No. 07-1404

In the Supreme Court of the United States

PETRUS A.C.M. NUIJTEN,

Petitioner,

v.

JON DUDAS, UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR, UNITED STATES PATENT AND TRADEMARK OFFICE, *Respondent.*

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF AMICI CURIAE OF INTELLECTUAL PROPERTY ACADEMICS IN SUPPORT OF THE PETITIONER

John F. Duffy *Counsel of Record* Oswald Symister Colclough Research Professor of Law George Washington University Law School 2000 H Street, NW Washington, DC 20052 (202) 994 - 0014

June 12, 2008

QUESTION PRESENTED

Whether the U.S. Court of Appeals for the Federal Circuit erred by adding new requirements to 35 U.S.C. § 101 that patentable manufactures must be tangible articles that are nontransitory and perceivable without special equipment, thereby denying patent protection to all signals and other important advances in technology that do not meet these new requirements, no matter how innovative, unique, or useful they are.

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INTEREST OF THE AMICI CURIAE

As professors and scholars who teach and write about patent law and policy, we are interested in maintaining a sensible patent system that accomplishes the constitutional goal of "promot[ing] the Progress of Science and useful Arts." We have no personal interest or stake in the outcome of this case.¹ A full list of *amici* is appended to the signature page.²

REASONS FOR GRANTING THE PETITION

I. THE DECISION BELOW CONFLICTS WITH SUPREME COURT PRECEDENT ON A FUNDAMENTAL PATENT LAW ISSUE.

As this Court has noted, § 101 of the Patent Act uses "extremely broad" language in defining the things that may be the subject of a patent. *J.E.M. Ag Supply v. Pioneer Hi-Bred Int'l*, 534 U.S. 124, 130 (2001). The statute provides that "any new and useful process,

¹ Pursuant to Supreme Court Rule 37.6, the *amici* represent that they have authored this brief in whole, and that no person or entity other than the *amici* and the educational institution of the counsel of record (The George Washington University Law School) has made a monetary contribution intended to fund the preparation or submission of the brief. Counsel of record for the parties received timely notice of the intent to file this brief and written consent to the filing of this brief has been obtained from the parties in accordance with Supreme Court Rule 37.2(a).

² The names of the educational institutions of the amici are provided for identification purposes only.

machine, manufacture, or composition of matter, or any new and useful improvement thereof," may be the subject of a patent provided that the patent applicant satisfies the conditions and requirements set forth in the rest of the Act. 35 U.S.C. § 101.

This Court explained in *Diamond v. Chakrabarty*, 447 U.S. 303, 315 (1980), that the breadth of the statutory language in § 101 is not accidental, but rather "[t]he subject matter provisions of the patent law have been cast in broad terms to fulfill the constitutional and statutory goal of promoting 'the Progress of Science and the useful Arts." Because Congress chose extremely broad language and because the evident policy undergirding this language is to foster a broad range of invention, this Court recognized that § 101 is a quintessential example where "[b]road general language is not necessarily ambiguous when congressional objectives require broad terms." Id. Thus, this Court has admonished that, in the context of interpreting § 101, "courts 'should not read into the patent laws limitations and conditions which the legislature has not expressed." Id. at 308 (quoting United States v. Dubilier Condenser Corp., 289 U.S. 178, 199 (1933)).

This Court's policy of refusing to read new, unexpressed limitations into the extremely broad language of § 101 is crucial to a healthy and vigorous patent system. As explained in *Chakrabarty*, "the inventions most benefiting mankind are those that 'push back the frontiers of chemistry, physics, and the like." *Id.* at 316 (quoting *Great A. & P. Tea Co. v. Supermarket Corp.*, 340 U.S. 147, 154 (1950) (Douglas, J., concurring). Thus, "Congress employed broad general language in drafting § 101 precisely because such inventions are often unforeseeable." *Id.*

The decision below disregards these fundamental teachings on patent law and policy. The panel majority below held that a new, nonobvious coded signal is not patentable subject matter because it is not a "manufacture" within the meaning of § 101. In reaching this conclusion, the panel recognized that such a signal "is man-made and physical—it exists in the real world and has tangible causes and effects." App. 20a. Yet despite the panel's recognition that signals are physical, man-made things, the court held that a signal could not be the subject of a patent because (i) "it is a change in electric potential that, to be perceived, must be measured at a certain point in space and time by equipment capable of detecting and interpreting the signal"; (ii) "energy embodying the claimed signal is fleeting and is devoid of any semblance of permanence during transmission"; and (iii) "any tangibility arguably attributed to a signal is embodied in the principle that it is perceptible—e.g., changes in electrical potential can be measured." Id. at 20a-21a.

These three distinctions—which may be termed (i) equipment perceptibility; (ii) fleeting nature; and (iii) arguable tangibility—have never been recognized, either singly or in combination, as limitations on the scope of § 101. Imposing such new and unprecedented limitations on the scope of § 101 is directly contrary to the teachings of this Court concerning the proper approach that courts should take in interpreting the extremely broad language employed by Congress in defining patentable subject matter. Moreover, reading these distinctions into the scope of patentable subject matter makes for extraordinarily bad patent policy.

The first distinction—that the signals at issue here can be perceived only with the aid of equipment—is plainly an illegitimate consideration for interpreting a statute designed to "push back the frontiers" of science The subject matter of scores of and engineering. patents can be perceived only with the aid of advanced equipment capable of discerning qualities that are undetectable to the unaided human senses. In *Chakrabarty* itself, for example, this Court sustained the patentability of a "human-made micro-organism." 447 U.S. at 305. A "micro-organism" is, of course, a "microscopic" organism, or an organism so small that it cannot be perceived without the aid of a microscope. Nothing in this Court's opinion suggested that a factor counting against patentability was that the subject matter could be perceived only with the aid of a microscope.

Numerous patents have been issued on subject matter that cannot be perceived without the aid of equipment. For example, patents have been issued on "quantum dot" semiconductor devices,³ isolated DNA

³ See, *e.g.*, U.S. Pat. No. 7,189,986 (2007) (setting forth a patent on a new "semiconductor quantum dot device"). As discussed in that patent, "quantum dots" are "boxes of quantized potential" on the order of "tens of nanometers" (tens of a billionth of a meter). *Id.* at col. 1.

and fragments of DNA,⁴ "nanotubes" and other nanotechnologies.⁵ With respect to any of these inventions, it can be said "that, to be perceived, [they] must be measured at a certain point in space and time by equipment capable of detecting and interpreting [them]." Yet though they are perceptible solely by equipment, these inventions can have, and do have, a large role in the progress of the useful arts. To suggest that the limits of human perception are a factor counting in some measure against patentability is to engraft an incongruously Luddite philosophy onto the Patent Act.

The second distinction invoked by the decision below—the "fleeting" nature of signal sought to be patented—is poorly defined and is inconsistent with basic patent policy. Restricting patentability based on the concept of a thing's "fleeting" nature is supported by no known precedent, and the Court of Appeals below provided no metrics for judging the timescale that would be used to decide whether an object's nature is "fleeting." The introduction of such an undefined concept into the law of patentable subject matter is certain to cause enormous difficulties, particularly because traditional intuitions about what

⁴ See, *e.g.*, U.S. Pat. No. 4,868,113 (1989) (claiming "[a]n isolated DNA sequence consisting essentially of a DNA sequence encoding human beta endothelial cell growth factor ...").

⁵ See, *e.g.*, U.S. Pat. No. 7,244,408 (2007) (setting forth a patent for "short carbon nanotubes"). The nanotubes in this patent have outer diameters from two to fifteen nanometers and lengths of 100 to 500 nanometers. *Id.* at col. 5 (claim 1).

may be properly described as "fleeting" work so poorly in modern realms of science and engineering. Even 60 vears ago, professionals working at the forefront of science and engineering recognized that, in many contexts, "a microsecond is a long time." Vannevar Bush, As We May Think, Atlantic Monthly, July 1945, available at http://www.theatlantic.com/doc/194507 /bush; see also Carl Dreher, Seconds Split a Million Ways, Popular Science, Apr. 1948, at 162, 163 (noting that "one microsecond may seem short enough to satisfy everyone, but to the modern electronics engineer it is a fairly long time"). In the computing technology of twenty years ago, a nanosecond (a billionth of a second) was recognized as a long time. See Ottis Cowper, *Editor's Notes*, 87 Compute! 4 (Aug. 1987), available at http://www.atarimagazines.com/ compute/issue87/Editors_Notes.php ("that might sound unimaginably fast, but in electronic terms. а nanosecond is a long time").

Moreover, the idea that a signal—even a signal "encoded on an electromagnetic carrier" traveling at the speed of light, App. 23a—is necessarily "fleeting" contradicts modern developments in physics. As noted in recent news reports, although light signals have traditionally been considered "the fleetest form of energy in the universe," cutting-edge scientific work has now slowed down light signals "to just 38 mph, about one-20-millionth its normal speed." Rick Weiss, *Putting the Brakes on Light Speed*, The Washington Post, Friday, Jan. 19, 2007, at A8, *available at* http://www.washingtonpost.com/wp-dyn/ content/article/2007/01/18/AR2007011801683.html.

This development is just one example in "in the fast-

paced field of 'slow light'—a discipline that barely existed a decade ago." *Id.*

Thus, while the traditional industrial processes are being sped up from milliseconds to microseconds to nanoseconds and beyond, traditionally fast natural processes are being artificially slowed to the point that fleet signals of light are slower than the most underpowered automobile on the market. In such a technological environment, incorporating a new and undefined concept of fleet-ness as a strike against patentability is sure to work great mischief. Indeed, this rapidly advancing technological environment shows the wisdom of this Court's traditional approach that respects the broad general language chosen by Congress and refuses to import new limitations into the statute. See, e.g., Chakrabarty, 477 U.S. at 316 ("A rule that unanticipated inventions are without protection would conflict with the core concept of the that anticipation patent law undermines patentability."). That policy is based on the wise view that innovation often follows an unpredictable path. Id. ("Congress employed broad general language in drafting § 101 precisely because ... inventions are often unforeseeable."). In this case, the path of current innovation is already becoming visible, and thus at the very time when the Federal Circuit's new limitation on patentable subject matter is being announced, the incoherence of the limitation is becoming readily apparent.

The third distinction relied upon by the Court of Appeals was that "any tangibility arguably attributed to a signal is embodied in the principle that it is perceptible—e.g., changes in electrical potential can be measured." App. 21a. This distinction is also difficult to define with any degree of precision and, in any event, is wholly alien to the text and purposes of the Patent Act.

As the Court Appeals noted elsewhere in its opinion, the signals at issue in this case are required to have "some physical form" in order to fall within the ambit of Nuijten's patent claims. App. 13a. Thus, contrary to the view adopted by the Board of Patent Appeals and Interferences (BPAI) in the Patent and Trademark Office (PTO), the Court of Appeals recognized that the signals here are not mere abstractions. See App. 9a (recounting the BPAI's position that the claimed signals are abstractions lacking physical form); *id.* at 12a-13a (rejecting that position).

The distinction drawn by the Court of Appeals appears to be between tangible objects and merely physical objects. An analogous distinction has traditionally been used to divide trespass and nuisance actions. See, e.g., San Diego Gas & Electric Co. v. Superior Court, 920 P.2d 669, 936 (Cal. 1996) (describing the traditional rule that "[a]ll intangible intrusions, such as noise, odor, or light alone, are dealt with as nuisance cases, not trespass," and deciding that "electric and magnetic fields ... are wholly intangible phenomena"). Yet even in that traditional context, the distinction has proved difficult to define and to police, especially in the context of new technologies. See, e.g., Fletcher v. Conoco Pipe Line Co., 129 F. Supp. 2d 1255, 1262 (W.D. Mo. 2001)

(sustaining the view that "stray electricity" is a sufficient "tangible phenomenon" that it can be actionable as trespass); CompuServe, Inc. v. Cyber Promotions, Inc., 962 F. Supp. 1015, 1021 (S.D. Ohio 1997) ("Electronic signals generated and sent by computer have been held to be sufficiently physically tangible to support a trespass cause of action."). The application of the tangibility doctrine in trespass law also produced a split of opinions among has commentators. Compare Dan L. Burk, The Trouble with Trespass, 4 J. Small & Emerging Bus. L. 27, 54 (1999) (arguing that "[i]f propertization via trespass imposes costs in excess of the costs imposed by spam [i.e., junk e-mails], it is difficult to justify recognition of trespass claims") with I. Trotter Hardy, The Ancient Doctrine of Trespass to Web Sites, 1996 J. Online L. art. 7, at ¶ 57, available at http://www.wm.edu/law/ publications/jol/95 96/hardy.html (concluding that a Web site should be considered just another species of property and that the common law recognition of trespass to Web sites is appropriate). Indeed. the difficulties associated with the tangibility distinction are evident even in the decision here, for earlier in its opinion the Court of Appeals stated that the signal claims at issue here do require some "tangible means of information carriage." App. 13a.

The difficulties experienced in applying tangibility concepts in the law of trespass should be sufficient cause to avoid importing the distinction into a patent law statute that, on its face, contains no such requirement. But there are other important reasons as well. First, tangibility itself is not a scientific concept. Even light waves are capable of being "felt" by

sufficiently sensitive instruments, for the light does exert pressure on other objects. See, *e.g.*, Arthur Ashkin, The Pressure of Laser Light, 226 Scientific American 63 (1972). The pressure exerted by light has been exploited over the last several decades to built "optical tweezers," which manipulate very small particles such as molecules and atoms using the pressures exerted by light beams. See, e.g., U.S. Pat. No 6,734,436 at col. 4 (2004) (explaining that "[w]hen light is absorbed, reflected, or refracted by a material, momentum is transferred to the material" and that this "radiation pressure" has been used to develop "[o]ptical tweezers ...that controllably deliver radiation pressure to manipulate small particles"). While the human sense of touch is not capable of sensing the pressure exerted by light, instruments can. Thus, in scientific terms, the tangibility distinction articulated by the Court of Appeals is nothing more than a restatement of its distinction between things susceptible to unaided human perception and things perceptible only with the aid of machinery.

Second, the language of the statute does not require tangibility. Rather, the word "manufacture" had very broad meanings when the predecessor of § 101 was enacted into statutory law in 1793. As noted by Judge Linn in dissent below, a common contemporary meaning of "manufacture" was "[a]ny thing made by art." App. 32a (Linn, J., dissenting) (quoting Samuel Johnson, A Dictionary of the English Language (3d ed. 1768)). As also noted by Judge Linn, U.S. law was following the British Statute of Monopolies (the statutory basis for the British patent system) in defining patentable subject matter with the

word "manufacture." Id. at 31a-32a. Contemporary legal interpretations by British courts confirmed the general understanding in the Anglo-American legal community that "manufacture" was to be afforded a meaning as broad as its dictionary definition. See, *e.g.*, Hornblower v. Boulton, 101 Eng. Rep. 1285, 1288 (King's Bench 1799) (Lord Kenyon, C.J.) ("I have no doubt in saying that this is a patent for a manufacture. which I understand to be something made by the hands of man."). U.S. commentators also understood the class of patentable inventions covered by the word "manufacture" to be "[c]omprehensive" and to include "every article devised by man, except machinery on the one side, and compositions of matter and designs on the other." 1 William Robinson, The Law of Patents for Useful Inventions § 183, at 270 (1890).⁶ In its most recent recodification of the patent laws, Congress was aware of this unbroken tradition in interpreting patentable subject matter broadly and thus, as this Court noted in *Chakrabarty*, the legislative history of 1952 Patent Act reflects the congressional the understanding that patentable subject matter will "include anything under the sun that is made by man." 447 U.S. at 309 (quoting S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952) and H. R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952)).

⁶ In this regard, machinery, compositions of matter, and designs were also statutory categories of patentable subject matter, so Robinson's definitions still allowed all articles devised by man to be patentable.

Third, the decision by the Court of Appeals conflicts not only with this Court's admonitions against imposing new limitations on patentable subject matter, but also with this Court's specific holding in *O'Reilly v*. Morse, 56 U.S. 62 (1853). As noted by Judge Linn in his dissent below (App. 50a-51a), this Court sustained Samuel Morse's claim to a "system of signs" consisting of the familiar dots and dashes of Morse Code. The panel majority below distinguished the holding in Morse by stating that Morse's claim was actually "a process claim covering the method (or 'art') of signaling." App. 23a n.9. Yet that re-interpretation of Morse's claim as a process claim contradicts the panel majority's own holding that a process claim must cover "an act or series of acts." App. at 18a. It also has no support in the record of O'Reilly v. Morse, as both sides of that litigation repeatedly referred to Morse's claim to dots and dashes as embracing an "alphabet"—i.e., a specific thing, not a series of steps. See. e.g., Transcript of Record in O'Reilly v. Morse (S.Ct. No. 224) (filed Aug. 3, 1850), at 35 (setting forth response by the defendant Henry O'Reilly which acknowledges that Morse arranged a "combination of dots and lines composing his alphabet and signs of numerals" but denying that "such an arrangement of an alphabet is the subject of a patent"); id. at 121, 122-23 (setting forth an affidavit of L.D. Gale, a chief examiner at the U.S. Patent Office who, testifying in support Morse, repeatedly describes Morse as having obtained a claim to an "alphabet").

In sum, the decision below conflicts with Supreme Court authority both in its general approach to interpreting 35 U.S.C. § 101 and in its specific holding that a new and nonobvious sign or signal is unpatentable. The justifications given by the panel majority for its unprecedented holding are scientifically vacuous and create bad patent policy.

II. THE ISSUE PRESENTED IN THIS CASE IS IMPORTANT.

The importance of this case is two-fold. First, issues concerning the subject matter patentable under 35 U.S.C. § 101 are inherently important, and this degree of importance is clearly demonstrated by this Court's record in granting certiorari in patent cases over the last three decades. From 1978 through to this year, this Court has granted certiorari and heard argument in twenty-five patent cases.⁷ Five of those grants, or 20%, have involved the proper interpretation of 35 U.S.C. § 101.⁸ Patentable subject matter cases have attracted this Court's attention far more than any other issue of patent law during this time period.

⁷ See John F. Duffy, *The Festo Case and the Return of the Supreme Court to the Bar of Patents*, 2002 S.Ct. Rev. 273, 287-88 & n.50 (2003). The data from that article has subsequently been updated to include the eight patent cases in which this Court has granted certiorari in the Terms 2002-2007.

⁸ Those five are: Parker v. Flook, 437 U.S. 584 (1978); Diamond v. Chakrabarty, 447 U.S. 303 (1980); Diamond v. Diehr, 450 U.S. 175 (1981); J.E.M. Ag Supply v. Pioneer Hi-Bred Int'l, 534 U.S. 124 (2001); and Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc., 548 U.S. 124 (2006). In the most recent of these five cases, the Court granted certiorari and heard full arguments on the case but ultimately dismissed the writ of certiorari as improvidently granted. See discussion in Part III, infra.

Moreover, in the last two cases involving patentable subject matter, this Court granted certiorari despite calling for the views of the Solicitor General and receiving his recommendation to deny certiorari.⁹ The attention that this Court has given to patentable subject matter is justified because § 101 of the Patent Act is a fundamental provision that regulates the entire domain of patent system.

This case is also important because the decision's reasoning is highly destabilizing in an important technological field. This case is yet another manifestation of the technological changes wrought by increasing progress in electronic technologies. That progress has raised legal questions in other fields as well. The issues concerning trespass law, as discussed above, present one example. Another is provided by this Court's Fourth Amendment jurisprudence, which was initially interpreted to be inapplicable to electronic surveillance if unaccompanied by tangible invasions of physical property. See, e.g., Olmstead v. United States, 277 U.S. 438 (1928); Goldman v. United States, 316 U.S. 129 (1942). More recent cases have, however, eschewed such restrictions on the Amendment's scope.

⁹ See Brief for the United States as Amicus Curiae at 12, in J.E.M. Ag Supply v. Pioneer Hi-Bred Int'l, 534 U.S. 124 (2001), available at <u>http://www.usdoj.gov/osg/briefs/2000/2pet/6invit/1999</u> -<u>1996.pet.ami.inv.pdf</u>; Brief for the United States as Amicus Curiae at 20, in Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc., 548 U.S. 124 (2006), available at http://www.usdoj.gov/osg/briefs/2005/2pet/6invit/2004-0607.pet.ami.inv.pdf.

See, e.g., Katz v. United States, 389 U.S. 347 (1967) (overruling prior case law on electronic surveillance); *Kyllo v. United States*, 533 U.S. 27 (2001) (Scalia, J.) (holding that the government's use of a thermal imaging scanner constituted a "search" of a house for purposes of the Fourth Amendment even though no physical intrusion occurred).

The importance of this case is not diminished because the PTO allowed claims covering Nuijten's process for making his new signals and claims covering Nuijten's signals when stored on a "storage medium." App. 8a & 21a n.6. A nearly identical situation was presented to this Court in *Diamond v. Chakrabarty*, where the PTO had denied claims to a new and nonobvious bacterium but had allowed claims covering the process for making the bacterium and claims covering the bacterium combined with a "carrier material ... such as straw." 447 U.S. at 306. Despite the issuance of those other claims, the issue whether the bacterium itself could be patented was sufficiently important to justify the grant certiorari.

The procedural posture in *Chakrabarty* also shows that this Court has not been receptive to the PTO's prior attempts to draw formalistic lines in restricting patentable subject matter. In *Chakrabarty*, the PTO was willing to allow patents on living organisms provided the organisms were mixed with something dead like harvested straw. Here the PTO is willing to allow patents on signals provided that the signals are placed on standard storage media. In both cases, the PTO's position threatens to deprive meritorious inventors of rights to the full scope of their inventions by exalting form over substance in an area of the law that is decidedly not formalistic. In *Chakrabarty*, the Court granted certiorari and rejected the PTO's attempt to inject needless and destabilizing formalisms into patentable subject matter law. The same should be done here.

Given the broad statutory language chosen by Congress, the time-honored policies of the Patent Act, and this Court's consistent teachings, § 101 of the Patent Act should be one of the least likely areas for the courts to begin fashioning formalistic "tangibility" requirements that are "bad physics as well as bad law." Katz, 389 U.S. at 362 (Harlan, J., concurring) (agreeing to overrule case law holding the Fourth Amendment inapplicable to "electronic surveillance accomplished without the physical penetration of petitioner's premises by a tangible object"). If the courts are willing to impose such unprecedented restrictions on patentable subject matter, then other similar requirements could also be imposed, for new inventions can, by definition, always be distinguished from all that has come before. Thus, beyond its specific holding, the decision below threatens to inject an enormous amount of uncertainty into the field of patentable subject matter.

III. THIS CASE IS AN EXCELLENT VEHICLE FOR DECIDING THE ISSUE.

As discussed above, this case is in nearly an identical procedural posture as *Chakrabarty* was when the Court granted certiorari there. In both cases, the PTO has already fully adjudicated the patent

applicant's claims to invention; has found that the applicant has satisfied all of the other requirements of the Patent Act, including novelty, utility, nonobviousness; and has allowed claims covering certain aspects of the invention. Thus, as in *Chakrabarty*, the procedural posture provides the Court with a case that isolates the patentable subject matter issue from the all other patent law issues.

The procedural posture is also far superior to that in the Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc., 548 U.S. 124 (2006). In that case, this Court granted certiorari even though the Petitioner "did not refer in the lower courts to § 101 of the Patent Act" and the Solicitor General advised the Court "not to hear the case (primarily based upon LabCorp's failure to refer to 35 U.S.C. § 101)." Id. at 132-33 (Breyer, J., dissenting). Certiorari was nonetheless granted; the case was argued primarily under § 101; and this Court ultimately dismissed the writ of certiorari as improvidently granted, with three Justices dissenting.

In this case, no such procedural default will prevent the Court from reaching the merits of the § 101 issue. The issue was properly adjudicated below and the split panel decision fully presents the competing views concerning the proper interpretation and application of § 101.

CONCLUSION

This Court should grant the writ of certiorari.

Respectfully submitted,

John F. Duffy *Counsel of Record* Oswald Symister Colclough Research Professor of Law George Washington University Law School 2000 H Street, NW Washington, DC 20052 (202) 994 - 0014

June 12, 2008

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APPENDIX - LIST OF AMICI

Martin J. Adelman Theodore and James Pedas Family Professor of Intellectual Property and Technology Law George Washington University Law School

John R. Allison Spence Centennial Professor McCombs Graduate School of Business University of Texas at Austin

Miriam Bitton Assistant Professor of Law Bar-Ilan University Law Faculty Israel

Christopher A. Cotropia Associate Professor of Law Intellectual Property Institute University of Richmond School of Law

Dennis D. Crouch Associate Professor of Law University of Missouri School of Law

John F. Duffy Oswald Symister Colclough Research Professor of Law George Washington University Law School

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Appendix

Jay P. Kesan Professor & Mildred Van Voorhis Jones Faculty Scholar University of Illinois at Urbana-Champaign

F. Scott Kieff Professor of Law Washington University School of Law Research Fellow Stanford University's Hoover Institution

Mark A. Lemley William H. Neukom Professor of Law Stanford Law School

Kristen Osenga Assistant Professor of Law University of Richmond School of Law

Ted Sichelman Ewing Marion Kauffman Foundation Research Fellow Berkeley Center for Law and Technology University of California, Berkeley, School of Law

R. Polk Wagner Professor of Law University of Pennsylvania Law School

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