. citizens on the same basis as foreign applications. And since 18-month publication occurs from the earliest priority date, I see no problem whatsoever with respect to provisional applications being problematic.

MR. COHEN: What about deferred examination? Another topic that is coming up these days. Would -- I mean, are some -- are all of the suggestions such that there would be a possibility that publication might be delayed? Has that been looked at? Would anything about these proposals make search more difficult? Would the time that claims are subject to evolution be extended through this? David, let's start with you.

MR. KAPPOS: Right. Thanks, Bill. So, I think the answer to all of those questions is it depends on what design point you choose for deferred examination. A design point that I would recommend would actually resolve and --

and address all of those issues. Right? So, for instance, I think that a deferred examination system in the U.S. would be a wonderful best practice for us to adopt. But it would need to require publication at 18 months of all applications put into the deferred examination system. So, if you want to use deferred examination, your application is going to publish in 18 months. If you don't want your application to publish in 18 months, don't bother using deferred examination.

Secondly, as to searching, I think searching actually can be aided and helped by deferred examination. And the reason is because tremendous amounts of prior art that are not findable, they're in foreign language, right, and in the intervening time between when an application is filed and when the deferral end is triggered by an applicant or by a third party that wants to have the application examined, that prior art will become actually search available to the Patent Office, whether it's because of translation or because it goes from some source like a -- like a library somewhere and gets put on an electronic system that patent examiners can find. So, you actually will find you'll get better prior art, more prior art, applicable prior art made available to examiners through deferred examination.

And then relative to issues with, you know, third-

party intervening rights and the like, I think that the best practice for deferred examination would be that, indeed, prior users would be protected from the -- from the patents that issue under the deferred system, and that any third party should have the right to trigger examination, and, therefore, get clarity as to the deferred application when, at any point, when that party wants to pay the fee.

MR. COHEN: Stephen?

MR. KUNIN: Well, I'm very much against deferred examination. And I think in part, as Dave pointed out, the devil is really in the details in terms of how you design it. Right now, I would think that it would be an absolute disaster because of the de facto deferred examination system that the PTO currently has. And until PTO can master its workload and get pendency down, to add a deferred examination system in front of a de facto deferred examination system and say, oh, well, this will be great because it will give the PTO the freedom for three years to be able to work off its backlog.

Of course, it won't have any money to do anything because PTO works off current fee revenues. On the applications they'd be examining, they already spent that money. And the idea is, oh, well, you'll have a lower filing fee, and, so, this will encourage people to file maybe too much and file frivolous applications. You could

have the situation where, oh, gee, if the PTO really needs to have the money, it may end up bumping up those filing fees in order to have operating revenues. And then you've just removed the incentive for people to defer if they have to pay so much money.

The idea with deferral also is to perhaps produce a reasonable amount of dropout rate, 10 percent or more, to reduce the burden on the PTO of not having to examine unnecessary applications. And, of course, while I agree that if you had, you know, the perfect design of a deferred examination system, you must have publication at 18 months, you must have a right for a third party to petition for early examination, but then, of course, now, you're throwing the burden on the third party to go to the expense of having to do the equivalent of a petition to make special to get early examination.

And then what I could see also happening is that the PTO will be in this perfect storm of a budget crisis, and says, well, of course the way that we need to make up the money is we're going to go to these foreign-style systems of having annuities. So, you have to start paying for patents you haven't gotten granted on an annuity scheme in order for the PTO to start getting some of this near-term operating revenue. So, if those kinds of issues can be resolved and resolved satisfactorily to take out, I think,

those concerns, you know, I'm open-minded to be convinced.

But at this particular point I think there are many things that have to be addressed, both from the standpoint of the PTO's existing workload and funding situation. I just don't think right now the timing is right. And I haven't seen the perfect design of how to really make it work. So, I'm a skeptic, and I'll let Dave prove me wrong in the foreseeable future, but I just don't think deferred examination right now is a -- is an immediate panacea.

MR. COHEN: Arti?

MS. RAI: So, there are two questions. One is the notice function and what effect deferred examination would have on the notice function. I think that issue can be addressed reasonably well through some of the mechanisms that Dave articulated.

Now, there is the entirely separate question, which is really an important one, of the very anachronistic, I would say, PTO fee structure, which has all sorts of independent problems, and deferred examination would pile onto those. But that's not your ambit right now, anyway. Although, I would suggest somebody should be looking at it very closely, the whole question of fee structure. I think that is actually -- just my editorial comment, since it is late in the day -- that's actually the most pressing problem

for the patent system right now.

MR. COHEN: And Terry.

MS. REA: Thank you. First of all, publication has to occur at 18 months. That's just an international norm and we have to stay consistent with that. So, publication will stay where it is. The devil is in the details in this reexamination proposal, more so than in anything else, just because the system is already stressed. It's already in a very delicate balance right now. And if reexamination was to be introduced --

MR. COHEN: Deferred examination?

MS. REA: No. If -- if deferred -- sorry. If deferred examination was to be introduced, it might be the final stress on a system. And right now the PTO is functioning, things are moving, and, you know, unlike the rest of the economy. So, I'd like things to continue at least at a minimum at the level they're in now.

What I'm most fearful about with deferred examination is the uncertainty and the delay and that possibly people will not be as aggressive jumping into the marketplace, and they may delay investments. They'll say there is a pending application sitting out there. There is some thing marked patent pending, and it's sitting out there.

Now, do I really want to go into this business

knowing that I have this number of land mines, this number of pending patent applications out there? And, so, this delay mode seems to be pervading a lot of our society right now. And I don't want the extension of nobody wanting to spend money and take action, to go to the point where people are delaying filing patent applications or asking for deferred examination, and then not making R&D investments because there are some of these pending applications out there.

MR. COHEN: We have just two more topics that I'd like to touch on. I think if we keep our answers short, we can get you out pretty much as scheduled.

One is publication, which we've heard about a lot in the context of deferred examination. We've got the 18-month publication for most patent applications. How would you feel about the effects of notice and any downsides that might result if you were to go to a system requiring 18-month publication for all applications? Terry, you can resume.

MS. REA: Very quick, that's what it should be.

MR. COHEN: Stephen?

MR. KUNIN: I agree that is what it should be. Certainly, the major concern that I have heard from -- from many sectors has to do with, I would call, the tech transfer aspect of where these applications are being published, and

it permits, you know, the third parties to see what is happening and perhaps jump on using that technology in foreign countries. It's a form of, you know, maybe an unintended consequence, but I'm still a firm believer in 18-month publication.

But the one thing that I think we need to think about is the PCT model, and that is 18-month publication with a search report and written opinion. That, to me, is the best model from the standpoint of helping to facilitate notice function.

MR. COHEN: And Chris.

MR. COTROPIA: Yeah, I mean, I agree with the earlier comments. Just an even broader, this is to your, kind of, your second question. I think it would also be nice if we really are going to go to kind of a real text format, just to make it easier and quicker to grab information from the PTO's website from PAIR, et cetera. I mean, I know from, and, obviously, I'm not the primary person you should be going toward as somebody who is trying to just do empirical research, but it is just tough to get a lot of information quickly and easily from PAIR. And it would be great if the information was just more readily available, more easily searchable, et cetera. And, I think that would help the notice function as well.

MR. COHEN: Okay. That goes to my last topic,

which is kind of search functions. One aspect of which I was going to ask about, PAIR. Just from a practical perspective, is it working well for purposes of following an individual application as opposed to perhaps doing research? Is it working well to find out what is happening? Are there any practical limitations on that? David.

MR. KAPPOS: Yeah. PAIR, my view is that PAIR actually does work well for following a single application. You can get access to the entire file history, electronically, quickly. It is wonderful for that limited purpose.

MR. COHEN: Mike?

MR. MESSINGER: Just, yeah, PAIR, when it's up, it works great. And it is frequently up.

UNIDENTIFIED SPEAKER: Most of the time.

MR. MESSINGER: It ties in with the 18-month publication in that I think many people agree with 18-month publication, but related to that is the fact that for patent term adjustment purposes, the Patent Office is expected to give first office actions in 14 months, and to the extent there is a requirement of an 18-month application, and we can get the Patent Office backlog down so that rights are settled, or at least an indication in 14 months, and issued patents are coming out in two to three years, then you kind of get the transparency with PAIR because you can only see

it on PAIR once it gets published, with the issued rights, and it all works very good.

And, I think a lot of people like that railroad, if we could just get it to sort of go on time.

MR. COHEN: And Stephen.

MR. KUNIN: I'll just go back to what Rob Clarke said. It used to be called patent file wrapper, PFW.

MR. CLARKE: Yeah, PFW.

MR. KUNIN: But I think that that is essential because having a full text searchable file history will provide a much better notice function. Right now working strictly with images, it's in some respects working with, you know, one hand tied behind your back. So, the sooner the PTO can afford to deploy that, I think we'll find the notice function will go up dramatically.

MR. COHEN: Okay. Final topic. Search, a big topic in its own right, but I'm going to ask just if -- if, in short answer form, any of you have suggestions or pet ideas as to steps that the PTO might be able to take to facilitate identification of patents and patent applications that would be relevant to business planning by third parties. David.

MR. KAPPOS: Well, so, you've asked the Peer-to-Patent question, in my view. The single, most straightforward thing that the PTO can and needs to do is

take advantage of the millions and millions of trained technical professionals, nearly 200,000 of them in my own company, who are more than happy to bring prior art and meaningful, helpful commentary to the attention of the Office versus applications that are pending.

In the Peer-to-Patent pilot that the Patent Office did a nice job of conducting, the statistics were stunning in terms of the success -- the amount of prior art that was submitted that the examiners themselves said they never would have gotten, they didn't have access to, they couldn't have found no matter how long they searched, the incidence of good rejections that were made with the prior art that was submitted, the helpfulness of the commentary, et cetera. It's all about transparency, and it's about bringing an arbitrage to bear for the benefit of the patent system, so that the people who have information, and for whom the cost to provide it is very low, can get it effectively to the people who desperately need the information, and for whom the cost to obtain it is very high. Peer-to-Patent, you know, really should be implemented across the board in the Patent Office.

MR. COHEN: Stephen?

MR. KUNIN: I agree with what Dave said. I think that it should be -- Peer-to-Patent should be expanded to all fields of technology. And in addition to that, I think

that some serious efforts should be made to look at industry-based classification systems with respect to technology, and to add that type of classification to patents in addition to the U.S. patent classification system. Because I have heard, for many years, that industry has its own standard of classification of technology, and why can't the Patent and Trademark Office have its classification system reflect that? And I think if that -- we're in an electronic world. We can add additional indices. I think that would be a great addition for industry.

MR. COHEN: Arti.

MS. RAI: So, I wasn't sure, the search questions you had listed here are searching basically freedom to operate type searches.

MR. COHEN: That was what my idea was.

MS. RAI: Yeah. So, I'm going to say a little bit about that, although I concur with the prior art search stuff --

MR. COHEN: Yes, please.

MS. RAI: -- that Dave and Steve are referring to very strongly. And particularly the classification system. I take it that examiners have been wanting a change in that classification system for a while.

So, but anyway, to the questions you asked. Now,

this is not something I know a lot about, but one thing I have heard is that it would help not only to know the patents in doing freedom to operate, and also it would help not only to know the patents, but also who the actual assignees are. And, so, that information is also useful. And I take it that you're supposed to report that information if you assign the patent, but that doesn't happen very often. I don't know a lot about this, so, I would defer to others, but that is one thing that I have heard. Maybe Dave could speak to that.

MR. MESSINGER: Real quick. Well, as a member of the advisory board of the Peer-to-Patent review, I concur with everybody's comments on Peer-to-Patent. It would encourage us to at least extend it to the green and clean technologies so we can really send a good message that the patent system is working for an important new area for the country.

Also, during the course of developing that system some things repeatedly came up. I know the Patent Office was looking at it. I would encourage them to keep doing it in terms of how can we have examiners get appropriate questions answered from people of ordinary skill in the art? They're often looking at these references. They know the article on, their journal article they're citing. They would love to call and talk to the person who wrote the

article, and perhaps there are some ways to do that that have the appropriate safeguards that give a good notice function on how that conversation can happen, but at the same time get a good read on the level of skill in the art into the -- into the record.

MR. COHEN: And David?

MR. KAPPOS: Yeah, so, back to Arti's point on freedom to operate searches. And, Arti, I want to see if you can just repeat your --

MS. RAI: So, I've heard --

MR. KAPPOS: -- point for a second?

MS. RAI: -- it, I'm not entirely sure what the contours of this concern are, but the problem seems to be that it's hard to figure out who really currently owns a patent because it could have been assigned and reassigned. And then, I take it, there are also shell company concerns.

MS. MICHEL: I've heard of the shell company --

MR. KAPPOS: All right. So, let me -- so, there are two --

MS. RAI: Yeah, there may be two different concerns.

MR. KAPPOS: So, that's a great point. So, there are two issues that come up there. One is during the application phase, when a patent application publishes, there is currently no requirement that the assignee of the

patent be listed. And that creates a significant notice problem because it becomes very hard to tell, for those of us who have literally hundreds of cross licenses, it's very difficult to tell if we're licensed to -- to many patent applications. So, you've got a notice problem there. And that is a pretty easy one to fix, actually, by requiring identification of assignee on published applications.

And then the second and more troubling and liability creating problem is, upon assignment, we are seeing instances, you know, broad-based ones, of assignees registering the patents or listing as the assignees, essentially fictitious or shell companies, typically with fanciful names, and making it as difficult as possible, apparently, to trace back to the true assignee of the patent. So, we get into another notice problem there.

Once again, we can't tell if we're licensed to the patent because we can't really tell who it was transferred to. Ultimately, we can usually figure that out, although it takes a lot of effort. And, so, you know, why should the public be forced to go through that effort to find out who really owns the asset? And in some cases you can't figure it out at all, so, you don't know who you need to go to in order to find out if you need to get a license and under what terms you can get one.

MR. COHEN: Well, listen. You've all been great,

and you've gone a long time with me. I did promise you the opportunity to add in anything that you wanted that you hadn't been able to get on the table to this point. You have that chance, if anybody wants to. You may all be talked out. I don't see any signs going up on this.

So, I'm going to thank you. You are a terrific panel, and I really enjoyed the session. We learned a lot from you. Thank you again.

(Applause.)

(Whereupon, at 5:20 p.m., the workshop was concluded.)