No. 18-1199

In the Supreme Court of the United States

INVESTPIC, LLC,
Petitioner,

v.

SAP AMERICA, INC.,
Respondent.

On Petition for Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF *AMICA CURIAE* ANNE E. BARSCHALL, PRO SE IN SUPPORT OF PETITIONERS

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STATEMENT OF AMICA'S INTEREST[1]

I am a semi-retired patent attorney, Reg. 31,089, of counsel to falati.com. This brief is my personal opinion, and not that of the firm.

My technical specialty within patent law includes computers, electronics, mechanical devices, and physics. I majored in physics at Dartmouth College, but also completed 10 out of the 12 courses for an honors math major there. I've taken miscellaneous courses including graduate work in computer science and electrical engineering. I was a computer programmer at IBM before entering Columbia Law School.

SUMMARY OF ARGUMENT

This brief relates to the interpretation of statutory subject matter under 35 U.S.C. §101 for patents. Argument will be structured around the following issues:

1. Why is a computer not a person, and software not an idea?
2. How should abstract sounding claims be construed in an environment that includes computers?
3. Examples of flaws of reasoning in subject matter cases?

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[1] No party's counsel authored this brief in whole or part. No party or party's counsel contributed money intended to fund preparing or submitting the brief. No person other than the amica curiae made a monetary contribution to its preparation or submission. Amica provided notice to both parties on April 5, 2019, of intent to file on behalf of Petitioner Investpic. Petitioner and Respondent have granted blanket permission to file an amicus brief.

4. Why should claims reciting mathematical formulae be patentable?

The court's rejection of new technology is damaging to innovation. New technology needs to be embraced, not rejected. Gottshalk v Benson[2], In re Nuijten[3]; Alice v CLS[4]; and Mayo v Prometheus[5] should be overturned. The Court should accept the petition so that these cases can be overturned.

ARGUMENT

1. Why is a computer not a person, and software not an idea?

The Court's attention is directed to a federal commission known as CONTU, set up to consider making software code copyrightable. There was a notable phrase in their report[6]: software "utters work." The CONTU commission gave a detailed explanation of how computers work – in particular how they convert software written by humans into physical configurations of the computer. The software actually becomes circuitry.

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[2] Gottshalk v Benson, 409 U.S. 593 (2010)

[3] In re Nuijten, 500 F. 3d 1346 (Fed. Cir. 2007)

[4] Alice Corp Pty Ltd v CLS Bank Int'l, 573 U.S. 208, 134 S. Ct. 2347 (2014)

[5] Mayo Collaborative Servs v. Promethus Labs, Inc, 566 U.S. 66 (2012)

[6] Final Report on the National Commission on New Technological Uses of Copyrighted Works, 3 COMPUTER L.J. 53 (1981) National Commission on New Technological Uses of Copyrighted Works (CONTU) https://repository.jmls.edu/cgi/viewcontent.cgi?article=1573 &context=jitpl

High level computer code, as written by computer programmers, might look a bit like human language. It includes human language words. This is actually an illusion. This code is highly technical and very specific.

Even one typo – in a piece of software that would fill cases of computer paper when printed out – can cause the entire thing to malfunction rather spectacularly.

Here is an example. Around 1979, when I was a computer programmer, I forgot one instruction that would send my test results to disk rather than to paper. I was presented with many boxes of paper with repetitive test messages produced by my test run. My whole department gathered around me to taunt me. They threatened to bill me for the paper.

There is a saying "to err is human, but to really **** things up requires a computer."

Back in the days of Gottshalk v Benson, the justices were very impressed with computers. They seemed to think the computers were people. They thought computers thought like people. I dealt with that misconception in my brief[7] in support of the petition for certiorari in Bilski[8]. In 1972, computers were newer. Most people had never touched a computer. Most people did not understand how stupid and mechanical they are.

Things are different now. The Justices probably all have computers, at least in their cell phones. Can The Court really say now that they are people? Or that they think like people?

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[7] Barschall Brief, https://patentlyo.com/media/docs/2009/03/barschallamicus.pdf

[8] Bilski v Kappos, 561 U.S. 593 (2010)

In high level descriptions of computer software, which resemble human language, each term refers to literature describing elaborate coding schemes previously developed for achieving stated goals. There is a multi-volume treatise called "The Art of Computer Programming" by Knuth[9], which is a canonical description of programming elements. The number of volumes in Knuth keeps increasing. This treatise is illustrative of what underlies a patent such as the one at issue here.

Programmers write mountains of computer code, using concepts like those set forth in Knuth, to create a huge web of modules. Programmers need extensive training, often in graduate school to do this.

In my first filing of a computer software application, I thought it necessary to submit all the code the inventors had written. Otherwise, how could anyone really know what they had done? I recall 10 boxes of printouts for one application. Now I wonder what happened to those boxes. Who would sift through them? Were they a disclosure? Or a burial of information?

Nowadays people don't write patent applications that way. They write in a way that looks very abstract. It's not abstract. Those skilled in the art understand that highly specific modules – designed for machine use, not human use – are required. These modules interact with each other in a mechanistic way. It's not at all like human thought. It's like a giant factory with gears and conveyor belts – only more intricate, more involved.

Moreover, as explained by CONTU all this code

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[9] D. Knuth, *The Art Of Computer Programming* (Addison-Wesley, 1st ed. 1968).

becomes circuit configurations in the computer when it runs. Computer code and the data it uses are stored in a physical form. This physical form is usually electromagnetic, but technology advances. Other storage media are envisioned.

Courts, e.g. in Alice have embraced ignoring the physical storage of code and data in computer readable media. Yet, the storage of these things in physical media is fundamentally different from putting words on paper. Words on paper cannot be used in a computer. Code and data in a storage medium can be. Ignoring this distinction is ignoring reality.

The whole software patent field is plagued by the open software concept. Programmers want to be able to use others' ideas without paying for them. This is so odd. You never hear bakers advocating for free bread.

"Have nots" have always wanted to take things from the "haves." I find this concept repulsive. Business cannot survive in such an environment.

In fact, though, these sanctimonious programmers demanding open software have a hidden agenda. Open software is not really open. The code is too complicated. Businesses cannot use it without hiring the original author or some other programmer as a consultant[10]. "Free" code is not like a patent application, which truly seeks to educate the

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[10] cf E Schindler, Starting a Businessas an Open Source Consultant, JAVAWORLD (Jun. 22, 2009), https://www.javaworld.com/article/ 2072861/starting-a-business-as-an- open-source-consultant.html (suggesting programmers become such consultants)

population on how to solve real technical problems.

I continue to believe that patents are necessary to create an atmosphere in which invention can thrive. I am well aware that there are professional economists who think not, but I would submit that they do not really know. If economists really knew how to make the economy work effectively, we would not have recessions – and countries with centrally planned economies, like Venezuela[11] and the former Soviet Union[12], would not have economies that collapse. People are willing to invest their time in innovation because they believe they will be compensated. If they cannot make money off innovation, because their inventions are immediately stolen, they will not spend time on innovation – just as farmers in the former Soviet Union were demotivated from farming by their crops being taken from them.

2. How should abstract sounding claims be construed in an technological environment that includes computers?

In my Bilski brief, I reviewed a number of cases to show how the concept that an abstract idea/principle should not be patentable arose out of obiter dicta. Some of these related to process steps

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[11] R. Mellen, "What's Going On inVenezuela" WASH. POST (Feb. 25, 2019) https://www.washingtonpost.com/world/2019/02/25/venezuelas-political- crisis-is-getting-worse-heres-what- you-need-know/

[12] J F Burns, "Soviet Food Shortages:Grumbling and Excuses" N.Y. TIMES (Jan. 15, 1982) https://www.nytimes.com/1982/01/15/world/soviet-food- shortages-grumbling-and-excuses.html

that were made legal by statutory amendment under 35 USC §101. Others simply misconstrued the claims and the physical reality of the inventions. This argument appears at pages 4-7 of my prior brief. I will not repeat that argument here.

Starting with Gottshalk v Benson, The Court has picked up these *dicta* without considering that they were made before anyone even could imagine current technology. These *dicta* should not have been swallowed so uncritically. The Court stated that claims in computer related cases read on human beings acting "with head and hand." This makes no sense.

Technology, algorithms, and methods as claimed in the present case are described in human language. They are described that way because we are humans. We have to be able to interface with this technology in a way that is understandable to us.

However, in fact, no one can do statistical information systems or methods, which is the field of this invention, with head and hands.

Let's do a thought experiment. Imagine people with pencils and paper trying to do the real time calculations that business requires. I will explain why this is impossible.

In measuring processor speed, there is a term in the art called: "FLOPS" [13] – Floating Point Operations per Second . FLOPS are arithmetic calculations using numbers that include decimal points: like, for instance, 3.5 divided by 2.6. This topic is typically taught to Americans in 6th grade. A

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[13] FLOPS, WIKIPEDIA https://en.wikipedia.org/wiki/FLOPS

single mathematical equation would normally be translated into many floating point operations. Those operations would have to be performed repetitively. Modern information systems have to gather unimaginable amounts of data from many locations, often worldwide, and process them instantly.

Standard commercial processors in 2017 could perform 75 TFLOPS [14] . In other words, 75,000,000,000,000 arithmetic calculations per second. Please note the number of zeroes here. These processors, which are better than the super computers of 20 years ago, are being developed, because they are needed.

There are only about 8,000,000,000 people in the world, again please count the zeroes. In other words, commonly available processors, can do over nine thousand times as many floating point operations in a single second as there are people on the Earth.

A person cannot do even one single FLOP in a one second, at least most people cannot. A person will require more like a minute to do a floating point operation. If every single one of us were doing these calculations by hand, it would take us approximately six and a half days – with no breaks – to do as many calculations as a standard commercial processor could do in one second. Working 8 hour days with breaks, it would take us more than three times as long, or more like twenty days to do ONE SECOND of work for a computer. Of course, only a fraction of the world's people is even capable of doing any floating point operations at all, so we cannot assume that 8,000,000,000 people could even be deployed to

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[14] *Ibid*

work in this thought experiment.

If we used hand held calculators we could speed up somewhat. Maybe we could do a single floating point operation in ten seconds, assuming no typos, but we would still not even get remotely close to a standard processor that would be used in an ordinary consumer computer.

The idea that patents are going to be used to sue people doing calculations with pencil and paper must be discarded. That's just not realistic. Patents that are otherwise valid should be construed to preclude that possibility, to prevent absurd results.

The inventor here is not on a witch-hunt to sue scholars writing on paper. He is trying to get a patent on a method that is relevant to viable businesses. It may sound like an abstract idea to The Court, because it is expressed in human language – but it is not abstract. It's useful technology.

Rejecting a whole field of technology, merely because the language used to describe the technology reminds one of topics considered by scholars in the past is wrong.

3. Examples of flaws of reasoning in subject matter cases.

As I pointed out in my Bilski brief, one of the claims in Gottshalk v Benson – recited a shift register. The Court said that claim could be carried out with head and hand. This is blatantly false. A shift register is a microscopic device that can only be manipulated by the intervention of machinery. A person cannot operate one with head and hand. The opinion is fatally flawed on its face.

In re Nuijten stated that signals were not patentable because they were too transitory. I would like to give an example of why this reasoning is incorrect.

My father worked in Los Alamos on the first nuclear weapons. He was asked to measure the strength of the first nuclear blast. Measurements had to be taken and transmitted in the split second before the entire area was incinerated. Would such a method of measurement be unpatentable, because transitory? Such a finding would undermine conventional patent law – and this was before computers, as we currently understand them.

I studied electromagnetic theory as a physics major. The idea that software and signals are somehow not physical is nonsensical. Ask a person struck by lightening. It was only a transitory signal, but it had a dramatic physical effect.

Alice stated that it did not matter whether an algorithm was implemented on a computer. It does matter. Implementing something on a computer makes the technique useful, as explained above. Doing it by hand generally does not make any sense in a modern business environment.

Mayo v Prometheus should also be overturned, but I will not discuss it at length here, because it does not seem to be on point[15].

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[15] I did blog about why I think that case was wrongly decided A. Barschall, "Mayo v. Prometheus – a critique" https://annebarschall. blogspot.com/2012/05/mayo-v-prometheus.html.

4. Why should claims reciting mathematical formulae be patentable?

The domain of science has long sought to model physical phenomena using mathematics. This has been useful, because mathematics is reproducible.

Newton, who invented a theory of gravity and motion back in the 17th century, was celebrated, because his math allowed the military to aim cannon balls. Before Newton, canon balls were of limited usefulness, because they so often went astray. After Newton, the military could much more consistently hit their target[16].

This math was useful. No one cared if Newton sat in his study and wrote equations on paper, unless there was a practical application. Again, otherwise valid claims should be construed – in the modern technological environment – to preclude the absurd result of encompassing a human merely thinking or merely writing on paper.

Some opinions seem to imply that courts think that scientific models of the universe are "laws of nature," as if they had some divine provenance. This is not so. Models made by humans are not laws of nature. We have no information about how nature is really governed. We only have models.

Science is constantly changing these models. Newton's theory was not complete. The theory was later modified by Einstein. Einstein's theory is being tested to see if it requires modification. New physical phenomena that do not fit into existing models are

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[16] College Physics: Projectile Motion," OPEN STAX COLLEGE https://opentextbc.ca/physicstestboo k2/chapter/projectile-motion/

constantly being discovered[17]. We have not developed any complete mathematical model of the universe – nor do I believe we ever will. The idea that human models could somehow encompass nature is hubris and anthropomorphization of the universe.[18]

Let's do another thought experiment. Let us imagine teaching a child to count. We pick up our hand and start pointing to our fingers and say "One, Two, Three, Four, Five." Most children, unless they have dyscalculia[19], get it. This is a mathematical model of fingers.

But why do kids get it? Each finger is unique. Why do we perceive them as being a group of things to be counted together? And why do human beings who have dyscalculia not have this ability if it really is universal or a "law of nature?"

My faith in the ability of mathematics to model the universe was shaken when I was a TA in pre-med physics. I had to try to explain to one of my friends a highly simplified form of Newton's theory of motion – that same theory that predicted the flight of cannon balls. My friend couldn't understand. I knew my friend wasn't stupid. He was a very nice, articulate fellow. I explained it over and over, as simply as I

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[17] O.M. Gomez, "Five Mysteries theStandard Model Cannot Explain," FERMILAB/SLAC (Oct. 18, 2018) https://www.symmetrymagazine.org/ article/five-mysteries-the-standard- model-cant-explain

[18] I've spoken more about the topic of anthropomorphization of the universe in my blog. A. Barschall, "A Parapatetic Search for Truth" https://annebarschall. blogspot.com/2012/01/peripatetic- search-for-truth.html

[19] Dyscalculia, WIKIPEDIA https://en.wikipedia.org/wiki/ Dyscalculia

could – yet he could not understand.

Why couldn't he understand? Why could most people not understand physics? Indeed, many judges and justices in patent cases have long protested that they don't understand. Why?

I came to believe that mathematics, which I loved and was good at, was actually a form of personal idiosyncrasy or even insanity[20]. Some people have that trait – the ability to perceive mathematics. Some people don't. Those people who don't have that trait are no less children of God than I am. God did not make the universe out of mathematics. Mathematics is not like the air we breathe or the water we drink.

Mathematics is the personal invention of people who have that kind of idiosyncratic mind that generates mathematics. Patenting mathematics would be patenting something useful that might solve a real world problem, like aiming a cannon ball or improving the efficiency of a computer system devoted to managing financial affairs.

I entreat The Court to step away from its fear of mathematics and give this domain a less exalted position. Mathematics is a useful thing, useful like sliced bread, like legs of a chair, like the wheels of a vehicle. It is not a "law of nature" or of divine provenance.

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[20] cf S. Nasar, *A Beautiful Mind: A Biography of John Forbes Nash, Jr.* (1998), which explores the relationship between schizophrenia and genius with respect to a famous and brilliant mathematician

CONCLUSION

This whole line of cases, cases seeming to express deep technophobia and penalize investment in new technology, needs to be thrown out. The Court should take the present case, and use it as an opportunity to overturn bad precedent.

Respectfully submitted,

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