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Grading Patent Remedies: Dependent Claims and Relative Infringement

Daniel Harris Brean

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Grading Patent Remedies

DEPENDENT CLAIMS AND RELATIVE INFRINGEMENT

Daniel Harris Brean[†]

ABSTRACT

Patents define an inventor's exclusive rights by reciting essential aspects of the invention in sentences called claims. The claims are drafted in varying degrees of technical specificity, such that each claim is legally distinct—some may be valid or infringed while others are not. Most commonly, this variation is accomplished by using a combination of “independent” and “dependent” claims. Independent claims stand alone, while dependent claims incorporate by reference all the features recited in the independent claims but go on to add further features or details. The result is a range of potential infringing activity that triggers liability, from the broadest, most conceptual claims to the narrowest, most concrete claims.

Yet when it comes time to remedy infringement, this range of infringement is too often treated as meaningless. Parties rarely bother to distinguish between claims when assessing damages or injunctive relief. And courts hold, for example, that damages owed for infringing one claim is no different than the damages for infringement of any other claim in the patent. This is not consistent with the law or common sense. Not every claim is of equal technological or societal value, nor is infringement of every claim equally harmful to the patent owner. Parties and courts should start paying more attention to the relative significance of the patent claims involved.

This article focuses on dependent claims as a particularly useful vehicle for evaluating relative patent remedies between claims. Any two patent claims can be compared, though their relative scopes can be debatable when, for example, two claims are directed to alternative embodiments. But dependent claims are, by definition, narrower in scope than their base independent claims. Dependent claims also are commonly employed to expressly cover commercial products or preferred embodiments of inventions. As a result, dependent claims often protect the core and most detailed disclosures of the patent specification, occupying the most important competitive space to the patent owner. The relative value of those claims to patent owners, infringers, and the public, should be evaluated as part of any sound patent remedies assessment.

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INTRODUCTION

In the U.S. patent system, inventors can define their own exclusive rights. At the end of their patent applications, inventors “claim” their inventions by reciting what amounts to a description of the invention’s essential features in sentence form.¹ The claims are “peripheral,” in that they identify the conceptual boundaries of the invention rather than any specific product or embodiment of the invention within the periphery.² The claim effectively defines the limits of the exclusive right to which the inventor believes he or she is entitled. If the claim language recites patentable subject matter,³ a patent is issued and the patent owner is granted the right to exclude others from practicing the invention within the scope of the claim.⁴

Inventors usually include multiple claims in their applications, each claim reciting the scope of the invention to a different degree of technical specificity, and all such claims might ultimately be granted and included in the patent. Some claims will define the invention more broadly (e.g., reciting only certain essential elements of the invention), while others will define the invention more narrowly (e.g., reciting certain implementation details, selected materials, or optional features). Most commonly, this is accomplished by including a combination of “independent” and “dependent” claims.⁵ Independent claims stand alone and recite a complete invention. Dependent claims incorporate by reference all the features recited in the independent claims but go on to add further features or details.⁶ Dependent claims are thus narrower in scope than the broader independent claims from which they depend. In a sense, this causes

¹ 35 U.S.C. § 112(b) (2012 & Supp. V 2018) (“The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.”).

² See Dan L. Burk & Mark A. Lemley, *Fence Posts or Sign Posts? Rethinking Patent Claim Construction*, 157 U. PENN. L. REV. 1743, 1744 (2009) (“In modern American patent doctrine, we define what the patentee owns not by what she actually built or disclosed, but by what she *claimed*. Courts and commentators regularly analogize patent claims as akin to the ‘metes and bounds’ of a real property deed, defining the outer boundaries of a ‘property’ right conferred on the patentee. According to this view, known as the *peripheral* claiming approach, words of a claim form a sort of conceptual ‘fence’ that marks the edge of the patentee’s rights.” (footnotes omitted)).

³ See 35 U.S.C. §§ 101–103, 112.

⁴ *Id.* §§ 154(a)(1), 271; *Astrazeneca AB v. Mut. Pharm. Co.*, 384 F.3d 1333, 1336 (Fed. Cir. 2004) (“It is axiomatic that the claims mark the outer boundaries of the patent right to exclude.”).

⁵ 35 U.S.C. § 112(c) (“A claim may be written in independent or, if the nature of the case admits, in dependent or multiple dependent form.”).

⁶ *Id.* § 112(d) (“[A] claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.”).

redundancy—to infringe the narrower dependent claim is necessarily to infringe the broader independent claim as well.

As this article will show, dependent claims were originally conceived as a means to boost examination efficiency, but they have come to serve other purposes and otherwise influence how the patent system operates. While many such aspects of dependent claiming have been discussed by commentators,⁷ this article will provide some much-needed scholarly attention to the role that dependent claims can play in setting proper patent remedies.

This article proceeds in four Parts. Part I introduces the basic legal and practical attributes of dependent claims, including how they originated to improve examination efficiency. Part II demonstrates how dependent claims have since evolved to serve a variety of functions beyond examination efficiency, from allowing patent owners to hedge their bets on claims being both valid and infringed, to expressly protecting commercial products, to signaling the core or most important embodiments of the invention. Part III

⁷ Notable scholarship concerning dependent claiming has included:

(1) Discussions of claim differentiation doctrine and other claim construction issues. *See, e.g.*, Neil Barnes, *Cracking the Claim Construction of “Code” in Interdigital v. International Trade Commission*, 14 N.C. J.L. & TECH. ON. 69 (2012); Tony A. Gayoso & Irving N. Felt, *Can a Patent Claim that Refers to Another Claim be Independent? Pfizer v. Ranbaxy Laboratories Reconsidered*, 89 J. PAT. & TRADEMARK OFF. SOC’Y 740 (2007); Mark A. Lemley, *The Limits of Claim Differentiation*, 22 BERKELEY TECH. L.J. 1389, 1396 (2007); Peter S. Menell et al., *Patent Claim Construction: A Modern Synthesis and Structured Framework*, 25 BERKELEY TECH. L.J. 711, 754 (2010); Jason N. Nolan, *Formalism and Patent Claim Drafting: The Status of De Facto Independent Claims Under the Fourth Paragraph of 35 U.S.C. § 112*, 19 TEX. INTELL. PROP. L.J. 263 (2011); Landon M. Reeves, *Claim Construction and Unpredictably Limiting the Patentee’s Rights*, 37 U. ARK. LITTLE ROCK L. REV. 333 (2015);

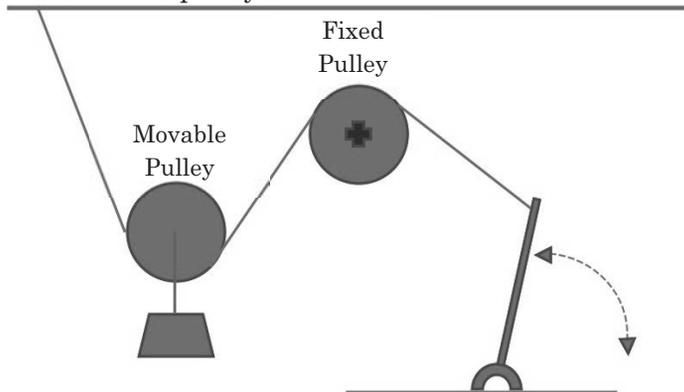
(2) Prosecution history estoppel when dependent claims are rewritten in independent form during prosecution, in light of *Honeywell Int’l, Inc. v. Hamilton Sundstrand Corp.*, 370 F.3d 1131 (Fed. Cir. 2004). *See, e.g.*, Matthew Eggerding, *Dependent Patent Claims and Prosecution History Estoppel: Weakening the Doctrine of Equivalents*, 50 ST. LOUIS L.J. 257 (2005); Justin E. Gray, *In-line or Insane? The Federal Circuit’s Recent Interpretation of Festo in Honeywell v. Hamilton Sundstrand*, 4 NW. J. TECH. & INTELL. PROP. 100 (2006); Werner H. Sterner, *Honeywell Int’l v. Hamilton Sundstrand Corp.: The Federal Circuit Goes to the Extreme in its Latest Attack on the Doctrine of Equivalents*, 87 J. PAT. & TRADEMARK OFF. SOC’Y 71 (2005); Wing H. Liang, Note, *Honeywell: The Straw That May Just Break the Inventor’s Back*, 26 CARDOZO L. REV. 2655 (2005); Andrew J. Tuck, Note, *Honeywell International Inc. v. Hamilton Sundstrand Corp.: A Rose By An Independent Description Does Not Smell As Sweet*, 39 GA. L. REV. 1521 (2005); and

(3) Other empirical and policy implications. *See, e.g.*, Kristen Osenga, *The Shape of Things to Come: What We Can Learn From Patent Claim Length*, 28 SANTA CLARA COMPUTER & HIGH TECH. L.J. 617, 639 (2012) (comparing number and length of dependent claims for U.S. and foreign applicants); Stephen Yelderman, *Improving Patent Quality with Applicant Incentives*, 28 HARV. J. LAW & TEC 77, 115–19 (2014) (discussing dependent fee structures and related strategies and incentives).

assesses how these functions affect—and how they should affect—infringement remedies, including enhanced patent damages upon findings of willfulness. Finally, Part IV provides some recommendations for how to best incorporate relative claim scope into the adjudication of patent remedies. The article concludes that the relative value of claims to patent owners, infringers, and the public should be evaluated as part of any sound patent remedies assessment.

I. DEPENDENT CLAIMS GENERALLY

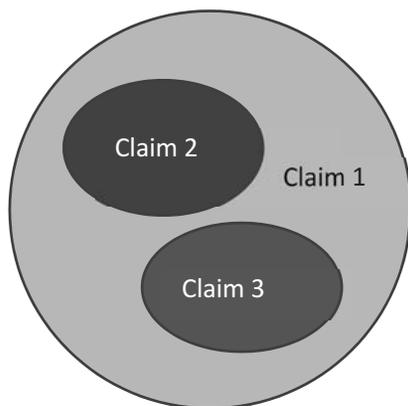
Suppose that an inventor invents a new apparatus for lifting heavy objects that includes four components: a lever, a fixed pulley, a movable pulley, and a rope attached to the lever and wrapped around the pulleys:



The patent application describes each element and how the overall apparatus may be made and used. It mentions that nylon rope is considered particularly effective. It also explains that the inclusion of the movable pulley, though not technically required, doubles the mechanical advantage and efficiency of the apparatus. A set of three claims, one independent and two dependent, might look like this:

1. An apparatus comprising:
 - a lever;
 - a fixed pulley; and
 - a rope;
 wherein the rope is attached to the lever and extends around the fixed pulley.
2. The apparatus of claim 1, wherein the rope is made of nylon.
3. The apparatus of claim 1, further comprising a movable pulley, and wherein the rope extends from the fixed pulley and around the movable pulley.

As is typical, the independent claim, claim 1, recites only the bare essential aspects of the invention, while the dependent claims, claims 2 and 3, add more specific technical and implementation details. The relative scopes of these above sample claims might be depicted as follows:



Claim 1 above is drafted in the typical open-ended fashion, so that anything “comprising” (i.e., including) a lever, a fixed pulley, and a rope configuration is within the scope of the claim.⁸ As long as an apparatus includes those essential elements, the apparatus can include any additional elements and still be within the scope of the claim (and thus infringing). This means that claim 1 includes, for example, all of the following within its scope:

- (a) an apparatus having only a single, fixed pulley;
- (b) an apparatus having a fixed pulley and a movable pulley;
- (c) an apparatus having two or more fixed pulleys;
- (d) an apparatus having a fixed pulley and two or more movable pulleys; and
- (e) an apparatus having two or more fixed pulleys and two or more movable pulleys.

Only examples (a) and (b) above are mentioned in the patent application, yet the scope of the claim extends to cover examples (c), (d), (e), and many more additional alternatives and permutations that were not specifically contemplated by the inventor or mentioned in the application. By contrast, claims 2 and 3 limit the claim scope to require the particular optimal features that were contemplated by the inventor and were expressly described in the patent application.

All else being equal, a narrower dependent claim is more likely to be patentable (because each feature might provide additional

⁸ *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501 (Fed. Cir. 1997) (“‘Comprising’ is a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim.”).

distinctions over the prior art)⁹ but less likely to be infringed (because each feature recited must be met by the accused device)¹⁰ than its broader independent base claim. Infringement of a broader independent claim does not necessarily infringe its narrower dependent claims, but a narrower dependent claim may be patentable even if its broader independent claim is not.¹¹

These qualities always apply to independent-dependent claim pairs, but do not necessarily apply to any other claims not linked by a dependent relationship. Any other two claims might have some overlapping features but also each include distinct features that have no technical relationship to each other. This makes the relative scopes of such other pairs of claims less clear and more debatable. For example, the features added by claims 2 and 3 above have no technical relationship to each other that allows one to discern their relative breadth—they are focused on two different things. But because dependent claims, by definition, narrow the scope of the independent claim, there is no question as to the relative breadth of claim 2 or 3 as compared to claim 1. This makes independent-dependent claim pairs uniquely efficient and useful for comparison purposes.

Indeed, dependent claiming arose as an examination efficiency boosting measure. While early practice required each claim to stand on its own and be complete in itself, by the early 1900s, the United States Patent and Trademark Office (USPTO) allowed

⁹ *Verdegaal Bros. v. Union Oil Co.*, 814 F.2d 628, 631 (Fed. Cir. 1987) (“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.”).

¹⁰ *Linear Tech. Corp. v. Int’l Trade Comm’n*, 566 F.3d 1049, 1060 (Fed. Cir. 2009) (“To prove infringement, a patentee must show ‘that a defendant has practiced each and every element of the claimed invention,’ and may do so by relying on either direct or circumstantial evidence.” (quoting *BMC Res., Inc. v. Paymentech, L.P.*, 498 F.3d 1373, 1380 (Fed. Cir. 2007))).

¹¹ Regarding infringement, *see., e.g., Wahpeton Canvas Co. v. Frontier, Inc.*, 870 F.2d 1546, 1552 n.9 (Fed. Cir. 1989) (“One may infringe an independent claim and not infringe a claim dependent on that claim. The reverse is not true. One who does not infringe an independent claim cannot infringe a claim dependent on (and thus containing all the limitations of) that claim.”); *id.* at 1553 (“It is axiomatic that dependent claims cannot be found infringed unless the claims from which they depend have been found to have been infringed.”). Regarding validity, *see., e.g.,* 35 U.S.C. § 282(a) (2012) (“Each claim of a patent (whether in independent, dependent, or multiple dependent form) shall be presumed valid independently of the validity of other claims; dependent or multiple dependent claims shall be presumed valid even though dependent upon an invalid claim.”); *In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1275 (Fed. Cir. 2015) (“Any grounds which would invalidate [dependent] claim 17 would by necessary implication also invalidate claims 10 and 14 [from which claim 17 depends]”); *Callaway Golf Co. v. Acushnet Co.*, 576 F.3d 1331, 1344 (Fed. Cir. 2009) (“A broader independent claim cannot be nonobvious where a dependent claim stemming from that independent claim is invalid for obviousness.”); *Sandt Tech., Ltd. v. Resco Metal & Plastics Corp.*, 264 F.3d 1344, 1356 (Fed. Cir. 2001) (“Because dependent claims contain additional limitations, they cannot be presumed to be invalid as obvious just because the independent claims from which they depend have properly been so found.”).

dependent claiming.¹² In 1965, dependent claims were formally recognized in the Patent Act.¹³ The Senate Committee Report for the 1965 amendments explained that there were two purposes to the amendments made at that time: (1) “to increase the fees payable to the Patent Office so that a reasonable part of the Patent Office costs may be recovered”; and (2) “to expedite the prosecution of patent applications and thus make new technology available to the public at an earlier date.”¹⁴

As to the first objective, the amendments made a variety of increases to the fee schedule, including financial incentives to make it more cost effective to file more dependent claims and fewer independent claims.¹⁵ The hope was that this fee structure would “discourage excessive permutations and combinations of claims and [] encourage use of the dependent form of claim.”¹⁶ As to the second objective, the Commissioner of Patents had told the committee that dependent claims can be examined twice as quickly as independent claims,¹⁷ and so the committee determined that an applicant’s insistence on including more independent claims should require additional fees to offset those additional examination costs.¹⁸ The committee believed that these efficiencies in evaluating claims would carry over in litigation as well.¹⁹

¹² *Honeywell Int’l, Inc. v. Hamilton Sundstrand Corp.*, 370 F.3d 1131, 1148 (Fed. Cir. 2004) (Newman, J., concurring) (citing *In re Sexton*, 1873 C.D. 66 (Comm’r Pat. 1873) and *Ex parte Brown*, 1917 C.D. 22 (Comm’r Pat. 1917)).

¹³ *Id.* (explaining that Congress “amend[ed] § 112 to recognize dependent claims, amend[ed] § 282 to state the presumptive validity of dependent claims, and § 41 to reduce the fee for dependent claims.” (citing Act of July 24, 1965, Pub. L. No. 89-83, 79 Stat. 259)). The amended Section 112 then provided: “A claim may be written in independent or dependent form, and if in dependent form, it shall be construed to include all limitations of the claim incorporated by reference into the dependent claim.” Act of July 24, 1965, Pub. L. No. 89-83, § 9, 79 Stat. 259, 261. The Patent Act was further amended in 1975 to recognize multiple dependent claims to comply with the Patent Cooperation Treaty, and the relevant provisions have remained essentially unchanged since then. *Honeywell Int’l*, 370 F.3d at 1148 (Newman, J. concurring) (citing Act of Nov. 14, 1975, Pub. L. 94-131 §§ 3, 7, 10, 89 Stat. 685, 690–92); 35 U.S.C. § 112.

¹⁴ S. REP. NO. 89-301, at 2 (1965).

¹⁵ *Id.* at 3–4; Act of July 24, 1965, § 1, 79 Stat. at 259 (setting new fees as “\$10 for each claim in independent form which is in excess of one, and \$2 for each claim (whether independent or dependent) which is in excess of ten”); see also *Honeywell Int’l*, 370 F.3d at 1152 (Newman, J., concurring) (“The use of dependent claims is encouraged by the patent examining authority as an aid in examination. Its value during examination is reflected in the significantly lower fees charged for examination of dependent claims.”).

¹⁶ S. REP. NO. 89-301, at 7–8.

¹⁷ *Id.* at 8 (“The Commissioner of Patents has informed the committee that even in the case of simple patents, the time saved in analysing the differences between claims is approximately [two] to [one] in favor of the dependent form of claim.”).

¹⁸ *Id.* (“This bill does not prevent an applicant from using independent claims. It merely provides that if an applicant or his attorney decide that independent claims would better serve the invention, then additional fees should be charged to compensate the Patent Office for the undisputed additional costs involved in the examination of such applications.”).

¹⁹ *Id.* (“The reduction in the number of claims and the encouragement of the use of claims in dependent form will not only be of advantage to the Patent Office and to the public, but will assist the courts in their consideration of those claims which become involved in litigation.”).

Little did Congress know that dependent claiming would come to perform a number of additional strategic roles for patent owners.

II. FUNCTIONS OF DEPENDENT CLAIMING

The essential function of dependent claiming—examination efficiency—remains an important part of the patent system. The USPTO fee schedule continues to discourage excessive independent claiming in favor of dependent claiming.²⁰ Beyond that efficiency, because the scope of any dependent claim is subsumed by its associated independent claim, it is, in that sense, redundant to the purpose of defining the overall scope of the exclusive right.²¹ Nonetheless, dependent claiming has evolved to serve a number of other purposes. Primarily, dependent claims are employed for: (1) hedging bets on patentability and infringement; (2) providing support for claim differentiation positions; and (3) protecting core embodiments and commercial products.

First, from a patent applicant's/owner's perspective, having a variety of independent and dependent claims in a patent allows patent owners to hedge their bets on which claims will be both valid and infringed.²² Having narrower "backup" dependent claims not only makes examination more efficient and likely to result in a patentable claim during prosecution, but it also allows for more refined claim assertion strategies in litigation.²³ In effect, each claim defines a

²⁰ See 37 C.F.R. § 1.16(h)–(i) (2018); *USPTO Fee Schedule*, USPTO (Mar. 1, 2019), <https://www.uspto.gov/learning-and-resources/fees-and-payment/uspto-fee-schedule> [https://perma.cc/5USY-58X9] (charging, for large entities, \$460 for each independent claim in excess of three and \$100 for each claim in excess of 20).

²¹ Jeanne C. Fromer, *Claiming Intellectual Property*, 76 U. CHI. L. REV. 719, 739 (2009); *Honeywell Int'l Inc. v. Universal Avionics Sys. Corp.*, 488 F.3d 982, 995 (Fed. Cir. 2007) ("Of course, infringement of a dependent claim also entails infringement of its associated independent claim.").

²² See Fromer, *supra* note 21, at 739–40 ("They have come to be seen by patentees as a form of insurance; should a broad independent claim be held invalid, the narrower dependent claims would still stand, so long as they are independently valid. This fallback protection has led to an abundance of dependent claims." (footnote omitted)); Dennis Crouch, *Theory of Dependent Claims: Survey Results*, PATENTLY-O, (May 22, 2008) <http://www.patentlyo.com/patent/2008/05/theory-of-depen.html> [https://perma.cc/5X9L-MHE] (finding in survey of 1,029 readers that more than 90% of respondents strongly or mostly agree that dependent claims serve as a "backup" in the event that the base "independent claim is rejected [during] prosecution" or "found invalid in litigation"); 1 INTELLECTUAL PROPERTY COUNSELING & LITIGATION § 9.07[c] (Lester Horowitz & Ethan Horowitz eds. 2018) ("[During prosecution,] the practitioner should keep the way open to argue in litigation the separate patentability of dependent claims. If one relies solely on the arguments for allowability of base claims, it may foreclose later arguing that the dependent claims are patentable or valid notwithstanding the fate of the base claims. If a dependent claim introduces an element or feature not shown in the prior art, point this out. If it introduces an old element, but the combination of such element with some other element(s) of the base claim is novel, this should be stated." (footnote omitted)).

²³ See *supra* note 22.

separate and distinct exclusive right and cause of action,²⁴ making claiming strategy “the name of the game” in patent law.²⁵

Second, dependent claims can be employed to bolster claim construction positions under the doctrine of claim differentiation. The doctrine presumes that a dependent claim is narrower in scope than its independent base claim, as per Section 112(d)'s prescription that “a claim in dependent form shall contain a reference to a claim previously set forth *and then specify a further limitation* of the subject matter claimed.”²⁶ Thus, in the example rope/pulley/lever apparatus claims above (in Part I, *supra*), the doctrine of claim differentiation would presume that the “rope” of claim 1 is not a nylon rope but could be made of other materials, given claim 2's further limitation that “the rope is made of nylon.” Although the doctrine can apply when comparing any two claims in a patent, it has particular force in the context of independent-dependent claim pairs.²⁷ Patent applicants can leverage this doctrine into a strategy by inserting dependent claims that are limited to specific embodiments of the invention, for the purpose of making the independent claims read as broader by comparison.²⁸

²⁴ See 35 U.S.C. § 282 (2012) (“Each claim of a patent (whether in independent, dependent, or multiple dependent form) shall be presumed valid independently of the validity of other claims; dependent or multiple dependent claims shall be presumed valid even though dependent upon an invalid claim.”); *Honeywell Int'l, Inc. v. Hamilton Sundstrand Corp.*, 370 F.3d 1131, 1148 (Fed. Cir. 2004) (Newman, J., concurring) (“Each claim defines a separate invention, whether or not written in independent form; and its validity stands or falls separately.”).

²⁵ Giles S. Rich, *The Extent of the Protection and Interpretation of Claims—American Perspectives*, 21 INT'L REV. INDUS. PROP. & COPYRIGHT L., 497, 499 (1990) (“To coin a phrase, the name of the game is the claim.”).

²⁶ 35 U.S.C. § 112(d) (emphasis added); *see, e.g.*, *AK Steel Corp. v. Sollac*, 344 F.3d 1234, 1242 (Fed. Cir. 2003) (“Under the doctrine of claim differentiation, dependent claims are presumed to be of narrower scope than the independent claims from which they depend.”).

²⁷ Lemley, *supra* note 7, at 1396 (“Patentees write dependent claims in order to differentiate the scope of their claims, so it will often make sense to use claim differentiation in that context. Indeed, an interpretation of an independent claim that renders it identical to a claim that depends from it would defeat the purpose of having a dependent claim.”); Menell et al., *supra* note 7, at 754 (“‘Pure’ claim differentiation refers to the situation where there is no meaningful difference between an independent claim and its dependent claim, except for the presence of an added limitation in the dependent claim. In that situation, the presumption is especially strong that the independent claim is not restricted by the added limitation in the dependent claim. In such situations, construing the independent claim to share that limitation would render the dependent claim ‘superfluous.’ The doctrine of claim differentiation has less force when there are additional differences between the independent claim and its dependent claim, such that the dependent claim would not be rendered ‘superfluous’ by limiting the independent claim. In the case of two independent claims, the doctrine of claim differentiation is generally not applicable because patent drafters are free to, and commonly do, claim an invention using multiple linguistic variations in multiple independent claims.” (footnotes omitted)); *see also* Lemley, *supra* note 7, at 1397 (“Of the 69 Federal Circuit cases analyzed, 50 involved claim differentiation arguments based on an independent-dependent relationship, 15 involved arguments based on two independent claims, and 4 involved both. Notably, the Federal Circuit applies claim differentiation 80% of the time when the claims are in a dependent relationship, and rejects it more than half the time when claims are not.”).

²⁸ Lemley, *supra* note 7, at 1398 (Applicants may draft claims “because the drafter hopes to take strategic advantage of the claim differentiation doctrine itself.”);

Third, dependent claims are employed to cover core embodiments or protect commercial products of the patentee.²⁹ Although subsumed by the independent base claim, dependent claims are valuable for their ability to highlight such important aspects of the invention for the patent examiner or factfinder.³⁰ The patentees went out of their way to ensure that those dependent features were expressly covered in the event of any doubt (or invalidity) as to the broader independent claim. From this perspective, Professor Jeanne Fromer concluded that dependent claims allow patent owners to retain a semblance of the “central” claiming approach (essentially, omnibus claims to the invention as disclosed) that was long ago discontinued in favor of the modern peripheral claiming approach.³¹

To be clear, dependent claims are still peripherally construed just like independent claims, and thus are not truly “central.”³² They nonetheless draw boundaries that stand closer to the core invention than their independent counterparts, which encompass more of a penumbra around the invention. As Professor Christian Mammen put it:

[I]n each patent, there is often some core invention, surrounded by a penumbra of literal meaning that is within the peripheral claim scope, which in turn is surrounded by a penumbra of equivalents that are outside the literal claim scope. Moreover, each pair of independent and dependent claims represents a core and a penumbra, with the dependent claim representing the narrower, more precisely defined core and the independent claim representing the broader penumbra. This image of a core and penumbra is further complicated by the

Janet Freilich, *Patent Clutter*, 103 IOWA L. REV. 925, 963 (2018) (“It is well established that some language found in dependent claims serves functions such as clarifying the language of other claims through the principle of claim differentiation.” (footnote omitted)).

²⁹ Fromer, *supra* note 21, at 740 (“A dependent claim typically describes a subset of the inventions communicated by the associated independent claim—prototypical instantiations—providing unique insight into the patentee’s conception of central examples or characteristics of his invention.” (footnote omitted)); Freilich, *supra* note 28, at 963 (“It is well established that some language found in dependent claims serves functions such as . . . highlighting a key embodiment.”).

³⁰ Fromer, *supra* note 21, at 740; Freilich, *supra* note 28, at 963 (“It is well established that some language found in dependent claims serves functions such as clarifying the language of other claims through the principle of claim differentiation, or highlighting a key embodiment.”); *see also* Crouch, *supra* note 22 (finding in survey of 1,029 readers that more than 73% of respondents strongly or mostly agree that dependent claims serve focus on commercial embodiments of the invention “to make infringement easier to explain to a jury”).

³¹ Fromer, *supra* note 21, at 740 (rather than the sentence-form peripheral claims we use today, central claiming involved essentially an omnibus claim to the subject matter disclosed in the patent application); *see also* Burk & Lemley, *supra* note 2, at 1772–74 (observing that the doctrine of equivalents and means-plus-function style claiming both continue the “legacy” of central claiming).

³² *See* Burk & Lemley, *supra* note 2, at 1780 n.148 (noting that even dependent claims are still construed peripherally).

multiplicity of independent and dependent claims that may be included in a single patent.³³

This core-penumbra concept is a helpful metaphor, as it seems to capture all the essential functions of dependent claiming. The core contains the “backup” dependent claims where patentability is more likely, where the dependent claims are narrowly drawn so as to make the penumbra broader by comparison, and where the most important features may be expressly protected by those dependent claims.

Dependent claims serve *all* of these functions (including examination efficiency), essentially, by being more closely tethered to embodiments detailed in the specification than their base independent claims. Drafted nearer to the core invention or particular implementations envisioned by the inventor, such dependent claims tend to be associated with the more concrete teachings in the patent specification. As one approaches the outer limits of the claims and enters the penumbra, however, the direct utility of the patent’s teachings tends to fall off. Hence, such penumbral claims are more likely to be invalid for failure to satisfy the written description and enablement requirements—either because the specification does not evidence possession of the broadly-claimed invention or because the specification fails to enable the full scope of the claim.³⁴ Indeed, in her empirical study, Professor Janet Freilich determined that independent claims tended to include more “ancillary” claim language—language that “appear[s] in the claims, but never or rarely in the specification.”³⁵ This is consistent with

³³ See Christian E. Mammen, *Patent Claim Construction as a Form of Legal Interpretation*, 12 J. MARSHALL REV. INTELL. PROP. L. 40, 63 (2012) (footnotes omitted).

³⁴ 35 U.S.C. § 112(a) (2012) (“The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same.”); *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (“[T]he test for sufficiency [of the written description] is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.”); *Genentech, Inc. v. Novo Nordisk, A/S*, 108 F.3d 1361, 1365 (Fed. Cir. 1997) (“To be enabling, the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without ‘undue experimentation.’” (quoting *In re Wright*, 999 F.2d 1557, 1561 (Fed. Cir. 1991) (internal quotation marks omitted)). A recent Federal Circuit case highlights this kind of danger in overclaiming one’s invention. See *Trs. of Bos. Univ. v. Everlight Elecs. Co.*, 896 F.3d 1357, 1365 (Fed. Cir. 2018) (“[T]o some extent, BU created its own enablement problem. BU sought a construction of ‘a non-single crystalline buffer layer’ that included a purely amorphous layer Having obtained a claim construction that included a purely amorphous layer within the scope of the claim, BU then needed to successfully defend against an enablement challenge as to the claim’s full scope Put differently: if BU wanted to exclude others from what it regarded as its invention, its patent needed to teach the public how to make and use that invention. That is part of the *quid pro quo* of the patent bargain.”) (citations and internal quotation marks omitted).

³⁵ Freilich, *supra* note 28, at 928; see also *id.* at 958 (“Overall, slightly more than half of ancillary language comes from independent claims (a median of 57% across the entire data set). This varies across industries: from a low of 50% in pharmaceutical patents to a high of 60%

views from other commentators who have bemoaned “overclaiming” by patentees—i.e., patentees whose claims are drafted to be substantially broader than the underlying invention disclosure in the application.³⁶

III. IMPLICATIONS OF DEPENDENT CLAIMING FOR REMEDIES

Based on the above-described functions of dependent claiming, dependent claims are places where the patent rights may often be more valuable to the public than independent claims, thus justifying comparatively stronger remedies. Contrary to the conventional wisdom, dependent claims may also often be comparatively more valuable to the patent owner. In either case, the result may be that infringement of dependent claims warrants stronger remedies and greater recovery than the norm, or that infringement of independent claims warrants weaker remedies and lesser recovery than the norm. Which result is more appropriate is debatable and would likely vary case by case. It should be noted, however, that the status quo, where the significance of independent claims greatly overshadows dependent claims,³⁷ has been criticized as leading to overcompensation in various contexts and for various reasons.³⁸

of ancillary language from independent claims in mechanical patents. . . . Note that ancillary words in independent claims may also appear in dependent claims.”); *id.* at 928 (“Surprisingly, although claims are supposed to be exclusively about the invention, approximately 25% of patent claim language is not about the patent’s core invention.”); *id.* (“The practice of including ancillary language in patent claims is roughly analogous to ‘keyword stuffing’—a technique of optimizing a website’s Google ranking by packing the website with popular but irrelevant words to draw in searchers. Ancillary language similarly obscures the invention actually protected by the patent and taxes the ability of judges, examiners, competitors, and the public to read and understand patent claims.” (footnotes omitted)).

³⁶ See, e.g., Bernard Chao, *The Infringement Continuum*, 35 CARDOZO L. REV. 1359, 1362 (2014) (“[P]atent attorneys intentionally draft the claims as broadly as possible. In many cases, these claims end up covering variations or improvements that have little resemblance to the original invention. Such overbroad claims reward inventors for technology that they did not invent and unnecessarily burden downstream innovation.” (footnote omitted)); Mark A. Lemley & Mark P. McKenna, *Scope*, 57 WM. & MARY L. REV. 2197, 2285 (2016) (“A more explicit focus on the breadth of the IP right will lead to better decisions, reducing both the endemic overclaiming of IP rights and the occasional backlash that invalidates those rights altogether.”); Oskar Liivak, *Overclaiming Is Criminal*, 49 ARIZ. ST. L.J. 1417, 1423–24 (2016) (“Patent applicants and their attorneys have a duty to craft claims limited to the disclosed invention [When claim drafting,] the general aim is to get as much real estate as possible. Broad claims are not offered; they must be asked for. Unless checked, there is an incentive to overclaim.”); Robert P. Merges, *The Trouble with Trolls: Innovation, Rent-Seeking, and Patent Law Reform*, 24 BERKELEY TECH. L.J. 1583, 1603 (2009) (“In practice, clever lawyering can often produce a patent claim that covers more technological ground than is truly warranted by the underlying invention.”).

³⁷ See *infra* Section III.A.

³⁸ See, e.g., Chao, *supra* note 36, at 1397–99 (“[B]oth the current lost profits and reasonable royalty frameworks overcompensate the patentee. . . . The reason why lost profits systematically overcompensates patentees is because the remedy is not designed to promote innovation.”); Mark A. Lemley, *The Boundaries of Patent Law: Distinguishing Lost Profits from Reasonable Royalties*, 51 WM. & MARY L. REV. 655, 674 (2009) (“Patent damages are supposed to compensate patent owners for their losses, putting them back in the world they

Proposals to modify patent remedies have tended to rely on technological and economic considerations, rather than claim type and relative scope.³⁹ This article's proposal does not supplant but supplements those earlier proposals' efforts to ascertain the true value—to the private stakeholders in the patent dispute and to the public—of the claimed technology and infringement. Whether a remedy is excessive or inadequate will depend on the facts of a given case involving a given set of patent claims. What matters is that the *relative* remedies as between claims becomes the subject of more purposeful consideration and development alongside other remedies

would have inhabited but for infringement. The lost profits analysis contains sophisticated economic tools to help courts calculate that but-for world. Unfortunately, the perfect has too often been the enemy of the good, relegating a number of lost profits cases to the rather less economically sophisticated analysis of reasonable royalties. Worse, the importation of concepts from lost profits into reasonable royalty analysis, and the fear of undercompensating deserving patent owners that should have been able to prove lost profits, has led to systematic distortions in the reasonable royalty structure that overcompensate nonmanufacturing patent owners.”); Christopher B. Seaman, *Reconsidering the Georgia-Pacific Standard for Reasonable Royalty Patent Damages*, 2010 BYU L. REV. 1661, 1666 (2010) (“[T]here is a growing body of evidence that *Georgia-Pacific* has resulted in the systematic overcompensation of patent owners in certain industries.”); David O. Taylor, *Using Reasonable Royalties to Value Patented Technology*, 49 GA. L. REV. 79, 81–82 (2014) (“In the last several years, commentators have expressed serious concerns with the state of the law governing awards of reasonable royalties as damages in patent infringement cases. These concerns range from uncertainty related to the underlying rationale and methodology for calculating reasonable royalties, misplaced use of reasonable royalties to punish infringers, excessive awards, and the creation of incentives for abusive negotiation and litigation tactics. Given these concerns, the proper assessment of royalties has been a recent, frequent topic for debate among economists and legal scholars. Economists have challenged basic premises of the law governing reasonable royalties and injunctions based on various economic theories and insights. Similarly, legal scholars have reassessed the governing law and, in particular, traditional methodologies for calculating reasonable royalties.” (footnotes omitted)); Brian J. Love, Note, *Patentee Overcompensation and the Entire Market Value Rule*, 60 STAN. L. REV. 263, 293 (2007) (“[T]he entire market value rule systematically overcompensates patentees who own patents covering only one component of a larger, complex device.”).

³⁹ See, e.g., Eric E. Bensen & Danielle M. White, *Using Apportionment to Rein in the Georgia-Pacific Factors*, 9 COLUM. SCI. & TECH. L. REV. 1, 40 (2008) (“Modern decisional law does not restrict reasonable royalties to some portion of the economic value actually provided by the patent and, in fact, provides almost no concrete guidance to the fact-finder in determining a reasonable royalty. The result is that reasonable royalty awards are at best arbitrary and at worst punitive.”); Lemley, *supra* note 38, at 674 (“Enforcing a strict separation between [lost profit and reasonable royalty damages] and easing the burden of proof on lost profits will enable both types of patent damages to serve the compensatory purpose for which they were intended.”); Michael B. Risch, *(Un)reasonable Royalties*, 98 BOS. U. L. REV. 187, 259 (2018) (“[T]he invention’s value should govern instead of obsessive focus on a hypothetical negotiation or rote adherence to economically suspect rules.” (footnotes omitted)); Seaman, *supra* note 38, at 1667 (“[A] reasonable royalty for patent infringement should not exceed the accused infringer’s expected costs of adopting an acceptable noninfringing substitute.”); Ted M. Sichelman, *Purging Patent Law of ‘Private Law’ Remedies*, 92 TEX. L. REV. 517, 571 (2014) (“[W]hen a patent covers a mere component of a patented product, and an infringer’s switching costs are high, it will often be more desirable to deny injunctive relief and reduce make-whole damages, regardless of whether the patentee practices its patents.”); Taylor, *supra* note 38, at 162 (urging focus on value of patented technology, explaining that “[l]eft unchecked, the hypothetical negotiation construct inappropriately undercompensates or overcompensates patent owners.”). A notable exception that does consider claim scope is Bernard Chao, *The Infringement Continuum*, 35 CARDOZO L. REV. 1359 (2014), discussed *infra* notes 48–55 and accompanying text.

reforms. Patent counsel and judges should pay more attention to the nature of the claims being asserted so that remedies in any given patent dispute may be properly calibrated.

A. *Identifying Value at the Invention's Core*

To justify the market disruptions that flow from granting exclusive patent rights, the U.S. patent system demands high quality disclosure of inventions in patent applications.⁴⁰ As the United States Court of Appeals for the Federal Circuit recently emphasized, “if [a patent owner] wanted to exclude others from what it regarded as its invention, its patent needed to teach the public how to make and use that invention. That is part of the *quid pro quo* of the patent bargain.”⁴¹

The teachings regarding core embodiments in the patent specification are arguably the most deserving of the patent rights because it is those teachings that most enrich the public with helpful examples and explanations of the invention. While those core teachings tend to be more associated with dependent claims, it is the vague notions of other, undisclosed options or features for the invention that occupy the penumbra of the patent. Near that outer periphery of the claim set is where the claims become more conceptual and the hypothetical person of ordinary skill in the art, as well as the public, must imagine alternatives and implementation details for the invention to fill out the boundaries of the claims. Those imagined boundaries may well turn out to be wrong and, in any event, will not become certain until well into a lawsuit when the district court construes the claims.⁴² Not only might claims turn out to cover

⁴⁰ See, e.g., *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55, 63 (1998) (“[T]he patent system represents a carefully crafted bargain that encourages both the creation and the public disclosure of new and useful advances in technology, in return for an exclusive monopoly for a limited period of time.”); *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 151 (1989) (“In consideration of [the invention’s] disclosure and the consequent benefit to the community, the patent is granted.”); *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 481 (1974) (“When a patent is granted and the information contained in it is circulated to the general public and those especially skilled in the trade, such additions to the general store of knowledge are of such importance to the public that the Federal Government is willing to pay the high price of [seventeen] years of exclusive use for its disclosure, which disclosure, it is assumed, will stimulate ideas and the eventual development of further significant advances in the art.”).

⁴¹ *Trs. of Bos. Univ. v. Everlight Elecs. Co.*, 896 F.3d 1357, 1365 (Fed. Cir. 2018) (citations and internal quotation marks omitted).

⁴² See Jason Rantanen, *The Malleability of Patent Rights*, 2015 MICH. ST. L. REV. 895, 935–41 (2015) (discussing how the skill and strategies of the attorneys can affect claim construction outcomes); *id.* at 941 (“[C]laim ambiguity itself can be a deliberate strategic choice. Patent drafters may choose, for example, claim terms and phrases that maximize future malleability so that they can later argue for either expanding or narrowing depending on the circumstances.”). Even after district courts construe the claims, there remains a great deal of uncertainty at the Federal Circuit. See *Retractable Techs. v. Becton, Dickinson & Co.*, 659 F.3d 1369, 1370 (Fed. Cir. 2011) (Moore, J., dissenting from the denial of en banc rehearing) (“Claim construction is the single most important event in the course

variations of the invention that are not described in the specification, but they might even cover technology that did not exist until after the patent issued.⁴³ This ambiguity becomes especially problematic if the invention is in a nascent field, where the inventor is expected to provide more technical detail and explanation than in well-established fields.⁴⁴ Likewise, if dependent claims are used for claim differentiation purposes, that strategy may only serve to underscore the vagueness of the independent claim—because the dependent claim is more precisely limited, the doctrine only indicates how the independent claim is *not* limited.⁴⁵

For all these reasons, dependent claims might provide better and more desirable public notice of what the invention is and what rights are exclusive to the patentee.⁴⁶ If the primary way that the patent system is designed to facilitate innovation is to spread knowledge through clear and high-quality invention disclosures, a stronger right for narrower dependent claims that encompass core and well-disclosed embodiments would be sensible.⁴⁷

of a patent litigation. It defines the scope of the property right being enforced, and is often the difference between infringement and non-infringement, or validity and invalidity. Despite the crucial role that claim construction plays in patent litigation, our rules are still ill-defined and inconsistently applied, even by us. Commentators have observed that claim construction appeals are ‘panel dependent’ which leads to frustrating and unpredictable results for both the litigants and the trial court.”).

⁴³ Chao, *supra* note 36, at 1368 (“Claims often cover variations of the invention that are not described in the specification. In fact, broad claims can even encompass after-arising technology.”).

⁴⁴ *Chiron Corp. v. Genentech, Inc.*, 363 F.3d 1247, 1254 (Fed. Cir. 2004) (“[A] patentee preferably omits from the disclosure any routine technology that is well known at the time of application. At the other end of the knowledge continuum, a patent document cannot enable technology that arises after the date of application. The law does not expect an applicant to disclose knowledge invented or developed after the filing date. Such disclosure would be impossible. Nascent technology, however, must be enabled with a ‘specific and useful teaching.’ The law requires an enabling disclosure for nascent technology because a person of ordinary skill in the art has little or no knowledge independent from the patentee’s instruction. Thus, the public’s end of the bargain struck by the patent system is a full enabling disclosure of the claimed technology.”) (quoting *Genetech, Inc. v. Novo Nordisk, A/S*, 108 F.3d 1361, 1368 (Fed. Cir. 1997) (internal citations omitted)).

⁴⁵ *Cf.* Chao, *supra* note 36, at 1362 (“The problem of broad claims is exacerbated by the problem of unclear claims.”).

⁴⁶ *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 909–10 (2014) (“[A] patent must be precise enough to afford clear notice of what is claimed, thereby apprising the public of what is still open to them. Otherwise there would be a zone of uncertainty which enterprise and experimentation may enter only at the risk of infringement claims. And absent a meaningful definiteness check, we are told, patent applicants face powerful incentives to inject ambiguity into their claims.”(citations and internal quotation marks omitted)); Chao, *supra* note 36, at 1374 (“[When claims are unclear.] competitors do not just have to worry about stepping inside the boundaries protected by a patent’s claims; they must worry about stepping near those boundaries too. As a result, companies may end up foregoing technology that is not actually covered by a patent. In these cases, no one wins.” (footnote omitted)).

⁴⁷ See William F. Lee & A. Douglas Melamed, *Breaking the Vicious Cycle of Patent Damages*, 101 CORNELL L. REV. 385, 465 (2016) (“Current patent infringement remedies do not adequately further the key incentives of the patent system: patentees’ incentive to invent, firms’ incentive to innovate and develop new products, and the incentive for patent holders and firms to negotiate patent licenses *ex ante*.”); Sichelman, *supra* note 39, at 519 (“Patent

Professor Bernard Chao similarly argued that infringement should be thought of as a “continuum,” where the infringing product may be exactly like the disclosed embodiments, a small variation thereof, or a substantial departure therefrom—and everything in between—commensurate with the potential claim scope.⁴⁸ Remedies can be tailored to reflect this continuum such that “[a] company that does precisely what is described in the specification owes a greater debt to the patentee than a company that modifies the invention in some unforeseen ways or adds its own contributions.”⁴⁹

Although doctrines like enablement, written description, and claim construction can serve to limit the reach of patent claims beyond the specification’s disclosure, Professor Chao noted that such outcomes are undesirable because they are binary—the result can only be valid/invalid or infringed/not infringed.⁵⁰ Employing remedies for this purpose, however, allows for a more flexible approach that fine-tunes the consequences of infringement by considering not only what the patentee should recover but what the infringer should retain.⁵¹ The result is “a framework that adjusts the amount of damages by the proximity the infringer’s use has to the use envisioned by the inventor.”⁵²

Professor Chao’s reasoning applies with particular force to independent-dependent claim pairs, which by definition occupy relatively outer and inner portions, respectively, of the continuum. His theory was justified by public benefits and innovation incentives with little concern for the private compensation to the patentee.⁵³ But if infringement of a dependent claim warrants stronger relief because of

law, on the other hand, is not designed to remedy private wrongs. Rather, its major aim is to promote innovation. Nonetheless, patent remedies mirror traditional tort law remedies by attempting to restore the patentee to the *status quo ante*—namely, the state of the world in which there is no infringement of the patent.” (footnotes omitted).

⁴⁸ Chao, *supra* note 36, at 1387–88.

⁴⁹ *Id.* at 1389.

⁵⁰ *Id.* at 1376.

⁵¹ *Id.* at 1404 (“Patentees clearly deserve more compensation when infringement looks just like what the patentee invented. Correspondingly, infringers deserve to retain more of their own proceeds when they provide larger contributions.”).

⁵² *Id.* at 1404–05; *id.* at 1362 (“Under this theory, the patentee’s remedy diminishes when the nature of the infringement looks less and less like what the specification describes.”).

⁵³ *Id.* at 1362 (“This theory is unconcerned with what the patentee lost and instead focuses on the relative contribution the patent made to the infringing device. By rethinking patent remedies in terms of disclosure principles, the proposal described in this Article tailors the remedy to better address the infringement continuum. Consequently, this proposal improves on existing doctrines that only offer binary outcomes.”); *id.* at 1398 (“This Article takes the public interest more seriously and argues that patent law should replace the current bifurcated lost-profits/reasonable-royalty framework with a single scheme that is primarily based on the proximity the infringement has to the actual invention. Under this proposal, the award a patentee would receive would more closely measure what it actually contributed to the infringing product.”); *id.* at 1399 (“The reason why lost profits systematically overcompensates patentees is because the remedy is not designed to promote innovation.”); *id.* at 1413 (“[T]his proposal will optimize incentives for both early innovators and those that would build on basic technology.”).

the patent disclosure's larger contribution to the infringing product, that result may often be supportable by the compensatory view of damages as well, at least to the extent the patentee also practices the core invention as disclosed. Even Professor Chao's point is not to eliminate compensation for patent owners, but to eliminate overcompensation for benefits not attributable to the infringement.⁵⁴ As he puts it, "[t]he question should not be: how does the law make the patentee whole? But rather, what compensation is needed to properly incentivize innovation?"⁵⁵ The following sub-parts make the case that the inquiry as to proper incentives should consider the relative claim scope, and dependent claims in particular, in all cases where only some subset of asserted claims might ultimately be both valid and infringed.

B. *Compensatory Damages and the Assessment of Pecuniary Harm*

Patent owners who prove infringement are entitled to recover "damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer."⁵⁶ As the Supreme Court recently reaffirmed, those damages should put the patent owner in the pecuniary position it would have been had the infringement not occurred.⁵⁷

On the surface, the above-discussed notion that dependent claims may ever warrant more damages than their independent counterparts may seem counterintuitive, as the broadest claims are often viewed as the most valuable because they include the most potential infringement (or prospects)⁵⁸ and thus reflect the largest degree of market control. In a market value sense (e.g., to prospective purchasers of a patent), that is a legitimate viewpoint, and dependent claims might be properly viewed as secondary—mere

⁵⁴ *Id.* at 1404 ("Patentees clearly deserve more compensation when infringement looks just like what the patentee invented."); *id.* at 1397 ("[B]oth the current lost profits and reasonable royalty frameworks overcompensate the patentee.").

⁵⁵ *Id.* at 1405.

⁵⁶ 35 U.S.C. § 284 (2012).

⁵⁷ *WesternGeco LLC v. ION Geophysical Corp.*, 138 S. Ct. 2129, 2139 (2018) ("Under § 284, damages are 'adequate' to compensate for infringement when they 'plac[e] [the patent owner] in as good a position as he would have been in' if the patent had not been infringed. Specifically, a patent owner is entitled to recover 'the difference between [its] pecuniary condition after the infringement, and what [its] condition would have been if the infringement had not occurred.'" (alterations in original) (citations omitted) (first quoting *General Motors Corp. v. Devex Corp.*, 461 U.S. 648, 655 (1983), then quoting *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 507 (1964)).

⁵⁸ Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 871 (1990) (explaining that the prospect theory of broad patenting pre-commercialization "amounts to granting rights over an unexplored pool, with the right-holder being permitted to charge for access to various parts of the pool. Thus the inefficiencies associated with rivalrous uncoordinated invention, as in the fishing or race models, can be avoided." (footnote omitted)).

hedges against the potential failure of the independent claim or pawns for claim construction purposes.⁵⁹ Indeed, the narrower dependent claim may also be comparatively easier to design around, diminishing the cost of using a suitable noninfringing alternative.⁶⁰ Of course, should the broader independent claims fall under a validity challenge, the dependent claims may become the only thing valuable about the patent.

Often, however, the dependent claims encompass the preferred implementations of the invention, as well as the patentee's commercial products.⁶¹ In those cases, the infringement of the dependent claims may strike closer to the heart of the patent owner's economic interests in exclusivity. Infringement of such a dependent claim may warrant greater damages than infringement of the corresponding independent claim. By analogy to trespass, there is a marked difference in the harm caused by entering someone's lawn versus their home, or even their home's curtilage,⁶² where the exclusive interests are more potent.⁶³ Lost profits recovery, for example, must be causally related to the infringement, showing that the patent owner would have made the sales but for the infringement⁶⁴—a showing that would be more compelling if the

⁵⁹ See *supra* Part II.

⁶⁰ See *Grain Processing Corp. v. Am. Maize-Prods. Co.*, 185 F.3d 1341, 1350-51 (Fed. Cir. 1999) (“[A] fair and accurate reconstruction of the ‘but for’ market also must take into account, where relevant, alternative actions the infringer foreseeably would have undertaken had he not infringed. Without the infringing product, a rational would-be infringer is likely to offer an acceptable noninfringing alternative, if available, to compete with the patent owner rather than leave the market altogether.”); *Seaman*, *supra* note 38, at 1667 (“[A] reasonable royalty for patent infringement should not exceed the accused infringer’s expected costs of adopting an acceptable noninfringing substitute.”).

⁶¹ See *supra* Part II.

⁶² *Cf. Collins v. Virginia*, 138 S. Ct. 1663, 1670–71 (2018) (“[T]he Fourth Amendment’s protection of curtilage has long been black letter law. When it comes to the Fourth Amendment, the home is first among equals. At the Amendment’s very core stands the right of a man to retreat into his own home and there be free from unreasonable governmental intrusion. To give full practical effect to that right, curtilage—the area immediately surrounding and associated with the home—is considered to be part of the home itself for Fourth Amendment purposes. The protection afforded the curtilage is essentially a protection of families and personal privacy in an area intimately linked to the home, both physically and psychologically, where privacy expectations are most heightened. . . . The conception defining the curtilage is familiar enough that it is easily understood from one’s daily experience. Just like the front porch, side garden, or area outside the front window, a driveway enclosure that constitutes an area adjacent to the home and to which the activity of home life extends is properly considered curtilage [that is subject to a reasonable expectation of privacy].” (internal citations and quotation marks omitted)).

⁶³ *Cf. Chao*, *supra* note 36, at 1363 (2014) (“Although reasonable minds may disagree on how far into the continuum a patent should reach, no one should dispute that some kinds of infringements should be treated more seriously than others.”).

⁶⁴ *Siemens Med. Sols. USA, Inc. v. Saint-Gobain Ceramics & Plastics, Inc.*, 637 F.3d 1269, 1287 (Fed. Cir. 2011) (“To recover lost profits, the patent owner must show causation in fact, establishing that but for the infringement, he would have made additional profits.” (quoting *Wechsler v. Macke Int’l Trade, Inc.*, 486 F.3d 1286, 1293 (Fed. Cir. 2007)); *Panduit Corp. v. Stahl Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1156 (6th Cir. 1978) (“To obtain as damages the profits on sales he would have made absent the infringement, i.e., the

infringed claim was a dependent claim drawn specifically to cover the patent owner's commercial product.

When the issue of relative damages among independent and dependent claims has come up, however, the Federal Circuit has surprisingly said that dependent claims do not even warrant a damages assessment distinct from that of the underlying independent claims. First, in *Wahpeton Canvas Co. v. Frontier, Inc.*, the patentee asserted both independent and dependent claims but failed to secure an infringement verdict or post-trial judgment as to any of the asserted claims.⁶⁵ In affirming the judgment, the Federal Circuit expressed some confusion as to why the patentee even bothered bringing up the dependent claims, reasoning that the independent claims were all that mattered, even for damages:

Because a reversal on appeal on one independent claim would give Wahpeton all it needs for victory, submission of the infringement issue on a plethora of dependent claims in Wahpeton's motion and appeal is difficult to understand. *Infringement of an independent claim would result in the same damage award as would infringement of all claims dependent thereon* and non-infringement of an independent claim carries with it non-infringement of all claims dependent thereon.⁶⁶

Similarly, in *CollegeNet, Inc. v. ApplyYourself, Inc.*, the patentee asserted a combination of independent and dependent claims, some of which were found infringed on summary judgment and the rest of which were found infringed by a jury after trial.⁶⁷ The district court denied the defendant's post-trial motion for a new trial on the jury's findings as to certain dependent claims, and the Federal Circuit affirmed again by treating those dependent claims as inconsequential, even for damages purposes:

ApplyYourself also challenges the district court's refusal to grant a new trial on the jury's finding of infringement as to various dependent claims of the '278 patent. However, having affirmed the district court's grant of summary judgment of infringement of [other, including two independent,] claims . . . of the '278 patent, *there is no reason for this court to reach this argument. After all, infringement of even a single claim entitles a patentee to damages.* Therefore, even if the district court had concluded that the infringement verdicts on [dependent] claims 6–8 and 27 of the '278 patent were against the clear weight of the evidence, the damages awarded on the '278 patent would still stand.⁶⁸

sales made by the infringer, a patent owner must prove: (1) demand for the patented product, (2) absence of acceptable noninfringing substitutes, (3) his manufacturing and marketing capability to exploit the demand, and (4) the amount of the profit he would have made.”)

⁶⁵ *Wahpeton Canvas Co. v. Frontier, Inc.*, 870 F.2d 1546, 1552–53 (Fed. Cir. 1989).

⁶⁶ *Id.* at 1552 n.10 (emphasis added).

⁶⁷ *CollegeNet, Inc. v. ApplyYourself, Inc.*, 418 F.3d 1225, 1236 (Fed. Cir. 2005).

⁶⁸ *Id.*

This sentiment, that dependent claims do not matter for damages, has been echoed by district courts as well—e.g., “[t]he damages are the same whether there is infringement of one or one hundred claims.”⁶⁹ Finally, sometimes in this context the Federal Circuit has made a more nuanced point, expressing a similar view that the dependent claims do not affect damages but attributing that to the parties’ or the record’s failure to evaluate damages claim by claim.⁷⁰

When courts and parties so fail to value the claims separately, and especially where the patent owner seeks a reasonable royalty (as is typical)⁷¹ instead of lost profits,⁷² the damages calculation largely collapses into an exercise in valuing the broadest claims at issue or the “invention” more generally.⁷³ The dependent claims are viewed as redundant and adding nothing of substance.⁷⁴ That perspective is

⁶⁹ *Total Containment, Inc. v. Environ Prods., Inc.*, 921 F. Supp. 1355, 1394 n.20 (E.D. Pa. 1995) (“The court knows of no reason for asserting the numerous dependent claims that have been asserted in this action. The damages are the same whether there is infringement of one or one hundred claims. Damages are not multiplied by the number of claims infringed.”); *see also* *Uniloc USA, Inc. v. Microsoft Corp.*, No. 03-440 S, 2007 U.S. Dist. LEXIS 97491, at *18 (D.R.I. Oct. 19, 2007) (“It is hornbook patent law that infringement of even a single claim entitles a patentee to damages.”), *aff’d* 290 F. App’x 337, 2008 U.S. App. LEXIS 16938 (Fed. Cir. 2008).

⁷⁰ *See, e.g.*, *TiVo, Inc. v. EchoStar Commc’ns Corp.*, 516 F.3d 1290, 1312 (Fed. Cir. 2008) (affirming infringement finding as to some but not all claims and explaining that “[b]ecause the damages calculation at trial was not predicated on the infringement of particular claims, and because we have upheld the jury’s verdict that all of the accused devices infringe the software claims, we affirm the damages award entered by the district court”); *Hartness Int’l, Inc. v. Simplimatic Eng’g Co.*, 819 F.2d 1100, 1108 (Fed. Cir. 1987) (“On this record, it does not appear that the award of damages would be increased even if [dependent] claim 3 were found to be infringed; therefore, a remand for this purpose is unnecessary.”).

⁷¹ *Seaman*, *supra* note 38, at 1667 (“[A] reasonable royalty recently has become the most commonly employed method for calculating patent infringement damages, supplementing or replacing the traditional remedy of the patentee’s lost profits.”).

⁷² Notably, there is some relevant blurring between reasonable royalty and lost profits doctrine. *See* *Lemley*, *supra* note 38, at 674 (“Patent damages are supposed to compensate patent owners for their losses, putting them back in the world they would have inhabited but for infringement. The lost profits analysis contains sophisticated economic tools to help courts calculate that but-for world. Unfortunately, the perfect has too often been the enemy of the good, relegating a number of lost profits cases to the rather less economically sophisticated analysis of reasonable royalties. Worse, the importation of concepts from lost profits into reasonable royalty analysis, and the fear of undercompensating deserving patent owners that should have been able to prove lost profits, has led to systematic distortions in the reasonable royalty structure that overcompensate nonmanufacturing patent owners.”).

⁷³ *See* *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970) (listing various factors for assessing a “reasonable royalty” measure of damages, such factors purporting to approximate the value of a license to use the patent and/or invention overall).

⁷⁴ *See, e.g.*, *Wahpeton Canvas Co. v. Frontier, Inc.*, 870 F.2d 1546, 1552 n.10 (Fed. Cir. 1989) (“Like many, if not most, dependent claims, most of those present here present minute structural details but were allowed because they contain all the limitations of allowed claims from which they depend.”); *Univ. of Pittsburgh of the Commonwealth Sys. of Higher Educ. v. Varian Med. Sys.*, 561 F. App’x 934, 947 (Fed. Cir. 2014) (“Varian asserts, nonetheless, that damages should not turn on claim draftsmanship such that the owner of an improvement patent may deliberately add dependent claims directed to unimproved conventional devices to expand the royalty base. We do not disagree. But, *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970), addresses that

inconsistent with the Supreme Court's insistence that patent infringement damages are supposed to be compensatory—i.e., money to offset actual harm suffered by the patent owner that is caused by the specific acts of infringement,⁷⁵ not payments for the privilege to use the entire scope of all the patent claims.⁷⁶

specific problem by requiring the patentee to provide tangible evidence regarding the relative value of his or her invention in combination with, but distinct from, any conventional elements recited in the claim. A number of the *Georgia-Pacific* factors are directed to that specific point and require the jury to reward the inventor only for the value of his or her innovation. In other words, if the claimed invention only adds an incremental value to the conventional element(s), the damages awarded must also be so limited. But, if the claimed invention adds significant value to the conventional element(s), the damages award may reflect that value.”)

⁷⁵ See 35 U.S.C. § 284 (2012) (“Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court.”); *WesternGeco LLC v. ION Geophysical Corp.*, 138 S. Ct. 2129, 2139 (2018) (“Under § 284, damages are ‘adequate’ to compensate for infringement when they ‘plac[e] [the patent owner] in as good a position as he would have been in’ if the patent had not been infringed. Specifically, a patent owner is entitled to recover ‘the difference between [its] pecuniary condition after the infringement, and what [its] condition would have been if the infringement had not occurred.’” (alterations in original) (citations omitted) (first quoting *General Motors Corp. v. Devex Corp.*, 461 U.S. 648, 655 (1983), then quoting *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 507 (1964))); *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 507 (1964) (“[T]he present statutory rule is that only ‘damages’ may be recovered. These have been defined by this Court as ‘compensation for the pecuniary loss he [the patentee] has suffered from the infringement, without regard to the question whether the defendant has gained or lost by his unlawful acts.’ They have been said to constitute ‘the difference between his pecuniary condition after the infringement, and what his condition would have been if the infringement had not occurred.’ . . . [The] question [is] primarily: had the Infringer not infringed, what would Patent Holder-Licensee have made?” (alterations in original) (citations omitted) (first quoting *Coupe v. Royer*, 155 U.S. 565, 582 (1895), then quoting *Yale Lock Mfg. Co. v. Sargent*, 117 U.S. 536, 552 (1886), then quoting *Livesay Window Co. v. Livesay Indus., Inc.*, 251 F.2d 469, 471 (5th Cir. 1958)).

⁷⁶ See Daniel Harris Brean, *Ending Unreasonable Royalties: Why Nominal Damages Are Adequate to Compensate Patent Assertion Entities for Infringement*, 39 VT. L. REV. 867, 923 (2015) (“There can be no substantial recovery for harmless patent infringement [under § 284 or Aro].”); Oscar Liivak, *When Nominal is Reasonable: Damages for the Unpracticed Patent*, 56 B.C. L. REV. 1031, 1067 (2015) (“Today cognizable harm is presumed for every case of infringement. That presumption is just not supportable.”); Doug Rendleman, *Measurement of Restitution: Coordinating Restitution with Compensatory Damages and Punitive Damages*, 68 WASH. & LEE L. REV. 973, 975–76 (2011) (“The court will base the plaintiff’s recovery of compensatory damages on her loss. . . . [Conversely,] [t]he court’s baseline guide to restitution is the defendant’s gain, not the plaintiff’s loss.”). At least where the *fact* of compensatory harm has been established, some restitution principles may assist in the calculation of the *amount* of a reasonable royalty. See John M. Golden & Karen E. Sandrik, *A Restitution Perspective on Reasonable Royalties*, 36 REV. LITIG. 335, 345–46 (2017) (“[C]ourts have explicitly recognized that the magnitude of an infringer’s profits can inform a court’s assessment of the proper size of a damages award, including a reasonable royalty award. . . . Among the fifteen *Georgia-Pacific* factors commonly cited as potential bases for a court’s assessment of reasonable royalty damages, at least two point to consideration of an infringer’s profits by directing courts to take into account ‘[t]he established profitability of the product made under the patent’ and ‘any evidence probative of the value of [the infringer’s] use’ of the invention.” (alteration in original) (footnotes omitted)); see also Liivak, *supra* note 76, at 1064 (“[R]easonable royalties developed to allow substantial damages where the fact of harm was proved and the amount of harm could not be fit into the stringent confines of lost profits or established royalties.”).

The difference may be dramatic in some cases. The actual pecuniary harm caused by infringement that practices a patentee's dependent-claim commercial embodiment, for example, may be far greater than the actual pecuniary harm caused by practicing a version of the invention never contemplated by the inventor that is nonetheless within the broad penumbra of the independent claim.⁷⁷ This is because the products that practice the narrower claim are necessarily a subset of the products encompassed by the broader claim. If the patentee and infringer both offer products in the smaller subset, it is more likely that a sale made by the infringer is the actual and proximate cause that a sale was a loss to the patentee. By contrast, an infringing product that incorporates a dependent feature may not be as directly competitive with a patentee's product that omits that feature—the infringer's customer in that instance might not even consider the patentee's product a suitable alternative.

To be sure, the Federal Circuit has long held, in other contexts,⁷⁸ that proximate cause can place a reasonable limit on the extent of compensatory damages liability, as measured by objective foreseeability:

We believe that under § 284 of the patent statute, the balance between full compensation, which is the meaning that the Supreme Court has attributed to the statute, and the reasonable limits of liability encompassed by general principles of law can best be viewed in terms of reasonable, objective foreseeability. If a particular injury was or should have been reasonably foreseeable by an infringing competitor in the relevant market, broadly defined, that injury is generally compensable absent a persuasive reason to the contrary.⁷⁹

But the court has also indicated that foreseeability is not the sole measure by which damages might be properly limited. Proximate cause, it explained, is essentially a “judicial tool[] used to limit legal responsibility for the consequences of one's conduct that are too remote to justify compensation.”⁸⁰ As such, the limits of recovery should “be determined on the facts of each case upon mixed considerations of logic, common sense, justice, policy and

⁷⁷ See *Georgia-Pacific Corp.*, 318 F. Supp. at 1120 (considering, for reasonable royalty determination, factors including “[t]he licensor's established policy and marketing program to maintain his patent monopoly . . . [t]he commercial relationship between the licensor and licensee . . . [and] the existing value of the invention to the licensor as a generator of sales of his non-patented items.”).

⁷⁸ Patentees have been able to recover lost profits for the sales of at least some products not covered by the patent(s) in suit but that bear a strong functional relationship to the products that are covered by the patent(s) in suit (essentially, the combined patented and non-patented products must make a single operable unit). See, e.g., *Micro Chem., Inc. v. Lextron, Inc.*, 318 F.3d 1119, 1120 (Fed. Cir. 2003); *Stryker Corp. v. Intermedics Orthopedics, Inc.*, 96 F.3d 1409, 1414 (Fed. Cir. 1996); *Minco, Inc. v. Combustion Engineering, Inc.*, 95 F.3d 1109, 1118 (Fed. Cir. 1996); *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538 (Fed. Cir. 1995) (en banc).

⁷⁹ *Rite-Hite Corp.*, 56 F.3d at 1546.

⁸⁰ *Id.*

precedent.”⁸¹ As applied to claim scope in general and to independent/dependent claim pairs in particular, this kind of nuance in the damages analysis would be a welcome addition.

The Supreme Court may have even recently signaled its receptiveness to placing more emphasis on causation as a limit on patent damages. In *WesternGeco LLC v. ION Geophysical Corp.*,⁸² the Court held that infringement under Section 271(f)(2) of the Patent Act, which prohibits supplying a material component of a patented device from the United States for assembly of the device abroad,⁸³ entitles the patentee to recover damages for foreign lost profits that result from the infringement.⁸⁴ In a footnote, the seven-Justice majority explained that “[i]n reaching this holding, we do not address the extent to which other doctrines, such as proximate cause, could limit or preclude damages in particular cases.”⁸⁵ This comment appears to have been at least partly in response to criticism made in dissent by Justice Gorsuch (joined by Justice Breyer). Justice Gorsuch suggested that the majority’s decision would allow any single domestic act of infringement (i.e., exporting a material component for assembly of a device abroad) to open the floodgates to recover profits derived from all uses of that device worldwide.⁸⁶

⁸¹ *Id.* (quoting W. PAGE KEETON ET AL., PROSSER & KEETON ON THE LAW OF TORTS § 42, at 279 (5th ed. 1984)). In practice, however, the Federal Circuit has been criticized for limiting its proximate cause doctrine to a foreseeability test, for applying that test inconsistently, and for the resulting damages awards being over-inclusive. *See, e.g.*, Timothy R. Holbrook, *Extraterritoriality and Proximate Cause After WesternGeco*, 21 YALE J.L. & TECH. 189, 224 (2019) (“[T]he court ignored . . . considerations [such as justice, policy, and precedent], instead embracing a simplistic test of foreseeability. The court, at times, has built upon this foreseeability principle to afford broad compensatory damages to patent holders.”).

⁸² *WesternGeco LLC v. ION Geophysical Corp.*, 138 S. Ct. 2129 (2018).

⁸³ 35 U.S.C. § 271(f)(2) (2012) (“Whoever without authority supplies or causes to be supplied in or from the United States any component of a patented invention that is especially made or especially adapted for use in the invention and not a staple article or commodity of commerce suitable for substantial noninfringing use, where such component is uncombined in whole or in part, knowing that such component is so made or adapted and intending that such component will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.”).

⁸⁴ *WesternGeco*, 138 S. Ct. at 2138. (“The conduct in this case that is relevant to that focus clearly occurred in the United States, as it was ION’s domestic act of supplying the components that infringed WesternGeco’s patents. Thus, the lost-profits damages that were awarded to WesternGeco were a domestic application of § 284.”).

⁸⁵ *Id.* at 2139 n.3.

⁸⁶ *Id.* at 2142 (Gorsuch, J., dissenting) (“Any suggestion that § 271(f)(2) provides protection against foreign uses . . . would threaten to ‘conver[t] a single act of supply from the United States into a springboard for liability.’ Here, for example, supplying a single infringing product from the United States would make ION responsible for any foreseeable harm its customers cause by using the product to compete against WesternGeco worldwide, even though WesternGeco’s U.S. patent doesn’t protect it from such competition. It’s some springboard, too. The harm flowing from foreign uses in this case appears to outstrip wildly the harm inflicted by ION’s domestic production: the jury awarded \$93.4 million in lost profits from uses in 10 foreign surveys but only \$12.5 million in royalties for 2,500 U. S.-made products.” (quoting *Microsoft Corp. v. AT&T Corp.*, 550 U.S. 437, 456 (2007))).

It is significant for the majority to hint—over this criticism—that causation might also be in play. As Tim Holbrook explained shortly after *WesternGeco* was decided, “[a]side from punting on the issue, this footnote does implicitly suggest that proximate cause and extraterritoriality concerns are properly viewed as distinct concerns.”⁸⁷ The parallel role of causation was discussed in some depth during oral argument, which included specific reference to an amicus brief by Professor Stephen Yelderman that argued that doctrines like causation-in-fact and proximate cause were well suited to serve as limiting principles for damages.⁸⁸ The footnote, in context, would thus appear to leave the door open for renewed focus on damages causation in *WesternGeco* and future cases.⁸⁹

The Federal Circuit may have to address this causation issue sooner rather than later. Judge Stark in the United States District Court for the District of Delaware recently took the position that Section 271(a), which applies to infringement activities entirely “within the United States,” permits recovery of damages suffered abroad under *WesternGeco*.⁹⁰ This is a generous reading of *WesternGeco*, which interpreted Section 271(f)(1)—a statute that expressly targets conduct leading to extraterritorial infringement.⁹¹ Without a proximate cause-based limit, the opened floodgates that troubled the dissent in *WesternGeco* will be compounded dramatically if all acts of domestic infringement allowed for recovery of foreign damages. Given the far-reaching implications of that decision, Judge Stark went the extra step

⁸⁷ Timothy Holbrook, *WesternGeco’s Implications for Patent Law and Beyond*, PATENTLY-O (June 24, 2018), <https://patentlyo.com/patent/2018/06/holbrook-westerngecos-implications.html> [<https://perma.cc/V5A2-NH6Q>].

⁸⁸ *Id.* (“Some of the amicus briefs at the Court looked at the damages issue from the perspective of proximate cause. Professor Yelderman submitted an amicus brief that drew specific reference at oral argument, focusing extensively on proximate cause as it relates to damages. Similarly, the amici brief I submitted also raised issues of proximate cause, particularly in this case where the lost profits were for foregone services and not for lost sales of the invention.”); Brief for Law Professor Stephen Yelderman as Amicus Curiae Supporting Petitioner at 15–26, *WesternGeco LLC v. ION Geophysical Corp.*, 138 S. Ct. 2129 (2018) (No. 16-1011), https://www.supremecourt.gov/DocketPDF/16/16-1011/37296/20180301183046990_16-1011%20Amicus%20Brief%20for%20WesternGeco%20LLC%20v.%20ION%20Geophysical%20Corporation.pdf [<https://perma.cc/79WJ-U49F>].

⁸⁹ As Tim Holbrook explained, the Federal Circuit has often taken a broad view of proximate cause in patent damages, and that “[t]he Supreme Court’s gesture to proximate cause may be a sign that it is time for the Federal Circuit to revisit the capaciousness of its doctrine.” Holbrook, *supra* note 81, at 226.

⁹⁰ *Power Integrations, Inc. v. Fairchild Semiconductor Int’l, Inc.*, No. 04-1371-LPS, 2018 WL 4804685, at *1 (D. Del. Oct. 4, 2018) (“Fairchild has identified no persuasive reason to conclude that the interpretation of § 284 should differ here from what was available in *WesternGeco II* just because the type of infringing conduct alleged is different. . . . Section 271(a) vindicates domestic interests no less than Section 271(f).” (internal citations and quotation marks omitted)).

⁹¹ Tim Holbrook criticized the decision as being based on reasoning that was “relatively thin, with no robust consideration of the focus of § 271(a)” and its clear domestic focus. Holbrook, *supra* note 81, at 219.

of certifying the issue for immediate interlocutory appeal to the Federal Circuit.⁹²

If there is to be an enhanced role for causation in patent damages, it should also influence the assessment of independent-dependent claim pairs as discussed above. An infringement of a dependent claim might be of the type that actually and proximately causes harm suffered by the patent owner (as in the case of a dependent claim that is directed to the patentee's commercial product), while infringement only of the independent claim might have a more tenuous causal relationship to the patentee's alleged harm. To the extent damages are designed to be compensatory, those two infringements cannot be assumed to cause the same amount of damages.

C. *Enhanced Damages and Deterring Willful Infringement*

Beyond compensatory damages, Section 284 of the Patent Act permits courts to increase damages up to three times⁹³ in instances where the infringement was willful. The term "willful" is nowhere in the statute, but comes from the common law,⁹⁴ where Section 284 has been interpreted to allow district courts to use enhanced damages to punish a wide variety of deliberate misconduct by infringers.⁹⁵

In cases that involve such misconduct, infringement of a dependent claim may be more culpable than infringement of a broader independent claim. The doctrine has long recognized that for a willfulness finding, *inter alia*: (1) the accused infringer must have known about the patent;⁹⁶ and (2) an accused infringer's "copying" of the patentee's ideas and designs is a proper factor to consider.⁹⁷ An

⁹² *Power Integrations, Inc.*, 2018 WL 4804685, at *3.

⁹³ 35 U.S.C. § 284 (2012) (providing discretion that "the court may increase the damages up to three times the amount found or assessed").

⁹⁴ *Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 136 S. Ct. 1923, 1931 (2016) ("The pertinent text of § 284 provides simply that 'the court may increase the damages up to three times the amount found or assessed.' That language contains no explicit limit or condition, and we have emphasized that the word "may" clearly connotes discretion." (citations omitted) (first quoting 35 U.S.C. § 284, then quoting *Martin v. Franklin Capital Corp.*, 546 U.S. 132, 136 (2005)); see also *id.* at 1928–30 (discussing history of enhanced damages based on various misconduct).

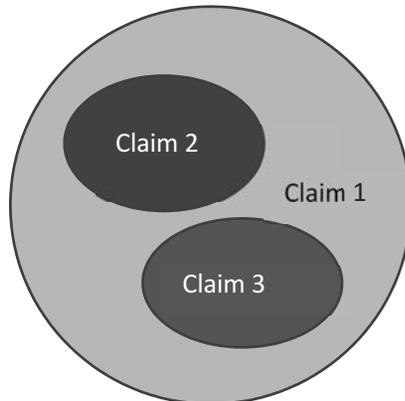
⁹⁵ *Id.* at 1932 ("The sort of conduct warranting enhanced damages has been variously described in our cases as willful, wanton, malicious, bad-faith, deliberate, consciously wrongful, flagrant, or—indeed—characteristic of a pirate. District courts enjoy discretion in deciding whether to award enhanced damages, and in what amount." (citation omitted)).

⁹⁶ *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1341 (Fed. Cir. 2016) ("Knowledge of the patent alleged to be willfully infringed continues to be a prerequisite to enhanced damages.").

⁹⁷ *Stryker Corp. v. Intermedics Orthopedics, Inc.*, 96 F.3d 1409, 1414 (Fed. Cir. 1996) ("[O]ne of the relevant factors [of willfulness] is 'whether the infringer deliberately copied the ideas or design of another.'"); *Read Corp. v. Portec, Inc.*, 970 F.2d 816, 827 n.7 (Fed. Cir. 1992) ("Ideas' and 'design' would encompass, for example, copying the commercial embodiment, not merely the elements of a patent claim."); see also Christopher A. Cotropia & Mark A. Lemley, *Copying in Patent Law*, 87 N.C. L. REV. 1421, 1439–40 (2009) ("Because copying is not an element of patent cases, there is no specific requirement that plaintiffs plead

important caveat is that the patent system simultaneously wants to discourage copying but encourage “design-around” innovation,⁹⁸ which can sometimes be a fine line to draw. Good faith efforts to design around might ultimately infringe and bad faith efforts to infringe might not succeed. Nonetheless, because the dependent claims are narrower with more concrete details than their independent counterparts, it is less likely—all else being equal—that a dependent claim was unknowingly infringed or was being designed around rather than copied. Put another way, infringement of a narrower dependent claim beyond infringement of the broader independent claim could constitute circumstantial evidence of intent to infringe.

To illustrate by analogy, imagine that the visual depiction of the claims covering the rope/pulley/lever apparatus discussed above (see *supra* Part I) was a dart board:



Designing around claims 1–3 is like to trying to throw a dart as close as possible to the board without hitting it. In that context, one could imagine a good-faith effort to throw a dart that will hit just outside the board nonetheless ending up hitting the outer the periphery of the board. But if one hits the smaller regions of claims

or prove that the defendant has copied the invention, either from the patent itself or from the plaintiff’s commercial embodiment of the invention. Nonetheless, there is good reason to believe that plaintiffs will have strong incentives to plead and prove copying in cases where it exists. First, the fact that the defendant copied an invention from the plaintiff strongly suggests that the defendant’s product infringes the patent; while parties can and do fight about the meaning of patent claims, if the defendant actually derived its product from the plaintiff’s, it is likely to fit within any reasonable interpretation of most patent claims. Second, if the defendant copied from the plaintiff, that fact is likely to provide strong evidence that the defendant was a willful as opposed to an innocent infringer, and therefore to justify an award of enhanced damages for infringement.”)

⁹⁸ 7 Chisum on Patents § 20.03[4][b][v][G] (2019) (“Tension persists in willful infringement case law between two conflicting desires: (1) that of discouraging improper ‘copying’ of patentees’ technology—directly from the patent disclosure or indirectly from the patentees’ commercial embodiments, and (2) that of not discouraging ‘designing around’ patented technology.”).

2 and 3, it is harder to believe one was not aiming for them (or at least somewhere on the board).

Given the Supreme Court's recent guidance in *Halo Electronics, Inc. v. Pulse Electronics, Inc.* that the willfulness determination should be flexible and discretionary, courts are ostensibly entitled to consider the type and scope of the claim as a proper factor in the willfulness analysis in this manner.⁹⁹ Indeed, the Supreme Court recognized that culpability is not binary but lies along a spectrum, holding expressly that "Section 284 allows district courts to punish the *full range* of culpable behavior," even if the Court itself believes that "such punishment should generally be reserved for egregious cases typified by willful misconduct."¹⁰⁰

Beyond the willfulness determination itself that is usually made by a jury, courts may also use the degree of the infringer's culpability in deciding whether and how much of an enhanced damages award is appropriate.¹⁰¹ The willfulness and enhanced damages inquiries tend to have substantial overlap, especially after *Halo* when egregiousness seems to be the new overarching benchmark.¹⁰² As Professor Dmitry Karshedt explained, courts can and have scaled enhanced damages awards in proportion to the culpability of the infringer:

There is a great deal of precedent for awarding lower enhanced damages where the defendant acted in a way that is "worse than negligent but less than malicious," in the old "intentional harm" sense of "malice." Judges assessing enhanced damages may well decide to follow this distinction, generally awarding, say, an amount closer to

⁹⁹ *Halo Elecs.*, 136 S. Ct. at 1933–34 ("Section 284 allows district courts to punish the full range of culpable behavior. Yet none of this is to say that enhanced damages must follow a finding of egregious misconduct. As with any exercise of discretion, courts should continue to take into account the particular circumstances of each case in deciding whether to award damages, and in what amount. Section 284 permits district courts to exercise their discretion in a manner free from the inelastic constraints of the *Seagate* test. Consistent with nearly two centuries of enhanced damages under patent law, however, such punishment should generally be reserved for egregious cases typified by willful misconduct.")

¹⁰⁰ *Id.* at 1933–34 (emphasis added); *see also id.* at 1932 ("District courts enjoy discretion in deciding whether to award enhanced damages, and in what amount.")

¹⁰¹ While juries currently decide matters of willfulness, judges decide whether such a finding warrants any damages enhancement. Daniel Harris Brean & Bryan P. Clark, *Casting Aspersions in Patent Trials*, 79 U. PITT. L. REV. 145, 160–61 (2017). The legal footing and wisdom of this jury involvement has been questioned. *See id.* at 204 ("Neither willfulness nor bad-faith enforcement have clear jury-trial rights in statutes, direct historical antecedents, or analogous historical contexts. Juries are generally well-suited to decide matters of culpability, but these specific culpability issues are probably better resolved by judges.")

¹⁰² Dmitry Karshedt, *Enhancing Patent Damages*, 51 U.C. DAVIS L. REV. 1427, 1531–32 (2018) ("Whatever the exact relationship between the jury willfulness standard and the trial judge enhancement standard, the inquiries overlap to some extent. For example, a good-faith belief of invalidity or noninfringement is likely relevant to the former as well as the latter, even for courts that have replaced or supplemented the *Read* factors with the more amorphous 'egregiousness' determination." (footnote omitted)); *id.* at 1531 ("Although it is difficult to draw generalizations less than two years after *Halo* was decided, trial judges appear to treat egregiousness as a kind of overarching requirement for awarding enhanced damages that they must enforce after the patentee proves to the jury that the infringer acted willfully.")

double damages for the former but closer to treble damages for the latter. To aid in this analysis, a jury could be asked to indicate whether the infringement was reckless or intentional on a special verdict form, or a judge could decide whether the facts supporting a jury's decision to open the door for enhanced damages allow for the conclusion of intentional conduct or that which is merely reckless.¹⁰³

To the extent that infringement of a dependent claim indicates a comparatively greater degree of culpability, that factor would support a comparatively greater enhancement of damages.

Finally, while ordinary damages are intended to compensate for the patentee's private harms,¹⁰⁴ enhancing those damages warrants even more consideration of societal harms to further the particular deterrence goals of damages enhancement.¹⁰⁵ For example, choosing to infringe patents can be economically inefficient in a variety of ways (e.g., generating deadweight litigation costs), which should be avoided where feasible.¹⁰⁶ In some cases, those inefficiencies may be more pronounced for a party's willful infringement of dependent claims—e.g., a narrowly-defined feature of interest is easier to find in patent searches for purposes of ex ante licensing, and is easier to design around as well.¹⁰⁷ More broadly, the public value of the higher quality disclosure and relative claim precision that tends to be associated with dependent claims, discussed above, may be especially significant to consider in the context of willfulness and enhanced damages. If intentional infringement offends public policy and

¹⁰³ *Id.* at 1533–34 (footnotes omitted); *see also id.* at 1533 (“[T]he current structure gives the judge the ability to modulate the amount of enhanced damages based on the severity of the infringer’s conduct, considerations of efficiency and deterrence specific to the circumstances of the case, and, perhaps, even based on the judge’s conclusion that the compensatory damages award is sufficiently severe that little or no enhancement is needed to ensure that the infringer is ‘punished.’”).

¹⁰⁴ *WesternGeco LLC v. ION Geophysical Corp.*, 138 S. Ct. 2129, 2139 (2018) (“Under § 284, damages are ‘adequate’ to compensate for infringement when they ‘plac[e] [the patent owner] in as good a position as he would have been in’ if the patent had not been infringed. Specifically, a patent owner is entitled to recover ‘the difference between [its] pecuniary condition after the infringement, and what [its] condition would have been if the infringement had not occurred.’” (alterations in original) (citations omitted) (first quoting *General Motors Corp. v. Devex Corp.*, 461 U.S. 648, 655 (1983), then quoting *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 507 (1964))).

¹⁰⁵ *See Karshedt*, *supra* note 102, at 1541 (“[E]nhanced damages are, in fact, one remedy for which some consideration of societal harms, as opposed to merely private ones, is possible even presently in civil litigation.”); *see also id.* at 1533.

¹⁰⁶ *Id.* at 1510 (“The goals of patent remedies should be, on the whole, to encourage efficient conduct, however defined, not to mete out punishment that would preclude retribution and self-help.”).

¹⁰⁷ *See id.* at 1519–25 (proposing that the degree of patent searching and analysis employed by a defendant, in the context of the particular case, should be considered as part of the enhanced damages assessment); *id.* at 1528 (suggesting that even for intentional infringers, efficiency considerations matter, and that a “fact-finder could evaluate whether the defendant was already ‘locked-in’ to using the infringing product, or whether there was a reason that negotiating a license would generate high transaction costs. If the costs of avoiding infringement in these circumstances were high, a finding of willfulness may be unwarranted” (footnotes omitted)).

deserves punishment, it is especially offensive to infringe the claims most clearly and closely tied to the patent's express teachings—teachings that the patent system as a whole is fundamentally designed to channel into it in exchange for the patent protection.¹⁰⁸

D. *Injunctions and Equitable Harm*

Finally, the scope and type of claim may also have relevance to the propriety of injunctive relief, particularly as it relates to the patentee's burden of showing irreparable harm.¹⁰⁹ As with damages, infringement of a dependent claim being practiced by the patent owner may cause harm more central to the patentee's commercial activity and provide a more compelling case for injunctive relief.

Because patents provide the right to exclude others from practicing the invention,¹¹⁰ courts have the power to issue injunctions upon findings of infringement.¹¹¹ Deeming injunctions essential to the right to exclude, the Federal Circuit used to presume that an injunction would be entered whenever infringement was found.¹¹² Then, in *eBay v. MercExchange*, the Supreme Court rejected that categorical approach in favor a flexible framework that, in every case, considers four equitable factors:

According to well-established principles of equity, a plaintiff seeking a permanent injunction must satisfy a four-factor test before a court may grant such relief. A plaintiff must demonstrate: (1) that it has suffered an irreparable injury; (2) that remedies available at law, such as monetary damages, are inadequate to compensate for that injury; (3) that, considering the balance of hardships between the plaintiff

¹⁰⁸ See, e.g., *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55, 63 (1998) (“[T]he patent system represents a carefully crafted bargain that encourages both the creation and the public disclosure of new and useful advances in technology, in return for an exclusive monopoly for a limited period of time.”); *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 151 (1989) (“In consideration of [the invention’s] disclosure and the consequent benefit to the community, the patent is granted.”) *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 481 (1974) (“When a patent is granted and the information contained in it is circulated to the general public and those especially skilled in the trade, such additions to the general store of knowledge are of such importance to the public weal that the Federal Government is willing to pay the high price of 17 years of exclusive use for its disclosure, which disclosure, it is assumed, will stimulate ideas and the eventual development of further significant advances in the art.”).

¹⁰⁹ *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 391 (2006).

¹¹⁰ 35 U.S.C. § 154(a)(1) (2012) (“Every patent shall contain a short title of the invention and a grant to the patentee, his heirs or assigns, of the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States or importing the invention into the United States.”).

¹¹¹ *Id.* § 283 (“The several courts having jurisdiction of cases under this title may grant injunctions in accordance with the principles of equity to prevent the violation of any right secured by patent, on such terms as the court deems reasonable.”).

¹¹² *MercExchange, LLC v. eBay, Inc.*, 401 F.3d 1323, 1338 (Fed. Cir. 2005) (“Because the ‘right to exclude recognized in a patent is but the essence of the concept of property,’ the general rule is that a permanent injunction will issue once infringement and validity have been adjudged.”), *vacated*, 547 U.S. 388 (2006).

and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction.¹¹³

After this landmark decision, although injunctions decreased significantly in frequency for noncompetitors and nonpracticing entities,¹¹⁴ patentees that can show competitive injury are still generally able to secure injunctive relief.¹¹⁵

More pointedly, since *eBay*, competition between the parties has become a new benchmark for patent injunctions. The overwhelming majority of injunctions granted after *eBay* have involved the defendant being a competitor of the patentee.¹¹⁶ But even non-practicing patent assertion entities (PAEs), which are generally denied injunctions, have a statistically better chance of getting injunctions than other PAEs if they merely *tried* to be a

¹¹³ *eBay*, 547 U.S. at 391; *see also id.* at 393–94 (“But traditional equitable principles do not permit such broad classifications. . . . Just as the District Court erred in its categorical denial of injunctive relief, the Court of Appeals erred in its categorical grant of such relief.”); *id.* at 394 (“We hold only that the decision whether to grant or deny injunctive relief rests within the equitable discretion of the district courts, and that such discretion must be exercised consistent with traditional principles of equity, in patent disputes no less than in other cases governed by such standards.”).

¹¹⁴ *See generally* Christopher B. Seaman, *Permanent Injunctions in Patent Litigation After eBay: An Empirical Study*, 101 IOWA L. REV. 1949 (2016). Ryan Holte ascribes this shift, in large part, to the influence of Justice Kennedy’s concurring opinion in *eBay*, which was joined by Justices Stevens, Souter, and Breyer. Ryan T. Holte, *The Misinterpretation of eBay v. MercExchange and Why: An Analysis of Case History, Precedent, and Parties*, 18 CHAP. L. REV. 677, 721 (2015) (“One reason for the change in jurisprudence regarding issuance of permanent injunctions post-*eBay*, is that district court judges are citing Justice Kennedy’s concurrence to support holdings that deny injunctions.”); *eBay*, 547 U.S. at 396–97 (Kennedy, J., concurring) (“[T]rial courts should bear in mind that in many instances the nature of the patent being enforced and the economic function of the patent holder present considerations quite unlike earlier cases. An industry has developed in which firms use patents not as a basis for producing and selling goods but, instead, primarily for obtaining licensing fees. . . . When the patented invention is but a small component of the product the companies seek to produce and the threat of an injunction is employed simply for undue leverage in negotiations, legal damages may well be sufficient to compensate for the infringement and an injunction may not serve the public interest.”).

¹¹⁵ *eBay*, 547 U.S. at 391; *see, e.g.*, *Douglas Dynamics, LLC v. Buyers Prods. Co.*, 717 F.3d 1336, 1345 (Fed. Cir. 2013) (“Where two companies are in competition against one another, the patentee suffers the harm—often irreparable—of being forced to compete against products that incorporate and infringe its own patented inventions. The evidence submitted by Douglas leads this court to conclude Douglas has suffered irreparable injury from Buyers’s infringement.”); *Robert Bosch LLC v. Pylon Mfg. Corp.*, 659 F.3d 1142, 1154 (Fed. Cir. 2011) (reversing denial of injunction where parties were direct competitors). On appeal, the Federal Circuit has seemingly favored injunctions in the wake of *eBay* more than the district courts have. *See* Ryan T. Holte & Christopher B. Seaman, *Patent Injunctions on Appeal: An Empirical Study of the Federal Circuit’s Application of eBay*, 92 WASH. L. REV. 145, 202 (2017) (“[T]he Federal Circuit is generally more favorable to prevailing patentees regarding permanent injunctive relief than the district courts following *eBay*. District courts that grant an injunction after a finding of liability are highly likely to be affirmed on appeal, whereas district courts that deny an injunction have a statistically significant lower affirmation rate.”).

¹¹⁶ Seaman, *supra* note 114, at 1990–91 (“Patent holders who competed with an infringer were granted a permanent injunction in the overwhelming majority of cases (84%; 150 of 179 cases), while patentees who were not market competitors rarely succeeded in obtaining injunctive relief (21%; 8 of 39 cases).”).

competitor of the defendant.¹¹⁷ Some commentators applaud this emphasis on competition;¹¹⁸ others have criticized it.¹¹⁹ In any event, it is the market-related injuries that have mostly justified findings of irreparable harm that supported injunctions—most commonly, a loss of market share,¹²⁰ but also harm to goodwill, price erosion, and diminished future business opportunities.¹²¹

If a dependent claim is drafted to encompass a patentee's commercial product, infringement of that claim would underscore the competitive relationship between the patentee and the infringer, weighing more strongly in favor of injunctive relief. Infringement only of a broader independent claim, closer to the periphery of the patent, is less likely to have as strong an effect in the patentee's competitive space. At a minimum, the nature and degree of competitive harm would become more speculative the further away from the patentee's commercial activities that the infringement occurred.

It is not enough that there be a competitive market injury, however, without proof of causation. The Federal Circuit's "nexus" test requires that, to demonstrate irreparable harm, there be a causal connection between the harm and the patented feature(s) that were infringed.¹²² In many industries, such as pharmaceuticals, there is little doubt that a patented compound is purchased from one competitor (e.g., a generic drug maker) at the direct expense of the patent owner, and

¹¹⁷ *Id.* at 1988–90 (“[I]n the rare cases where a PAE was granted an injunction, the patentee was generally a failing or failed operating company that had previously sought to commercialize the patent and thus was only a non-practicing entity at the time of the injunction decision. . . . [A] patentee who has attempted to commercialize its invention—even if that effort was ultimately unsuccessful—has a better chance than other PAEs of demonstrating irreparable harm, which is a critical part of the *eBay* analysis.”).

¹¹⁸ *See, e.g.,* Bernard H. Chao, *After eBay, Inc. v. MercExchange: The Changing Landscape for Patent Remedies*, 9 MINN. J.L. SCI. & TECH. 543, 571 (2008) (“[B]oth the existence of competition and the relative contribution the patented invention makes to the infringing device should play an important role in deciding whether to grant a permanent injunction.”).

¹¹⁹ *See, e.g.,* Holte, *supra* note 114, at 733 (“While every case must be reviewed individually, the post-*eBay* 78%–84% drop in post-trial permanent injunction grants for patent infringers who are not market competitors is a broad abuse of *eBay* practice that needs to be further analyzed and potentially contained.”).

¹²⁰ Seaman, *supra* note 114, at 1993 (“[T]he most common reason by far for finding irreparable harm was loss of market share (80%). This is perhaps unsurprising in light of district courts’ willingness to grant an injunction when the parties are competitors.”).

¹²¹ *Id.* at 1993 (“Another significant source of irreparable harm was loss of goodwill or reputation (43%) due to the infringement. This type of loss may be irreparable because goodwill is ‘often difficult to quantify’ and thus may be difficult or impossible to compensate with money damages.” (citing *Douglas Dynamics, LLC v. Buyers Prods. Co.*, 717 F.3d 1336, 1344–46 (Fed. Cir. 2013))); *id.* at 1993 (“[P]rice erosion (13%) and loss of future business opportunities (19%) are competition-related harms.”). Somewhat surprisingly in this equitable context, willfulness had no statistically significant effect on injunction decisions. *Id.* at 1999 (“[A] finding of willful infringement does not have a statistically significant correlation with permanent injunction decisions.”).

¹²² *Apple Inc. v. Samsung Elecs. Co.*, 809 F.3d 633, 639 (Fed. Cir. 2015) (“[T]here must be proof that the infringement causes the harm.”); *Apple Inc. v. Samsung Elecs. Co.*, 735 F.3d 1352, 1364 (Fed. Cir. 2013) (“Apple must show some connection between the patented feature and demand for Samsung’s products.”).

that the purchase is made because of the compound's chemical and biological properties. Those industries, unsurprisingly, have very high injunction rates.¹²³

In industries with more multifaceted products, however, it can be difficult to show that the cause of the patentee's market injury is the defendant's inclusion of the infringing feature and not some other factor (e.g., other non-patented features, product pricing, or branding).¹²⁴ Thus, electronics and software patents, which tend to involve a plethora of interoperating features and components, have been among the technologies with the lowest injunction rates.¹²⁵ As Professor Chao has explained, "a single infringing feature rarely, if ever, 'causes' [a] consumer[] to buy the infringer's multicomponent product."¹²⁶

Here, if a dependent claim is drafted to encompass the patentee's commercial product, that fact has no necessary correlation to nexus. The feature covered by the dependent claim, and even those covered by its independent claim, may or may not be of sufficient importance to be the cause of any market injury. Even though both the patented and infringing products would occupy a smaller competitive space, which makes the range of infringing substitutes on the market proportionally smaller, that alone says nothing about whether any sales lost to the infringer were because of the patented feature.¹²⁷ That said, if nexus can be proven otherwise, the likelihood that the resulting harm will be the type recognized as irreparable (i.e., competitive injury) is higher in the case of dependent claims

¹²³ Seaman, *supra* note 114, at 1985 ("[P]ermanent injunctions are almost always granted in cases where the patented technology at issue involves biotechnology (100%) or pharmaceuticals (92%).").

¹²⁴ See *Macom Tech. Sol. Holdings, Inc. v. Infineon Techs. AG*, 881 F.3d 1323, 1330 (Fed. Cir. 2018) ("This [nexus] requirement 'ensures that an injunction is only entered against a defendant on account of a harm resulting from the defendant's wrongful conduct, not some other reason.'" (quoting *Apple Inc. v. Samsung Elecs. Co.*, 809 F.3d 633, 640 (Fed. Cir. 2015))).

¹²⁵ Seaman, *supra* note 114, at 1985 ("Injunctions were granted only about two-thirds of the time for electronics (67%), and for medical devices (65%). Most notably, permanent injunctions were granted only slightly over half the time in cases involving computer software (53%)—a result that was statistically significant."); *id.* at 1998 ("When a patent is found to cover a small component, district courts rarely grant an injunction, as reflected by the low odds ratio for this variable. Thus, it appears that district courts are heeding Justice Kennedy's advice to avoid injunctive relief '[w]hen the patented invention is but a small component of the product the [infringer] seek[s] to produce.'" (alterations in original) (footnote omitted) (quoting *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 396 (2006) (Kennedy, J., concurring))).

¹²⁶ Bernard Chao, *Causation and Harm in a Multicomponent World*, 164 U. PA. L. REV. ONLINE 61, 64 (2016) ("Although a competing *product* might take sales away from a patentee, that loss may not be caused by the inclusion of a particular *infringing feature*. . . . Devices like smartphones can be covered by literally hundreds of thousands of patents." (emphasis in original)).

¹²⁷ As Bernard Chao posited, it is inappropriate to ever presume that certain features are important and that infringement causes harm. *Id.* at 71–74 (criticizing the Federal Circuit's nexus jurisprudence for failing to require sufficient proof of actual harm caused by the infringement).

directed to the patentee's commercial embodiment, as discussed above.

Finally, beyond the irreparable harm and the related inadequacy of monetary damages,¹²⁸ the remaining *eBay* factors concerning the public interest and the balance of the hardships may further weigh in favor of comparatively stronger exclusive rights in dependent claims.¹²⁹ Again, a competitive relationship between the parties is important, as the Federal Circuit has stated that "the public interest nearly always weighs in favor of protecting property rights in the absence of countervailing factors, especially when the patentee practices his inventions."¹³⁰ The court's emphasis on protecting the patentee's "investment-backed property right"¹³¹ is especially appropriate for dependent claims, which tend to be more clearly defined and supported by the specification.¹³² Those claims are closer to the core "invention" that resulted from the patentee's investment and that is most helpfully disclosed to the public via the patent application.

As to the balance of the hardships, the Federal Circuit has held that "forcing [a patentee] to compete against its own patented invention" imposes a considerable hardship on the patentee—one that is exacerbated in small markets, and one that will not easily be offset by an infringer's need to remove or design around only the specific patented feature(s).¹³³ By that reasoning, a patentee whose commercial product

¹²⁸ Commentators have noted that the irreparable harm and inadequacy of money damages factors of the *eBay* test, though recited separately, are essentially redundant. Mark P. Gergen, John M. Golden & Henry E. Smith, *The Supreme Court's Accidental Revolution? The Test for Permanent Injunctions*, 112 COLUM. L. REV. 203, 209 (2012) (noting that *eBay's* "requirements of (1) irreparable injury and (2) inadequacy of legal remedies are redundant as these are, traditionally speaking, one and the same"); Jeremy Mulder, Note, *The Aftermath of eBay: Predicting When District Courts Will Grant Permanent Injunctions in Patent Cases*, 22 BERKELEY TECH. L.J. 67, 80 (2007) ("Courts collapse the first two factors [of the *eBay* test], apparently viewing irreparable harm, if an injunction is not granted, and inadequate remedy at law, in the form of damages, as opposite sides of the same coin.").

¹²⁹ *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 391 (2006) (A patentee must show "(1) that it has suffered an irreparable injury; (2) that remedies available at law, such as monetary damages, are inadequate to compensate for that injury; (3) that, considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction.").

¹³⁰ *Apple Inc. v. Samsung Elecs. Co.*, 809 F.3d 633, 647 (Fed. Cir. 2015).

¹³¹ *Id.* ("[T]he public often benefits from healthy competition. However, the public generally does not benefit when that competition comes at the expense of a patentee's investment-backed property right. To conclude otherwise would suggest that this factor weighs against an injunction in every case, when the opposite is generally true. We base this conclusion not only on the Patent Act's statutory right to exclude, which derives from the Constitution, but also on the importance of the patent system in encouraging innovation. Injunctions are vital to this system.").

¹³² See *supra* Part III.

¹³³ *Apple Inc.*, 809 F.3d at 646 ("Samsung's infringement harmed Apple by causing lost market share and lost downstream sales and by forcing Apple to compete against its own patented invention, which 'places a substantial hardship' on a patentee, especially here where it is undisputed that it is essentially a two-horse race. Furthermore, as the district court found, Apple's proposed injunction was narrowly tailored to cause no harm to Samsung other

is specifically protected by a dependent claim would have comparatively stronger grounds for an injunction—the dependent claims focus on the most important competitive space and are comparatively easier to avoid and design around if enjoined.

IV. SHARED RESPONSIBILITY FOR REFORM

Ostensibly, the only reason why patent remedies determinations do not significantly consider the relative nature and scope of the claims involved is a lack of attention to the issue. With more purposeful development of the foregoing remedies theories, a more complete and accurate picture of private harms and public benefits can be constructed. Like many litigation reform efforts, this will be best accomplished by the combined efforts of parties, experts, and judges.

Typically, in a patent trial, the damages models present an all-or-nothing approach, assuming that all asserted claims are infringed¹³⁴ and not considering the relative value of the claims. Some of this may be caused by tight time pressure at trial or pressure to limit the number of claims being asserted to keep matters sufficiently simple for the jury. Or it may be because independent and dependent claims have long been understood to “stand or fall” together in important ways,¹³⁵ though especially when the claims are not separately argued.¹³⁶ This leads to results like those discussed above, where courts assume there is no meaningful difference as to remedies among the claims even if there might be.¹³⁷

than to deprive it of the ability to continue to use Apple’s patented features.” (quoting *Robert Bosch LLC v. Pylon Mfg. Corp.*, 659 F.3d 1142, 1156 (Fed. Cir. 2011)).

¹³⁴ *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1325 (Fed. Cir. 2009) (“The hypothetical negotiation [framework for assessing patent damages] also assumes that the asserted patent claims are valid and infringed.”).

¹³⁵ *See, e.g., Callaway Golf Co. v. Acushnet Co.*, 576 F.3d 1331, 1344 (Fed. Cir. 2009) (“A broader independent claim cannot be nonobvious where a dependent claim stemming from that independent claim is invalid for obviousness.”); *Wahpeton Canvas Co. v. Frontier, Inc.*, 870 F.2d 1546, 1552 n.9 (Fed. Cir. 1989) (“One who does not infringe an independent claim cannot infringe a claim dependent on (and thus containing all the limitations of) that claim.”).

¹³⁶ *See, e.g., Rycos, Inc. v. Ag-Bag Corp.*, 857 F.2d 1418, 1425 (Fed. Cir. 1988) (invalidating claims dependent on an invalid base claim because the dependent claims were not argued separately); *In re Nielson*, 816 F.2d 1567, 1572 (Fed. Cir. 1987); *Perkin-Elmer Corp. v. Computervision Corp.*, 732 F.2d 888, 898 (Fed. Cir. 1984) (“Because the claims have generally been argued together, the validity of all the claims stands or falls with claims 1 and 7.”); *In re Sernaker*, 702 F.2d 989, 991 (Fed. Cir. 1983) (“Since neither of the parties argue separately the patentability of each of the rejected claims, the dependent claims will stand or fall with independent claims 1 and 10.”).

¹³⁷ *See supra* notes 65–69 and accompanying text; *see also CollegeNet, Inc. v. ApplyYourself, Inc.*, 418 F.3d 1225, 1236 (Fed. Cir. 2005) (“ApplyYourself also challenges the district court’s refusal to grant a new trial on the jury’s finding of infringement as to various dependent claims of the ‘278 patent. However, having affirmed the district court’s grant of summary judgment of infringement of claims 1, 9, 10 and 21 of the ‘278 patent, there is no reason for this court to reach this argument. After all, infringement of even a single claim entitles a patentee to damages. Therefore, even if the district court had concluded that the

The tendency to lump together multiple patent claims for all-or-nothing disposition has perhaps been most pronounced in the aftermath of the landmark *Alice Corporation Pty. Ltd. v. CLS Bank International* decision,¹³⁸ where many claims were being held patent-ineligible under Section 101 upon the early adjudication of one or two “representative” claims.¹³⁹ The Federal Circuit has endorsed the representative claims approach at least when the parties have failed to treat the claims independently,¹⁴⁰ but even then that approach is in tension with some of the court’s own precedent.¹⁴¹ Some judges have now pushed back on broad-stroke motions that encompass many distinct claims in the Section 101 context, requiring that the burden be carried across all challenged claims,¹⁴² and the Federal Circuit itself recently imposed

infringement verdicts on claims 6-8 and 27 of the ‘278 patent were against the clear weight of the evidence, the damages awarded on the ‘278 patent would still stand.”); *Wahpeton Canvas Co.*, 870 F.2d at 1552 n.10 (“Because a reversal on appeal on one independent claim would give Wahpeton all it needs for victory, submission of the infringement issue on a plethora of dependent claims in Wahpeton’s motion and appeal is difficult to understand. Infringement of an independent claim would result in the same damage award as would infringement of all claims dependent thereon and non-infringement of an independent claim carries with it non-infringement of all claims dependent thereon.”); *see also* *Total Containment, Inc. v. Environ Prods., Inc.*, 921 F. Supp. 1355, 1394 n.20 (E.D. Pa. 1995) (“The court knows of no reason for asserting the numerous dependent claims that have been asserted in this action. The damages are the same whether there is infringement of one or one hundred claims. Damages are not multiplied by the number of claims infringed.”).

¹³⁸ *Alice Corp. Pty. v. CLS Bank Int’l*, 573 U.S. 208 (2014).

¹³⁹ *See, e.g.*, *Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1147 (Fed. Cir. 2016) (affirming judgment as to 8 claims based on analysis of single representative claim); *Intellectual Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307, 1313 (Fed. Cir. 2016) (affirming judgment as to 5 claims based on analysis of single representative claim); *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat’l Ass’n*, 776 F.3d 1343, 1345 (Fed. Cir. 2014) (affirming judgment as to 242 claims based on consideration of only two representative claims).

¹⁴⁰ *See Berkheimer v. HP Inc.*, 881 F.3d 1360, 1365 (Fed. Cir. 2018) (“Courts may treat a claim as representative in certain situations, such as if the patentee does not present any meaningful argument for the distinctive significance of any claim limitations not found in the representative claim or if the parties agree to treat a claim as representative.”); *Content Extraction & Transmission, LLC*, 776 F.3d at 1348 (permitting treatment of “representative claim” where the patentee “never asserted . . . that the district court should have differentiated any claim from those identified as representative . . . [n]or did [the patentee] identify any other claims as purportedly containing an inventive concept”).

¹⁴¹ While it might be proper to dispose of dependent claims that admittedly rise or fall with an independent claim pre-issuance, given the presumption of validity for issued patents, the Federal Circuit has previously held “that rule has no application in a district court proceeding to determine whether the claims of an issued patent are valid.” *Shelcore, Inc. v. Durham Indus.*, 745 F.2d 621, 624 (Fed. Cir. 1984); *see also id.* at 625 (“[A] party challenging the validity of a claim, absent a pretrial agreement or stipulation, must submit evidence supporting a conclusion of invalidity of *each* claim the challenger seeks to destroy.” (emphasis in original)).

¹⁴² *See, e.g.*, *Pragmatus Telecom, LLC v. Genesys Telecomms. Labs., Inc.*, 114 F. Supp. 3d 192, 199 (D. Del. 2015) (“All Defendants have done is stated, in a conclusory fashion, that none of the other asserted claims in the other three patents include ‘any meaningful limitation’ that establishes patent eligibility. This is not enough. Absent additional analysis, the Court will only deal with the patent eligibility of the claims of the ‘314 Patent. If Defendants wish to challenge the other patents under § 101, they must actually provide analysis for this position.”); *TriPlay, Inc. v. WhatsApp Inc.*, No. 13-1703-LPS, 2015 U.S. Dist. LEXIS 55068, at *18-19 (D. Del. Apr. 28, 2015) (“[F]rom a procedural and practical perspective, a process in which a defendant seeks to have large groups of claims ruled subject matter ineligible after giving negligible attention to them strikes the Court as unfair and

more procedural hurdles to successful Section 101 challenges.¹⁴³ Whether judge driven or party driven (likely both), the shift toward more purposeful consideration of individual claims in the Section 101 context may substantially reduce all-or-nothing decisions based on representative claims.¹⁴⁴ If nothing else, more individualized treatment properly respects the function of claiming and the distinct legal effects of each claim.

A similar effort from both parties and judges should be made to push for individualized consideration of patent remedies on a claim-by-claim basis. Judges are more inclined to consider claims individually when the parties treat the claims individually.¹⁴⁵ And parties are more inclined to do that if judges express interest in understanding the differences and nuances between asserted claims and how they might justify a range of results. This can be accomplished via discovery orders, local rules, alternative dispute resolution, or other means. Notably, some courts already require early damages disclosures that seem to permit, but do not specifically encourage or require, this kind of claim-by-claim discussion.¹⁴⁶

fraught with the potential for problematic decisionmaking. In the end, as the moving party, Defendant bears the burden to demonstrate that its asserted Section 101 defense is well taken as to each claim. In the absence of significant discussion regarding claims other than claims 1 and 12, the Court finds that Defendant has not carried its burden as to those claims.”)

¹⁴³ Specifically, the Federal Circuit held that “[w]hether something is well-understood, routine, and conventional to a skilled artisan at the time of the patent is a factual determination.” *Berkheimer*, 881 F.3d at 1369. Such facts may be established by the patent specification. *See id.* at 1370. Such factual averments must also be accepted as true when stated in the patentee’s complaint for Rule 12(b)(6) purposes. *See Aatrix Software, Inc. v. Green Shades Software, Inc.*, 882 F.3d 1121, 1130 (Fed. Cir. 2018).

¹⁴⁴ The Federal Circuit also acknowledged that “not every § 101 determination contains genuine disputes over the underlying facts material to the § 101 inquiry.” *Berkheimer*, 881 F.3d at 1368. Further, that claim construction should but is not required to occur as needed to resolve § 101 disputes at the pleadings stage, which may temper the effects of those recent decisions. *See Aatrix*, 882 F.3d at 1125.

¹⁴⁵ *See, e.g.*, *Puckett v. United States*, 556 U.S. 129, 140 n.2 (2009) (“That argument might have convinced us had it been pressed, but the Government conceded the breach, and we analyze the case as it comes to us.”); *Calgon Carbon Corp. v. Potomac Capital Inv. Corp.*, No. 98-0072, 2007 WL 2907865, at *8 (W.D. Pa. Sept. 28, 2007) (“All defendants are sophisticated parties with the benefit of very experienced counsel. In fact, defendants had numerous attorneys present at all times during trial. During the course of trial, the court can only rule on arguments made and motions presented by such experienced counsel. The court did not, and would not, question defendants’ strategic choice to rely on the novel argument that contributory negligence was not an affirmative defense under Florida law, and therefore, did not have to be pled in federal court. They argued this consistently and vigorously. Defendants’ attempts to second guess this strategy, and place their mistakes at the feet of this court are disingenuous, at best.”).

¹⁴⁶ *See, e.g.*, Local Patent Rule 2-1(b)(5) (N.D. Cal.) (requiring that, at the Initial Case Management Conference, “[t]he parties shall provide the court with a non-binding, good-faith estimate of the damages range expected for the case along with an explanation for the estimates”); Local Patent Rule 3-8 (requiring disclosure of Damages Contentions during discovery, where parties must “[i]dentify each of the category(-ies) of damages it is seeking for the asserted infringement, as well as its theories of recovery, factual support for those theories, and computations of damages within each category”); Local Patent Rule 3.6 (W.D. Pa.) (“Not later than fourteen (14) calendar days after production of the summary sales and use information set forth in LPR 3.5, the party asserting patent infringement

Expert witnesses warrant special attention, as their testimony is among the primary sources of evidence by which remedies are assessed.¹⁴⁷ Damages experts provide appraisals and economics experts evaluate market effects. Parties should ensure that their experts at least consider and offer alternative opinions in the event that only some asserted claims are both valid and infringed. Although the hypothetical negotiation framework for assessing reasonable royalty damages,¹⁴⁸ for example, assumes that the asserted claims are valid and infringed,¹⁴⁹ nothing in the law requires that the assessment *only* be done wholesale, assuming that *all* asserted claims are valid and infringed.

As noted above, some claims may specifically cover commercial products of the patentee and substantially influence the harm resulting from any infringement.¹⁵⁰ Similarly, the cost and ease of implementing a design-around influences the royalty rate and may differ significantly from claim to claim.¹⁵¹ If there are such meaningful differences of claim scope, an expert's failure to factor those differences into the analysis does a disservice to his or her client—if only some of those claims turn out to be valid and infringed, any damages award might be “clearly not supported by the evidence, or based only on speculation or guesswork,” and cannot be upheld.¹⁵² The failure of an expert to conduct a distinct claims assessment may even warrant excluding the expert's opinion under *Daubert v. Merrell*

shall serve upon the party asserting non-infringement a good faith estimate of its expected damages, including a summary description of the method used to arrive at that estimate.”)

¹⁴⁷ See 35 U.S.C. § 284 (2012 & Supp. V 2018) (“The court may receive expert testimony as an aid to the determination of damages or of what royalty would be reasonable under the circumstances.”).

¹⁴⁸ See *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970) (listing various factors for assessing a “reasonable royalty” measure of damages, such factors purporting to approximate the value of a license to use the patent and/or invention overall).

¹⁴⁹ *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1325 (Fed. Cir. 2009) (“The hypothetical negotiation [framework for assessing patent damages] also assumes that the asserted patent claims are valid and infringed.”).

¹⁵⁰ See *supra* Part II.

¹⁵¹ See *Grain Processing Corp. v. Am. Maize-Prods. Co.*, 185 F.3d 1341, 1350–51 (Fed. Cir. 1999) (“[A] fair and accurate reconstruction of the ‘but for’ market also must take into account, where relevant, alternative actions the infringer foreseeably would have undertaken had he not infringed. Without the infringing product, a rational would-be infringer is likely to offer an acceptable noninfringing alternative, if available, to compete with the patent owner rather than leave the market altogether.”).

¹⁵² *Lucent Techs., Inc.*, 580 F.3d at 1310 (quoting *State Contracting & Eng'g Corp. v. Condotte Am., Inc.*, 346 F.3d 1057, 1072 (Fed. Cir. 2003) (internal quotation marks omitted)).

*Dow Pharmaceuticals, Inc.*¹⁵³ and Rule 702¹⁵⁴ for being economically unsound and unreliable.¹⁵⁵

To avoid such outcomes, parties should not only affirmatively offer expert testimony that accounts for plausible partial verdicts on liability, but should also cross-examine the opposing expert on the subject, employing mechanisms like motions *in limine* and *Daubert* challenges to further police inadequate damages assessments or other market harm analysis.

CONCLUSION

Contrary to conventional wisdom, dependent claims may frequently be more valuable to the public and to the patent owner than their independent base claims. Consequently, those dependent claims may warrant comparatively stronger remedies and greater recovery. Recognizing this relativity provides patent remedies with desirable flexibility.¹⁵⁶ Because such grading only potentially limits—but does not mandate or eliminate—any particular remedies, it is a fine-tuning tool to help strike the right balance between too-broad claims that unduly preempt the field and too-narrow claims that under-incentivize innovation and commercialization.¹⁵⁷ Finally, this grading continues to encourage

¹⁵³ *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993) (“The inquiry envisioned by Rule 702 is, we emphasize, a flexible one. Its overarching subject is the scientific validity—and thus the evidentiary relevance and reliability—of the principles that underlie a proposed submission. The focus, of course, must be solely on principles and methodology, not on the conclusions that they generate.” (footnotes omitted)).

¹⁵⁴ FED. R. EVID. 702 (“A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if: (a) the expert’s scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue; (b) the testimony is based on sufficient facts or data; (c) the testimony is the product of reliable principles and methods; and (d) the expert has reliably applied the principles and methods to the facts of the case.”).

¹⁵⁵ *See Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1315, 1318 (Fed. Cir. 2011) (explaining that royalty rates that are “arbitrary” and “unrelated to the facts of th[e] case” are “unreliable and irrelevant”); *see also Riles v. Shell Exploration & Prod. Co.*, 298 F.3d 1302, 1311 (Fed. Cir. 2002) (explaining that damages experts must base their damages theories on “sound economic and factual predicates”).

¹⁵⁶ John M. Golden, *Principles for Patent Remedies*, 88 TEX. L. REV. 505, 553 (2010) (“[R]egardless of how extreme or moderate one makes the default rules for patent remedies, there seems likely to be a nontrivial probability that those rules are not quite right and, indeed, perhaps very wrong in a significant number of cases. Incorporation of some flex in such default rules would therefore seem wise.”).

¹⁵⁷ *Merges & Nelson*, *supra* note 58, at 875 (“Property rights that are too narrow will not provide enough incentive to develop the asset, while overly broad rights will preempt too many competitive development efforts.”). Many substantive patent doctrines affect this balance as well, but as John Golden explained, remedies are among the many aspects of the patent system that must all be adjusted to fine-tune and optimize outcomes. *See Golden*, *supra* note 156, at 527 (“For the policy maker seeking to fine-tune the operation of the patent system, the presence of so many interacting and adjustable parts complicates the task of finding the optimal balance. Adjusting one knob can require compensating adjustments to any of a number of others. Altering the length of the patent term, for example, can substantially affect the extent to which a patentee is likely to be properly rewarded, thereby generating a need for weaker or stronger

the examination efficiencies that flow from using dependent claims, but also encourages production of higher-quality patent disclosures that more clearly signal and define the most important embodiments of the invention.¹⁵⁸ For the benefit of the patent system, parties, their experts, and judges should pay closer attention to claim scope and claim type when assessing remedies.

To be clear, the point is not that damages are currently too high or too low, or that injunctions are too easy or too difficult to obtain. The point is that meaningful differences in claim scope should matter—and not just for validity and infringement purposes. Each patent claim that is asserted is, in effect, a distinct cause of action and it should be treated as such. If, as Judge Giles Rich famously proclaimed, “the name of the game is the claim,”¹⁵⁹ then the game should come out differently when different claims are in play.

remedies.” (footnotes omitted); *see also* Chao, *supra* note 36, at 1371 (arguing that “patent law needs to constrain claim scope so that it does not depart too far from the specification . . . without limiting claims to the described embodiments and their most trivial variations,” and that flexibility in remedies law can accomplish that result).

¹⁵⁸ Golden, *supra* note 156, at 561 (“The principle of learning looks toward fashioning a regime of patent remedies that encourages the production of information that can be used to improve the regime itself.”); *id.* at 562 (2010) (“[T]he burdens of production and proof assigned and the form of relief ultimately provided should, all else being equal, be arranged so as to encourage optimal information production and disclosure.”).

¹⁵⁹ Rich, *supra* note 25, at 499 (“To coin a phrase, the name of the game is the claim.”).