



**The Journal of Robotics,
Artificial Intelligence & Law**

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THE JOURNAL OF ROBOTICS, ARTIFICIAL INTELLIGENCE & LAW (ISSN 2575-5633 (print) /ISSN 2575-5617 (online) at \$495.00 annually is published six times per year by Full Court Press, a Fastcase, Inc., imprint. Copyright 2018 Fastcase, Inc. No part of this journal may be reproduced in any form—by microfilm, xerography, or otherwise—or incorporated into any information retrieval system without the written permission of the copyright owner. For customer support, please contact Fastcase, Inc., 711 D St. NW, Suite 200, Washington, D.C. 20004, 202.999.4777 (phone), 202.521.3462 (fax), or email customer service at support@fastcase.com.

Publishing Staff

Publisher: Morgan Morrisette Wright

Journal Designer: Sharon D. Ray

Cover Art Design: Juan Bustamante

Cite this publication as:

The Journal of Robotics, Artificial Intelligence & Law (Fastcase)

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A Full Court Press, Fastcase, Inc., Publication

Editorial Office

711 D St. NW, Suite 200, Washington, D.C. 20004

<https://www.fastcase.com/>

POSTMASTER: Send address changes to THE JOURNAL OF ROBOTICS, ARTIFICIAL INTELLIGENCE & LAW, 711 D St. NW, Suite 200, Washington, D.C. 20004.

Articles and Submissions

Direct editorial inquires and send material for publication to:

Steven A. Meyerowitz, Editor-in-Chief, Meyerowitz Communications Inc.,
26910 Grand Central Parkway, #18R, Floral Park, NY 11005, smeyerowitz@
meyerowitzcommunications.com, 718.224.2258.

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Morgan Morrisette Wright, Publisher, Full Court Press at mwright@fastcase.com
or at 202.999.4878

For questions or Sales and Customer Service:

Customer Service
Available 8am–8pm Eastern Time
866.773.2782 (phone)
support@fastcase.com (email)

Sales
202.999.4777 (phone)
sales@fastcase.com (email)
ISSN 2575-5633 (print)
ISSN 2575-5617 (online)

Toward a Phenomenology of Machine-Assisted Legal Work

Marc Lauritsen*

We are entering an era in which very little legal work will be done without substantial assistance from intelligent machines. Such machines will better advance human goals if they better understand the humans behind them, and behave accordingly. The field of artificial intelligence and law has made great contributions around many aspects of legal reasoning. It can strengthen those contributions by devoting more attention to the practical contexts within which machine intelligence is harnessed to assist people in their legal work. The author of this article explores the use of artificial intelligence in the law and the implications.

Our homes and workplaces are becoming ecologies of machines. Chatbots and virtual assistants—like Apple’s Siri, Microsoft’s Cortana, Google’s Home, and Alexa on Amazon’s “smart speaker” Echo—have become commonplace. Machines increasingly have voices, faces, and other embodiments. What might conversations with them be like in the legal workplace?

Legal technology is still remarkably primitive. While many quotidian tasks are now being automated, our systems are emotionally deaf and strategically clueless.

Crafting tools for legal work requires modeling that work. An important aid to modeling is having a high fidelity description of the thing being modeled. If one of our goals is to get quality legal work done more effectively, constructing machines with greater insight about us humans should be on the agenda.

Research in the artificial intelligence and law field has usefully focused on knowledge representation and reasoning around the substance of tasks being performed.¹ It has not yet paid much attention to methods of work or the coordination of multiple laborers.

This article takes a brief look at several early articles that strike themes still relevant today and then touches on the philosophical tradition known as phenomenology. It discusses machine assistance in its several forms, and explores analogies to law in developments that are arising around driver-less vehicles and robotic musicianship. It reviews implications for the legal and knowledge

engineering professions and for legal education and the justice system. It concludes with a call for adventuresome research and development.

Looking Back

J.C.R. Licklider's *Man-Computer Symbiosis*² was published in 1960, when speech recognition and "automatic talkers" were just being contemplated. Even things like time sharing of computers were only on the horizon. Besides serving as a good reminder of how radically technological environments can evolve in just a few decades, this piece outlines a vision of human-computer cooperation that largely remains unachieved. Licklider's conception was one in which computers facilitate "formulative" thinking and cooperate with people in making decisions and controlling complex situations without inflexibly depending on predetermined rules. Even if machines will eventually outthink us, he felt, for at least some period, "the main intellectual advances will be made by men [sic] and computers working together in intimate association. . . . [T]hose years should be intellectually the most creative and exciting in the history of mankind." In part that is because many of the operations that fill most of the time devoted to thinking can be performed more effectively by machines. The dissimilarity of humans and machines offers great opportunity for mutual supplementation.

Another classic account with current resonance is the Pandemonium model formulated by Oliver Selfridge over 50 years ago.³ He attacked the problem of pattern recognition by decomposing the work into jobs for multiple independent but cooperating agents. "Demons" would "yell" when they noticed something of potential significance. This kind of architecture finds echoes in massively parallel approaches like that taken with IBM's DeepQA.⁴ One current challenge for legal knowledge engineers is how to fashion battalions of artificial agents that can tackle tasks requiring multiple simultaneous forms of reasoning.

More recently, but still near the dawn of organized artificial intelligence ("AI") and law ("AI & Law") efforts, Don Berman and Carole Hafner encouraged us to explore ways computers can be used to present relevant facts and issues in the service of human decision makers.⁵ They described how systems can serve as tools for better understanding and resolving legal problems:

The expert system would be normative rather than predictive, providing guidance based on a complex model encompassing characteristics of the crime, mitigating and aggravating circumstances, and the characteristics of the individual defendant. Although such a system might influence a judge's decisions, he or she would always be free to reject its recommendations, since no matter how many factors were included in the expert system's model, there would always be cases whose unique circumstances would justify a different result.

We don't yet particularly turn to our tools for understanding and resolving legal problems.

Phenomenology

Like most philosophical traditions, phenomenology is a waterway rich with tributaries and branches. From Greek *phainómenon*, "that which appears," it aspires to be a science of phenomena as distinct from one of the nature of being (ontology). It concentrates on consciousness and the objects of direct experience, such as judgment, perception, and emotion. Intentionality (in the sense of aboutness) is a central theme.

Methodologically, phenomenologists seek through systematic reflection to examine the essential properties and structures of experience. Reflective attentiveness aims at "lived experience," including that of everyday activity. This method involves suspending judgment in favor of intuitively grasping knowledge, with minimal presupposition and intellectualizing. Subjects are encouraged to return to primordial experiences, whether the object of inquiry is a feeling, an idea, or a perception.

Stepping out of habitual attitudes, through a suspension or "bracketing" of conceptual modes of processing, helps disclose how reality is constituted in the present moment within the structure of a conscious mind.

Edmund Husserl established phenomenology⁶ with a recognition that all consciousness is intentional (in the sense that it is always intended toward something, and is always about something). In the philosophy of Martin Heidegger, this understanding became the idea that all experience is grounded in "care." Heidegger argued that *Dasein* (being there) is defined by *Sorge* (care), its practically engaged and concerned mode of being-in-the-world, contrary to

rationalist thinkers like René Descartes, who located human essence in our thinking abilities. For Heidegger, this meant understanding that experience is always situated in a world and in ways of being. This existential analytic was developed in *Sein und Zeit* (Being and Time⁷).

Heidegger was and is controversial (for more than romancing his student Hannah Arendt and serving as the Nazi Rektor of Freiburg University). Michel Foucault famously accused phenomenology of “transcendental narcissism” and sought to “free history” from its grip.⁸ This essay does not purport to philosophize, let alone be faithful to any particular strand of phenomenological thinking. Rather, it borrows a general spirit of reflective attentiveness to examine one corner of human experience.

Legal Work

When someone faces a legal problem or opportunity, work is generally required to address it. What is the nature of that work?

Answering that means asking questions like these:

- What *happens* when legal work is being done?
- What tools are used, what artifacts are produced?
- In what kind of capacities and roles do people operate?
- What is the work process?
- What jobs are being done, how?
- What events and actions are in play?

Ontologies are typically about domains, not the work being done in them. Not enough attention has been paid to what legal workers actually *do*. They inhabit complex fields of behavior we haven’t significantly yet begun to model, let alone to emulate. Ergonomics, in the broad sense of that word as the study of work, naturally needs to encompass extended forms of cognition.⁹

Legal work is a rich sphere of endeavor, undertaken not only by lawyers and other trained legal professionals, but by many others in their organizational and personal lives.

Just as legal vocabulary substantially overlaps with general vocabulary, and legal ontologies build on generic ones, legal work phenomena largely overlap with those found in many other forms of work. Nearly all situations have legal aspects, and all legal situations have non-legal aspects.

Legal work shares many characteristics with other kinds of work, but also has distinct features. Like other work, legal work is goal-directed, with one or more desired end states. It involves general activities like planning, learning, ideation, strategic interaction, argumentation, and choice.¹⁰ Distinctive varieties of legal work include the familiar lawyering verbs—interviewing, counseling, investigating, document drafting, negotiation, and advocacy.

Most forms of work involve cognitive, emotional, and communicative aspects in addition to physical ones. Legal work is primarily intellectual, but it also includes non-negligible amounts of emotional work, such as empathizing with clients, active listening, putting up with obnoxious people, swallowing pride, being humble in victory, and suffering defeat with resilience. It takes energy to deal with pride, anger, jubilation, sadness, and impatience. There may not be any law-specific emotions. Yet failing to attend to emotions in general is a recipe for professional failure.

The magisteria of legal cognition include both algorithmic realms and value composition or reason balancing realms. There are symbolic aspects that lend themselves to digital treatment and analog aspects that don't. Legal work is sometimes mostly a matter of discovering and implementing the sets of algorithms that transform input facts into desired output facts. But the *Fingerspitzengefühl* of an expert practitioner is largely based on heuristics and embodied practices of which there is but tacit knowledge. Expertise involves knowing the uses to which information can be put, and the ways in which informational artifacts can be constructed.

The underlying cognitive task in work is to get from Situation A, with certain salient aspects, to Situation B, which is better in at least one way; or to prevent a situation from deteriorating; or to minimize the deterioration. Actors need to know what aspects of the world they can change, and how the world will likely react to those changes, including changes that may be made by other strategic actors.

Substantive legal work is innately messy and complex. From an information scientist's point of view, it is a rich porridge of data structures and processes. Building truly integrated information systems that reach to the core of professional practice in and on behalf of complex organizations is an enormous task.

Legal work entails a lot more than research, rule application, and argumentation. It often involves manufacturing expectations, understanding and shaping motivations, and otherwise sculpting

the experiences of other people. Only a minority of issues get resolved “on the merits.” More often resolution involves navigating through complicated social arrangements, populated with disparate representatives of humanity, from smooth operators to harmless drudges.

Machine Assistance

Machine assistance is actively being cultivated in a wide range of domains. Two particular ones offer interesting analogies for purposes of this article: automated vehicle driving and robotic musicianship. Most legal work is somewhere between these in terms of complexity.

Driver-Less Transportation

Automated vehicles have been much in the news. Few expect fully autonomous versions to operate in complex situations in the near future, even though most children born today will likely never drive. Rather, attention is now focused on partially automated driving. That involves tools and methods for safely getting to a destination that draw upon both machine intelligence and human involvement.

A recent article summarized developments and challenges in this field.¹¹ The United States National Highway Traffic Safety Administration (NHTSA) has identified five levels of increasingly automated vehicles,¹² from function-specific automation to full autonomy. Autopiloting makes sense in routine but labor-intensive tasks like driving. But it raises human factor complications such as inattention, mind wandering, misplaced trust, complacency, and skill atrophy. Too much information can also lead to distraction.

While safety now seems to require attentive human oversight, it is recognized that sometimes people make worse decisions than machines, and thus anticipated that we will reach a cross-over point where the net cost of allowing human overrides is no longer justifiable. Fewer lives will be lost if we let the less fallible machines decide, even if they sometimes make grievous errors.

Life and limb are generally not in imminent danger while one performs legal work, but stakes can be high in terms of personal freedom, family integrity, and finances. Legal “transportation”—which

conceptually involves navigating from one location in socioeconomic space to another—is usually more complex than physical transportation. One needs to attend to the totality of requirements and prohibitions posed by the combination of public and private law applicable to the situation, the meaning of some of which can be quite contentious.

Lawyers don't quite yet have the equivalent of GPS navigation, let alone quasi-autonomous driving. But they already have some analogs of vehicular aids like cruise control, anti-lock braking, and stability control. That includes generic functions like spelling and grammar checking, and legal-work-oriented tools like document assembly and predictive analytics for discovery and due diligence efforts.

Lawyers in tomorrow's law offices will be like drivers in partially automated cars. They will need to maintain oversight and periodically seize control. The situation calls for cooperation among people and machines.

Robotic Musicianship

Machine musicianship is a thriving area of research and development. It explores cognitive models that enable artificial systems to approach human-level competence in the perception, composition, and performance of music. Machine listening and algorithmic composition are active subjects of attention. Some are modeling artists like John Coltrane and Thelonious Monk via second-order Markov chains.¹³ Rich forms of intelligence are required to support even basic degrees of expressiveness and interaction with other musicians. Such interaction requires both pragmatic and epistemic actions (conveying useful information for fellow performers or audience). These developments are reviewed in a recent piece in the *Communications of the ACM*.¹⁴ Related work is underway in the field of dance.¹⁵

Besides encompassing physical wonders like anatomically correct “hands” for playing the piano, robotic music offers new instruments and interfaces, including augmented instruments and unprecedented forms of shared control.

Like much of law, music is inherently not geography bound. Forms of both are found in all cultures. Both disciplines' exercise and enjoyment require integrating many tasks and modalities.

There's little objective truth. Both fields deal with ambiguity and alternative interpretations. And collaborative musical performance encounters social dynamics not unlike those present in situations of legal interaction. Both fields can discover artistic and tactical potential in the non-human qualities of machines. We can imagine new genres of legal production, and non-anthropomorphic designs to supplement humanoid ones.

Law may not often involve making millisecond adjustments to convey meaning, but some legal performances require moves of considerable artistry. Listening to and understanding a long client "story" or a counterparty's case is not unlike sensing and making sense of the hierarchy of features present in musical expressions, such as pitch, amplitude, timbre, harmony, and tempo. Interpreting a judge's demeanor is not unlike extracting melody from a polyphonic source.

Modeling and Noticing Us

It is sobering to remember the extremely limited channel through which our machines experience *us*. Systems can readily know what information and other digital resources are available to us. But most software systems have at best a primitive sense of their users. They are mostly oblivious to what we care about. Most of what we care and think about is not represented at all in our software. Even our smartest computers barely know us.

Most humans excel at physical interaction with the world and communicative interaction with fellow beings. Tools that understand and account for our experiences and sensibilities can be more effective. That includes our goals, intentions, preferences, frailties, and fears. It is not just what we know and think, but what we feel, want, and hope. Machines should understand our motivations and model our ignorance. They should attend to our beliefs, expectations, concerns, dreams, pains, and pleasures. Work is full of unenacted intentions and unintended enactments. In law it often deals with the pathos of human dramas. Understanding those dramas requires contextual awareness and frames of reference.

Developing a representation language that faithfully mirrors the structure of epistemic modalities like knowledge and belief is no small undertaking, as Thorne McCarty reminds us.¹⁶

We cannot faithfully describe human behavior without “going meta.” People have expectations as to expectations, intentions about intentions, thoughts about thoughts, emotions about emotions. Human experience is full of recursive phenomena, like remembering a time when one remembered to remember.

Artificial systems should not just model the human workers using them, but those people involved in the circumstances and processes about which the work is being done. This capacity would not only enhance utility in the work process, but could accentuate forms of emotional and communicative intelligence that are central to excellence in lawyering.

There are many things it would be useful for machines to know—who a document is being drafted for; what stage of drafting or negotiation; which “side” we’re on; what we’ve already thought of. Various tasks would be aided by such knowledge. Knowing why something needs to be done often helps in doing it well.

Helping

Assistance is a kind of work, as is being assisted. Helping someone do their work, and being helped to do work, both involve work. As does helping the helpers.

Assistance is also a fundamentally social activity, involving conversation and shared understanding. Doing it well entails a certain degree of common social sense. The mere taking on of information or knowledge itself can sometimes be a social act and a social fact.

The experiences of needing legal work done, of having work done, and helping someone get work done all invoke the kaleidoscope of human thoughts and cares.

Machines will be more helpful when they have some inkling of how humans help other humans. Systems that know what is helpful, that know how to help, will better help people do the things that people still do best. And we humans can better help each other by being better helped by machines.

Just as in automating legal work, it helps to understand the work being automated, in assisting legal work it helps to understand the work being assisted. Lawyers and others doing the equivalent of brain surgery need different tools and other forms of help than those making the equivalent of deliveries.

Software systems that represent human experience can be more significantly helpful to us than those that don't. Understanding and generating natural language, and interpreting and simulating facial expressions, are venerable areas of research attention and progress. But to become fully competent helpmates, software systems may require artificial desire and synthetic care. They may need to join us in a shared metaphorical space, and understand allusions like "sour grapes" or calling someone Lady Macbeth. They may need to become adept at storytelling and narration, and develop appreciation for wit, beauty, and elegance.

Co-Working

Assistance with work often takes the more intense form of collaboration and co-production. Implicit in such contexts are questions about allocation of effort. Who can best do X? And which of the many forms of "best" are most to be desired?

An effective worker (real or artificial) needs models of its co-workers, including *their* models of co-workers (which in turn include models of clients and *their* models of their situations).

As we substitute software systems for human effort, experiential engineering will become increasingly central. Advanced tools should be conscious of the uses to which they may be, and are being, put. We should expect from them what we reasonably expect from human colleagues, counselors, and assistants.

Machines should appreciate practical heuristics and notice better ways to do things. They should take the initiative to suggest corrections to legal points and authorities and improvements to draft arguments. Like most humans, lawyers are often inattentionally blind to opportunities for process improvement that are right in front of us.

A fresh-on-the-job machine should be artificially curious about its work and fellow workers. It should naturally ask questions like these:

- What should I know?
- What should I read?
- What have you done?
- What do you know?
- What do you think?

At a higher level, we could use more artificial appreciation of natural things such as human beings. Machines should at least register the fact that we are conscious and engage in pro-social bonding mechanisms like laughter, religion, dancing, singing, and other cultural outgrowths. They should notice our social grooming practices and Machiavellian intelligence, through which we manipulate the perceptions, preferences, and behaviors of others.

We should look forward to computers that are not just clever but good-natured and sympathetic. That can take our occasional abuse. That earn (and deserve) our trust. That can teach us.

We may not turn to machines for emotional support, but it certainly will help if they understand our situations, goals, and moods. We in turn should appreciate that machines can be socially intelligent agents, with personalities, affects, and emotions.¹⁷

Humans and machines have complementary strengths when it comes to both cognition and metacognition. Builders of intelligent systems tend to learn respect for both the superiority of humans over machines and of machines over humans. That's why the intersection of artificial intelligence and intelligence augmentation is so exciting.

We humans are slow, forgetful, distractible, and error prone. (Other than that some of us are reasonably well suited for intellectual labor!) The more we delegate cognitive work to machines, the less mechanical we need to be.

To the extent we can faithfully model reasoning around legal decisions in automated systems, we should. A lot of important knowledge is not adequately modeled with rules or decision trees. Necessary and sufficient logic may be necessary for most legal decisions. But for many others it doesn't suffice. To rationally pursue any instrumental activity presupposes having a framework of values and goals. Only humans can say what they think they want. Yet machines can aid our preferential reasoning. They can alert us to relevant considerations and render competing assessments and evaluative perspectives in illuminating ways. They can address aspects of quasi-quantitative reasoning recently discussed in articles such as those by this author¹⁸ and by Sartor.¹⁹

Related Work

The general topics here of course have been the subject of active attention in related disciplines. Those include human-computer

interaction and discourse theory, to name just a few. There have been scattered efforts to apply phenomenological techniques to contemporary technological experiences, like slowly loading web pages.²⁰ Tranter explicitly addresses the phenomenology of law and technology.²¹ Michael Polanyi distinguishes between the phenomenological, instrumental, semantic, and ontological aspects of tacit knowing.²²

Duncan Kennedy tackles the phenomenology of legal argument in several pieces.²³ He describes how lawyers and judges tend to think in term of argument bites, like items on a *tapas* plate. Argument recognition and response seem to depend on familiarity with shared understandings about inter-bite dynamics.

Not much has been written about the phenomenology of legal *work*, let alone the special case of machine assistance. Little seems to have been done on human factors engineering around advanced tools in the legal workplace. Yet there's surely useful literature on these topics that the author has not yet encountered, and would welcome being pointed to.

Implications

Looking at machine-assisted legal work through a phenomenological lens should lead us to attend to problems and opportunities that have been neglected. Resulting insights and innovations could have significance for the legal and knowledge engineering professions, and for legal education and the justice system generally.

For Lawyers

A lot of legal intelligence consists of the kinds of behavior sketched here. To remain successful and practice at the top of their licenses, lawyers are going to need increasingly powerful cognitive exoskeletons. Skillful non-biological helpmates may enable them to thrive as more and more free and low-cost services handle commodity work.

We rightly marvel at the subtle power of the human mind, yet its non-biological progeny may outdo all but a vanishing few of its own capacities. Many legal tasks can be dispatched with modest cognitive effort and a decent knowledge base. Lawyers have no monopoly over either of those things. Lawyer time may be the

whale oil of today's economy that is eclipsed by the kerosene of intelligent legal knowledge tools.

Many lawyers implicitly assume that artisanal intransigence will prevail over artificial intelligence. Computational literacy can help them escape from being pawns of received work environments. More sociable systems will drive adoption.

Lawyers should embrace knowledge technologies as complements to professional service. Those technologies can be augmenters and accelerants, not just substitutes. If they learn to leverage machine intelligence, even average lawyers can outperform machine intelligence alone.

For Legal Knowledge Engineers

The legal work that growing numbers of legal professionals will be doing will involve building and supporting systems that others will use to do their legal work.

Knowledge system design may be one of the last refuges for lawyers who want to continue being artisans. But even there machines may eventually know best how to make machines. In the meantime, those who build knowledge systems in support of legal work have a wealth of new phenomena to model.²⁴

For Legal Education

For a helping profession, lawyers spend precious little of their education actually learning how to be helpful to clients and colleagues. Even at progressive law schools little time is spent studying the work lawyers do, let alone how that work can be improved. (Clients may insufficiently appreciate the grand tradition in which most teachers of lawyers, at least in the United States, are spared the indignity of law practice.)

An increasingly essential lawyer skill is recognizing how much of their work could be done better with software assistance. Yet full-time law professors who deeply understand the technology of practice are almost as rare as vegan butchers. Some members of legal academy act as though teaching practice technology would be like the Inns of Court having taught quill sharpening and ink making. The displacement (and enhancement) of human lawyers by artificial systems is prominent in few law schools' curricula, even

though a growing number now at least offer elective courses and extracurricular programs that address the changing profession.²⁵

Just as law students are better prepared for their careers by exposure to the realities of practice, our machines will benefit from experiential education. Conveniently, it turns out that teaching machines how to think like lawyers is a powerful method of human education.²⁶ We can join deep examinations of the lawyering craft with efforts to fashion new tools.

For the Justice System

Most importantly, greater machine brilliance will likely turn out to be critical for the overall effectiveness of our justice systems, which in most jurisdictions woefully fail to affordably serve the legal needs of average people. One root problem is that the legal work required to produce desirable outcomes in many situations costs more than most are able or willing to pay.

There are enormous opportunities to enhance both self-help systems and professional service through advanced systems that better understand the special characteristics of legal work, and enable people to accomplish it more cost-effectively.

Questions and Concerns

The broad considerations in this article raise interesting questions that are appropriately addressed with design thinking. For example,

- How much phenomenological intelligence is optimal in an artificial assistant or colleague? How proactive should it be? How personable? How can we avoid the “uncanny valley” of creepy pseudo-humanism?
- When does artificial curiosity become counterproductively excessive inquisitiveness?
- What happens as our “equipment” becomes not just interactive and intelligent, but social and even sentient? How much will we confide in our machines?
- Are we better served with one or multiple artificial personalities at a time in a given work context?

- How should we deal with the speed mismatch issue? (Human: “Do any of these seven million documents discuss this issue?” Machine, a millisecond later: “Nope.”)
- What interface affordances will optimize the combined effectiveness of human–machine teams?

It seems unlikely that the tricks evolution has stumbled on for imbuing consciousness and intelligent behavior in mammalian brains will indefinitely elude our artificial creations. As our tools become more personality-like, legal and policy issues such as those around the unauthorized practice of law will sharpen.²⁷ Security and privacy concerns that already loom large in the consumer context will present themselves in our work environments. Bots will be hacked and decision support systems colonized by hostile forces. There will be a need for artificial agent identity control and verification.

Some tend to regard the rise of machine intelligence as AI versus us humans. It will more likely pit humans against humans over access to such intelligence. It may be that one day only the rich will afford the best legal machine intelligence, and others will have to settle for flesh-based lawyers.

Taking Flight

We are in a period of exploding computational power and rapid advances in deep learning. As machines are more expansively involved in our legal work lives, we’ll need to keep thinking beyond today’s form factors. Our non-biological assistants should be about more than just doing our chores; they should be more than appliances in our legal kitchens.

Even if ultimately computers do most of our legal thinking for us, humans will still commission the work and human lives and values will still largely be the subjects of that cognition.

Legal work will be even more interesting when our tools can be actively part of the conversation. All such developments present both opportunities and dangers. As with self-driving cars, highly automated legal work processes will raise challenges such as over-reliance. As with robotic musicians, such processes will open new frontiers of creative expression.

It is time to think about radically new ways machines can help with legal work. They present a breathtaking expanse of largely unexplored territory. Those working in the AI & Law field should spread their wings and ascend into the rarefied atmosphere overlooking that landscape. That flight will be smoother if we adopt an attitude of reflective attention to the human experiences that are the subjects and sinews of legal work.

Notes

* Marc Lauritsen, president of Capstone Practice Systems, is a lawyer, educator, and software developer. Mr. Lauritsen taught in and directed the clinical program at Harvard Law School, and directed Project PERICLES, a research program in law and computers. Mr. Lauritsen may be reached at marc@capstonepractice.com. The author is grateful to Aileen Leventon, Jordan Furlong, Ken Grady, and Ron Friedmann for their constructive feedback on drafts of this article.

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26. This was the focus of a presentation by the author on “Learning Law by Teaching Machines How to Think Like Lawyers” at a 2014 Stanford Law School event, which can be viewed at <https://www.youtube.com/watch?v=C01legdVziA&feature=youtu.be&t=27m14s>.

27. See Lauritsen, M. Liberty, Justice, and Legal Automata. *Chi.-Kent L. Rev.* 88 (2012): 945.