Remembering Dr. Dmitry Karshtedt as a Scholar and Friend

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Recommended Citation

J. Jonas Anderson, Sean B. Seymore, and Timothy R. Holbrook, Remembering Dr. Dmitry Karshtedt as a Scholar and Friend, 21 NW. J. TECH. & INTELL. PROP. ().
https://scholarlycommons.law.northwestern.edu/njtip/vol21/iss3/6

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REMEMBERING DR. DMITRY KARSHTEDT AS A SCHOLAR AND FRIEND

J. Jonas Anderson, Sean B. Seymore & Timothy R. Holbrook
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J. Jonas Anderson, * Sean B. Seymore† & Timothy R. Holbrook‡

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Professor Dmitry Karshtedt was one of the preeminent patent law scholars of the past decade. Professor Karshtedt’s scholarship influenced the way that the Supreme Court thinks about patent law’s enablement doctrine. His work exploring the boundaries between patent law and tort law led to significant change in various areas of patent law. His work on nonobviousness changed the conversation about patent law’s most important doctrinal area. This article pays homage to Professor Karshtedt’s influential scholarship, illuminating his profound impact on the field while offering a glimpse into the enduring friendship shared by the authors and Professor Karshtedt.

We shared a unique perspective on Professor Karshtedt’s scholarship. We have known Professor Karshtedt since before he was a law professor. Indeed, all of us first encountered him when he was a law student. We all had a shared love and awe at Professor Karshtedt’s breathtaking brilliance. Professor Karshtedt was one of the most well read, knowledgeable, and generous scholars we have met. His dedication to his students, his ability to simplify complex legal concepts, and his unwavering commitment to fostering intellectual curiosity are qualities that endear him to colleagues and students alike.

We witnessed the evolution of Professor Karshtedt’s scholarship firsthand, often engaging in spirited debates over patent law intricacies that enriched our lives. Yet, we shared not only an academic connection but also a deep friendship with Professor Karshtedt. For us, this article is more

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than an assessment of Professor Karshtedt’s academic legacy. It is also a moment for us to reflect on the person and friend that Professor Karshtedt was and to process what his absence will mean to us. In other words, it is our chance to say goodbye.

Through anecdotes and reflections, this article offers a personal glimpse into the man behind the scholarship, revealing the passion, humility, and wit that made Professor Karshtedt not only an exceptional scholar but also a cherished friend. This article serves as a tribute to his extraordinary scholarly contributions, blending a profound respect for his work with a deep sense of loss at his passing.

We begin by summarizing the articles by Professor Karshtedt that most impacted us and our thinking about patent law. We then shift to the personal, where we discuss Professor Karshtedt, the person, and our friendship with him. We hope that this article helps advance Professor Karshtedt’s legacy—not only as an outstanding scholar but also as an incredible person and friend.

I. Dmitry Karshtedt, the Scholar: the Articles that Most Impacted Us

To explore Professor Karshtedt’s impact as a scholar, each of us has selected an article that significantly impacted our own thinking on patent law. The topics of these articles vary significantly, demonstrating both the breadth and the depth of Professor Karshtedt’s work.

A. The Completeness Requirement in Patent Law

Professor Karshtedt and I shared a unique bond—we each earned a Ph.D. in chemistry before becoming law professors. Indeed, we were both trained as inorganic chemists and our doctoral advisors are good friends. So it’s not surprising that issues involving scientific research—particularly those involving chemistry, biotechnology, and pharmaceuticals—pervade our patent scholarship. This was a source of pride for us. Indeed, Professor Karshtedt was eager to remind anyone who’d listen that the first patent granted in the United States involved chemistry—an improved method for making potash (potassium carbonate).

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1 Professor Sean B. Seymore wrote this section.
Given this shared background, our scholarly research interests often overlapped. One topic that frustrated us is how courts handle chemical inventions whose primary function is to serve as research inputs or “building blocks” for other things. Simply put, courts invoke a variety of patent doctrines to deem such “upstream” inventions as per se unpatentable, often out of a concern of their (potential) negative effects on “downstream” innovation. Our angst led us to write about it. My unbridled frustration spawned a tetralogy of articles on the courts’ intransigence. By contrast, the more restrained Professor Karshtedt wrote one comprehensive article entitled The Completeness Requirement in Patent Law. Completeness will be my focus.

Professor Karshtedt sets up the problem with a few hypotheticals, which I’ll summarize. First, consider a chemist who discovers a new method of making a certain type of chemical bond. A pervasive challenge in synthetic chemistry is to figure out a way to make chemical bonds (and hence, new molecules) more efficiently (and hence, cheaply). This new method would “add[] to other chemists’ toolkits and pave[] the way for making an entirely new class of molecules, opening up possibilities of discovery of new drugs, useful materials, and so on.” Given this scientific utility and commercialization potential, the inventor attempts to patent the method.

Second, consider a biomedical researcher who discovers that interfering with the function of a specific receptor in the human body can

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3 We co-authored one patent article together which, not surprisingly, had a chemistry focus. See Dmitry Karshtedt, Mark A. Lemley & Sean B. Seymore, The Death of the Genus Claim, 35 HARV. J.L. & TECH. 1 (2021).

4 See Katherine J. Strandburg, What Does the Public Get? Experimental Use and the Patent Bargain, 2004 WIS. L. REV. 81, 123 (2004) (“The concern with patented research tools arises from the fear that a research tool may give the tool inventor the ability to block technological progress by controlling the research that may be performed using the tool . . . .”); Peter Yun-hyoung Lee, Inverting the Logic of Scientific Discovery: Applying Common Law Patentable Subject Matter Doctrine to Constrain Patents on Biotechnology Research Tools, 19 HARV. J.L. & TECH. 79, 81 (2005) (“Allowing [patents] over such research tools permits propertization near the beginning of the development chain and threatens to establish individual control over broad areas of scientific research.”).


7 This hypothetical is loosely based on a chemical invention deemed unpatentable in Brenner v. Manson, 383 U.S. 519, 534 (1966).

8 Karshtedt, supra note 6, at 950.

9 Id.
reduce “inflammation associated with diseases such as arthritis.”\(^{10}\) This discovery treats inflammation while avoiding “undesirable side effects such as stomach upset [sic], irritation, ulcers, and bleeding.”\(^{11}\) The utility of the discovery is clear—it opens the door for a new type of painkillers that’d be easy on the stomach. So, the researcher attempts to patent the method of treating the inflammation based on the discovery of the receptor function as well as a roadmap for finding drugs that would interfere with it.\(^{12}\)

Third, consider a biochemist who discovers a method for optimizing dosages of a particular drug based on the measured concentration of a chemical compound (a “probe molecule”) in a patient’s blood sample.\(^{13}\) The inventor licenses the technology to a company that designs and sells kits for optimizing the drug dosages. Medical experts praise the invention as a major development in the treatment of inflammatory bowel disease, and researchers and doctors use the kit to make further discoveries. While the inventor could merely claim the kit, the inventor attempts “to claim a general method of optimizing the drug dosage based on the measured concentration of the probe molecule.”\(^{14}\)

In fact, these hypotheticals are based on true stories. The courts held that “none of them could be patented in view of what the inventors claimed and what they disclosed (or, rather, failed to disclose) in their patent applications.”\(^{15}\) The first invention is unpatentable because it lacks utility.\(^{16}\) Although a new method of making chemical bonds has practical utility for chemists, it falls short of the judicially-created “substantial” utility requirement.\(^{17}\) As the Federal Circuit later explained, the applicant “must show that an invention is useful to the public as disclosed in its current form, not that it may prove useful at some future date after further research.”\(^{18}\) This excludes basic research\(^ {19}\) and methods of making chemical compounds.\(^ {20}\)

\(^{10}\) Univ. of Rochester v. G.D. Searle & Co., 358 F.3d 916, 917 (Fed. Cir. 2004).

\(^{11}\) Id. at 918.

\(^{12}\) Karshtedt, supra note 6, at 950.


\(^{14}\) Karshtedt, supra note 6, at 951.

\(^{15}\) Id. at 951 (citing Brenner, 383 U.S. at 534; Univ. of Rochester, 358 F.3d at 929; Mayo, 566 U.S. at 92).


\(^{18}\) In re Fisher, 421 F.3d at 1371.

\(^{19}\) See NAT’L SCI. FOUND., THE STATE OF U.S. SCIENCE AND ENGINEERING 31 (2022) (defining basic research as “[e]xperimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or
The second invention fails the written description requirement.\(^{21}\) Whereas the utility requirement denies patents on well-defined chemical compounds that lack a present-day benefit to the public, the written description requirement denies patents “that claim chemical compounds in terms of their beneficial function but fail to provide any actual chemical structures.”\(^{22}\) For a chemical invention to be complete, the court requires the disclosure of actual chemical structures—not a research plan, search method, or roadmap for finding drugs that would act on a biological target.\(^{23}\)

The third invention fails the patentable subject matter requirement.\(^{24}\) The courts deem optimizing therapeutic efficiency merely an application of an (unpatentable) law of nature.\(^{25}\) The stated concern is that granting such patents upstream in the research and development process would “inhibit future innovation”\(^{26}\) and “foreclose[] more future invention than the underlying discovery could reasonably justify.”\(^{27}\)

The common thread in these unpatentable inventions is that they are “building block” inventions\(^{28}\) from “unpredictable” fields like chemistry and biotechnology.\(^{29}\) I’ve explained that “[t]he common thread shared by all building blocks—regardless of the nature of the technology—is that

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\(^{22}\) See 35 U.S.C. § 112(a) (2012) (“The [patent document] shall contain a written description of the invention . . . .”). The purpose of the written description requirement is to ensure that the inventor had “possession” of the invention as of the patent application’s filing date. See also Ralston Purina Co. v. Far-Mar-Co, Inc., 772 F.2d 1570, 15275 (Fed. Cir, 1985).

\(^{23}\) Karshtedt, supra note 6, at 974 (citing Ariad Pharm., Inc. v. Eli Lilly & Co., 598 F.3d 1336, 1358 (Fed. Cir. 2010) (en banc); Univ. of Rochester v. G.D. Searle & Co., 358 F.3d 916, 929 (Fed. Cir. 2004)).

\(^{24}\) See Univ. of Rochester, 358 F.3d at 926–30.

\(^{25}\) See 35 U.S.C. § 101 (2012) (“Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent . . . .”).


\(^{27}\) Id. at 86.

\(^{28}\) Id.

\(^{29}\) Seymore, Foresight Bias, supra note 5, at 1111; cf. Mayo, 566 U.S. at 89 (noting “the underlying ‘building-block’ concern”).

In experimental sciences like chemistry, biotechnology, and pharmacology, it’s often hard to predict chemical reactivity or outcomes with a reasonable expectation of success. Seymore, Foresight Bias, supra note 5, at 1115 (citing Sean B. Seymore, Heightened Enablement in the Unpredictable Arts, 56 UCLA L. REV. 127, 136–54 (2008)). Indeed, “a slight variation in a [structure or] method can yield an unpredictable result or may not work at all.” Cedarapids, Inc. v. Nordberg, Inc., No. 95–1529, 1997 WL 452801, at 2 (Fed. Cir. Aug. 11, 1997).
their principal usefulness is the structural role they perform in creating the bigger thing.” But all building blocks aren’t alike in patent law. Professor Karsh tedt observed that the unpredictability of downstream research with building blocks from unpredictable fields “has the potential to cover many unforeseeable, transformative applications.” The fear is that granting patents on upstream building blocks will create problems for future research and hinder downstream activities. Professor Karsh tedt provides a hypothetical that illustrates the fear:

[T]he concern behind allowing a patent on a chemical compound without an identified consumer utility is that subsequent researchers who discover such a use—for example, biological activity against cancer cells—will be beholden to the owner of the patent on the compounds. The patentee might threaten litigation to enjoin downstream research, charge an unreasonable royalty, or tie up the follow-on researcher in extensive, costly negotiations over the patent right. Faced with this prospect, the follow-on researcher might forgo investigating a certain chemical structure during the life of the patent, and society would then lose out . . .

Thus, an early-stage patent on a research input could become a “bottleneck[]” which stifles downstream research and innovation. He argues that the critical policy concern isn’t blocking, but rather the possibility of upstream patents preempting downstream research.

My view is that judges—not unlike ordinary persons—tend to fear things they can’t see (like chemical compounds), let alone understand. Professor Karsh tedt liked a hypothetical where I describe that a chemist who seeks to patent a molecular scaffold—a chemical whose primary purpose is to serve as a backbone for a larger chemical—would face a lack-

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30 Seymore, *Foresight Bias*, supra note 5, at 1114.
31 Karsh tedt, *supra* note 6, at 958.
32 *Id.* at 966.
33 *Id.* at 967 (citations omitted).
34 “Indeed, the Patent Act expressly contemplates patents for new uses of known things, even when the known thing is itself patented.” *Id.* at 984 (citing 35 U.S.C. § 100(b) (2012)). In discussing Fisher, Professor Karsh tedt argues that “[p]atent claims on microscope inventions, just like claims on chemical inventions, can be complete or incomplete depending on the stage of the invention’s development and that invention’s potential to facilitate (and, if patented, to block) further research and development activity.” *Id.* at 985.
35 *Id.* at 984. Karsh tedt convincingly argues that “[c]ourts do not like patents on upstream inventions, and, in the absence of a statutory prohibition against the objects of basic research, they . . . [find ways] to invalidate claims that are drawn to them.” *Id.* at 981.
36 Seymore, *Foresight Bias*, supra note 5, at 1128. This can be traced to the Latin proverb “Damnant quod non intellegunt,” which literally means “[t]hey condemn what they do not understand.” WALDO E. SWEET, LATIN PROVERBS 87 (Georgia Irby-Massie & Scott Van Horn eds., 2002).
of-utility rejection. By contrast, “the utility of other types of building blocks—things like bricks, steel beams, and software modules—is never questioned.”

Professor Karshtedt’s proposal to address the building block conundrum is two-fold. First, he sought recognition of a “unified completeness requirement” in patent law. To determine completeness, the decision maker would evaluate “the generality and unpredictability of the claimed invention’s applications.” To illustrate, a claim to a new chemical compound with unknown uses would fail the completeness test because it “could become a cancer drug, a lubricant, or a fuel, or it could function as an intermediate for making other chemicals.” The new compound might have a wide array of (yet unknown) downstream applications, including those that can’t be foreseen. By contrast, a method for forming a new chemical bond in a specific chemical setting would be complete. This is because the method would only be applicable in a narrow set of circumstances, thereby precluding it from “transformative and unpredictable downstream applications.”

Second, Professor Karshtedt proposed a limited patent right for upstream, basic-research inventions that satisfy the completeness requirement. This partial patent would incentivize basic research and serve as a mechanism for inducing disclosure—particularly in situations where peer reviewed publications aren’t present. What’s curious about this limited patent right is that I proposed something similar in The Research Patent. Interestingly, Professor Karshtedt and I reached our respective proposals independently. Although Professor Karshtedt and I talked regularly about current and future research projects, Completeness

37 Seymore, Foresight Bias, supra note 5, at 1112.
38 Id. As one commentator wisely observes, “[chemical] intermediates or building blocks are very little different from bricks which as individual pieces of ceramic [sic] material have no utility but which do have utility because they can be fabricated into a wall or other structure.” Edward H. Valance, Patentability of Chemical Intermediates: The ‘Nelson’ Case in Perspective, 3 J. CHEM. DOCUMENTATION 33, 34 (1963) (quoting Brief for Connecticut Patent Law Association as Amicus Curiae at 10, In re Nelson, 280 F.2d 172 (C.C.P.A. 1960) (No. 6338)). Indeed, chemical building blocks “are no less useful to a skilled chemist than bricks to an architect or mason.” Id. at 1128.
39 Karshtedt, supra note 6, at 992–1013.
40 Id. at 992.
41 Id. at 1002.
42 Id.
43 Id.
44 Id.
45 See id. at 1013–29.
46 See id. at 1015–16.
47 See Seymore, supra note 5, at 161–85.
inadvertently slipped under my radar. Professor Karshtedt and I discussed it for the first time when I was far along with Research. At that point, we rejoiced at how our articles would complement each other in addressing patent law’s building block conundrum. How did we independently end up at the same place?

B. The Tort Turn: Causal Responsibility and Patent Infringement

One of the complicated debates over patent law as a form of intellectual property is whether patents should be considered property at all.49 I have drawn on property theory—specifically possession—to offer descriptive insights on, and prescriptive recommendations for, patent law.50

Property law is not the only way to view patent law, however, because patent law also shares features with tort law. As Professor Karshtedt has demonstrated, tort law can inform much of the work done in patent law, especially as it relates to causation. In important, groundbreaking work, Professor Karshtedt turned to tort and criminal law to explore causation and damages for patent infringement.51 For me, the most important of this body of work is Causal Responsibility and Patent Infringement.52 This piece is transformative by challenging the traditional conceptions of causation in patent law.

In Causal Responsibility and Patent Infringement, Professor Karshtedt articulates a more flexible view of causation that would allow a patent to capture actors who should be deemed culpable for direct patent infringement.53 To explore these ideas of causation, Professor Karshtedt interrogates the “performer/non-performer” distinction in patent law.54 This distinction arises in two distinct but related scenarios. The first is when the person directly using a patent method could be viewed as an “innocent.”55

48 Professor Timothy R. Holbrook wrote this section.
53 Id. at 571.
54 Id. at 580-92.
55 Id. at 575.
For example, consider someone taking their medicine as directed, or a coffee shop using an off-the-shelf wireless router. If a patent covers those activities, then the users are direct infringers because liability under patent law is strict. That may seem unfair because those actors may lack the sophistication to explore whether they infringe a patent. The parties in a better position to assess infringement are manufacturers: the pharmaceutical company selling the medicine or the electronics company selling the wireless router. Yet, under current patent doctrine, the manufacturers would only be liable for induced infringement, which requires proof that the inducer (the manufacturer) both knew of the patent and intended to induce patent infringement. As Professor Karshtedt recognized, when thinking about culpability, patent law seems to have it completely wrong. The truly culpable party are the manufacturers but because of the performer/non-performer distinction, they will only be liable under a heightened standard even though they are better positioned to assess the patent landscape and the direct infringers could be deemed innocent.

The second scenario arises when multiple parties perform the steps of a patented process. These multi-user scenarios are called “divided infringement” claims because the performance of the claimed steps are divided across different parties. Multiple users complicate the infringement analysis because, traditionally, all of the steps of the patented process must be performed by a single entity. A person performing only a few of the steps is not technically infringing the patents. The steps of the claimed method are only all performed if the acts of those various parties are aggregated. A strict application of this rule could mean that certain patents would simply become unenforceable, creating a gap in protection, if it is impossible to show that one responsible party performed all of the steps of the claimed process or method. The Federal Circuit has created somewhat of a safety-valve for the rule, allowing others’ acts to be attributable to another under certain circumstance to satisfy the single entity rule:

Where more than one actor is involved in practicing the steps, a court must determine whether the acts of one are attributable to the other such that a single entity is responsible for the infringement. We will hold an entity responsible for others’ performance of method steps in two sets of

\[56\] Id. at 589.
\[57\] Id. at 592; see also Mark A. Lemley, et al., Divided Infringement Claims, 33 AM. INTELL. PROP. L. ASSOC. Q.J. 255 (2005).
\[58\] See Karshtedt, supra note 52, at 570.
circumstances: (1) where that entity directs or controls others’ performance, and (2) where the actors form a joint enterprise.\footnote{59 See Akamai Technologies, Inc. v. Limelight Networks, Inc., 797 F.3d 1020, 1022 (Fed. Cir. 2015).}

Professor Karshtedt criticized the court’s approach to divided infringement on causation grounds, similar to that of his first scenario.\footnote{60 See Karshtedt, supra note 52, at 569–71.} In these divided infringement scenarios, often the performer is someone viewed as an “innocent”: patients and doctors jointly using a personal medical webpage or a customer tagging elements of a webpage to allow a service provider to enhance internet speed.\footnote{61 See Akamai Techs., Inc. v. Limelight Networks, Inc., 692 F.3d 1301, 1306 (Fed. Cir. 2012), rev’d, 572 U.S. 915, 134 S. Ct. 2111, 189 L. Ed. 2d 52 (2014) (discussing facts of Akamai and companion case of McKesson Techs. Inc. v. Epic Sys. Corp., 463 F. App’x 906 (Fed. Cir. 2011)).} The Federal Circuit’s resort to vicarious liability, however, seems an ill-fit for these scenarios because, as Professor Karshtedt recognized, vicarious liability “is a liability-shifting doctrine,” yet “the customer or user did not perform a tortious act.”\footnote{62 See id. at 624–45.} One of the keen insights from this article is that these two scenarios—the inducement of infringement by innocents and divided infringement—are actually related when viewed from the perspective of causation.\footnote{63 See id. at 624–45.}

To explore and improve patent doctrine in this area, Professor Karshtedt used causal responsibility and, in particular, how that concept informs multi-party scenarios.\footnote{64 See id. at 624–45.} Causal responsibility “holds that one is responsible for the actions of others that one has caused, leading to the legal effect of imputing the act of the ‘causee (in patent cases, often the end user) to the causer (e.g. the manufacturer).”\footnote{65 Id. at 566.} At times, one of the causal links in tort and criminal law can be another human being.\footnote{66 Id. at 571.} For example, A can be deemed a trespasser if A causes B to enter the property of C. Even though B is the person physically entering C’s property, B may not necessarily be considered a trespasser. For example, if B entered under duress, A is liable for B’s entry, and B would not be viewed as having trespassed. From that review of criminal and tort causal responsibility surfaces a far more nuanced approach to determining whether a party or parties are responsible for harms that arise from particular conduct. What distinguishes causal responsibility from the Federal Circuit’s approaches to the above multi-party activity is that liability does not depend on control over another person but rather “control over the circumstances in which
that person performs some act."\textsuperscript{67} Because of the pervasiveness and trans-
substantive nature of this concept, Professor Karshtedt contends it would be
legitimate for the Federal Circuit to rely on the concept to interpret the
infringement provisions of the Patent Act with no need for Congressional
amendments.\textsuperscript{68}

In what can only be called a tour de force, Professor Karshtedt
explores criminal law, trespass, and product liability to distill how causal
responsibility could inform patent law.\textsuperscript{69} With adeptness and clarity, he
compared and contrasted these three areas to illuminate similarities that
could be generalized to patent infringement. One party can cause the acts of
another even without direct control, which would broaden the approaches
taken by the Federal Circuit for multi-party infringement situations.\textsuperscript{70}
Importantly, the use of causal responsibility potentially could make some
parties now viewed only as indirect infringers instead as direct infringers,
such as the pharmaceutical company manufacturing a drug used in a
patented process.\textsuperscript{71} The manufacturer, depending on the circumstances,
would be viewed as causing the customer to perform the patented method.\textsuperscript{72}
That use would be attributed to the manufacturer, rendering it a direct
infringer.\textsuperscript{73} By making the manufacturer a direct infringer, the heightened
\textit{mens rea} requirements for demonstrating induced infringement would be
eliminated.\textsuperscript{74} Similarly, under the divided infringement scenario, causal
responsibility would relax the requirements for imputing the acts of third
parties to a single entity.\textsuperscript{75} Per Professor Karshtedt’s example, doctors do
not control their patients, but they certainly could be viewed as causing the
actions of their patients given information asymmetries.\textsuperscript{76} Under either
multi-user scenario, the more culpable party would be held directly liable
(even though the actual performer of the method could also be liable).\textsuperscript{77}

Professor Karshtedt’s focus, and statutory hook for his intervention, is
infringing uses under 35 U.S.C. § 271(a).\textsuperscript{78} Under his approach, a non-
performer could be liable for using the invention by causing some other

\textsuperscript{67} \textit{Id.} at 572.
\textsuperscript{68} \textit{See id.} at 574.
\textsuperscript{69} \textit{Id.} at 609–624.
\textsuperscript{70} \textit{Id.} at 571.
\textsuperscript{71} \textit{Id.} at 628–30.
\textsuperscript{72} \textit{Id.}
\textsuperscript{73} \textit{Id.} at 630.
\textsuperscript{74} \textit{Id.}
\textsuperscript{75} \textit{Id.} at 636–37.
\textsuperscript{76} \textit{See id.} at 639–40.
\textsuperscript{77} \textit{Id.} at 571.
\textsuperscript{78} \textit{See id.} at 631.
party to perform some or all the claimed elements of the method. In his view, the courts could take this interpretive step based on that language. It would, of course, require overruling some existing precedent. Alternatively, Karshtedt argues that his approach could be housed in the indirect infringement provisions under 35 U.S.C. § 271(b) and (c). He offered that not every case should require the same level of mens rea under these scenarios, and there could be varying levels of mens rea depending on the nature of the causal responsibility.

Similar to Professor Seymore’s experience, Professor Karshtedt and I both converged on a similar solution to a vexing problem, although we approached the issue from different angles. Nearly contemporaneously with Professor Karshtedt’s argument, I had argued that parties that make or sell devices that can only perform the patented method should be deemed direct infringers. Why else would a company sell the device if its only use is to infringe? Under my approach, the manufacturer would be a direct infringer for making, selling, or offering to sell the claimed invention. Professor Karshtedt reached a similar conclusion, but his analysis focused on infringing uses of patented methods. Professor Karshtedt did acknowledge that he agreed with my critique of the law. His approach offers another, broader approach to deal with the inequities that arise in this situation.

Professor Karshtedt’s piece is a landmark piece of legal scholarship. It fully engages patent law with criminal and tort law to explore the concept of causal responsibility in a truly novel fashion. For me, this piece forced me to reconsider long-established conceptions of patent law and how the performer/non-performer dichotomy creates inequities and inconsistencies in patent law. While the causal responsibility approach could be criticized for injecting uncertainty into patent law given its flexibilities and contextual nature, other areas of the law have wrestled with the concept successfully. There is no reason to think that patent law could not do the same.

79 See id. at 624–27.
80 See id. at 631.
81 Id. at 631–35.
82 See id. at 631–32.
83 Id. at 628–36.
84 Timothy R. Holbrook, Method Patent Exceptionalism, 102 Iowa L. Rev. 1001, 1053 (2017); see also id. at 1053 n.326 (citing Causal Responsibility and Patent Infringement in draft form); Karshtedt, supra note 52, at 580 n.87 & 88 (citing Method Patent Exceptionalism in draft form).
85 Holbrook, supra note 84, at 1053.
86 Karshtedt, supra note 52, at 631.
87 Karshtedt, supra note 52, at 580.
Professor Karshtedt’s engagement with tort law in particular is important. Minimally, his approach would also help combat patent law exceptionalism, where patent law exists in its own doctrinal bubble. Patent law is made better and more coherent if it is woven into the broader legal tapestry. More importantly, as his other work has also shown, patent law actually contains both property and tort elements. Future scholars will have to engage with Professor Karshtedt’s scholarship to fully appreciate the tort-like aspects of the patent system, especially as it relates to causation and remedies. His work has elevated the importance of tort law concepts to patent law in a way that has been underappreciated.

C. Nonobviousness: Before and After

Another great example of Professor Karshtedt’s unique contribution to patent law scholarship is his 2021 paper entitled Nonobviousness: Before and After. Appearing in the Iowa Law Review, this article tackled one of, if not the most contentious area in patent law: the doctrine of nonobviousness. Like most of Professor Karshtedt’s work, the article displayed both his absolute command of a deceptively tricky doctrinal area, as well as his ability to fashion highly practical solutions to those doctrinal areas.

Nonobviousness is a crucial doctrine in patent law that requires that an invention not be obvious to a person having ordinary skill in the art (“PHOSITA”) of the relevant field at the time of invention. In other words, for an invention to be granted a patent, it must exhibit a level of creativity and innovation that goes beyond what would be considered common knowledge or routine practice in that particular field. To assess whether an invention is nonobvious, patent examiners and courts consider

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88 Professor J. Jonas Anderson wrote this section.
whether a PHOSITA would have found it obvious, considering the prior art, to make the invention.

One common scenario that occurs in nonobviousness cases is when an inventor combines elements or concepts from prior art sources to create something new. Even if each element on its own is known, the combination may still be considered nonobvious if it produces unexpected or advantageous results. To prevent hindsight bias, where an invention may appear obvious after it has been disclosed, patent examiners and courts must consider the state of knowledge at the time of the invention’s creation, not after the invention has become public. The nonobviousness requirement is integral to the patent system’s goal of incentivizing innovation. By granting patents only to inventions that represent a significant leap forward and are not merely incremental improvements or obvious extensions of existing knowledge, the system encourages inventors to push the boundaries of technology and industry.

When judges or PTO examiners evaluate a patent’s nonobviousness, the first case they inevitably cite is the Supreme Court case *Graham v. John Deere*. *Graham* established the basic framework for analyzing nonobviousness and is one of the most cited patent cases. While *Graham* has been (and continues to be) heavily cited, it has not settled the doctrine of nonobviousness. Professor Karshtedt’s article notes these shortcomings, but focuses its attention on what he sees as the main problem with *Graham*, namely the difference between the test for nonobviousness and the “secondary considerations” which can serve as objective evidence of nonobviousness.

Secondary considerations are best understood as evidence of nonobviousness that does not come from the prior art. The universe of prior art, in this sense, may be considered the “primary considerations” of obviousness. This division of evidentiary sources into two categories—primary (prior art) and secondary (everything else)—is used by decision-

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94 “Prior art” includes most (but not all) information available before the invention’s filing date, such as existing patents, scientific publications, textbooks, and any other relevant sources of knowledge in the specific field of technology or industry. 35 U.S.C. § 102(a). There are some situations, however, that involve prior known information that is not considered prior art under 35 U.S.C. § 102(a), e.g., if it was known abroad but not in the U.S. under pre-AIA legislation.


96 *Graham*, supra note 93, has been cited in 10,811 cases and 3,495 scholarly articles, according to Hein Online.

97 Id.

98 Karshtedt, supra note 92, at 1622–23 (“Graham’s discussion of the precedent was so limited that the opinion seemingly reset the law back to the square one of Hotchkiss without incorporating insights from later decisions like Goodyear.”).

99 Id. at 1623.
makers to weigh nonobviousness. The primary considerations revolve around what the prior art teaches: identifying the prior art, noting the differences between the prior art and the invention, and the level of skill in the art. In other words, the Graham factors. Whereas the secondary considerations focus not on the prior art but rather on other objective indicia of nonobviousness: long felt need, commercial success, failure of others, industry praise, copying, and simultaneous invention.  

Professor Karshtedt deftly critiques this two-division evidentiary scheme. He notes that the formulation of nonobviousness evidence into primary/secondary buckets has little historical backing, arises (according to the Graham Court) from a student note that does not support the division as a legal distinction, provided scant guidance for lower tribunals, and was not explicitly followed in subsequent Supreme Court cases. Despite these shortcomings noted by Professor Karshtedt, Graham’s distinction between primary and secondary considerations has become the view of patent law, endorsed repeatedly by the Supreme Court and the Federal Circuit. The Supreme Court’s latest venture into nonobviousness doctrine, KSR v. Teleflex, did nothing to undermine the supremacy of primary and secondary considerations.

Recently, the problems with the application of Graham’s “secondary considerations” bubbled to the surface at the Federal Circuit in Apple v. Samsung. In his dissent, Judge Reyna disagreed “over the role objective indicia play in the court’s analysis of the ultimate determination of obviousness.” Specifically, he flagged the court’s internal division on two issues: “(1) whether an obviousness analysis involving secondary considerations (or objective indicia of non-obviousness) is a one- or two-

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100 See id. at 1624–25.
101 Id. at 1626 (“Graham cited no opinion endorsing any formal grading of evidence as primary or secondary, and no such precedent appears to exist.”).
102 Id. (“Nonetheless, in the view of Robbins and of the opinions he discussed, evidence outside the prior art was simply a way to ease the highly technical challenge of determining obviousness, as opposed to a distinct “secondary consideration.”).
103 Id. at 1627 (“[T]he Court’s validity analysis added little, if any, useful guidance—and worse yet, Graham did not even rely very much on its own framework in when it actually decided whether the patents at issue were valid under § 103.”).
104 See id. at 1630–33 (discussing how U.S. v. Adams, decided on the same day as Graham, failed to apply the Graham factors or discuss secondary conditions).
106 Karshtedt, supra note 89, at 1637 (“[T]he question of how secondary considerations, if properly established, would have interacted with the motivation and expectation elements (and impacted the ultimate validity conclusion) was simply not raised by the facts of KSR. The baggage from Graham thus remained unsorted.”).
108 Id. at 1089 (Reyna, J., dissenting).
step process and (2) how much weight to accord secondary considerations in the obviousness analysis. These are the issues that Professor Karshtedt attempts (successfully, I would say) to tackle.

Before addressing his solution to the two issues arising from the Supreme Court’s evidentiary hierarchy in nonobviousness, Professor Karshtedt first addresses calls to entirely dissolve Graham’s evidentiary categories and to simply consider nonobviousness holistically. Instead, he proposes what he terms an “ex ante/ex post classification.” Professor Karshtedt’s proposed approach to nonobviousness would look to whether indicia of nonobviousness was developed before or after the filing date of the invention. Looking at the evidence from this temporal vantage point would have the benefit of reminding factfinders of nonobviousness’ temporal concerns. Indeed, one of the warnings that the Supreme Court and the Federal Circuit have repeated regarding nonobviousness determinations is to avoid hindsight bias. Adjusting the factual evidence along temporal lines, Professor Karshtedt persuasively argues, forces judges to weigh, not only the quality and relevance of the evidence, but also when the evidence was created. This framework properly focuses judges on the task at hand (determining whether an invention was nonobvious at the time of filing) and eliminates meaningless categories like “primary” and “secondary” that do nothing but distract judges from their task.

Replacing the primary/secondary considerations framework with this time-based ex ante/ex post framework has additional advantages. First, this new framework provides factfinders with greater detail about the theories of relevance for both pre- and post-filing evidence. Second, the framework explains how specific types of nonobviousness evidence should be considered, weighed, and their relevance evaluated. Third, the framework would be easier to apply for factfinders in many cases. Lastly, Professor Karshtedt’s proposal has the advantage of being easily inserted into the Federal Circuit’s nonobviousness jurisprudence: the proposal is in

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109 Id.
110 Karshtedt, supra note 92, at 1658.
111 Id.
112 Id.
113 Id. at 1632.
114 Id. at 1660.
115 Id. at 1658.
116 See generally id. at 1659.
117 See generally id. at 1659–63.
118 See generally id. at 1664–79.
119 See generally id. at 1680–82.
line with *Graham, KSR*, and all the previous nonobviousness cases. As a practical matter, it would merely require that the Federal Circuit (or the Supreme Court) finally state how the *Graham* factors interact with the secondary considerations, and how much weight each consideration should receive.

This article alone demonstrates Professor Karshtedt’s astounding contribution to patent law scholarship. Despite being published just two years ago, the article has been cited by academics dozens of times. But besides that, his article was a tour de force on patent law’s nonobviousness doctrine. No discussion about the future direction of nonobviousness is complete without seeking Professor Karshtedt’s input. Professor Karshtedt was sought out by academicians, law students, practicing lawyers, and federal judges hoping for his insights into nonobviousness. This article established Professor Karshtedt not as a rising superstar, but as a fully formed entity and intellectual force of nature.

But you never would have known of the acclaim that Professor Karshtedt was receiving by talking to him. He remained, as always, a humble, generous colleague to those who were lucky enough to work alongside him. While Professor Karshtedt’s academic star was exploding, his demeanor and lovable personality were as constant as ever.

II. **Dmitry Karshtedt, the Person: Our Friend**

Professor Karshtedt was more than a scholar. He was a friend and someone that we knew as he progressed from law student to law clerk to law professor. At one level, he was a friend-scholar who engaged us with our work thoroughly, but he was also far more than simply a scholarly interlocutor. He was a friend who made us laugh and appreciate many things. Professor Karshtedt had insights into such a variety of topics—from food, to chess, to Russian history, to chemistry—that one marveled at his depth of learning. Most importantly, he was someone we cared about deeply and whom we miss. To us, he was Dmitry.

When it came to engagement with our own scholarship, Dmitry always came prepared, probably more than we were even prepared! He would do his due diligence and bring to the table reams of research and brilliant insights into our work. His perspective was never to belittle or to advance his own stature in the field; instead, it was always to make our work better. In so doing, he made us better scholars and better people.

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120 See generally id.
121 Id. at 1680–81.
122 Because this section emphasizes the personal, we intentionally are switching to referring to Professor Karshtedt as Dmitry.
Dmitry was also always willing to share beyond the scholarly. Professor Holbrook watched Dmitry evolve from law student, to law clerk, to law professor and peer. Throughout this evolution, Dmitry also became a friend. Dmitry clerked for now-Chief Judge Kimberly A. Moore at the Federal Circuit, and Chief Judge Moore was Professor Holbrook’s co-clerk and opened the door to Professor Holbrook’s academic career. This professional connection helped forge a broader professional and personal connection. His perceptiveness and striking insights into the law immediately demonstrated the sharpness of his intellect. Importantly, there was never a touch of hubris with Dmitry. He was who he was, and he accepted all of us for who we were. Dmitry was the rare scholar who wanted those around him to improve because he cared about them and not because, somehow, it elevated him.

Dmitry and Professor Seymore shared a unique friendship. To begin, they were trained as Ph.D. inorganic chemists with similar research backgrounds. This bond led Dmitry to contact Professor Seymore during Dmitry’s 3L year at Stanford for help with Dmitry’s law review note which, not surprisingly, involved chemistry and patent law. This spawned what would become an amazing friendship. They talked often about chemistry, patent law, research ideas, teaching, career aspirations, personal challenges, and life in general. Although they weren’t close geographically, Dmitry and Professor Seymore spent quite a bit of time together. The two always met during Professor Seymore’s frequent trips to Washington. Over the years they traveled together—including trips to Stanford, Berkeley, and MIT to visit their legendary chemistry departments—thereby reaffirming their chemistry bona fides. Whenever they met one thing was certain: there would be at least one meal at a fabulous restaurant. Dmitry made Professor Seymore a foodie and a fine dining aficionado.

Professor Anderson was also geographically close to Dmitry, which led to even greater engagement. They were law clerks and then law professors in D.C.: Professor Anderson at American University and Dmitry at George Washington University. Dmitry was a constant at the conference Professor Anderson held every year at AU. He was also a panelist, or an audience member, at the various patent-based events at AU. Similarly, Professor Anderson frequently visited Dmitry to guest lecture in his patent law class or to participate in an event at GW. But they met and bonded years earlier at PatCon I at the University of Kansas, when Professor Anderson was a legal fellow at UC Berkeley and Dmitry was a law student at Stanford. They spent that conference weekend talking about their plans of teaching law and writing about patents, not knowing that they would have the opportunity to live and work in the same city for over a decade. Over the years, Professor Anderson and Dmitry had frequent collegial
interactions, but they also became close on a personal level. They frequently spoke on the phone about work, the oddities of living in D.C., or the latest gossip in patent legal academia.

The four of us shared a cherished friendship. We established a text group in which we would all share our successes, our frustrations, and our aspirations. It was a non-judgmental, entirely supportive forum that allowed us to navigate not only the difficulties we faced as academics but also our personal challenges, especially during the height of the COVID-19 pandemic. With thoughtfulness and humor, we worked to maintain a sense of connection during a period where we were all atomized to a level few ever feel. We were a cohort who knew how much we cared about each other, professionally and personally. Dmitry’s warmth and gregariousness shined through those messages.

Of course, our text group is now just the three of us, and our messages often now relate to the loss and absence we feel with Dmitry’s passing. It simply is not, and never will be, the same. We take solace in knowing that, through our messages, we have no doubt that Dmitry knew the important place he held in our lives. For us, his legacy as both a scholar and a friend will be eternal. It was our honor to know this gentle scholar and a privilege to call him friend.