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Teaching to the Tech: Law Schools and the Duty of Technology Competence

Raymond H. Brescia[†]

As a result of a wide range of emerging technologies, the American legal profession is at a critical inflection point. Some may argue that lawyers face dramatic threats not only to their business models but also to their very usefulness in the face of new technologies. Indeed, it is possible that these new technologies will offer a modicum of legal guidance to virtually every American with a little bit of computer savvy and access to digital technologies at a fraction of the cost of what a lawyer would charge for similar assistance. At the same time, in recent years, the profession has largely imposed upon itself a duty of technology competence, which imposes an array of obligations regarding the use and proliferation of new practice technologies. Since lawyers are obligated to maintain this duty of technology competence, law schools should also have an obligation to teach technology competence as a core professional skill. Even with the significant changes that are likely afoot in the legal profession due to emerging technologies, a duty on lawyers to maintain technology competence, and the likely burden on law schools to prepare students for it, the precise contours of this duty of technology competence are themselves hardly defined.

To understand the full scope and potential consequences of the likely impact of technologies on the American legal profession, we should consider another point in its history—another inflection point—where technology had dramatic effects on the practice of law: the last decades of the nineteenth century. Then, technology impacted all aspects of practice—not only the means by which lawyers practiced their craft, but also the type of work they did and the subject matter of that work. In this Essay, I explore the contours of a robust duty of technology competence; what I call a thick version of that duty. As part of this exploration, I describe efforts of law

[†] Hon. Harold R. Tyler Chair in Law & Technology and Professor of Law, Albany Law School. The Author would like to thank the editorial team at the *Washburn Law Journal* and Albany Law School students Polly Boyle and Alice Broussard.

schools from across the country that are teaching different aspects of this broader duty. I also attempt to set forth a program for law schools moving forward that will impart in all law students a muscular version of technology competence. Such a version will prepare them to practice not just today, but also tomorrow and for the rest of their professional lives.

I. INTRODUCTION

The recent introduction of generative artificial intelligence tools is just one of the technological developments that stand to have a significant impact on the practice of law in the coming years.¹ Some predict that these and other technologies will not only significantly impact the way lawyers practice,² but will also create a serious risk of displacing the profession itself.³ Some ask whether the delivery of services through new technologies might provide the same (or superior) quality service, particularly when the alternative to such services is, all too often, no service at all.⁴ Since the COVID-19 pandemic transformed the way lawyers practice virtually overnight, and since many law offices have yet to return to a pre-pandemic-style of working, the profession itself is both using new technologies and adapting to new opportunities and challenges presented by new technologies.⁵

Likewise, such new technologies are impacting not just how lawyers practice but also the substance of their work: lawyers are now facing questions involving liability for autonomous vehicle accidents, cybersecurity threats, digital privacy, algorithmic bias, and worker rights in sharing-economy settings—to name just a few new and thorny legal issues arising in the midst of dramatic technological change.⁶ Thus, technological

1. See, e.g., Paul Riermaier, *ChatGPT and Other AI Technologies in the Study and Practice of Law*, U. PENN. CAREY SCH. L. (Feb. 6, 2023), <https://www.law.upenn.edu/live/news/15538-chatgpt-and-the-law> [<https://perma.cc/A99M-K9BR>] (collecting analysis and opinions across the legal industry and legal academia on the impact of artificial intelligence on the future practice and study of law).

2. Andrew M. Perlman, *The Implications of ChatGPT for Legal Services and Society*, HARV. L. SCH. CTR. ON THE LEGAL PRO., Dec. 5, 2022, SSRN, Doc. No. 42941971.

3. Jenna Greene, *Will ChatGPT Make Lawyers Obsolete? (Hint: Be Afraid)*, REUTERS (Dec. 9, 2022, 7:33 PM), <https://www.reuters.com/legal/transactional/will-chatgpt-make-lawyers-obsolete-hint-be-afraid-2022-12-09/> [<https://perma.cc/H66G-7V9L>] (describing potential threats to the legal industry from some forms of artificial intelligence).

4. James J. Sandman, *The Current State of Access to Justice in the United States*, 22 GEO. J. ON POVERTY L. & POL'Y 453, 458 (2015) (arguing for greater access to justice through various means, including enhanced technology, where “[a] service delivery model that leaves huge numbers of customers with no service of any kind is broken”).

5. See Meghan Tribe, *Manhattan Law Firms Eye Wall Street's Lead on Office Returns*, BLOOMBERG L., Sept. 30, 2022, BL (describing law firms' halting return-to-work policies).

6. See Iria Giuffrida, Fredric Lederer & Nicolas Vermeys, *A Legal Perspective on the Trials and Tribulations of AI: How Artificial Intelligence, the Internet of Things, Smart Contracts, and Other Technologies Will Affect the Law*, 68 CASE W. RES. L. REV. 747 (2018) (describing some of the potential legal implications of new technologies).

change is, in turn, driving institutional change in virtually all aspects of the legal profession, from where and how lawyers practice, to what it is lawyers do every day. A profession that might have once seen itself as largely immune from automation and technological change now faces unprecedented threats from emerging technologies, and lawyers may find themselves displaced by technology in ways few thought possible even five years ago.⁷

At the same time, the profession has made somewhat feeble attempts to address and prepare for these changes, from deploying charges of the Unauthorized Practice of Law (“UPL”) to stifle efforts to deliver technology-enhanced services,⁸ to imposing on lawyers a duty of “technolog[y] competence.”⁹ The latter is reflected in a simple clause, inserted in a comment to the American Bar Association’s Model Rules which provides that in order to “maintain the requisite knowledge and skill” to meet the core requirement that an attorney serve their clients in a competent fashion, a lawyer must “keep abreast of changes in the law and its practice, including the benefits and risks associated with relevant technology,” and “engage in continuing study and education” in order to do so.¹⁰

While most states have incorporated some version of this language in their own rules governing the practice of law,¹¹ this gesture towards competence in light of the changes already underway hardly seems adequate to meet the moment, or the future. What is more, it is not sufficient to address how the practice of law is likely to change in light of technological change without also addressing what substantive issues lawyers will handle: that is, the issues that lawyers will face in their practice and the legal questions they are going to be asked to address. I will refer to these two ideas in the remainder of this piece as the “how” and the “what” of legal practice.

As unprecedented as these times may seem, there is another moment in the history of the American legal profession from which we might draw

7. See Christopher A. Suarez, *Disruptive Legal Technology, COVID-19, and Resilience in the Profession*, 72 S.C. L. REV. 393, 400–15 (2020) (describing changes to the practice of law due to technological innovation).

8. See *Janson v. LegalZoom.com, Inc.*, 802 F. Supp. 2d 1053, 1064–65 (W.D. Mo. 2011) (finding non-law firm provider of services engaged in the unauthorized practice of law with respect to some of its practices).

9. See Lisa Z. Rosenof, *The Fate of Comment 8: Analyzing a Lawyer’s Ethical Obligation of Technological Competence*, 90 U. CIN. L. REV. 1321, 1325–30 (2021) (describing scope of the duty of technological competence).

10. MODEL RULES OF PRO. CONDUCT r. 1.1 cmt. 8 (AM. BAR ASS’N 2020).

11. For a recent analysis of the states that have adopted the duty of technology competence, see Bob Ambrogi, *Another State Adopts Duty of Technology Competence for Lawyers, Bringing Total to 40*, LAW SITES (Mar. 24, 2022), <https://www.lawnext.com/2022/03/another-state-adopts-duty-of-technology-competence-for-lawyers-bringing-total-to-40.html> [<https://perma.cc/8SAY-3ZKE>].

to understand how the practice of law may change in the coming decades. Towards the end of the nineteenth century, the American legal profession was at a significant crossroads: new technologies, from the telephone to rapid reproduction and dissemination of judicial decisions, transformed the way lawyers practiced.¹²

What is more, innovations in transportation, communications, and finance changed the substance of their work.¹³ These technological and social innovations transformed virtually every aspect of lawyers' practice, creating a key inflection point in the history of the American legal profession.¹⁴ Recognizing that we are at no less of a critical inflection point in the practice of law today, it is important to consider how technological change will likely impact all aspects of this practice. Accordingly, a review of the ways in which technology is impacting the practice of law, again, not just in the how but also the what of practice, requires a wholesale review of the ways in which lawyers must adapt to technological change as well as the extent to which that technological change impacts legal ethics. It also means law schools, tasked with educating the next generations of lawyers, must adapt to fulfill their critical role in preparing the lawyers of the future.

With the goal of addressing the changes afoot in the legal profession in light of technological change, and the need for law schools to educate future lawyers to respond to these changes, this Essay proceeds as follows. Part I describes the technological changes, threats, and opportunities that the American legal profession faces today. It then provides an overview of the changes that occurred to virtually all aspects of the profession in the late nineteenth century and the ways the profession responded to those changes. Part II then introduces the duty of technology competency in two forms. The first is what I call a "thin version" of this duty, which is what the profession seems to have adopted. The second is a "thick" version, which I argue is necessary to adequately address the coming changes to the practice of law. Part III then outlines the implications for law schools under this thick version of technology competency and provides some examples of law schools rising to meet these challenges. Part IV then provides some concluding thoughts on what legal education might look like to prepare future lawyers for the technologically transformed practice of law.

12. See *infra* Part II.B.

13. *Id.*

14. *Id.*

II. TECHNOLOGY AND THE PRACTICE OF LAW, TODAY AND YESTERDAY: TECHNOLOGICAL CHANGE TO THE PRACTICE OF LAW IN THE TWENTY- FIRST CENTURY

A. Technology's Present Relationship to the Practice of Law

Digital technologies began impacting the practice of law in the 1970s as services like Westlaw and Lexis transformed legal research.¹⁵ Since that time, virtually all aspects of how lawyers go about providing legal services to clients have changed. Currently, lawyers largely interface with prospective clients through websites. Complaints and other legal filings are often submitted to courts using web-based portals. Discovery does not only involve digital evidence, but even physical evidence is often reduced to its digital doppelganger, which is then reviewed using technological tools. Lawyers can communicate with their clients using mobile technologies and can share information with clients in real time.¹⁶

The ability to communicate with clients and to share information and documents over digital networks has implications for the lawyer's ability to meet the standard of care to preserve their clients' confidences in a competent way.¹⁷ These network-communication capacities, when combined with remote technologies, transformed the ability of lawyers to communicate with clients, adversaries, and the courts. They were deployed rapidly and extensively when the COVID-19 pandemic hit; forcing lawyers, courts, and clients to operate in a virtual world, changing the practice of law in ways that did not seem likely in January 2020.¹⁸ As I have alluded to already, technology is not just transforming the way lawyers practice, but it is also changing the what of their practice, i.e., the substance of the things they do every day.

Lawyers are now being asked to advise clients on issues and areas of law that did not exist forty years ago, like drones, quantum computing, the functioning of autonomous vehicles, and cybersecurity. In addition, traditional fields of practice, like antitrust and securities law, are being tested by new technologies like cryptocurrencies and blockchain technologies, and by social media companies that enjoy unprecedented

15. William G. Harrington, *A Brief History of Computer-Assisted Legal Research*, 77 L. LIBR. J. 543, 552–53 (1985).

16. Suarez, *supra* note 7 (describing innovations in the practice of law due to technology).

17. *Id.* at 431.

18. See *The COVID Crisis Catalyses Legal Tech Adoption Among Law Firms*, WOLTERS KLUWER (Nov. 16, 2020), <https://www.wolterskluwer.com/en-gb/expert-insights/the-covid-crisis-catalyses-legal-tech-adoption-among-law-firms> [<https://perma.cc/L4HH-HFH9>] (describing the changes to law firm practices in light of the pandemic).

international reach.¹⁹ Lawyers have had to learn about new technologies to understand their functions, how the law applies to them, or whether new laws and regulations are needed to protect consumers and the environment. We are trying to shoehorn entire industries into existing regulatory systems, sometimes comfortably, but often not.²⁰

The legal profession has a significant role to play in every aspect of the introduction of new technologies into society. For example, the legal profession plays a significant role in the conception and protection of the intellectual property of such technologies, the setting of laws and regulations to address the impact of such technologies on society, and the litigation that emerges after the fact when those technologies harm the community. While it may seem that today's technological changes to the American legal profession are unprecedented, we can see another time in the profession's history when technology transformed not just the how of lawyers' practice, but the what as well. It is to that inflection point that I now turn.

B. Technological Change in the Late Nineteenth Century

The legal profession is experiencing a never-before-seen dramatic change today and can look forward to even greater change in the near future. The profession is clearly at an inflection point in its history, one that continues to transform the practice of law in both predictable and difficult-to-anticipate ways. But this is not the first time that the profession has faced changes brought on by technology; the profession that emerged in the wake of that technological change of a prior era was, by all measures, transformed.

Indeed, in that inflection point, the legal profession not only caught up to changes in technology in significant ways, but also lawyers helped to shape those technologies as those technologies were shaping the profession. That era, from the last decades of the nineteenth century to the first decades of the twentieth, served as a key inflection point in the American legal profession. It also shows that one cannot simply consider the ways technology affects the how of the practice of law, but also must address the what at key inflection points—like the one, I argue, we are in today.

In the decades following the end of the American Civil War, lawyers mostly practiced as solo practitioners or in very small groups of two or three

19. See Lisa Dimyadi, *The Highest-Growth Legal Practice Areas in 2023 and Beyond*, CLIO, <https://www.clio.com/blog/emerging-areas-law/> [<https://perma.cc/X7XH-9ST5>] (last visited May 13, 2023) (describing new areas of legal practice arising as a result of new technologies).

20. Raymond H. Brescia, *Finding the Right 'Fit': Matching Regulations to the Shape of the Sharing Economy*, in *THE CAMBRIDGE HANDBOOK OF THE LAW OF THE SHARING ECONOMY* 156, 157–60 (Nestor M. Davidson, Michèle Finck & John J. Infranca eds., 2018).

lawyers, doing little more than sharing offices, a nineteenth-century version of a co-working space.²¹ As the century came to an end, lawyers began organizing into law firms for a range of reasons, with the most important being that the nature of legal work itself had changed, as technology and a technology-enabled economy changed all around it.²²

First, the mechanics of legal advising changed as telephones and typewriters were introduced into law offices.²³ Initially, a telephone might have served as a distraction for some, as a law office might have a single telephone located in a central space where everyone could overhear the lawyer's side of the conversation.²⁴ Some saw these as nefarious developments, arguing that typing letters and other correspondence was an impersonal means of communication in comparison to personally handwriting them, undermining the trust between the lawyer and their client.²⁵ Eventually, of course, it was hard for a lawyer to function without such technologies, and their adoption was ubiquitous.

The economy was also being transformed in dramatic ways, and a greater volume of work for lawyers meant that they needed to find ways to make their work more efficient. Lawyers began to form the modern law firm to keep up with the work that their clients needed them to do.²⁶ Many lawyers, especially in the large city centers, spent more time advising clients than going to court.²⁷

The lawyers who did continue to practice in court found that the traditional way of conducting oneself in that setting—becoming fluent in “general principles” rather than developing and maintaining knowledge of recent judicial decisions—was at risk. This was because of innovations in typesetting, the improvement of the typewriter, and new means of printing that made the rapid production and wide dissemination of judicial decisions possible.²⁸ These innovations put the old-style practitioner at a disadvantage.²⁹ Such lawyers could no longer bluster their way through a legal argument relying on vague and general principles when their adversaries could refer to decisions directly on point. This prompted one

21. MILTON C. REGAN, JR., *EAT WHAT YOU KILL: THE FALL OF A WALL STREET LAWYER* 16 (2004).

22. GEORGE MARTIN, *CAUSES AND CONFLICTS: THE CENTENNIAL HISTORY OF THE ASSOCIATION OF THE BAR OF THE CITY OF NEW YORK 1870–1970*, at 191–96 (1970).

23. *Id.* at 192.

24. *Id.*

25. *Id.*

26. On the emergence of the modern law firm, see JEROLD S. AUERBACH: *UNEQUAL JUSTICE: LAWYERS AND SOCIAL CHANGE IN MODERN AMERICA* 22 (1976).

27. On the division between corporate counseling and litigation-focused lawyering in the late nineteenth century, see WILLIAM G. THOMAS, *LAWYERING FOR THE RAILROAD: BUSINESS, LAW, AND POWER IN THE NEW SOUTH* 37–38 (1999).

28. See MARTIN, *supra* note 22.

29. See *id.* at 196.

prominent lawyer at the time to lament: “[o]n the whole, the effect of the large number of adjudged cases contained in the reports has virtually transformed the profession from a class of lawyers able to practice without law books to a class almost entirely dependent on the adjudged cases.”³⁰ Legal and regulatory innovations also meant that those general principles, developed through the common law, probably no longer even applied to the situation in the first place.³¹

But it was not just the way lawyers practiced that changed in this moment; it was also the subject matter of the work that was changing, largely a product of technological change, which itself needed the law and lawyers to change with it.³² Transportation and communications technologies transformed the nation.³³ Urbanization and immigration accelerated as farm technology improved, and factories offered the promise of opportunity as a beacon to rural communities and low-income workers across the globe. New business forms and financing arrangements were needed to shape and refine the practices of new business syndicates, from railroads and steel companies, to banks and insurance companies, and the lawyers serving these industries had to understand the business of their clients.³⁴ Lawyers not only needed to help advise clients in how to manage and develop these new industries; they also needed to write the laws, promote (or oppose) their adoption, create the regulatory agencies that would enforce and oversee them, and litigate questions that would arise in these new fields.³⁵

While the mechanics of practice thus changed with technology, the substance of that practice also changed dramatically, spurring a near-

30. THERON G. STRONG, *LANDMARKS OF A LAWYER'S LIFETIME* 427 (1914).

31. The codification movement that began in the mid-nineteenth century had gained full force and steam by the end of the century as the effort to rein in big businesses was inspired, at least in part, by a larger desire to order life in general as it became more complex with new technologies, urbanization, immigration, and internal migration. These changes gave many residents of the United States in the late nineteenth century a sense of dislocation and a loss of control. On the early codification movement, see CHARLES M. COOK, *THE AMERICAN CODIFICATION MOVEMENT: A STUDY OF ANTEBELLUM LEGAL REFORM* 132–60 (1981); MAXWELL BLOOMFIELD, *AMERICAN LAWYERS IN A CHANGING SOCIETY, 1776–1876*, at 84–88 (1976); David Dudley Field, *The Law and the Legal Profession*, in 1 *SPEECHES, ARGUMENTS, AND MISCELLANEOUS PAPERS OF DAVID DUDLEY FIELD* 539, 539–42 (A.P. Sprague ed., 1884). On the “search for order” in the late nineteenth century, see generally ROBERT H. WIEBE, *THE SEARCH FOR ORDER 1877–1920* (1967).

32. See AUERBACH, *supra* note 26, at 22–23 (describing changes to the nature of law practice to fit needs of corporate clients).

33. See THOMAS, *supra* note 27, at 37–40 (describing specialization within the bar).

34. Samuel Untermyer, *What Every Present-Day Lawyer Should Know*, *ANNALS OF THE AM. ACAD. OF POL. & SOC. SCI.*, May 1933, at 173, 174.

35. JAMES WILLARD HURST, *LAW AND SOCIAL ORDER IN THE UNITED STATES* 145–46 (1977); see generally Price Fishback, *The Progressive Era*, in *GOVERNMENT AND THE AMERICAN ECONOMY: A NEW HISTORY* 288, 288–322 (2007).

comprehensive overhaul of the legal profession.³⁶ This overhaul ended up affecting not just the ways that lawyers practice, through the adoption of the first national code of ethics by the American Bar Association in 1908,³⁷ but also involved the dramatic expansion of, and reliance on, law schools in the education of prospective lawyers, and a significant increase in the barriers to entry into the profession generally.³⁸ In other words, the profession changed virtually from top-to-bottom, as a result of, and in response to, the dramatic changes in technology that impacted all aspects of society. And those changes were not just a question of developing a competency in the use of the technologies that affected law practice.

The changes were far greater and more comprehensive than that. They were not just a response to the adoption of technological change. In many ways, they were both a product and an accelerant of that technological change, as lawyers facilitated the expansion, proliferation, and even the oversight of those technologies by serving as the legal handmaidens of corporations that brought these technologies to market, while also leading efforts to rein those corporations in.³⁹

As such, looking at technology as something that affects only the mechanics of how lawyers practice tells just part of the story of how technology impacts the practice of law. Indeed, taking a broader view on the impact of the technology on the practice of law calls for a different sense of lawyer competency in light of technological change.

III. THIN AND THICK VERSIONS OF TECHNOLOGICAL COMPETENCE

A. A Thin View of Technological Competence

As part of its effort to address how legal practice was changing in the late 2000s, particularly due to globalization and technology, the American Bar Association (“ABA”) created the ABA Commission on Ethics 20/20 to determine whether it might appear necessary to update and modernize the Model Rules of Professional Responsibility. The Commission provided guidance to lawyers in light of developments in contemporary technologies and those perceived to affect future legal practice.⁴⁰ The Commission

36. LAWRENCE M. FRIEDMAN, *A HISTORY OF AMERICAN LAW* 620–39 (4th ed. Oxford Univ. Press 2019) (1973) (describing changes to the legal profession in the late nineteenth century).

37. ABA Comm. on Ethics & Pro. Resp., Final Report 567 (1908).

38. RICHARD L. ABEL, *AMERICAN LAWYERS* 51–73 (1989).

39. See, e.g., Louis D. Brandeis, Address Before the Harvard Ethical Society: The Opportunity in the Law (May 4, 1905), in 39 AM. L. REV. 555, 559–62 (1905) (describing role of lawyers supporting corporations but also advocating for lawyers to serve the people against such corporate interests).

40. See AM. BAR ASS’N, ABA COMMISSION ON ETHICS 20/20: INTRODUCTION AND OVERVIEW 1, https://www.legalethicsforum.com/files/20120508_ethics_20_20_final_hod_introduction_and_overview_report.pdf [<https://perma.cc/GPY5-VD4B>] (last visited May 15, 2023).

explained the importance of analyzing how technology was impacting the practice of law as follows:

[T]echnology has irrevocably changed and continues to alter the practice of law in fundamental ways. Legal work can be, and is, more easily disaggregated; business development can be done with new tools; and new processes facilitate legal work and communication with clients. Lawyers must understand technology in order to provide clients with the competent and cost effective services that they expect and deserve.⁴¹

In 2012, the Commission recommended, and the ABA House of Delegates approved, an amendment to Comment 8 to Rule 1.1, which incorporated language that would include within the overall duty of competence a requirement that they must maintain that competence, by, among other things, remaining aware of “the benefits and risks associated with relevant technology.”⁴² This clause was inserted into the existing Comment, as set forth below:

To maintain the requisite knowledge and skill, a lawyer should keep abreast of changes in the law and its practice, including the benefits and risks associated with relevant technology, engage in continuing study and education and comply with all continuing legal education requirements to which the lawyer is subject.⁴³

The Commission explained that what we might call the duty of technology competence had to be made “explicit” on account of the Commission’s position that “technology is such an integral—and yet at times invisible—aspect of contemporary law practice.”⁴⁴ It believed that “[t]he phrase ‘including the benefits and risks associated with relevant technology’ would offer greater clarity regarding this duty and emphasize the growing importance of technology to modern law practice.”⁴⁵ While it would assert that “this obligation is not new. . . . the proposed amendment emphasizes that a lawyer should remain aware of technology, including the benefits and risks associated with it, as part of a lawyer’s general ethical duty to remain competent in a digital age.”⁴⁶

The Commission’s report made clear that the emphasis of the modest change to the relevant Comment was informed, almost exclusively, by ways that technology was affecting the how of legal practice. Although the report asserted that “[t]echnology affects nearly every aspect of legal work,”⁴⁷ it identified that those effects included how lawyers “store confidential

41. *Id.* at 3 (footnote omitted).

42. MODEL RULES OF PRO. CONDUCT r. 1.1 cmt. 8 (AM. BAR ASS’N 2012).

43. *Id.* (emphasis added).

44. AM. BAR ASS’N, *supra* note 40, at 8.

45. *Id.*

46. *Id.*

47. *Id.* at 4.

information, communicate with clients, conduct discovery, engage in research, and market legal services.”⁴⁸ It recognized that “technology has transformed the delivery of legal services by changing where and how those services are delivered (e.g., in an office, over the Internet or through virtual law offices).”⁴⁹

It also highlighted technology’s “impact on the cost of, and the public’s access to” legal services, noting that “[i]n the past, lawyers communicated with clients by telephone, in person, by facsimile or by letter,”⁵⁰ and that lawyers “typically stored client confidences in paper form, often inside locked file cabinets, behind locked office doors or in offsite storage facilities.”⁵¹ It recognized that, due to modern technologies, lawyers “communicate with clients electronically, and confidential information is stored on mobile devices, such as laptops, tablets, smartphones, and flash drives, as well as on law firm and third-party servers (i.e., in the “cloud”) that are accessible from anywhere.”⁵²

The Commission noted also that technology impacts “how lawyers conduct investigations, engage in legal research, advise their clients, and conduct discovery[.] . . . requir[ing] lawyers to have a firm grasp on how electronic information is created, stored, and retrieved.”⁵³ The Commission also noted that the internet was changing the way clients find lawyers because it “provides immediate access to information about lawyers through search engines, websites, blogs, and ratings and rankings services.”⁵⁴ Thus, while admitting that technology affects “nearly every aspect of legal work,” the Commission’s focus appears to have been exclusively centered on the ways in which technology was affecting how lawyers work and not on the actual work itself.⁵⁵ This is what I will call a “thin” view of the duty of technology competence. It does not align with, nor does it appreciate, what is the true impact of technology on the practice of law, particularly today, when there is virtually no corner of contemporary life that is not impacted by current developments in technology and those that appear just on the horizon.

48. *Id.*

49. *Id.*

50. *Id.*

51. *Id.*

52. *Id.* (citing AM. BAR ASS’N, LEGAL TECHNOLOGY SURVEY REPORT: EXECUTIVE SUMMARY 18–22 (2011)).

53. *Id.* (footnote omitted).

54. *Id.* (citing AM. BAR ASS’N STANDING COMM. ON THE DELIVERY OF LEGAL SERVICES, PERSPECTIVES ON FINDING PERSONAL LEGAL SERVICES (Feb. 2011)).

55. *Id.*

B. Towards a Thick View of Technological Competence

As described previously, the introduction of new technologies that transformed virtually all aspects of contemporary life at the end of the nineteenth century impacted not just the how of legal practice (the mechanics or means of production), but also the type of services lawyers provided (the mode of production), and the very substance of the work (the matter of legal services).⁵⁶ Lawyers transformed the mechanics of the practice of law in the late nineteenth century through the use of communications and other technologies, while also entering into different modes, like advising clients about their businesses and helping them to navigate new regulatory regimes.⁵⁷

Lawyers also had to learn about their clients' businesses in order to advise them effectively.⁵⁸ This notion—that technology can impact the means, mode, and matter of legal practice—represents what I will refer to as a “thick” view of technological competence. It is this thick view of technological competence that lawyers should strive to achieve, and which any duty of lawyer competence should encompass.

Today, as in the late nineteenth century, the technologies that are transforming all aspects of life are of such complexity and are challenging extant legal structures and paradigms so dramatically that they require the legal profession to develop a different kind of competency, one that does not merely confine itself to a facility with, and knowledge of, the risks associated with the practice tools that lawyers use to do their jobs. These technologies demand a different kind of competence, one that is informed by an understanding of these technologies, as well as an appreciation for the impacts they can have on clients and the community.

While there are many areas to choose from, I will focus on one area of contemporary life—the emergence of artificial intelligence, machine learning, and Big Data—to show how a thick version of technology competence is critical for providing effective—and ethical—legal services to clients. While the terms “artificial intelligence” and “machine learning” are often thrown about somewhat interchangeably, the difference is important, particularly if we see artificial intelligence as analysis and machine learning as involving prediction.⁵⁹ More and more in legal practice, machine learning is providing predictive analytics to lawyers and

56. See *supra* Part II.B.

57. See *supra* Part II.

58. See *supra* Part II.

59. See Suarez, *supra* note 7, at 401–08 (describing artificial intelligence and machine learning tools as used in the practice of law).

the legal system.⁶⁰ In one area in particular, it has some degree of promise, but also a great degree of peril: risk assessment.

The ability to assess risk effectively is one of the critical lawyer competencies when advising clients, but it involves more than just legal risk assessment.⁶¹ In the medical field, for example, risk assessment involves a complex array of analytical tools that the lawyer must use, including understanding the medical practices and technologies the lawyer's client is deploying, the nature of the illnesses and ailments the client is treating, the application of patient privacy rules to a given situation, and the likelihood of harm associated with different practices.⁶² In other words, the "risk" the lawyer is analyzing combines threshold legal questions and an understanding of the practices and science behind their client's work. It also can involve compliance work, as well as litigation. While some degree of machine learning may be used predictively in public health settings (as in epidemiological research to identify populations vulnerable to particular medical conditions), in other settings, predictive analytics are being deployed with deeply troubling outcomes that have profound implications for lawyers' practice and ethics.

In the criminal justice system, judges have long had to make judgments about risk: who they can release on bail and what sort of conditions they should impose on those released on parole.⁶³ A judge might use a formal risk assessment tool, or develop merely a subjective "sixth sense," to gauge the threat an accused party may pose to the community if released on bail, or to determine the likelihood that they may flee the jurisdiction prior to their return date.⁶⁴ Recently, criminal justice systems have begun to utilize algorithms, fueled by Big Data, in an attempt to analyze whether a particular defendant could be a flight risk or a danger to the community while awaiting trial.⁶⁵

The problem with any such programming is that the quality of the outcomes is always determined by the quality of the inputs. To the extent those inputs reflect a bias—conscious or unconscious—the outcomes they

60. *Id.*

61. *See, e.g.*, MODEL RULES OF PRO. CONDUCT r. 2.1 (AM. BAR ASS'N 2020) ("In representing a client, a lawyer shall exercise independent professional judgment and render candid advice. In rendering advice, a lawyer may refer not only to law but to other considerations such as moral, economic, social and political factors, that may be relevant to the client's situation.").

62. *See, e.g.*, Mary Beth Johnson & Leighton Roper, *HIPAA Becomes a Reality: Compliance with New Privacy, Security, and Electronic Transmission Standards*, 103 W. VA. L. REV. 541 (2001) (describing privacy compliance work by lawyers serving medical professionals).

63. For a discussion of the many ways in which judges engage in risk assessment, see generally Brandon L. Garrett & John Monahan, *Judging Risk*, 108 CALIF. L. REV. 439 (2020).

64. *See id.* at 450–53 (describing different risk-assessment methodologies).

65. For a discussion of algorithmic risk assessment, see J. Stephen Wormith, *Automated Offender Risk Assessment: The Next Generation or a Black Hole?*, 16 CRIMINOLOGY & PUB. POL'Y 281, 288–93 (2017).

generate will be biased as well.⁶⁶ The actors in the criminal justice system—prosecutors, defense counsel, and judges alike—have an obligation to understand the algorithms and to conduct their own assessment of the extent to which those algorithms are infected by biased assumptions and data.

This concern implicates not just the duty of competence and zealous advocacy, but also the requirement that the legal profession has a duty to refrain from engaging in racial and other forms of discrimination.⁶⁷ There are often substantive issues implicated in the use of these algorithms. For example, the idea that the companies that license the algorithms to the judicial system might argue that the contents and processes contained within their technologies are proprietary and subject to trade secret or intellectual property protections.⁶⁸ There are also constitutional considerations as well, such as the due process implications of the deployment of these technologies.⁶⁹ Thus, competency with respect to the use of these predictive analytics requires not only a knowledge of how to deploy them (to implement them as a means of practice), but also an understanding of how they actually work (the risks and opportunities they pose) and the substantive law that their deployment might implicate.

Competency might also involve advocates lobbying to require the exposure of the “black box” contents of the algorithms (the processes they use to conduct their analysis), or bringing impact litigation challenging their use. Thus, technology competence with respect to the use of these algorithms in the criminal justice system requires much more than an understanding of how to incorporate them into one’s practice; it demands a thick version of technology competence.

C. Mapping the Contours of the Thick Version of Technological Competence

With an appreciation for the fact that a thick version of technology competence involves the means, modes, and matters involved in legal representation, can we chart out the contours of this more muscular version of lawyer competence when it comes to technology?

66. *See id.* at 289–290.

67. *See* MODEL RULES OF PRO. CONDUCT r. 1.1 (AM. BAR ASS’N 2020) (duty of competence); r. 1.3 cmt. 1 (duty to act with “zeal in advocacy upon the client’s behalf”); r. 8.4(g) (professional misconduct includes “engag[ing] in conduct that the lawyer knows or reasonably should know is harassment or discrimination on the bases of race . . .”).

68. Elizabeth A. Rowe & Nyja Prior, *Procuring Algorithmic Transparency*, 74 ALA. L. REV. 303, 337–43 (2022) (describing tensions between trade secret protection for risk-assessment algorithms and the need for transparency regarding their formulas).

69. *See* Garrett & Monahan, *supra* note 63, at 443.

1. Developing Competence in Practice Technologies and an Understanding of Their Potential Ethical Implications

A thick version of technology competence encompasses the thin version, and lawyers certainly have to understand how to use the new practice technologies in order to serve their clients effectively and with zeal.⁷⁰ This includes a knowledge of the dangers posed by using cloud services for storage, a need to “harden” confidential communications and stored files against breach, an understanding of the potential risks associated with relying on artificial-intelligence-driven search and content creation, an ability to utilize court electronic filing systems, and a basic understanding of electronic discovery.⁷¹

At the same time, there are “second-order” ethical implications of the incorporation of technology into the practice of law, especially when used as a means of delivering legal services. These include, as the example in Part II.B revealed, an appreciation for the extent to which next technologies might advance or undermine diversity, equity, and inclusion in the legal profession.⁷² As lawyers set up new methods for communicating with their clients, or as court systems begin to use electronic filing and virtual court appearance software, a sensitivity to the digital divide will be required. Lawyers and legal systems will have to acknowledge the fact that not all potential clients and consumers of legal services and participants in the legal system will have access to the technologies that will enable them to engage fully with these systems.⁷³ While the thin version of the duty of technology competence certainly envisions the first-order implications of the incorporation of technology into the practice of law, when that duty is considered in light of other ethical requirements to determine these second-order effects, a clearer vision of the thick approach to technology competence begins to come into view, and it brings with it far deeper and wider-ranging implications.

70. See, e.g., Iantha M. Haight, *Digital Natives, Techno-Transplants: Framing Minimum Technology Standards for Law School Graduates*, 44 J. LEGAL PROF. 175, 175 (2020) (proposing a scope for the duty of technology competence to include knowledge of technologies related to information storage, communication, discovery, research and analysis, marketing, and technology resilience).

71. For a discussion of the ethical implications of the duty of technology competence, see generally Katy (Yin Yee) Ho, Note, *Defining the Contours of an Ethical Duty of Technological Competence*, 30 GEO. J. LEGAL ETHICS 853 (2017).

72. See *supra* text accompanying notes 63–65.

73. Raymond H. Brescia, *The Downside of Disruption: The Risks Associated with Transformational Change in the Delivery of Legal Services*, in IMPACT: COLLECTED ESSAYS ON EXPANDING ACCESS TO JUSTICE 113, 115 (2016) (discussing impact of digital divide on technology-based access-to-justice initiatives).

2. Developing Competence in Other Technologies

Just as the lawyers at the end of the nineteenth century had to understand their clients' businesses, the financial arrangements that were needed to construct them, and the laws and regulations—existing and new—that undergirded them, lawyers engaging with the technologies that are implicated in their representation have to develop an understanding of the functions and effects of those technologies. This will require a degree of interdisciplinary collaboration that can sometimes make lawyers, steeped in their own exceptionalism and their need for professional independence, somewhat uncomfortable.⁷⁴

The rules of ethics generally prohibit lawyers from entering a business arrangement with a non-lawyer when the purpose of the venture is to deliver legal services.⁷⁵ But when a lawyer is advising a client on the implications of their technologies on the community, advocating for a change to regulations governing a particular technology, engaging in patent prosecution, or defending a company against a claim of tort liability or a violation of antitrust law, the lawyer does not just shape how the law impacts technology. In these contexts, the lawyer is also engaged in an act of co-creation, shaping the legal institutions that will impact how the technology itself is being used and how it will develop.⁷⁶ The lawyer thus must have a deep appreciation for the implications of their actions—not just for their clients, but also for the technologies the lawyer's practice affects. A superficial understanding of, and appreciation for, technology will likely harm the client's ability to utilize the technology and to put it to its most beneficial economic use.

This superficial understanding might also narrow the social implications of that technology, for better or for worse. We certainly want lawyers to understand the extent of the harm a client's technology may pose. We also want to understand the benefits of that technology so that the client can make the best case for its intended use. Similarly, those who wish to

74. See Scott Westfahl, *Leveraging Lawyers' Strengths and Training Them to Support Team Problem-Solving Under Crisis Conditions*, in *CRISIS LAWYERING: EFFECTIVE LEGAL ADVOCACY IN EMERGENCY SITUATIONS* 345–46 (Ray Brescia & Eric K. Stern eds., 2021) (discussing emphasis on lawyer independence in legal training and education). Law schools can provide opportunities for students to get exposed to interdisciplinary settings by going outside the law school to seek them out, including through tech-focused internships and courses within other educational institutions. See, e.g., Anthony Volini, *A Perspective on Technology Education for Law Students*, 36 *SANTA CLARA HIGH TECH. L.J.* 33, 50–51 (2020) (describing examples of such extra-institutional interdisciplinary initiatives).

75. MODEL RULES OF PRO. CONDUCT r. 5.4(b) (AM. BAR ASS'N 2020).

76. For a discussion of the role of law in shaping the American media landscape, see generally PAUL STARR, *THE CREATION OF THE MEDIA: POLITICAL ORIGINS OF MODERN COMMUNICATIONS* (Int'l ed., 2005). For the role of law in facilitating the emergence of social media, see generally JEFF KOSSEFF, *THE TWENTY-SIX WORDS THAT CREATED THE INTERNET* (2019).

rein in the technology must have a full understanding of the technology's potential harm and the legal institutions necessary to prevent that harm from occurring. Regardless of whether one is advocating for the expansive incorporation of a particular technology into the market, or seeking to prevent or mitigate the harms it might cause, the lawyer needs to have a deep understanding of the technology in question to represent their client's position with competence and zeal.

What is more, the interdisciplinary collaboration necessary for the lawyer to develop the requisite level of competence also has implications for the preservation of work product and even attorney-client privilege protections. Lawyers dealing with complex technologies, unless they themselves are experts in those technologies, will need to consult with engineers, scientists, and other professionals to understand how the technologies implicated by the lawyer's representation operate. Those conversations might involve employees of the client company that the lawyer represents, which raises questions about whether those employees are protected by the attorney-client privilege and confidentiality rules,⁷⁷ and whether they are insulated by the no-contact rule.⁷⁸ One can certainly make a viable argument in such a context that the expertise of these individuals has a sufficient nexus to the representation to cloak the communications under the protection of the attorney-client privilege,⁷⁹ and their relationship to the legal services likely brings them within the definition of the client under Rule 4.2.⁸⁰

But what about when those experts are not employed by the client company? Do the conversations enjoy the same sorts of protections? Short of hiring the individual as a formal expert in litigation, which has its own unique set of challenges and considerations, we should view these conversations in the same way that we consider communications between a lawyer and client with the assistance of a language translator or interpreter. Since all of these communications are essential to facilitate effective representation, we should still protect them under the attorney-client privilege even though a third-party is present for the conversation, which

77. See, e.g., *Upjohn Co. v. United States*, 449 U.S. 383 (1981) (discussing scope of confidentiality and attorney-client privilege protections in corporate settings).

78. See *Niesig v. Team I*, 558 N.E.2d 1030 (1990) (discussing scope of protections under the no-contact rule).

79. See, e.g., *Stroh v. Gen. Motors Corp.*, 623 N.Y.S.2d 873 (N.Y. App. Div. 1995) (discussing instances where presence of a third party in conversations between lawyer and client does not constitute a waiver of attorney-client privilege).

80. See *Niesig*, 558 N.E.2d at 1037 (Bellacosa, J., concurring).

would otherwise constitute a waiver of the privilege.⁸¹ In other words, since the purpose of the communication is to further the representation—regarding a lack of technological expertise rather than a language deficit on the part of the lawyer—the development of a basis of knowledge regarding that information is itself necessary for effective representation in the first place. Thus, a deeper appreciation for the role of other professionals in the provision of effective and competent legal services goes beyond simply ensuring a lawyer knows how to use contemporary and emerging practice technologies.

3. Transforming How Lawyers and Other Professionals Organize Themselves in the Delivery of Legal Services

The incorporation of interdisciplinary perspectives and professionals into the lawyer's work is just one way in which lawyers should and will have to organize themselves and their practice in the future. But there are also other implications for the organization of the lawyer's work that are a result of the impact of technology on the practice of law. These implications provide further evidence of the need for a thick view of technology competence and an embrace of this broader view in the rules that govern the profession.

In the late winter of 2020, the legal profession and legal systems, like virtually all sectors of life and the economy, adapted practically overnight to remote functions and protocols.⁸² On one level, this had clear implications for technology competence: lawyers had to know how to use remote technologies for hybrid work; to understand the threats these technologies posed to their confidential communications; and to utilize such technologies for court appearances, meetings with clients, negotiations with adversaries, depositions of witnesses, etc.⁸³ There are deeper implications for the practice of law, however, that have spillover effects that relate to other professional ethics requirements. Remote work impacts the ability of lawyers to develop competency itself, to supervise the other lawyers who work under their guidance, and, for newer lawyers, to receive the mentoring

81. On the impact of the presence of third parties in conversations between attorneys and their clients, see Jay M. Zitter, *Applicability of Attorney-Client Privilege to Communications Made in Presence of or Solely to or by Nonattorney Consultants, Professionals, and Similar Contractors*, 66 A.L.R.6th 83 (2011).

82. Danielle Braff, *Remote Possibilities: Thanks to the COVID-19 Pandemic, Law Firms Are Starting to Embrace Virtual Offices—But Will It Last?*, 107 AM. BAR ASS'N J. 20 (2021) (describing pre- and post-pandemic remote-work arrangements in law firms).

83. This transformation did not always go well for some. See, e.g., Daniel Victor, "I'm Not a Cat," *Says Lawyer Having Zoom Difficulties*, N.Y. TIMES, <https://www.nytimes.com/2021/02/09/style/cat-lawyer-zoom.html> [<https://perma.cc/674E-G4LE>] (last updated May 6, 2021) (describing one lawyer's notorious failure to utilize remote technology in a competent fashion).

and acculturation to professional practices and values that occur in in-person settings. Sometimes, these occur in formal ways, but they can also occur through what we might call “osmosis”: simply functioning in a professional culture and seeing how skilled and experienced lawyers go about their business.⁸⁴ While there are many benefits to remote work, including its impact on diversity and inclusion,⁸⁵ something is certainly lost in hybrid settings, particularly when it comes to the mentoring of newer attorneys.⁸⁶

While some of the most immediate threats of the pandemic appear largely behind the profession, recognizing that there are some benefits to permitting lawyers a degree of flexibility in where and how they perform their professional functions, many law offices have yet to return to fully in-person operations.⁸⁷ This is partly a product of wanting to keep their employees safe, but it is also a function of workers desiring a more flexible and accommodating workplace. Lawyers have long been seen as working under relatively difficult conditions, at least in terms of the number of hours worked in a week and in the office, the time pressure and other demands of the work, etc. Law offices should seek to balance an accommodating workplace with their duty of supervision to ensure the provision of competent service to clients.

While it might not be as easy as before pandemic protocols to meet the standard of supervisory care (in which a lawyer’s commitment to the work and the quality of that work were sometimes gauged by their physical presence in the office), today’s more accommodating workplace requires a more flexible style of supervision that is more intentional and takes the mentoring role more seriously, rather than expecting that newer lawyers will simply soak up professional culture just by being around their more senior mentors.⁸⁸

84. Gleb Tsipusky, *How Managers Can Support the Development of Junior Staff in Hybrid Work*, FAST CO. (Feb. 9, 2023), <https://www.fastcompany.com/90847138/how-managers-can-support-the-development-of-junior-staff-in-hybrid-work> [<https://perma.cc/3YZN-W99D>] (noting that mentoring in hybrid relationships cannot simply happen by “osmosis”).

85. See, e.g., Calandra McCool, *How Working Remotely Builds the Case for Accessibility*, ABA: L. PRAC. TODAY (Aug. 14, 2020), <https://www.lawpracticetoday.org/article/working-remotely-builds-case-accessibility/> [<https://perma.cc/PFN4-E4NS>] (describing advantages of remote work for lawyers with disabilities).

86. For an exploration of some of the issues involving the challenges and opportunities of supervision and access to justice through remote work settings, see Raymond H. Brescia, *Lessons from the Present: Three Crises and Their Potential Impact on the Legal Profession*, 49 HOFSTRA L. REV. 607, 621–43 (2021).

87. See Tribe, *supra* note 5.

88. It is important to note that the duty of supervision is relatively minimal. All that is required is that supervisory lawyers “make reasonable efforts to ensure that the firm has in effect measures giving reasonable assurance that all lawyers in the firm conform to the [Model] Rules of Professional Conduct.” MODEL RULES OF PRO. CONDUCT r. 5.1(a) (AM. BAR ASS’N 2020).

A thick sense of technology competence will also impact how lawyers organize themselves and work with other professionals, as well—in ways that go beyond merely managing hybrid work arrangements. The capacity for remote work will also likely increase the ability of lawyers to work more as independent contractors, not serving as employees within a particular law office. Law firms will assemble legal teams based on the nature of the work and plug different lawyers into different projects according to the needs of the client, the professional expertise required for the project, and lawyer availability.⁸⁹ This will put some stress on what is permissible under the rules regarding the sharing of legal fees among lawyers not associated with the same firm.⁹⁰

This sort of collaboration between lawyers from within and outside the firm will also place some strain on traditional frameworks for analyzing successive and concurrent conflicts of interest.⁹¹ Firms contracting with lawyers from outside the fold will have to ensure appropriate screens to insulate the outside lawyer from gaining confidential information about other clients of the firm. The free agent lawyer will have to be careful about potential conflicts of interest that might arise in the event they are involved in serving a diverse array of clients. The normal conflict-checking approach that a law firm takes will have to change to accommodate and evaluate the conflicts that each independent lawyer brings with them.

As described above,⁹² lawyers will need to engage more and more with other disciplines, sometimes to such an extent that they might want to explore bringing technology experts in-house within law firms. This of course runs afoul of the prohibition on lawyers partnering with non-legal professionals in the delivery of legal services.⁹³ There is an inherent tension in the rules when the duty of competence requires a high degree of interdisciplinary collaboration, while the rules strictly prohibit a lawyer from partnering with other disciplines in the delivery of legal services.⁹⁴ The rules against such interdisciplinary partnerships should not trump the duty of competence where, to meet the standard of care, such partnerships are essential for the lawyer to do their job effectively.

89. A decade ago, Richard Susskind predicted the emergence of legal process managers and legal process analysts among other new professional roles within the legal field. RICHARD SUSSKIND, TOMORROW'S LAWYERS: AN INTRODUCTION TO YOUR FUTURE 110–18 (2013).

90. r. 1.5(e).

91. *Id.* rr. 1.7, 1.9, 1.10 & 1.11.

92. *See supra* Part III.C.

93. r. 5.4(d).

94. *Id.*

4. Technology and the Unauthorized Practice of Law

While there may be other areas affected by a thick version of the duty of technology competence—like the rules surrounding lawyer advertising and solicitation of clients,⁹⁵ communication with third parties,⁹⁶ and trial publicity,⁹⁷ among others—the final area I will address surfaces another deep internal tension in the rules. Lawyers have a duty to ensure access to justice.⁹⁸ The introduction of new practice technologies, content-generating searches enhanced by artificial intelligence, new communications technologies, and new ways of delivering services is making the delivery of services (that look a lot like legal services) a great deal easier, regardless of whether those services are being provided by a lawyer or not.⁹⁹

Once again, as with the need to develop competence by partnering with technology experts, there is a contradiction baked into the rules that govern the profession. The legal profession at large has a duty to ensure access to justice, but since the market for legal services is so clearly broken—with 80 percent of low-income and 50 percent of middle-income Americans facing their legal problems without a lawyer¹⁰⁰—the profession is simply not satisfying this duty. Technological innovations can make it possible to provide a degree of legal assistance to the unrepresented, even if such assistance is not as complete or bespoke as that which a lawyer might provide in the same situation.¹⁰¹ Accordingly, a thick version of technology competence would engage lawyers in exploring technology channels to deliver effective legal assistance, even if the lawyer is not at the center of that delivery. Currently, a lawyer engages in the unauthorized practice of law when they assist a non-lawyer in the delivery of legal services.¹⁰² But new technologies can deliver some services to those who would otherwise go unrepresented. When the content delivered through those technologies has been reviewed by a lawyer—and when those technologies use lawyer-developed triage functions to ensure the alignment of client needs and services delivered—are there consumer-side risks to the delivery of such services?

95. *Id.* rr. 7.1, 7.2 & 7.3.

96. *Id.* r. 4.3.

97. *Id.* r. 3.6.

98. *Id.* pmb1., ¶ 6.

99. *Id.* r. 5.4(d).

100. Rebecca Buckwalter-Poza, *Making Justice Equal*, CTR. FOR AM. PROGRESS (Dec. 8, 2016), <https://www.americanprogress.org/article/making-justice-equal/> [<https://perma.cc/9985-JJG5>].

101. For an exploration of some of the ways technology can be utilized to improve access to justice, see generally LEGAL SERVS. CORP., REPORT OF THE SUMMIT ON THE USE OF TECHNOLOGY TO EXPAND ACCESS TO JUSTICE (Dec. 2013), https://www.lsc.gov/sites/default/files/LSC_Tech%20Summit%20Report_2013.pdf [<https://perma.cc/66H2-8ZNU>].

102. r. 5.5(a).

In the field of architecture, it is often the case that professionals who are not fully licensed as architects engage in a wide range of functions, including the drafting of building plans, which a licensed architect then approves after review, even if they did not do much work on them at all.¹⁰³ In the access-to-justice context, an analogy would be that the licensed lawyer can review the content that is being delivered for accuracy, and can assess a service-delivery system to determine the propriety of its screening tools—the mechanisms it uses to assess which customers receive which services and when. In such a setting, the risk to the consumer is likely minimal if lawyers have been involved in both the preparation of content and the creation of triage tools that determine which content is appropriate for which type of consumer of those services.

Of course, the real threat in those situations is the lawyer monopoly itself. But we cannot allow the lawyer's desire to control the market for legal services to override the duty to provide legal services where they are needed. Again, the thick version of the duty of technology competence exposes the tensions inherent in the rules that govern the profession: here, between the duty to provide access to justice and the obligation to prevent the unauthorized practice of law. When technology can help bridge that divide and resolve that tension, lawyers should embrace it and the opportunities it provides.

Lawyer competence in settings involving different forms of technology (and virtually all of law practice is already impacted by technology) will require a base-level understanding of a range of technologies for effective representation of clients, including clients who are providing services to the community through new technologies, as well those that are being affected by such technologies. At first blush, the duty of technology competence addresses issues like how to preserve client confidences while using new technologies and how to ensure the lawyer can serve their clients effectively using the new tools of law practice. But a more robust version of technology competence reflects an understanding that technology is going to permeate not just how lawyers practice, but what type of work they will provide their clients, as well as what the substance of that work will be.

This thick version of technology competence requires a more robust vision of competence than one which looks only at the means of legal practice, because it considers the mode and matter of law practice, as well.

103. See, e.g., *State Bd. of Architects v. James Clark*, 689 A.2d 1247, 1250–52 (Md. Ct. Spec. App. 1997) (describing the duties of licensed architects in supervising unlicensed professionals' work under state law).

If this thick version of technology competence is an important skill that lawyers must develop, and law schools are tasked with preparing the lawyers of the future, then legal education must position itself to train law students in this competency. As it turns out, some law schools are already engaging with contemporary technologies and are preparing their students for effective future legal practice by providing them with training in some aspects of the thick version of technology competence. In the next Part, I will explore some of the ways that law schools are currently delivering a technology-informed legal education to assist students in developing a more muscular form of technology competence.

IV. CURRENT LAW SCHOOL INNOVATION TO ADDRESS THE THICK VERSIONS OF TECHNOLOGY COMPETENCE

Law schools throughout the United States are “teaching to the tech.” That is, schools are trying to develop in their students a facility with practice technology, while also preparing them for the impact of technology in society in other ways.¹⁰⁴ This reflects a tentative embrace of the thick version of technology competence. In this Part, I will provide a typology of the different approaches that some innovative law schools are taking to prepare students for a technology-inflected legal profession. This typology reflects the different ways that law schools are preparing students for the practice of law in the future, including how to master the following: functioning within a technology-enhanced legal practice; engaging with new areas of practice and the impact of technology on traditional legal fields; serving technology startup companies; developing their own legal tech innovations; and addressing the impact of technology on legal doctrine and the role of the law in reining in technology. I will discuss each of these categories in turn. Keep in mind, however, that the programs listed here serve as examples of how law schools are incorporating a broad view of technology competence into law school curricula. These examples simply show what is possible, and by no means represent a complete inventory of such efforts.

104. One article identifies the early 1970s as the period when technology was first introduced into the law school curriculum and law school classrooms. Kenneth J. Hirsh & Wayne Miller, *Law School Education in the 21st Century: Adding Information Technology Instruction to the Curriculum*, 12 WM. & MARY BILL RTS. J. 873, 875–76 (2004).

A. Preparing Students for a Technology-Enhanced Legal Practice

This first category fits squarely within the thin-version framework, but is still incredibly important.¹⁰⁵ Just as students learned how to use computer-aided research a generation ago, students today will need to use the broad array of technologies that are being incorporated into practice now and will need to develop a capacity to incorporate even newer technologies as they become available.¹⁰⁶ Some of this is certainly being taught in first-year lawyering or writing programs already,¹⁰⁷ and, as Sarah Boonin and Luz Herrera show,¹⁰⁸ students enrolled in clinical courses across the country, especially since the pandemic, are being exposed to the technology of practice, blending client service while developing technological competence.¹⁰⁹ Georgia State University College of Law, through its Legal Analytics & Innovation Initiative, strives to “equip[] students with competitive skills needed by law firms across the country as they adopt new technologies.”¹¹⁰ It offers a Certificate in Legal Analytics & Innovation, which “allow[s] students to excel in a new legal environment where technological prowess is a necessity, not just a benefit.”¹¹¹

There are also dual degree and LLM opportunities offered through the program. Suffolk University Law School’s Legal Innovation and Technology Law Concentration, which fits under several different categories in this typology, allows students to learn to incorporate new technologies into the practice of law and to provide guidance and assistance to non-profit organizations searching for technology-based solutions to their

105. See, e.g., Kristen E. Murray, *Take Note: Teaching Law Students to be Responsible Stewards of Technology*, 70 CATH. UNIV. L. REV. 201, 201–02 (2021) (describing some of the core elements of what might be considered a thin duty of technology competence).

106. There is also a practical element of the duty of technology competence: “students may eventually find themselves unemployable without it.” Tammy Pettinato Oltz, *Educating Robot-Proof Attorneys*, 97 N.D. L. REV. 185, 187 (2022). For the argument that law school educators should incorporate legal practice technologies in the classroom as way to “model the practices of successful attorneys,” see Simon Canick, *Infusing Technology Skills into the Law School Curriculum*, 42 CAP. UNIV. L. REV. 663, 664–65 (2014).

107. See generally Dyane L. O’Leary, “Smart” Lawyering: *Integrating Technology Competence into the Legal Practice Curriculum*, 19 U.N.H. L. REV. 197 (2021) (describing incorporation of technology competence in legal research and writing courses).

108. See Sarah R. Boonin & Luz E. Herrera, *From Pandemic to Pedagogy: Teaching the Technology of Lawyering in Law Clinics*, 68 WASH. U. J.L. & POL’Y 109, 121 (2022) (surveying clinic programs across the United States and showing that “clinics of all types, whether specializing in eviction defense or criminal defense, corporate transactions or class actions, were neck deep in the technology of practice during COVID-19”).

109. *Id.* (arguing that “COVID-19 demonstrated the promise of clinical programs to emerge as a primary site within law schools for educating students in this area”).

110. *Legal Analytics & Innovation Initiative*, GA. STATE UNIV. COLL. OF L., <https://law.gsu.edu/faculty-centers/legal-analytics-innovation/> [<https://perma.cc/KP98-BM3G>] (last visited May 15, 2023).

111. *Certificate in Legal Analytics & Innovation*, GA. STATE UNIV. COLL. OF L., <https://law.gsu.edu/student-experience/academics/certificates/certificate-in-legal-analytics-innovation/> [<https://perma.cc/J842-MDJD>] (last visited May 15, 2023).

service-delivery and advocacy needs.¹¹² While Suffolk's approach can also be considered under the access-to-justice category below, students are learning about, and working with, new technologies and developing a facility with them as they provide services to their clients.¹¹³

While many of the programs described here, and listed within other categories of the typology, include exposure to, and training in, the new practice technologies, the programming described above, and the work of many clinical programs, demonstrate some of the different ways many law schools are striving to incorporate new practice technologies into their pedagogy. Once again, however, the programs I have pointed out here are examples, and are not intended to serve as an indication of the only instances or environments in which students are learning law practice technologies. Law librarians may provide programming in new technologies, sometimes hosted and led by representatives from industries that sell legal tech products. Law firms, government offices, and non-profit providers are also sites of training in new practice technologies. Nevertheless, Georgia State and Suffolk stand out as institutions teaching with intention the duty of technology competence with respect to law practice technologies.

B. Preparing Students for New Areas of Practice and the Impact of Technology on Traditional Fields

This next category involves two different but related approaches to the study of technology and its relationship to the law. The first of these involves doctrinal courses in new technologies per se. Examples might include a course on the law of drones or on the legal implications of blockchain technology generally, or on cryptocurrency in particular. North Carolina Central University School of Law offers a certificate in Law & Technology, through which students select from an array of technology-centered courses—including legal practice technologies as well as autonomous vehicles and blockchain technologies—and fulfill other requirements via courses that cover technology, equity, and leadership.¹¹⁴ Similarly, Santa Clara University School of Law has gone beyond stand-

112. See *Legal Innovation & Technology Lab*, SUFFOLK LEGAL INNOVATION & TECH. LAB, <https://suffolklitlab.org> [<https://perma.cc/U3V7-XQDR>] (last visited May 15, 2023).

113. Another trend that some schools have embraced and which fits under this category is to offer “coding for lawyers” classes that teach law students the rudiments of computer coding, like at the Duquesne School of Law. See, e.g., Duquesne Univ. Thomas R. Kline Sch. of L., *Coding for Lawyers with Professor Wes Oliver*, FACEBOOK (Mar. 7, 2023), <https://www.facebook.com/watch/?v=607156434130016> (describing the Coding for Lawyers program at Duquesne School of Law).

114. See *Law & Technology Certificate Program: Technology Law & Policy Center*, N.C. CENT. UNIV. SCH. OF L., <https://law.nccu.edu/academics/techlawcenter/techlawcurriculum/> [<https://perma.cc/8ABS-4PQP>] (last visited May 15, 2023).

alone courses on a particular technology-related issue and built an integrated program around data privacy,¹¹⁵ as well as its “Tech Edge JD,” which focuses the education of students enrolled in it around technology and the practice of law.¹¹⁶ Albany Law School and Cleveland-Marshall College of Law both offer extensive programming in cybersecurity.¹¹⁷ This type of substantive programming can also involve broad-based training in technology-related policy issues; for example, the University of Washington School of Law’s Tech Policy Lab “aims to improve current technologists’ and policymakers’ understanding of tech policy issues, and to prepare the next generation of technologists conversant in policy and policymakers conversant in technology.”¹¹⁸

This category can also encompass programming within more traditional courses that do not focus specifically on technology, but attempt to address the ways in which technological and social innovations might stress or strain existing doctrine, or examine the ways in which such existing doctrine views new technologies. Examples include a course on property law that examines the use of blockchain technologies in title systems, or a course on constitutional law or criminal procedure that looks at the Fourth Amendment implications of GPS technologies. Any doctrinal course in which technology is challenging existing legal paradigms should certainly strive to provide students with the tools to understand how law is changing or may change in light of emerging technologies.

C. Preparing Students for Serving Technology Startup Companies

An area where there has been a great deal of law school activity is training students to serve technology startup companies. Such programming tends to reside within clinical programs and often serves businesses in the schools’ respective communities. Two such innovative initiatives can be found at Brooklyn Law School and Emory University School of Law. The Brooklyn Law Incubator & Policy Clinic (“BLIP”) functions as “a modern, technology-oriented law firm” that strives to train

115. See ERIC GOLDMAN, INTRODUCING SANTA CLARA LAW’S PRIVACY LAW CERTIFICATE 1 (Mar. 2017), <https://law.scu.edu/wp-content/uploads/Introducing-Santa-Clara-Law-Privacy-Certificate.rev3-2017.pdf> [<https://perma.cc/3RD9-5SS9>].

116. For a description of this program, see Laura Norris & Eric Goldman, *How Santa Clara Law’s ‘Tech Edge JD’ Program Improves the School’s Admissions Yield, Diversity & Employment Outcomes*, 27 MARQ. INT’L PROP. & INNOV. L. REV. 21, 28–41 (2023).

117. *Cybersecurity and Data Privacy*, ALBANY L. SCH., <https://www.albanylaw.edu/graduate/cybersecurity-and-data-privacy> [<https://perma.cc/DB3F-G4D4>] (last visited May 15, 2023); *Cybersecurity and Data Privacy Certificate*, CLEVELAND STATE UNIV. COLL. OF L., <https://www.law.csuohio.edu/academics/curriculum/concentrations/cybersecurityprivacy> [<https://perma.cc/R45U-VYP4>] (last visited May 15, 2023).

118. *Education*, TECH POL’Y LAB UNIV. OF WASH., <http://techpolicylab.uw.edu/education/> [<https://perma.cc/5V8B-RDMV>] (last visited May 15, 2023).

“a new generation of lawyers who are well-versed across the spectrum of skills needed to represent emerging tech, Internet, communications, and novel ventures pushing the limits at the intersection of law and technological innovation.”¹¹⁹ In addition to serving technology-related business ventures, BLIP students also “advocate on behalf of causes and businesses in various legislative, regulatory, and judicial arenas, quite often on issues of first impression that the law has not yet anticipated.”¹²⁰

The Emory University TI:GER Program (Technological Innovation: Generating Economic Results) is an interdisciplinary program across the university that “aims at bringing business, law, engineering, and science graduate students to work on projects and convert research into economically viable projects.”¹²¹ The program helps its clients “develop better business plans, reduce legal risk, and position themselves to seek funding for their new ventures.”¹²² It teaches students about the “strategies needed for technology commercialization.”¹²³ They learn “from startup founders and CEOs, and simulate the process of taking new technologies to market.”¹²⁴

Other schools also offer students opportunities to learn about representing technology-focused startup companies, as well. At the Northwestern Pritzker School of Law, students can participate in the San Francisco Immersion Program (“SFIP”), where they have the opportunity to learn at Northwestern’s San Francisco campus and develop an understanding of “the legal and business environment of growth-stage startup firms, venture-capital and private-equity firms, and established high-tech companies.”¹²⁵ Similarly, Santa Clara University School of Law originally offered what it called a Tech Edge JD Certificate, which offers students the opportunity to develop hands-on skills while working with technology-based companies.¹²⁶ It has since expanded the program into a

119. *About Us*, BROOKLYN L. INCUBATOR & POL’Y CLINIC, <https://bliplclinic.wixsite.com/bliplclinic/about> [https://perma.cc/88JQ-JV2B] (last visited May 15, 2023).

120. *Id.*

121. Emory Univ. Sch. of L., *What is TI:GER?*, TECH. INNOVATION: GENERATING ECON. RESULTS TI:GER, <https://tigerinnovation.org/what-is-tiger/> [https://perma.cc/PYR8-5B8Z] (last visited May 15, 2023).

122. Emory Univ. Sch. of L., *Program Details*, TECH. INNOVATION: GENERATING ECON. RESULTS TI:GER, <https://tigerinnovation.org/program/> [https://perma.cc/M4GN-3YJQ] (last visited May 15, 2023).

123. *Id.*

124. *Id.*

125. *San Francisco Immersion Program*, NW. PRITZKER SCH. OF L., <https://www.law.northwestern.edu/academics/curricular-offerings/west-coast-initiatives/san-francisco/> [https://perma.cc/N5TT-NXUF] (last visited May 15, 2023).

126. *See Tech Edge J.D.*, SANTA CLARA L., <https://law.scu.edu/techedge/> [https://perma.cc/SS2E-KZ5J] (last visited May 15, 2023).

full Tech Edge JD degree.¹²⁷ The articulated purpose of the program meshes well with the thick version of technology competence: it “reflects the reality of [twenty-first] century lawyering; that to be an effective counselor, a lawyer should understand the business and technology challenges of the client.”¹²⁸

Other schools offer programs that might not be as immersive as these two, which are based in Silicon Valley, but nevertheless strive to offer students opportunities to serve technology-focused startup companies—for example, Syracuse University College of Law’s Innovation Law Center.¹²⁹ The University of Richmond School of Law puts a slightly different spin on this model by striving to train students to start their own technology-focused legal startups.¹³⁰

D. Preparing Students to Develop Their Own Legal Tech Innovations

The next category brings together a number of different aspects of the thick version of technology competence, including the idea that technology should be harnessed to meet the lawyer’s duty to ensure access to justice. Several law schools are training students in the creation of legal technology solutions to close the “justice gap,” which is the difference between the availability of legal services for people of modest means and the need for such services. These programs, which are numerous, are engaging in exciting programming that instills in students not only an appreciation for the access-to-justice crisis in the United States, but also the ways in which technology can work to close the justice gap. Because there are several of these programs, many with similar features, I will just list them here. They include initiatives at Albany Law School,¹³¹ Brigham Young University Law School,¹³² Harvard Law School,¹³³ Michigan State University College

127. *See id.*

128. *See id.*

129. *See Innovation Law Center*, SYRACUSE UNIV. COLL. OF L., <https://law.syr.edu/academics/centers-institutes/innovation-law-center?redirect> [<https://perma.cc/V2C6-H467>] (last visited May 15, 2023).

130. *See The Richmond Legal Business Design Hub*, UNIV. OF RICHMOND SCH. OF L., <https://law.richmond.edu/academics/centers/design/index.html> [<https://perma.cc/4TQF-VCHG>] (last visited May 15, 2023).

131. *See* Lauren Mineau, *Albany Law, UAlbany Students Collaborate to Aid Nonprofits*, ALBANY L. SCH. (July 12, 2022), <https://www.albanylaw.edu/community-impact/news/albany-law-ualbany-students-collaborate-aid-nonprofits> [<https://perma.cc/C2QN-MJPC>].

132. *See Legal Design Clinic*, BYU L., <https://law.byu.edu/centers-and-clinics/lawx/> [<https://perma.cc/PBG7-7TRX>] (last visited May 15, 2023).

133. *See Startup Entrepreneurship and Innovations in Legal Technology*, HARVARD L. SCH. (Spring 2023), <https://hls.harvard.edu/courses/startup-entrepreneurship-and-innovations-in-legal-technology-2/> [<https://perma.cc/H56N-HZY2>].

of Law,¹³⁴ Suffolk University School of Law,¹³⁵ Northeastern University School of Law,¹³⁶ Stanford Law School,¹³⁷ the University of Arizona James E. Rogers College of Law,¹³⁸ the University of Denver Sturm College of Law,¹³⁹ and Villanova University Charles Widger School of Law.¹⁴⁰ Each of these programs offers a variation on a theme: teaching students to harness technology to help close the justice gap, a critical component of the thick version of technology competency more generally.

E. Training in the Ethics of Technology

One last category I will describe here are law school courses and programming that explicitly engage with the question of the ethical issues related to the introduction of new technologies into the practice of law, as well as into society in general. Any legal ethics course should certainly teach the thin version of technology competence. They do so by exposing students to the issues of practice competence in the delivery of technology-enabled legal services in the law offices of today and tomorrow, the threats associated with using social media in the practice of law, and the risks to confidentiality posed by remote and other technologies.

In addition, some schools are taking the question of the ethics of technological innovation in new and exciting directions. The University of California College of the Law, San Francisco offers a concentration in Technology and Innovation in the Practice of Law.¹⁴¹ While this course would seem to fall within both the first and second categories, it also goes beyond technological fluency to explore the ethical implications of technology on the practice of law. The program is designed around the idea that “[k]nowledge of the way that technology impacts the law, the delivery of legal services, the ethical implications of its design and use, and the

134. See *Center for Law, Technology & Innovation*, MICH. STATE UNIV. COLL. OF L., <https://www.law.msu.edu/lawtech/index.html> [<https://perma.cc/JP2R-K2ME>] (last visited May 15, 2023).

135. *Legal Innovation & Technology Lab*, *supra* note 112.

136. See Ne. U. Sch. of L., *Mission + History*, NULAWLAB, <https://www.nulawlab.org/mission-history> [<https://perma.cc/PHW2-WTZM>] (last visited May 15, 2023).

137. See *The Legal Design Lab*, STAN. L. SCH., <https://law.stanford.edu/organizations/pages/legal-design-lab/> [<https://perma.cc/QWM5-3ZA6>] (last visited May 15, 2023).

138. See James E. Rogers Coll. of L., *Innovation for Justice*, INNOVATION 4 JUST., <https://www.innovation4justice.org/education> [<https://perma.cc/NP4W-QE3M>] (last visited May 15, 2023).

139. See *Law & Innovation Lab*, STURM COLL. OF L., <https://www.law.du.edu/academics/practical-experience/law-innovation-lab> [<https://perma.cc/7Y7P-VKKT>] (last visited May 15, 2023).

140. See *LAW 7220—Leverag Tech to Promote Just*, VILL. UNIV. (Fall 2021), https://novasis.villanova.edu/pls/bannerprd/bwckctlg.p_disp_course_detail?cat_term_in=202220&subj_code_in=LAW&crse_num_in=7220 [<https://perma.cc/9CW2-RYU2>].

141. *Technology and Innovation in the Practice of Law*, U.C. L. S.F., <https://www.uchastings.edu/academics/jd-concentrations/technology-and-innovation-in-the-practice-of-law/> [<https://perma.cc/8TLU-DV25>] (last visited May 18, 2023).

economics of the legal industry are crucial to the success of [twenty-first] century attorneys.”¹⁴² The coursework for the concentration “teach[es] students how technology is impacting the law as well as the delivery of legal services,” and through these courses students are supposed to “acquir[e] an understanding of the doctrinal, ethical, economic, and technological forces impacting the legal industry” and to “understand the economic and technological forces currently impacting the legal profession and the policy and application of technology that offers new methods to deliver legal services.”¹⁴³ The purpose of this approach is to assist students in developing “the mindset needed for success in the [twenty-first] century practice of law.”¹⁴⁴ Northwestern’s Center for Practice Engagement and Innovation (“CPEI”) also addresses issues of the ethics of technological innovation in the practice of law,¹⁴⁵ while at Gonzaga University School of Law, its Center for Law, Ethics & Commerce focuses on ethics in technological innovation more generally.¹⁴⁶

The organic emergence of programming around issues of technology and the practice of law helps to bring a sense of what is necessary to teach a thick version of technology competence. Once again, this overview of some of the more exciting and cutting-edge programming is not intended to serve as a complete list of all innovative law school initiatives designed to prepare students for the role that technology will play in the practice of law or society more generally. This survey helps to highlight some of the different and more forward-thinking ways that law schools are trying to instill in their students a sense of technological awareness and competence. The final Part attempts to chart out the tentative components of a program of study that law schools could adopt to ensure they offer students the ability to develop a muscular version of this critical competence.

V. TOWARDS A TECHNOLOGICALLY COMPETENT LEGAL EDUCATION

Taking a comprehensive and clear-eyed view of the components of a thick version of technology competence yields several core elements. These include not just a facility with the tools of practice and an

142. *Id.*

143. *Id.*

144. *Id.*

145. See *Center for Practice Engagement and Innovation*, NW. PRITZKER SCH. OF L., <https://www.law.northwestern.edu/research-faculty/practice-engagement/> [https://perma.cc/5WR5-SHDN] (last visited May 15, 2023).

146. See *Center for Law, Ethics & Commerce*, GONZAGA UNIV. SCH. OF L., <https://www.gonzaga.edu/school-of-law/clinic-centers/center-for-law-ethics-commerce> [https://perma.cc/N97M-8693] (last visited May 13, 2023).

understanding of their ethical implications, but also an appreciation for the need to teach students about the technologies that will impact their clients and communities; the particular legal needs of their clients that engage with emerging technologies and/or their implications; the importance and methods of interdisciplinary collaboration; and the uses of technology to advance access to justice. This course of study is designed to prepare students for practice in a future imbued with technology.

A. The Nuts and Bolts of Practice

First and foremost, law students need to receive training in the technologies that are essential for effective practice in the decades to come. We have successfully incorporated legal search and remote technologies into law school curricula. We also need to ensure students understand e-discovery tools and the ways in which artificial intelligence and legal analytics can complement legal judgment. It is certainly possible that these tools threaten to displace legal services providers, but they can also be harnessed to make the practice of law more efficient and effective, making the cost of legal services lower and perhaps expanding access to justice. Training students in these technologies is part of making them practice-ready: if the tools are being utilized in law offices, students who have a fluency and facility with the use of these tools will be in a better position to get up and running faster, making them more attractive as potential employees. Through an array of modalities—lawyering and legal writing programs, clinical programs, library trainings—schools are providing students with a base of knowledge in the nuts and bolts of law practice. But, as I have been arguing all along, true technological competence requires more.

B. The Ethics of New Technologies and Their Implications

As with teaching the how of practice through technology, schools should (and many are), also be preparing students to appreciate the ethical implications of the technology they use. This can take place in clinical settings, where clinical faculty advise students on digital hygiene and ensure that, through the technologies they incorporate in their service delivery, students are preserving client confidences. Legal ethics courses should also prepare students to understand the ethical implications of the technology they will use in practice so that they understand the threats they may pose to client confidentiality. Such courses should also consider the implications of incorporating certain technologies on the attorney's duty to promote diversity and inclusion. To the extent that lawyers engage in a sort of digital apartheid—that is, only assisting potential clients who can reach them

because they have access to digital technologies, or utilizing algorithms that are infused with bias—students should be made aware of the fact that these types of practices have implications for attorney legal ethics.

C. Understanding the Technology to Serve Clients Well

As in the late nineteenth century, lawyers today need to become knowledgeable about any technologies that clients come across in their lives. This certainly can involve serving clients that commercialize technology. But it can also involve serving clients impacted by technology in adverse ways. Some of the law school programs highlighted here train law students in how to serve technology startups. Some courses are specifically designed to teach students about emerging technologies. And doctrinal courses often incorporate the ways in which emerging technologies will impact existing legal paradigms and perhaps prompt a need for new ones. What may be missing in the array of law school offerings are courses and clinical programming designed specifically to address the adverse impacts of technology on society, particularly on marginalized communities. Courses that teach about algorithmic bias, or clinics serving those adversely impacted by technology, would complement the other types of programming described here.

D. Teaching Interdisciplinary Collaboration

Some of the programs highlighted here explicitly incorporate interdisciplinary collaboration, like Emory's TI:GER program.¹⁴⁷ Developing robust programming that truly instills technology competence will require providing opportunities for interdisciplinary collaboration so that students can develop the skills necessary for working in teams where the lawyer may not be the only "expert" in the room. A degree of professional humility, and an awareness of how other professionals think about, see, and solve problems, will be an essential skill in law practice in the future. Schools should develop opportunities for interdisciplinary collaboration that provide students with the ability to work in partnership with other professionals while learning the skills of teamwork and project management within cross-cutting groups, where the lawyer does not necessarily supervise or have authority over all members of the team.

147. See *What is TI:GER?*, *supra* note 121.

E. Technology and Access to Justice

Finally, the incorporation of technology competence throughout the law school curriculum will also encourage students to explore the market for legal services and understand that technology offers some hope for addressing the access-to-justice crisis. Just as ensuring access to justice is an ethical imperative for all lawyers, understanding the opportunities that new technologies present for closing the justice gap is an essential aspect of technological competence. Law students should have the skills to understand the practice of law and the ways in which creative technology-based solutions might deliver services to more people, at lower costs, and in effective and meaningful ways.

Lawyers, law students, and law schools should not take a head-in-the-sand approach: there are potential solutions to the access-to-justice crisis that run through technology. But students will need to understand the scope of the problem, the nature of service delivery, the contours and reach of the *authorized* practice of law, the needs of clients, and the capacities of existing and emerging technologies. By doing this, they can be the inventors of a future where anyone who needs legal assistance can have it, whether it is provided through traditional means, or by technologically sophisticated and accessible channels.

VI. CONCLUSION

To date, much of the dialogue around the now decade-old duty of technology competence has focused on the extent to which the legal profession in general and law schools in particular, are competent in the use of technology, using a very narrow sense of what such competence should include. A more robust and muscular approach to technology in the practice of law, what I have called a thick version of technology competence, considers not just the means of legal practice but also the modes of practice and the subject matter on which the lawyer works. The ethical, effective, and competent lawyer of the present and future must develop a more comprehensive skill set when it comes to technology. If that is the case, law schools must instill in their students a technological competence that has as its hallmark an understanding of all of the ways that technology impacts not just the practice of law but also society in general. The effective lawyer of the future will have to possess a technology competence that goes beyond a mere understanding of how to deploy practice technologies and the ethical risks inherent when doing so.

A more comprehensive competency will also include the following: a sense of the technologies that touch the lives of the lawyer's clients, in positive and negative ways; an understanding of the potential adverse

impacts on diversity and inclusion from these technologies; a facility with an understanding of how to engage effectively in interdisciplinary collaboration; and a greater appreciation for the ways in which technology can help close the justice gap. It is this version of technology competence that law schools, and the legal profession in general, should advance and embrace to ensure all students and practitioners maintain a muscular version of technological competence that will allow them to practice effectively not just today, but also tomorrow and for the rest of their professional lives.

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