Res or Rules? Patents and the (Uncertain) Rules of the Game

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INTRODUCTION

The stakes at play in modern-day patent infringement suits can be worth hundreds of millions of dollars; just ask the executives of Research In Motion, Ltd. (“RIM”). In “one of the most celebrated intellectual property showdowns in U.S. history,” NTP, Inc. sued RIM, the Canadian corporation that developed the very popular BlackBerry system, for patent infringement. In particular, NTP, an alleged “patent troll,” maintained that several of its wireless email communication patents covered various configurations of RIM’s BlackBerry technology and that RIM therefore was violating NTP’s rights by producing and selling the BlackBerry without NTP’s permission. After spending over five years in court and settlement negotiations, RIM ultimately paid NTP $612.5 million to settle the case.

How could RIM have made such an expensive mistake? After all, NTP’s patents were all of public record – shouldn’t RIM simply have done its homework and realized that its BlackBerry system was running afoul of NTP’s intellectual property rights? As is typically true of patent infringement cases, there were a multitude of reasons why RIM ended up paying such a large price for infringing NTP’s patents, but one problem that many critics complain turns almost all major

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patent infringement cases into a costly mess is lack of clarity. According to the critics, patents do not clearly specify what would and would not constitute infringement. And in RIM and NTP’s case, the parties did in fact spend a good deal of their time before both the trial and appellate courts wrangling over the exact scope of NTP’s patent rights and, specifically, whether NTP’s patents actually covered RIM’s Blackberry system. The proper interpretation of the patents’ claims consumed several pages of the Federal Circuit’s decision in this case, including extended discussions on the meaning of the terms “electronic mail system,” “originating processor,” and “gateway switch.” Such extended debates over patent claim interpretation are hardly unique, moreover. Other patent infringement cases have famously hinged on the meanings of seemingly even simpler words, such as “a,” “or,” “to,” “on,” “about,” “including,” and “through.”

Thus, despite the fact that most view patents as an area of law dealing with science and technology, not linguistics, distinctions about the meaning of words are routine in patent litigation. Patents are written documents, and the words used in a patent’s claims define the legally binding effect of the patent owner’s rights. Accordingly, patent claim construction – how we interpret the meaning of that part of the patent that defines its scope – takes center stage in nearly every suit alleging infringement of a patent. For these patent disputes, then, this reflects uncertainty as to the outcome of the case. Neither patentees nor alleged infringers know the exact scope of a patent until a court interprets that patent’s claims as a matter of law.

To those who have studied the law, this type of ambiguity is commonplace. From criminal statutes and tax regulations to clauses in contracts and wills, legal documents cannot always anticipate every situation to which the rules in that document might apply. Most of the time what does or does not fit within the meaning of a statute or a contract will be fairly clear, but in those instances in which it is not so clear – those instances most likely to wind up in court – the statute, regulation, contract, or will must instead be interpreted after the fact to determine how it should apply. Even bright-line rules and air-tight contracts are porous at their edges. As a result, the outcome of certain cases may depend on

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4 NTP, Inc., 418 F.3d at 1294-1311.
6 Id.
8 Burk & Lemley, supra note 7, at 1762.
9 Gillian K. Hadfield, Weighing the Value of Vagueness: An Economic Perspective on Precision in the Law, 82 CALIF. L. REV. 541, 543 (1994); Jason Scott Johnston, Uncertainty, Chaos, and
what can be very fine distinctions about the meaning of words and even punctuation.

For many critics, however, such linguistic ambiguity in the scope of patent rights is very troubling. These critics complain that both patent holders and potential infringers too often must risk millions of dollars over patent claim language that must be interpreted by a court. The purpose of patent claims, the critics argue, is to demarcate clearly, and thereby give notice to others of, the boundaries of the patent holder’s rights. In other words, patent claims are supposed to draw linguistic lines around the patented invention. The critics therefore liken patent claims not to statutes, contracts, or other legal writings but to property boundary lines and, in particular, “tangible” property lines, by which they seem mostly to mean real property metes and bounds. Under this analogy, then, they argue that patent claim language should be as unambiguous as the see real property boundaries to be but that, as RIM and NTP’s case and thousands of other such examples illustrate, patent claims fall far short of this ideal. Some critics even argue that patent claim boundaries are so uncertain that they threaten to undermine the very purpose of the patent system in incentivizing investment in technological progress. Indeed, the Federal Circuit itself repeatedly has expressed concern over the uncertainty of patent claims.

For the most part, this analogy between patents and property is entirely

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understandable. Patents are often viewed as property because they share many of the hallmarks of property, including the all-important right to exclude.\textsuperscript{15} But to jump from these similarities to concluding that patent claims should be as clear as tangible property boundaries is a confusing generalization. For one thing, as any first-year law student can explain, “property” is just a legal conclusion, a variable bundle of rights asserted over a “thing” or a resource but separate from the particular thing or resource itself, the latter of which is merely the \textit{res} of those property rights.\textsuperscript{16} Although it is not entirely clear, most critics of patent claim clarity seem to be comparing patent claims not to the legal interests a property \textit{res} but to the boundaries of the particular tangible things or resources that the \textit{res} comprises. In particular the critics most often seem to compare patent claims to “fences” or to the “metes and bounds” of real property, rather than to easements, leaseholds, or other legal interests. Of course, an even more basic question is why the critics should compare patent claims with only “tangible” property boundaries. Property rights can be asserted over a wide variety of things and resources, many of which are neither “tangible” nor physical. For example, property interests in corporations and partnerships, in financial obligations, and even in property interests themselves are common forms of “intangible” property.\textsuperscript{17} Why the critics do not compare patent claim clarity to clarity in defining these other, non-tangible types of property \textit{res} is therefore somewhat puzzling, especially given that, as the critics themselves are quick to concede, part of the problem of comparing patent claims with real property boundaries is that the inventive concepts protected under patents are obviously intangible and therefore more difficult to delineate.

In other words, faulting the patent system simply because patent claims are necessarily less unambiguous than real property or other “tangible” boundaries begs the question. Even accepting the idea real property boundaries are indeed clear, an assertion of some debate,\textsuperscript{18} although for the purposes of the discussion below, accepted at face value, one cannot simply assume that the demarcation of real property boundaries is the proper framework for evaluating uncertainty in patent claims. Rather, the initial question should be, are patents so similar to plats for land that their respective boundaries should be defined with the same clarity? Or do these two versions of “property” inevitably differ in ways that impact the clarity with which we can expect to define them? Many have already questioned

\textsuperscript{17} Smith, \textit{supra} note 11, at 1744.
the value of the patent-as-property analogy in a variety of other contexts. 19 Likewise, the analysis below concludes that, given the intrinsic differences between patents and property, patent claims will always be more uncertain than the boundaries of tangible property.

This is by no means a revolutionary statement to the extent it suggests that a fair degree of uncertainty in patent claims is inevitable. 20 What the analysis here adds to the discussion, however, is the idea that our current patent claiming system is not necessarily “broken” simply because it yields less certainty than real property boundaries. Indeed, any comparison between the two types of regimes will inevitably be misleading, for not only the assets protected but also the very purposes of the two regimes are completely different. First, the assets protected under the patent system are both intangible and therefore difficult to define as well as highly conceptual, abstract, and functional in a way that unavoidably defies clear definition. Second, because the res of patent “property” rights are always novel and unique, claim drafters must find equally novel ways to describe their inventions rather than being able to rely on previously established points of reference. 21 Third, propertization of a patent asset is almost immediately cancellable, by design, reflecting the differing purposes between the patent system and real property systems. The patent system is designed to incentivize the creation and expeditious release of new technological ideas as non-consumable goods, not efficient management of an existing plot of land as a rivalrous good. 22 Finally, the unpredictability of the future value and uses of a patent, and even the terminology by which it is defined, make patent claims highly uncertain as compared to real property plats. In sum, uncertainty in patents stems from such different sources that it simply cannot be compared to uncertainty in real property boundaries in terms of how we think about that uncertainty, whether in terms of how to reduce that uncertainty or even whether that uncertainty needs to be reduced. There are just too many differences that must be taken into account. 23 Given that reducing uncertainty is costly, the optimal level of certainty in patent boundaries is unlikely to be the same as the optimal level of certainty in tangible

20 Burk & Lemley, supra note 7, at 1744; Schwartz, supra note 12, at 259. 
22 Smith, supra note 11, at 1744. 
23 But see Duffy, Isolationism, supra note 11, at 1090-91 (criticizing intellectual property exceptionalism and efforts to distinguish intellectual property from other types of property).
property boundaries.

An alternative analogy gaining currency among some scholars is therefore to view modern patent claims not as a land surveyor might view them but as lawyers might view them. In other words, perhaps a more apt comparison is not between patent claims and real property plats but between patent claims and statutes, contracts, regulations, and other complex legal documents that may be clear for many purposes but inevitably require some interpretation at their margins. This shift in analogy is similar to what some refer to as the shift from “rules of exclusion” to “rules of governance.” Rules of exclusion embody the classical notion of property by pinpointing the asset from which you wish to exclude all others. Rules of governance, on the other hand, are more familiar in the context of contract, statutes, and regulations, for they fixate not so much on a particular asset but rather on the permitted and prohibited uses of an asset or on conduct more generally, untied to any particular asset. In many ways patent claims give notice not just of what patent holders regard as their exclusive (often physical) assets but also of how all others may or may not use their own assets without infringing the patentee’s rights. Patent claims can thus be seen not only as the boundaries of a property res but also as rules of governance for the use of others’ property. Indeed, historically speaking, patent claims have intentionally been patterned after rules, albeit not so much as a rejection of the property paradigm of patent rights but rather as a means to achieve more certainty in patent boundaries.

Again, however, even the most carefully drafted statute, contract, or other rule of governance is limited in its ability to anticipate all situations. Depending on the unpredictability of situations to which the rule might be applied, the rule may have to be drafted with more or less specificity and therefore more or less need for interpretation. Patent claims can thus be seen as falling at the more unpredictable end of the spectrum: the requisite novelty of the patentable concepts as well as the unpredictability of future developments in the field lead not only to highly complex rules of governance but also to rules that are necessarily more vague and therefore more flexible. Once again, given the design and purpose of the patent system, patent claims are inevitably uncertain because they must be adapted, often through post hoc interpretation, to the situation at hand. In this way, patents can also be seen as lying along a spectrum between rules and standards, with rules specifying the law in detail ex ante and standards setting only the rough contours of the law, leaving further elaboration to be developed later during

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24 See, e.g., Burk & Lemley, supra note 7, at 1761-62; Golden, supra note 13, at 323.
25 Fromer, supra note 21, at 725, 730; Smith, supra note 16, passim.
26 Id.
27 See Golden, supra note 13, at 324 n.14 (“Given that patent rights exist at the evolving edges of technology and, like contracts, effectively ‘regulate the future, it is debatable whether demands for certainty in patent scope can ever be satisfied.”) (citing Richard A. Posner, The Law and Economics of Contract Interpretation, 83 TEX. L. REV. 1581, 1582 (2005)).
application. Much of not only modern patent claiming but also patent law more generally can be seen through this lens.\textsuperscript{28}

The Article proceeds as follows. Part I reviews the basics of patent claiming, the traditional view of claims as real property deeds, and why uncertainty as to the boundaries of those deeds is considered undesirable. Part II critiques the analogy between real property deeds and patent claims, highlighting in particular the requisite novelty and conceptual nature of the patent \textit{res}, the differences between the purposes of the patent system and real property regimes, and their inevitable effect on the expected predictability of patent boundaries. Part III then changes the analogy from patent claims as property deeds to patent claims as rules of governance, noting the advantages of this analogy but also the limitations. Part III then continues the critique and concludes with a discussion of patent claims not just as rules of governance but also as blends of rules and standards in their need to anticipate often unpredictable future circumstances.

\section{I. \textsc{The Conventional View: Patent Claims As Property Deeds}}

Patents rights are in many ways property-like entitlements and, indeed, are intended to serve at least two of the same major functions as property rights. First, patents are designed to incentivize investments in developing new technologies by granting patentees the property-like right to exclude all others from their technologies, albeit for a limited period of time. Second, patents are designed to announce the patentees’ rights to exclude, as well as the boundaries of those rights.\textsuperscript{29} In fact, the Patent Act explicitly states that “patents shall have the attributes of personal property.”\textsuperscript{30} Accordingly, under the analogy between patents and property, the claims of a patent are akin to the “metes and bounds” of real property and serve to give the public notice of the property \textit{res}’s boundaries and of what would constitute trespass of those boundaries.\textsuperscript{31} Certainty in those patent boundaries would seem desirable, as certainty would allow patent holders, potential infringers of patents, and even the courts easily to resolve conflicts over rights to technological innovation, leading to greater efficiencies overall.\textsuperscript{32}

\begin{thebibliography}{99}
\bibitem{35 USC} 35 U.S.C. § 261.
\end{thebibliography}
boundaries, however. In the case of a patent, the rights are to exclude others from “making, using, offering for sale, or selling the [patented] invention throughout the United States or importing the invention into the United States.” These rights last for a period of only twenty years from the time the application for a patent is filed.\(^{33}\) The purpose of this system comes from the Constitution itself, which grants Congress the power to “promote the Progress of . . . the useful Arts, by securing for limited Times to . . . Inventors the exclusive Right to their respective . . . Discoveries.”\(^{34}\) Scientific research and discovery can involve a quite sizeable investment of resources; for example, economists estimate that bringing a single pharmaceutical product to the market currently costs upwards of $800 million.\(^{35}\) No rational market actor would invest this kind of money without some significant chance at returns on that investment. By enjoying exclusive rights to exploit their inventions for at least a limited period of time under patent protection, inventors can protect their investments from free-riding or outright theft by others.

The exclusivity of patents also allows patent holders to price at supra-competitive levels in markets where their inventions have few or no close substitutes, thereby placing the patentees in a better position to recoup their investments and even earn significant profits. In this way, the patent system allocates to patentees a share of the overall social welfare their inventions create. A fundamental driving force behind patent law is the belief that without the possibility of such returns, the market would have inadequate incentives to invest in technological progress.\(^{36}\) In addition, the rights are fully alienable, in whole or in part, as a way to encourage transfer to a higher-valuing user. The rights are thus private and market-based in a way that not only increases their liquidity but also allows the market to assess their value.\(^{37}\) Importantly, patents also provide public notice of not only who owns the patent but also the scope of the technological development over which the patentee claims exclusive rights.\(^{38}\) Like property rights, patent rights are in rem


\(^{34}\) Constitution Art. I, § 8.

\(^{35}\) Henry Grabowski, Are the Economics of Pharmaceutical Research and Development Changing?, 22 PHARMACOECONOMICS 15, 16 (2004).

\(^{36}\) See generally BESSEN & MEURER, supra note 10; Lemley, supra note 19.

\(^{37}\) Carrier, supra note 15, at 58-62. Until recently, injunctive relief was also a common remedy for patent infringement, although it now may be somewhat less common a remedy after the Supreme Court’s decision in eBay, Inc. v. MercExchange, LLC, 547 U.S. 388 (2006).

and therefore good against all comers, regardless of relationship or agreement. Also like property rights, liability for infringing patent rights is strict and applies regardless of intent or even awareness of the patent.\textsuperscript{39} The rights granted under patents are therefore publicly recorded to provide notice and give potential infringers at least the opportunity to discover how they might run afoul of another’s rights.\textsuperscript{40}

Merely drawing a picture of one’s invention or describing examples of it does not necessarily give others adequate notice of what might constitute infringement of a particular patent, however. Without a doubt, visual image of the invention, descriptions of examples of it, and even explanations of its technological background are immensely helpful and in fact often necessary for understanding the invention. Patentees will therefore routinely include such materials in what is called the “specification” of a patent. These kinds of materials cannot inform the public of what specifically belongs to the patentee under the patent, however. Rather, under the patents-as-property analogy, the actual metes and bounds of the \textit{res} of that particular patentee’s property right to exclude, her invention, are set forth in the “claims” of the patent.\textsuperscript{41} The claims are detailed descriptions of the property \textit{res}, found at the end of a patent and “particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.”\textsuperscript{42} A single patent may contain multiple claims of varying breadth, each describing variations on the underlying invention, which the patentee includes as part of the \textit{res} of her right to exclude.

The claims of a patent thus inform others of not only what “property” the patent covers but also, just as importantly, what it does not cover. To use technology that is claimed within a patent, subsequent inventors must license the patent, invest resources in “designing around” it to produce a non-infringing alternative, or forgo competing with the patented invention altogether.\textsuperscript{43} Technology not claimed within a patent, on the other hand, can be used freely by anyone, including subsequent inventors who may invent or discover their own advances.\textsuperscript{44} The patent system thereby guards against the overbreadth by preventing assertion of exclusive rights over technology that the patentees did not in fact invent or that otherwise does not meet the law’s rather stringent

\begin{itemize}
\item \textsuperscript{39} Cf. Moringiello, \textit{supra} note 16, at 180 (describing property rights by extent to which they bind persons other than parties to the instrument conveying the right); Smith, \textit{supra} note 11, at 1744-45, 1784-85, 1793, 1796-97, 1800.
\item \textsuperscript{40} BESSEN & MEURER, \textit{supra} note 10, at 31.
\item \textsuperscript{41} E.g., Burk & Lemley, \textit{supra} note 7, at 1744; Dam, \textit{supra} note 29, at 254; Merges & Nelson, \textit{supra} note 31, at 845; Nard, \textit{supra} note 13, at 759, 785-86.
\item \textsuperscript{42} 35 U.S.C. § 112 ¶ 2.
\item \textsuperscript{44} Cotropia, \textit{supra} note 38, at 54.
\end{itemize}
patentability requirements.\textsuperscript{45} In either case, the patentee cannot validly claim such technology as their exclusive property \textit{res}.\textsuperscript{46} Patent claims accordingly take on a singular importance in how the system achieves its various policy goals. Indeed, patent claims and how they are interpreted are usually dispositive of not only whether an alleged infringer has in fact infringed the patent but also whether the patent holder is in fact asserting valid patent coverage. In this way patent claim construction is also dispositive of a patent’s strength, or scope, which in turn determines the patent’s possible economic value.\textsuperscript{47} As famously said by Judge Giles Rich, one of the founding fathers of modern patent law, “the name of the game is the claim.”\textsuperscript{48}

Uncertainty as to what a patent’s claims do and do not cover is obviously undesirable. When we speak of “uncertainty” in the law generally, we usually mean \textit{ex ante} ambiguity as to how the law will apply to any given fact pattern. Uncertainty may arise from a lack of clarity in how the law is defined, such as when the law is vaguely worded or is incomplete in its content of the law itself. Similarly, uncertainty as to how the law will or should apply may arise because of a lack of clarity or incomplete information about the factual context to which we are trying to apply the law. Finally, uncertainty as to a law’s application may arise from a lack of clarity in how to interpret or apply the law to given factual context.\textsuperscript{49} Regardless of its cause, however, uncertainty ultimately means that the law may be legitimately understood to apply, such that one cannot fully rely on everyone understanding it in the same way.\textsuperscript{50} Rather, both potential plaintiffs and defendants and even the courts may be unable to predict with absolute certainty \textit{ex ante} what outcome the law will dictate.\textsuperscript{51} The likelihood of any given outcome will instead fall along a probability distribution.\textsuperscript{52}

Given that a patent’s claims define the value of the patent, uncertainty as to the scope of those will subject the value of the patent to uncertainty. That insecurity may in turn discourage inventors and their investors from making

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\textsuperscript{45} For more detail on patentability requirements, see infra text accompanying note 129. \\
\textsuperscript{47} Burk & Lemley, \textit{supra} note 7, at 1795; Lemley, \textit{supra} note 7, at 102 (“[O]nce the court construes the claims, most patent cases settle, and those that do not are often decided on summary judgment.”). \\
\textsuperscript{49} Hadfield, \textit{supra} note 9, at 542. Uncertainty as to legal outcomes can also arise from probabilistic detection or enforcement, \textit{id.}, but these sources of uncertainty lie outside the scope of this Article. \\
\textsuperscript{50} Burk & Lemley, \textit{supra} note 7, at 1749. \\
\textsuperscript{51} Hadfield, \textit{supra} note 9, passim. \\
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optimal investments in research and development or in the marketing and other
commercialization necessary to bring an invention to the public.\textsuperscript{53} Predictability
as to the meaning of a patent’s claims, on the other hand, assures that no nasty
surprises will crop up if and when the claims are construed \textit{ex post}. On the other
hand, if the interpretation of a patent’s claims is uncertain, a competitor in the
same field may not be certain of exactly what the bounds of the patent are and
how to avoid trespassing them.\textsuperscript{54} As a result, the competitor may under-invest in
avoiding infringement through design of a non-infringing alternative or may even
unwittingly reinvent what another has already patented. Alternatively, a risk-
averse competitor may over-invest, possibly by avoiding the field altogether and
thereby decreasing competitive alternatives within the market.\textsuperscript{55} Unpredictability
is also thought to raise both transaction costs and the likelihood of litigation
because of the lack of a stable and consistent background against which parties
may negotiate over patents.\textsuperscript{56} And when suits for infringement do occur,
unpredictability in patent claim meaning increases judicial burdens and decreases
the likelihood of settlement.\textsuperscript{57}

Despite the almost ubiquitous complaints, most situations depending on
patent claim scope do not seem to be unduly affected by uncertainty. For one
thing, most cases either settle or renegotiate licensing terms, for the most part
avoiding the issue of exact claim scope.\textsuperscript{58} For most other cases, commonsense or
common knowledge dictates what falls clearly within or without the boundaries of
the patent. Nevertheless, many still worry whether the current patent claiming
system leads to adequate certainty in patent scope. One popular way by which
critics try to measure that certainty is by comparing it to the predictability
supposedly enjoyed in defining real property boundaries, and the conclusions
have not been favorable.\textsuperscript{59} First, if only the patent system were as clear as real
property regimes in notifying potential trespassers of what has been claimed, the
argument goes, innovators like RIM would not be caught in unknowing
infringement of another’s patent rights.\textsuperscript{60} Second, the prolonged lawsuit between
RIM and NTP is also an example of what the critics believe is an inordinate
amount of resources spent by both parties and courts in establishing exactly what
the boundaries of any given patent. The basic criticism is that patents are too
difficult to enforce without resort to costly litigation, thereby lowering their value

\textsuperscript{53} Golden, \textit{supra} note 13, at 323.
\textsuperscript{54} Newman, \textit{supra} note 11, at 65-66.
\textsuperscript{55} Nard, \textit{supra} note 13, Pt.IV.A.
\textsuperscript{56} Gregory D. Leibold, \textit{In Juries We Do Not Trust: Appellate Review of Patent-Infringement
\textsuperscript{57} Golden, \textit{supra} note 13, at 323.
\textsuperscript{58} Robert E. Scott & George G. Triantis, \textit{Anticipating Litigation in Contract Design}, 115 \textit{YALE
\textsuperscript{59} BESSEN & MEURER, \textit{supra} note 10, \textit{passim}.
\textsuperscript{60} \textit{Id}.
and imposing costs on others.\textsuperscript{61} Third, and perhaps most importantly, the uncertainty of patent claim meaning deters investments in technology because the costs of enforcing your patents or having another’s patents enforced against you are a drag on invention and innovation.\textsuperscript{62}

Even the critics, however, recognize that perfect symmetry between the supposed clarity of real property boundaries and those of patent claims is, at most, an ideal.\textsuperscript{63} Patent “property” and real property obviously differ in many ways that significantly impact any analogy between the two, particular in terms of the clarity with which they can be defined. The most often recognized difference between intellectual “property” and tangible forms of property such as real estate and chattels is that intellectual property covers res that are intangible. On the one hand, real and personal property rights protect tangible and physical commodities, such as land, buildings, and vehicles. The boundaries of these commodities are therefore defined by the commodities’ structural characteristics. In the case of real property, for example, such structural characteristics, or “metes and bounds,” include directions and distances from landmarks or other structural points of reference.\textsuperscript{64} Patents, on the other hand, protect non-physical, intangible concepts, techniques, and ideas.\textsuperscript{65} Such intangibility does not lend itself well to clear delineation, for it is “hard to draw a boundary around an idea.”\textsuperscript{66} Both the inherent limitations of language in expressing abstractions such as concepts and ideas and the lack of physical referents for demarcating boundaries lead to a situation where, although we may know exactly what we mean, we cannot always express that meaning in a way that can reliably be communicated to others.\textsuperscript{67}

But even this concession fails fully to appreciate the differences between tangible property and intellectual property. The problem is not just that patentable ideas are intangible or even that the technologies involved are often complex.\textsuperscript{68}

\textsuperscript{61} BESSEN & MEURER, supra note 10, at 1-2; JAFFE & LERNER, supra note 12, at 171; Golden, supra note 13, at 323; Moore, supra note 13, at 28; Nard, supra note 13, at 761-63.
\textsuperscript{62} Id.; Lemley, supra note 19, at 1100-02.
\textsuperscript{63} E.g., BESSEN & MEURER, supra note 10, at 5.
\textsuperscript{64} JESSE DUKEMINIER ET AL., PROPERTY 516. (6th ed. 2008).
\textsuperscript{65} Lemley, supra note 19, at 1036.
\textsuperscript{66} BESSEN & MEURER, supra note 10, at 32; Golden, supra note 13, at 324 n.14; Paul M. Janicke, On the Causes of Unpredictability of Federal Circuit Decisions in Patent Cases, 3 NW. J. TECH. & INTELL. PROP. 93, 97 (2005) (asserting that the unpredictability of claim construction is, “to a large extent, an expected byproduct of a legal system that tries to express technical exclusivity with words”); Schwartz, supra note 12, at 259; Burk & Lemley, supra note 7, at 1744 (“[C]laim construction may be inherently indeterminate; it may simply be impossible to cleanly map words to things.”).
\textsuperscript{67} BESSEN & MEURER, supra note 10, at 55 (“[I]t is much more complicated to map the boundaries of a technology from a verbal description than it is to map a plot of land using a standardized surveyor’s description.”); Schwartz, supra note 12, at 259-60; Janicke, supra note 65, at 97 (and sources cited therein); see also Louis Kaplow, Rules Versus Standards: An Economic Analysis, 42 DUKE L.J. 557, 562-63 (1992).
\textsuperscript{68} See BESSEN & MEURER, supra note 10, at 55-56 (suggesting that “[p]erhaps in an earlier time,
As the next section explains, other much more important differences exist between patentable ideas and real property, including the fact that patentable ideas are “intangible” not just because they are ideas rather than things or resources but also because they are ideas about how to use things and resources. Patentable inventions are also always novel and unique. These additional and widely unacknowledged differences between real property and patentable ideas further suggest that tangible property is not the property baseline for evaluation the certainty or, as is more often alleged, uncertainty of patent boundaries.

II. CRITIQUE OF THE PATENTS-AS-PROPERTY ANALOGY

Beyond the rather basic distinction between patentable ideas and real property based on tangibility lie a number of even more fundamental differences that throw into grave doubt any analogy between the two regimes. First, patentable ideas are not just intangible but also conceptual in way that necessarily focuses on utility and function. As such, patents can be seen not just property-like rules of exclusion but also as regulation-like rules of governance and, in particular, as rules governing the use of resources in ways that constitute the patented invention. Patent claims are thus not so much the easily demarcated boundaries of a protectable property res but rather a much more complex and less easily defined set of prohibited uses. Second, patentable ideas are, per the design of the patent system, always novel and unique and thus defy easy description through standardization and indeed even easy categorization as “propertizable” in the first place. While profound in and of themselves, furthermore, these differences between patentable inventions and real property also advert to an even more fundamental difference in the very purposes of the patent system as compared to real property regimes. Any comparison between real property and patentable property must therefore necessarily falter when faced with these stark contrasts between the two systems.

A. UNCERTAINTY AND THE CONCEPTUAL NATURE OF THE PATENT RES

Unlike real property, patentable “property” res are highly conceptual in a way that concentrates on the functional and otherwise abstract characteristics of an invention. The most important (and to some, the only) patentable part of an invention is therefore the technological idea behind the invention, sometimes called its inventive concept or inventive principle.69 True, most technological ideas are ultimately embodied in physical forms such as machines, chemicals,
mechanical devices, and even physical processes, but it is not that particular tangible embodiment or its components over which a patentee asserts her rights but rather the conceptual characteristics that those embodiments have in common.\textsuperscript{70} In fact, those physical embodiments and components are often the subject of entirely separate property rights.\textsuperscript{71} The technological concepts that are the subject of patent rights, by contrast, are directed not so much to specific components or structures or even the structure of the invention as a whole but instead focuses on the dynamic relationships between the various elements of an invention and how they can be coordinated to give the whole utility.\textsuperscript{72} Indeed, an inventive idea is in many regards simply a specific way of using various components and structures that is in itself useful. A patent claim thus sets forth an inventive idea not only as the new \textit{res} of a patent’s property-like rights but also as an exclusive new use for existing property. As such, patent claims operate on not just one but two different levels. On one level, patent claims are property boundaries, signaling simply the duty not to trespass on the patentee’s exclusive inventive idea. On another level, patent claims are also rules defining much more elaborate duties of how not to use existing property in ways that would constitute such a trespass. Because patent claims thus operate dually as what some have come to term rules of exclusion and rules of governance, they differ starkly from real property deeds as to how clearly they can be delineated.

The kind of inventive ideas that can be protected through patent has been variously defined as the operative concept behind an invention, a description of how the invention works or how it provides utility in the specific way that it does.\textsuperscript{73} It is perhaps most easily understood as a specific technological solution to some real-world problem in a way that is new and non-obvious as compared to what already existed.\textsuperscript{74} Regardless of exact definition, however, a patentable idea is universally agreed to be something that is intangible.\textsuperscript{75} In \textit{RIM} v. \textit{NTP}, for example, the Federal Circuit broadly summarized the inventive concept behind

\begin{itemize}
  \item \textsuperscript{70} Fromer, \textit{supra} note 21, at 725-26. In fact, although somewhat controversial, the courts have gone out of their way to avoid requiring that an invention be “physical” – that is, involving physical or chemical materials – at all. \textit{E.g.}, \textit{Bilski v. Kappos}, 130 S. Ct. 3218 (2010); \textit{In re Bilski}, 545 F.3d 943 (Fed. Cir., 2008).
  \item \textsuperscript{71} For example, the “first sale” or “patent exhaustion” doctrine refers to the fact that the purchaser of a copy of anything made from a patented idea or made according to a patented process is nonetheless the owner of that thing and has rights to use, resell, or otherwise transfer that item unfettered by claims of patent infringement. \textit{See Motion Picture Patents Co. v. Universal Film Mfg. Co.}, 243 U.S. 502, 516 (1917); \textit{United States v. Univis Lens Co.}, 316 U.S. 241, 252 (1942); \textit{see also} Glen O. Robinson, \textit{Personal Property Servitudes}, 71 U. CHI. L. REV. 1449, 1452-53 (2004).
  \item \textsuperscript{73} \textit{Id.}
  \item \textsuperscript{74} Slusky, \textit{supra} note 69, at 8.
  \item \textsuperscript{75} \textit{Bessen & Meurer, supra} note 10, at 9-10; [others].
\end{itemize}
NTP’s inventions not as a particular portable email device or even a particular wireless email system but rather as the idea of “integrating existing electronic mail systems with RF wireless communications networks” so that travelers no longer had to plug their portable PCs into telephone jacks in order to access their incoming email messages. Of course, in order to explain how to achieve such wireless email transfers, NTP’s technological concept as actually described in its various patents’ claims included references to processors, gateway switches, interface switches, and other physical components. Nevertheless, it was not these components or even a particular structural arrangement of them that NTP asserted as its “property.” Rather, NTP asserted patent rights over a system defined by its use of these electronic components to transfer incoming email messages over an RF network.

Thus, the technological concept that constitutes the true object of a patent’s protections is not the particular components or structure of an invention that patent law seeks to protect but rather the patentees’ particular way of using those components and the particular way that her invention operates to create utility. This makes sense for a number of reasons. First, and most importantly, incentivizing the creation of new and useful inventions is the sole purpose of the patent system, so why not design that system to spotlight use rather than particular structures or tangible elements? And this is exactly what the patent system does, both in terms of what it grants patent protection and how it allows patentees to claim that protection. For example, method-of-use patents are commonplace and allow patentees to gain patent protection for new uses of existing inventions, even if those inventions belong to a different patent holder. Modern patent claiming practices also allow patentees to concentrate on the conceptual and functional rather than structural attributes of an invention in a number of ways. For example,

76 NTP, Inc., v. Research In Motion, Ltd., 418 F.3d 1282, 1288-89 (Fed. Cir. 2005). As mentioned previously, NTP actually sued RIM for infringement of a number of NTP’s patents, but all the patents in suit were divisionals originating from a single patent application. NTP, Inc., 418 F.3d at 1293.
77 See, e.g., U.S. Pat. No. 5,436,960, Claim 1. The additional detail about the components of NTP’s inventive concept also satisfies the Patent Act’s requirement that patentees describe their inventions with sufficient detail to enable others to make and use their inventions. 35 U.S.C. § 112, ¶ 1.
78 Cf. Newman, supra note 11, at 105 (“Even though the patent claims describe a physical object – or to be more precise, a class of physical objects having functions and characteristics that fall within certain parameters – the right to exclude conferred by the patent does not pertain to any such actual corresponding object.”).
79 See, e.g., Hughes Aircraft Co. v. U. S., 640 F.2d 1193, 1195 (Ct. Cl. 1980) (“The claims define the inventive concept that the patent embodies. The specifications, on the other hand, are designed to reveal how the invention may be put into practice . . . .”).
80 35 U.S.C. § 101 (providing for patent protection of “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof”).
81 MPEP 2173.05(q); Schering Corp. v. Geneva Pharms., Inc., 348 F.3d 992, 994 (Fed. Cir. 2003) Newman, J., dissenting from denial of motion for rehearing en banc).
the Patent Act expressly allows patentees to avoid detailed descriptions of structure and other characteristics by instead claiming their inventions through the “means plus function” format.\textsuperscript{82} Under this method of claiming, a patent claim may define one or more components of an invention by reciting its intended function rather than any definite structure, material, or process step for performing that function.\textsuperscript{83} The component can then be interpreted as covering the structure, material, or steps the patentee listed as examples of the component in her specification, as well as any equivalents thereof.\textsuperscript{84} Thus, a patentee may use the term “fastening means” rather than listing every type of tape, staple, brad, nail, glue, or other equivalent materials. Other examples of claiming techniques that similarly allow a patentee to focus on her inventive concept rather than being too tied to structural or other more corporeal attributes are Markush claiming,\textsuperscript{85} product-by-process claiming,\textsuperscript{86} and terms of approximation such as “substantially” and “about.”\textsuperscript{87}

Second, modern patent claiming’s fixation on technological concepts rather than specific structure or components comports with the needs of efficiency. There may therefore be many ways of executing or “practicing” an invention, depending on which components are used or the invention configured.\textsuperscript{88} For example, in NTP’s case it was found that multiple models of RIM’s BlackBerry handheld devices, along with the system and software with which they operated, all infringed the same claim; although the models may have varied in size, shape, or even additional functionality offered, they were all merely examples, or embodiments, of the same single operative concept described in NTP’s patent claim.\textsuperscript{89} If, however, NTP had been allowed to describe its invention not by its

\textsuperscript{83} Id.; Intellectual Science and Technology, Inc. v. Sony Electronics, Inc., 589 F.3d 1179, 1183 (Fed. Cir. 2009).
\textsuperscript{85} Markush claiming allows a patentee to claim an invention by listing interchangeable components rather than specifying each alternative structure or species of an invention. Meurer & Nard, supra note 84, at 1975-76 (and sources cited therein); Louis S. Sorell, The Application of the Doctrine of Equivalents to Chemical Inventions: A Primer, 11 ALB. L.J. SCI. & TECH. 225, 238 & n68 (2001).
\textsuperscript{86} Product-by-process claiming “enable[s] an applicant to claim an otherwise patentable product that resists definition by other than the process by which it is made.” In re Thorpe, 777 F.2d 695, 697 (Fed. Cir. 1985) (quoted in Irab H. Donner, Combating Obviousness Rejections Under 35 U.S.C. Section 103, 6 ALB. L.J. SCI. & TECH. 159, 229 (1996)).
\textsuperscript{87} Meurer & Nard, supra note 84, at 1975-76 (and sources cited therein).
\textsuperscript{88} Cf. Burk & Lemley, supra note 7, at 1780 (“The metes and bounds of a property line define a single physical entity, but the peripherally construed claims of a patent are directed to multiple theoretical entities.”).
\textsuperscript{89} NTP, Inc., v. Research In Motion, Ltd., 418 F.3d 1282, 1291 (Fed. Cir. 2005) (describing how BlackBerry 800, 900, and 5810 series handheld devices were all found to infringe Claim 15 of NTP’s ‘960 patent).
essential conceptual characteristics but rather only by reference to its specific embodiments, it would be a simple matter for copyists merely to swap out one or two unimportant components or structural elements and thereby deny infringement while still free-riding on the inventor’s idea.

Moreover, if NTP had been required to describe this contribution not as a single technological concept but as every possible embodiment that could ever be made from that concept over the twenty-year life of the patent, the patent claim would likely have demanded volumes of text – not to mention some degree of clairvoyance! Needless to say, the costs of drafting such a claim would have been prohibitive, as would the costs of reading and understanding those patents once drafted.90 Thus, the patent system is intentionally designed to allow an inventor to claim rights over the entire inventive concept that the inventor created, whether or not she “possessed” by either producing or expressly describing every embodiment falling within that inventive concept. Simply limiting an inventor to rights only over what she possessed would only narrow her patent’s scope without necessarily contributing anything meaningful to the clarity of her patent’s claims. In addition, such limitations could also lead to not only narrower but more numerous patents and a resulting increase in the public’s cost of searching through them.91 Describing an invention by its conceptual and functional characteristics, on the other hand, is not only much more direct but also much more efficient. One can much more effectively explain the concept of “prime numbers” than one can write down the infinitely long list of every concrete embodiment of the prime number concept.

Such conceptual, functional, and therefore necessarily more abstract patent claim drafting has implications for the clarity with which those claims can be drafted, however. Despite functional claiming methods, technological concepts are still rather difficult to describe in ways that fully communicate their boundaries. The conceptual nature of patentable inventions inevitably strains the inherently limited capacity of language to define them. Delineating concepts rather than physical structures means that a patent claim drafter lacks the structural referents that a land surveyor or machinist might rely on. Patent drafters must also grapple with the fact that the functionality and other non-spatial characteristics of their inventive ideas add further dimensions along which thing being described can vary, further aggravating the difficulties of achieving clarity.

Many have noted as well that some technologies are just inherently more conceptual and therefore abstract and difficult to define.92 For example, computer software patents are often thought to be defined more by concept than chemical compound patents, which are indeed more like land in that they are defined less

91 Contra BESSEN & MEURER, supra note 10, at 64-68.
92 BESSEN & MEURER, supra note 10, at 152-54, 162, 243-47.
by function or other conceptual characteristics and more by physical structure. Likewise, processes generally are considered more abstract than machines, manufactures, or compositions of matter. Attempts to exclude such inherently more abstract technologies to improve patent claim clarity would necessitate further distinctions as to patentable subject matter, a subject that is itself fraught with uncertainty as to how to draw lines between the patentable and unpatentable.

As has now become clear, a patent’s res is more than just intangible versions of tangible objects, such as what one might see in the virtual world of computing, or even intangible “objects” such as data or numerical values. Rather, patentable concepts are an entirely different form of property res with many unique characteristics. In fact, if we truly wanted to analogize patents and real property, the more accurate analogy would be to a real property regime in which owners could claim ownership over specific uses of real property plots, even those plots that might be remote, as yet unseen, or otherwise owned by another. Under such a regime, for example, you would be able to assert ownership rights over the use of any and all real property plots whose soil had been modified to fall within any of a specific range of combinations of pH, sun exposure, and mineral and water content, perhaps because this range is especially conducive to cultivating a certain type of bean. (For reasons that will become more clear in the discussion in the next section, let us also assume that this particular range of pH, sun, and mineral and water content does not occur naturally and that you were first to discover its virtues in bean cultivation). Note that the location of the soil is entirely unimportant, as is the exact combination of pH, sun exposure, and mineral and water content of any given plot of soil; rather, the scope of your ownership rights is defined by the functional characteristics you discovered were useful in growing beans. Thus, although the particular combination might vary from plot to plot of soil, as long as the combination of soil pH, sun, water, and mineral content were within the range you specified, they would all be “embodiments” of your invention and therefore would lie within the metes and bounds of your property rights. For example, even if someone unknowingly modified their own soil for reasons entirely unrelated to bean cultivation, you would immediately have the right to sue them for trespass on your property rights as long as their soil’s relevant characteristics fell within your claimed range. As this example illustrates, if real property res were truly analogous to patent res, we

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93 Id. at 187-214, 244.
94 See, e.g., Bilski v. Kappos, 130 S. Ct. 3218 (2010); In re Bilski, 545 F.3d 943 (Fed. Cir., 2008).
95 Contra Besen & Meurer, supra note 10, at 244-45. Others have express no opinion as to whether business methods, software, or other types of concepts should be excluded from patentable subject matter for other reasons
97 See infra text accompanying note 137.
would have a very different real property regime indeed!

More importantly, this revised real property analogy also provides a nice illustration of how the functional and conceptual delineation of rights that we see in patent claims is at least as much about use as it is about exclusion. True, in the example above of a more patent-like version of real property rights, you would have the right to exclude all others from using your idea of modifying soil to fall within a specific range of pH combined with sun exposure and water and mineral content. Note, however, that you would also be able to assert your rights with regard to a plot of soil even though someone else might own the property rights to all the other features and resources on that plot, including even property rights to the soil itself or the water and minerals it. You would not have the right to use the soil yourself but you would have the right to ensure that the soil’s owner did not use it in such a way (i.e., by modifying its pH, sun exposure, and water and mineral content) that fell within your claimed range. The other owners of the soil or its individual contents would simply have to recognize that their use of their own property was now subject to your rights.

By the same token, patents concentrate on use, not on the actual possession of any resources for that use. Patent law forbids anyone from making using, selling, or offering to sell a patented invention without the patentee’s authorization. Unlike property rights, however, merely possessing or otherwise trespassing on any given physical embodiment of that invention, without more, does not constitute infringement of the patent. 98 Patent law’s disregard for physical possession thus emphasizes not only its focus on intangible concepts rather than the physical embodiments of those concepts but also on the use, rather than the possession, of those embodiments. In other words, because patent rights are directed to technological concepts rather than physical “things,” the claims defining those rights highlight not so much the boundaries of “things” but rather the permissible and impermissible uses of those “things” and other resources.99 Thus, although it is often tempting to think of patents primarily as property rights, they are also in large part regulatory rules about use of “things” and resources that might be subject to entirely separate rights as property.100

This dual nature of patent claims has important implications for the degree of clarity that they can be expected to display. On the one hand, patent claims establish near absolute rights of exclusivity over the inventive ideas they protect and as such are relatively simple. You have the right to prevent others from making, using, selling, or offering to sell your invention regardless of their identity or intent and regardless of whether you are even harmed. Moreover, unlike copyright, patent rights are also protected under a property rule and

88 Newman, supra note 11, at 105.
99 Cf. Lemley, supra note 19, at 1042, 1072 & n166 (noting intellectual property injuries can be characterized under tort rather than property).
100 Newman, supra note 11, at 68.
unfettered by possible compulsory licenses, experimental or fair use rights, or other equitable incursions. Treating patent claims as rules of exclusion therefore relieves most private and public actors of the need to collect and evaluate the information that would otherwise be necessary to make these kinds of distinctions.\footnote{Smith, supra note 11, at 1746-48. But see Newman, supra note 11, at 63 (noting that after the Supreme Court’s decision in eBay v. MercExchange, injunctive relief is not as guaranteed as it used to be).} As long as the boundaries of the property \textit{res} are clear and as long as everyone knows on which side of those boundaries they stand, the information costs for all parties concerned should be minimal.\footnote{Newman, supra note 11, at 66 (citing Smith, supra note 11, at 1728).} Or so at least the critics would argue.

On the other hand, however, patent claims also specify what uses of one’s own property are prohibited as exclusive under that inventive idea and as such constitute rules of governance. Rules of governance are believed to be more costly than rules of exclusion because one must now specify not only the resources that may or may not be used but also how they may be used in a way that achieves optimal allocative efficiency.\footnote{Id.} For example, while a rule of exclusion would govern more or less absolute laws against trespass on a plot of land, a rule of governance would govern nuisances on that same plot but in a much more qualified fashion, taking into account the relative cost of avoidance, social value, and so on as between the alleged nuisance and quiet enjoyment of the property.\footnote{Fromer, supra note 21, at 729; Smith, supra note 11, at 1746.} Balancing cost-benefit ratios in this way is much more information-intensive than simple rules of exclusion and therefore much more costly. First, rules of governance require investment in evaluating which uses to regulate and how to communicate those regulations in a way that is easily accessible for the affected parties. Second, the affected parties must invest in learning the rules and then in determining how those rules might apply to their particular circumstances. The more complex and numerous the rules are, the greater these various costs.\footnote{Newman, supra note 11, at 66, 78-79, 81.}

Furthermore, rules of governance differ from rules of exclusion in that they prescribe only the use of resources rather than the ownership or possession of those resources. Indeed, this is yet another way in which patentable inventions and the patent claims that describe them constitute rules of governance. Patentable inventions and other types of intellectual property are widely viewed as non-possessory and nonrivalrous, although thus far this view stems largely from the patents-as-property perspective. In other words, because patentable ideas are intangible property, they can be used without being consumed and without precluding simultaneous use by others.\footnote{Smith, supra note 11, at 1744-45, 1784-85, 1793, 1796-97, 1800.} But really, to say that patent property
res are nonrivalrousness is merely to advert to the conceptual and functional nature of the patentable res. From a patents-as-rules-of-use perspective, we can see that patent claims are also non-possessor because they, like rules of governance, prescribe uses, not possession.

Regardless of whether we view patentable inventions as property or as rules of use, their non-possessory nature has a number of implications for the certainty that they provide both patentees and potential patent infringers. One well-recognized implication is that patent property rights are more prone to innocent infringement because of they lack the opportunity for automatic notice that comes with the rivalrousness of physical possession.107 The non-possessor and use-based nature of patentable inventions also means that patentees cannot easily detect when their inventions are being made, used, or sold and therefore infringed. Thus, many may be well entrenched in infringing on a patent by the time that either they or the patentee realize what is happening.108

Think again to the revised real property regime above in which we claim real estate not by the boundaries of individual and discreet plots but rather by use of essential characteristics, such as drainage, soil composition, and average sun exposure. In the latter method of claiming rights to land, one could easily claim uses that affected multiple plots of land without actually having to possess any one of them. Indeed, the claimant of such land rights might not even know about all of the various plots of land that might meet these criteria and therefore fall within her ownership rights. By the same token, the actual plots of land over which the claimant can assert rights might change over time as various plots gained or lost the requisite mineral content, drainage, sun exposure, or other characteristic by which the claimant’s ownership rights are defined. In fact, the claimant herself might be the cause for such changes, for she might use up the particular mineral content of the soil, drained the water content, or otherwise consume the resources on whichever plots of land she might own at any given time. In other words, although the resources themselves that fall within the owner’s rights are consumable, the fact that the claimant has defined her rights as uses rather than as specific plots means that she simply shifts her rights to plots of land whose characteristics meet that definition.

In this way, we can easily see that defining real property rights by characteristic, the same way that we define patent property rights, rather than by boundary means that the property res as defined will never be consumable. Although the definition of her rights is unique (as mandated per the patent system method of claiming ownership rights), the actual individual plots of land that meet that definition – and therefore fall under her ownership – are not unique in that the claimant is never limited to a single plot or even single group of plots; the plots

108 LANDES & POSNER, supra note 107, at 15-16.
that fall under her ownership rights are potentially ever-changing. Thus, under this alternative, more patent-like system of defining real property rights, mere possession of a particular plot of land by the claimant signals little or nothing about her ownership rights more generally. For example, mere possession of one plot of land tells the public nothing about what other plots of land might also currently fall under her ownership; what other plots of land might fall under her ownership in the future, should they acquire the defining characteristics of her claim of ownership; and whether the currently possessed plot of land will continue to fall under ownership in the future, as that particular plot of land may eventually lose the characteristics that originally gave the claimant ownership rights over it. All this is by very long way of saying that, when we define ownership rights by characteristic rather than by boundaries, possession becomes irrelevant as a way of signaling ownership.109

This revised analogy between patents and real property also helps us appreciate another, seldom acknowledged phenomenon that distinguishes the patent system from real property regimes: the inevitability of overlapping rights and their effect on the clarity with which those rights can be delimited. The conceptual and use-based nature of patent rights lead to overlap in two different ways. First, patents create overlapping rights because, as explained above, they are rules of governance that affect how others may use their own property. Patent rights in an inventive idea thus will overlap with property rights in the components and other resources they use. In the example above, a person who owns real property rights in soil modified to possess a certain range of pH, water and mineral content, and sun exposure such as in the example above does not necessarily own any soil himself or even the water and minerals in soil; he owns merely Second, patents create overlapping rights because inventive ideas often overlap with one another by piggybacking off one another’s functionality. For example, while NTP owned a variety of patents on how to transfer incoming emails wirelessly from wireline electronic mail systems, RIM owned patent rights for how to make that transfer without the user having to initiate it.110 Thus, although both patented inventive ideas achieved slightly different ends, they covered overlapping technologies. Although RIM had been using its own patented technology in its BlackBerry system, the suit by NTP demonstrated that RIM could not continue to use that technology without simultaneously infringing NTP’s patents. And the effect was mutual. Although NTP is a non-practicing patent holder, NTP also could not have used its patents rights in a system in any way that trespassed on RIM’s patent rights, such as by creating a non-user-initiated email transfer system.

109 Contra Bessen & Meurer, supra note 10, at 10, 66.
RIM and NTP are hardly unique, moreover; such mutually overlapping patents are common and are often called “blocking” patents for their obvious effect in blocking each owner’s use of their patents unless they both consent.\textsuperscript{111} Depending upon the industry, the conceptual and functional nature of patents means that the \textit{res} of two separate patents frequently overlap in complex and often unpredictable ways.\textsuperscript{112} In the electronics industry, for example, many separately patented technologies must often be coordinated in order to manufacture a single cell phone. Patented technologies are in this way are often highly complementary.\textsuperscript{113}

Overlapping rights are important in that they create uncertainty in the boundaries of those rights. For one thing, it is often very difficult to define where one overlapping right stops and the other one starts, particularly where the object of the rights is conceptual, as is the case in patents. Indeed, it is probably more accurate to say that patent rights are intermeshed rather than merely overlapping. Although a patent holder can often simply decide not to use that part of his inventive idea that overlaps with another patented idea, it is just as frequently the case that the two overlapping patents are so interrelated that one or the other patent holder is completely blocked from using his patented idea, as was the case with RIM’s patents. It is a well-recognized fact that a patent cannot guarantee the patent holder an affirmative right to use their own invention because blocking patents held by another.\textsuperscript{114} What many frequently fail to appreciate, however, is that this lack of affirmative rights to use occurs because patent \textit{res}, unlike property \textit{res}, are so frequently subservient to other patent rights under what are effectively negative easements on the patented \textit{res}.\textsuperscript{115} The same obviously can also be said of patent rights that overlap with tangible property and other resources: the fact that a patented idea is in many ways a form of use of an underlying resource or component, patent protection of that idea creates a negative easement over that resource or component.\textsuperscript{116} Unlike real property servitudes, moreover, the use restrictions created by patents are not standardized or restricted in form nor must they be based on any privity with the underlying

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\textsuperscript{111} Such overlapping patents are particularly common in the electronics industry, where hundreds of patents might need to be coordinated in order to manufacture a single cell phone.
\textsuperscript{113} Id. at 1590-91.
\textsuperscript{114} E.g., BESSEN \& MEURER, supra note 10, at 30
\textsuperscript{115} See id. at 30. Some attribute the lack of an affirmative right to use one’s own invention to the non-rivalrousness of the patent \textit{res}. See, e.g., id. at 6. This seems counterintuitive, however, given that by definition, non-rivalrousness lowers even further the likelihood of any interference between two uses of the same resource. If we view patent claims not as boundary definitions but as rules of use (and in particular as rules prohibiting certain uses), however, the lack of an affirmative right to use one’s own invention despite its non-rivalrousness begins to make more sense.
\textsuperscript{116} Newman, supra note 11, at 105.
\end{footnotesize}
property burdened with them, as the revised real property analogy above illustrates. 117

Indeed, overlapping rights are much more common in intellectual property than in tangible property regimes. 118 To be sure, overlapping property interests, such as easements, overlapping estates, and concurrent ownership, are common in real property regimes, and occasionally even real property res may overlap, such as in the case of condominium rights. 119 Nevertheless, overlapping real property res are uncommon, and even overlapping real property interests are limited through the use of zoning, use restrictions, reversions, and other methods for minimizing non-possessory and concurrent rights. 120 Accordingly, those who would seek to compare patent claims to real property deeds fail to recognize that such overlapping rights effectively define patentable property, in large because of the conceptual as well as negative easement nature of patent rights.

B. UNCERTAINTY AND THE NOVELTY AND DEFEASIBILITY OF THE PATENT RES

Rules of governance offer less clarity and depend more upon ex post interpretation and balancing than rules of exclusion, but even as rules of governance patent claims are subject to additional obstacles that limit their ability to provide ex ante clarity. A significant but often overlooked source of uncertainty in patent claim boundaries is the requirement that each and every patent property res be new. 121 Unlike real property regimes, the patent system is designed not so much to facilitate management of existing property res but rather to incentivize a constant cycle of creation and then eventual release of new technological concepts into the public domain. Toward this end the Patent Act demands that every invention be not only a non-naturally occurring concept but also one that no other human being had devised before. 122 The res of a patent is thus always required to be a unique entity – a technological development that not only has never been propertized before but in fact never existed before. Clearly defining the boundaries of such mandatorily novel patent res is thus subject to additional

117 Id. at 106-07 (2009); see also infra text accompanying notes 165-170.
118 See Besen & Meurer, supra note 10, at 40-41, 53-54; see also Thomas W. Merrill & Henry E. Smith, Optimal Standardization in the Law of Property: The Numerus Clausus Principle, 110 Yale L.J. 1, 12-17 (2000) (noting that, although still extant, overlapping rights in real property are at least limited and standardized).
120 Besen & Meurer, supra note 10, at 43-44 (noting how property claims to oil, gas, and mineral rights can often overlap with competing claims to land rights).
121 See id. at 42.
122 35 U.S.C. § 102(a), (e), and (g).
obstacles not seen in real property regimes. First, each res must be evaluated for patentability through an information-intensive examination process, for unlike real property regimes, there is no presumption of propertizability. Indeed, patentable inventions are propertizable only briefly if at all, reflecting the very different purposes of the patent system as compared to tangible property systems. Second, the novelty of patentable res defies easy definition through standardization of property types, for each res is necessarily unique. Third, although patentable inventions must be novel, they are also cumulative in nature, thus increasing the likelihood of overlap among patentable inventions. These additional steps of creation, vetting, and recordation are in turn additional sources of uncertainty as to the propertizability and boundaries of the patent property res, particularly as compared to tangible property, which typically does not need to go through any sort of vetting process. Indeed, at most tangible property may need to be officially surveyed or appraised and recorded, while patentable property must go through a number of more complicated steps.

Although patent practitioners and scholars usually use the term “novelty” somewhat more specifically, inventive ideas must be novel in at least two different respects in order to be patentable. First, unlike tangible property, in order to be patentable subject matter under § 101 of the Patent Act, an inventive idea can never be a naturally occurring or otherwise already extant phenomenon, object, or even concept. Rather, a patentable concept must be “invented” ab ovo and not merely “discovered.”123 For example, no one may patent naturally occurring organisms, algorithm, or other law of mathematics, biology, chemistry, or physics are unpatentable subject matter – even if no one else had ever before recognized or appreciated it. Second, under § 102 of the Patent Act, the invention must never before have been known, invented, described, or used by another; it is this latter type of novelty that most practitioners and scholars discuss when they use the term “novelty.”124 A patentable invention must thus represent not only a change from nature but also a cognizable advance over technology already known.

In these ways, the Patent Act requires that all patentable inventions be new and therefore unique and non-fungible. Although one patentable concept may serve as a meaningful market substitute or even technological substitute for another patentable concept, no patentable concept can ever be identical to another known or naturally occurring technological concept. And although multiple inventors may independently hit upon the same concept, only one – the first to invent – may assert patent property rights over it. Any and all other subsequent inventors will have no rights over the concept; instead, the best they can hope to do, if they want to acquire patent property rights similar to those of the first-to-invent is to create other patentably different inventions that could serve as

124 35 U.S.C. § 102(a), (e), & (g).
meaningful albeit not identical substitutes for the original concept.

With tangible property, by contrast, most res are already existing; indeed, real property res typically have long since been created, divided into parcels, and even recorded as property by an entire series of previous owners by the time they are the center of a dispute. If patents were truly analogous to real property rights, then, one might think that any res of any value, whether novel in any sense, would be propertizable, but that is clearly not the case. Rather, novelty is one of the *sine qua non* of patentability. If we were to revise real property regimes to more closely resemble patent law, then, the novelty requirement under patent law would be akin to requiring that all real property rights holders be like explorers of yore who continually find new lands to claim as their own but who then almost immediately turn those lands over to the public domain. An even better analogy would be to require those same explorers continually to discover not only new lands but also new *forms* of property rights, such as mining rights, water rights, and airspace rights as well as new methods of using any of the above.

As both rules of governance and as novel res, furthermore, such a constant stream of new inventive ideas would present any property recording agency with challenges in not only describing the metes and bounds of such new property but also in determining whether it should be declared “property” at all. Given that inventions are conceptual, one cannot simply look at it and determine whether it is protectable. Rather, the requisite uniqueness of every patent property res means that the res has to go through a vetting process before it can be recognized (and protected) as “property.” Every new technological concept must be evaluated to determine if it is not only truly new but also whether it meets all the other patentability requirement; no assumptions can be made based on similarity to previously patentable concepts. Instead, patent examination is a multistep process much more complex than merely measuring physical attributes and spatial orientation. Because of its information-intensity, moreover, it is also an ongoing process in which even inventions granted patent protection may have that protection taken away at any time should invalidating information emerge. And in any event, even patents that are not invalidated expire after only twenty years, reflecting the patent system’s objective in incentivizing the creation of inventive ideas, not their ongoing management.

The fact that inventions must be novel to be patentable means that not all inventions are patentable, so the United States Patent and Trademark Office (“PTO”) has the duty to separate the patentable from the unpatentable through a

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126 BESSEN & MEURER, supra note 10, at 32, 53.

process call patent examination.\textsuperscript{128} The examination process varies from patent to patent but averages about three and a half years of a patent’s total twenty-year term, in large part because of all the inquiries that must be made before a patent may be granted. As described above, patent claims are designed not only to describe the inventive res of the patent but also to help determine whether that res should be afforded any rights to exclude others at all – that is, whether the invention claimed fulfills all the criteria necessary to warrant the right of exclusivity.\textsuperscript{129} The four main criteria are that it be non-obvious, novel, useful, and within the realm of patentable subject matter.\textsuperscript{130} Patent property rights on inventions that do not meet these requirements are believed to be unnecessary, socially wasteful, or both.\textsuperscript{131} For example, know-how already discovered, invented, or made obvious by others do not need the incentives of the patent system; there is no sense in encouraging reinvention the wheel or obvious variations on it.\textsuperscript{132} Likewise, invention or discovery of mathematical algorithms, scientific laws, or other natural phenomena and “pure” ideas are generally held to be unpatentable subject matter because patents would likely hinder future advances far more than such patents would incentivize their discovery or invention.\textsuperscript{133} Patent claim drafters must therefore carefully differentiate their inventions from all prior inventions (“prior art”) to which they might be related technologically. Such differentiation more often than not involves quite subtle and complex distinctions, particularly in densely populated fields of technology.

Not surprisingly, patent drafters rarely if ever write the perfect claim the first time around and usually involve multiple rounds of amending the patent’s claims in order to meet patentability requirements. When ultimately issued, a granted patent’s claims rarely if ever match the claims as drafted in the patent application from with the granted patent evolved. This means that a patent’s claims continue to be uncertain in scope up until the final versions of them are drafted and granted by the PTO.\textsuperscript{134} For example, in the \textit{NTP v. RIM} case, RIM likely did not even know of NTP’s patents until NTP itself informed RIM about them and demanded that RIM pay licensing fees. Although NTP filed for patent

\textsuperscript{128} Bessen & Meurer, supra note 10, at 32.

\textsuperscript{129} Cotropia, supra note 38, at 57.

\textsuperscript{130} 35 U.S.C. § 101 (defining patentable subject matter as "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof"); 35 U.S.C.A. § 103 (West Supp. 1997) (requiring that invention be nonobvious, novel, and have utility); \textit{see also} \textit{Diamond v. Diehr}, 450 U.S. 175, 185 (1981) (holding patent protection not available for laws of nature, natural phenomena, and abstract ideas).

\textsuperscript{131} 35 U.S.C. §§ 101, 103, 112.

\textsuperscript{132} 35 U.S.C. §§ 101, 102.


\textsuperscript{134} \textit{But see Bessen & Meurer, supra note 10}, at 53 (attributing delays in finalizing patent claims to continuations and other strategic efforts by patent applicants to “submarine” others in the field).
protection on the technology at issue that case as early as 1991, it took the PTO a number of years to examine and then grant the various patents that ultimately arose from that initial application. In fact, the last of the patents that NTP asserted against RIM at trial did not issue until 2001, after commencement of the suit.\textsuperscript{135} If the exact interpretation of a patent’s claims is indeed pivotal in resolving whether a defendant has in fact infringed that patent, such delay in issuing a patent would obviously create a great deal of uncertainty for potential patent defendants.\textsuperscript{136} If, on the other hand, the PTO were to forgo its current in-depth examination practices in order to prevent such delays in patent claim issuance, the PTO could find itself granting patent applications that should not have been granted and denying applications that should.

In fact, as one would expect, the PTO’s current examination processes are already less than perfect, leading to the relatively frequent (as compared to real property regimes) need to invalidate improvidently granted patents.\textsuperscript{137} This in itself creates uncertainty problems, as neither patent holders nor potential infringers can be certain of whether a patent’s claim boundaries are valid, much less where exactly they lie. Although the PTO is charged with at least initial responsibility for examining patent applications and deciding whether to grant them, any patent or any claim within a patent describing an invention that fails to meet the patentability requirements will be denied protection, even if the patent has already been vetted by the PTO.\textsuperscript{138} In fact, patent rights are never definitively “valid,” although issued patents do at least enjoy a presumption of validity rebuttable by clear and convincing evidence.\textsuperscript{139} Any court asked to enforce a patent may therefore declare any or all of a patent’s claims invalid if it decides that the patent or any given claim within it should never have been granted. Such disagreements as to validity arise in two situations. On the one hand, a court may disagree with the PTO’s apparent interpretation of an issued patent’s claims as describing an invention that meets the various patentability requirements;

\textsuperscript{135} U.S. Patent No. 6,317,592; \textit{see also NTP, Inc., v. Research In Motion, Ltd.}, 418 F.3d 1282, 1287, 1288-89 (Fed. Cir. 2005). All five relevant patents were granted on “continuations” of the original patent application filed in 1991, meaning that the inventions protected under each were originally disclosed in the 1991 application and are considered to have been filed \textit{de jure} at the same time as the 1991 application. \textit{See} 35 U.S.C. § 120. Although United States patent law does not allow patent holders to sue for infringement until a patent issues, once the patent is granted, patent holders may sue for enjoinder of any future infringement and even for reasonable royalties covering the period after both the patent application was published under 35 U.S.C. § 122(b) and the defendant actually had notice of the application. 35 U.S.C. §§ 154, 271.

\textsuperscript{136} \textit{See} BESSEN & MEURER, \textit{supra} note 10, at 62-63, 160.

\textsuperscript{137} JAFFE & LERNER, \textit{supra} note 12, \textit{passim}.

\textsuperscript{138} Patent rights have often been described as “contingent property rights,” Kesavan Banik, \textit{supra} note 43, at 25, or “probabilistic property rights,” \textit{id}.; Mark A. Lemley & Carl Shapiro, \textit{Probabilistic Patents}, 19 J. ECON. PERSPECTIVES 75 (2005), for this reason.

\textsuperscript{139} 35 U.S.C. §282.
presumably, the PTO would never grant a patent claim that it did not consider valid. Patent claim interpretation is a question of law, however, so a court later asked to enforce a patent’s claims may decide to interpret those claims in a slightly different way that no longer seems to describe a patentable invention. In this situation, the court’s interpretation supersedes any interpretation the PTO might have had, and the “reinterpreted” claims therefore become invalid. As the critics point out, clarity as to the claims’ meaning would obviously alleviate this problem, for all parties involved, including the PTO and the courts, would likely interpret the claims the same way. On the other hand, however, even if a claim’s meaning seems perfectly clear, a potential infringer may still discover references to relevant prior art previously unknown to either the patentee or the PTO but nonetheless showing that the invention at issue does not in fact meet the patentability requirements. In this case, again, a court would be obliged to invalidate the affected claims, but in this latter case, uncertainty as to the claim’s invalidity could not have been prevented simply by drafting more clearly written claims. It is this latter source of uncertainty that ultimately cost RIM in its defense against NTP’s patent infringement suit. RIM initially refused to settle the case against it as it firmly believed that all the patents NTP was trying to enforce against RIM were invalid for a variety of reasons, including obviousness and lack of novelty. RIM even presented several pieces of previously unknown evidence in support of their argument. The trial court in their case rejected this evidence, refusing to find the patents invalid. RIM also asked the PTO to reexamine NTP’s patents, which the PTO did, finding the vast majority of all five patents at issue in the case to be invalid.

And while the potential invalidity of a patent’s claims does not necessarily mean that the meaning of the claims cannot or need not be clear and predictable as possible, it does begin to highlight yet another major difference between real property regimes and the patent system that weakens any analogy between the two. First, drafting claims of clear and predictable scope becomes much more difficult when they might apply to unknowable future events such as the discovery of invalidating prior art. Discovering all relevant prior art at the time of drafting is a prohibitively expensive and time-consuming prospect and something

of an infinity-minus-one proposition. Unlike real property systems, furthermore, the law provides no means other than the presumption of validity of protecting against unknown, unrecorded blemishes on her patent rights, such as invalidating prior art references. Second, and more importantly, even those inventions that do meet the various patentability requirements become invalid in a sense when their relatively short patent terms expire. Again, patents last only twenty years from the date of filing the patent application; after the patent expires, the exclusive res of the patent becomes public domain. This stems in part from the fact that the patent system was created to incentivize the eventual dedication of new technologies to the public and to expand the wealth of public scientific and technological knowledge. By both incentivizing technological advances and the inevitable release of rights to those advances for public use, patents lay the foundation to ensure future advances. Under what is often referred to as the “patent bargain,” then, patentees invest in technological research and development and offer up them up to the public in exchange for a limited period of exclusive rights over them. The alternative would be for innovators to keep their technological breakthroughs secret, depriving the public not only of the eventual dedication of those inventions to the public domain after the patents would have expired but also of the information value of their patent disclosures. The result would be wasted investments in reinventing the wheel and rediscovering old technologies.

Real property rights, by contrast, are potentially perpetual, while rights in chattel last for as long as the chattel itself lasts. And although real property rights may change, they never just disappear; real property is always owned by someone, even if it is just the government or the public. By comparison, then, if patents can be said to grant “property” rights, those rights are at best defeasible.

143 JAFFE & LERNER, supra note 12, at 21.
144 See DUKEMINIER ET AL., supra note 65, at 559.
145 As suggested above, the claims are not the only part of a patent that provide a detailed description of the invention protected therein. The “specification” of the patent includes text, diagrams, and other relevant information that describes the patented invention “in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains . . . to make and use the same.” 35 U.S.C. § 112. Both the specification and the claims are published eighteen months after the patentee files the application and remain part of the public record after the patent is granted. 35 U.S.C. §§ 111-13, 154(a) (4); 37 C.F.R. 1.11, 1.14 (1997); see also generally Cotropia, supra note 38.
147 Rebecca S. Eisenberg, Patents and the Progress of Science: Exclusive Rights and Experimental Use, 56 U. CHI. L. REV. 1017, 1037 (1989).
149 BESSEN & MEURER, supra note 10, at 32.
150 Id. at 2; Kesan & Banik, supra note 43, at 25.
In this way patents differ markedly from real property: in terms of the property analogy, even full-term patent rights are at best analogized to an “estate” in land and not the land itself – that is to say, inevitably defeasible, limited in duration, and intangible in its boundaries.\footnote{Mossoff, supra note 19, at text accompanying n.7.}

Indeed, the very structure of the patent system itself adverts to the futility of comparing tangible property boundaries with patent claim boundaries. Unlike real property, patent property is not intended to exist forever and is often not intended to exist at all. That is to say, patent rights differ from tangible property rights in that they are often defeasible through invalidation even before patent expiration and in any event their extremely short terms mean that they are almost immediately defeasible by design.\footnote{See Kesan & Banik, supra note 43, at 25. The term “defeasible” is typically used in property law to refer to a property interest, but not necessarily a property res, that may cease to exist upon the occurrence of some future event. DUKEMINIER ET AL., supra note 65, at 206-207. Here, the term is being used to refer to the cessation of both the property res and any interests in it.}

The deliberate defeasibility of patent “property” rights comports well with the purpose of the patent system as opposed to that of tangible property systems. Tangible property regimes generally operate on the principle that tangible properties are consumable commodities that are subject to both the risk of congestion externalities and the tragedy of the commons; that is to say, tangible properties and any investments in them quickly become depleted if no one has exclusive rights to them. The law therefore grants such exclusivity in the form of property rights in order to limit the number of people who can use the commodity as well as incentivize investments in maintaining it.\footnote{The term “congestion externalities” refers to the idea that when a resource is limited and no one has exclusive rights to its use, no one will have the incentive to optimize current and future consumption of it; instead, everyone will rush to use as much of the resource as they can before others can use it up, leading to rapid depletion of the resource. Similarly, the term “tragedy of the commons” refers to the lack of incentive not only to regulate use but also to invest in the resource because of the lack of exclusive rights to the returns on that investment. LANDES & POSNER, supra note 107, at 222-28 (“The result of [widespread unauthorized variants of a copyrighted work] could be premature saturation of the market, consumer confusion, ... and impaired demand for the original work because of the poor quality of some of the unauthorized derivative works.”); Dennis S. Karjala, Congestion Externalities and Extended Copyright Protection, 94 GEO. L.J. 1065, 1066-67 (2006).}

As explained above, however, inventive concepts are nonrivalrous; multiple people may use an inventive concept without exhausting the resource or otherwise interfering with its use of others.\footnote{LANDES & POSNER, supra note 107, at 226; Smith, supra note 11, at 1758. Although trademarks and perhaps even copyrighted works may be subject to congestion externalities in terms of “premature saturation of the market, consumer confusion, ... and impaired demand for the original work because of the poor quality of some of the unauthorized derivative works,” patented concepts generally are not thought to suffer any such risks. See, e.g., Karjala, supra note 153, at 1081 n.43.} The patent system is therefore designed not to promote allocative efficiencies by avoiding such use
conflicts as congestion externalities or depletion of resources. Rather, the patent system is designed to incentivize the creation and public release of technological information. Indeed, the patent system is as much about the dissemination of the resource— that is, information—to as many as possible for their simultaneous use.

In other words, the patent system is designed to allow as many users as possible to “possess” the resource for as great a gain as possible, not to limit the number or intensity of their use. Rather, to the extent that use of the information arising from a patent is limited at all, it is limited for only a very short duration and only in the specific invention(s) claimed under the patent—all other use of that information is freely available to the public. Once a technological advance has been created and put to public use and all the information gained from it released to the public, there is often no reason to continue to protect the invention under property rights beyond the minimum necessary to recoup costs and to incentivize the investment in such activities. In fact, there would be much less need to guard settled expectations through protections against unrecorded blemishes on property titles or other unknowable future events. How much in the way of settled expectations can one have in “property” that is not only so short-lived but also may not in fact be propertizable at all? Indeed, many view intellectual property rights such as patents not as “property” at all but rather as a government subsidy. Accordingly, the relatively immediate defeasibility of patent rights, as compared to the potentially infinite duration of tangible property rights, reflects not only the different cost structure of propertizing information versus propertizing land or other tangible goods but also the different reasons for doing so.

The inevitable defeasibility of patent rights, whether through invalidity or through patent-term expiration, is thus a reflection of what is perhaps a larger notion that information, even in the form of inventive concepts, is ultimately not something that must or even should be privately owned. Many scholars argue

155 Smith, supra note 11, at 1744.
156 Id.; Burk & Lemley, supra note 112, at 1605. Of course, earlier in history, the potential for real property rights, particularly in areas that had not yet been settled or even explored, could also be characterized as incentives to discover property. Similarly, the potential for property rights in buildings or in personal chattel can be seen as incentives to create either of those as a property res.
157 See LANDES & POSNER, supra note 107, at 21-24; see generally Lemley, supra note 19. Actually, returns on investments should slightly exceed costs in order to incentivize invention and its commercialization over alternative investments. See LANDES & POSNER, supra note 107, at 21-24.
158 See, e.g., Lemley, supra note 19, at 1031; see also Smith, supra note 11, at 1744-45, 1784-85, 1793, 1796-97, 1800.
159 Cf. Carter, supra note 125, at 718 (noting no reason why, if patents are truly property, they should not last forever).
160 Carter, supra note 125, at 717; Long, supra note 21, at 540.
that the most important function of the patent system is not so much the short-
term, individual property-like rights it grants but rather the overall expansion of
technological information that it creates and discloses.\textsuperscript{161} Indeed, the inventive
concepts underlying patents are only reluctantly propertized and, because of the
rigorous patentability requirements and patents’ relatively short duration as
property, generally are not propertized. Many inventors simply choose not to
propertize their inventions at all and instead offer them freely to the public.\textsuperscript{162}
Thus, anyone contemplating a particular scientific or technological area can
usually safely assume that any given inventive concept is not under any property
ownership rights. Indeed, the general – and fully justified – expectation is that
ideas are not property, particularly if they have been around for some period of
time.\textsuperscript{163}

Beyond the need for a vetting process, the requirement that each and every
patentable invention be a novel and unique concept creates recordation and later
search costs by making it more difficult to describe things in ways that are not
only easily recognized but also categorized and catalogued in a searchable manner.
In particular, the requisite uniqueness of patentable ideas precludes
standardization of the way we describe those ideas and how we compare them to
one another, especially given the wide range of sciences and technologies swept
under the single one-size-fits-all patent banner.\textsuperscript{164} We thus can never neatly
pigeonhole patentable concepts into a discrete \textit{numerus clausus} type of system
such as that seen in real property systems.\textsuperscript{165}

The \textit{numerus clausus} principle refers to closure of the set of property
forms that the law will permit as enforceable. In real property, for example, the
law has traditionally permitted only the fee simple, the life estate, the lease, and a
limited number of other interests. The virtue of so limiting the cognizable
property interests to a few standardized forms is that it lowers the information
costs of evaluating them, particularly when the interests relate to property that is
intangible or otherwise problematic to observe or measure. Such information
costs may be particularly steep for third parties unfamiliar with either the holder
of a property interests or the \textit{res} of that interest. Standardization through a
\textit{numerus clausus} type of approach thus creates efficiencies in addressing \textit{in rem}
rights such as those in property regimes by reducing the dimensions of a property

\textsuperscript{161} Robert P. Merges, \textit{Commercial Success and Patent Standards: Economic Perspectives on

\textsuperscript{162} For example, many inventors choose to achieve exclusivity over their inventions through trade
secrecy law, while others may opt to instead to share their inventions with the public by
publishing descriptions of the inventions or otherwise dedicating their inventions to the public

\textsuperscript{163} Carter, \textit{supra} note 125, at 717; Long, \textit{supra} note 21, at 540.

\textsuperscript{164} Burk & Lemley, \textit{supra} note 112, at 1588.

\textsuperscript{165} Newman, \textit{supra} note 11, at 106-07.
interest that must be measured.\textsuperscript{166}

Applying the \textit{numerus clausus} principle to patent claims would thus seem on its face like the perfect idea. As not just intangible but also highly conceptual property, patentable ideas are particularly onerous for third parties to identify and measure and yet are fully enforceable against those third parties.\textsuperscript{167} Standardizing the forms that those ideas can take would lower those third parties’ information costs. Of course, the \textit{numerus clausus} principle is typically of as applying not so much to property \textit{res} as to the interests in them, they would seem to be perfect candidates for \textit{numerus clausus} treatment. Patent law does indeed employ something of a \textit{numerus clausus} approach by limiting patentable ideas to those for a “process, machine, manufacture, or composition of matter,” although those categories have been very broadly interpreted.\textsuperscript{168} Other than these very loose categories, however, any type of \textit{numerus clausus} treatment would be impossible to apply in describing patentable inventive ideas because of their obligatory uniqueness. Patentable ideas do not occur in neatly pre-carved, standardized forms; otherwise, they would be unpatentable.\textsuperscript{169} Neither those who draft patent claims nor those who interpret them can rely on references to existing technological concepts to identify the novel aspects of the claimed invention, in much the same way that it is difficult to use physical referents to describe intangibles. Furthermore, if the patent system truly incentivizes the development of new technology (and likely regardless of whether it does), technology advances apace, such that what might serve as a relevant referent for describing today’s new technology will be obsolete and irrelevant five years from now. Thus, simply relying on established glossaries, treatises, or other standardizations of technical terminology would prove unhelpful when that terminology is used to describe technologies that are themselves constantly changing and evolving.\textsuperscript{170} Indeed, even for the inventors themselves as the parties most intimately acquainted with their inventions and the technological fields from which they come, drafting patent claims can be very difficult to draft due to constant novelty of \textit{res}.

For example, the more pioneering and novel an invention may be, the more abstract it is likely to be, for two reasons. First, the more novel an invention

\begin{footnotes}
\item[Newman, supra note 11, at 107.]
\item[Smith, supra note 11, at 1755.]
\item[Burk \textit{v. Lemley}, supra note 5, at 52 (suggesting that “the whole search for a ‘plain’ or ‘ordinary’ or ‘settled’ meaning of patent claims is doomed to failure”) (cited in Golden, supra note 13, at 324 n.14); \textit{contra} Bessen \textit{v. Meurer}, supra note 10, at 239-40. Indeed, such difficulties may underlie some of the Federal Circuit’s reluctance to rely too heavily on technical dictionaries or treatises in interpreting patent claims. \textit{See Phillips \textit{v. AWH Corp.}}, 415 F.3d 1303, 1319-25 (Fed. Cir. 2005) (\textit{en banc}).]  
\end{footnotes}
is, the more it falls outside of what is already known and the fewer referential points there are to describe the invention. Second, the more novel and therefore the more pioneering an invention is, the less likely it is to overlap with existing technology in the prior art and therefore the more broadly the patentee may claim his or her concept. Such greater patent breadth is generally considered acceptable, however, as truly pioneering inventions are exactly the kinds of technological developments we most want to incentivize through the patent system, for they not only represent huge advances in the useful Arts but also open up new avenues for further development.  

To the extent that we believe that patent scope should reflect the social welfare the underlying invention creates, the breadth of patents on pioneering patents is just as it should be. Given that both novelty and breadth lend to abstractness in claiming, we can see that patent claims on pioneering inventions will inevitably be among the most abstract. Thus, again, simply eliminating certain types of inventions as patentable subject matter simply because of their nature as either pioneering inventions or just more technologically abstract inventions would eliminate vast swaths of new science and technology from the patent system.  

Finally, the patent system’s requirement for novel patent *res* exacerbates the overlapping rights problem created by the uniquely conceptual nature of the patent *res*. Inventive concepts are cumulative by nature. It is often said that technology progresses by “standing on the shoulders of giants;” indeed, the cumulative nature of technological progress is clearly a foundational element of the patent system. In order to continue the creation of new and unique patentable concepts, technology must constantly build upon itself to achieve further breakthroughs in innovation and further expansion of our collective body of technological knowledge. Rights in that knowledge therefore build upon one another as well and thus overlap, again creating difficulties in delineating where one set of rights ends and the next begins. This is in many ways the diametric opposite problem faced by pioneering inventions. Unlike pioneering inventions, the cumulative nature of technology means that, even if not attempting to copy another’s work, any given inventor is likely to overlap with of another’s efforts in the same area and therefore perhaps run afoul of their rights.

The patent system does account for serially cumulative rights – rights over overlapping concepts developed distant in time – by limiting patent rights to only twenty years in duration so that protected concepts can be released to the public.

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173 *Contra Bessen & Meurer, supra* note 10, at 27.

for use in future technological advances. Likewise, the patent system accounts for concurrently cumulative rights – rights over overlapping concepts developed closed to one another in time – by again guaranteeing only the negative right to exclude others from, not the affirmative right to practice, one’s own invention. Nevertheless, the necessarily novel and conceptual nature of a patent property res and more importantly, how that res are created – i.e., the cumulative nature of innovation frequently channels multiple independent inventors toward not only the same areas of innovation but also the same ideas – increases the overlap between innovations due to often near-simultaneous creation. Accordingly, even if subsequent inventors are not even aware of, much less trying to copy, another inventor’s patented idea, they could independently develop separate ideas that nonetheless overlap at least in part the scope of the other inventor’s patent, even before that patent has issued. Indeed, most alleged patent infringers appear to be inventors themselves acting in good faith to develop their own original ideas, rather than copyists or free-riders.

For example, the RIM and NTP story is a good deal more complicated as to why RIM was caught so unaware of its infringement of NTP’s patents. A significant part of the story is that the inventors for both NTP and RIM not only independently invented the same technology but also did so at about the same time, NTP first in the late 1980s to early 1990s, and RIM second in the 1990s. Others, such as ALOHAnet, were also working on this technology around the same time, raising real issues about the novelty and non-obviousness of NTP’s patented ideas. Such “patent races” are common between inventors competing (whether knowingly or simply in effect) to be first to claim rights to the same or very similar inventive ideas. Inventors who are second in time are blocked from practicing their own inventions, either because they are identical to the first inventor’s invention or because the second inventor’s idea at least overlapped with the first inventor’s idea. Even if patent claims were drafted in perfectly clear language, inventors would inevitably overlap one another in their inventive efforts. Other than the gold mine rush or Oklahoma land rush, such races for

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175 LANDES & POSNER, supra note 107, at 33-34.
176 BESSEN & MEURER, supra note 10, at 30; Burk & Lemley, supra note 112, at 1607-10.
177 BESSEN & MEURER, supra note 10, at 124. Indeed, most alleged patent infringers appear to be inventors themselves rather than copyists or free-riders. Id.
178 Some therefore advocate that such “innocent” infringers be allowed prior user rights or some other means of lessening liability under patent law’s strict liability regime. See, e.g., Id. at 48-49.
179 Id. at 124.
180 NTP, Inc. v. Research In Motion, Ltd., 270 F. Supp. 2d 751, 755 (D. Va. 2003); see also Stoughton, supra note 3; McKenna et al., supra note 1.
182 See generally Scotchmer, supra note 146; Scotchmer, supra note 171; cf. BESSEN & MEURER, supra note 10, at 44 (describing similar problems in mining rights).
183 The Homestead Act of 1862 allowed settlers to claim up to 160 acres, leading frequently to
ownership are uncommon in real property regimes, marking yet another significant difference between patents are property and real property.

To summarize, patents do indeed resemble real property rights but only superficially. Certainly, patents grant inventors exclusive in rem rights over their inventive ideas, and these rights are fairly robust. Beneath that property-like surface, however, patent claims are also rules of use that frequently create negative easements on others’ property. Patent claims as rules are therefore much more prone to uncertainty than real property deeds, not only because they represent intangible rules of use but also because they are novel and unique, in keeping with their purpose to incentivize the creation and almost immediate release of inventive ideas into the public domain. The next section therefore analyzes patent claims as rules of governance, examining in detail whether patent claims as rules can ever be expected to achieve certainty and clarity. The section concludes that, for a number of reasons, patent claims cannot achieve such certainty and indeed are often better interpreted as more like standards than bright-line rules.

III. THE NEW VIEW: UNCERTAINTY AND PATENT CLAIMS AS RULES OF GOVERNANCE

For all the reasons discussed above, patent claims are not just boundaries marking exclusive rights to inventive and novel ideas but also specific rules on the use of goods and resources to create utility. The analysis thus far has therefore framed the discussion as whether patent claims are rules of exclusion or rules of governance. The following takes this analysis further and reorients it slightly by concentrating on patent claiming as rules rather than as standards. Unlike real property boundaries, patent claims are not lines on a plat map or references to landmarks; rather, patent claims are written prescriptions, and like all written law can be couched as either rules or standards. Whether we view them as rules of exclusion or rules of governance, then, we can at least appreciate that modern patent claims are rules; indeed, in an effort to achieve more predictability in the patent system, it has long been required that all patent boundaries be drafted as rules, and rather Byzantine rules at that. The following analysis of patent claims as rules rather than standards therefore benefits from the rich literature comparing rules and standards, particularly in terms of the certainty that they can each provide. Viewing patent claims through the rules-versus-standards lens helps explain why, despite their careful framing as rules, patent claims still face

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multiple settlers attempting to claim the same or overlapping plots of land. Only 40% succeeded in obtaining title, with fraud and abuse of the claim resolution process. Act of May 20, 1862, Pub. L. No. 37-64, 392 (repealed 1976); John Vaterlaus, Stuck Between a Rock and a Hard Place: The United States Supreme Court Misapplies Statutory Construction Precedent in Bedroc Ltd. v. United States, 38 CREIGHTON L. REV. 1263, 1263 (2005); see also M. Brent Leonhard, There Are No Implied Easements Over Trust Lands, 33 AM. INDIAN L. REV. 457, 482-85 (2008 / 2009) (describing some of overlap created by Homestead Act).
inevitable uncertainty for yet another reason: the impossibility of foreseeing all the contexts to which they might apply. As such, we cannot expect patent claims to offer complete certainty *ex ante* but rather must accept that in light of their context, *ex post*.

As a means of giving content to the law and guiding decision-making within it, one can choose between rules and standards. Rules and standards differ as to their flexibility and specificity as well as their relative time frames; the choice between rules and standards centers on whether to convey the law with specificity *ex ante*, before parties choose whether and how to act, or to provide only more general guidance, leaving the courts later to decide *ex post* how to apply that guidance in each case. A rule provides the specifics of the law ahead of time, often leaving only issues of fact for determination *ex post*. A standard, by contrast, *ex ante* provides only the rough contours of the law, leaving for later not only factual determinations but also determination of what exactly the law should be in the circumstances at hand. For example, a rule might specify *ex ante* that driving faster than 65 miles per hour on a highway is illegal; the only determination remaining would be whether a driver was in fact going faster than 65 miles per hour and was doing so on a “highway.” A standard, by contrast, might specify only that driving “in an unsafe manner” is illegal, leaving for later not only whether a given driver was in fact traveling at unsafe speeds but also what range of speeds might be “unsafe” on that particular road at that particular time of day under those particular weather conditions.\textsuperscript{184}

Patent claims clearly display many of the characteristics of rules.\textsuperscript{185} First, as noted above, the primary function of patent claims is to give public notice of the boundaries of a patent holder’s property-like rights to exclude all others by “particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.”\textsuperscript{186} Ideally, claims that meet this requirement will *ex ante* inform the public and, if necessary, the courts, of the boundaries of the claimed right to exclude others.\textsuperscript{187} Some factual determinations will remain to be made *ex post*, as is true of the application of any rule. In patent law, for example, the question of whether an allegedly infringing device does in fact infringe a given patent claim is considered to be a factual issue. In most cases, however, infringement *vel non* is often uncontested after the relevant patent claims have been construed by the court.

In fact, belief in the virtues of specifying patent scope *ex ante* prompted


\textsuperscript{186} 35 U.S.C. § 112; on patent claims as rules generally, see Burk & Lemley, supra note 7, at 1778-83; Fromer, supra note 21, at 757-60.

\textsuperscript{187} Nard, supra note 13, Pt.IV.A. & B.
the adoption of what we now know as the peripheral claiming system. This modern system of patent claiming dates back to at least the Patent Act of 1870, when the peripheral claiming system was first codified. Before that time, patent law subscribed to the central claiming system, under which patents contained only background information and written and pictorial descriptions of the patented invention but no specific boundary-defining claims. Rather, the courts were left to determine the scope of a patentee’s and infringement thereof rights by discerning the “principle” or “essence” of the invention as described in the patent, much as if measuring patent scope by a standard. Because of the inherent difficulties of defining the patentee’s rights from the scatter of information contained in the specification, Congress changed the law to require claims specifically to “mark out the periphery or boundary of the area covered by the [patent].” Patents must now include one or more claims in rule-like form so that they provide a detailed description of what the patentee considers her exclusive inventive idea. Great detail in patent claiming is believed to foster consistency and ease of interpretation by making claims more precise and saving others from having to risk interpretive errors in applying them as rules. Patent applicants are therefore expected to invest heavily in crafting their patent claims in as much detail as feasible. The evolution from the central to peripheral claiming system is slightly more complex than described here, but for the most part, the rule-like claim is considered the sole determinant of patent scope. By doing away with central claiming, however, the patent system intentionally gave up almost all flexibility in determining patent boundaries ex post under a more standard-like approach.

Patent claims are also rule-like in shifting the burden of specifying legal liability ex ante onto their drafters, the patentees. Because rules and standards differ in the certainty they can offer, they also differ their relative cost structures and where they place the burden of those costs. Greater certainty involves greater ex ante costs, including both the costs of drafting laws that are predictable and yet still precise. By specifying the law in detail up front, then rules offer more certainty and are therefore more useful when certainty in the law is important.

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188 See generally Cotropia, supra note 38, at 64-65; see also Fromer, supra note 21, at 731-35.
189 Burk & Lemley, supra note 7, at 1772.
192 Burk & Lemley, supra note 7, at 1745; Golden, supra note 13, at 348-62. And while courts are required to interpret claims according to the specification of the patent, the specification is to be used only as an interpretive aid, not as substantively determining the boundaries of the patent. Id.
193 Kaplow, supra note 184, at 309.
such as when actors want to know what to expect of the law in order to allocate their investments accordingly. This may be particularly true, for example, when liability for violations is strict, as is the case with patent infringement. Rules are also more costly to draft, however, because they shift onto the drafter the burden of anticipating all the possible contexts in which they might be applied and then clearly addressing each of those possibilities. Standards, by contrast, are less costly to draft but more costly to enforce and apply because they leave such determinations for resolution ex post. Standards are thus more effective in giving content to the law in a more context-dependent and often equitable manner but also lead to more discretionary outcomes that are difficult for parties to predict with certainty.

In the end, all of these differences in cost allocation between the drafters of the law, the courts who must interpret the law, and the public who is subject to the law often equate to a choice in burden shifting. Rules place the initial information burden on the drafting parties, potentially easing the burden on courts and on the public. Standards shift the burden from the drafting parties to the courts in terms of ex post resolution of the law and to the public in terms of potential confusion about the law. The appropriate locus of the burden ultimately depends on who is more efficiently able to bear it. Switching back to patent claims, then, it makes sense that patentees should have to specify the boundaries of their patents ex ante rather than putting the burden on others ex post, as was the case under the central claiming system. Patentees are the parties most intimately acquainted with their own inventions and possess the requisite information on not only the technical nature of those inventions but also what new advances they have contributed to the field. In designing their own inventions, moreover, patentees generally will also have made significant investments in researching what technologies already exist in the field. Accordingly, a patentee’s information costs ex ante are generally much lower than those of a court or the public ex post. To the extent that we have decided to make patent claiming rule-like in its public-notice effects, patentees are best able to bear the burden of doing so.

Patent claims may specify too much up front, however. Again, claims describe inventive ideas that are highly conceptual, complex, and unique and do

194 See Long, supra note 21, at 469.
196 Burk & Lemley, supra note 7, at 1779; see also Daniel A. Crane, Rules Versus Standards in Antitrust Adjudication, 64 WASH & LEE L. REV. 49, 52-55 (2007).
198 Long, supra note 21, at 468.
199 Craswell, supra note 197, at 547.
so in ways that must carefully distinguish all previously known (and sometimes unknown) ideas. The resulting claims therefore often become quite complicated, placing a significant burden on the public and the courts to understand what those claims mean. As noted above, the more complicated a rule or standard is, the greater the costs to the public of understanding it. Such complexity will not necessarily impair the efficiency of a rule or standard, however, if the relevant public already possesses the private information or field-specific knowledge necessary to understand the rule or standard in question. This is believed to be exactly the case with regard to patent claims: patents are generally thought to be most relevant to those working in the same technological field as the claimed invention. Patentees therefore are supposed to draft their claims so that their fellow “PHOSITAs” (“Persons Having Ordinary Skill In The(ir) Art”) would be able to comprehend the claims without undue difficulty. Similarly, a court tasked with interpreting a patent claim should also do so from the perspective of a PHOSITA.

For all the benefits of drafting claims as rules in order to provide greater certainty ex ante, however, patent claim drafters must still contend with a number of factors that ultimately cause a great deal of uncertainty in patent boundaries. One of these factors was discussed above: the highly desirable novelty of patent ideas means that inventors cannot simply refer to previous ideas of categories in drafting their patent claims. A second and perhaps more onerous obstacle to certainty, however, is the unforeseeability of future events that those patent claims will be expected to address. Herein lies the virtue of viewing patent claims as rules, for the spectrum between rules and standards revolves very much around anticipating future events ex ante versus coping with unforeseen events ex post.

The concept of property “metes and bounds,” by contrast, assumes a relatively static res; the value of that property res might vary over time, but the physical things that constitute that res themselves generally do not. Rules of governance, on the other hand, do not necessarily assume any such static existence around which the behavior to be governed will center; rather, the behavior to be governed is unified not by some static tangible good but rather by some harm to be avoided or benefit to be achieved, which themselves can be expected to vary over time as situations and even what is categorized as “harmful” or “beneficial” may change over time.

That is not to say that patent claims are inherently uncertain simply because they are rules rather than property rights. Quite the contrary: if anything,

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201 Although it can of course be argued that real property boundaries are simply another form of rule-making and hence “rules” of exclusion, as they are simply as an ex ante demarcation of between legal conduct or use and trespass as illegal conduct or use. See Smith, supra note 11, at 1744-45, 1784-85, 1793, 1796-97, 1800.
certainty in the interpretation of rules is at least as important as certainty in the interpretation of property boundaries. Nevertheless, uncertainty about legal outcomes arises for a variety of reasons, most of which relate to information costs, including the information costs of anticipating the future.\[^{202}\] Perhaps one of the most challenging obstacles to efficient drafting of public and private laws is anticipating all the contingencies that can arise over time. The vicissitudes of time and changes in economics and technology can be difficult to impossible to predict, particularly where those potential changes are large in number and distant in time.\[^{203}\] Attempting to provide for all possible contingencies could cause drafting and transaction costs to approach infinity.\[^{204}\] Those who draft rules will most efficiently invest in clarifying their intentions and meaning and anticipating contingencies only to the point that the marginal costs thus invested equal the expected returns in clarity and protection from contingencies.\[^{205}\] The prohibitively high information costs of anticipating the future therefore often lead to incompleteness in rule drafting.\[^{206}\] Even bright-line rules are porous at their edges.\[^{207}\] When rules are unable to address unforeseeable future events, then, those who must apply those rules may need to interpret them according to their spirit rather than their letter in order to maintain the purpose of the rule in light of the unforeseeable. To this extent, then, rules such as patent claims may often need to be interpreted in a more standard-like fashion than as pure bright-line rules.\[^{208}\]

Patent claims in particular must contend with at least three types of unforeseeability. One source of uncertainty, as mentioned above, references to previously unrecognized but potentially invalidating prior art may be present to the courts or to the PTO at any point during a patent’s lifetime.\[^{209}\] When such unknown prior art emerges, it is in the interests of both patent holders and alleged infringers to argue that any ambiguities in a claim’s language either does or does not cover the potentially invalidating reference.\[^{210}\] Beyond this possibility, however, are also uncertainty as to two, future technological developments that might change the meaning of the claims and what they do or do not cover;\[^{211}\] and

\[^{202}\] Hadfield, supra note 9, at 547.
\[^{203}\] Cf. Hadfield, supra note 9, at 547-48.
\[^{204}\] Posner, supra note 27, at 1582 (”[P]erfect foresight is infinitely costly, so that, as the economic literature on contract interpretation emphasizes, the costs of foreseeing and providing for every possible contingency that may affect the costs of performance to either party over the life of the contract are prohibitive.”).
\[^{206}\] Hadfield, supra note 9, at 547-48.
\[^{207}\] Hadfield, supra note 9, at 546; Johnston, supra note 9, at 345.
\[^{208}\] Landry, supra note 72, at 92-93.
\[^{209}\] JAFFE & LERNER, supra note 12, at 21; see also infra text accompanying notes 137-144.
\[^{210}\] Burk & Lemley, supra note 7, at 1752-53.
\[^{211}\] Kesan & Banik, supra note 43, at 31-32.
three, unforeseeability as to ingenious ways in which alleged infringers will try to find loopholes that the patent claim drafter did not anticipate. The following will take a closer look at each of these contingencies in turn and how they affect the certainty with which patent claims can be drafted and interpreted.

First, the nature of technology is such that the future of any given invention is inevitably uncertain.\textsuperscript{212} For one thing, an inventor may have difficulty gauging whether any other inventors will enter her same field and either overlap or compete with her invention, how subsequent inventors might improve upon her invention, and even whether market value of her invention.\textsuperscript{213} Indeed, technology often changes so quickly that even within the relatively short twenty-year lifespan of a patent, a claimed invention may become relevant in ways its inventor never expected or it may become obsolete.\textsuperscript{214} The value of technological ideas therefore may vary wildly, not only over time but also across inventions, with some inventions such as NTP’s worth millions and even billions over dollars but the vast majority of patented ideas worth nothing.\textsuperscript{215} And if nothing else, the meaning of technical terminology may evolve over time along with the technology it describes, thereby changing the meaning of patent claims using that terminology in often unexpected ways.\textsuperscript{216} The courts themselves expressly acknowledge this fact by requiring that claim language be interpreted by its meanings at various different times, depending on whether the claim is being evaluated for obviousness or novelty, definiteness, infringement, enablement, and so on.\textsuperscript{217} To understand this, one need only consider how much the term “computer” has changed over time. Decades ago, “computers” were necessarily huge concatenations of processors that used punch cards and filled entire rooms because that was the only “computer” that existed at the time. Today, by contrast, we understand “computers” to be laptops, handelds, desktops, and even computers small enough to be implanted in the human eye.\textsuperscript{218} How is a patentee drafting claims during the era of punch cards write those claims such that they still have meaning twenty years later during an era of floppy disks and hard drives?

Second, it is not just the unpredictability of the law but also the unpredictability of the activities to be regulated by that law that influence whether

\textsuperscript{212} Smith, \textit{supra} note 11, at 1744-45, 1784-85, 1793, 1796-97, 1800.
\textsuperscript{213} Burk & Lemley, \textit{supra} note 7, at 1748 (“But peripheral claiming stands this custody on its head, purporting to set forth the maximal boundary of the patent grant during the application process, before the measure of the inventor’s contribution or the different variants that competitors might adopt can be properly assessed.”).
\textsuperscript{214} Burk & Lemley, \textit{supra} note 112, at 1591; Burk & Lemley, \textit{supra} note 7, at 1748.
\textsuperscript{215} Lemley, \textit{supra} note 19, at 1053.
\textsuperscript{216} BESSEN & MEURER, \textit{supra} note 10, at 67; Burk & Lemley, \textit{supra} note 7, at 1749, 1757 (citing Lemley, \textit{supra} note 7); Schwartz, \textit{supra} note 12, at 260.
\textsuperscript{217} Lemley, \textit{supra} note 7, \textit{passim}.
a standard or a rule will be more effective. The scope of a patent claim is often uncertain because of the variety of ways in which others might unwittingly or even intentionally reproduce the idea behind an invention. Patentees will generally endeavor to draft claims that expressly cover all foreseeable but insignificant variations on their claimed inventions, but often those variations are limited in variety only by the ingenuity and imaginations of potential infringers.\(^\text{219}\) The costs of drafting against all such potentially infringing variations therefore quickly become prohibitive, resulting in patent claim language containing inadvertent ambiguities and other loopholes that accused infringers will exploit in an effort to avoid liability. Given that it is these latter cases that are most likely to be litigated, moreover, the cases that most often come to the attention of the court and the public are exactly those in which there is some uncertainty as to the proper scope of a patent’s claims.

Certainty in the law depends upon the ability to discern \textit{ex ante} not only what is desirable and undesirable behavior but also what is likely to happen in particular contexts and how widely those contexts may range. In other words, the law may need to anticipate a broad variety of possible eventualities in order to specify the proper consequences. The optimal precision of a rule thus depends on the variety of activities to which the rule may apply. On the one hand, wide differences in the value of possible activities increase the value of certainty in differentiating between them as permissible versus impermissible.\(^\text{220}\) Indeed, the more often a particular activity recurs, the more the law may wish to specify with precision how that activity will be treated under the rule. Furthermore, the more often a particular activity occurs and the more familiar we become with its permutations, the more efficiently we are able to anticipate its consequences and to address it \textit{ex ante} in the form of a rule.\(^\text{221}\)

On the other hand, where the probability of any one event is low and the likelihood of it recurring even lower, the expected benefit of investments in greater certainty are less. Rather, when the likelihood of a given act is low or when the information costs of predicting the act are very high relative to harm from failing to do so, it is often more efficient simply to judge those activities that ultimately do occur on an individualized basis under a standard \textit{ex post}. Thus, when the activities to be regulated vary greatly, particularly over time, devising a rule \textit{ex ante} to govern those activities will be not only costly but also inefficient; a simpler standard may more efficiently provide the necessary flexibility without sacrificing the predictability that could not have been achieved in such


\(^{220}\) Burk & Lemley, supra note 7, at 1781-82; see also Kaplow, supra note 184, at 309. Conversely, the lower the variance between acts, the less efficient investments in accuracy become. Id.

\(^{221}\) Kaplow, supra note 67, at 563.
circumstances anyway. In other words, when the activities in question are heterogeneous, a standard may be better suited to address them because the activities themselves at the time that they occur may provide the information necessary to determine their culpability.

Because the ways in which potential infringers may effectively copy a patented idea are indeed heterogeneous and perhaps even infinite in variety, patent claims suffer the same incompleteness as any other rule in the same situation. For example, could NTP have anticipated in 1991 that, less than twenty years later, emails users would be not only downloading their messages wirelessly but also sending them and that they would be using not only devices specially designed for the purpose but also laptops, tablets, and smartphones to do so? And yet, according to NTP anyway, all of these technologies infringe the inventive idea on which it first filed back in 1991 for patent protection. How can this be the case? The patent system is all about inventive new ideas, and this applies with no less force to possible ways of using another’s original idea that it does to inventing such original ideas in the first place. The way that others might effectively emulate an inventive idea are likely themselves to be novel because of the inevitable influence of technology advances. Again, most patent infringement is inadvertent and merely the side effect of good faith efforts by fellow inventors to develop their own original ideas, often channeled by the state of the art or the industry toward the same directions as the patented idea they unwittingly infringe. The resulting infringement is thus often the infringing inventor’s own often creative slant on what turned out to be a common inventive idea. True, some of these separately developed variations on nonetheless patented ideas may be so unique and inventive themselves as to be separately patentable, but as long as they overlap with the earlier patented idea, they could very well infringe the patent. Yet other variations, however, will be much less inventive and may be so insignificantly different from the patented invention as to be virtually identical infringing. Nevertheless, unless the claims covering the infringed invention clearly cover even such insignificantly different variations, the variations will be

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222 Isaac Ehrlich & Richard A. Posner, *An Economic Analysis of Legal Rulemaking*, 3 J. LEGAL STUD. 257, 273-74 (1974) (noting that drafting costs increase even more when rules have to be modified to meet changes over time).


225 *See supra* text accompanying notes 177-179.

226 In order to be found infringing, the variation must contain all the same “elements” or components as, and so must overlap completely with, the claimed invention. The infringing invention need not be identical to the claimed invention, however, and may additional elements that are themselves separately patentable. This was the case with RIM’s patented technology and how it infringingly overlapped with NTP’s patents. *See supra* text accompanying notes 110-113.
found non-infringing as a matter of law. It is therefore incumbent upon patent drafters to try to anticipate as many of these overlapping variations as possible.

In this way, patents again differ starkly from real property. Real property rights of course suffer from the uncertainty of unforeseen events but not nearly to the same extent as patent rights do.\textsuperscript{227} Real property rights may be affected by unexpected zoning changes, environmental issues, nuisances, and even servitudes, but all of these tend to be less frequent and less unexpected than unforeseen contingencies relating to patented inventions, largely because of the relatively more static nature of real property.\textsuperscript{228} In addition, real property regimes typically employ a variety of measures to protect against such unexpected events, such as zoning laws and variances, limitations on cognizable servitudes, the \textit{sic utere} doctrine, and other quiet enjoyment doctrines.\textsuperscript{229} Unlike patented ideas, moreover, which are often feared as monopolistic exceptions to what would ideally be a free exchange of ideas, quiet enjoyment of real property is often viewed as a basic right of ownership. Thus, interferences with quiet enjoyment of real property are seen as nuisances or trespasses, but in patent law they are seen as competition to be enjoined only reluctantly and otherwise encouraged. This is consistent with the overarching differences in the purposes of the patent system and real property regimes. While real property rights are often upheld as fundamental to personhood as well as a free-market economy, patent rights are considered an “embarrassment” to competition.\textsuperscript{230} Patent drafters are therefore left to their own hard luck if they fail to protect their inventive ideas from interference by others.

Furthermore, a patent drafter’s ability to hedge against unforeseeable future events is obviously limited. Just as the costs of describing every possible embodiment of an inventive idea are impossibly high, so too are the costs of describing every possible variation on the inventive idea. NTP could no more have described every single conceptual variation on its wireless email concept, such as RIM’s BlackBerry or even AT&T’s and Motorola’s much later developed smartphones, than it could have described each possible way of physically embodying such systems. And NTP and other claim drafters certainly cannot be expected to describe physical embodiments or conceptual variations that were unforeseeable and perhaps not even possible at the time of drafting, just as they cannot be expected to anticipate the emergence of unknown prior art, future changes in language, or other unforeseeable contingencies. To ask them to do otherwise would be to stretch the limits of reality.

Rather, those who draft rules such as patent claims will most efficiently invest in both clarifying meaning and anticipating contingencies only when it provides a benefit in guiding courts and other parties in interpreting and

\textsuperscript{227} Lemley & Shapiro, \textit{supra} note 138, at 76.
\textsuperscript{228} Duffy, \textit{Isolationism}, \textit{supra} note 11, at 1085.
\textsuperscript{229} Newman, \textit{supra} note 11, at 106-07.
\textsuperscript{230} Carter, \textit{supra} note 125, at 716-17, 718.
understanding those rules. Where the stakes at risk are exceptionally high, parties will find it worth their while to invest more in clarifying ambiguities and anticipating contingencies. Where the stakes are lower, on the other hand, drafting parties may rationally forgo the cost of clarification and save particularly challenging or unforeseen contingencies for resolution ex post. Further investments in clarity and completeness yield decreasing marginal returns. This is particularly true when the probability of a particular contingency is low relative to the costs of providing for it – the less likely a particular contingency, the less valuable are investments in providing for it. We can therefore expect parties rationally to invest in drafting for the most probable or important contingencies first, then the second most probable or important, and so on, until the marginal cost of drafting for an additional contingency exceeds the expected marginal returns. The resulting rules may therefore be efficient and yet incomplete and ambiguous.

The problem, however, is that even the most carefully drafted rules are particularly prone to such opportunism because they state up front not only to what behavior they do apply but also, by virtue of their incompleteness, effectively to what behavior they do not apply. Indeed, rules limit the factors that can be considered to those specified within the rule, and those factors are often only imperfect proxies for effecting the underlying purpose of the rule. This is particularly true when the possible ways of circumventing or negating the rule are highly heterogeneous and unpredictable, as is the case with patent claims. Under such circumstances, the probability of any single circumvention or negation materializing from the myriad of possible such contingencies may be de minimis, but the sum total odds of at least one materializing increases greatly and may even approach unity. The costs of drafting against all such contingencies, on the other hand, are still prohibitive and may approach infinity if numerous. Thus, even though a patentee may have rationally and efficiently decided not to

231 Schwartz & Scott, supra note 205, at 545; Posner, supra note 205, at 544.
232 Scott & Triantis, supra note 58, at 819; Posner, supra note 27, at 1584, 1610.
233 Meurer & Nard, supra note 84, at 1952; see also Kaplow, supra note 67, at 563 (“Designing a rule that accounts for every relevant contingency would be wasteful, as most would never arise.”); Posner, supra note 205, at 544 (similar).
234 Rose, supra note 200, at 592.
235 Ehrlich & Posner, supra note 222, at 258; Kaplow, supra note 67, at 565; cf. Burk & Lemley, supra note 7, at 1762 (citing Autogiro Co. of Am. v. United States, 384 F.2d 391, 397 (Ct. Cl. 1967) (“An invention exists most importantly as a tangible structure or a series of drawings. A verbal portrayal is usually an afterthought written to satisfy the requirements of patent law. This conversion of machine to words allows for unintended idea gaps which cannot be satisfactorily filled.”).
236 Fromer, supra note 21, at 757 (noting that while patentee must anticipate all loopholes, competitors need find only one loophole to escape liability); Meurer & Nard, supra note 84, at 1998; cf. Posner, supra note 27, at 1602 (“[W]hile the probability of a particular contingency materializing may be slight; the probability that some contingency in what may be a very extensive array of low-probability events will materialize may be great.”).
invest in drafting against all possible contingencies, it is exactly these contingencies that potential infringers will seek out if they want to free-ride on the patent or at least escape liability for inadvertently infringing it. A patentee therefore cannot rely on being protected against all contingencies and may very likely have to litigate at least one, thus bringing almost certain uncertainty as to the patent’s scope from the patentee’s perspective. In this way patent claims, like tax codes, are particularly subject to opportunistic exploitation of ambiguities and loopholes to avoid liability. A taxpayer will use the loopholes to avoid paying taxes, and the patent infringer will use the loopholes to free-ride on the patent, to avoid infringement liability, or to try to invalidate the patent. In fact, inventors should expect that potential infringers, or at least their legal counsel, will affirmatively look for such loopholes. Thus, while the patent drafter has to anticipate and try to cover all possible embodiments of, variations on, and risks of invalidation of their inventive ideas, potential infringers have to find only one loophole to effectively circumvent all of the drafter’s precautions.

The inability to draft against all possible contingencies is thus yet another reason why patent claims describe an inventive idea by its concepts and functional relationships, not by its varied embodiments. Describing all possible embodiments would be not only prohibitively resource-intensive but also yet another obstacle to anticipating future contingencies such as unforeseeable variations on one’s inventive theme or even changes in technological language. Functional and conceptual claiming, by contrast, is extremely useful in addressing exactly these kinds of contingencies. Describing an inventive idea by its conceptual and functional relationships rather than simply by its physical characteristics allows claim drafters to explain in real terms why future technology, unknown and unforeseeable at the time of drafting, might nonetheless be merely infringing variations on the patented idea. It is the shared functional and conceptual characteristics that define what infringes a claimed inventive idea, so by expressly setting forth those defining characteristics, patent claim drafters can protect themselves to some extent against changes in technology or terminology not necessarily relevant to their inventive idea or how others might infringe the patent on it. That being said, of course, claim drafters must nevertheless use language to describe even the most functional and conceptual of characteristics and are therefore still subject to the inconstancy of language as technology and usage evolve over time.

Because it thus hone in on what does and does not constitute infringement of a patent rather than merely approximating it by describing embodiments as

237 Newman, supra note 11, at 80, 81.
238 RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW 95-98 (6th ed. 2003); Rose, supra note 200, at 592, 596-99.
239 Rose, supra note 200, at 592.
240 Burk & Lemley, supra note 7, at 1752-53; Meurer & Nard, supra note 84, at 1975 (as cited in Fromer, supra note 21, at 757).
examples of an inventive idea, functional and conceptual claiming in many ways increases the clarity of patent boundaries. Conceptual characteristics are still abstract characteristics that cannot be easily observed or measured, however, and in this way create concomitant uncertainties as well. This has lead a number of critics to charge that patentees intentionally draft not just abstract but also strategically vague claims in hopes that they can later parlay that ambiguity into greater patent scope later, should the claims need to be construed in the course of litigation.  

This is undoubtedly true for some small number of patent claim drafters, for the greater a patent’s scope, the more valuable the patent may become. But the larger truth is that most “vague” claim language is not strategic gaming but rather, for all the reasons explained above, simply the patentee’s good faith effort to protect her inventive ideas against an uncertain future. Indeed, a patentee’s best interests lie in avoiding such uncertainty. Uncertainty in patent claim boundaries would hinder patentees in licensing their patents, making investment decisions, and otherwise throw the value of patents into doubt.

Patentees have other reasons to avoid uncertainty as well, primarily due to the risk of invalidity. First, the Patent Act requires that patents fully enable the patentee’s fellow PHOSITAs both to make and to use the claimed invention and that the patents do so in an adequately detailed and “definite” manner. Patent claims that fail to meet either requirement are considered invalid. Second and perhaps more importantly, claims that may be interpreted too broadly are at much greater risk of running afoul of invalidating prior art references. As mentioned above, patentees need to differentiate their claimed inventions from known technologies in their art, and this often relies on very carefully and precisely drawn lines between what is their novel contribution to the art and what existed before. If those lines are too vague, however, a patentee’s claim language could be rejected by the PTO or worse, later invalidated by a court. In fact, patentees are believed to draft their claims more narrowly because of their fears of unknown but invalidating prior art references. Often, these prior art references appear only when a highly motivated defendant digs up the references as part of its defense to alleged infringement, and the validity of a claim or entire patent in light of those references could easily depend on how the patent’s claims are construed. Patentees hedge against this risk in part through multiple-claim drafting techniques. Multiple-claim drafting which allows patentees to cover their inventive ideas through pyramidally structured independent and dependent claims

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243 Burk & Lemley, supra note 112, at 1593-93.
244 Kesan & Banik, supra note 43, at 25; Lemley & Shapiro, supra note 138, at 76, 80.
of varying breadth.\textsuperscript{245} That way, if and when a broader version of a claim on an inventive idea is invalidated, patentees will at least still retain rights over the remaining narrower versions.\textsuperscript{246} Even the most strategic form of multiple-claiming will not provide complete insurance against unknown but invalidating prior art, however. Sacrificing patent scope by narrowing one’s claims further reduces the chances that a patentee will inadvertently, and invalidly, draft claims that cover prior art.\textsuperscript{247} Risk-averse patentees will therefore tend to draft their patent claims conservatively.

Although most patentees may not intentionally draft ambiguous patent claims, however, the abstractness and novelty of inventive ideas and the unforeseeability of the future means that patent claims will inevitably be both incomplete and uncertain. Patentees and other rule-drafters in similar circumstances therefore may rationally rely on courts to resolve unaddressed contingencies \textit{ex post}.\textsuperscript{248} In fact, for many such rule-drafters, postponing resolution of many issues can be beneficial because the information necessary not become available until later. This is particularly true for patent claims. First, the nature of technological progress is such that circumstances will change rapidly over time, particularly if the invention at issue is pioneering.\textsuperscript{249} Second, the other technologies potentially infringing patent claims is often so heterogeneous that needed information about those activities may be more efficiently collected \textit{post hoc}. Finally, the necessary information about those other technologies typically will lie in the hands of alleged infringer and will not be available until ordered by a court. Many commentators therefore consider relying on \textit{ex post} resolution of many issues, including validity, to be more efficient because those issues are often too information-intensive to resolve efficiently at the drafting and examination stage.\textsuperscript{250}

Postponing certain issues until later makes drafting parties more dependent on courts, however, and subjects them to the court’s potential errors and uncertainty, especially given that the court is being asked to resolve exactly those issues for which resolution has not been explicitly provided.\textsuperscript{251} And while patentees may efficiently postpone complete resolution of patent scope until litigation, however, the courts charged with determining patent scope under such circumstances face their own cost-benefit analyses in struggling to achieve optimal outcomes. Most importantly, courts must figure out how to deal with the unaddressed contingencies in patent claims and with the inevitably

\begin{itemize}
\item \textsuperscript{245} Fromer, \textit{supra} note 21, at 758 (and sources cited therein).
\item \textsuperscript{246} Meurer & Nard, \textit{supra} note 84, at 1975; see also 35 U.S.C. § 112, ¶ 3 (allowing multiple dependent claiming).
\item \textsuperscript{247} Kieff, \textit{supra} note 38, at 101, 104.
\item \textsuperscript{248} Rose, \textit{supra} note 200, at 600.
\item \textsuperscript{249} Long, \textit{supra} note 21, at 512-13.
\item \textsuperscript{250} Kieff, \textit{supra} note 38, at 73.
\item \textsuperscript{251} Posner, \textit{supra} note 27, at 1583-84, 1588; Scott & Triantis, \textit{supra} note 58, at 820.
\end{itemize}
incompleteness they create. The case law illustrates how the courts have struggled mightily with patent claim construction and have yet to devise a unified body of construction canons that yield consistent results. Given the inherently uncertain nature of the patent claims they are tasked with interpreting, one can hardly blame the courts for being unable to translate this into certainty. Some of the obstacles to predictable patent claim interpretation simply unavoidable; the esoteric nature of the technologies claimed and the inherent limitations of language both hinder non-specialist courts in their efforts to interpret patent claims.\footnote{Fromer, supra note 21, at 758; see also Kaplow, supra note 67, at 562-63; Schwartz, supra note 12, at 259.}

Nevertheless, analyzing patent claiming as a form of rule-making suggests that at least some part of the courts’ difficulties with patent claim construction is that they fail to appreciate how patent claims deviate from the ideal rule. The result has been a mishmash of interpretive approaches that seem simply to ignore the shortcomings of patent claims as rules and therefore create their own brand of uncertainty. In other ways, however, the case law on patent claim construction suggests that the courts do indeed understand these shortcomings and have therefore adopted a few interpretive canons that in fact treat patent claims less like pure rules and more like mixtures of rules and standards. These latter canons may better address many of the inherent uncertainties in patent claiming in a way more commensurate with the purposes of the patent system.

For examples of how interpreting patent claims as if they were ideal rules creates yet further uncertainty, one need only look at the modern canons of claim construction.\footnote{See generally R. Polk Wagner & Lee Petherbridge, Is the Federal Circuit Succeeding? An Empirical Assessment of Judicial Performance, 152 U. PA. L. REV. 1105 (2004); John R. Thomas, Formalism at the Federal Circuit, 52 AM. U.L. REV. 771, 796-97 (2003).} The federal district courts are given the discretion to construe patent claims in a mini-hearing called a Markman hearing and may do so at whatever point in the overall trial that they see fit, even before discovery has been conducted.\footnote{Burk & Lemley, supra note 7, at 1759; Cotropia, supra note 38, at 71; Moore, supra note 13, at 28.} The wording of the claim should then be given its “plain and ordinary meaning” as understood by a PHOSITA, unless something in the patent demonstrates that the patentee intended to assign some other more specialized meaning to a particular term.\footnote{Burk & Lemley, supra note 5, at 33; Moore, supra note 13, at 28.} Under this approach, then, judges would simply have to familiarize themselves with the relevant technology and terminology in order to be led to the “correct” interpretation of patent claims. If patent claims were indeed clear on their face the way the ideal rule – or property metes and bounds – are supposed to be, this procedure would be fairly straightforward. As the discussion above shows, however, patent claims are seldom clear, and usually by the time the meaning of a patent claim is being litigated, that meaning is as clear as mud. Construing them through techniques better suited for bright-line
rules therefore makes no sense and indeed just causes more problems.

For example, construing patent claims during a Markman hearing conducted before any evidence has been presented or even discovery conducted deprives the court of much of the information necessary to understand them. In fact, patent claim construction is often so information-intensive that courts have been known to modify their initial interpretations in light of new information presented later at trial.256 Likewise, interpreting patent claims through the eyes of the relevant PHOSITA is a great idea on its face, but the PHOSITA is an uncertain lodestar itself. From what time period should a court draw its PHOSITA? What specialized knowledge can we expect the PHOSITA to have? And what would a PHOSITA understand a claim to mean if it describes an inventive idea that is novel and therefore never seen or even imagined by any PHOSITA? All of these are highly context-dependent questions that defy easy answers.257 Perhaps the most rule-oriented of these construction canons, however, is the requirement that claims be interpreted according to their “plain and ordinary” meaning. Does the word “computer” have a plain and ordinary meaning? Do any words, including simple ones like “a,” “or,” “to,” “on,” “about,” “including,” and “through”?258 Or are the all context-dependent, such that they may vary in definition not only according to how they are used in a claim but also at what point in time the claim is being construed. For the purposes of determining infringement, a claim’s meaning is interpreted as of the time of the alleged infringement, which will of course vary from accused infringer to accused infringer.259 To suggest that a claim term might possess a “plain and ordinary” meaning, then, seems to fly in the face of how language is actually used and understood. Not surprisingly, under such confusing guidance, the trial courts and even the Federal Circuit has come up with a multitude of differing and often conflicting approaches to interpreting patent claims.260

Perhaps the greatest drawback of treating patent claims purely as rules, however, is that such treatment risks losing sight of the very purpose of patent claims. Patent claims, like all rules, are often limited in their ability to effect the underlying purpose of the rule when they are unable to address all the contingencies to which they will be applied. Rules are inevitably incomplete in such situations.261 This is why some ingenious taxpayers continue to be able to find loopholes in the tax codes and why yet other hapless individuals are held

257 See generally Burk & Lemley, supra note 7, at 1755; Golden, supra note 13, passim.
258 Burk & Lemley, supra note 5, at 53.
259 Lemley, supra note 7, at 109-110.
261 Rose, supra note 200, at 592.
liable in situations in which a sense of fairness or efficiency might dictate otherwise. Both of these false-negative and false-positive types of mismatch blunt the ability of rules to incentivize desirable and deter undesirable behavior. Applying rules as if they were optimal thus tends to be both under- and over-inclusive.

The unpredictability of the future in technological and scientific fields, changes in language over time, and even the difficulty of describing technological concepts through the written word all would therefore suggest that courts interpret patent claims not purely as rules but also as standards. In fact, a few suggest that we should abandon the modern patent claiming system altogether and instead invest in other ways to improve the efficiency and even fairness of the patent system. How can courts justify such treatment, however? The more standard-like central claiming system has long since been rejected as creating too much uncertainty, particularly within the patents-as-property paradigm of patent claiming. And even if we view patent claims as not just rules of exclusion but also as rules of governance, that is not the same thing as saying that patent claims should be interpreted as standards rather than rules. Rules of governance have more in common with standards than rules of exclusion do, however, for governance rules often allow for the same balancing of interests and context-dependence as do standards.

And indeed, the courts overall approach to interpreting patent claims appears to be consistent with the view that patent claims are in fact rules of governance. If nothing else, the various possible canons of construction that the courts have not adopted are instructive. If certainty in patent claim meaning were truly the only or even primary goal of modern patent claim construction, there are a number of more bright-line techniques that they could employ. For example, the courts could simply place the burden of uncertainty on one party or the other through interpretive approaches such as the doctrine of contra proferentem. Under this doctrine, patentees would bear all responsibility for the fact that their claims are not complete and all unaddressed contingencies would automatically be ceded to potential infringers as liability-free loopholes. The virtue of this principle, of course, is that it provides both courts and potential infringers with greater certainty at the expense of the patentee: if it is not clearly in the patent claim, it does not belong to the patentee.

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262 Id. at 596-601.
264 Burk & Lemley, supra note 7, at 1745; Fromer, supra note 21, at 731-35.
266 Bradley D. Liggett, Contra Applicantem or Contra Proferentem Applicatio: The Need for Clarification of the Doctrine of Contra Proferentem in the Context of Insured-Created
courts used to construe claims to avoid invalidating it and thereby undermining the patentee’s expectations, which tends to favor the patentee over the alleged infringer. Modern courts have thus far seemed reluctant to employ either interpretive approach, however, opting instead to spotlight other goals such as equity.

Such equitable concerns are palpable, if not necessarily expressed, in the way that courts construe patent claims. On the one hand, burdening subsequent inventors with liability for infringing another’s patent while creating utility of their own is often unfair and perhaps not in the best interests of society. On the other hand, failing to protect patentees against incursions on what should be their patent scope simply because of the limits of language is inequitable. And because patenting an invention may hinder further improvements on it and in any event is designed to hinder competition in the form of copying, the law relies on all the patentability criteria as a way of avoiding patents that may harm not only subsequent technological progress but also competition within the market.

According to the courts, none of these is a legitimate reason to interpret any particular claim in any particular way, but they are clearly compelling concerns that may influence a court’s choice to emphasize one interpretive approach in one case while emphasizing a different approach in another case. For example, commentators have noted that the courts will even change the meaning of defined patent law terms such as “means,” “consisting of,” or “comprising,” if the results would otherwise be absurd. The judiciary’s awareness of the difficulties of drafting airtight patent claims and other equitable concerns may therefore be yet another reason why patent claim meaning is often uncertain.

Equitable concerns also expressly influence the way courts interpret patent claims, however. In particular courts sometimes choose to compensate for unforeseen contingencies by interpreting patent claims in a more standard-like fashion. Indeed, laws usually do not exist in clear rule or standard format and

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270 Burk & Lemley, supra note 7, at 1793-94.
271 Landry, supra note 72, at 92-93.
272 Johnston, supra note 9, at 364.
exhibit characteristics of both.\textsuperscript{273} Courts in infringement cases therefore may resort to the “doctrine of equivalents,” a standard that allows courts to find infringement even when the accused technology does not lie within the literal scope of a patent claim but nevertheless is the “equivalent” of the claimed invention in the way that it functions, the means it uses, and the results it yields.\textsuperscript{274} Even though patentees may not have invested the foresight or, in the case of equivalent technologies not even invented until after the patent was drafted, the clairvoyance to claim expressly all equivalents of their patented innovations, they can still enjoy protection against such infringement by the assistance of the courts. Many commentators and jurists have complained that the doctrine of equivalents injects too much uncertainty into patent claim scope, but perhaps such uncertainty is not entirely without benefits. By discouraging exploitation of loopholes in patent claims, the doctrine of equivalents may deter opportunism in a way that ultimately increases overall social welfare.\textsuperscript{275} Similarly, the means-plus-function format allowed under § 112, ¶ 6 of the Patent Act allows patentees not only to describe an element of their inventive idea by its function rather than its structure but also allows them later to claim patent scope over anything structurally equivalent to examples of that element that they provided in their patent’s specification. Equivalence through means-plus-function claiming is thus obviously more limited than equivalence under the doctrine of equivalents, but both serve similar purposes in allowing courts more equitable discretion in how they interpret and apply patent claims.\textsuperscript{276} In particular, both means-plus-function claiming and the doctrine of equivalents treat patent claims more as if they were standards and less like pure rules, an approach more in keeping with the various differences between patent claims and ideal rules.

\textbf{CONCLUSION}

While obviously desirable, certainty in patent claims comes at a cost and that some level of uncertainty is inevitable.\textsuperscript{277} More importantly, patent claims by their very nature will inevitably be more uncertain in their “boundaries” than real property boundaries. As such, it seems odd that so many critics complain that the patent system is necessarily failing simply because patent boundaries are less certain than real property boundaries. There are simply too many differences between the patent system and real property regimes for any meaningful comparison to be made between the two. Indeed, many take issue with this characterization of patents as property and instead argue that they can better be

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\footnotesize\textsuperscript{273} Rose, supra note 200, at 593.
\footnotesuperscript{274} Burk & Lemley, supra note 7, at 1772; see also Smith, supra note 11, at 1807.
\footnotesuperscript{275} Rose, supra note 200, at 600.
\footnotesuperscript{276} Intellectual Science and Technology, Inc. v. Sony Electronics, Inc., 589 F.3d 1179, 1183 (Fed. Cir. 2009).
\end{flushleft}
described as rules of governance that define not so much the metes and bounds of a property res but rather the contours of desirable and undesirable behavior. In the end, however, patent claims are undoubtedly a little of both: property boundaries as far as they define near-absolute rights of exclusion over an inventive idea, but rules of governance in terms of how they affect other’s rights to use their property in ways that copy that inventive idea.

Regardless of how we characterize patent claims, moreover, we must be cognizant of why they are inevitably uncertain in their meaning and boundaries. The conceptual and unavoidably abstract nature of patent claims; the desired novelty of the patent res, and the last but not least, the unpredictability of future developments in technology mean that patent claims can never neatly establish expectations ex ante the way an ideal rule might. Instead, patents are perhaps best interpreted as a combination of rules and standards: designed for public notice but necessarily incomplete as well as affected by equitable concerns, limiting the clarity with which they are able to provide that notice. This has implications for how courts should interpret patent claims. Interpretive methods that simply assume that patent claims are rules and present everything that needs to be known about the law will undoubtedly run into problems and perhaps create uncertainty themselves. Interpretive methods that are designed for blends between rules and standards, on the other hand, may be a suitable fit for patent claims. Approaches such as the doctrine of equivalents, means-plus-function claiming, and even the now-discarded reverse doctrine of equivalents may therefore be much more useful than currently appreciated.

The analysis here is by no means an argument that our current patent system is perfect or even that it is working well. Indeed, many legitimate complaints can be and have been made about the patent system, including complaints about patents being granted on obvious or already well-known technology or patents being used to hold up important social welfare advances such as breast cancer detection and treatment. Nor is this Article intended to be a conclusive analysis of the issues discussed. Without addressing any particular industry affected by patent law and without further empirical support, the conclusions offered are necessarily preliminary and tentative. Rather, the analysis here argues only that any particular focus on patent claims and claim construction as a way of improving the overall function of the patent system must take into account the particular features of that system.

278 JAFFE & LERNER, supra note 12, passim.