



Remarks by Director Andrei Iancu at the IPBC Global Conference

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Good morning, everyone, and thank you, Richard [Lloyd], for that very gracious introduction. Thank you also to IAM for hosting this impressive gathering of IP leaders and inviting me to speak here today. It's a pleasure to be with you.

Imagine yourselves in a small rural town in post-Civil War America. There are only dirt roads in this town, and only a handful of buildings. One building in particular is the focus of town. It holds the town's main business. It is, in fact, a large woodshed—basically a long rectangle.

Inside, the wooden walls are lined with shelves full of tools and contraptions and bottles with various chemicals. In the middle, there are many workbenches with technicians tinkering busily on all sorts of devices, mostly new experiments. And in one corner, the main engineer is working by himself, hunched over at his desk poking and prodding at a complex mass of components.

The year is 1877, and the main engineer, an inventor, is working on an improvement for the telephone that Alexander Graham Bell invented the year before. At the time, Bell's telephone was still rather crude, and our engineer is trying to improve its receiver. Bell's receiver worked based on a diaphragm that vibrated in tune with his voice. The louder one spoke, the higher the vibrations.

Unfortunately, our engineer is very hard-of-hearing. Almost deaf, some say. This is rather inconvenient when working on a device for producing sound, such as a telephone receiver. The worst part is that he cannot judge the amplitude of the diaphragm's vibrations due to his faulty hearing. So ingeniously, he attaches a short needle to it and rests his finger on the needle. As he speaks into the diaphragm, the needle moves up and down and pokes his finger. The louder he speaks, the sharper the needle's poke.

But in the midst of this work, he has a new idea: What if instead of his finger, he wonders, he put coated paper on a cylinder under the needle? (So many inventions begin with "what if," by the way.)

So he does this, and the needle makes indentations in the coated paper based on sound vibrations that move the needle. And given his prior experience with the telegraph, the engineer then wonders what would happen if he then runs the cylinder with the now-indented paper through another needle on a reverse diaphragm?

In early December 1877, this hard-of-hearing inventor gathered his colleagues in the middle of the big shed, and brought out his new—and very strange-looking—machine that had diaphragms, needles, and a cylinder with special coated paper.

The room was quiet: what's the boss up to now, they all wondered?

The inventor leaned over the machine and began to shout into the diaphragm:

Mary had a little lamb,
Its fleece was white as snow,
And everywhere that Mary went
The lamb was sure to go.

Nobody else in the room spoke. They thought the boss finally lost it, yelling a nursery rhyme at a machine! But our inventor then calmly turned the machine around, ran the paper back to its starting point, and once again turned the cylinder crank.

And in the stillness of the room, in a wood shed in a tiny American town in 1877, the machine spoke back:

Mary had a little lamb,
Its fleece was white as snow,
And everywhere that Mary went
The lamb was sure to go.

Everyone was stunned! How can a machine speak? This was the stuff of mythology or science fiction. It was a trick, some thought!

But it was no trick.

Indeed, it was Thomas Edison's invention of the speaking machine, or phonograph, in his laboratory in Menlo Park, New Jersey. Edison was a prolific inventor, working squarely within our patent system, and fully cognizant of the incentives and protections it was designed to provide.

And so, just a few days later, on December 15, 1877, Edison filed his patent application for a speaking machine (or phonograph). A patent examiner at the U.S. Patent Office received the application and had literally nothing to compare it to. There was no prior art that came close. Nothing before in human history (other than humans themselves) ever spoke—no animal, and certainly no machine.

And so, a mere 57 days later, Thomas Edison received U.S. patent no. 200,521.

But here we are, 140 years later (and 9,799,479 patents later), so let's have a little fun and ask: How would Edison's famous patent on a speaking machine fare today? Let's put it through the various sections of the modern Patent Act.

Well, first up is patentable subject matter under Section 101. And we run into an immediate problem: we must go through the *Alice* test.

Step one: Of course, Edison's patent claims the "abstract idea" of recording and then playing back sound. After all, everything can be reduced to an abstract idea if we back up from the details far enough.

Step two: Is there "substantially more" beyond this abstract idea? Does it have any additional features that are "inventive?" Well, there is a diaphragm, a needle, and a cylinder with coated paper, all of which seem conventional, even in the 1800's.

Indeed, the main component—the diaphragm—was straight out of Graham's telephone, which was already transmitting the human voice. So in the end, because there is nothing inventive beyond the abstract idea itself ("recording and playing back sound") the patent is deemed invalid under 35 U.S.C. 101! We don't even get to the novelty question and the fact that Edison was first and that there was zero prior art.

Now, I am saying much of this in jest, of course.

I suspect that most everyone here would, in fact, agree that Edison's phonograph is patentable subject matter, even under *Alice*. But why? Change the facts just a bit, and assume now that Edison was the first to invent recording and playing back sound using electronics. And instead of a cylinder with paper, a crank to turn the cylinder, and a conventional diaphragm; he used a disk drive, a microprocessor, and a conventional computer speaker.

How would he really fare in today's world?

Today, for example, courts are struggling with whether toys exchanging signals so that they can "speak" to each other are patent-eligible. Or whether a patent should issue on an improved method for making crankshaft assemblies. Or converting man-made video signals so that they can be viewed on different electronic devices. Or whether we should maintain a patent on assessing and treating disease.

I don't express here a view on how these specific examples should turn out under the current legal framework. My only point is that for many modern technologies, we are nowadays going through a tortured exercise that asks as a threshold question: Do we want to prevent a patent even if the invention is perhaps entirely novel, completely nonobvious, enabled, and well-claimed?

And this question is proving to be extremely difficult to answer. Inventors and their lawyers, examiners, district court judges, and Federal Circuit judges are all struggling on a daily basis trying to figure out what is in and what is out.

Here is a simple exercise:

Can anyone in this room explain, simply and clearly, to your client, spouse, child, student, or an aspiring inventor, what matter exactly qualifies as patent-eligible in this country?

Einstein said, "If you can't explain it simply, you don't understand it well enough."

But is that really our problem? That we, collectively, don't understand Section 101 law? Or is it that the law itself is too complicated and not amenable to clear understanding or simple explanation?

As James Madison said, "It will be of little avail to the people if the laws are so incoherent that they cannot be understood."

How are the people supposed to know where to focus their inventive energy and investment dollars if they do not even understand what subject matter is patentable to begin with? It is incumbent upon all of us to find a clearer path. So let's all step back from the day-to-day grind of applications and cases, and ask, ultimately, what is it we are trying to accomplish with this initial filter in the patent code?

We already have laws specifying what is novel and what is nonobvious. We already have laws specifying how definite claims need to be, how they must be enabled, described, and the like. And so, what other filter is needed?

Put another way, we should ask ourselves: Is there subject matter that we do not want to patent even where the applicant demonstrates full compliance with Sections 102, 103 and 112? If so, what is it? Let's be transparent. Let's make a list.

For example, there seems to be longstanding agreement in this country that pure discoveries of nature should not be patentable, even if they otherwise are newly found, well-disclosed, properly claimed, and the like. This would include things like gravity, electromagnetism, DNA, etc., all natural and before human intervention. The *Myriad* case from the Supreme Court is an example addressing this issue.

What else? Perhaps fundamental mathematics as such, like calculus, geometry (Pythagorean theorem), arithmetic, and the like. *Gottschalk v. Benson* is an example case where math was excluded.

Some basic “methods of organizing human activity,” such as fundamental economic practices like market hedging and escrow transactions, have also been excluded by the Supreme Court in *Bilski* and *Alice*.

Anything else? Perhaps purely mental processes and intellectual concepts that are only in the human mind, such as forming a judgement.

Should anything else be excluded, even if otherwise novel, nonobvious, and well-claimed? If so, we need to be clear. Whatever we do, we need to start by answering what exactly it is we want to accomplish—what specifically, as a country, do we want to exclude from patenting? People should know up front.

The Supreme Court has referred to the excluded categories as “basic tools of scientific and technological work.” The court has been interpreting this statute for the past 200 years or so, and throughout that time has given a limited number of examples of these basic tools—and they all generally fit into the categories I mentioned earlier.

So, as long as we operate under the current statutory language, why don’t we stay within the bounds of these categories exemplified by the Supreme Court?

In other words, if the claims at issue do not contain subject matter in one of these excluded categories, then perhaps they should be presumptively patent-eligible. In such cases, this would end the 101 analysis and we could move on to Sections 102, 103, and 112. This alone would resolve a significant number of cases currently confounding our system.

On the other hand, if the claims do include subject matter in one of the excluded categories, the Supreme Court has instructed that we need to do more analysis. Specifically, the court instructed us that in such cases we need to decide whether the claims are “directed to” those categories.

To that end, we must first understand what the line is that the court wants us to draw to decide whether the claim is “directed to” an excluded category or not. I think Supreme Court jurisprudence taken together effectively allows claims that include prohibited matter as long as that matter is integrated into a practical application.

For example, in *Le Roy v. Tatham*, the court said in 1853 that “a new property discovered in matter, when practically applied in the construction of a useful article of commerce or manufacture, is patentable.”

Then 128 years later, in *Diamond v. Diehr*, the court repeated that “an application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.”

And recently, in *Mayo*, the court explained that “applications of such concepts to a new and useful end... remain eligible for patent protection.”

In the end, as we go through the process under the current statute, we should not over-complicate, and we ought not to twist ourselves into a pretzel on every single case. Sure, there will be a number of cases that are difficult to resolve when we ask whether a claim is directed to one of the fundamental building blocks, or whether, on the other hand, it is a practical application of it.

But for the vast majority of cases in the big middle, we must simplify our approach.

In particular, if the claim as a whole does not even describe a fundamental building block that we want excluded irrespective of the other criteria for patentability, we can move on easily. And for those cases, we can rest assured that other sections of the code will usually prevent a patent if the invention is not inventive or is merely on a non-enabled or undescribed idea.

Some folks, for example, express concern with certain types of broad, functionally defined claims that do not have sufficient support in the specification. But for these cases, USPTO examiners know, and could receive further guidance and training on, how to apply well-defined Section 112 principles. And likewise, examiners know how to apply well-defined Sections 102 and 103 principles to prevent patents on non-inventive concepts.

The point is that the modern patent code already contains organized filters to eliminate poorly drafted claims or claims that lack an inventive step.

So let me summarize this way: Using Section 101, we just have to capture applications that would otherwise pass muster under Sections 102, 103, and 112, but are on things that we still should not patent. The Supreme Court has noted some specific examples of what we should not patent. We must be careful not to over-read the Court's exclusions.

Indeed, Justice Thomas warned in *Alice* that we must "tread carefully in construing this exclusionary principle lest it swallow all of patent law." This is because, as he wrote, "at some level, all inventions embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas."

And well-settled principles of judicial restraint in statutory interpretation caution that "courts should not read into the patent laws limitations and conditions which the legislature has not expressed."

So in that spirit—and especially because we have other sections of the patent code that eliminate patents on inventions that are not new, obvious, not definite, and not enabled—why not simplify and bring the analysis back to its original filter: Is the patent merely on a defined building block of scientific or technological work? Or is it instead on a practical application of it?

Let's go back to our almost-deaf inventor.

Protected by his patent, Edison's phonograph became remarkably successful and spawned entirely new industries. In the process, it also democratized music, speech, and all sound. It changed the world, and we reap its benefits to this day.

A year after Edison invented the phonograph, a leading science magazine of the time said that Thomas Edison, "with his marvelous inventions, is pushing the whole world to the highest civilization."

That is what our most brilliant inventors do: backed by the American patent system, they change the world and consistently push us to the highest civilization. But to do so, at the very minimum, inventors and the public need to know, with reasonable predictability, what is patent-eligible and what is not.

Next week, on June 19, the USPTO will issue patent number 10 million.

As remarkable as the inventions that have brought us here have been—including light, flight, DNA synthesis, the modern internet, and countless others—the next ten million patents and beyond are likely to be even more remarkable. We stand on the cusp of truly historic times for science and technology.

With a predictable and reliable patent system, I firmly believe that American inventors will continue to push us to the highest civilization.

Thank you for the opportunity to be with you today.