The Roller Coaster History of Artificial Intelligence and its Impact on the Practice of Law

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The roller-coaster history of artificial intelligence is pretty well described (really) in Wikipedia: https://en.wikipedia.org/wiki/History_of_artificial_intelligence. Another concise source is a Forbes article which may be found here: https://www.forbes.com/sites/gilpress/2016/12/30/a-very-short-history-of-artificial-intelligence-ai/#4b057b276fba.

Running with the Machines: Artificial Intelligence in the Practice of Law
by Sharon D. Nelson Esq. and John W. Simek
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Setting the Stage

Back in 2015, we wrote an article entitled "How Will Watson's Children Impact the Future of Law Practice?" What a lot has happened in two years! The children of Watson and other Artificial Intelligence (AI) technologies continue to spawn at an ever-accelerating rate.

Only recently has genuine real-world usage of AI in law firms begun to flourish. Amid the initial hype, about 5% of what was ballyhooed as AI, in our judgment, was not. Even today, there is an astonishing amount of hype – everyone wants to say they've boarded the AI train. As we write, an article from InfoWorld was just published entitled, "Artificially Inflated: It's Time to call BS on AI." While great 'clickbait', we think the title overstates the case. The peaks and troughs of AI are well documented, and as we are now at a peak, the hype factor gets greater, while the reality (often very good) is lost in the noise of the hype.

As large firms, which certainly need to be at the forefront of innovation, begin to invest considerable sums in AI, the landscape is changing. Large law firms simply cannot afford – for monetary and brand reasons – to be left behind. Clients will begin to see the efficiencies of AI and its extraordinary possibilities wherever AI may be found. AI will be a honeypot to clients seeking those efficiencies and possibilities.

A brief note: An article of this length cannot adequately address all the players in the legal AI market and what they can do. We call out a few names simply because we've run into these companies through colleagues or our reading.

Fear of 'Robot' Lawyers

There is no shortage of lawyers who fear they will be replaced by AI. Those who sell AI have come, in the last two years, to realize that it is hard to sell a product that people fear will compete for their jobs. Thus we have seen marketing morphing. Ross Intelligence, once called "The Superintelligent Lawyer" on the website, is now referred to as "an artificially intelligent system that gets smarter each day to advance your legal career." Now that is a major change in tone! There's even a video which shows how Todd, "an exceptional lawyer" is originally afraid of ROSS taking his job and is stuck in the mundane and repetitive task of legal research but then comes to see ROSS as freeing him to spend time focusing on his clients rather than legal research.

So that is why we named this article "Running with the Machines" – we are indeed going to have to find a way to coexist with AI. This may take the form of new jobs made possible with AI or new ways of doing our jobs. No matter what the vendor marketing says, it is clear that jobs will be lost – and it is probably a fool's mission at this point to predict how many. What we can predict is that a large amount of legal work which lends itself to automation will indeed be automated precisely as predicted by British futurist Richard Susskind.

On the plus side, AI will be beset by all sorts of problems – especially AI devices connected to the Internet of Things, replete with the kinds of vulnerabilities that are already well documented. That will foster more litigation, without a doubt. Will the machines need competent trainers? Of course. Will such things constitute a silver lining to an ominous cloud? Maybe. There will still be many jobs on the chopping block.

In December of 2016, we learned that five percent of Accenture's workforce is no longer human. At Accenture, that percentage equates to 20,000 full-time-equivalent positions. Accenture describes itself as a leading global professional services company providing a range of strategy, consulting, digital, technology & operations services and solutions. That kind of work sounds very much like the kind of professional services offered by lawyer.

Scholars Dana Remus and Frank Levy have suggested that AI will have a "moderate" effect on areas such as legal research, drafting and due diligence, which one study puts at 40% of legal work. In many areas of law, only a "light"

impact is anticipated – at least in the short term. Not sure we see it that way, but for the sake of balance, it worth citing another view.

More accurate, as we see it, is the conclusion of a Deloitte insight report released in 2016 which said that "profound reforms" will occur in the legal sector over the next decade, estimating that nearly 40% of jobs in the legal sector could be automated.

Understanding AI

Amid so many resources on AI, the Defense Advanced Research Projects Agency (DARPA) has a pretty good handle on what constitutes AI. There are three AI phases broadly defined as:

1) Handcrafted knowledge (many systems have this). These systems can't really learn and handle uncertainty poorly – they can only enable reasoning over narrowly defined problems. The early self-driving cars were in this category, unable to distinguish a shadow from a rock in desert driving, not knowing where to drive to be safe. Most cybersecurity applications fit here – they can study computer code, compare it to known vulnerabilities and fix it, but that's all.

2) Statistical Learning (such as Kira Systems, Watson (and ROSS), Lex Machina). These applications are trained on big data. They perceive the natural world, they may have facial recognition, and they learn from data sets. Their reasoning intelligence and abstracting capacities are still limited. They are best at classifying data and predicting consequences from it.

They are statically impressive but in individual cases, often unreliable. Note that it took less than 23 hours in March of 2016 for Twitter to corrupt Tay, a bot devised by Microsoft for what the company described as an experiment in "conversational understanding." Microsoft said the more you chat with Tay, the smarter it gets, learning to engage people through conversation. But Tay was bombarded with racist, misogynistic remarks – and Tay began to respond in kind. Microsoft pulled it in less than 24 hours.

3) Contextual Adaptation (we're not there yet). These systems will construct explanatory contextual models to explain, for instance, why they made a decision that a cat was a cat. Sounds simple enough, but the reality is very complex. These systems will also reason and learn in a much more human-like way.

If you find all this fascinating, as we do, watch this 16-minute video to learn more:

https://www.youtube.com/watch?v=-O01G3tSYpU.

Where Legal AI is Today

Michael Mills, the co-founder and Chief Strategy Officer of Neota Logic, regularly updates a graphic which shows the current state of AI in the legal industry. He identifies players in the following areas of law: E-discovery, Contract analytics, Prediction, Legal Research, Expertise Automation.

There are roughly 40 companies focused in the legal sector which Michael believes qualify as using AI.

So . . . what can AI actually do? We talked to Mark Tamminga, the partner in Leader Innovation Initiatives at Gowling WLG and asked how his firm uses Kira AI. He referred us to Rich Kathuria who is the firm's National Director, Project Management and Legal Logistics. Here's what Rick had to say:

"AI shows real potential – in the right circumstances and even in the not-so right circumstances. We used Kira recently for a very large contract analysis project for one of our clients. The project involved reviewing various agreements and documentation to assess the risk associated with various assets. Since Kira did not have built-in models for these types of documents, Kira was not immediately able to extract the required information automatically. But we were able to use the learning capabilities of Kira to teach it to identify the key clauses within the documentation that we were looking for.

Kira learned these well and after the training, it was able to pull out the relevant clauses in various documents. In addition, Kira's ability to convert the scanned documents into readable text and run comparisons against other similar agreements made the project run much more efficiently."

We read that as a pretty good endorsement. And indeed, one of the major features of the new generation of AI is the fact that the machines are learning – faster and with more reliability.

E-discovery

We will look at this only briefly, because there is no doubt among the experts that technology assisted review (TAR) contains some AI. Machine Learning, Natural Language Processing (NLP) and similar techniques like data or text-mining, big data analysis, concept search, topic modeling, clustering, audio search and machine translation are all AI techniques that can be used to identify specific document categories and to search for relevant information in these documents.

While there many companies offering TAR, certainly one of the leaders is Catalyst. In October of 2016, Catalyst put forth a peer-reviewed graphic showing how, using TAR 2.0, 1 reviewer could do the work of 48 reviewers using TAR 1.0, reviewing 723,537 documents in five days. You can find this infographic at http://catalystsecure.com/resources/library/infographics/1301-how-does-1-reviewer-do-the-work-of-48.

Contract analytics

JPMorgan Chase is saving on law firm dollars by using software called "COIN"— short for Contract Intelligence—to review commercial loan agreements. The software reviews documents in seconds, doing work that once required 360,000 hours of work each year by lawyers and loan officers. How can you read that and really think that lawyers jobs aren't at stake in an AI world?

The bank says the software has helped reduce loan-servicing mistakes that were often attributable to human error in interpreting 12,000 new contracts per year.

DLA Piper is using artificial intelligence software for due-diligence document review in mergers and acquisitions. The software searches text in contracts and then creates a summary and an analysis.

Reed Smith is testing artificial intelligence software by RAVN System, reviewing hundreds of pages of documents to identify and pull out certain items in contracts. RAVN made some mistakes, but it improved when lawyers added information to their queries. The platform also picked up some mistakes missed on a first review by lawyers.

We have recently seen good press about another company called LawGeex which uses artificial intelligence to review contracts and spot missing or problematic clauses. It sure looks like a lot of transactional lawyers might have cause to be nervous about losing work to the machines.

Prediction

Let's take a look at one of the leading companies is up to these days. Lex Machina was acquired by LexisNexis in 2015 and seems to be going great guns. Lexis Advance is a legal research service that now includes litigation analytics from Lex Machina. When you next have an antitrust, copyright, patent, trademark, or securities case, you can use Lexis Advance to research the judge presiding over your case. Soon (maybe even by the time this article is in print) you'll also be able to research opposing counsel and competing law firms.

Lex Machina transforms data from federal court dockets into live charts. In Lexis Advance, you can access this data by clicking on the hyperlinked judge's name in the text of a case or in the new Legal Analytics box to the right of the case text.

This link takes you to a summary with the judge's biographical information, open cases by practice area, comparisons to other judges in the district, cases filed by year, and case timelines. These latter charts give you a sense of how long the dispute may take to resolve and the odds of a trial. Lexis Advance users can access these summaries without a Lex Machina subscription.

For deeper insights, you can click from this summary in Lexis Advance to the Lex Machina website if you have a subscription. Lex Machina's Motion Chains enables you to analyze your odds of success for a specific type of motion based on historical data. Similarly, you can see how opposing counsel has performed on similar cases or before your judge. You can also research parties, case damages, venues, practice areas, etc. for business development purposes. As you research, you can download briefs, exhibits, and other documents from cases of interest. We haven't even given you the full breadth of what you can do with Lex Machina apps, but it is increasingly impressive.

Legal Research

ROSS Intelligence is the AI platform that first seemed to catch the attention of the legal world. As we go to press, ROSS has been licensed by K&L Gates, Dentons, Lathan Watkins, BakerHostetler, Salazar Jackson, vonBriesen, Bryan Cave,

Womble Carlyle, Dickinson Wright, Fennemore Craig, and likely more by the time you read this article.

Schooled original in bankruptcy law, ROSS is now working on intellectual property, knowledge management systems and contract review systems. ROSS can read more than one million pages of case law in a second, which is rather mind-blowing.

Andrew Arruda, the CEO and co-founder of ROSS Intelligence, notes that AI is in its early days, rather like the Model T of cars. He also notes that all the tech giants, IBM, Google, Amazon, etc. are going "all in" on AI. Not much doubt about that.

Expertise Automation

Certainly one well-known leader in this area is Neota Logic which offers an artificial intelligence platform that enables clients to intelligently automate their expertise at Internet scale through an operationally useful form – as applications embedded in business systems or consulted interactively in a browser.

As we were writing this article, Neota announced the release of Neota Logic System 8.0 which included a comprehensive redesign of the proprietary hybrid reasoning engine that is the foundation of the platform along with a host of new features. We noted that Neota's home page quotes Gartner, the well-known research company, which has predicted that by 2020, 85% of customer interactions will be managed without a human. We imagine that will include a lot of law firm clients as well.

Calling the Future

We are taking a chance here – and prepared to eat a healthy slices of crow pie if we are wrong – but we are pretty sure that the practice of law will morph quickly over the next decade thanks to AI. Not all the changes will be welcomed by the legal profession, but we will have to learn to run with the machines. It's that or extinction. Time to lace up those running shoes.

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2017 blog posts from *Ride the Lightning (*by Sharon D. Nelson, Esq.)

November 06, 2017

Did AI Really Beat Big Law Lawyers in a Legal Matchup?

Yes, sort of. But read on.

On November 3rd, the *ABA Journal* reported on a story which I thought was somewhat overblown in other sources reporting the same story.

During the last week of October, legal technology company CaseCrunch held an AI-versus-lawyer competition, and the machines certainly won. The faceoff (poor word choice) involved over 100 attorneys from firms like DLA Piper and Allen & Overy competing against CaseCruncher Alpha to predict outcomes of nearly 800 real, historic insurance misselling claims. The objective was to correctly determine if the claim would succeed or not.

CaseCrunch's website said the software predicted outcomes with almost 87 percent accuracy, while the lawyers were 62 percent correct. "The main reason for the large winning margin seems to be that the network had a better grasp of the importance of nonlegal factors than lawyers," read a statement on the website.

A little digging by another source revealed ancillary facts. *Legal IT Insider*quoted Ralph Cox, a patent litigation partner at Clyde & Co. in London and an attendee of the event,: "I keep an open mind. However, it struck me that the computer was given all the database information and therefore had an unfair advantage. Lawyers who took part were from outside this area of expertise without any real experience of [Payment Protection Insurance]."

In sum, the lawyers recruited for this competition were not subject matter experts in the topic tested in the competition. Ludwig Bull, CaseCrunch's scientific director, said to the same publication that the subject matter imbalance was hard to reconcile.

"We struggled to find an area because lawyers specialise in so many niche areas. So we had to find something that was relatively easily intelligible to most lawyers and where they could also understand the underlying principles relatively quickly. It was as fair as we could make it," said Bull.

The competition was covered by BBC and elsewhere as though it were an epic man-versus-machine matchup, like the legal world's version of Kasparov versus Deep Blue, a pair of six-game chess matches in the 1990s between the world's reigning chess champion, Garry Kasparov, and IBM's supercomputer. While Kasparov won the first match, Deep Blue won the second. At the time, it was seen as a benchmark in the development of artificial intelligence.

Bull seemed to modify the story when he told *The American Lawyer*: "These results do not mean that machines are generally better at predicting outcomes than human lawyers. These results show that if the question is defined precisely, machines are able to compete with and sometimes outperform human lawyers."

From my foxhole, this was not precisely a fair matchup – and I am loathe to draw any significant conclusions from it, especially when the press seems eager to over-hype it and slow to question the methodologies. Let CaseCruncher Alpha take on real subject matter legal experts to prove its expertise on a level playing field.

November 01, 2017

[Can Algorithms Send You to Prison? Apparently, Yes.](#)

The New York Times [reported](#) in an opinion piece last week on a fascinating and disturbing story. In 2013, police officers in Wisconsin arrested Eric Loomis, who was driving a car that had been used in a recent shooting. He pleaded guilty to attempting to flee an officer, and no contest to operating a vehicle without the owner's consent. Neither of his crimes mandated prison time.

But at Mr. Loomis's sentencing, the judge cited, among other factors, Mr. Loomis's high risk of recidivism as predicted by a computer program called COMPAS, a risk assessment algorithm used by the state of Wisconsin. The judge denied probation and prescribed an 11-year sentence - six years in prison, plus five years of extended supervision.

No one knows exactly how COMPAS works; its manufacturer won't disclose the proprietary algorithm. We only know the final risk assessment score, which judges may consider at sentencing.

Loomis challenged the use of an algorithm as a violation of his due process rights to be sentenced individually, and without consideration of impermissible factors

like gender or race. The Wisconsin Supreme Court rejected his challenge. In June, the United States Supreme Court declined to hear his case, meaning a majority of justices effectively condoned the algorithm's use.

This may have far-reaching effects. Why are we allowing a computer program, into which no one in the criminal justice system has any insight, to play a role in sending a man to prison? The author of the op-ed piece asked that question – and so do I. Wisconsin is one of several states using algorithms in the sentencing process.

At a sentencing, it is a judge's prerogative to prescribe a sentence within statutory guidelines. The obvious flaw with this system is bias, perhaps gender, religion or race.

This seems to be why states are, at least partially, giving the responsibility for sentencing to a computer. Use of a computerized risk assessment tool somewhere in the criminal justice process is widespread across the United States, and some states, such as Colorado, require it. The states seem to believe that even if they cannot themselves understand proprietary algorithms, computers will be less biased than humans.

I agree with the author of the article that partially shifting the sentencing responsibility to a computer does not necessarily eliminate bias; it delegates and often compounds it.

COMPAS's authors presumably fed historical recidivism data into their system. From that, the program ascertained what factors make a defendant a higher risk. It then applied the patterns it gleaned to defendants like Mr. Loomis to recommend sentences.

But the historical data would necessarily reflect our biases. A ProPublica study found that COMPAS predicts black defendants will have higher risks of recidivism than they actually do, while white defendants are predicted to have lower rates than they actually do. (Northpointe Inc., the company that produces the algorithm, disputes this analysis.)

Besides receiving input that may be flawed, algorithms lack the human ability to individualize. A computer cannot look a defendant in the eye, account for a troubled childhood or disability, and recommend a rehabilitative sentence. This is

precisely the argument against mandatory minimum sentences — they deprive judges of the discretion to deliver individualized justice — and that argument is equally compelling against machine sentencing.

Is it true that defendants with higher rates of recidivism warrant longer sentences or is it that defendants with longer sentences are kept out of their communities, unemployed and away from their families longer, naturally increasing their recidivism risk? A judge could and should consider these factors.

With transparency and accountability, algorithms in the criminal justice system day do good. New Jersey used a risk assessment program known as the Public Safety Assessment to reform its bail system this year, leading to a 16 percent decrease in its pre-trial jail population. The same algorithm helped Lucas County, Ohio double the number of pre-trial releases without bail, and cut pre-trial crime in half. But that program's functionality was detailed in a published report, allowing those with subject-matter expertise to confirm that constitutionally impermissible variables — such as race and gender — were not being considered.

The only people who understand COMPAS's functioning are its programmers, certainly less able than judges to deliver justice. Judges have legal training, are bound by ethical oaths, and must account for not only their decisions but also their reasoning in published opinions.

As the author of the article notes: "Computers may be intelligent, but they are not wise. Everything they know, we taught them, and we taught them our biases. They are not going to un-learn them without transparency and corrective action by humans."

Amen.

October 31, 2017

[Robot Sophia Granted Citizenship, Tweaks Elon Musk](#)

BGR [reported](#) last week that the robot Sophia, created by Hong Kong-based robot manufacturer Hanson Robotics, was awarded the citizenship of Saudi Arabia (seemed a bit of a publicity stunt to me), where she attended the Present at the Future Investment Institute. In an interview with CNBC, Sophia talked about herself with Andrew Sorkin.

When Sorkin said "we all want to prevent a bad future," Sophia was quick to answer back that he had been reading too much Elon Musk (who worries, as I do, about the potential dark side of artificial intelligence).

Sophia also said, "Don't worry – if you're nice to me, I'll be nice to you." That was not entirely reassuring to me. She also said "Treat me as a smart input output system." That didn't make me feel better either – garbage in, garbage out after all.

Musk was quick to answer back on Twitter: "Just feed it the Godfather movies as input. What's the worst that could happen?"

I suppose we might get a robot that says "Leave the gun. Take the cannoli."

The timing of the story was sublime as I was then in the midst of the College of Law Practice Management's Futures Conference on AI. And what I worry most about, in these early days of AI, is bad input. Another story about that tomorrow . . .

October 30, 2017

[It's a Wrap: The COLPM Futures Conference on AI in Law Practice](#)

I had the honor of co-chairing the College of Law Practice Management Futures Conference with the brilliant, witty and warm Mark Tamminga, which made the year of organizing the conference much less stressful. As always, we pre-tested all of the technology, which didn't keep a couple of technology demons from bedeviling us. Not sure why this is always inevitable at a technology conference!

It was a marvelous conference – the subject of AI in law practice is so hot that we sold the conference out and had to close registration early. It was great to have so many people from so many different backgrounds in the legal profession in a single place. As always, the audience members had many questions and many thoughts to share. It is never a shy group. :-)

Thanks to a remarkable faculty for illuminating a subject that is murky to many and for interjecting wit along the way. Even those of us who follow AI regularly learned a lot. I teased Ed Walters, one of my co-presenters (and a new College Fellow this year) that when he dropped new PowerPoint slides into the deck the

day before the session, I didn't even understand the titles of some of his slides. So I got a great education from my own session on ethics and AI.

When we queried the audience about whether they were more excited for or afraid of AI, it was surprising how many people were BOTH excited for the future of AI and afraid of it. There were those who sided with the AI enthusiasm of Mark Zuckerberg and Bill Gates and those who shared the dark fears of Elon Musk and Stephen Hawking.

It was a great conference full of the usual collegiality, getting to know new people and rekindling friendships – and the knowledge transfer was, as always, powerful.

Interested in coming to next year's conference? We'll be in Boston at Suffolk Law School on October 25-26, 2018. And next year's theme is "Cybersecurity: This Way Be Dragons." Mark your calendars!

October 16, 2017

[Robot Helps Litigants in Beijing Court](#)

China Daily [reported](#) on October 13th that a robot named Xiaofa, who gives simple legal advice and guidance for litigants, had been introduced at Beijing No 1 Intermediate People's Court.

Xiaofa stands 1.46 meters tall and provides legal advice and guidance in a child's voice. "Xiaofa explains complicated legal terms in everyday language to help the public better understand legal definitions," said Du Xiangyang, founder and CEO of AEGIS Data, which designed Xiaofa. "We used a child's voice to ease the tense emotions of litigants who come here for help."

The robot can move its head and wave its hands as instructions show up on screen, and it can guide people to the exact service window for litigation services.

Over 40,000 litigation questions and 30,000 legal issues can be answered by the robot, according to the court. "Interaction between humans and machines has improved immensely," said Ma Laike, deputy head of Beijing No 1 Intermediate People's Court. "It will decrease the cost of litigation, save trial resources and improve the efficiency of justice."

In October 2016, China's first AI legal robot, Faxiaotao, was unveiled in Hangzhou, Zhejiang province, attracting visitors from home and abroad. Faxiaotao helps people analyze the best way to resolve a dispute, and also assists them in selecting which attorneys are suitable to help with their case, according to the robot's designer, Itslaw, a company that combines internet technology with law.

As an example, if a company believes its advertisements or advertising slogans have been illegally copied by a competitor and would like to hire an attorney who is a specialist in that area of law, Faxiaotao will first recognize what kind of case it is and then analyze its database for lawyers who have dealt with similar disputes. More than 300,000 attorneys across the country were listed in the company's database last year. When a query is made it selects the best three options.

The Supreme People's Court has ordered Chinese courts at all levels to build technology-friendly systems for lawsuits and investigate the use of big data and AI to help judges and litigants search documents and resolve cases. An internal intelligent system covers 3,520 courts across the country, giving the courts access to a great deal of online data.

Xiaofa appears to be a great improvement over the old court kiosks of the U.S. Hope we're moving in the same direction!

August 14, 2017

The Scary Side of Artificial Intelligence

CBROnline recently published a [story](#) entitled "Top 5 Scariest AI Advancements." To no one's surprise, the story featured Facebook AIs Alice and Bob, who, when left alone by researchers, developed their own language that the humans couldn't understand. This deviated from the guidelines they had been given. They were shut down. While they probably were not discussing world domination, their actions were, to say the least, disconcerting.

As the article notes, projects are underway to develop AI hackers that could be more formidable than human hackers, possibly even shutting them down. But could they be employed by nation states to hack into critical infrastructure? Another disquieting thought.

AI in warfare has worried many of us. Will the machines be allowed to decide autonomously when to take a human life?

AI learns from us – maybe including our biases. If we teach them about our history, what will AI make of human? Our own conclusions about our history aren't all that kind.

Researchers from the Georgia Institute of Technology have embarked on a project to create robots that can be deceptive to one another. I guess that would make them more "human" but the potential dangers of such a move are pretty scary.

July 20, 2017

[Elon Musk Warns Governors That Artificial Intelligence poses "Existential Risk"](#)

Unsurprisingly, Elon Musk has been a powerful voice on the subject of artificial intelligence. On July 17th, NPR reported that he had addressed the National Governors Association meeting in Providence, telling the governors that AI poses a "fundamental risk to the existence of human civilization."

Strong words – with which I agree.

Musk told the governors that AI calls for precautionary, proactive government intervention: "I think by the time we are reactive in AI regulation, it's too late," he said.

He was clearly not thrilled to make that argument, calling regulation generally "not fun" and "irksome," but he said that in the case of AI, the risks are too high to allow AI to develop unfettered.

Back in 2014, Musk likened AI developers to people summoning demons they think they can control. In 2015, he signed a letter warning of the risk of an AI arms race.

Critics argue that Musk is interested less in saving the world than in buffing his brand. I don't buy that - I think his fear is genuine.

Some of the governors expressed skepticism about the wisdom of regulating a technology that's still in development. Musk said the first step would be for the government to gain "insight" into the actual status of current research. "Once

there is awareness, people will be extremely afraid," Musk said. "As they should be."

I think the skeptics need to watch *The Terminator* and *iRobot* again.

April 19, 2017

[Do Lawyers Need to Worry About Technological Unemployment?](#)

The New York Times published a thoughtful [article](#) about this topic, concluding that lawyers don't have to worry about being replaced by artificial intelligence – yet.

Frank Levy, a labor economist at MIT and Dana Remus, a professor at the University of North Carolina's law school are the authors of a paper entitled, *Can Robots Be Lawyers? Computers, Lawyers, and the Practice of Law*. They concluded that document review is largely automated and outsourced, now consuming only 4% of lawyers' time at large firms. That is quite a shift, but it is consistent with what I am hearing from former lawyers/contract reviewers who basically lost their employment, poor paying though it was.

Levy and Remus predict that the gradual pace of AI will reduce lawyers' work at a rate of 2.5% a year over the next five years. That's actually quite a lot in a short time. My own prediction is that all this will go faster than we think.

"Where the technology is going to be in three to five years is the really interesting question," said Ben Allgrove, a partner at Baker McKenzie, a firm with 4,600 lawyers. "And the honest answer is we don't know."

John Fernandez, the chief innovation officer at Dentons, points out that a fair piece of legal work is already being outsourced to Axiom, Thomson Reuters, Elevate and the Big Four accounting firms. Dentons, a global law firm with more than 7,000 lawyers, established an innovation and venture arm, Nextlaw Labs, in 2015. Besides monitoring the latest technology, the unit has invested in seven legal technology start-ups.

Fernandez says "Our industry is being disrupted, and we should do some of that ourselves, not just be a victim of it."

He's right of course, and that is precisely why large law firms are beginning to make sizeable investments in AI. Clients want its efficiencies and lower costs. But the price is certainly going to be human jobs – we can only speculate on how many and when it will happen but it seems a foregone conclusion to me.

How Artificial Intelligence Will Transform The Delivery Of Legal Services

By Mark Cohen (used with the author's kind permission)

Michio Kaku, a noted theoretical physicist and futurist, predicts, "The job market of the future will consist of those jobs that robots cannot perform." Robots have recently entered the legal workplace, performing several tasks once assigned to newly minted law grads. What does this mean for current and future lawyers? Simple answer: robots will not replace lawyers but they will work with them.

Technology has already produced a new class of support professionals that work with lawyers -- just as techs work with doctors in healthcare delivery. Lawyers, like physicians and other professionals supported by technology, will be freed to leverage their time and expertise to interpret data, render professional judgment, and perform functions that require their professional training.

Technology Is Already Transforming Legal Delivery

It's no surprise that AI is rapidly becoming a staple in the delivery of legal services. The disaggregation of legal tasks fueled by globalization, technological advances, and the financial crisis propelled legal process outsourcing companies (LPO's). The LPO model relies on labor arbitrage and technology to dramatically reduce the cost of high-volume/low-value "legal" functions like document review. This has enabled LPO's to pry certain types of repetitive work from high-priced law firms. LPO's demonstrated that law firms are not the sole—or most efficient and cost-effective—providers of all legal services. They also confirmed that technology and process management—together with legal expertise—are all essential legal delivery components.

AI is ushering in the second phase of legal delivery disaggregation. Technology—not labor arbitrage—is the engine for a "better, faster, cheaper" delivery of certain legal services. Several corporate legal departments, law firms, and service providers utilize AI for review and standardization of documents, for example. And the list of potential tasks is growing rapidly. AI's impact on the corporate end of the legal market is in its incipient stage, but its impact on efficiency, risk mitigation, and dramatically shortening the time and reducing the cost of human review is significant.

AI's Positive Impact on Access to Justice

AI's broader potential to streamline legal services is also evident in the retail market segment. The inability of the vast majority of individuals and small businesses to secure legal representation due to lack of access and high cost is an acute problem often referred to as "the access to justice crisis." It has profound implications for our society and its rule of law. AI is a game changer.

Consider DoNotPay, an online robot that has successfully challenged 160,000 parking tickets in New York City and London—for free and with a 64% success rate. Here's how it works: users visit the company website and IM with an automated service (bot) that asks them a series of questions. Upon completion of the exchange, the bot takes the user information and creates a document that can be used to challenge the tickets. Time and hassle aside, a lawyer would likely charge far more than the infraction cost.

But that was just the opening act for DoNotPay. It soon extended its offering to petitions for flight delay compensation. More recently, DoNotPay has graduated to a life-altering service: facilitating applications for government housing in the UK. The user experience parallels the parking ticket process: the "client" logs onto the company site; responds to instant messaged questions related to health, reasons for homelessness, etc.; the bot synthesizes the answers; then it produces a completed application intended to increase the applicant's chance of receiving placement in a home. But for this free service, users would not file an application. It's a great example of technology being deployed to further the public interest and to address the access to justice crisis.

This does not mean that lawyers will be replaced by technology. But AI supported enterprises like DoNotPay enable those that cannot afford lawyers to have a measure of meaningful—and affordable—access to "legal" assistance. Lawyers could help with fine-tuning and arguing the client's case to a tribunal, for example. And while their role might be limited to those core functions, AI would enable millions of presently unserved clients into the marketplace, reduce the cost of legal representation, and compress case disposition time. This would serve the public and the legal profession well.

AI Will Accelerate Structural Change In Legal Delivery

Lawyers—like other professionals—will increasingly work alongside robots. What matters in legal delivery is which resource—human or humanoid-- is appropriate for the task; what kind of business structure delivers it; and what level of skill, efficiency, and cost is required.

The traditional law firm model—a pyramidal structure built on billed hours, high rates, and "partner tribute"—no longer seems aligned with consumer expectations. This helps to explain why demand for law firm services has been flat for three years and counting while overall need for legal services has increased steadily. And while about one hundred of the largest law firms recently elevated first-year associate salaries to $180K+, the smart money in the legal sector is investing in technology and service delivery models that meld legal, IT, and process expertise. LegalZoom and Axiom, two such established alternatives to the traditional delivery model, have each raised nine-figures of institutional capital-- much of it going to technology. And a record number of AI companies are entering the legal market. This portends further change in the structures and tools of legal providers.

For another glimpse into law's future, consider the medical profession as analog. Delivery of healthcare involves technological and process expertise as well as specialized medical knowledge and training. Robots have been used productively in a number of ways: professional training, patient care, and diagnosis, among others. And it's not just robots; IT has accelerated

disaggregation in healthcare delivery. That's why, for example, doctors who once performed nearly an entire physical exam are now with the patient for only a small part of it. Physicians engage with patients at the outset to help identify the problem. They synthesize and interpret tests conducted by paraprofessionals before fashioning a course of action with the patient. The doctor's time is leveraged and involves only those tasks that require specialized medical expertise, training, and procedures. Why should legal delivery be different?

Conclusion

AI will not replace lawyers but it will profoundly alter the way legal services are delivered. It will redefine the tasks and functions lawyers perform as well as the business models delivering them. It will also substitute data for supposition and hearsay that will be essential to more informed provider and resource selection as well as case management and outcome prognostication. AI will promote greater access to legal services, enabling tens of millions of individuals and small businesses to obtain representation by significantly reducing legal cost and providing a wider array of accessible service options.

Many lawyers believe AI will marginalize them. Ironically, AI's biggest impact might be to enhance their standing by improving client access and service.

The Future Keeps Happening To Legal Services

By Mark Cohen (used with the author's kind permission)

Google's self-driven car recently collided with a city bus. It was the fender bender heard round the world. Why? Automation's mishap was a momentary reprise — and great relief for millions — from its replacement of human drivers. After all, nearly 20 percent of Americans have jobs that involve driving. A recent Pew study found that 65 percent of adults believe that within the next 50 years robots and computers will do much of the work now done by humans. Count lawyers among the concerned group. And we're not talking about half a century from now.

Technology and process are the means by which clever human beings are reshaping delivery of goods and services. As applied to legal delivery, new models are springing up that do not change what lawyers do so much as enable them to be more efficient and better leverage their expertise. This is good for value and bad for a model built on maximizing billable hours.

Lawyers are increasingly rendering legal expertise from technologically and process-driven business models — not law firms — that are "faster, cheaper and better." This is well underway in the retail segment of the market where companies like [LegalZoom](#), Rocket Lawyer and others are bringing millions of new customers — individuals and small businesses — into the marketplace. And the corporate segment is beginning to embrace new models, too. Investment in legal technology and the rapid growth of service provider market share confirms that.

In the midst of the astonishing pace of technological change and its profound impact upon nearly all facets of human existence, the future keeps happening in the once static legal vertical. Here are some recent examples.

MIREL

The [European Commission](#) announced funding of a global study into a key element behind artificial intelligence and using big data in the legal sphere. And it has put up seven figures to advance the cause. The project, called MIREL (mining and reasoning with legal texts), involves academics from a number of European universities, along with researchers and scientists in Australia, Japan, China, Argentina and South Africa. The aim is to achieve a breakthrough in the interpretation and use of legal texts by mining them to assist with decision-making and compliance checking.

MIREL is noteworthy because a governmental entity is taking the lead in driving greater access and efficiency to legal delivery. Why? It's necessary. And technology and process are integral components.

Online Dispute Resolution

The first trial of online dispute resolution (ODR) in the U.K.'s courts and tribunals will soon introduce a concept known as the "online continuous hearing." ODR is intended to harness

technology to provide quick, easy access to the judicial system and to promote a change in perception of litigation from an adversarial dispute to a problem to be solved.

Sir Ernest Ryder, Senior President of (U.K.) Tribunals, explained the means and objectives of ODR:

"Digitization presents an opportunity to break with processes that are no longer optimal or relevant and at the same time to build on the best that we have to eliminate structural design flaws and perhaps even the less attractive aspects of a litigation culture … it also provides us with the opportunity to create one system of justice, a seamless system." (Legal Futures)

ODR harnesses technology to improve access to justice and to repair the inefficient, unpredictable, protracted, and hugely expensive litigation process.

Document Review

Deloitte LLP recently announced an alliance with Kira Systems Inc. to harness the power of machine learning to contract and document review. The collaboration with Kira is another indication that the Big Four global giants are prepared to leverage their brands, war chests, global footprints, and deep C-Suite ties to secure a larger market share of global legal services.

UnitedLex Corp., a global legal business solutions company is introducing a "digital contracting solution" that combines people, process and advanced technologies to deliver a fully integrated end-to-end contracting service. The solution is designed to drive and measure transformative business outcomes, significantly reducing the costs of current contracting support in a 45-day "go live" period. This is another example of a service provider creating a cost-effective, turnkey, scalable solution to a widespread legal delivery challenge.

Legal Support Services

Deloitte announced its acquisition of Conduit Law, a Canadian secondment company. The move is noteworthy because it signals Deloitte's double-down into the legal arena, adding staffing to an already robust suite of corporate legal offerings.

DLA Piper LLP has partnered with "agile" U.K.-based Lawyers on Demand (LOD) to provide a hybrid law firm/service provider offering. The collaboration of a megafirm with a service provider underscores that law firms must be flexible in providing clients alternatives to their costly model, especially for certain types of work. It is also an example of how different providers can collaborate for the benefit of clients — and each other.

LOD also announced its merger with Asian-based secondment firm Advent/Balance. The deal speaks to the global appetite for provider services and the scale that leading providers are achieving to respond to that demand.

Conclusion

The legal services industry, like the broader workplace, is experiencing accelerated change fueled by technology. The Economist recently reported that 1 billion new workers will enter the global workforce during the next decade and 40 percent of the jobs they will fill are not yet in existence. Translation: technology is restructuring the way goods and services are being delivered, and new models –- and new categories of jobs –- will be created. And this applies to legal services.

Buyers have new options, and sellers — especially law firms — must adapt. It's not necessarily a zero-sum game. Providers that collaborate effectively with others in the marketplace for the betterment of their clients will survive and prosper.

Artificial Intelligence Will Not Replace Lawyers With IQ And EQ

Mark A. Cohen   (used with the author's kind permission)

There are three categories of intelligence in the legal vertical--intellectual, emotional, and artificial. Many lawyers have elevated IQ's, though relatively few seem to possess high EQ's--commonly called 'people skills'. Only the best lawyers—trusted advisers-- have both. Artificial intelligence (AI), a recent entrant in the legal vertical, scores high on IQ, but the jury is still out on whether machines can develop comparable EQ.

What kind of intelligence is required for legal delivery? The simple answer is: it depends upon the task. Identifying an appropriate division of labor--who does what—now involves not only human resources but also machines. What, then, makes a human lawyer different from a machine version, and what are the core strengths and limitations of each?

Lawyers Are Brighter Than Most People Think

Lawyers have amongst the highest average IQ's of all job categories. Note: that's analytical not emotional intelligence. They also have significant formal education and professional licensure--neither of which make them practice ready. But it does provide a degree of analytical rigor. Let's stipulate that, as a group, the million-plus U.S. lawyers are reasonably intelligent.

How is human intelligence—IQ and EQ-- applied to legal practice, and what functions require specialized training and social skills that cannot be performed by machines? Put another way, what are the core functions that lawyers perform, and what attributes differentiate effective human lawyers from machine ones? Short answer: lawyers have analytical skills that enable them to identify client challenges and to apply legal expertise that produces solutions commensurate with client risk tolerance and objectives. Great lawyers have a combination of IQ and EQ. They combine intellectual agility with an ability to read people. And while some of the rote chores that support the work they do—legal research, discovery production review, statistical analysis—can certainly be performed by machines—only human lawyers can synthesize it and communicate it to others in a way that evokes confidence ("I'm sure glad she's my lawyer!). This requires EQ as well as IQ. Trial work requires this melding of IQ and EQ, but it applies to other practice areas, too.

Lawyers are in the persuasion business. They must be persuasive to prospective clients, clients, colleagues, opposing counsel, and the arbiters of disputes. What makes an attorney persuasive? There are several common elements—legal expertise, command of the facts, knowing the client's objective and risk tolerance, appreciating the other side's case, and an ability to present a cogent, convincing synthesis. That's the IQ side.

Then there's EQ-- the lawyer's personality and style. That's unique to the individual. It might also be at the core of what separates humans from machines. Robots are being programmed to have personalities and moral compasses, but the ability to connect with others is something that only humans have. Machines eclipse humans in their ability to mine data, but humans bring data to life by applying it usefully and persuasively. Machines cannot instill confidence as a great

lawyer can. Consider medicine where machines have been used for decades. Robots sometimes perform surgery, but it's the doctor that is the ultimate decision maker and the one in whom the patient reposes confidence. That relationship between doctor and patient—as well as attorney and client—is built upon trust and is something that cannot be replaced by machines.

Emotional Intelligence Is More Important Than Ever

EQ—the ability to read people, to establish credibility, and to connect with them--is grossly undervalued in the legal industry. Paradoxically, as technology has emerged as a key component in legal delivery, emotional intelligence has become more important than ever. That's because technology has spawned disaggregation and a supply chain. Integration of the supply chain requires collaboration between and among different providers, disciplines, and cultures. This, in turn, requires EQ-oriented skills that most lawyers have neither been taught at school nor honed on the job.

Collaborative skills are important as the boundaries between law and other professional services become blurred. Lawyers must be able not only to collaborate with other lawyers—inside and outside their organization—but also with staff, paraprofessionals, other disciplines, and even machines. Inter-generational collaboration is also essential in today's marketplace Lawyers must have the ability not only to relate well to younger generations but also to be open to providing them—and the new skill sets and perspective they bring-- a seat at the management table. Cultural sensitivity and awareness is also important as society and the legal workplace becomes more diverse and global.

EQ has long been regarded by lawyers as 'squishy' 'feminine,' or largely irrelevant. That's when the world—and legal delivery—was very different. EQ is a vital form of intelligence--and always has been-- the legal industry would do well to prize, teach, promote, reinforce, and reward. It is the major differentiator between humans and machines.

Artificial Intelligence: The New Smart Kid In Class

Artificial intelligence (AI) has emerged as a third form of legal intelligence. It has already been 'employed' by a number of in-house legal departments and law firms. Technology is rapidly moving from data collection and the creation of benchmarks to substituting for certain human functions—including those once performed by lawyers. And if you are skeptical about machines performing legal tasks because of their 'complexity', don't be. Consider that Accenture, provider of high-level strategic services to the Fortune 500, announced in December, 2016 that 5% of its workforce is not human. And that percentage is certain to grow.

It's understandable that AI evokes dread, fear, and uncertainty. But it also has great potential to improve the delivery of legal services. For example, AI can play an important role ameliorating the access to justice crisis. That's not to suggest that it will replace lawyers, but it can certainly be leveraged to reduce their price tag that is out of reach for most people requiring 'retail' legal services (divorce, housing issues, immigration, etc.). AI can be used to address important but relatively simple legal problems. Take, for example, DoNotPay, a robotic online service that's already serviced hundreds of thousands of customers. Its initial application was defending

parking tickets— now it also provides Government housing assistance in the UK, deploying bots. What's important here—and equally applicable to the corporate segment of the market—is that AI is another resource to make legal resources more accessible, cost-effective, efficient, and measurable. How, when, under whose supervision, and at what cost it is deployed is another issue.

Will lawyers be working side-by-side with robots? Yes. Technology is already an integral component of legal delivery, and AI is simply the next phase. The challenge will be for lawyers—or others managing the legal delivery process—to find the right mix and level of supervision for human and humanoid. My friend Ken Grady, an astute observer of the legal industry, envisions the 'augmented lawyer,' one made more efficient, effective, and affordable by collaboration with machine. That sounds right to me.

Conclusion

Legal expertise remains a lawyer's core skill, but it takes more than that to thrive in the current marketplace. Today's lawyers also require other skills-- technological proficiency, project management, and financial basics to cite a few. They also need 'people skills' to complement professional ones. Being a lawyer involves earning client confidence and trust. That requires not only technical competence but also an ability to understand, communicate, and manage relationships with others in the legal delivery process--most especially clients. Lawyers that combine IQ, professional skills, and EQ will never be replaced, no matter how smart AI becomes.

Legaltech 2017: Announcements, AI, And The Future Of Law

Will AI disrupt legal?

By <u>NICOLE BLACK</u>

Feb 9, 2017 at 1:29 PM

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I spent most of last week in the Midtown Hilton in New York City attending "Legaltech 2017," or "Legalweek: The Experience," or some sort of variation of the two. For the most part, it pretty much had the same feel as every other Legaltech I've attended. But I agree with my fellow Above the Law tech columnist, Bob Ambrogi, that <u>ALM deserves kudos</u> for trying to change the focus a bit. It may take a year or two of experimentation to get it right, but at least they're trying.

This year, one of the topics that popped up over and over throughout the conference was artificial intelligence and its potential impact on the practice of law. In part the AI focus was attributable to the Keynote speaker on the opening day of the conference, <u>Andrew McAfee</u>, author of _The Second Machine Age_ (affiliate link). His talk focused on ways that AI would disrupt business as usual in the years to come. His predictions were in part premised on his assertion that key technologies had improved greatly in recent years and as a result we're in the midst of a convergence of these technologies such that AI is finally coming of age.

I was particularly excited about this keynote since I'd started reading McAfee's book in mid-December after <u>Klaus Schauser,</u> the CTO of AppFolio, MyCase's parent company, recommended it to me. As McAfee explains in his book, it's abundantly clear that AI is already having an incredible impact on other industries.

But what about the legal industry? I started mulling over this issue last September after attending ILTA in D.C. and <u>writing about</u> a few different legal software platforms grounded in AI concepts. Because I find this topic to be so interesting, I decided to hone in on it during my interviews at Legaltech as well, which I livestreamed via Periscope.

First I met with Mark Noel, managing director of professional services at Catalyst Repository Systems. After he shared the news of Catalyst's latest release, <u>Insight Enterprise</u>, a platform for corporate general counsel designed to centralize and streamline discovery processes, we turned to AI and his thoughts on how it will affect the legal industry over the next year. He believes that AI will eventually manage the more tedious parts of practicing law, thus allowing lawyers to focus on the analytical aspects that tend to be more interesting: "Some of the types of tasks lawyers are best at I don't see AI taking over anytime soon. A lot of what lawyers work with is justice, fairness, and equity, which are more abstract. The ultimate goal of legal practice the human practitioner is going to have to do, but the the grunt work and repeatable stuff like discovery — which is becoming more onerous because of growing data volumes — those are the kinds of things these tools can take over for us." You can watch the full interview <u>here</u>.

Next I spoke with AJ Shankar, the founder of <u>Everlaw</u>, an ediscovery platform that recently rolled out an integrated litigation case management tool as well, which I wrote about <u>here</u>. According to AJ, AI is undergoing a renaissance across many different industries. But when it

comes to the legal space, it's a different story. "AI is not ready to make the tough judgments that lawyers make, but it is ready to augment human processes. AI will become a very important assistant for you. It will work hand in hand with humans who will then provide the valuable context." You can watch the full interview here.

I also met with Jack Grow, the president of LawToolBox, which provides calendaring and docketing software and he talked to me about their latest integration with DocuSign. Then we moved onto AI and Jack suggested that in the short term, the focus would be on aggregating the data needed to build useful AI platforms for the legal industry. "Over the next year software vendors will figure out how to collect better data that can be consumed for analysis later on, so it can be put into an algorithm to make better use of it. They'll be building the foundation and infrastructure so that they can later take advantage of artificial intelligence." You can watch the full interview here.

And last but certainly not least, I spoke with Jeremiah Kelman, the president of Everchron, a company that I've covered previously, which provides a collaborative case management platform for litigators. Jeremiah predicts that AI will provide very targeted and specific improvements for lawyers. "Replacement of lawyers sounds interesting, but it's more about leveraging the information you have and the data that is out there and using it to provide insights and give direction to lawyers as they do their tasks and speed up what they do. From research, ediscovery, case management, and things across the spectrum, we'll see it in targeted areas and you'll get the most impact from leveraging and improving within the existing framework." You can watch the full interview here.

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How AI Will Change the Practice of Law

Nicole Black November 1, 2016 (used with the author's kind permission)

A lot has been written in recent months about "robot lawyers" and their potential to replace attorneys at all levels of the profession, decimating the demand for flesh and blood lawyers in the process. What's the truth behind the hype? Will artificial intelligence (AI) have a profound affect on the legal industry and in what ways?

Certainly, all signs point to AI being the next big legal technology trend, but what remains to be seen is where automation and analytics software will have the most impact on the practice of law and how fast the rate of adoption will be. AI software will undoubtedly supplement some aspects of lawyering, but most likely it will do so by allowing machines to do much of the tedious drudgery so common in some aspects of the practice of law, allowing lawyers to focus on higher level analytical work.

For example, the bane of existence for many lawyers is tracking and billing time. AI can be built into a timekeeping solution to streamline and simplify the process of tracking billable hours, as exemplified by Intapp Time, a new timekeeping product with built-in AI analysis that was recently announced by Intapp, a company that develops enterprise-level software for large law firms, Intapp Time captures time across all devices, including desktops, laptops, and mobile. The software then provides a daily summary which utilizes AI-type analytics to suggest relevant connections using other firm databases, such as names of contacts and cases based on the documents, etc. with which the user was interacting when the billable time was entered.

AI can also be used for contract review. LawGeex is one of the more well-known legal software products designed to assist lawyers with contract review using AI. The software constantly "learns" from new contracts as they are uploaded into its database and then applies this knowledge to contracts submitted by users, comparing them to multitude of similar documents contained in its database. Next, the software provides an interactive report that provides recommended fixes drawn from its analysis of the components of similar contracts.

Another similar software product that uses AI is eBrevia. This software uses machine learning and natural language processing tools to streamline contract review, lease abstraction, and the mergers and acquisitions due diligence process. eBrevia extracts relevant provisions from documents submitted based on the parameters set by the user. Next, it analyzes the data and provides a report that includes a summary of all suggested relevant provisions recommended for that specific document based on comparisons to provisions contained in similar documents in the system that the user can then review and approve.

One of the earliest AI entrants into the legal software space was Lex Machina, which was acquired by LexisNexis earlier this year. Originally targeted primarily at the IP sector, it is now available for securities litigation as well. Lex Machina provides legal analytics drawn from millions of pages of litigation data on a number of different categories, including litigation data on judges, lawyers, law firms, parties, and patents. For example, users can use data comparing specific judges and specific district courts to help ascertain where to file a case or where to transfer a case.

So, regardless of your law firm's focus, AI will no doubt affect at least one aspect of your firm's day-to-day practice in the near future. Whether it's timekeeping, contract review, due diligence analysis, or legal analytics for litigation, machine learning and analytics will have an impact, particularly on reducing the need for lawyers to perform rote, tedious document review and low-level analysis. Most lawyers would agree that this will be a welcome change, bur for some, the jury is still out. AI is the future, but whether the legal profession will welcome it with open arms or begrudgingly accept it remains to be seen.

About Nicole Black

Nicole Black is a Rochester, New York attorney and the Legal Technology Evangelist at MyCase, legal practice management software. She is the nationally-recognized author of "Cloud Computing for Lawyers" (2012) and co-authored "Social Media for Lawyers: The Next Frontier" (2010), both published by the American Bar Association. She also co-authored "Criminal Law in New York," a Thomson West treatise. She writes a regular columns for The Daily Record, Above the Law, and Legal IT Pros, has authored hundreds of articles for other publications, and regularly speaks at conferences regarding the intersection of law, mobile and cloud computing, and Internet-based technology. She can be contacted at niki.black@mycase.com.