Quantitative Legal Predictions and the Changing Practice of Law

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Lawyers make a wide variety of decisions in the everyday practice of law including whether to take up a case, whether to file a suit in a court of law or settle outside, what sort of an associate to staff on which sort of matter etc. Making prediction is an essential component of this decision making process. Accordingly, they advise or counsel their clients. Unsurprisingly, lawyers are also called counselors. Oliver Wendell Homes once said, "*the prophecies of what the courts will do in fact, and nothing more pretentious, are what I mean by the law*"[1]. The ability to make accurate predictions can have repercussions on a lawyer's credibility and financial success, the satisfaction of a client, and the justice environment in general[2] by keeping unwanted litigation out of courts. Thus, making successful predictions is of paramount importance to the entire legal system.

Quantitative prediction technologies are nowadays being used to predict the outcome of cases pending before the Supreme Court of the United States[3], the chances that a judge will grant or deny a specific motion in patent litigation or the chances that a judge will find patents, trademarks or copyrights infringed, invalid, or unenforceable.[4] They have also revolutionized large scale discovery process in complex litigation[5]. Quantitative prediction technologies have been shown to accurately predict case outcomes in the majority of the times involving a variety of legal issues[6] and have been demonstrated to predict more accurate results than human experts.[7] In fact, studies demonstrate that lawyers universally are prone to the risk of overestimation, over placement, and over precision.[8] Prediction technologies have been "*designed to remedy or supplement the shortcomings of human reasoners*"[9] as the task of legal prediction is performed more efficiently vis-a-vis human experts in lesser time, with fewer associates and at cheaper rates.[10]

Predictive analytics in other professional services such as accounting has been shown to make audits more secure and free up the talented workforce to work on bespoke and creative matters of clients.[11] Similarly, the use of prediction technologies in law will make legal prediction more reliable and free up talented lawyers to focus on bespoke and creative work.

Quantitative prediction technologies seek to use big data to improve legal practice. The continuing increase in processing power of computers[12] and decline in data storage costs[13], has given rise to big data including in law. While in the print era, legal research was primarily limited to appellate cases found in official reports, legal research today can be conducted online to gain access to unpublished appellate cases, lower court orders, briefs and extra jurisdictional materials.[14] Additionally, with changes in law, new sources of admissible evidence that are required to be reviewed are rising.[15] In an age when data is viewed to be as valuable as oil with enormous untapped potential[16], quantitative analytics and soft artificial intelligence is already aiding diverse industries make decisions related to hiring and retaining of employees[17], product pricing, etc. Those who will be able to make sense of large quantities of crude unstructured or open data, have been predicted to lead in the future economy.[18] As is the case with other industries, big data analytics in law can provide valuable information relating to product pricing, decision making, predicting case outcomes, strategizing transactions, policing etc.

Lawyers predict outcomes based on their past observations and experience. More experienced lawyers tend to make more accurate predictions[19] and are hence obviously more expensive. Prediction technologies can help to remedy some well known shortcomings of human beings including the problem of limited experience, observation, and other cognitive limitations. These machines can easily sift through and process large quantities of unstructured data and the structured results that they generate will be valuable to junior lawyers who due to lack of experience are more prone to making incorrect predictions.[20]

While the creation and adoption of prediction technologies in law such as data analytics and artificial intelligence has begun in the United States and the United Kingdom, introduction of such technologies to reinvent

legal services is still at an embryonic stage in other common law countries such as Australia and India. With a recent observable trend of law firms and companies acquiring analytics firms with a legal focus[21] and prediction competitions being organized on a global platform between legal experts and algorithms on the outcome of cases pending before the US Supreme Court[22], quantitative tech based decision making is just getting to be more exciting! Another organization called Lex Machina is already revolutionizing legal research and prediction making in intellectual property related transactions and cases.

Lex Machina is an IP litigation research firm backed by leading venture firms and angel investors that provides legal analytics to the top tech companies and law firms in the United States of America.[23] The idea behind Lex Machina was developed in 2006 as a public interest joint project titled IP Litigation Clearinghouse (IPLC) between Stanford's law school and its computer science department. Even today, Lex Machina continues to have a public focus in the delivery of its services. Its services and reports are free for students, academics and government officials.

Traditional legal research tools perform the simple task of data extraction. Such data is usually in the form of case laws that is listed out based on simple language queries. However, such data which is unstructured requires lawyers to spend hours on structuring them to extract relevant information. Lex Machina uses analytics to clean unstructured data to provide relevant customized information to its clients. Its Lexpression[24] engine skims through unstructured IP litigation documents and utilizes natural language processing and machine learning to "clean, tag, and structure the data". It uses latest advances in computer science to combine data and software to create Legal Analytics that provides relevant information necessary for drafting successful legal strategies[25]. Its Custom Insights[26] allows users to have data driven customized answers to their litigation related strategic queries. From access to trends emerging from a judge's prior transfer orders in patent cases to predicting how long a case will last, this tool even provides information about time to trial and time to termination for every federal judge, structured data about opposing counsel's client lists, total open cases, relevant experience and other data relevant to win a case. Law firms use this online tool to acquire new clients, win lawsuits, close transactions, and prosecute new patents. Corporate counsel use Lex Machina to select and manage outside counsel, increase IP value and income, protect company assets, and compare performance with competitors[27]. This startup company "*can speedily mine and analyze litigation data that would take an army of associates months to go through*"[28]. For being the "*pioneer provider to lawyers an interactive platform that provides powerful custom insights for litigation strategy and competitive analysis*"[29], Lex Machina's Legal Analytics was awarded the New Product of the Year award for 2015 by the American Association of Law Libraries.

The legal profession has evolved over centuries and across many cultures to be of strong relevance and of value to the recipients of its service. Today, emerging prediction technologies are changing the traditional model of finding legal answers and delivering them. These technologies are beginning to impact core areas of lawyering such as legal research, legal analysis, legal advising, and outcome prediction. While it is a little too early to judge if quantitative legal prediction technologies have the potential to disrupt or significantly alter a lawyer's job by fulfilling expectations of a legal advisor's role, its benefits are definitely beginning to be recognized by clients and lawyers alike.

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[1] Oliver Wendell Holmes, Jr., 'The Path of the Law', (1897) 10 Harvard Law Review 457 http://www.constitution.org/lrev/owh/path_law.htm

[2] Jane Goodman-Delahunty, Maria Hartwig, et. al., 'Insightful Or Wishful: Lawyers' Ability to Predict Case Outcomes', [2010] 16 (2),Psychology, Public Policy, and Law 133,135

[3] See generally, David Kravets, 'Algorithm predicts US Supreme Court decisions 70% of time', ARS Technica (Online), Jul 30, 2014, http://arstechnica.com/science/2014/07/algorithm-predicts-us-supreme-court-decisions-70-of-time/

[4] See generally, Lex Machina, Legal Analytics, https://lexmachina.com/what-we-do/legal-analytics/.

[5] Greg Carter, 'Predictive coding is set to revolutionise large-scale discovery', Greg Carter (Online), April 9, 2014, http://www.gregcarter.com.au/2014/04/09/predictive-coding-is-set-to-revolutionise-large-scale-discovery/.

[6] Daniel Martin Katz, 'Quantitative legal Prediction - Or- How I Learned to Stop Worrying and Start Preparing for the Data-Driven Future of the Legal Services Industry", (2013) 62 EMORY LAW JOURNAL 909, 909 http://law.emory.edu/elj/_documents/volumes/62/4/contents/katz.pdf

[7] A project in quantitative legal prediction by Prof. Ted Ruger, Andrew D. Martin and others began in 2004 with the task of employing statistical methods to predict Supreme Court outcomes. That project compared the results of human experts comprising of law professors and attorneys against a statistical model that had analysed data of about hundreds of past Supreme Court cases. The computer model correctly forecasted 75% of Supreme Court outcomes, while the experts only had a 59% success rate in predicting Supreme Court affirm or reversal decisions. See generally, Harry Surden, 'Predicting Supreme Court Decisions Using Artificial Intelligence', http://www.harrysurden.com/wordpress/archives/248

[8] Jane Goodman-Delahunty, Maria Hartwig, et. al., 'Insightful Or Wishful: Lawyers' Ability to Predict Case Outcomes', [2010] 16 (2),Psychology, Public Policy, and Law 133,135

[9] Daniel Martin Katz, 'Quantitative legal Prediction - Or- How I Learned to Stop Worrying and Start Preparing for the Data-Driven Future of the Legal Services Industry", (2013) 62 EMORY LAW JOURNAL 909, 928. http://law.emory.edu/elj/_documents/volumes/62/4/contents/katz.pdf

[10] In 2001, it took 200 attorneys a year to review 300 Gb of legal matter at a cost of $15 million. Today electronic discovery software can review several hundred Gb of data with

fewer attorney supervision and in a matter of hours. See generally, 'Improving document review in e-discovery', FTI Consulting, Incorporated, http://www.researchgate.net/publication/268183099_Improving_Document_Review_in_E-Discovery.

[11] Note, 'Demand for Stem Skills Will Generate The Next Wave of Growth', PricewaterhouseCoopers (Online) April 30, 2015 http://www.pwc.com.au/media-centre/2015/stem-skills-apr15.htm

[12] See generally, 'Moore's Law or how overall processing power for computers will double every two years', http://www.mooreslaw.org/.

[13] See generally, Chip Walter 'Kryder's Law', The Scientific American (Online), July 25, 2005 http://www.scientificamerican.com/article/kryders-law/

[14] Johnathan Jenkins, 'What can Information Technology Do for Law?' [2008-Spring] 21(2) Harvard Journal of Law and Technology 589, 592.

[15] See for example, Eric Sinrod, 'E-Discovery: The Times, They Are a Changing', Findlaw (Online), August 7, 2006 http://technology.findlaw.com/articles/00006/010189.html; Daniel B Garrie and Matthew J Armstrong, 'Electronic Discovery and the Challenge Posed by the Sarbanes-Oxley Act', UCLA Journal of Law and Technology (forthcoming), http://www.lawtechjournal.com/articles/2005/02_050530_garrie_armstrong.pdf

[16] See generally, Joris Toonders, 'Data Is the New Oil of the Digital Economy', The Wired (Online), http://www.wired.com/insights/2014/07/data-new-oil-digital-economy/; and Perry Rotella, 'Is Data the New Oil?' The Forbes (Online), April 2, 2012 http://www.forbes.com/sites/perryrotella/2012/04/02/is-data-the-new-oil/.

[17] Joseph Walker, 'Meet the New Boss: Big Data, Wall Street Journal', The Wall Street Journal (Online), September 20, 2012 http://www.wsj.com/articles/SB10000872396390443890304578006252019616768.

[18] Joris Toonders, 'Data Is the New Oil of the Digital Economy', The Wired (Online), http://www.wired.com/insights/2014/07/data-new-oil-digital-economy/.

[19] Jane Goodman-Delahunty, Maria Hartwig, et. al., 'Insightful Or Wishful: Lawyers' Ability to Predict Case Outcomes', [2010] 16 (2),Psychology, Public Policy, and Law 133,134.

[20] Daniel Martin Katz, 'Quantitative legal Prediction- Or- How I Learned to Stop Worrying and Start Preparing for the Data-Driven Future of the Legal Services Industry", (2013) 62 EMORY LAW JOURNAL 909, 909 http://law.emory.edu/elj/_documents/volumes/62/4/contents/katz.pdf.

[21] See Generally, Note, 'It's the second acquisition of 2015: Huron buys Sky Analytics', The Legal IT Insider (Online), January 9, 2015 http://www.legaltechnology.com/latest-news/its-the-second-acquisition-of-2015-huron-buys-sky-analytics/; Kevin McLaughlin, 'Microsoft Acquires Legal-Focused Analytics Vendor Equivio, Plans To Roll Tech Into Office 365', The CRN (Online), January 20, 2015 http://www.crn.com/news/applications-os/300075424/microsoft-acquires-legal-focused-analytics-vendor-equivio-plans-to-roll-tech-into-office-365.htm; "Elevate Services Acquires Analytics Division of RFx Legal", The Elevate Services September Press Release, 21, 2012 http://elevateservices.com/about-us/news/elevate-services-acquires-analytics-division-of-rfx-legal/.

[22] David Kravets, 'Algorithm predicts US Supreme Court decisions 70% of time', ARS Technica (Online), Jul 30, 2014 http://arstechnica.com/science/2014/07/algorithm-predicts-us-supreme-court-decisions-70-of-time/

[23] See generally, https://lexmachina.com/about/.

[24] See generally, https://lexmachina.com/what-we-do/how-it-works/.

[25] See generally, https://lexmachina.com/legal-analytics/.

[26] See generally, https://lexmachina.com/custom-insights-apps/.

[27] See generally, https://lexmachina.com/.

[28] Leigh Mcmullan Abramson, 'Why Are So Many Law Firms Trapped in 1995?', The Atlantic, October 1, 2015 http://www.theatlantic.com/business/archive/2015/10/why-are-so-many-law-firms-trapped-in-1995/408319/?single_page=true&print=

[29] Lex Machina Press Release, 'Lex Machina's Legal Analytics Named 2015 New Product of the Year by American Association of Law Libraries', May 13, 2015 https://lexmachina.com/media/press/legal-analytics-named-2015-new-product-of-the-year/