USIJ Response to USPTO Request for Comments on Patent Eligibility Issues

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The Alliance of U.S. Startups and Inventors for Jobs ("USIJ") responds herein to "Request for Information re Patent Eligibility Study" published 7/9/2021 at 86 FR 36257, page 36257-36260 (4 pages), PTO-P-2021-0032 ("PTO Request").[1] USIJ supports the initiatives undertaken by the current leadership of the PTO at the request of Senators Tillis, Hirono, Cotton and Coons, all of whom have shown a genuine interest in the Supreme Court's interpretations of 35 USC § 101, including the manner in which the Federal Circuit and the lower courts have implemented those interpretations.

I. Introductory Comments

a. Patents Are Critical for Inventors, Startups and Their Investors

Before addressing the specific focus of the PTO Request, we would like to emphasize the critical importance of patents to entrepreneurs, inventors, startups and their investors that, throughout our history, have been disproportionately responsible for "breakthrough" inventions that have allowed the U.S. to dominate the "progress of science and the useful arts," the promotion of which is specifically called out in Article I, Section 8, Clause 8 of the U.S. Constitution.[2] In discussing the role played by patents in

[1] USIJ is an association of inventors, startups, venture capital investors, entrepreneurs and supporters, whose efforts to bring new companies and new technologies into being are entirely dependent on a reliable system of patent protection. USIJ was formed in 2014 to help foster the need for strong and enforceable patents and to promote investment and innovation in patent-intensive industries that are critical to U.S. economic leadership. Among its principal activities, USIJ monitors decisions of the Supreme Court, the Federal Circuit and the Patent Trial & Appeal Board, and makes regular reports to our constituents, participates in conferences that promote the interests of inventors, entrepreneurs and investors, and files amicus briefs in appropriate cases to voice the needs of our constituents.

[2] Examples abound, but perhaps the late Ray Dolby illustrates the point as well as any other. Mr. Dolby spent years thinking about how to remove the high frequency hiss from a music recording, but was told by many knowledgeable people that it was simply impossible. Setting out on a path of his own, and with a high risk of failure, Dolby finally managed to create a noise reduction system that worked well enough to license to recording companies and others; Dolby Laboratories is the result of his persistent belief that he had analyzed the mathematics correctly and that the system would work. The company today employs more than 2000 people and continues Dolby's research to improve the quality of sound in numerous environments. Without Dolby's persistence, the world might still have heard a high-pitched hiss during soft and quiet passages in recorded music for many more years, and would have forgone the dozens of improvements that the company has contributed to

this nation's enormously productive economy, it is important to bear in mind the economic reality of what was intended in Article I, paragraph 8, clause 1, of the U.S. Constitution.[3] Scientific research and experimentation have been ubiquitous throughout history, not just in this nation but the entire world. What has made America unique is our creative ability to translate scientific learning into new products and services, which no other nation has ever matched. For more than 200 years, patents provided one of the fundamental building blocks of this country's industrial policy, precisely because reliable and enforceable patents established a fertile climate that encouraged risk taking and investment in the implementation of new ideas and the creation of new products.[4] We urgently need – as an outcome of the current PTO Request – a renewal of this country's commitment to the startups, entrepreneurs and inventors who have played such an important part in insuring U.S. dominance of critical technologies. Renewing that commitment is particularly important at this time, because (among other reasons) the People's Republic of China, which is several times larger than the U.S., is rapidly developing the scientific expertise to challenge this nation's dominance of critical strategic technologies.

To start any new company from scratch, regardless of whether or not patents come into play, requires a genuine appetite for risk on the part of entrepreneurs and their investors. A large percentage of startups fail for one reason or another, meaning that any investment of executive time and investor capital in a new idea or new technology can be justified, if at all, only by achieving above average returns on those investments that do succeed. This, in turn, requires a strong belief that the company will be able to monetize its work and to protect itself from much larger and established incumbents from whom it plans to capture market share. Once any new technology is proven to work and starts to enjoy success, it is almost certain that one or more larger incumbents with established manufacturing and distribution capabilities will attempt to copy the technology and thereby appropriate to themselves much of the value in the startup's having proven that the technology is feasible. Uncertainties in the administration of patent litigation increases, often by multiples, the risk to patent owners seeking to enforce their U.S. patents. As a result, many startups and small companies today have altered their business strategies to make them less dependent on patents as the basis for the formation of new companies and investments in new technologies. Not all startups regard patents as essential to survival, but many do – particularly those that face long time periods to develop and prove a new technology and to implement it in real products. And those in the latter group are the very companies that we most need to take risks and explore unproven ideas that will maintain our nation at the forefront of cutting edge science and technology.

It is also important to note that lip-service by politicians to the importance of maintaining strong intellectual property rights for small companies and individual inventors is not the same as actually creating mechanisms that work for those inventors and companies. Nearly every political leader will stipulate that intellectual property is central to creating jobs, boosting economic output, and protecting consumers. These policy makers consistently tie strong IP protections to American competitiveness, as

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sound quality over the years.
https://www.bing.com/videos/search?q=Full+interview+of+Ray+Dolby+at+http%3a%2f%2fwww.emmytvlege
And without enforceable and reliable patents to protect years of work from the copyists that emerge once such an invention is proven to be economically feasible, the incentive to undertake such work in the first instance is severely diminished or lost entirely.

[3] "Congress shall have the power … 'To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.'"

[4] *See, e.g.*, comments of Senator Chris Coons supporting a legislative proposal to strengthen the enforceability of patents. https://www.coons.senate.gov/issues/intellectual-property/strong-patents-act.

indeed they should. Yet, many of these same policy makers also echo theories contrived by large technology companies about "bad patents" and "patent trolls" as a stated rationale for weakening patent protection through legislation. Of relevance to this paper, these same policy makers also oppose efforts to provide greater clarity to patent eligibility inquiries and they fight efforts to examine post grant review procedures at the USPTO to prevent gaming by large incumbent technology companies. This type of ambiguity and confusion over whether our country actually wants strong and reliable patent rights pervades nearly all of our governmental institutions that are engaged in establishing and enforcing such rights. Legislative correction of Section 101 jurisprudence is not likely to occur until this type of ambiguity and confusion is recognized and addressed.

b. The Climate for Patent Protection Has Shifted Away from Small Innovative Companies to some of the Corporate Giants for Which Patent Protection Is Not Critical

For at least two decades prior to 2005, the strength and reliability of U.S. patent protection was widely perceived by both inventors and their investors as mitigating some of the risk that larger incumbents with greater resources might blatantly misappropriate their new technology without penalty. Patent owners were reasonably certain that courts would enforce their property rights against infringers and that any company accused of infringement would act in good faith and at least try to negotiate a license that provided fair compensation to the patent owner without the necessity of litigation. For their part, most infringers respected patent rights of other companies, because the patent law had significant teeth that made it painful and risky to do otherwise. That situation began to change in 2005, slowly at first but steadily for the next sixteen years, such that today inventor and investor confidence in the U.S. patent system has been eroded to the point that, for many inventors and entrepreneurs, patent protection has become almost irrelevant as a factor in their business strategies. This, in turn, has diminished the level of entrepreneurship and investor appetite for starting new companies and pursuing new technologies in industries that are dominated by large, well-funded incumbents, such as those that dominate the digital technologies. It is one of the principal reasons that a number of the large companies in the digital technology space today face little or no competition and enjoy monopoly power and a bountiful harvest of excessive profits as a result.

A report last year from the House Judiciary Subcommittee on Antitrust, Commercial and Administrative Law, entitled "Investigation of Competition in Digital Markets" notes concerns over the decline in startups willing to take on the corporate giants, particularly in the digital products space. The 451-page report points out (pages 45 – 46) that competition is a critical source of innovation, business dynamism, entrepreneurship, and new industries; that vigorously contested markets have been a critical competitive asset for the United States over the past century; that while large incumbent firms with significant resources may invest in research and development for new products and services such that some level of innovation may still occur without competitive pressures, such innovation takes place at a slower pace than would be present under competitive market conditions. The report goes on to point out that the absence of competition to large incumbents has led to a:

> "… sharp decline in new business formation as well as early-stage startup funding. The number of new technology firms in the digital economy has declined, while the entrepreneurship rate—the share of startups and young firms in the industry as a whole—has also fallen significantly in this market. Unsurprisingly, there has also been a sharp reduction in early-stage funding for technology startups." *Id*.

Many factors have contributed to this current state of affairs, most importantly decisions made by the U.S. Supreme Court with respect to patents. Thirty-three decisions by the Court over the last 16 years have left an indelible stamp on the U.S. patent system that will last for decades unless corrected by Congress. The aggregate impact of these rulings, most of which modified legal interpretations of the Patent Act previously established by the Federal Circuit, has made it far more difficult – indeed, effectively impossible in some cases – for small companies and inventors to enforce their patent rights against larger incumbents. Taken as a whole, the Court's rulings and their implementation by the lower courts have made it vastly easier for infringers to invalidate patents or – barring that – simply to ignore the patents without consequence.[5] For anyone seeking to understand just how the major players in digital technology markets have managed to become monopolies and near-monopolies in their respective spaces, it would be a good idea to examine the impact of this neutering of the U.S. patent system.[6]

II. Responses to Numbered Questions.

1. Please explain how the current state of patent eligibility jurisprudence affects the conduct of business in your technology area(s). Please identify the technology area(s) in your response.

USIJ Response to No. 1:

Four of the Supreme Court's thirty-three decisions in patent cases since 2005 have been unprecedented rulings related to patent eligibility under 35 U.S.C. § 101 that reflect the Supreme Court's willingness to substitute its own judgment for the statutory language adopted by Congress and thereby expand significantly the many types of inventions that no longer are deemed "patent eligible." These rulings ignore the actual language of the statute, replacing it with a "judicial exception" that allows the Court to impose its own views as to what is eligible for protection. Section 101 is simple and clear:

> "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title."

The Supreme Court has long held that products of nature, laws of nature and abstract algorithms, formulas and equations are not eligible for patent protection. No one can quarrel seriously with that list, because none of those phenomena falls into one of the four statutory categories. It is more convenient, however, for the Court to refer to the non-statutory nature of the list as "judicially created exceptions" to the law

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[5] Directly in point, an article in the Economist on December 14, 2019 reports as follows: ""Boris Teksler, Apple's former patent chief, observes that 'efficient infringement', where the benefits outweigh the legal costs of defending against a suit, could almost be viewed as a 'fiduciary responsibility', **at least for cash-rich firms that can afford to litigate without end**." (Emphasis supplied).

[6] A recent book by Jonathan M. Barnett, professor of law and economics at the University of Southern California, entitled "Innovators, Firms, and Markets: The Organizational Logic of Intellectual Property" (2020) details how corporate giants over the last few years have lobbied intensely for a weakening of patent enforcement so as to insulate themselves from the forces of competition from smaller, more nimble and more creative companies, with the relatively predictable effect that the R&D needed for developing new technologies and for improving old ones has become increasingly the sole domain of some of the corporate giants whose motivations are to retain the status quo at all costs. He notes that few barriers to entry are more effective than a weak patent system that allows cost-free copying of new ideas.

as written by Congress, because this characterization provides greater license for the Supreme Court to rewrite the law unconstrained by the patent statute. Therein, lies the heart of the eligibility problem. The current Court no longer looks to the will of Congress in administering the Patent Act, or even to its own precedents for guidance, as it has begun rewriting the law.

Exemplary of the latter is an important earlier decision anchoring the law on eligibility, *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980), in which the Supreme Court noted that "We have cautioned that courts 'should not read into the patent laws limitations and conditions which the legislature has not expressed.'" The Court added that "Congress intended statutory subject matter to 'include anything under the sun that is made by man,'" observing further that "Congress took this permissive approach to patent eligibility to ensure that 'ingenuity should receive a liberal encouragement.'" *Id*. These cautionary words enjoy little or no recognition today. The current Supreme Court's willingness to interpret Section 101 in a manner that extinguishes the rights of patent owners is highly arbitrary and unpredictable, except that the patent owner almost always loses.

More troublesome still from a national security and national competitiveness perspective is that such rulings appear to have been rendered without any regard for their actual economic impact. Stated differently, the Court seems unconcerned with how its rulings affect the incentives for future inventors to participate in the implementation of new ideas that require reliable patents for justification. With other countries increasing the enforceability of their patents in order to promote innovation, it seems peculiar indeed that our country is heading in the opposite direction.

Two of the Court's eligibility decisions, in particular, have reshaped what previously was a reasonably well-settled body of law as to the proper role for Section 101, leading to a great deal of judicial confusion and misinterpretations by lower courts on an unprecedented scale. It is critical, if reliability is to be restored to the sanctity of U.S. patents, that this situation be corrected by Congress.[7]

Prometheus v. Mayo Clinic

The first of these two decisions was *Mayo Collaborative Services v. Prometheus Laboratories*, Inc., 132 S.Ct. 1289 (2012), wherein the Supreme Court held that certain method claims covering a process for determining proper patient dosages of a drug used to treat autoimmune diseases were not patent eligible because the claimed invention did nothing more than rely on the operation of a fundamental "law of nature" (the measurement of metabolites created by an individual human body in response to the injection of a chemical) and teach medical practitioners how to use that law to obtain useful information. Because the claims merely "inform a relevant audience about certain laws of nature" and because "any additional steps consist of well understood, routine, conventional activity already engaged in by the scientific community;" the Court concluded that the claims were not patent eligible.

The vice in this decision was two-fold; first the ruling assumed that a court can determine on its own and without reference to persons skilled in the art, what is "well understood, routine and conventional." This part of the ruling, which conflated Section 101 with Sections 102 and 103 against the advice of the Solicitor General, provides the genesis for much of what is now wrong with the law. It may be possible for the

[7] Many of the other decisions since 2005 also have affected adversely the ability of inventors, entrepreneurs and investors to rely on U.S. patents for protection, but because of the narrow focus of the PTO Request, we address the only two of the eligibility decisions that have had the greatest impact on inventors and investors that comprise the USIJ community.

Supreme Court, with its superior resources and wisdom, to divine what is "well-understood, routine and conventional" without the benefit of evidence or expert opinion, but the lower courts – including the Federal Circuit – have thus far yet to find anything approaching consensus on such things. Additionally, and quite apart from its procedural implications, the ruling in *Mayo* casts doubt on the enforceability of literally dozens of patents associated with personalized medicine and diagnostics and complicates the problem of protecting research that depends on the identification and measurement of biomarkers and on human intervention to analyze the outcome of testing.[8]

The effect of the uncertainty created by *Mayo* has been devastating to a large part of the biotechnology community, particularly small companies devoted to the development of diagnostic testing using biomarkers. Thus, in *Ariosa Diagnostics, Inc. et al v. Sequenom, Inc.*, et al, 788 F.3d 1371 (Fed. Cir. 2015), the inventor had discovered that it is possible to detect genetically caused birth defects in the blood of the mother without the need for the dangerous and invasive extraction of amniotic fluid from the sac holding the fetus. The patent claim was for a process of identifying potential birth defects by testing the blood of the mother. The Federal Circuit, while recognizing the enormous importance of the invention and the value of incentives to continue researching (and disclosing) such inventions in the future, felt constrained by the overbreadth of the Supreme Court's *Mayo* decision to hold the patent to be ineligible subject matter. A plaintive concurrence by Judge Linn, who clearly believed the discovery should be patentable, reveals the difficulty in trying to distinguish the *Mayo* rules in a principled manner:

> "The Supreme Court's blanket dismissal of conventional post-solution steps leaves no room to distinguish *Mayo* from this case, even though there [was no prior teaching about] amplifying and detecting paternally-inherited cffDNA using the plasma or serum of pregnant mothers. Indeed, the maternal plasma used to be 'routinely discarded,' ('540 patent col.1 ll.50–53), because, as Dr. Evans testified, 'nobody thought that fetal cell-free DNA would be present.'" *Id.* at 1390.

Another group similarly disadvantaged by the ruling in *Mayo* are those companies seeking to identify subgroups within a larger population than can benefit from treatment that might not otherwise seem appropriate for them. In *Athena Diagnostics v. Mayo Collaborative Services*, 915 F.3d 743 (Fed Cir. 2019), the Federal Circuit again followed the restrictive ruling in *Mayo* to strike down a patent on a novel method of diagnosing Myasthenia Gravis, a dreadful autoimmune disease that destroys muscle function. The patent owner had discovered a unique biomarker that allowed a physician to identify a subpart of the population with this disease who were often missed by conventional testing. And, the Federal Circuit once again took a tautological approach to its analysis, rejecting a common-sense application of the patent statute to what the court acknowledged should be a protectable invention. A compelling dissent by Judge Pauline Newman stated the implications as follows:

> "This court's decisions on the patent-ineligibility of diagnostic methods are not consistent, and my colleagues today enlarge the inconsistencies and exacerbate the judge made disincentives to development of new diagnostic methods, with no public benefit. I respectfully dissent."

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[8] The Court appears to recognize that it ruling is likely to have an adverse impact on investment in diagnostic procedures, but states that the problem is for Congress to fix, as if the Court itself is permitted to view its own work wearing blinders. *E.g.*, "we must recognize the role of Congress in crafting more finely tailored rules where necessary. [citation omitted]. We need not determine here whether, from a policy perspective, increased protection for discoveries of diagnostic laws of nature is desirable." 132. S.Ct. at 1305.

Her dissent notes further that when there is confusion as to whether an invention is patentable, the public loses the benefits of new technological advances. *Id*. at 773.[9]

Even worse than the *Mayo* decision itself is the utter chaos left in its wake. At the Federal Circuit, *Athena Diagnostics* generated ten different opinions in all, from a court of only twelve judges. The patent owner sought Supreme Court review to no avail. Even the Solicitor General recognized the jurisprudential confusion surrounding Section 101, writing in a separate case that the Supreme Court "should provide additional guidance in a case where the current confusion has a material effect on the outcome of the Section 101 analysis." Although litigation is inherently probabilistic and subject to risks of miscalculating, the level of legal uncertainty surrounding eligibility is in a wholly different class that harms both the purveyors of technology and the potential downstream users, including and most importantly the public at-large.

Particularly significant in terms of the risk and uncertainty fostered by cases such as *Athena* is that a patent owner may not learn the outcome until litigation against an alleged infringer has consumed many months and millions of dollars that the subject matter of the invention is not eligible for patent. This compounds the insult; not only is much of the value of the developmental work lost when a patent is struck down, the money spent trying to enforce the patent is also lost and works as a deterrent to any future effort to preserve the patent rights of the owner.

Alice Corporation v. CLS Bank

The second of the two decisions of the Supreme Court responsible for confusion in the lower courts is *Alice Corporation Pty. Ltd. v. CLS Bank International*, 134 S.Ct. 2347 (2014), a unanimous opinion authored by Justice Thomas, affirming the Federal Circuit's holding that the patent claims at issue were drawn to abstract ideas and thus were not eligible for patent protection under 35 U.S.C. §101. The claims before the Court described a method of employing a computer to act as an intermediary (in lieu of an escrow agent or other neutral party) in a financial transaction to minimize for each participant the risk of nonperformance by the other participant. Essentially, the Supreme Court held that the creation of mechanisms by which the parties to financial transactions can protect themselves from counterparty

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[9] The foregoing observation by Judge Newman was prophetic. As developed more fully elsewhere, the impact of the Court's rulings striking down patents on diagnostic procedures has caused a number of venture capitalists and other investors to look for other types of investments. One of the founders of USIJ has turned down significant opportunities to invest in such inventions, a huge loss to our country and its citizens. In addition, some venture capital backed entrepreneurs and some large enterprises such as the Cleveland Clinic are distressed by the sorry state of patent protection and are redirecting investments in response. *See, e.g.*, Report by Professor Mark F. Schultz, Goodyear Endowed Chair in Intellectual Property Law & Director of the IP & Technology Law Program of Akron University, entitled "The Importance of an Effective and Reliable Patent System to Investment in Critical Technologies," published July 2020, at pages 38 - 51. https://static1.squarespace.com/static/5746149f86db43995675b6bb/t/5f2829980ddf0c536e7132a4/1596467617939/USIJ+Full+Report_Final_2020.pdf

Professor Schultz' report makes reference to an earlier study by Professor David O. Taylor at SMU Dedman School of Law Patent entitled "Eligibility and Investment" (February 24, 2019). Available at SSRN: https://ssrn.com/abstract=3340937 or http://dx.doi.org/10.2139/ssrn.3340937 wherein Professor Taylor recaps interviews of 375 venture capital investors and discovering that Section 101 jurisprudence was having a distinctly negative effect on the willingness of VCs to invest in patent intensive companies.

nonperformance is simply an abstract idea and that the computerized implementation of the idea does not remedy the patentability problem.

In affirming the Federal Circuit's ruling that the patent claims in question are not patentable subject matter, the Supreme Court relied on the concept of "preemption" to ask whether the claims seek to preempt others from the use of the ideas embodied in the claims. Characterizing laws of nature, natural phenomena and abstract ideas as the "basic tools of scientific and technological work," the Court expressed a need to prevent a patent applicant from preempting the use of an idea by others:

> "'[M]onopolization of those tools through the grant of a patent might tend to impede innovation more than it would tend to promote it,' thereby thwarting the primary object of the patent laws. [Citations omitted]. We have 'repeatedly emphasized this … concern that patent law not inhibit further discovery by improperly tying up the future use of 'these building blocks of human ingenuity."

The decision in *Alice* repeats the same two-part test described in *Mayo*, wherein the courts are instructed to ask, first, whether the claim in question is "directed to a law of nature or an abstract principle," and if the answer is yes, the court should examine the rest of the claim for an "inventive concept." It should not be lost on anyone trying to assess the workability of this two-part test that the Federal Circuit opinion in *Alice* consists of a one-paragraph per curium decision affirming the lower court's finding of ineligibility and six separate opinions concurring in part and dissenting in part from one another – a harbinger of things to come.

The Court recognized in passing that almost all inventions implement laws of nature and abstract ideas in some way, noting the importance of preserving incentives to innovate that are created by patents:

> "At the same time, we tread carefully in construing this exclusionary principle lest it swallow all of patent law. … At some level, 'all inventions . . . embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.' ... Thus, an invention is not rendered ineligible for patent simply because it involves an abstract concept. See *Diamond v. Diehr*, 450 U. S. 175, 187 (1981). '[A]pplication[s]' of such concepts 'to a new and useful end,' we have said, remain eligible for patent protection. *Gottschalk v. Benson*, 409 U. S. 63, 67 (1972). Accordingly, in applying the §101 exception, we must distinguish between patents that claim the 'buildin[g] block[s]' of human ingenuity and those that integrate the building blocks into something more … thereby 'transform[ing]' them into a patent-eligible invention …. The former 'would risk disproportionately tying up the use of the underlying' ideas … and are therefore ineligible for patent protection. The latter pose no comparable risk of preemption, and therefore remain eligible for the monopoly granted under our patent laws."

Although this latter passage might be read to encourage lower courts to use some measure of balance in their application of the *Alice* decision, the decision overall has proven extremely difficult for the lower courts to apply with any consistency, and the aftermath has created some disturbing outcomes for inventors and their assignees that employ software terminology as part or all of their claims. When fundamental and settled principles of law are undermined by the use of vague and imprecise language or are abandoned altogether, the predictable result is that the lower counts feel free to adopt whatever subjective interpretation they choose as to the meaning of the statutory language.

One of the most devastating consequences of the ambiguities in the *Alice* decision is that many federal court judges, anxious to manage their dockets as efficiently as possible, have seized challenges to eligibility as a convenient way to dispose of cases without trials, and in some cases without even scheduling discovery. Shortly after the *Alice* case was decided, a number of district judges began resolving questions of eligibility on Rule 12(b)(6) and motions for judgment on the pleadings, which meant that the patent owner was denied even the opportunity to explain what the invention was and what problem it solved. This practice was initially endorsed by the Federal Circuit in the form of affirmances.

> "We have repeatedly recognized that in many cases it is possible and proper to determine patent eligibility under 35 U.S.C. § 101 on a Rule 12(b)(6) motion." *Genetic Techs. Ltd. v. Merial LLC*, 818 F.3d 1369, 1373 (Fed. Cir. 2016).

Hastily considered rulings can be extremely unfair to patent owners who have gone through the necessary investigations and procedures to get their lawsuit on file, only to have a trial judge toss the case out without giving the plaintiff the benefit of so much as an evidentiary hearing.

Even where the district court allows a patent case to get past the pleading stage and permits some discovery, summary judgments continue to be granted arbitrarily by trial judges on the basis of patent eligibility. In *Berkheimer v. HP Inc*., 881 F.3d 1360 (Fed. Cir. 2018), the appellate court reversed such a summary judgment as to several of the claims in a patent on digital information processing. The Federal Circuit held that where there was a factual dispute over whether some of the limitations found in dependent claims were "well understood, routine and conventional," as the lower court had held, summary judgment is improper. The court did not decide whether the patent claim would in fact satisfy the requirements of the *Alice* case, but did give the patent owner his day in court on this pivotal question. One might have thought that the holding in *Berkheimer* at least would have halted the use of the ruling in *Alice* to run roughshod over patent owners, and in some cases it did, depending on which of the judges of the Federal Circuit made up the appellate panel.

Not all the appellate judges proved willing to follow the principles set out in the *Berkheimer* case. Thus, in *American Axle v. Neapco,* 967 F.3d 1285, petition for cert. pending (Sup. Ct. Docket No. 20-891), a split panel of the Federal Circuit affirmed a summary judgment ruling by the district court that a process for manufacturing a rotating axle in a vehicle was nothing more than a natural law and therefore not patent eligible. The actual invention lies in the design of a cardboard insert that can be placed inside a rotating axle to dampen vibrations in two separate planes. This was a problem that the defendant had not been able to solve until its engineers saw the disclosures in the patent, which the defendant then copied. Contrary to the panel majority (Judges Taranto and Dyk) at the Federal Circuit, the invention actually satisfies Section 101 in three ways – first, it falls into the statutory category of an "improvement" on prior art axles that employed inserts for dampening vibration; second, a rotating axle falls into the statutory category of articles of manufacture; third, the process for creating such an article falls into the statutory category of processes. Nevertheless, the panel majority held that the invention was nothing more than an abstract application of Hooke's law, a natural law involving the relationship between the mass of an object and the effect of distorting it by force. Curiously, Hooke's law is never mentioned in either the patent specification or its claims. Judge Moore filed a stinging dissent, calling attention to numerous points at which the panel decision ignored settled principles of summary judgment law and substituted an unfounded enablement rejection for eligibility.

On request for rehearing *en banc*, the 12 judges of the Federal Circuit split 6 to 6 and therefore review was denied, with now Chief Judge Moore again writing a powerful dissent.[10] As noted in the citation, a petition for writ of certiorari is pending; the Court has asked the Solicitor General's office to weigh in on the issues raised. A number of the amicus briefs filed in the Supreme Court in support of the plaintiff's petition for a writ of certiorari detail the chaotic nature of the current state of eligibility jurisprudence.[11]

2. Please explain what impacts, if any, you have experienced as a result of the current state of patent eligibility jurisprudence in the United States. Please include impact on as many of the following areas as you can, identifying concrete examples and supporting facts when possible:

Because of the nature of USIJ's membership and focus, as described at the beginning of this Response, the organization is involved only indirectly in assessing the full impact of the current state of eligibility jurisprudence. Several of the investors who form part of the USIJ community report having decided not to invest in certain areas of technology (diagnostic procedures, for example) as a result of the manner in which the *Mayo* decision is being applied by the Federal Circuit. It sometimes can be difficult to identify investments that were **not** made, in part because the risk equations in deciding not to invest are rarely shared in full and consist of only relative weights assigned to each of multiple investment opportunities. The study of venture capital investing trends by Professor Mark Shultz referred to above (fn.10) does not specifically identify any particular investments that were not made as the result of eligibility, standing alone, but he does report interviews with several experienced investors and entrepreneurs who reported having shifted their focus away from longer term, higher risk investments as a result of the lack of adequate patent protection. See Schultz Report, "The Importance of an Effective and Reliable Patent System to Investment in Critical Technologies," pp. 7, 19 – 22 and interviews with Earl Bright, Josh Makower, Derrick Rossi and others.

There is little question that for the period for which Professor Schultz was able to obtain useful data (2004 to 2017), aggregate venture capital flows moved away from patent intensive industries to those that promised lower risks and faster exits. Section III (pp.24 to 37) analyzes venture capital flows during period in question, detailing in a more granular way the extent to which investors shifted away from industries and companies that required patent protection to those that did not. The chart on page 37 is particularly compelling, in that it shows that during the period 2004 to 2017, Financial Services, Food and Beverage, Healthcare technology systems, Restaurants, and Software grew from 28.6% or VC funding to 49.6%, while

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[10] More recently, in *Yanbin Yu and Zhongxuan Zhangiffs v. Apple Inc*, Doc. No. 2020-1760 (Fed. Cir. 2021), Judges Taranto and Prost teamed up to find ineligible for protection a patent claim on a digital camera, the theory being that the claimed device merely carried out a series of steps that had been carried out previously. As the dissent from Judge Newman makes clear, the camera described is a mechanical and electronic device of defined structure and mechanism; it is not even arguably an "abstract idea." And if it was obvious in light of established prior art, Section 103, not 101, would be the appropriate way to address the question of patentability.

[11] The Supreme Court Docket No. is 20-891; the invitation for the SG to file an amicus brief was dated May 3, 2021. The amicus brief by Senator Thom Tillis, Hon. Paul R. Michel and Hon. David J. Kappos, filed March 1, 2021 and corrected March 12, 2021, describes in considerable detail the inability of trial judges and those of the Federal Circuit to interpret the Supreme Court's eligibility rulings and apply them with even reasonable consistency. The amicus brief of USIJ filed January 29, 2021, lays out the devastating effect that the current state of eligibility law is having on the ability of entrepreneurs and inventors to rely on their U.S. patents and the decline of venture capital flows into companies for which patents are an important part of a business strategy.

Computer Hardware, Healthcare Devices and Supplies, Pharmaceuticals and Biotechnology, and Semiconductors fell during the same period from 33.1% to 20.4%.

Some people argue that the foregoing statistics are out of date, because a huge renaissance in VC investing has taken place since 2017. It may be true that there is a great deal more money being invested today, but the trend away from investing in early-stage companies and patent intensive companies continues. A more recent PitchBook analysis of VC investing through July 2021 shows the same trend lines continuing. See Appendix A, a photocopy of a page from a PitchBook report for 3Q2021.

3 – 12. We leave for others to address.

Respectfully submitted,

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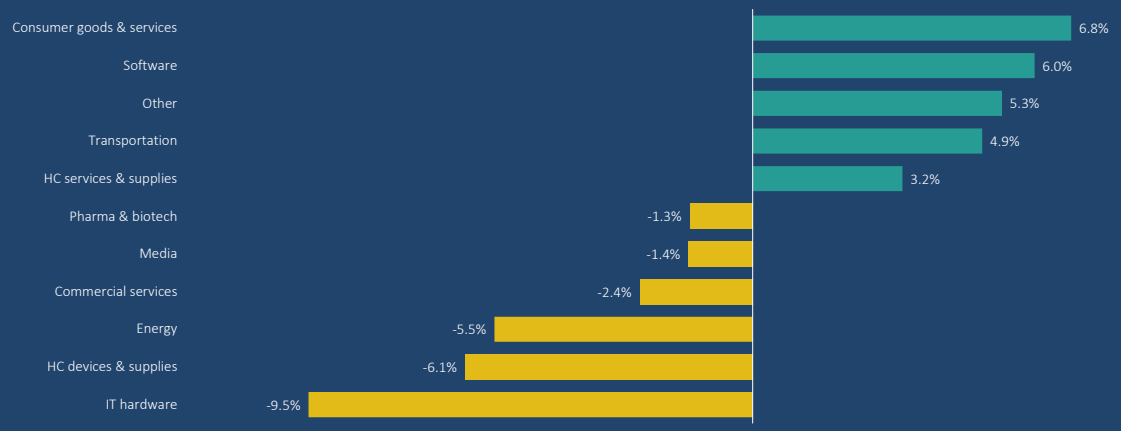
Alliance of U.S. Startups and Inventors for Jobs
By Robert P. Taylor, Senior Counsel

APPENDIX A

VENTURE INVESTMENT DURING COVID-19

..with consumer goods & services and software increasing their shares of aggregate VC invested, and IT hardware seeing the largest reduction in capital investment.

*Change in share of VC invested by industry between 2006 to 2010 and 2016 to 2021 YTD**



Source: PitchBook | Geography: US
*As of June 30, 2021

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