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IN THE LINE OF FIRE: IS TECHNOLOGY TAKING OVER THE LEGAL PROFESSION?

MANVEEN SINGH*

Technology is nothing. What's important is that you have a faith in people, that they're basically good and smart, and if you give them tools, they'll do wonderful things with them.¹

-Steve Jobs

I. INTRODUCTION

The booming era of technology and start-ups has caused a major upheaval in several professions.² While a few have flourished, most of them have witnessed a role replacement by advancing technology; the legal profession being one of them.³ Lying deep-rooted in tradition and precedent for the better part of its existence,⁴ the face of law has been the subject of a major change in light of technological innovations.⁵ In today's age, where information is available freely, answers to basic legal questions are being offered at the click of a mouse.⁶ There are several websites offering users legal advice, ranging from simple will kits to more advanced matters of Employment and Family Law.⁷ Legislation too, has become more digitalized and accessible, no longer leaving legal practitioners in a monopolistic position in terms of legal expertise.⁸ Although the legal profession was slow to embrace technology, with many in the profession maintaining concerns regarding the privacy of client

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1. Jeff Goodell, *Steve Jobs in 1994: The Rolling Stone Interview*, ROLLING STONE (Jan. 17, 2011), <http://www.rollingstone.com/culture/news/steve-jobs-in-1994-the-rolling-stone-interview-20110117>.

2. Warlow-Shill, *Technology and the Law*, WARLOWS LEGAL, <https://www.warlows.com.au/technology-and-the-law/> (2016).

3. *Id.*

4. Robert J. Ambrogi, *Empowered or Enslaved? Effect on the Profession*, 5 LAW OFF. COMPUTING 37 (1996).

5. Warlow-Shill, *supra* note 2, at 1.

6. Warlow-Shill, *supra* note 2, at 1.

7. Warlow-Shill, *supra* note 2, at 1.

8. Warlow-Shill, *supra* note 2, at 1-2.

information, technological effects are fast being felt across legal circles.⁹ The automation of legal processes has prompted practitioners, lawyers, paralegals, and academics into gaining proficiency at an ever increasing array of online processes such as word, spreadsheet, presentation, database, and legal research software.¹⁰ Furthermore, several in the field are adopting social networking platforms such as LinkedIn and Facebook for expansion of their social networks, development of new business opportunities, the continuation of legal education, and faster communication with clients.¹¹

For several decades, lawyers were left with antiquated tools, and their primary focus was on the Boolean search.¹² There was a long-felt need for better data interpretation, which has been facilitated by technological innovation.¹³ Technology slowly set in, and the once-ubiquitous typewriter and its cohort, carbon paper, could hardly find a place in the modern-day set-up.¹⁴ Legal professionals today are being afforded round-the-clock access to relevant information through the use of smartphones, tablets, and cloud computing.¹⁵ This access allows legal professionals to carry various tools, such as a digital library, invoicing applications, scanned image files, legal dictionaries, juror information, and more, in a single pocket-sized device.¹⁶ Client interaction, the other key component of legal practice, is also being reinvented through the lens of artificial intelligence (“AI”).¹⁷ AI has had a massive impact on the way lawyers interact with their clients and the way they conduct their business.¹⁸ The ways in which the legal profession has been affected by AI include its ability to process data, identify fact patterns, perform tests, and produce results based on evaluation of data.¹⁹ Often termed as cognitive compu-

9. Charles A. Volkert, *Technology and the Legal Profession: Trends that Could Impact your Career*, ROBERT HALF LEGAL, http://www.acc.com/_cs_upload/vl/membersonly/Article/1315331_1.pdf (last visited Apr. 30, 2017).

10. Sally Kane, *Legal Technology and the Modern Law Firm*, B THE BALANCE, <https://www.the-balance.com/technology-and-the-law-2164328> (last updated May 15, 2017).

11. Volkert, *supra* note 9, at 1.

12. Julie Sobowale, *How Artificial Intelligence is Transforming the Legal Profession*, ABA JOURNAL (Apr. 1, 2016), http://www.abajournal.com/magazine/article/how_artificial_intelligence_is_transforming_the_legal_profession.

13. Ambrogi, *supra* note 4, at 3.

14. Ambrogi, *supra* note 4, at 3.

15. Volkert, *supra* note 9, at 1.

16. Volkert, *supra* note 9, at 1.

17. Sobowale, *supra* note 12, at 3.

18. Sobowale, *supra* note 12, at 3.

19. James Parker, *Artificial Intelligence Trends and their Impact on the Legal Sector*, LEXIS NEXIS FUTURE OF LAW (Oct. 20, 2016), <http://blogs.lexisnexis.co.uk/futureoflaw/2016/10/artificial-intelligence-trends-and-their-impact-on-the-legal-sector/>.

ting, AI involves computers completing tasks traditionally performed by people.²⁰ With AI at the helm, there is a likelihood of incremental transformation in the review of documents and assessment of legal risk.²¹

With such advancement in multiple areas, the question that naturally arises then becomes: Is technology taking over the legal profession? This paper is an attempt to answer this question by analyzing the impact of technology on law across its myriad forms. This paper measures both the positive and negative impacts of technological innovations on the development, and study, of law.

II. THE INTERPLAY BETWEEN LAW AND TECHNOLOGY

“Lawyers are notoriously conservative,” is a cliché often used to describe legal professionals.²² Law has been labelled as inimical to technological innovation, with legislators more content with the clumsy misunderstanding of the legal knowhow and harm to the innovation process, than searching for an effective solution.²³ In ancient times, cases were required to be pleaded by the parties themselves, only to be eventually replaced by an unregulated group of lawyers, skilled in rhetoric, who would plead on their behalf.²⁴ Soon, the need for greater regulation became apparent, and by the 7th century, the practice of law had turned into a real profession, one driven by great skill and expertise.²⁵ It continued in this fashion for many years, and despite being on the verge of a sudden collapse during the Middle Ages, several of the basic fundamental principles of the profession remain the same to date.²⁶

Law and the legal industry have come a long way since and are on the precipice of a major transition, driven by the constant proliferation of technology in human’s daily lives.²⁷ The Internet, artificial intelligence, driverless cars, and drone deliveries, are just some of the ways in which technology has revamped our lives.²⁸ Conversely, law has often been used for safeguarding innovation and regulating the public networks which facilitate Internet innovation.²⁹ Technology, thus influences and is in turn influenced by law,

20. *Id.*

21. Jane Croft, *Artificial Intelligence Disrupting the Business of Law*, FINANCIAL TIMES (Oct. 6, 2016), <https://www.ft.com/content/5d96dd72-83eb-11e6-8897-2359a58ac7a5>.

22. Andrew Sullivan, *Technology and the Law - New Opportunities for Lawyers and Their Clients*, <http://dx.doi.org/10.2139/ssrn.2648538> (last visited on Oct. 23, 2017).

23. Christopher T. Marsden, *Law and Technology* (Jan. 29, 2014), International Encyclopedia of Digital Communication & Society (2014).

24. Aaron George, *The Evolution of Lawyers and What the Future Holds*, LEXICATA (August 26, 2014), <https://blog.lexicata.com/evolution-lawyers-future/>.

25. *Id.*

26. *Id.*

27. *Id.* at 2.

28. *Id.* at 5.

29. Marsden, *supra* note 23, at 1.

and this mutual interdependence has been in existence throughout the course of technological innovation.³⁰

The last couple of decades have seen technology gain a major stronghold on the legal profession.³¹ In fact, technology is so interwoven with our lives today that lawyers too, like professionals from any other field, interact on a daily basis with clients who are the users of highly sophisticated technologies, in their personal or professional lives.³² This has prompted law firms, as well as, independently practicing lawyers, to implement the underlying functionalities of the various technologies used by their clients into the legal services they render.³³ Most of them have moved beyond the typical search function in digital articles, and are using data analytics to pre-process the huge backlog of files they are expected to review.³⁴ On the basis of past experiences, and key search words, data analytics can filter through tons of files during discovery, sometimes more efficiently and reliably than interns or junior associates.³⁵ Furthermore, lawyers are beginning to adopt technology that enables them to better explain to their clients, the progress and likelihood of success in their cases.³⁶ Transactional lawyering is witnessing an increase in the popularity of contract automation, with the open source availability of contract templates fast becoming the industry standard.³⁷ Open source approaches to contracts have limited transactional lawyering to the filling in of information on forms for clients or assembly of pre-written clauses from clause libraries.³⁸ Lawyers have indeed taken a step in the positive direction, by employing the latest technology beyond the typical search function of words in digitalized legal articles.³⁹

While there is evidence that illustrates that technological innovation is taking place rapidly, at the same time, one cannot neglect the fact that human brains are not programmed to think in exponential parameters.⁴⁰ Rather, they are used to thinking linearly.⁴¹ According to Moore's Law, the processing power of computers is likely to double every two years.⁴² Human brains can

30. Marsden, *supra* note 23, at 1.

31. Sullivan, *supra* note 22, at 2.

32. Sullivan, *supra* note 22, at 3.

33. Sullivan, *supra* note 22, at 3.

34. Sullivan, *supra* note 22, at 4.

35. Sullivan, *supra* note 22, at 4.

36. Sullivan, *supra* note 22, at 4.

37. Sullivan, *supra* note 22, at 4.

38. Sullivan, *supra* note 22, at 4.

39. Sullivan, *supra* note 22, at 4.

40. Sullivan, *supra* note 22, at 2.

41. Sullivan, *supra* note 22, at 2.

42. Sullivan, *supra* note 22, at 3.

in no way, compete with that.⁴³ In fact, according to some artificial intelligence professors, there might soon be no need for lawyers because artificial intelligence will have advanced to the point that answers to legal questions would be derived more effectively from a computer, than from a human.⁴⁴ Lawyers have found it difficult to come to terms with this development due to its exponential character, but to sustain their existence in the legal industry, they need to take advantage of the changes the industry is now, and will continually, be subjected to.⁴⁵ Law is a fairly protected and slow changing profession, and lawyers find themselves in a position of advantage, where they can look at other professions to analyze the impact that technology has had on them.⁴⁶ That will serve them well in identifying key areas where technology can help them innovate their own services.⁴⁷

III. THE INTERNET, ARTIFICIAL INTELLIGENCE, AND LAW

When it comes to measuring the impacts of technology on law, none pose a bigger threat to the profession than the Internet and artificial intelligence.⁴⁸ “We live in the age of the Internet,” remarked *New York Times* columnist, Thomas L. Friedman.⁴⁹ The legal profession has been significantly affected by the global reach of the Internet, and lawyers across the world are staring at the prospect of an ever-increasing global competition, fueled in part by Internet technology.⁵⁰ AI isn’t far behind, and has permeated our lives in various subtle and not-so-subtle ways, exhibiting the potential to perform tasks that, until recently, could only be performed by humans equipped with a specialized level of training and knowledge.⁵¹ Next, the impact of Internet technology and AI on the legal profession is further examined.

(A) INTERNET TECHNOLOGY

Gone are the days when leaving the office actually required one to leave the office. The Internet, through email and other work flow software, has made it possible to be at work around the clock.⁵² Time zone barriers are a thing of the past, with clients and co-workers in a position to shoot an email

43. Sullivan, *supra* note 22, at 3.

44. Sullivan, *supra* note 22, at 2, 3.

45. Sullivan, *supra* note 22, at 3.

46. Sullivan, *supra* note 22, at 3.

47. Sullivan, *supra* note 22, at 3.

48. Leonard Bierman & Michael A. Hitt, *The Globalization of Legal Practice in the Internet Age*, 14 *IND. J. GLOBAL LEGAL STUD.* 29 (2007).

49. *Id.*

50. Bierman & Hitt, *supra* note 48, at 30.

51. Matthew U. Scherer, *Regulating Artificial Intelligence Systems: Risks, Challenges, Competencies, and Strategies*, 29 *HARV. J.L. & TECH.* 353, 354 (2016).

52. Bierman & Hitt, *supra* note 48, at 30.

from India to the United States, with the expectation of a swift response.⁵³ Moreover, there is a growing trend in Western countries, to outsource basic legal research and document preparation to the lower-wage earning legal professionals in English speaking countries, like India.⁵⁴ Virtual work has gained acceptance in the legal profession, not just by lawyers, but by clients as well.⁵⁵ Being an international attorney is fast becoming an around-the-clock occupation.⁵⁶ There is a plethora of information about lawyers and law firms publicly available, courtesy of “Google” and the Internet as a whole.⁵⁷ This has kept the reputations of law firms and their attorneys constantly in play.⁵⁸

Today, the Internet and related technologies are helping turn the practice of law into more of a commodity type of business.⁵⁹ Legal research tasks once considered complicated, are now being accomplished fairly easily through the use of computers, electronic files, and records.⁶⁰ Furthermore, the Internet has facilitated law firms to provide services for their clients around the world, without having to be physically present in different countries.⁶¹ Recent years have seen big corporations pressurizing their law firms into having a diverse workforce for market-based reasons.⁶² For instance, Wal-Mart Corporation, Sara Lee Corporation, and many other corporate houses have taken steps to ensure their leading outside law firms maintain diversity in their workforce.⁶³

Despite the hastening of globalization of the legal profession, the Internet and other digital communication technologies have posed major challenges to lawyers, due to three main reasons.⁶⁴ First, the technologies are moving at the speed of light and are in need of expert design for the implementation of policy choices.⁶⁵ New technologies, that used to have a shelf life of about two years, now become obsolete in six months, and this pace of change shows no signs of slowing.⁶⁶ Therefore, lawyers have their work cut out for them.⁶⁷

53. Bierman & Hitt, *supra* note 48, at 30.

54. Bierman & Hitt, *supra* note 48, at 30.

55. Bierman & Hitt, *supra* note 48, at 31.

56. Bierman & Hitt, *supra* note 48, at 30.

57. Bierman & Hitt, *supra* note 48, at 31.

58. Bierman & Hitt, *supra* note 48, at 32.

59. Bierman & Hitt, *supra* note 48, at 32.

60. Bierman & Hitt, *supra* note 48, at 32, 33.

61. Bierman & Hitt, *supra* note 48, at 33.

62. Bierman & Hitt, *supra* note 48, at 33.

63. Bierman & Hitt, *supra* note 48, at 33, 34.

64. Bierman & Hitt, *supra* note 48, at 34.

65. Marsden, *supra* note 23 at 1.

66. Mark Fenwick, Wulf A. Kaal & Erick P.M. Vermeulen, *Regulation Tomorrow: What Happens When Technology is Faster Than the Law?*, SSRN Electronic Journal (2016), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2811111.

67. Fenwick, Kaal, & Vermeulen, *supra* note 67, at 8.

Second, technologies are by nature transnational, and do not conform to the mythical borderless character ascribed to them by libertarians.⁶⁸ Law meanwhile, is grounded in national policy outcomes, with international law operating as an extended arm of national norms and processes, under the doctrine of extraterritoriality of national laws.⁶⁹ The response of international lawyers to transnational problems is often through the use of summits, followed by international treaties, and is paralleled by the continuous extraterritorial application of national laws in close cooperation with other jurisdictions.⁷⁰ In case of failure of international multi-jurisdictional legal doctrine on the regulatory front, there is a requirement for more efficient transnational responses, a reality cautiously embraced by the legal systems and policy makers.⁷¹ Last but not least, enforcement of legislative will on the internet, and other similar technologies, is extremely difficult and is largely uneven, resulting in the requirement of more sophisticated types of legal instruments, such as the ‘soft law.’⁷² The most significant covenant on the regulation of the Internet remains the 2001 Council of Europe Cybercrime Treaty.⁷³ The absence of any competency or legitimacy for state action in regards to the internet, coupled with persistent opposition by the United States to an international treaty in matters other than cybercrime, has meant that repeated pleas by international lawyers, the United Nations, and several human rights bodies for the establishment of international norms for the Internet, have fallen on deaf ears.⁷⁴ That being said, the flattening effects of the Internet have brought unbridled competition into the practice of law, with its full impact yet to be seen.⁷⁵

(B) ARTIFICIAL INTELLIGENCE

“Armies of Expensive Lawyers Replaced by Cheaper Software,” read a *New York Times* headline from March 14, 2011.⁷⁶ John Markoff, a technology reporter, had given a description of how a large number of lawyers in discovery practice ran the risk of being displaced by computers that possess the capability of identifying relevant words and phrases.⁷⁷ It is often claimed

68. Marsden, *supra* note 24, at 2.

69. *Id.*

70. Marsden, *supra* note 24, at 2.

71. Fenwick, Kaal, & Vermeulen, *supra* note 66, at 3.

72. Marsden, *supra* note 24, at 2.

73. Marsden, *supra* note 24, at 2.

74. Marsden, *supra* note 24, at 2.

75. Bierman & Hitt, *supra* note 27, at 34.

76. John Markoff, *Armies of Expensive Lawyers, Replaced by Cheaper Software*, *New York Times* (Mar. 4, 2011), <http://www.nytimes.com/2011/03/05/science/05legal.html>.

77. Markoff, *supra* note 76, at 1.

by computer enthusiasts that they have revolutionized the world,⁷⁸ and though it may not be obvious, we are indeed living in the age of smart machines. In the words of Richard and Daniel Susskind, “lawyers among other professionals, face a future in which increasingly capable machines, autonomously or with non-specialist users, will take on many of the future tasks that are currently the realm of the professions.”⁷⁹ Traditionally speaking, the primary targets of technological automation have been mechanical labor and factory jobs, but artificial intelligence and robotics have extended this trend beyond blue-collar work into the white collar sectors, like law.⁸⁰ So, what exactly is AI and how is it affecting the legal profession? So far, there does not appear to be any single universally accepted definition of artificial intelligence prevalent among the experts in the field, much less the common man.⁸¹ John McCarthy, the man credited with coining the term “artificial intelligence” abstained from defining the term, since he was of the view that, “we cannot yet characterize in general what kinds of computational procedures we want to call intelligent.”⁸² Despite the problems in defining AI, it continues to trigger the imminent and widespread displacement of lawyers around the world.⁸³

The legal application of IBM’s Watson,⁸⁴ Ross Intelligence, claims the ability to furnish concise answers to natural language legal questions.⁸⁵ Furthermore, Legal Zoom, Rocket Lawyer, and other legal service providers operating online, provide basic wills, divorce agreements, contracts, and incorporation papers without involving a lawyer at any stage.⁸⁶ The traditionalist view that lawyering is irreducibly human, is being challenged by these technologies, and one is forced to recognize that the practice of law is being changed by computers.⁸⁷ According to a latest piece of analysis from Deloitte Insight, an estimated 114,000 jobs in the legal sector are likely to be replaced with smart machines and algorithms over the next two decades.⁸⁸ That makes

78. Richard L. Marcus, *The Impact of Computers on the Legal Profession: Evolution or Revolution?* 102 NW. U. L. REV. 1827 (2008).

79. Richard Susskind & Daniel Susskind, *The Future of the Professions, How Technology Will Transform the Work of Human Experts* 231 (1st ed. 2015).

80. Jelor Gallego, *New Report Predicts Over 100,000 Legal Jobs will be Lost to Automation*, FUTURISM (Mar. 23, 2016), <https://futurism.com/new-report-predicts-over-100000-legal-jobs-would-be-lost-to-technological-automation/>.

81. Scherer, *supra* note 52, at 4.

82. Scherer, *supra* note 52, at 5.

83. Dana Remus & Frank S. Levy, *Can Robots Be Lawyers? Computers, Lawyers, and the Practice of Law* (2016), <https://ssrn.com/abstract=2701092>.

84. “IBM’s Watson to help Indian enterprises go digital” <https://tech.economicstimes.indiatimes.com/news/technology/ibms-watson-to-help-indian-enterprises-go-digital/55939386> (2016).

85. Remus & Levy, *supra* note 83, at 2.

86. Remus & Levy, *supra* note 83, at 2.

87. Remus & Levy, *supra* note 83, at 2.

88. Gallego, *supra* note 81, at 1.

up for over thirty-nine percent of jobs in the sector.⁸⁹ AI is hard at work in the legal practice, with legal research, e-discovery, contract analysis, case prediction, and document automation, all becoming faster, better, and cheaper.⁹⁰ Yet, the challenge that AI researchers are currently grappling with is *reinforcement learning*; a training method allowing AI models to learn from their past experiences.⁹¹ In such a case, how is the legal system positioned to treat reinforcement learning? What has been seen in the legal system's interactions with robotics-like software is liability being attributed only in case of the developer's negligence or his foreseeing harm.⁹² In a case from New York, *Jones v. W+M Automation, Inc.*,⁹³ where a worker was injured by a robotic gantry loading system, the court didn't find the defendant liable since the court was of the view that all the regulations had been complied with by the manufacturer.⁹⁴ In reinforcement learning, there is no culpability on the part of humans and no foreseeability of an injury, so under traditional tort law, the developer shall not be liable.⁹⁵ This will force courts of law to adapt to this technological change in the near future.⁹⁶ One would like to believe that this sudden impact of technology on the legal practice is not so sudden after all, with the Internet, email, and legal research databases, like Lexis Nexis and Westlaw, affecting and altering the practice of law for several decades.⁹⁷ However, looking at how machine learning applications seem poised to make further inroads into the profession's monopoly, we may well be on the cusp of a more fundamental shift.⁹⁸

IV. LAW TEACHING AND THE TECHNOLOGICAL IMPACT

In the early 1980's, education scholars led by Zelda Gamson and Arthur Chickering created the "*Seven Principles of Good Practice in Undergraduate Education*" as a part of their efforts to foster an improved quality of teaching in colleges and universities.⁹⁹ These seven revolutionary principles are:

- Encourage student-faculty contact

89. Gallego, *supra* note 81, at 1.

90. Gallego, *supra* note 81, at 1.

91. Jeremy Elman & Abel Castilla, *Artificial Intelligence and the Law*, TECH CRUNCH (Jan. 28, 2017), <https://techcrunch.com/2017/01/28/artificial-intelligence-and-the-law/>

92. Elman & Castilla, *supra* note 92, at 2.

93. *Jones v. W & M Automation, Inc.*, 2006 NY Slip Op 5398, 31 A.D.3d 1099, 818 N.Y.S.2d 396 (App. Div.)

94. Elman & Castilla, *supra* note 92, at 1.

95. Elman & Castilla, *supra* note 92, at 1.

96. Elman & Castilla, *supra* note 92, at 1.

97. Remus & Levy, *supra* note 83, at 2.

98. Remus & Levy, *supra* note 83, at 2.

99. Arthur W. Chickering & Zelda F. Gamson, *Seven Principles for Good Practice in Undergraduate Education*, AAHE BULLETIN 2 (Mar. 1987), <http://files.eric.ed.gov/fulltext/ED282491.pdf>.

- Encourage cooperation among students
- Encourage active learning
- Give prompt feedback
- Emphasize time on task
- Communicate high expectations
- Respect diverse talents and ways of learning¹⁰⁰

These principles have, since then, made much headway in the legal education sector.¹⁰¹ The 90's witnessed the technology bandwagon roll itself successfully into law schools, with the technology-savvy teachers introducing high-tech innovations into classroom teaching.¹⁰² PowerPoint presentations, web-based course platforms and in-class Internet access¹⁰³ were among the early entrants into the teaching methodology. The students didn't stay far behind for long and soon, a flurry of laptops started sprouting up in classrooms.¹⁰⁴ Technology had become commonplace on both sides of the podium.¹⁰⁵ Just when it felt like technology had fully set in, there appeared a sudden backlash in the education sector.¹⁰⁶ The use of PowerPoint slides and laptops in the classroom was criticized by Douglas L. Leslie as being destructive towards classroom interactions and creating a passive learning environment.¹⁰⁷ He opined that PowerPoint slides dragged students into a pedagogical stupor, with their eyes glued to the screens through the course of lecture, so as to allow them to capture all the information contained therein.¹⁰⁸ One could argue that the way around this problem could be to distribute the slides in advance, but that has led to a couple of additional problems: first, it causes frustration among students since electronic copies of the slides are difficult to annotate, and second, circulation of slides in advance kills the inclination to attend the lecture and pay attention in the class.¹⁰⁹ Furthermore, the use of laptops by students results in diverting their attention towards online games, shopping, news, etc., all available at the click of a mouse.¹¹⁰ Critics view PowerPoint slides as having a negative impact on law school classroom learning, with only a handful of students engaged in active discussion, at any

100. *Id.*

101. Caron, Paul L. and Gely, Rafael, *Taking Back the Law School Classroom: Using Technology to Foster Active Student Learning*, 54 J. LEGAL EDUC. 551, 552 (2004).

102. *Id.* at 555–56.

103. *Id.* at 556.

104. *Id.*

105. *Id.*

106. *Id.*

107. Douglas L. Leslie, *How Not to Teach Contracts, and Any Other Course: PowerPoint, Laptops, and the CaseFile Method*, 44 ST. LOUIS U. L.J. 1289, 1304 (2000).

108. *Id.*

109. Caron & Gely, *supra* note 102, at 556–57.

110. Caron & Gely, *supra* note 102, at 557.

given time.¹¹¹ Technology, for some, is proving to be antithetical to active learning in law schools.¹¹²

For a twenty-first century aspiring lawyer, the legal profession commences with law school.¹¹³ However, with the surge in technological innovation, the lives of law students are changing quickly.¹¹⁴ The present generation of students in law school have been using technology since their pre-school days and are so called “digital natives”.¹¹⁵ These digital natives get their daily dose of news from blogs rather than newspapers and meet each other online before they meet in person.¹¹⁶ In 2012, an estimated 7.1 million college students admitted to taking at least one course online.¹¹⁷ Having had prior experience with online learning, it will not be surprising if the students coming to law school have the expectation of such technologies being used there as well.¹¹⁸ That said, to date, the most widely adopted technological innovation in law school teaching has been online instruction, with the New York Law School providing online courses for well over a decade.¹¹⁹ Following its lead, several universities in the United States have started using online learning technologies for teaching courses,¹²⁰ some of which offer the capability to earn a degree entirely online.¹²¹ In 2015, William Mitchell College of Law commenced the first J.D. program, that incorporates a substantial online learning component, with students spending just one week on campus each semester.¹²² Distance learning may take multiple forms: it may be synchronous, asynchronous, massive open online courses (“MOOC”) or blended, combining both, online and face-to-face learning.¹²³ These are briefly described as follows:

111. Caron & Gely, *supra* note 102, at 558.

112. Caron & Gely, *supra* note 102, at 558.

113. Remus & Levy, *supra* note 83.

114. Michele R. Pistone, *Law Schools and Technology: Where We Are and Where We Are Heading*, 64 J. LEGAL EDUC. 586, 591 (2015).

115. *Id.*

116. *Id.*

117. *Id.*

118. *Id.*

119. *Id.* at 592.

120. For example, the graduate tax law programs at Georgetown Law, NYU, Villanova, and Boston University each have an online program. Indeed, the graduate tax program at Alabama is entirely online. In 2012, Washington University Law School in St. Louis started a fully online master’s degree program in U.S. law. Florida Coastal College of Law has offered an online degree since 2010, while the New York University Law School and the Loyola University of Chicago School of Law offer fully online programs that target specific areas of U.S. law.

121. Pistone, *supra* note 114, at 593.

122. Pistone, *supra* note 114, at 593.

123. Pistone, *supra* note 114, at 593.

(A) SYNCHRONOUS DISTANCE LEARNING

The synchronous model of learning is synonymous with traditional classroom learning methods, where all the students and the teacher participate in the course at the same time, despite being at different locations.¹²⁴ Special electronic equipment is required at both ends of the communication, with the lecturer broadcasting the lecture online to students, from a classroom enabled with audiovisual equipment.¹²⁵ Synchronous lectures can be delivered, either by allowing for real-time interaction between the students and the lecturer, or with the students holding their questions until after the end of the lecture.¹²⁶ Washington University in St. Louis currently employs this method of online tutoring for its online LL.M. program.¹²⁷ The program further provides for online class meetings and teacher-designed coursework with video content accessible to students outside of class hours.¹²⁸

(B) ASYNCHRONOUS DISTANCE LEARNING

The asynchronous model of learning, in contrast to the synchronous model, involves separating the participants in both time and space.¹²⁹ Presentations are recorded by professors and are viewed by students in various parts of the world.¹³⁰ The advantage of the asynchronous model is that it allows students to review the course material at their convenience and as often as required for mastery.¹³¹ While the synchronous model mirrors a traditional classroom set-up, the asynchronous model of learning enables utilization of different teaching techniques to achieve improved learning outcomes.¹³² Teachers may also use experts for the purpose of instructional design to effectively implement such teaching techniques.¹³³ From the student point of view, the synchronous model provides for active student interaction through discussion boards and other similar online technologies.¹³⁴

(C) MASSIVE OPEN ONLINE COURSES (MOOC)

MOOC are one of the forms of asynchronous learning, wherein students in large numbers end take an online course simultaneously.¹³⁵ MOOCs were

124. Pistone, *supra* note 114, at 593.

125. Pistone, *supra* note 114, at 593–94.

126. Pistone, *supra* note 114, at 594.

127. Pistone, *supra* note 114, at 594.

128. Pistone, *supra* note 114, at 594.

129. Pistone, *supra* note 114, at 594.

130. Pistone, *supra* note 114, at 587.

131. Pistone, *supra* note 114, at 595.

132. Pistone, *supra* note 131.

133. Pistone, *supra* note 131.

134. Pistone, *supra* note 131.

135. Pistone, *supra* note 131.

first offered back in 2012, but they soon became popular with several undergraduate institutions around the world, and in about a year, a number of professors in U.S. universities started experimenting with MOOCs,¹³⁶ including: the International Criminal Law course by Case Western Reserve Professor, Michael Scharf; the Copyright Law course by Harvard University Professor, William Fisher; the Constitutional Law course by Yale University Professor, Akhil Amar; the course on Law and Entrepreneurship by Northwestern University professors, Esther Barron and Steve Reed; and the Environmental Law course by University of North Carolina Professor, Don Hornstein.¹³⁷ According to Georgetown University Professor Philip Schrag, these courses have already triggered a growth in online law school education and are likely to overtake many of the traditional place-based law schools, with only a handful of law schools surviving.¹³⁸ A study conducted by researchers from MIT, Harvard, and Tsinghua universities, revealed that students leaned more introductory courses on platforms like MOOC, as compared to traditional lecture-based course.¹³⁹ With further improvements in technology, more and more courses are expected to find a balance between traditional learning and online learning.¹⁴⁰

(D) BLENDED LEARNING

Blended learning is a model that involves blending of face-to-face learning with online instruction.¹⁴¹ In a blended learning set-up, instructions and background information are delivered online, in the form of short videos that can be reviewed by the students outside of the classroom.¹⁴² This way, the face-to-face class time between the students and the professor is freed up, thereby allowing more time for group discussions, simulation exercises, role plays, and problem solving, etc.¹⁴³ What is learned through online learning, is reinforced through these in-class activities.¹⁴⁴ The advantage associated with such a model is that it allows professors to make use of videos prepared by their colleagues and lawyers, just like the use of casebooks.¹⁴⁵ This has also opened the door for legal publishers to convert the material usually found in printed casebooks into an online format.¹⁴⁶

136. Pistone, *supra* note 131.

137. Pistone, *supra* note 114, at footnote 35.

138. Philip G. Schrag, *MOOCs and Legal Education: Valuable Innovation or Looming Disaster?* 59 *VILL. L. REV.* 83, 134 (2014).

139. Pistone, *supra* note 114, at 596.

140. Pistone, *supra* note 139.

141. Pistone, *supra* note 114, at 597.

142. Pistone, *supra* note 141.

143. Pistone, *supra* note 141.

144. Pistone, *supra* note 141.

145. Pistone, *supra* note 141, at 598.

146. Pistone, *supra* note 114, at 598.

V. LAW ENFORCEMENT TECHNOLOGY

There is no denying that technology has evolved at a rapid pace and has had lasting impacts on the legal profession.¹⁴⁷ On one hand, there are areas of the profession that have been aided by technology, however, at the same time, there are others that have been negatively impacted by digitalization and its far-reaching impact.¹⁴⁸ One such branch of law that has had a tough time dealing with technological innovation, has been Intellectual Property Law.¹⁴⁹ While technology is intruding into almost every aspect of our day-to-day lives, it is important that this technological intervention is kept in check and is subjected to regulation.¹⁵⁰ Intellectual Property is based on incentivizing the intellectual property owners to innovate, but in the absence of effective enforcement of their rights, they may be left with little or no incentive to innovate.¹⁵¹ Copying, transferring and transforming works has become cheaper, faster and more private, thereby making it difficult to detect.¹⁵² Traditional enforcement mechanisms are being impeded by information technologies.¹⁵³ According to Elon University professor David Levine, it is quite difficult to translate and apply intellectual property law to intangible products moving through the Internet.¹⁵⁴ It is also partially due to the fact that intellectual property laws are territorial in nature, and with the Internet's global accessibility, jurisdictional issues can create major obstacles in regulating information and content online.¹⁵⁵ That, coupled with a stiff resistance from people in general, towards government regulation of the Internet, has led to difficulties in monitoring infringing activities online.¹⁵⁶

Despite there being technologically sophisticated ways of committing crimes, law enforcement officers today are much better equipped to respond

147. Pistone, *supra* note 114, at 587.

148. Bertrand Guerin & Frank Rohling, *Are Competition Law Instruments Sufficient to Handle New Developments in Digital Media?*, FRESHFIELDS BRUCKHAUS DERINGER (Nov. 8, 2017) <https://www.freshfields.com/en-gb/our-thinking/campaigns/digital/media--internet/are-competition-law-instruments-sufficient/>.

149. U.S. Congress, *Office of Technology Assessment, Intellectual Property Rights in an Age of Electronics and Information 98* (Washington, DC: U.S. Government Printing Office, 1986), (<https://www.princeton.edu/~ota/disk2/1986/8610/861007.PDF>)

150. *Id.*

151. *Id.*

152. *Id.*

153. *Id.*

154. Dave Levine, *Understanding Technology's Impact on Intellectual Property Law*, 2011 President's Report, Elon University, http://www.elon.edu/e-web/academics/presidents_report/levine.xhtml (last visited Nov. 8, 2017).

155. *Id.*

156. Paul Ohm, *We Couldn't Kill the Internet if We Tried*, 130 Harvard Law Review F. 79,80 (2016).

quickly to emergency situations,¹⁵⁷ thanks to the utilization of contemporary high tech tools.¹⁵⁸ The constantly changing tech-landscape has forced law enforcement officials to familiarize themselves with the latest trends in the technology sector on a regular basis.¹⁵⁹ Police officers, in addition to being trained in defending against and disarming perpetrators, are honing their skills in effectively using technology to their advantage.¹⁶⁰ In the not so distant past, the only technology at the disposal of the police officers was a police radio and knowledge regarding the location of the nearest payphone.¹⁶¹ Those radios have been replaced by their high-tech versions, having a capability to scan over 30 channels.¹⁶² Furthermore, police officers are now also armed with body cameras and cell phones, while their cruisers come equipped with radar units, high-technology engines, surveillance cameras, point of view cameras, and computer data terminals with Internet access.¹⁶³ In the era of tablets and smartphones, faster means of communication are helping law enforcement officers track down criminals with the use of hi-tech devices.¹⁶⁴ Society has started accepting a certain level of technology, thus making it the norm.¹⁶⁵ It is courtesy of this rapidly advancing technology that DNA evidence has been put to use in apprehending criminals rather quickly and at the same time, exonerate those who have been wrongfully convicted.¹⁶⁶

Positive technology is admired and appreciated society, but at the same time, society may be wary of its negative effects.¹⁶⁷ Equipped with state of the art technology, law enforcement officers may end up exceeding the scope

157. Matt Kenyon, *Technology in Law Enforcement: Changing Trends*, Power DMS (May 25, 2016), <https://www.powerdms.com/blog/technology-in-law-enforcement-changing-trends/>.

158. Jennifer Chase, *The Age of Technology and the Impact on Law Enforcement*, (March 8, 2017), <https://authorjenniferchase.com/2017/03/08/the-age-of-technology-and-its-impact-on-law-enforcement/>

159. *Id.*

160. *Id.*

161. *Id.*

162. *Id.*

163. *Id.*

164. George Avalos, *Police Use New Technologies to fight Crime*, Contra Costa Times (Jan. 18, 2016), <http://www.govtech.com/dc/articles/Police-Use-New-Technologies-to-Fight-Crime.html>.

165. *Id.*

166. Kelsey Bray, *Fighting Crime in the Computer Age*, Law Off. of Tim Powers (Sept. 24, 2012), <http://www.timpowers.com/Blog/2012/September/How-is-technology-changing-the-game-for-law-enfo.aspx>.

167. *The Positive and Negative Effects of Technology in Law Enforcement*, Police Technology, <https://policetechnology.wordpress.com/the-positive-and-negative-effects-of-technology-in-law-enforcement/> (last visited May 18, 2017).

and intruding into citizens' private lives, by intercepting their conversations, without first having a warrant.¹⁶⁸ This often leads to citizens experiencing the feeling of being treated as criminals.¹⁶⁹ Using technological solutions for crime prevention goals requires a balance between security and privacy.¹⁷⁰ Technology developed to safeguard people can sometimes turn into a public safety issue.¹⁷¹ For instance, the use of robot drones for surveillance has become a major cause for concern, with many worried that innocent people might be killed by armed drones, since they are unable to recognize threats versus non-threats.¹⁷² The problem essentially lies in using technology in a way that was not intended to when it was initially created.¹⁷³ Every time it is used correctly, there is a likelihood of it being used incorrectly in other situations.¹⁷⁴ Many future technologies potentially pose a serious threat to civil liberties and personal privacy, which must be addressed before they are marketed.¹⁷⁵ Users of law enforcement technology and the like, must weigh the pros and cons of such technology and ensure that it causes more good than harm for the public at-large.¹⁷⁶

VI. CONCLUSION

In today's world, most professions are being revolutionized by technology; the key to the future of the legal profession may lie in the ability to identify the specific practice areas where legal service providers can be replaced and those where they cannot.¹⁷⁷ With technology becoming more integral to the evolving legal landscape, even the biggest conventional firms are feeling the pressure to provide quality legal services at competitive prices.¹⁷⁸ Most law firms and corporate legal departments are in the process of experimenting with several technologies in order to streamline operations, cut costs and

168. *Id.*

169. *Id.*

170. *Id.*

171. David S. Wall, *The Internet as a Conduit for Criminals*, INFO. TECHNOLOGY AND THE CRIM. JUST. SYS. 93 (A. Pattavina ed., 2015).

172. Avalos, *supra* note 163.

173. Avalos, *supra* note 162.

174. Avalos, *supra*, note 162.

175. Avalos, *supra*, note 162.

176. Michael Heywood, *How Will Technology Change Criminal Justice?*, RAND REVIEW (Jan. 7, 2016), <https://www.rand.org/blog/rand-review/2016/01/how-will-technology-change-criminal-justice.html>.

177. Avalos, *supra*, note 162.

178. Blair Janis, *How Technology is Changing the Practice of Law*, GP SOLO (AMERICAN BAR ASSOCIATION), VOL. 31 NO. 3 (May/June, 2014). http://www.americanbar.org/publications/gp_solo/2014/may_june/how_technology_changing_practice_law.html.

bring about an improvement in client services.¹⁷⁹ This has contributed to reshaping the criteria for hiring legal professionals, with tech-savvy candidates holding a competitive edge in the job market in areas of litigation and e-discovery.¹⁸⁰ In the near future, reliance will be placed upon autonomous machines for performing a wide variety of tasks.¹⁸¹ Legal regulators will soon find themselves tasked with the responsibility of deciding whether direct regulation would be a desirable method to reduce harm¹⁸² in cases where such machines cause harm.¹⁸³

The future of legal education seems ripe for change, with technology set to play a major role.¹⁸⁴ Legal academia is witnessing an onslaught of change, and it will only continue to build momentum.¹⁸⁵ One may try to slow down the change, but the law professors who understand the change, will prepare for it and adopt a proactive approach to combat the disruption.¹⁸⁶ The best practice regarding the use of technology for imparting legal education lies in welcoming new approaches and engaging deeply with technologies that enable innovation, thus giving way to a culture of educational experimentation.¹⁸⁷ Legal academics, actively involved in the use of technology, remain best-positioned to enhance legal education without endangering its strengths,¹⁸⁸ as the goal is to maintain the best parts of the past while making the change.¹⁸⁹

Technology builds upon itself such that the more advanced it becomes, the easier it is to make further advancements.¹⁹⁰ This gives rise to innovation at an exponential rate, where increasingly routine, traditional tasks are being automated with the help of smart, self-learning algorithms.¹⁹¹ It is interesting that while technology may end up replacing or minimizing the role of lawyers, it also necessitates the need for an increase in regulation and policy-making, which humans are better equipped to handle.¹⁹² Lawyers, by chang-

179. Adi Snir, *The Impact of Technology on the Legal Landscape*, LEGAL VISION (Jul. 2, 2014), <https://legalvision.com.au/impact-technology-legal-landscape/>.

180. Volkert, *supra* note 7.

181. Volkert, *supra* note 7.

182. Fenwick, *supra* note 66 at 7.

183. Fenwick, *supra* note 66 at 6.

184. Scherer, *supra* note 51 at 373.

185. Pistone, *supra* note 114 at 601.

186. Brian Wick, *The Impact of Technology on the Legal Profession*, SEAL (Jul. 25, 2016), <https://www.seal-software.com/blog/impact-technology-legal-profession>.

187. *Id.*

188. Pistone, *supra* note 114 at 603.

189. Pistone, *supra* note 114 at 603.

190. Pistone, *supra* note 114 at 603.

191. Pistone, *supra* note 114 at 589.

192. Gallego, *supra* note 80.

ing their perspective towards legal services, created new business opportunities through new technologies and user-centered design.¹⁹³ This willingness to venture into learning, exploration, and experimentation using technology could prove to be the key to unlocking the future successes of legal professionals.¹⁹⁴ In an industry as competitive as the legal profession, embracing the change could especially help young lawyers carve out a place for themselves. If lawyers wish to be the drivers of change, rather than the ones driven by it, technological innovation must be embraced in the law.¹⁹⁵

193. George, *supra* note 24.

194. Sullivan, *supra* note 22.

195. Sullivan, *supra* note 22.