Bridging the Paradigmatic Crevasse between Lawyers and Scientists: The Need for New Institutional Models

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ABSTRACT. The professions of science and law have traditionally been siloed paradigms, operating often in tandem with each other but rarely intersecting in the interdisciplinary pasture which separates them, a pasture from which an abundance of synergistic collaboration and ensuing creative concepts might sprout. However, the erstwhile never the twain shall meet situation is neither realistic nor even tenable in the current century, a century increasingly dominated by science, technology, invention, innovation, and intellectual property. Simply put, whereas lawyers are risk averse and build constructed realities to argue points and serve clients, scientists seek an objective assessment of truth and accept a shifting appraisal of reality. As a harbinger of global challenges which will likely define this century, the COVID pandemic and the rapid development of efficacious vaccines vividly illustrates the necessity, importance and indeed urgency of building interdisciplinary bridges between the legal and scientific profession, i.e., a paradigmatic bridge. This cannot be accomplished by the time-honored ad-hoc approaches which typify prevailing programs. Instead, it must be strategically approached via institutional commitment. The Franklin Pierce Law Center was a pioneer in this regard, and the University of New Hampshire Franklin Pierce School of Law carries that tradition forward into this century. Under the inspired leadership of two eminent dynamic thought-leaders in the field of legal education, Professor Leah Plunkett and Dean Megan Carpenter, the Powerhouse embodies this vision and commitment, with an innovative implementation of a paradigmatically synergistic model for legal education, forging the interface between law and science.

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INTRODUCTION

Intellectual property (IP) and its attached principal intellectual property rights (IPR) regimes (patents, trademarks, and copyrights) are all too often viewed by scientists as an esoteric, mysterious, and even treacherous area of law. And this attitude is particularly apropos in view of the divergent cultural paradigms of lawyers and scientists. However, in an ever-expanding global science—innovation—technology economy, IP is where the disciplines of science and law are most likely to intersect. This is where ideas become research results, which then become inventions, and inventions become innovations with potential commercial value as products, services, and often life-saving applications, for example, the biotechnology used to assemble COVID vaccines. Schooled in their respective

1 It is important to immediately clarify the conceptual distinction between IP and IPR, as scientists, by and large, do not distinguish property per se from an attached property right. Property rights are intangible abstract concepts, irrespective of whether the property is real, chattel, or intellectual. Indeed, and perhaps not surprisingly, this distinction is also not readily appreciated by many law students, judges, lawyers, or even law professors! As articulated by a noted authority:

Property can therefore be of an incorporeal nature [i.e., copyrights, trademarks, and patents], and it is not the “thing” which is integral, but rather the legal rights which attach to it. Such rights can, of course, attach to corporeal [i.e., real property and chattels] and incorporeal [i.e., IP] property. Hohfeld, recognizing this problem, propounded a new de-physicalized definition of property, which emphasized that, “all legal interests are ‘incorporeal’—consisting, as they do, of more or less limited aggregates of abstract legal relations.”


2 Under the visionary leadership of President Donald Trump, Operation Warp Speed (OWS) (officially announced on May 15, 2020) launched the public-private partnerships which drove accelerated research and development of efficacious COVID vaccines. The success of OWS was unprecedented and spectacular. OWS has been described as “the administration’s national program to accelerate the development, manufacturing, and distribution of COVID-19 vaccines, therapeutics, and diagnostics.” OWS illustrates the importance and ultimately the power of cross-disciplinary communication among disparate teams of professionals, e.g., law, science, business, military, and government. As articulated by HHS Secretary Alex Azar, "President Trump’s vision for a vaccine by January 2021 will be one of the greatest scientific and humanitarian accomplishments in history, and this is the team that can get it done". Trump Administration Announces Framework and Leadership for ‘Operation Warp Speed’, U.S. DEP’T OF HEALTH AND HUMAN SERVS. (May 15, 2020), https://web.archive.org/web/20201216233803/https://www.hhs.gov/about/news/2020/05/15/trump-administration-announces-framework-and-leadership-for-operation-warp-speed.html [https://perma.cc/3U5U-Z3XL]; OWS has been hailed as not only pragmatic, but also remarkable, heroic, and courageous, saving the lives of millions while simultaneously firmly establishing the United States as the global leader in vaccine innovation and production. See generally Arthur Herman, Why Operation Warp Speed Worked, WALL ST. J. (Feb. 1, 2021), https://www.wsj.com/articles/why-operation-warp-speed-worked-11612221219 [https://perma.cc/ST2W-JRB7]; Jon Cohen, Unveiling ‘Warp Speed,’ the White House’s America-first push for a coronavirus vaccine, SCI. INSIDER HEALTH (May 12, 2020), https://www.science.org/content/article/unveiling-warp-speed-white-house-s-america-first-
individualized educational silos, scientists and lawyers are inclined to view reality through their respective paradigmatic lenses and filter experience, information, and communications according to these constructed world views. Therefore, when scientist meets lawyer, what can arise is a classic problem of a collision of cultures, wherein communication breakdowns generate misunderstanding, confusion, distrust, suspicion, and even animosity.

Such a professional-paradigmatic and siloed situation had been the norm throughout the previous century and into the early decades of the current: scientists busy focusing on science and lawyers practicing law, with occasional crossing of paths (e.g., expert witness, patent licenses, etc.). Whereas this might have been tolerable in the last century, times have changed. The twenty-first century is international and interdisciplinary, where complex, and often urgent, problems require sophisticated solutions, with efficient teams of professionals, including lawyers, businesspeople, technology transfer personnel, scientists, and engineers working in concert and collaborating to accelerate the innovation process from idea to commercial product. For example, climate change is a perfect example of an area of innovation where an acute global challenge will drive an ever-expanding interdisciplinary community to work in concert. This collaboration would aim to accelerate the research, development, commercialization, diffusion, and adaptation of environmentally sound technologies, including alternative clean energy resources, greenhouse gas mitigation technologies, alternative energy resources, and their utilization, and advanced biotechnological innovations in agriculture and forestry.

Indeed, as globally esteemed authority Professor Helen Yu has noted:

In the context of the COVID-19 pandemic, open and collaborative research, and development efforts to accelerate the discovery of solutions have proven in theory and in practice to be successful as long as interests of the participants in the innovation process are aligned. However, as private rights and commercial realities diverge from previously shared common good considerations, problems associated with access and availability to adequate supplies to much needed public health solutions start to arise. 


Therefore, for all of us, it is crucial to bridge this paradigmatic crevasse between science and law. This can be accomplished through education and shared vision, as well as common interests, goals, and, ultimately, missions. This article, using IP/IPR as examples, seeks to demystify IP and law in general for scientists who are hobbled with numerous misconceptions. The article then proceeds to identify, explain, and thereby better understand the analogous, albeit similarly siloed, legal paradigm which is typically articulated as “thinking like a lawyer.” The article then goes on to suggest that there is a need for conceptual piers, abutments, and beams that will help to connect the two seemingly disparate, yet absolutely complementary, disciplines of IP law and scientific endeavor, and, in a broader view, the scientific and legal paradigms as they currently prevail. In a stepwise manner, the article proceeds from the fundamental paradigmatic divide between science and law, relating it to a discussion of IP and IPR in the context of what a “right” is in the legal context. The article then concludes with several recommendations on how to foster greater awareness, cooperation, collaboration, and collegiality amongst the disciplines of law and science, using the pioneering establishment of the Franklin Pierce Law Center in 1973, and its rebirth as the Powerhouse in this century, as an institutional blueprint for integrating the law–science paradigms and moving legal education into the complex, interdisciplinary, international reality of the new century. A new generation of legal professionals will be needed to address the looming global challenges, and the Powerhouse stands ready to answer this call.

I. LEGAL AND SCIENTIFIC PARADIGMS: AN OVERVIEW OF OSTEINSIBLY INCOMPATIBLE VIEWPOINTS

Perhaps a good place to begin the IP-focused comparison and contrast between lawyers and scientists is with the often-parleyed word “paradigm”. Often used, even more often misused by otherwise well-meaning intellectuals, the term is most clearly defined in the seminal work of Robert Ornstein: “Any . . . community of people [e.g., scientists and lawyers] holds in common certain assumptions about reality . . . assumptions . . . termed a paradigm . . . The paradigm is the shared conception of what is possible, the boundaries of acceptable inquiry, the limiting cases.”

The scientific paradigm is characterized by attitudes, perceptions, beliefs, and practices that can be distilled to that of truth-seeking and an ongoing quest to seek unchanging truths of ourselves and our world. Science is descriptive and seeks progress. On the other hand, the legal paradigm is characterized by attitudes, perceptions, beliefs, and practices that can be summarized as justice serving; the law is prescriptive, emphasizes process, and articulates societal norms in the context


of interpretation of the law. In the law, therefore, “truth” is often constructed based on an adversarial system, where the universe of “information” (evidence) is managed, and even constrained, in order to expedite the process and, indeed, application of the law in any given dispute or tribunal. Whereas science is built on observation, analysis, and logic, albeit influenced by these, the law is subject to a vast realm of “normative concerns and institutional practices.”

This distance between science and the law can ergo be characterized as a paradigmatic chasm wherein the law is viewed as a doctrinal system, indeed, an authority paradigm that harkens to a theological hierarchy with judges making assertions unhampered by any scientific method, as they did centuries ago. From this perspective, there is, unfortunately, frequently little attempt to look to science and its pursuit of understanding the biological, physical, and sociological world. As will be discussed later, this paradigmatic divide relates to the purpose of each discipline, their educational systems, and the resulting practice. Albeit now, in this century, they have begun to merge, and therein lies the challenge discussed herein: the twenty-first century presents us with many opportunities and yet it is simultaneously unforgiving in its relentless progression.

My own observations as a research scientist followed by a faculty position in a law school is that lawyers focus on risk management, arguing points, and adapting a constructed reality based on evidence and facts but molded and shaped to conform to and confirm the argument. Scientists strategically seek answers in a universe of information. Instead of molding facts and evidence to conform, scientists are molded by what they discover. Lawyers look for issues and points of law; scientists look for opportunities and breakthroughs. As Adler articulates:

‘Science explores what is; the law dictates what ought to be. Science builds on experience; the law rests on it. Science welcomes innovation, creativity, and challenges to the status quo; the law cherishes the status quo.’ Lawyers . . . rely on . . . legal rules and presumptions to generate stability and certainty in the face of factual uncertainty. . . . Scientists see the world as complex, changing and uncertain. They test theories . . . and revise those theories as better information becomes available. . . .

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9 The quoted extract from Adler’s chapter is remarkable as it encapsulates the entire paradigmatic divide between law and science; therefore, the unabridged paragraph is provided in this footnote for the interested reader:

In part, other authors have suggested that this frustration reflects a “culture clash” between law and science. Sheila Jasanoff explained that “[S]cience seeks truth, while the law does justice; science is descriptive, but the law is prescriptive; science emphasizes progress, while the law emphasizes process.” (Jasanoff, 1995). David Faigman wrote: “Science explores what is; the law dictates what ought to be. Science builds on experience; the law rests on it. Science welcomes innovation, creativity, and challenges to the status quo; the law cherishes the status quo.” (Faigman, 1999). Lawyers often rely on enforceable legal rules and presumptions to generate stability and certainty in the face of factual uncertainty so that
However, the divide is not an impassable abyss; there is a common paradigmatic bridgework for connecting scientists and engineers on one side of the crevasse and the lawyers on the other. The piers, abutments, and beams include a common systematic reliance on authoritative work; a general reliance on evidence, assessment of facts, reliability of observations, and rational conclusions; and a disdain for dogmatic authority which is not grounded in the rules of logic and reason. In addition, with each new generation of scientists, there is an increasing awareness of regulations and laws governing research, e.g., genetic engineering and biotechnology. It should therefore not be surprising that it is IP law, e.g., patents, which interests more and more scientists. And IP law is precisely where said paradigmatic bridgework can be, and indeed has been, erected. As this article elucidates, the Franklin Pierce Law Center is an exemplary case study in bridging the paradigmatic crevasse. It illustrates how an institution can move, indeed evolve, beyond the traditional, Socratic, podium-doctrinal method of legal instruction to interactive, experiential, practical education, and training, i.e., from thinking like a lawyer to practice-ready professional.

As with the law–science divide, in IP, the lawyer–scientist paradigmatic crevasse too can appear to be quite striking. For example, to illustrate this crevasse paradigm in IP, consider the distinctions: publications vs. patents, authors vs. inventors, R&D and results vs. inventions, innovations, and commercial products. A scientist and an IP attorney might simultaneously view them as discrete concepts, entirely missing their interconnectivity as components of a larger system. However, what is increasingly needed is for these related, albeit distinct concepts to become apparent to both. Indeed, many scientists and engineers are inventors, recognizing the multifaceted value of patenting their R&D-based inventions. In addition, many scientists and engineers have migrated, as the author has, to the law, to second careers as patent lawyers, IP managers, policy advisors, or regulatory specialists. Hence, as with all migrations and mixing of populations, this serves to further bridge previously crevasses that might have been characterized by antipathy and antagonism, and which are indeed ephemeral in the greater scheme of things.


See Jasanoff, supra note 7, at 8–9.


This traditional method is known as the “Langdellian Method” or “Harvard Case Method,” but more on that later in this article. For a fundamental overview and general critique, see Russell L. Weaver, Langdell’s Legacy: Living with the Case Method, 36 VILL. L. REV. 517 (1991).

II. EXEMPLIFYING THE PARADIGM: PROPERTY AND PROPERTY RIGHTS

To illustrate the paradigmatic divide more clearly between law and science, the respective way that lawyers and scientists tend to view the concept of property differently is perhaps a good starting point. Although, when it concerns their own property, e.g., home, yard, house, boat, car, etc., they are both apt to consider it their stuff, i.e., property, as in “Hey you, get the hell off of my property!” However, in a professional sense, and unlike lay folks (including most scientists), lawyers don’t think of property per se, but instead about property rights. And this applies to both real property (land and building), personal property (various things, “chattels” in legalese) and, importantly here, IP. So, the questions to consider are: Just what is a “right”? How does the law view these rights in the context of property? What are IPRs?

In general, then, just what is a right? The law carefully defines legally operative language, and the term “right” is defined in the authoritative Black’s Law Dictionary as “[a] legally enforceable claim that another will do or will not do a given act; a recognized and protected interest the violation of which is a wrong” or as “[t]he interest, claim, or ownership that one has in tangible or intangible property.”14 Put another way, a right is a relation between two persons, the right-holder and the obligor.15 This voluntary relationship is entered into via contract, but can also be between an individual and society, as we will see in the realm of IPR. Hence, within the context of property, [a] property right is the exclusive authority to determine how a resource is used, whether that resource is owned by government or by individuals...[This] includes the right to delegate, rent, or sell any portion of the rights by exchange or gift at whatever price the owner determines (provided someone is willing to pay that price).16

One might then ask, What is the public policy rationale for property rights? Keeping in mind that the public policy rationale is applicable to all forms of property rights, including real, personal and IPR, we are obliged to look to the historical foundations of the law of property for guidance:

Tracing back to the works of Adam Smith and Jeremy Bentham, which grounded the need to secure private property rights in the creation of incentives for productive activity, twentieth century economic theory has looked at how property could foster markets, control externalities, and more generally bring about the optimal use of the world’s scarce resources.17

14 Right, BLACK’S LAW DICTIONARY (11th ed. 2019).
According to de Jasay, property rights exist as a bundle of rights, e.g., for an acre of land, one might have the rights to fallow, plough, grow crops, walk, drive across, build a house or barn on, lease to a tenant, bequeath in a will, or sell to someone else.¹⁸ There might even be rights in the bundle that are above or below the actual soil horizon, e.g., mining, oil, water, gas, or ancient gravesite rights below, or timber, airspace, or view of scenery rights above. Important to our discussion of IPR is that each right might be removed from the bundle and leased or sold outright, e.g., mineral rights to a mining company. In this context, an interesting and illustrative example is the option to either lease or sell mineral rights to a parcel of land; a sale is a one-time deal, that is, a conveyance of ownership of the property right without future “rent,” i.e., royalties, which a lease (i.e., the retainment of possession but permission to use) would entail.¹⁹ These common concepts of property law and property rights are applicable to IPR as well, e.g., patents can be sold (assigned), leased (licensed), or even trespassed (infringed), as we will see hereinbelow.

Theoretically, i.e., from an economics perspective, the property rights bundle over a resource (land, livestock, machinery, or, in the case of IP; inventions, brands and creative works) provides the owner with full control to select how to use or not use, which then confers economic value to said owner.²⁰ Of course, this is a generalized maxim, which may or not apply, and in the case of IPR, varies among forms of IPR, e.g., patents, copyrights, and trademarks. Unfortunately, as with so many things in life, the exceptions complicate the pristine and clearly stated principles; for example, the value of the bundle of rights can be impacted by the degree of control that the owner actually has, or the number of rights that are present in the bundle. However, as we see with patents, the IPR in the bundle can be managed to generate something resembling fasces, i.e., a bundle of “sticks” that can be parsed, licensed, and sublicensed to various parties, for pieces of the technology (e.g., research license, manufacturing license, marketing license) in distinct geographical locales (e.g., different states or even countries).²¹

Wandering once again into the legalese paradigm, a property right, or more specifically in the instance of this chapter, an IPR, is rooted in the time-honored concept of what a “right” is: “Right is a correlative to duty; where there is no duty there can be no right . . . . In order for a duty to create a right, it must be a duty to

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¹⁸ De Jasay, supra note 15.
act or forbear." Alternatively, . . . :

A is said to have a right that B shall do an act when, if B does not do the act, A can initiate legal proceedings that will result in coercing B. In such a situation B is said to have a duty to do the act [or in the case of IPR, to not do an act]. Right and duty are therefore correlatives, since in this sense there can never be a duty without a right.\(^{23}\)

Note that, for the sake of this discussion, two linked concepts are key: that the right (IPR) is conditioned on a duty to forbear. In other words, the IPR confers one right only to its owner: the right to exclude (a “negative right”), and the duty for the others is to forbear, i.e., not use the IP in accordance with the law. Therefore, “[the term] IP . . . refers broadly to the creations of the human mind. [IPRs] protect the interests of innovators and creators by giving them [property] rights over their creations.”\(^{24}\)

Even though this seemingly verbose ancillary exegesis on property vs. property rights might appear to be a quasi-dissertation, it is meant to highlight that lawyers view property as a system of rights and duties which are entirely intangible abstract concepts of the law, while scientists view property as “things”, whether said “things” are tangible (e.g., objects) or intangible (e.g., ideas).\(^{25}\) This is the subtle distinction between the two paradigms as discussed herein, and hence the conceptual crevasse. As discussed hereinbelow, said paradigmatic crevasse must be bridged, and this is not only important, but increasingly urgent, as the multitude of challenges which characterize this century confront all of us.

\(^{22}\) See Right, supra note 14; see also John Chipman Gray, The Nature and Sources of the Law 8 (2d ed. 1921).

\(^{23}\) See Right, supra note 14; see also E. Allan Farnsworth, Contracts § 3.4, at 114. n.3 (3d ed. 1999).

\(^{24}\) WIPO, Understanding Industrial Property 5 (2d ed. 2016), https://www.wipo.int/edocs/pubdocs/en/wipo_pub_895_2016.pdf [https://perma.cc/XF6G-NLFK]. To extend this analogy, infringement of a patent is analogous to trespass on a piece of land, i.e., non-authorized entry and, therefore, violation of the rights of the owner. As previously mentioned, the claims of a patent define the “boundary” of the actual property right which has been granted to the inventor by the federal government, and just as an unauthorized entry onto (or other use of) another’s parcel of real estate might be trespass, use of another’s patented technology might be infringement. As a corollary prophylactic, a real estate owner would provide a lease for entry or use, just as an inventor would provide a license for use (etc.) of his or her patented technology. Hence, this further illustrates how IPRs are conceptually rooted in the common law of property, dating back centuries to the sovereigns and princes, their estates and grants therefrom. And, for the purposes of this article, whereas the law conceptualizes IPR in this broader context of the law of property, few, if any, scientists will share this viewpoint and understanding. In this regard, see also J. Thomas McCarthy et al., McCarthy’s Desk Encyclopedia of Intellectual Property 68 (Bureau of Nat’l Affs., 3rd ed. 2004).

\(^{25}\) See Joseph Singer, Property 2 (Aspen Pub’g, 5th ed. 2017).
III. IP CONCEPTS THAT SCIENTISTS BELIEVE THEY DO, BUT DO NOT, UNDERSTAND

Scientists and engineers are trained to conduct research, analyze data, document, and present scientific progress, and then contribute this as new knowledge. They often do not fully appreciate the corollary disciplines of law, specifically IPR, and related business applications. Several areas of misunderstanding are worth noting here:

1. Patents vs. Publications—there is a profound difference between the two!
2. Research results do not equal inventions, and inventions are not innovations.
3. Authorship is not equivalent to inventorship.

Patents are not the same as academic publications. Methods and results published in academic journals must be informative enough to convince referees, attract a large scope of potential users and citers, and build the body of information and knowledge in a particular area of science. Publications, therefore, are a good representation of the advancement of science. Patents, on the other hand, do collect a large part of technological information, yet the patent combines several functions above and beyond an academic publication: patents are legal documents designed to disclose sufficient technical information, such that the claimed invention is enabled and can be practiced. Hence, patent information may, or might not always, be used as sources for scientific technical information. Furthermore, information disclosed in patents might not appear in non-patent academic literature, and vice versa. One can generally expect, therefore, different patterns of information disclosure in scientific academic publications and patents, with these two sources of information being neither exclusive nor inclusive, but rather complementary. When conducting research, it might be prudent to research both patent and non-patent literature, regardless of the intent, i.e., whether for legal (prior art searching, freedom to operate analysis, or patent invalidation research) or solely scientific purposes.

Another ubiquitously frequent point of confusion relates to the fact that research results do not (necessarily) equal inventions, and inventions are not innovations. Perhaps this is understandable, as scientists might tend to view their research as inherently valuable; yet value is a variable concept, and monetary value of inventions is a process of systematic culling: few research findings fulfill the requirements of statutory patentability, and few patents subsequently become innovations with broad commercial applicability or commercial potential. Hence, there are several pointers worth remembering in this context:

1. A scientific idea and a patentable invention are not the same.
2. Interesting research results are not necessarily worth patenting.
3. Patented inventions might be, yet most likely are not, marketable innovations.

Another often confused terminology, shared by lawyers, scientists and even policy makers, is that invention and innovation do not mean the same thing, and
need to be distinguished. Invention is the first occurrence of an idea for a new product or process and its reduction to practice, while innovation is when it is put to use and has social or commercial impact... the successful implementation of creative ideas (i.e., inventions).

This takes us to another point of confusion: one of the most frequently misunderstood and contentious issues between scientists and IP professionals is the confusion between inventorship and authorship.26 The basic difference is that whereas inventorship is a legal determination as articulated in statute and rules, authorship is frequently subjectively determined without established criteria or guidelines. Inventorship is based on a contribution to the enabling concept embodied in at least one allowed claim; for instance, if an invention has twenty different claims and an inventor only contributes to one of those claims, then he or she is still a co-inventor. Unlike authorship on an academic publication, one who has spent extensive time and effort in the laboratory working on research that leads to an invention is, in fact, not an inventor in any sense unless he or she has also contributed to at least one claim: conceptualization and reduction to practice, i.e., the inventive step. In other words, although it sounds inequitable, one person might sit back, conceptualize an invention, and suggest the most enabling reduction to practice, and then be granted the patent, whereas the cadre of workers who actually operationalize the prototype, in fact, do not.

Quite unlike inventors on patents, authors are occasionally added to research publications out of professional courtesy or deference to authority with little fear of invalidation of the science presented; authorship might also extend to nearly anyone who worked on the research project or contributed algorithms, equations, or figures used during the research. On the other hand, if inventors listed on a patent are intentionally incorrect, excluded, or removed, the patent can be deemed invalid; this is called fraud on the patent office, a potentially serious situation which might result in loss of IPR.27 Hence, it is extremely important to correctly indicate inventorship on a patent application. Honest mistakes may be amended, but willful misrepresentation, i.e., listing an inventor who didn’t contribute to the conception of the invention, or failing to list someone who did contribute to the conception of the invention, is highly problematic. Ultimately, inventorship should be decided by

26 For a general discussion and overview of the subtle, and perhaps not so subtle, differences between these concepts, see European IP Helpdesk Factsheet: Inventorship, Authorship and Ownership, EUR. COMM’N (Sept. 2022), https://data.europa.eu/doi/10.2826/528362 [https://perma.cc/H2K7-QY33].

27 See David Hricik, Wrong About Everything: The Application by the District Courts of Rule 9(b) to Inequitable Conduct, 86 MARQ. L. REV. 895, 935 n.156 (2003). Fraud on the patent office is also, and now more commonly, termed “inequitable conduct.” See McCARTHY ET AL., supra note 24, at 292–93. The loss of IPR would occur due to a non-enforceability: a patent that had been procured with unclean hands, thus creating a defense for a putative infringer. See id.
a qualified patent attorney.28

In addition to the hereinabove relating to inventorship and authorship, the concept of inventorship should not be unduly confused with ownership, as they are indeed different and distinct legal operative concepts, and, once again, a point frequently misunderstood by scientists. Whereas inventorship identifies the person who conceptualized and reduced to practice a creative technical idea, ownership designates the entity or person to whom the patent rights pursuant to said invention are held, i.e., the proprietary rights holder of the invention who has the right to restrict others in their use of the IP it owns.29 The inventor does not always correspond to the owner, and vice versa: although an inventor can be the first owner of the IPR to a given patented invention, he or she might subsequently assign (transfer of IPR sufficient to move title of the patent) these rights to another.30 While an inventor is always a human person, owners can be organizations. This is a common situation when inventors work for an organization or employer that owns their creations due to assignment arrangements pursuant to an employment relationship.31 This distinction between the property per se and property rights is the source of much confusion among lay folks, including scientists, and frankly some lawyers and even judges. Table 1 summarizes these distinctions in the context of intellectual property.

28 David R. McGee, Invention Disclosures and the Role of Inventors, in 1 INTELLECTUAL PROPERTY MANAGEMENT IN HEALTH AND AGRICULTURAL INNOVATION 779, 780 (Paula Douglass et al. eds., MIHR & PIPRA 2007).


30 Id.

31 Id.
<table>
<thead>
<tr>
<th>Intellectual Property (IP)</th>
<th>Intellectual Property Right (IPR)</th>
<th>What is protected by the property right?</th>
<th>Duration of the property right</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invention</td>
<td>Patent</td>
<td>Functional features of process, machine, manufactured item, or composition of matter</td>
<td>20 years from date of application</td>
</tr>
<tr>
<td>Brand Name</td>
<td>Trademark</td>
<td>Words, names, symbols, devices, sounds, smells, trade dress, or product shape</td>
<td>Common Law: as long as properly used as a mark; Federal Reg.: 10 years (if formalities complied with), renewable for 10-year periods.</td>
</tr>
<tr>
<td>Work of Authorship</td>
<td>Copyright</td>
<td>Works fixed in tangible medium of expression, e.g., literary, musical, pictorial, and motion picture works</td>
<td>Works after Jan. 1, 1978: life of author plus 70 years</td>
</tr>
<tr>
<td>Know-how</td>
<td>Trade Secret</td>
<td>Business information (not generally known among, or readily accessible to, circles that normally deal with the kind of information in question) and have commercial value</td>
<td>Indefinitely, if subject to reasonable steps by the rightful holder of the information to keep it secret (e.g., through confidentiality agreements)</td>
</tr>
</tbody>
</table>

IV. LEGAL EDUCATION AND ITS DISCONTENTS: WHY LAWYERS “THINK” LIKE LAWYERS

Having discussed the confusion and misconceptions which scientists may hold with regard to the law in general and intellectual property in particular, we now turn to the other group, i.e., lawyers and the paradigmatic baggage that they also carry.

The relationship (or, to be more precise . . . disconnect) between “thinking like a lawyer” and “thinking like a scientist” is perhaps paradoxically epitomized in the origin of the overwhelming prevailing model of legal education, i.e., the case method. And, perhaps not surprisingly, it is from the very loins of Harvard Law School that this method sprung. As the seminal promulgator of this method, Christopher Columbus Langdell, dean from 1870 until 1895, envisioned it as a way to move the legal vocation forward, from an arguably folksy trade replete with apprenticeship (not unlike other trades and guilds of that time), rarely with any university-level education or training (e.g., think honest Abe Lincoln, the country lawyer), to an esteemed profession.33 Langdell thereby wished to establish legal study, research, and practice as a “science,”34 which was not inconsistent with the trend in the United States following the Civil War and increasing momentum towards accelerated industrial development. Furthermore, it is likely not coincidental that Langdell was a contemporary of Thomas Edison and Alexander Graham Bell.35 Ironically, however—and this is where the paradox comes into play—Professor Hennessy points out:

‘Industrial property studies’ were not worthy of inclusion in Langdell’s ‘Legal Academy.’ More likely, if there were a patent law professor in an American law school, it was a patent practitioner (and sometimes a former patent examiner) who was brought into the law school as an adjunct member of the faculty to cater to a small number of technically trained students rather than a tenured member of the law faculty.36

This then begs the question as to whether the Langdell Harvard Law School case


35 See id. at 121

36 Id. at 122.
method is really scientific or merely “scientific.” The question posed is not solely of academic interest, as it affects both the continuing appropriateness of the Langdell methodology and also the growing reality of interactive teams of lawyers, scientists, and engineers who function at the cutting edge of technological innovation and development . . . i.e., intellectual property law. Whereas arguments can be made on both sides of this issue, from the point of view of the Langdell school of legal theory, it is at best a tenuous assertion that legal education is science in the current parlance of that term. There are several not un compelling arguments to substantiate that proposition. First, it has been argued not unconvincingly that the study and practice of law shares much more in terms of its paradigmatic foundation with theology than with science. From a purely practical, and literally visual, perspective, a courtroom with its decorum, protocols, and, of course, authoritative judges bedecked in robes and served by clerks evokes the sanctuary of the cathedral, with similarly authoritative clergy bedecked in ecclesiastical vestments and assisted by deacons. In addition, and more importantly, this comparison to theology carries over to scholarship in that both are grounded in established intellectual and doctrinal authority, i.e., an overriding authority paradigm which is arguably closed. Perhaps this illustrates how the enquiry paradigm of science stands in stark contradistinction to law (and its closest of kin, theology). As visual comparison once again, science, or to be more specific, a research laboratory, does not resemble a cathedral, but rather a workshop with research scientists garbed in dirty lab coats, conversing informally, working side by side, and constructing experiments to advance knowledge outside of and beyond what is known, similar to machinists in a shop, operating lathes, drill presses, and forges. This image of a scientific researcher in the laboratory illustrates the enquiry paradigm in full operative mode. Second and following from the first point to a certain degree law

37 Whether law practice, legal analyses, and scholarship are truly scientific has been discussed, debated, and argued in both the legal and scientific literature. See, e.g., David L. Faigman, Is Science Different for Lawyers? 297 Sci. 339 (2002). The globally esteemed chancellor and dean of UC Law, David Faigman, notes that there is a “skepticism of the scientific method and its usefulness to judicial decision-making . . . . [T]his skepticism stems from ignorance, a condition that can only be remedied by a sustained effort to educate these decision-makers about the practices and culture of hypothesis testing in science.” Id. at 339.


39 This comparison, which alludes to a closer kinship between the legal and the ecclesiastical than to the legal and the scientific, has historical roots which reach back to the pronouncements (dogmatic ipse dixit) of archbishops and even the Pope in Rome. See Faigman, supra note 37, at 340.

Although it has taken more than 200 years, the law is ever so slowly coming to embrace the scientific culture of empirical testing. Yet some courts remain in a prescientific age. When Galileo announced that he saw moons around Jupiter through his telescope, the Pope declared that he was mistaken, for the Bible did not allow it. But the moons are there.

40 See Geoffrey Samuel, Interdisciplinarity and the Authority Paradigm: Should Lawyers Be
involves what has been referred to as a constructed reality. Indeed, a noted authority has stated, “[t]he problem with the legal scholarly work being pursued within the authority paradigm is that it is not really telling us much about the world. It is, like astrology or numerology, telling us about formalism, coherence, and philosophy in a world constructed by consenting insiders.”\(^{41}\) Science, on the other hand, works to ascertain the truth, albeit within a paradigmatic framework that is subject to radical revision as discoveries are made, e.g., the germ theory of disease supplanting the age-old paradigmatic, and quite ridiculous, miasma theory of noxious night air as the causative agent.\(^{42}\) Third, from a pedologically paradigmatic pragmatic perspective, the time-honored Langdellian case method engenders a reactive, reticent, and risk-averse mode of professional development which might be inappropriate for the increasingly transaction-oriented and team-driven interdisciplinary practice of law, particularly as it moves inexorably into an ever more complex and challenging global market.\(^{43}\) Ergo, it is not akin to the collaborative research and development of scientists.

Leading commentators have strongly suggested that the over-emphasis on the increasingly pedagogically obsolete Langdellian case method of legal education puts both students and the profession at a clear disadvantage as the twenty-first century progresses.\(^{44}\) Students are conditioned within a narrow paradigm, which is risk averse and, although might have been not only adequate but appropriate decades

\(\text{Taken Seriously by Scientists and Social Scientists?}, 36 J. L. \& Soc’y 431, 456 (2009).\)

As with theology, the law itself is closed in terms not just of its rules at any one time but also of its structure, concepts, and basic categories and it is only the ability to interpret and reinterpret this closed system (the ‘chess pieces’ and theories about their movement possibilities) that remains open to doctrinal law scholars. Legal scholars and their students are imprisoned in a paradigm framework (authority and simplicity) within which the very possibility of radical epistemological thinking is by definition prohibited.

\(^{41}\) See generally id.

\(^{42}\) See Ellsworth, supra note 33, at 900.

In law, attorneys for both sides may propose different deductive arguments—identifying a law and showing how it inevitably leads to an outcome that favors their client in the particular case—but their aim is not to determine the truth but to create a chain of reasoning that best favors their position. The decision maker gets the facts from the attorneys, who emphasize different facts and often different legal precedents.


The emphasis on mastering adversary dialogue discourages students from deviating from this structured format, or from speaking when they are uncertain about whether they are ‘right.’ This discourages students from risk-taking or trying on new ideas. In particular, students don’t want to take chances either by stepping out of a highly stylized way of interacting or by introducing novel ideas about which they are curious but unsure . . . . When people cannot change the way in which the problem itself is being addressed, they often opt for silence to avoid signaling acquiescence in a framework they find troubling. That silence then reinforces the sense that everyone must conform to a set pattern of interaction.

\(^{44}\) See generally Hilary G. Escajeda, \textit{Legal Education: A New Growth Vision Part I—The Issue: Sustainable Growth or Dead Cat Bounce? A Strategic Inflection Point Analysis}, 97 NEB. L. REV. 628 (2019); Sturm & Guinier, supra note 43; Hennessy, supra note 34.
ago, is dangerously inadequate as this century progresses.\textsuperscript{45} This is perhaps best illustrated with a personal anecdote: I am a member of the local YMCA, where a number of local attorneys attend to exercise and engage in casual conversations. On one occasion, the author spoke with a senior partner from a law firm. Said partner lamented that although most lawyers are skilled at arguing points, they are seemingly unable to engage in strategic thinking, inferring the narrowness of their collective paradigm, which reflects the heritage of the Langdellian system with its roots extending 150 years back to the Harvard of yore. Creativity, curiosity, and imagination had been sacrificed on the altar of law, to their “benefit” and, sadly, detriment.\textsuperscript{46}

\textsuperscript{45} The persistent dominance of the Langdellian doctrinal, Socratic, casebook method in legal education has been critically analyzed by noted authorities, perhaps none better than Krannich, Holbrook, and McAdams. They argue that, albeit an important component of the legal education system, the casebook method should only be one pedogeological method in a law school curriculum. The longer-term professional and career development of this antiquated system is troubling:

> Because little emphasis is placed on direct training in professional practice, legal analysis thus overshadows the entirety of students’ education, ‘conveying the impression that lawyers are more like competitive scholars than attorneys engaged with the problems of clients.’ Most students’ educational experience is therefore dominated by the process of learning to ‘think like a lawyer.’ The result of this unbalanced and inaccurate perspective is that many students spend the third (and even second) year of law school figuratively treading water, having been taught the skill of legal reasoning but not provided a structured way to place this skill in the context of legal practice.” In addition, the esteemed authors note that this system fosters collateral negative consequences, such as elitism, hierarchy of status (pecking order) and an overall narrow perspective: “On entering law school, most students’ values were oriented toward societal contribution, helping others, emotional connections, and personal growth. Over the course of law school, however, students became less likely to act based on personal interest or inherent satisfaction and more likely to act based on extrinsic rewards such as image, appearance, and prestige. This shift in values understandably caused a great deal of distress for the students, for it represented a change in many students’ self identities.


\textsuperscript{46} See Sturm & Guinier, supra note 43, at 544 (discussing one law student’s reflection on his first year:

> This student is not the first to notice the similarities between high school and law school culture. In both settings, inhabitants are in a process of transition—to personal or professional adulthood in a setting marked by collective rituals, fascination with authority, competition for prestige, and strong peer and faculty pressure to conform. The risk aversion that this student describes is antithetical to what one really needs to succeed as a lawyer in today’s world. As Todd Rakoff and Martha Minow argue persuasively, what students most crucially lack is ‘legal imagination.’ ‘Legal imagination involves creativity and indeterminacy. It requires risk taking and being willing to make mistakes, which are so often the source of innovation. Legal imagination is hard to develop when you are worrying constantly about keeping up, mastering the rules, and out-performing your competition. Indeed, learning theory underscores the importance of intrinsic motivation and trust in facilitating creativity and long-term learning. Law firm culture reinforces law students’ tendency to eschew risk and rely on extrinsic measures as a substitute for intrinsic goals.

The seemingly petrified Langdellian system hence becomes a self-perpetuating mode, long after the rationale for its development and application. Indeed, its original utility has been eroded by the exponentially evolving global marketplace for legal services and law practice. This is particularly the case with intellectual property law and practice, where international trade and transactions dominate commerce in terms of value and volume. The petrified state of the Langdellian method has been discussed by noted and esteemed commentors: Hilary G. Escajeda’s analysis, for example, strongly suggests that the inertial forces which maintain the 150-year-old status quo are not dissimilar to similar forces which can be analogized more closely to the ecclesiastical paradigm than to modern science, which is driven by curiosity, imagination, and the empirical paradigm. The Langdellian system therefore perpetuates an environment in law school which is not only antithetical to natural curiosity but also generates legions of legal professionals who are not equipped to meet the challenges that are rapidly increasing in both importance and urgency.

Perhaps Sturm and Guinier’s comparison of law school to high school is

Th[e] lack of curiosity and inquisitiveness has its source in law school. Though granted, many of those drawn to law aren’t particularly curious to begin with, law school does nothing to cultivate curiosity. As for students who arrive with a healthy sense of curiosity, most leave three years later defeated. Law school’s assault on curiosity begins the first day with the introduction to the Socratic Method. Although the Socratic Method has fallen into disfavor, it is still used in some law schools—and accounts for the greatest blow to curiosity. The Socratic Method, by its very nature, preempts students’ ability to ask questions or to explore new theories outside the narrow parameters of the Socratic forced colloquy. Of course, even without the Socratic Method, law school is hardly a breeding ground for curiosity. Law school affords few opportunities for law students to ask questions during a class . . . .


If . . . the education program elects to defend the status quo, it is appropriate to consider whether the organization suffers from the ‘Semmelweis effect’ . . . ‘a metaphor for [how individuals and organizations have a] reflex-like tendency to reject new evidence or new knowledge because it contradicts established norms, beliefs or paradigms.’

Nearly 150 years later . . . Langdell’s case method remains the pinnacle of most legal education programs and is seemingly oblivious to outside technological advancements and financial adversities. While attempts to graft new branches onto the Langdell tree in the form of clinical and experiential learning opportunities show promise, these grafting efforts may yield meager harvests unless the education ecosystem intentionally cultivates biodiversity and aligns education offerings with modern technologies and marketplace demands. In 2009, University of Denver Law Professor David I.C. Thomson predicted: ‘The current forms of teaching in law schools are not sufficient to prepare students for the technological challenges they will face in the 21st Century.’

See John H. Roberts, The Role of the Scientifically and Technologically Literate Attorney in the Application of Preventive Law to Low Entropy Corporate Decision Making and Long-Range Planning, 32 IDEA 155, 172 (1992) (expanding this concept to that of a “professional parochialism, the idea that one who is not the product of legal education can neither think like a lawyer, nor manage the professional activities of the group.”); id. (quoting Charles Walter & Edward P. Richards, III, Corporate Counsel’s Role in Risk Minimization: Lessons from Bhopal, 4 PREVENTIVE L.
not so far off the mark after all.\textsuperscript{50} This then raises the question: How can the legal profession build bridges to the scientific profession in order to advance the law-science interface? What might be a sound, strategic, sustainable institutional structure that would make such an aspiration a reality?\textsuperscript{51} There is a model for this:

\(\text{REP. 139, 147 (1986).}\)

Lawyers exacerbate this problem by a facile adoption of the jargon of their clients, without concern for its underlying knowledge base. Lawyers are trained to pick up jargon and develop a superficial understanding of subjects. . . . [T]his superficial knowledge can lead to unsound risk management decisions. Rather than providing objective advice, the attorney will provide advice that mirrors the opinions of the client. This reinforces the client’s opinions, rather than encouraging critical evaluation of the situation. Unfortunately, managers are ill equipped to recognize this problem because of the inability of the managers and attorneys to communicate effectively. This problem is rooted in their different professional paradigms.

(articulating the paradigmatic challenge); see also id. at 157.

In the modern world dominated by science and technology, preventive law has an increasingly important role to play. When a technological development moves along a vector into the future that crosses the boundary of the law-science interface, the legal implications and consequences of that encounter must be dealt with. . . . The role of the scientifically literate attorney is of central importance for the practice of preventive lawyering and long-range planning in this arena.

\textsuperscript{50} Sturm & Guinier, supra note 43, at 544.

\textsuperscript{51} One “strategy” for law school success has been the arguably misguided focus on fame. However, fame is ephemeral and evanescent, and a rare, limiting (scarce) “commodity”: everyone cannot be famous and hence the competition to achieve the largest share of the rare (scarce) fame “commodity.” Sadly, the fame route has become all too common, and desperate, as faculty and deans relentlessly pursue status, build personal brands, and seek self-promotion via various outlets, e.g., internet resources and even sometimes personal, quasi-celebrity websites. Law schools likewise do so by association with the famous, or not-so-famous, and also the associated deluge of promotional mailings (the so-called law school porn). However fleetingly gratifying such an approach is, it is ultimately shallow and unsustainable, and, most importantly, glaringly non-strategic. See George Critchlow, Kim Kardashian and Honey Boo Boo: Models for Law School Success (or Not), 45 CONN. L. REV. 1319, 1323–26 (2013).

A famous law school is, by definition, one that attracts attention. A law school that attracts attention is one whose name will be known, remembered, and talked about by lawyers, judges, and educators who are called upon to identify law schools and programs in response to USNWR surveys. Fame is likely to create a competitive advantage in attracting applicants. Fame will attract money from donors who revel in being associated with famous institutions. Money will also come to famous law schools in the form of increased tuition that students are willing to pay because they hope to have a degree from a famous school. Finally, fame will contribute to greater self-esteem among law school faculty because it will counteract the haunting and pervasive fear at some law schools that faculty are not sufficiently recognized and valued. When the mission is to achieve fame, strategies for implementing the mission will crystallize in such a way as to compel agreement by even the most obtuse faculty member. The agenda will be clear: commit a large portion of the law school budget to the distribution of promotional literature. This agenda is sometimes referred to as ‘law porn,’ which may be the functional equivalent in the law school world to the sex tapes that helped raise the profiles of both Kim Kardashian and Paris Hilton. The mission will also dictate advancement of the school’s brand (‘famous law school’) in the promotional literature, on the law school website, and in the way administrators and faculty talk about themselves to each other and to external audiences. The mission will clearly dictate the hiring of famous teachers over unknown teachers. Since fame will replace the conventional mission focus on such things as teaching excellence, ethics, public service, and diversity, the need to evaluate what a candidate brings to the law school in these areas will diminish. The mission will also clarify budget priorities by directing money away from costly (and controversial) programs and student support and into the pockets of famous administrators, faculty members, and students who advance the mission.
the Franklin Pierce Law Center.

V. THE FRANKLIN PIERCE LAW CENTER

In 1973 there was an ever-so-faint, yet clearly audible clarion call for a radical change in legal education. This was heard by a pair of remarkable and distinguished individuals: the co-founders of the Franklin Pierce Law Center, Robert M. Viles and Robert H. Rines. Viles and Rines innately understood that the Langdellian model of legal education was self-limiting. They recognized, and that law students needed to not only learn the law and think like a lawyer, but also be practice ready. They understood that a new generation of law students had arrived who looked to the future where interdisciplinary bridges were needed between law, business, science, and technology. They viewed this as not only a vision but a necessity in the context of a globally expanding innovation economy. Viles and Rines therefore were not content to only lament the stagnant status quo of legal education. They decided to do something about it: build an institution to effect real change.

Born in a ramshackle bull barn, the Franklin Pierce Law Center answered that call: “to modernize legal education in a technological era.” At the gala to celebrate the school’s fiftieth anniversary, Dean Megan Carpenter summed this up: “Our law school was founded with two principles in mind . . . [t]o be the best intellectual property-focused law school in the country, and to train students to practice law—to be lawyers, not just to think like lawyers.” In other words, the time was nigh for the objective to build paradigmatic bridges across the law–science crevasse, via a practice-based legal education (without abandoning all manner of the time-honored Langdellian system!).

Considering the era, i.e., the 1970s, the year the film The Paper Chase was popularized (with the dreaded prototypical Langdellian Professor Kingsfield), such a vision was groundbreaking. As summarized by Professor Bill Hennessey:

Not until the IPR ‘revolution’ in the 1970s and 1980s did the two strains of education (of patent agents or solicitors trained as examiners in the Patent Office and of lawyers trained in the law schools) really begin to converge. Since that time, many American law schools have begun to offer courses in intellectual property law, but only a few have approached the project in a systematic way. One is the Franklin Pierce Law Center (‘Pierce Law’), founded in 1973 as an independent law school, not attached to a
In other words, to paraphrase Professor Hennessey’s cogent and unpretentious statement, the Franklin Pierce Law Center took the courageous step to systematically and strategically establish and implement a curriculum which balanced traditional doctrinal education with creative, and essential, experiential, and pragmatic subjects; this then fostered the creation of cadres of graduates who were ready to not only think like a lawyer but quite literally be a lawyer from day one.

However, as the Franklin Pierce Law Center (FPLC) transitioned to the early years of the twenty-first century, the innovative momentum which launched it waned, and the rising waters of the still-prevailing Langdellian legacy crept closer and closer to New Hampshire’s law school. This has been discussed in the context of the name change which is both ironic and bewildering, i.e., that an intellectual property-intensive school would abandon an internationally recognized brand of great value, an intellectual asset, that is . . . the Franklin Pierce Law Center, to the University of New Hampshire School of Law (UNH Law). A noted commentor in the field of intellectual property candidly weighed in on this very issue and how it related to a general loss of focus on intellectual property in the early years of the current century:

When UNH removed the name Franklin Pierce it severed itself from the memories many alums had of a genuinely good place, with genuinely good people who genuinely cared, and signaled it was something different. It lost the good will it had accumulated. Alumni openly and mockingly joked that they “attended the school formerly known as Franklin Pierce,” and student resumes made obvious notations to make sure employers knew that the University of New Hampshire was really the old Franklin Pierce Law Center. Why? Because the name Franklin Pierce had become synonymous with excellence in the field of intellectual property, wholly devoid of any association with the man who was President during the most difficult period of time in U.S. history. It was trademark malpractice to remove the name Franklin Pierce—which had become synonymous with excellence in IP—in the first place.

There had even been conversations that UNH Law might transition to a general practice law school, i.e., a “Harvard-lite” for the state of New Hampshire (entirely antithetical to the original conception of FPLC and vision of its founders in 1973). But as Quinn further articulated, a change was coming which led to a rebirth of the FPLC legacy in a new and powerful way. With the appointment of a new dean, the first woman to assume that responsibility, a visionary leader in legal education and eminent authority in intellectual property, positive change was once again coming. “With the recent hire of Dean Megan Carpenter, the school has become rededicated

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56 Hennessey, supra note 34, at 122.
57 See generally Cavicchi, supra note 52.
to intellectual property . . . .” The Powerhouse came to the rescue.  

A. Rebirth of Franklin Pierce: The Powerhouse

The advent of a new era was marked by the dynamic leadership, enthusiasm, energy, and vision of Dean Megan Carpenter, the first woman to lead as dean at UNH School of Law, and an esteemed and globally recognized thought-leader in intellectual property. She and Micky Minhas, executive director of Franklin Pierce Center for Intellectual Property, have worked in tandem to reinvigorate intellectual property as a core asset of UNH Franklin Pierce Law, essentially re-envisioning the original philosophy and paradigm of the Franklin Pierce Law Center of 1973. In addition, their sojourns to Latin America and other global destinations, e.g., France, India, and Hawaii, exemplifies their mutual commitment to re-positioning UNH Franklin Pierce Law as a global leader in IP education. By building partnerships and forging the global interface, they are creating exciting and, indeed, awesome opportunities. Truly, such application of theory to practice, of rumination to action, is in the time-honored tradition of the Franklin Pierce Law Center, now reborn as the Powerhouse, as a leader in legal education, cracking the hard shell which has been in place since the time of Professor Langdell 150 years ago at Harvard.

The remarkable endurance, persistence, and dedication of Dean Carpenter, with the ongoing support of Micky, illustrates the continuing legacy of the Franklin Pierce Law Center, from its bold pioneering origin five decades ago to the present Powerhouse, with Dean Megan Carpenter continuing to forge forward, opening new vistas, and creating new opportunities. This epitomizes, in a very real and concrete sense, the legacy of the Franklin Piece Law Center and what it was so well known for: being a pioneer, years ahead of all the rest, innovative, inclusive, interdisciplinary, and globally focused, tackling critical issues at the intersection of intellectual property, international development, and the public interest. And this tradition continues in new and exciting ways, as it is in the very DNA from the time of the Franklin Pierce Law Center. As a dynamic thought-leader in the field of legal education and intellectual property, Dean Carpenter’s outside-the-box approach has fostered a plethora of awesome and cutting-edge programs, decades ahead of the rest, innovative, bold, and courageous. She also combines these stellar attributes with a dedicated commitment to diversity, equity, and inclusion in a results-oriented manner, i.e., beyond rhetoric to action.

The Powerhouse is a vision for the future of legal education: whereas it takes measured steps away from Professor Langdell’s time-honored system of legal education, it simultaneously builds on his legacy, yet all the while also recognizing the realities and challenges of the twenty-first century. This is epitomized in the very words of Dean Carpenter:

Changing financial realities for the legal services industry means that law firms now need to hire associates who are prepared to hit the ground running. Law schools should

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59 Id.
respond to this demand by graduating students who have specialized, experiential training that prepares students not just to think like lawyers but to be lawyers.60

B. The Powerhouse in Action: UNH Franklin Pierce’s Hybrid JD Program

In the spring of 2018, three esteemed and extraordinarily creative individuals, veritably a tiger team, armed with only a white board, markers, and a plethora of ideas communed, conceptualized, and memorialized the launch of the Powerhouse intellectual property hybrid degree program at UNH Franklin Pierce School of Law. Indeed, in a session best articulated as a blue-sky thought-shower, they effectively catalyzed the rebirth of the Franklin Pierce Law Center for the twenty-first century and beyond. Dean Megan Carpenter, the visionary leader; Professor Leah Plunkett, the unparalleled hybrid program education guru and chief architect;61 and Professor Mike McCann, the diligent and faithful rapporteur, captured a concept which then emerged as a cutting-edge strategy that re-established UNH Franklin Pierce School of Law as the preeminent Powerhouse it had been in the previous century.62

Leading this courageous team, Dean Carpenter was thereby able to not only think outside the box and push the envelope as no one had done previously, but also essentially capture lightning in a bottle, bringing a new paradigm to the table, and thereby establish herself as a game-changer, an internationally acclaimed thought-leader in creative, dynamic, and innovative initiatives in legal education.63

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61 Professor Plunkett’s contribution as chief architect to the conceptualization, planning, and launch of the UNH FP Hybrid JD Program is even more commendable and remarkable given that at that time she was also working on her now widely acclaimed tome: LEAH A. PLUNKETT, SHARENTHOOD: WHY WE SHOULD THINK BEFORE WE TALK ABOUT OUR KIDS ONLINE (2019). Professor Plunkett’s book has gained national notoriety, airing on the Dr. Phil program in November 2022. Professor Plunkett continues her work, now at the Harvard Law School as Associate Dean of Learning Experience and Innovation and Executive Director of Harvard Law School Online, contributing as an eminent, visionary, and dynamic thought-leader in the field of innovative legal education.

62 It is historically fascinating and arguably noncoincidental that the term “powerhouse” had already been used, in the last century, to describe the unique and pioneering character of the Franklin Pierce Law Center. See Kenneth J. Germeshausen Ctr. for the L. of Innovation & Entrepreneurship & Student Intell. Prop. L. Ass’n, Franklin Pierce L. Cent., Dean Robert Viles: Shaping a Different Law School, GERMESHAUSEN CRT. NEWSL., Summer 1996, at 3, 3 (emphasis added) (“Since 1973 Bob Viles has served FPLC as Associate Dean, Dean and Treasurer, and Dean and President. Under his assiduous guidance and nurture over more than two decades, FPLC shaped its innovative brand of legal education and became a powerhouse in intellectual property education and training.”)

63 The fact that the principal drivers, innovators, and implementers of both the Powerhouse and the Hybrid JD Program have been women in critical leadership roles, i.e., Dean Carpenter and Professor Plunkett, is not only ground-breaking but also exemplary of their roles as not only visionary, but verily transformative leaders in legal education. See Susan Hanley Duncan et al.,
Far from re-inventing the wheel, what they brought to the table was a profound paradigm shift; they tore down silos but maximized core competencies that, led to a proactive, results-oriented program that was individualized yet flexibly scalable as it grew via dynamic and creative disruption.\footnote{Dean Carpenter has astutely articulated that the prevailing model of legal education is facing something akin to quasi-scaled obsolescence, albeit not widely recognized or accepted as such by the bulk of the professional or legal establishment. \textit{See} Carpenter, \textit{supra} note 60, at 28.} Whereas the hybrid JD program had lots of moving parts, when drilling down it is apparent that it embodies robust best practices in cutting-edge legal education, essentially leveraging assets of the UNH Franklin Pierce School of Law in a manner where the rubber meets the road, taking legal education to the next level. Naysayers might argue that this was too innovative, beyond the UNH Franklin Pierce School of Law’s bandwidth, essentially boiling the ocean. However, Dean Carpenter’s core team strategically squared the circle creating a win-win, value-added program. Indeed, boldly facing the headwinds, setting sail into uncharted waters of legal education, she, along with Professor Plunkett, and with the able assistance of Professor McCann, established themselves as unparalleled agents of change in an ever-shifting and unpredictable ocean of legal education. This was simultaneously a game-changer, but also a reconnection with the unique ability of the Franklin Pierce Law Center to integrate the legal and scientific paradigms into an interwoven fabric of concepts, values, and, most importantly, paradigms. Dean Carpenter’s team took the bold and unprecedented step to make this a reality. As she has said many times, the


Today’s research seems to focus less on . . . masculine traits and instead on transformational leadership with some studies revealing that women are particularly adept at this style. First introduced by James MacGregor Burns in his research on political leaders, transformative leadership—unlike transactional leadership—focuses on leading by example and empowering others to fulfill the goals of the organization as well as their personal ambitions. Transformational leaders spend time developing strong interpersonal relationships that lead to a climate of mutual trust between the leader and her followers. Transformational leaders possess a high degree of emotional intelligence and view their role as coach or mentor committed to developing their staff by empowering them and celebrating positive contributions. According to the Pew Research study (discussed above), women rank higher than men on traits more aligned with the transformational style. For example, women rank higher than men for having qualities such as compassion, honesty, integrity, and the ability to compromise.\footnote{Attorneys and accreditors, in addition to law schools, have kept the practice of law precious. By keeping legal education for the few and failing to adapt to new roles over time, the haves and have-nots of legal knowledge have been defined in a way that is not sustainable and is ripe for disruption. Legal education is not one-size-fits-all, and not all legal professionals should be lawyers. While the market has changed over time, there is a pervasive need for education about legal frameworks across industries. While law schools and the legal profession have both experienced a decline, the number of people who would benefit from knowledge about law and its operation has not. \textit{See also} A New Year’s Message from the CEO, Economist (Jan. 1, 2024), https://www.economist.com/business/2024/01/01/a-new-years-message-from-the-ceo [https://perma.cc/Q2SN-K364] (describing the concept of disruption and identifying some disruption as being so “disruptive that it may end up disrupting disruption itself.”).}
Powerhouse not only talks the talk but walks the walk.65

CONCLUSION

For those reading this article, a key message and hoped-for outcome will be to encourage bringing scientists and lawyers together, but also to bridge the paradigmatic crevasse that exists between the two, thereby avoiding (potentially costly) misunderstandings that can lead to headaches, loss, and liability. Scientists can thereby better learn both the risks associated with IPR (e.g., premature disclosure of an invention with possible loss of patent rights, or misappropriation and infringement of another’s IPR), along with the rewards (e.g., how patenting can simultaneously build knowledge, advance innovation, generate revenue, and solve pressing societal problems). Lawyers can learn how scientists venture into the unknown, in a measured manner, building new knowledge while managing risk along the way.

It is also important to recognize that the modern research enterprise is increasingly an interdisciplinary endeavor: science as business, business as science, with the law (especially the law of IPR) facilitating the process. Therefore, pragmatic steps need to be taken to build capacities that drive this enterprise. This could be achieved, for example, by offering IP educational and training sessions for scientists, engineers, and businesspeople; holding joint law–science educational programs and symposia that bring together scientists and legal professionals, and encouraging community outreach programs that bring the two professions together for informal dialogue, round tables, and mutually supportive awareness building . . . —bridging cultures, a new model for the new century. In other words, what is proposed here is global community development for advancing and accelerating science, technology, and innovation via a dynamic, networked open-innovation system, where science, technology, law (IP), and business (technology transfer) operate in unison and in tandem.

However, and critically, as outlined in this article, such legal programs cannot be ad-hoc, run and maintained by individual faculty, or simply offered as knock-off special events (e.g., workshops, symposia, summits); they need to be part of a much

65 Dean Carpenter has described the innovative UNH Franklin Pierce School of Law Hybrid JD in Intellectual Property, Technology, and Information Law as a highly specialized hybrid law degree, designed for working professionals and, therefore, both a natural evolution from the DNA of the Franklin Pierce Law Center and (albeit not articulated explicitly) a challenge to the prevailing, yet arguably failing, Langdellian system of legal education. See, e.g., Carpenter, supra note 60, at 29–30.

For 150 years, law schools and the legal services industry have combined to make legal education a precious commodity, bundled in a very specific way. Like the cable industry or print news media of yore, the education that qualifies people for the U.S. legal profession has been one-size-fits-all, without regard to particular practice areas or specializations and without responding to the diversification of the legal services market. It is time that we consider ways to diversify legal education and make it accessible to new populations.

(providing an illuminating and pragmatic vision for the future).
THE NEED FOR NEW INSTITUTIONAL MODELS

larger institutional-level strategy, i.e., a change that is committed, focused, and highly innovative; a program that brings together legal and science professionals to address the pressing global challenges and realities of this century. The model for such an institutional change is the Franklin Pierce Law Center and its current incarnation as the University of New Hampshire Franklin Pierce School of Law, and the highly innovative Hybrid Juris Doctor (JD) program with an Intellectual Property, Technology, and Information Law focus. This is indeed the harbinger of the future of legal education.66

Finally, this article is meant to illustrate that the paradigms of law and science, albeit quite real and established, urgently need to be bridged towards seamless connectivity that extends from research and development to commercialization and global access. It’s all about teams and communities interdisciplinarity working towards common, important, and increasingly urgent goals, addressing the global challenges looming as the century progresses, e.g., rapidly COVID pandemic via accelerated vaccine rollout. In this context, environmentally sound technologies are also excellent examples of how IPR can facilitate and accelerate the identification, access, adaptation, deployment, and commercialization of crucial innovations where most needed, e.g., to address the challenge of climate change with appropriate and sustainable global application of environmentally sound technologies. The importance of bridges between legal and scientific teams is now more than ever urgently needed to address such complex and pressing global challenges spanning paradigmatic crevasses before it is too late, i.e., . . . before all the ice melts further swamping us with even greater challenges!

66 This is entirely consistent with the conclusions drawn by George Critchlow, supra note 51, at 1352 (citations omitted).

The law schools that will lead us into the future are those that have internal confidence in their mission and compass and are not afraid to be proactive and different; those that are most interested in playing to external media for affirmation will likely be hindered by the status quo, complacency, and fear of change.