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Operating Efficiently Post-Bilski by Ordering Patent Doctrine Decision-Making

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OPERATING EFFICIENTLY POST-*BILSKI* BY ORDERING PATENT DOCTRINE DECISION-MAKING

Dennis Crouch[†] & Robert P. Merges^{††}

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I. INTRODUCTION

Now that the Supreme Court has decided *Bilski v. Kappos*,¹ there is an enormous amount of speculation about the case’s impact on patent applicants, litigants, and other participants in the patent system. Most of the

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1. 130 S. Ct. 3218 (2010).

commentary is concerned with the holding in *Bilski*, how this holding will be applied by courts and the Patent Office, and ultimately, the effect of the holding on inventors, and those who hold and seek patents.

We take a different approach. Rather than try to cut through the complexity of *Bilski*, or predict how it will be applied, we talk about how to avoid it. We are interested in minimizing the cost and confusion that accompany a review of patents for § 101 subject-matter eligibility.² We propose that the § 101 issue of *Bilski* be considered only when doing so is absolutely necessary to determine the validity of a claim or claims in a patent. We believe any claim that can be invalidated under one of the less controversial and less complex requirements for patentability—§§ 102, 103, and 112, for instance—ought to be disposed of without considering subject matter patentability.³ In other words, the *Bilski* issue should be avoided wherever it is not strictly necessary. To support this conclusion, we present a set of empirical data that indicates that the vast majority of patent claims challenged on subject matter eligibility grounds were also challenged on other patentability grounds.

We set the stage for our proposal in Part II, which briefly reviews the history behind *Bilski* and explains its open-ended holding and individualized approach. The difficulty of applying the *Bilski* ruling to different types of patent claims leads us to Part III, in which we call into question an accepted (if largely implicit) principle of patent law—that the lexical priority of statutory provisions in the 1952 Patent Act dictates a necessary logical sequence of invalidity tests. We reject this widespread assumption. There is nothing in the statute that requires this. Indeed, in Part III we argue that in many ways the very idea of a sequence of discrete patentability requirements is conceptually misleading. Claims can be and often are rejected by the Patent Office for multiple reasons, suggesting that at least certain claims suffer from defects that transcend specific statutory validity requirements. We argue further that the policy underpinnings of various requirements overlap in complex ways, so that in reality patentability doctrine does not test for a series of discrete and independent qualities that are distinct from and mutually exclusive of each other. In the same way, transcendent qualities of an invention can influence multiple doctrines simultaneously, with pioneering

2. 35 U.S.C. § 101 (2006).

3. These disqualifying doctrines include, *inter alia*, anticipation and pre-filing disclosures under 35 U.S.C. § 102 (2006); obviousness under 35 U.S.C. § 103(a) (2006); enablement, written description, and best mode under 35 U.S.C. § 112 ¶ 1 (2006); and indefiniteness under 35 U.S.C. § 112 ¶ 2 (2006).

inventions (due to both a liberal treatment under enablement, and a broad reach under infringement doctrines) being a prime example. This demonstrates again that there is not and should not be a strong separation between various patent law doctrines.

Another argument along these lines recognizes that while patentability doctrines are not discrete entities, neither is the validity of the “the invention” that is being considered. Patent applicants routinely present multiple, overlapping claims, all of which cover fine-grained variations on a central inventive insight or advance. So it is inaccurate to visualize patentability as a stepwise series of tests applied to a single “invention.” It is not true, for example, that “invention X” passes § 101 and should thus proceed in logical sequence to be tested under § 102. One claim growing out of inventive insight X might present no § 101 problems at all, yet another claim in the same patent application might raise a difficult issue under this provision. Each claim, being a unique slice of the overall inventive insight, ought to be considered on its own terms, and in whatever order makes the most sense. Put another way, the mental model of a stepwise sequence of patentability determinations overlooks the highly granular nature in which different slices of the inventive concept are presented for validity testing.

This analysis is further developed in Section III.A. When a claim fails to pass muster under any single test of validity, that claim should be invalidated. *No further tests should be applied.* We describe this as “chain” theory of validity: once one link in the chain is broken, the claim fails, and there is no reason to proceed further. Beyond that point, any expenditure of resources on validity questions is inefficient. Pragmatic considerations enter at this point. Issues of cost, justiciability, and spillover effects are perfectly appropriate in determining the actual sequence in which validity tests are applied with respect to any particular patent claim. The non-linearity of patent validity tests, together with the principle of efficient administration, yields a simple rule: start with chain links that are, in general, easiest and cheapest to test, and when the chain fails, stop the process. That way, the costliest and most complex doctrines—the trickiest “links in the chain”—are often avoided, and in any event are put off until later. Therefore, § 101 should be avoided, both at the Patent Office and in the courts. We justify this not only on efficiency grounds, but also by analogy to the Supreme Court rules of avoidance.

In Part IV, we apply this simple principle. It leads to several recommendations. First, though the PTO has good reasons for its longstanding practice of rejecting claims for multiple reasons, we recommend that § 101 be used only as an exception or last resort even at the PTO. Next, we contend that the courts should proceed in a stepwise fashion, beginning

with §§ 102, 103, and 112, changing the order of doctrines as dictated by pragmatic considerations, and stopping as soon as a claim is conclusively invalidated. In all cases, the difficult process of deciding whether a claim presents patentable subject matter under § 101 should be deferred until very late in the process. Therefore, we recommend, courts should in effect hold off on the difficult task of evaluating claims under § 101—ideally deploying the full § 101 analysis only when that is essential, i.e., when a claim passes muster under the other validity doctrines.

II. PATENTABLE SUBJECT MATTER: *BILSKI* AND BEYOND

The issue of patentable subject matter was given fresh prominence when the Supreme Court handed down the *Bilski v. Kappos* decision in June, 2010.⁴ In *Bilski*, the Supreme Court sustained the invalidity of claims to a financial hedging method that allows commodity users and producers to fix their costs by shifting the risk of supply and demand fluctuations onto other market participants.⁵ The rationale behind the ruling was that Bilski's "claims are not patentable processes because they are attempts to patent abstract ideas."⁶ The Court rooted the exclusion of "abstract ideas" in a long line of precedent stretching back to the nineteenth century, which, the opinion said, confers legitimacy despite the absence of any definition or even mention of the term "abstract" in the text of the Patent Act.⁷ The primary source of the Court's holding was three earlier opinions, all touching on the patentability of software-related claims. In explaining its ruling, the Court explicitly rejected several comprehensive standards for patentability that had been proposed by academics and practitioners. These more comprehensive standards were attempts to create order in the complex area of patentable subject matter.

4. *Bilski*, 130 S. Ct. 3218.

5. Dependent claims of the patent identified energy as the commodity being hedged, identified the other market participants as energy distributors, and identified a statistical method for calculating the fixed costs.

6. *Bilski*, 130 S. Ct. at 3229–30 (citing *Le Roy v. Tatham*, 55 U.S. 156, 175 (1853)).

7. According to the *Bilski* Court:

The Court's precedents provide three specific exceptions to § 101's broad patent-eligibility principles: "laws of nature, physical phenomena, and abstract ideas." [*Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980).] While these exceptions are not required by the statutory text, they are consistent with the notion that a patentable process must be "new and useful." And, in any case, these exceptions have defined the reach of the statute as a matter of statutory *stare decisis* going back 150 years.

Id. at 3221.

Instead of relying on these, however, the Court chose to rest its holding primarily on its case law from the decade 1970–1980.

Rather than adopting categorical rules that might have wide-ranging and unforeseen impacts, the Court resolved this case narrowly on the basis of its decisions in *Gottschalk v. Benson*, *Parker v. Flook*, and *Diamond v. Diehr*, which showed, according to the Court, that Bilski's claims are not patentable processes because they are attempts to patent abstract ideas.⁸

While it is understandable that the Court would choose to reject “atextual” tests, the organizing impulse behind these proposed standards was that they would transcend the Court's software cases, which were widely thought to be too fact-specific and outdated to serve as an effective source for a workable test.

One problem with the Court's approach is the lack of guidance in the words of the statute. The literal terms of § 101—“process, machine, manufacture and composition of matter”—are so open-ended that they provide very little traction for a court that feels the need to reign in the scope of patentable subject matter. This is where the historical non-textual exclusions from patentable subject matter come in. Long ago a sort of gloss was placed on the Patent Act: despite the statute's open-ended terms,⁹ the Court decreed that “laws of nature, physical phenomena, and abstract ideas” were implicitly excluded from the realm of what is patentable.¹⁰ Because none of these exclusions have ever been defined in legislation, their contours have taken shape over the years through the traditional way of common law principles. The chief advantage of this approach is well understood: flexibility and adaptability.¹¹ By the same token, the lack of a comprehensive definition can also create uncertainty—especially where the volume of case law is relatively low. When cases are few and far between, those who must rely on a

8. *Bilski*, 130 S. Ct. at 3229–30 (citing *Diamond v. Diehr*, 450 U.S. 175 (1981); *Parker v. Flook*, 437 U.S. 584 (1978); *Gottschalk v. Benson*, 409 U.S. 63 (1972)).

9. The statute has undergone both major and minor revisions since its first enactment in 1793, but the provision on patentable subject matter—§ 101 under the current, 1952, Act—has hardly changed at all. See ROBERT P. MERGES AND JOHN F. DUFFY, PATENT LAW AND POLICY: CASES AND MATERIALS 68 (4th ed. 2007) (citing Patent Act of 1793, ch. 11, § 1, 1 Stat. 318 (current version at 35 U.S.C. § 101 (2006)) (authorizing patents for “any new and useful art, machine, manufacture or composition of matter, or any new and useful improvement on any art, machine, manufacture or composition of matter”).

10. *Chakrabarty*, 447 U.S. at 309 (citing *Flook*, 437 U.S. 584; *Benson*, 409 U.S. at 67; *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948); *O'Reilly v. Morse*, 56 U.S. 62, 112–21 (1854); *Le Roy*, 55 U.S. at 175 (1853)).

11. Prior to *Bilski*, the last subject matter eligibility question decided by the Supreme Court was *Diamond v. Diehr*, 450 U.S. 175 (1981).

common law rule are placed in the difficult position of reading the specific facts of the few decided cases for whatever clues and signals they might throw off.

This is precisely the situation that now confronts patent lawyers, inventors, and everyone else who is interested in the scope of patentable subject matter under § 101. The hard kernel of legal authority after *Bilski* is this: the risk-hedging claims in *Bilski* were too abstract. Therefore, claims that are similar enough to those at issue in *Bilski* will also be unpatentable. It is easy enough to state this general principle, but—because of the great variety and complexity of patent claims that will be subject to the post-*Bilski* standard—very difficult in practice to apply it to a specific case. The virtue of the *Bilski* opinion is that it does not tie the patent system down to a restrictive test for patentability. But there is a matching vice: a bedeviling lack of guidance over what patent applicants and patentees can expect when § 101 is applied to a specific patent claim.

We have a particular concern that application of this flexible “no rules” standard to patentable subject inquiry will be difficult at the bureaucratic level of a patent examiner. Patent examiners are typically non-lawyer technology experts trained to judge technical questions of newness and sufficiency of disclosure. Examiners are likely not similarly prepared to pursue the more philosophical inquiries associated with patentable subject matter.¹²

If the volume of Supreme Court case law was higher, this guidance might emerge relatively quickly. But typically, the Court takes few cases in this area. Consider also that in the *Bilski* case itself, the Court was deeply split (5–4) along traditional conservative-liberal lines. Because of this, the Court might well choose to avoid the issue for some period of time. This probably leaves the Federal Circuit to sort through this area on its own. In the next Part, we argue that the Federal Circuit, as well as the district courts and the PTO, ought to follow a prudential rule of simply avoiding the § 101 issue whenever possible.

12. See Reply Brief for Petitioners at 3, *Bilski v. Kappos*, 130 S. Ct. 3218 (2010) (No. 08-964), 2009 WL 3453657, at *3 (“Rather than struggling to determine whether a machine is ‘particular’ enough or whether a claim falls within the ever-changing definition of ‘technology,’ the question of patentability should instead focus on the underlying substance of an invention and whether it is novel, nonobvious, particularly described, and properly claimed.”); Brief for Amicus Curiae, Roberta J. Morris, Esq., Ph.D., In Support of Appellants and thus Supporting Reversal at 5–6, *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (No. 07-1130), 2008 WL 1842256, at *6–7 (explaining that patent examiners are better qualified to judge technical questions of novelty and obviousness than the “philosophical” questions of patentable subject matter).

III. LEXICAL PRIORITY AND PATENTABILITY DOCTRINES

The lexical priority of § 101 is often assumed to dictate the order in which validity issues must be addressed. So it is often assumed that when a § 101 issue arises in a patent case, the relevant decision maker should deal with that issue first, before other requirements for patentability are even considered. Some dicta in Supreme Court cases support this idea. In *Diamond v. Diebr*, the Court focused on whether the claim at issue was “barred at the threshold by § 101.”¹³ And in *Parker v. Flook*, the Court said “[t]he obligation to determine what type of discovery is sought to be patented must precede the determination of whether that discovery is, in fact, new or obvious.”¹⁴ So too at the Federal Circuit, which said in *State Street Bank & Trust Co. v. Signature Financial Group, Inc.* that “[t]he first door which must be opened on the difficult path to patentability is § 101.”¹⁵

As might be expected, this approach has filtered down to the Board of Appeals at the PTO, which has found that lexical priority dictates a rigid order for evaluating validity. In *Ex parte Christian*,¹⁶ for example, the examiner rejected Christian’s claims as anticipated by a prior publication. On appeal, the Board of Appeals refused to evaluate the merits of the prior art rejection, and instead instituted a new ground of rejection solely focusing on subject matter eligibility grounds under § 101.

Surely the idea that the patent validity provisions are meant to be applied in the order that they appear in the Patent Act has some appeal. If we take the linguistic details of our statutes seriously, why then not take the lexical ordering of the statutory provisions seriously as well? Section 101 appears before §§ 102 and 103, after all—and surely there is some good reason for this. Who would advocate skipping willy-nilly around the statute when a complex patent case is being decided? Surely the result would be something like chaos.

To begin, it is important to see that the various sections of the Patent Act certainly do proceed in a logical order. It is certainly not *illogical* to start the substantive requirements of patent law with patentable subject matter (after

13. 450 U.S. at 188.

14. 437 U.S. at 593; *see also In re Bergy*, 563 F.2d 1031 (C.C.P.A. 1977), *vacated sub nom. Parker v. Bergy*, 438 U.S. 902 (1978), *remanded to In re Bergy*, 596 F.2d 952, 960 (C.C.P.A. 1979) (“Achieving the ultimate goal of a patent under th[e] statutory provisions involves, to use an analogy, having the separate keys to open *in succession* the three doors of sections 101, 102, and 103” (emphasis added)).

15. 149 F.3d 1368, 1372 n. 2 (Fed. Cir. 1998) (quoting *Bergy*, 596 F.2d at 960); *see also In re Comiskey*, 554 F.3d 967, 973 (Fed. Cir. 2009).

16. *Ex Parte Christian*, No. 2009-6589, 2010 WL 3389297 (B.P.A.I. Aug. 23, 2010).

the administrative details of the very first sections of the Patent Act). In a way, it makes sense to begin with a general definition of the types of things that are patentable, and then proceed to the question whether a particular invention is novel; then nonobvious; then enabled; and so on. But we argue that although the statute unfolds in a logical order, this is not the only order that makes sense. And, most importantly, it is not essential to *apply* the statutory requirements in the precise order they are set out in the Patent Act.

It is black letter law, for example, that novelty under § 102 is determined strictly on the basis of all the elements recited in a given claim. But if one or more of those elements cannot be pinned down, it makes sense to start with a consideration of the claim itself. Thus, for example, the definiteness provision of § 112 ¶ 2 might logically be considered first in some cases.¹⁷ Furthermore, sometimes other claim-related requirements must also be considered first, before non-claim-related validity doctrines can be applied. For example, a claim whose only limitation is a single means plus function element—invalid under § 112 ¶ 1—need not first pass through the analysis required under §§ 102 and 103.¹⁸

It could be argued from all this that a series of provisions setting forth what is required for a valid claim might logically appear first in the Patent Act. That would certainly make sense, given the primacy of claims in contemporary patent analysis. But even under a patent statute so ordered, it would not make sense to always start with claim-related issues. Consider a case involving a claim with no apparent defects that read directly on a comprehensive piece of prior art. In this scenario, it would be logical to move directly to § 102. The point is therefore not that some optimal ordering of patent validity doctrines is available; it is that no such ordering will make sense in every case. Which leads us back the simple starting point: though § 101 comes first in the Patent Act, it need not always be considered first in a particular case.

A. PATENT VALIDITY AS A CHAIN OR CIRCUIT

We illustrate our point here with a simple analogy. To do its job, each link in a chain must be sound. If any one link breaks, the chain will not work. When thinking about its overall performance, it is the overall effectiveness of the chain that counts; there is no reason to focus on any particular link, or

17. *Cf.* *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342 (Fed. Cir. 2005) (deciding case on the basis of indefiniteness, without reaching other issues of patent validity).

18. *See In re Hyatt*, 708 F.2d 712 (Fed. Cir. 1983) (rejecting “single means” claim under § 112 ¶ 1, enablement requirement, without reaching other validity issues).

any particular order. Put another way, each link can potentially be the subject of the first test. As soon as a single link fails, the chain is broken, so other links need not be tested or considered.

Another useful analogy is to a series circuit. If two or more electrical components are connected in a series circuit, a malfunction in any component (such as a light bulb that burns out) disrupts the circuit, and none of the components will work.¹⁹ In testing a series circuit that has failed, the obvious procedure to follow is to start with the weakest component, whichever one that gives the greatest evidence of having a problem. It would make far less sense to follow a rigid testing process determined by some arbitrary ordering, such as testing the closest component to the power source first, the second-furthest second, and so on. It is precisely this rigid and unthinking ordering that we are opposed to when it comes to applying doctrines of patent validity.

These analogies bolster our initial point: in some cases, such as those where patentability is rejected on other grounds, *Bilski*-type subject matter questions can be entirely avoided. This is a good starting point for our conception of patent validity testing. But, there are a number of more practical reasons to believe that these § 101 issues *should* be avoided when possible.

B. A PRAGMATIC RATIONALE FOR AVOIDING § 101 DECISIONS

If an “easier” issue—one involving less controversy and requiring lower resource expenditures to correctly resolve—would conclusively resolve a case, the courts should decide the case on the basis of that issue, and express no opinion on § 101. This approach makes sense for two related reasons. It is more efficient, obviously. And also, it preserves the scarce currency of court legitimacy. These goals are furthered in the Supreme Court’s doctrine of avoidance, under which the Court resolves cases on non-constitutional grounds whenever possible.²⁰ By analogy to the doctrine of avoidance, our approach conserves the courts’ legitimacy by reserving consideration of § 101 issues for only those cases in which it is absolutely essential.²¹

19. This is not true of a parallel circuit, in which each component is attached to a power source separately.

20. *Ashwander v. Tenn. Valley Auth.*, 297 U.S. 288, 345–48 (1936); HART & WECHSLER’S, *THE FEDERAL COURTS AND THE FEDERAL SYSTEM* 76–77 (Richard H. Fallon, Jr. et al eds., 6th ed. 2009).

21. To be clear, we are not proposing that courts apply an aggressive form of avoidance that would alter the statutory construction of other Patent Act provisions in order

So for example, a questionable claim under § 101, which is clearly invalid because of a statutory bar event or very clear prior art under § 102, should be resolved on the § 102 ground. The same for validity under the utility requirement, under § 103 or § 112. Any validity requirement that has generated an extensive body of case law will in general be a firmer and less controversial basis for invalidating a patent than the philosophical post-*Bilski* inquiry under § 101. We say this in full recognition that the analysis of some validity provisions—in particular § 103, and in some cases the written description requirement under § 112—can themselves be arduous undertakings.

Although clearly not a constitutional question, we see some parallels between our vision for patentable subject matter procedural jurisprudence and the Supreme Court's doctrine of avoidance. As with the Constitution, the text of the § 101 has remained virtually unchanged for over two hundred years.²² During that time, the statute has served as the fundamental core defining our patent system, and, in that role, the Supreme Court has continued to interpret the provision with its own gloss that does not appear to be fundamentally based on the words of the statute.²³ And, perhaps more than any other provision in the Patent Act, § 101 decisions tend to be policy based and politically minded.²⁴

Rules of constitutional avoidance are deeply-seated in U.S. judicial practice. As Professor Adrian Vermeule wrote, “[a]voidance is perhaps the preeminent canon of federal statutory construction.”²⁵ Many rules of avoidance exist—some that aid in construing federal laws in ways that avoid constitutional conflicts and others that suggest a jurisprudential approach that avoids directly addressing constitutional questions unless absolutely

to avoid deciding a § 101 issue. Rather, we propose only that the Court reserve any decision on § 101 issues until other patentability doctrines have been resolved.

22. See Patent Act of 1793, Ch. 11, 1 Stat. 318–23 (Feb. 21, 1793) (patents available for any “new and useful art, machine, manufacture or composition of matter”).

23. *Bilski v. Kappos*, 130 S. Ct. 3218 (2010) (noting that historic subject matter exclusions are “not required by the statutory text”).

24. See Orin S. Kerr, *Rethinking Patent Law in the Administrative State*, 42 WM. & MARY L. REV. 127, 190 (2000) (“PTO discretion to set the scope of patentable subject matter would transform control over the PTO into a valuable political chip.”).

25. Adrian Vermeule, *Saving Constructions*, 15 GEO. L.J. 1945, 1948 (1997); see *Ashwander*, 297 U.S. at 347 (Brandeis, J., concurring) (“The Court will not pass upon a constitutional question although properly presented by the record, if there is also present some other ground upon which the case may be disposed of.”); see also Alexander M. Bickel, *The Supreme Court 1960 Term Foreword: The Passive Virtues*, 75 HARV. L. REV. 40, 58 (1961); Lisa A. Kloppenberg, *Avoiding Constitutional Questions*, 35 B.C. L. REV. 1003, 1025 (1994); Cass R. Sunstein, *Constitutionalism After the New Deal*, 101 HARV. L. REV. 421, 468–69 (1987).

necessary.²⁶ There are also many different but related grounds for the principle of avoidance,²⁷ but one core idea is that the principle helps courts conserve their legitimacy, the scarce but essential resource that justifies judicial review.²⁸

We do not argue that issues under § 101 of the Patent Act rise to the level of constitutional questions. Our invocation of the avoidance rule is therefore by analogy only, which we find convincing, for the same reasons that avoidance makes sense in the Supreme Court context. Validity under § 101 presents issues to the courts that are complex, difficult, and saturated by fundamental policy considerations. Deciding a § 101 case necessarily involves a judgment about whether a particular invention falls into a particular category of inventions—and ultimately about the patentability of that category as a whole. This is an issue that often far transcends the inherently bounded questions of patentability under §§ 102 and 103, or enablement under § 112. The courts in this area are given rather thin material to work with: some fairly ancient general phrases (machine, manufacture, composition of matter), and some quite general categories of exception (products of nature, natural phenomena, abstract ideas). To fashion a holding in a § 101 case out of these materials will often require a court to stretch the available authority in an effort to apply it to specific facts. It is therefore to be expected that rulings in these cases will often engender controversy and strain the credibility of the courts in charge. Therefore, the same logic that leads the Supreme Court to avoid its most delicate subject matter ought to apply in the case of patents and § 101.

IV. AGAINST A SIMPLE ORDERING: THE FUNDAMENTALLY OVERLAPPING NATURE OF CLAIMS AND DOCTRINES

In this Part, we explain in more detail why a simple lexical ordering approach fits poorly with basic features of the patent system. The problem with rigid ordering is that it is based on a very simplistic model of patent claims and validity doctrines. In particular, a rigid approach assumes a single discrete invention that is processed through a linear series of discrete and independent validity doctrines. The truth of the matter is that this process is

26. See *Ashwander*, 297 U.S. at 346–48.

27. See, e.g., *Rescue Army v. Mun. Ct. of L.A.*, 331 U.S. 549, 571 (1947) (reciting a non-exhaustive list of grounds supporting the avoidance doctrine).

28. *Id.* (citing “the delicacy of [the judicial review] function” and “the limited resources of enforcement” available to courts as rationales for avoidance).

much more complex. Inventions are “granularized” and “unpacked” by patent applicants, who construct a series of claims that cover different aspects and dimensions of the inventive concept. So a single patent may present individual claims that trigger close calls under several different validity doctrines. This means that no single, linear procedure will work in a foolproof way, even on a single patent. In addition, when it comes to validity doctrines, there is a good deal of conceptual overlap between the discrete requirements of patent validity. Thus, at the conceptual level, even with respect to a single patent claim, there is no foolproof ordering that moves along a logical sequence in which each concept is discrete and separate from the others.

A. APPLYING VALIDITY TESTS TO CLAIM SETS, NOT “INVENTIONS”

We tend to think in terms of testing “inventions” for patentability under various validity doctrines, but this is not really an accurate portrayal of the law. In a strict sense, inventions are neither valid nor invalid; only claims are. Patent applicants know this all too well, which is why they almost invariably include multiple claims when seeking legal protection for their inventions. For purposes of validity, then, it makes more sense to speak in terms of claim sets rather than inventions.

For example, suppose an inventor comes up with a new way to access stored data files that creates a unique, encrypted identifier based on the contents of a file. This allows users to search for and retrieve files without knowing their precise physical locations or specific file names.²⁹ Conventional claiming strategy for an invention like this would start with one or more broad, independent claims and then refine each independent claim, through various narrowing limitations recited in a series of dependent claims. The independent claims might include a “computer system” or simply “system,” meant to be an open-ended claim to a broad class of computer hardware implementations of the data storage idea. Another independent claim that makes sense in this situation is one that covers a method for storing data. Additional independent claims might cover slightly less open-ended versions of these basic claims, such as an implementation of the storage technique in a local or distributed network (a slightly narrower

29. This example is loosely based on the development of content-addressable memory in computer systems. See *Content Addressable Storage*, WIKIPEDIA, http://en.wikipedia.org/wiki/Content-addressable_storage (last visited Oct. 31, 2010); U.S. Patent No. 6,807,632 (filed Jan. 21, 1999) (issued Oct. 19, 2004); U.S. Patent No. 7,475,432 (filed July 19, 2004) (issued Jan. 6, 2009).

embodiment than the broadest “system” claim, which would include embodiments running on a single computer). Some method claims in the claim set might include a general algorithmic approach (i.e., first assign a unique identifier to a file, then put this identifier into a table, then note the location of the table, etc.), while others might well be more specific about the algorithm. One can also imagine a claim to the method of using this storage technique for retrieval of title documents in a computerized real estate database. Finally, the method claims might culminate in a recitation of a specific series of steps or commands written in a certain programming language.

The claims in this hypothetical patent application raise many patent validity issues. Depending on how broadly the computer system and system claims are drafted, there could well be prior art that raises serious validity issues under § 102 or § 103. A claim to a system that includes “retrieval of encrypted file identifying data,” without further limitations, might be anticipated by an earlier computer system designed for high-security applications. Clearly it would make sense to first examine such a claim under § 102 or § 103. By the same token, other claims might well raise other issues. For example, a claim that includes a broadly-worded software element—such as a “data access module,” or “means for retrieving data”—might raise indefiniteness issues. Validity testing of a claim like this might sensibly start with a consideration of § 112 ¶ 2.³⁰

Now consider the claim mentioned earlier, covering a method of using the storage retrieval technique for title documents in the real estate industry. This claim might implicate § 101 patentable subject matter. Under *Bilski*, the relevant question would be whether the claim was too abstract. This would be a complex and difficult question, given the open-ended nature of the “abstractness” inquiry and the difficulty of fitting a case such as this into the framework of earlier Supreme Court cases.

If there is solid prior art in the area of real estate title storage and retrieval, the same claim might also raise validity issues under § 102 or § 103. The essence of our proposal in this Article is that in such a case novelty and

30. See *Blackboard, Inc. v. Desire2Learn, Inc.*, 574 F.3d 1371, 1382–83 (Fed. Cir. 2009) (invalidating a claim including the element “means for assigning a level of access and control,” where specification failed to disclose any structure for this element); *Aristocrat Tech. Austl. PTY Ltd. v. Int’l Game Tech.*, 521 F.3d 1328 (Fed. Cir. 2008) (invalidating a claim including “control means” element where specification failed to disclose any structure corresponding to the element); *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342 (Fed. Cir. 2005) (examining indefiniteness with regard to software disclosure).

nonobviousness should be considered first, before addressing the § 101 requirement. If prior art is identified that invalidates the claim, there is no need to move on to the difficult § 101 issue. As we have been arguing, there is no necessary order in which validity issues must be considered in every instance. Each claim must be taken on its own. In some cases, it makes sense to consider one doctrine first; in others, it makes sense to start somewhere else.

With the hypothetical claim we have just described, the place to start is with §§ 102 and 103. Just as judgment and prudence dictate that with other claims in our example it might make sense to start with § 112 or § 102, we think the title retrieval system claim ought to be examined first under provisions other than § 101. Only if the claim passes muster under these other provisions will it be necessary to take up the question of patentable subject matter.

B. PRACTICAL AND CONCEPTUAL OVERLAP IN VALIDITY DOCTRINES

Our argument thus far has been based on an assumption of doctrinal overlap. Namely, that a substantial number of patent claims lacking subject matter eligibility under of § 101 also fail to satisfy at least one other validity test. Although we have not completed an exhaustive empirical study, this assumption appears reasonable and is supported by two recent studies. In the first study, Professors Mark Lemley, Christopher Cotropia, and Bhaven Sampat examined the prosecution history files of over 1,500 recently issued US patents. When parsing through their sample, the authors found that 84% of the patent applications that had been rejected for lacking subject matter eligibility were also rejected as either anticipated or obvious.³¹ In a separate study conducted for this article, we reviewed a set of 117 recently released opinions of the Board of Patent Appeals and Interferences (BPAI) that decided an issue of subject matter eligibility. In 110 (94%) of the BPAI opinions in our sample, each claim questioned on subject matter eligibility grounds also stood rejected on at least one other ground.³² This data appears

31. Christopher A. Cotropia, Mark Lemley & Bhaven Sampat, *Do Applicant Patent Citations Matter? Implications for the Presumption of Validity* (Stanford Law & Econ., Working Paper No. 401, 2010), available at <http://ssrn.com/abstract=1656568> (showing unpublished data generated by study that was conducted at the patent level, not claim-by-claim).

32. For this study, we used Westlaw to broadly search for all ex parte BPAI cases decided between October 13, 2009 and October 13, 2010 that included the phrase "patentable subject-matter." Those opinions were then examined to determine whether the claims were rejected on subject matter eligibility grounds and, if so, whether the claims were also rejected on any other ground. The table of collected data is available online at <http://www.patentlyo.com/CrouchMerges.BPAIDecisions.2010.xlsx>.

to show an exceptionally high rate of doctrinal overlap and lends credence to the idea that, by initially avoiding subject-matter-eligibility questions, many of those potential issues will be avoided.

The *Bilski* case likely represents a scenario that could have been decided on other grounds—especially to the extent that the claims are interpreted broadly as an attempt to “patent . . . the concept of hedging risk and the application of that concept to energy markets.”³³ The general concept of hedging is old and *Bilski*’s particular application of that concept was likely obvious at the time of his invention.³⁴

Although patent examiners are instructed to assert all applicable reasons for rejection in each office action rejection,³⁵ the BPAI has been somewhat aggressively following a rule of lexical priority. The tribunal’s recent decision in *Ex parte Christian*³⁶ is typical of this approach. The patent examiner rejected *Christian*’s claims as anticipated by a prior publication. On appeal, the BPAI refused to evaluate the merits of the prior art rejection and instead instituted a new ground of rejection solely focusing on subject matter eligibility grounds. This procedure was sanctioned by *In re Comiskey*.³⁷ In that case, the Court of Appeals for the Federal Circuit reiterated the “first door” approach and § 101 “threshold” language of *Bergy*,³⁸ and *Diehr*,³⁹ as it focused solely on newly raised patentable subject matter issues and held the other patentability issues moot. Thus, despite the practical overlap between the various patent

33. *Bilski v. Kappos*, 130 S. Ct. 3218, 3222 (2010).

34. See Brief of Amicus Curiae Regulatory Datacorp, Inc. in Support of Neither Party, *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (No. 2007-1130), 2008 WL 1842273, at *27–28 (citing Ronald White, *Some Statistical Aspects of Future Trading on a Commodity Exchange*, 99 J. ROYAL STAT. SOC’Y 297, 315 (1936)); Dennis Crouch, *Bilski: Full CAFC to Reexamine the Scope of Subject Matter Patentability*, PATENTLY-O (Feb 15, 2008), <http://www.patentlyo.com/patent/2008/02/bilski-full-cafc.html> (noting “serious obviousness problems” with the *Bilski* claims); Lauren Katzenellenbogen, Bob Irvine & David Donoghue, *Debate on In re Bilski*, 7 NW. J. TECH. & INTELL. PROP. 260 (2009) (“[*Bilski* is] a bad case [for Section 101 analysis] because the *Bilski* invention would have been rejected for obviousness, if nothing else, so really the rejecting it because of subject matter was sort of an additional reason to reject it.”).

35. See MPEP § 706 (8th ed. Rev. 7, Sept. 2008) (“The goal of examination is to clearly articulate any rejection early in the prosecution process so that the applicant has the opportunity to provide evidence of patentability and otherwise reply completely at the earliest opportunity.”).

36. *Ex Parte Christian*, No. 2009-6589, 2010 WL 3389297 (B.P.A.I. Aug. 23, 2010).

37. *In re Comiskey*, 554 F.3d 967, 973 (Fed. Cir. 2009).

38. *In re Bergy*, 596 F.2d 952, 960 (C.C.P.A. 1977) (“The first door which must be opened on the difficult path to patentability is § 101.”).

39. *Diamond v. Diehr*, 450 U.S. 175, 188 (1981).

doctrines, the adjudicative bodies tend to focus on § 101 issues to the exclusion of the other patentability doctrines.

The doctrinal overlap is not surprising given that subject matter eligibility overlaps with many of the other patentability doctrines in both purpose and operation. All of the patentability doctrines seek to ensure that granted patents are not overreaching but instead are given their appropriate scope.⁴⁰ It makes sense that claims directed toward naturally occurring phenomena—unpatentable under § 101—will likely fail the newness requirements of §§ 102 and 103(a). Likewise, the breadth of a claim directed to an abstract idea increases the likelihood that (1) an embodiment covered by the claim is already known in the art and (2) that the disclosure failed to provide an enabling written description commiserate with the scope of the claims. Even today, academics argue over whether the 1853 decision in *O'Reilly v. Morse*,⁴¹ rejecting Morse's broadest telegraph claim, should be categorized as a subject matter eligibility decision, or instead as an enablement decision.⁴² Thus, although the various patentability doctrines are each distinct in some form, they still overlap in many, often complex, ways.⁴³

The complex overlapping nature of the patentability doctrines is mirrored in most patentees' claims of inventive rights. Namely, patent applicants typically protect an invention with multiple, overlapping claims, and the validity of each relevant claim must be considered before a patent issues or infringement lawsuit concludes. In the same way that the patent doctrines can all be explained by a handful of policy goals, the set of claims defines the invention around one or more central inventive advances.

In litigation, courts are tasked with judging patentability as a binary valid/invalid inquiry. However, practicalities of patent prosecution that allow for both multiple claims and multiple pre-issuance amendments potentially serve to granularize the otherwise binary question. In the circuit analogy

40. See Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 843 (1990); see also Mark F. Grady & Jay I. Alexander, *Patent Law and Rent Dissipation*, 78 VA. L. REV. 305 (1992). But see *SmithKline Beecham Corp. v. Apotex Corp.*, 403 F.3d 1331, 1342 (Fed. Cir. 2005) (“The scope of the claims is not relevant to subject matter eligibility.”).

41. *O'Reilly v. Morse*, 56 U.S. 62 (1853).

42. See, e.g., Dan L. Burk & Mark A. Lemley, *Inherency*, 47 WM. & MARY L. REV. 371, 404 n.161 (2005) (“[T]he decision in *O'Reilly* may more properly be read to hold that Morse failed to enable . . . his broadest claims”).

43. The parallel purposes of the patentability doctrines suggests to us that, during patent prosecution claim amendments necessitated by a rejection under a non-subject matter eligibility patentability doctrine will often incidentally correct subject matter eligibility problems.

described above, multiple claim sets add some parallel organization to the circuit previously considered linked in series. From the standpoint of doctrinal overlap, the addition of multiple claims of varying scope suggests that an increasing variety of patent doctrines would be required to test the validity of a patent. In this common scenario, one set of claims might be most quickly invalidated based on published prior art associated with the invention, while other claims may lack a proper written description under § 112 or subject matter eligibility under § 101.

Our take-away from this discussion is the clear notion that patentability doctrines frequently overlap. In turn, this overlap suggests that some amount of conscious ordering of analysis could serve to reduce the workload of decision makers and to avoid having to decide disfavored doctrines.

C. STOPPING RULES: WHEN TO TERMINATE VALIDITY TESTING

It is one thing to talk about the order in which validity testing is performed. It is another thing altogether to ask when validity testing should stop. Should all potentially relevant validity issues be determined even if an apparently fatal defect is encountered at an early stage of testing? In general, the practice in court has been to terminate proceedings when the first fatal defect is encountered.⁴⁴ Once a patent is held invalid, the other potentially useful doctrines become moot and the court may lose its jurisdictional findings.⁴⁵ We support this practice.

In contrast, in early-stage patent examination, PTO examiners often reject claims on multiple grounds. The difference in approach may well be justified by understanding some subtle differences between a patent being challenged in court and a patent application being examined at the PTO. A typical patent application is involved in multiple rounds of examination before a patent eventually issues or the application is left abandoned. During that period, applications are regularly amended in order to overcome examiner rejections or to take into account other information discovered during the examination period. However, because almost every applicant has a wide variety of potential claim amendments they can implement, the process does not necessarily follow any linear or predictable pattern. Finally, patent examiners may have less confidence in their rejections—either

44. *See, e.g.,* *Geo. M. Martin Co. v. Alliance Machine Systems Intern. LLC*, 618 F.3d 1294, 1300 (Fed. Cir. 2010) (discussing district court refusing to decide moot issues); *Blackboard, Inc. v. Desire2Learn, Inc.*, 574 F.3d 1371 (Fed. Cir. 2009) (refusing to decide obviousness question after ruling that the claims were invalid as indefinite).

45. Some courts do prefer to provide alternative grounds for judgment as a way to add credibility to the decision and to bolster the decision's potential to sustain an appeal.

because of their own lack of experience or because they intentionally have made questionable rejections in order to force the patent applicant to prove his case. Based on all of these factors, the PTO has chosen to take the approach of attempting to address all potential patentability issues in the initial examination decision. The PTO's apparent hope is that this full up-front analysis will reduce the rounds of negotiation because patent applicants better understand the types of amendments necessary to obtain a patent and spurious examiner rejections can be dealt-with as a unit.⁴⁶

While we see merit in the PTO's approach, we suggest here that subject matter eligibility questions be treated as an exception and delayed until after the application passes muster with all other patentability doctrines. Our conclusion derives from our cautious hope that most subject matter eligibility questions will be corrected during the process of overcoming the examiner's obviousness, indefiniteness, and enablement rejections, and therefore, that the PTO will only rarely need to reveal its examiners' relative lack of skill in judging philosophical questions of abstract ideas and products of nature. To be clear, we are not looking to poke fun at patent examiners or BPAI judges. Rather, our point is that the subject matter eligibility test under *Bilski* is quite difficult for anyone to implement (because of the lack of guidance), and on a comparative basis, an examiner's time is better spent applying the other patentability doctrines and at least temporarily ignoring subject matter eligibility questions.

Professor Tun-Jen Chiang has suggested that it is a mistake to consider patentable subject matter doctrine as an indivisible unit. Chiang would rather divide the doctrine into at least two categories, one of which is easy to reliably judge.⁴⁷ To the extent that the low-cost, rule-based subject matter decisions can be easily categorized and segregated from the more philosophical questions highlighted in *Bilski*, it may make sense to only postpone judgment for the more difficult questions.⁴⁸

In this vein, PTO examiners may be well equipped to easily determine whether a particular invention either (1) incorporates a particular machine into the invention or (2) transforms an article from one thing or state to

46. See MPEP § 706 (8th ed. Rev. 7, Sept. 2008).

47. Tun-Jen Chiang, *The Rules and Standards of Patentable Subject-Matter*, 2010 WIS. L. REV. 1353 (distinguishing rule-driving subject matter eligibility questions that are easier to accurately adjudicate from more flexible standards-based issues that are more difficult to accurately decide).

48. We agree with Professor Chiang that some subject matter eligibility questions are easy to resolve. However, we disagree with his notion that it is a simple matter to a priori distinguish the easy cases from the difficult ones.

another. In *Bilski*, the Supreme Court approved this machine-or-transformation test as offering an important clue to patentability, but ruled that the machine-or-transformation test could not completely answer the eligibility question.⁴⁹ Although PTO examiners could use the machine-or-transformation test as a simple rough-cut eligibility test, we see problems with that approach. Namely, initial rejections following the rule will only be roughly accurate and would lead to further arguments in the prosecution process; challenge PTO decision-making legitimacy; and potentially set-up appeals that force the courts to decide subject matter eligibility questions (especially when the PTO decides subject matter eligibility and ignores other patentability questions as it did in *Bilski*).

V. CONCLUSION

Our proposal ultimately adds up to breaking through the superficial appeal of lexical ordering and imposing a more pragmatic approach to the sequence in which decision makers evaluate patent validity doctrines. As simple as our approach is, we are convinced that it would have a number of salutary effects. It would first and foremost cut down the total cost of deciding validity issues, given that § 101 is the most vague and contentious of all the validity doctrines. It would also contribute to greater respect for patent tribunals, by removing them whenever possible from the controversial business of deciding cases under § 101. And finally, by making this a rare and unusual basis for deciding patent cases, it would make the entire validity-determination process more certain and less problematic.

To be sure, *Bilski* will spawn a huge amount of commentary and an equal amount of controversy. We believe that many will look in vain for a clear and consistent set of principles to apply in future § 101 cases; however, the answers will not be found, or at least, convincing answers will not be found in the pages of the *Bilski* opinion. It is unlikely that a single § 101 case can supply what everyone seeks; the nature of the inquiry, as shown by the long history of case law in this area, militates against this sort of firm guidance. Under the circumstances, it is best not to try to map the swampy terrain of § 101 in any great detail. Whenever possible, we argue, try something else: just avoid it.

49. *Bilski v. Kappos*, 130 S. Ct. 3218 (2010).

