

Unlocking the Potential of AI for English Law

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Abstract

This paper discusses how digital technologies including artificial intelligence (AI) reshape the work of lawyers and the organizations that they work for. We overview how AI is being used in legal services, and identify three distinct impacts: AI substitutes automatable legal tasks; AI enhances productivity of lawyers giving advice on the basis of AI-generated outputs; and legal expertise itself augments the deployment of AI when lawyers work as part of a multi-disciplinary team (MDT) encompassing a range of relevant professional expertise. Our survey of English solicitors shows that AI deployment is associated with MDTs, and that MDTs are less prevalent in law firms than in corporations. This latter finding is due to challenges that law firms face as mono-professional partnerships. We find evidence from our interviews that their challenges lie not so much in capital constraints, relaxed via alternative business structures in the UK, but in traditional law firms' inability to recruit and retain talent other than those in the legal profession. Inadequate adaption is occurring in law firms shifting their structure from a funnel shape to a rocket shape with junior lawyers in partnership tournament working alongside a growing number of non-lawyers whose career paths offer no prospect of partnership.

Introduction

One of the many important questions explored in Philip Lewis' work on the sociology of the legal profession was how lawyers' identity and role was linked to what they *do* and what they *know* (Abel and Lewis 1989). In this paper, we consider the extent to which modern technology—in particular, artificial intelligence (“AI”)—is re-shaping the answer to this question. How will new technologies such as AI change the work of lawyers, the knowledge they require, and the legal profession?¹ The topic has generated heated debates, with some arguing that the entire profession will be radically transformed (Susskind and Susskind 2015) while others maintain that robots will never be lawyers (Remus and Levy 2017). We shed light on these issues through a systematic empirical study of the deployment of AI in legal services.

We first explore the way in which AI and related technologies are impacting the work of lawyers. Advances in technology mean automated systems are capable of substituting for humans in an ever-increasing range of tasks. While AI substitutes for humans in tasks that are automated, it simultaneously increases the productivity of—and hence, demand for—humans performing the tasks that cannot (yet) be automated, who will benefit from the technology as an input to their work. Moreover, the deployment of AI itself engenders new roles for human workers, typically working together in multidisciplinary teams (MDTs). In the context of legal services, such MDTs combine legal expertise with a range of other specialisms including data science, project management, and design thinking. The work done by those with legal expertise working as part of such teams is very different from traditional “lawyering”.

We then turn to the impact these changes are having on the firms in which legal services are delivered. Today’s AI entails significant fixed costs for deployment, meaning its roll-out in legal services has so far been focused on corporate and commercial legal services. We show that law firm partnerships struggle to recruit, co-ordinate and retain the MDTs necessary for the deployment of AI. Participation as a “non-lawyer”, with associated ceilings on career and earning potential, is unappealing to high-quality experts from other disciplines. The successful production of AI-enabled legal services consequently creates friction with law firms’ traditional organisation as mono-disciplinary partnerships.

While UK law firms have since 2010 been permitted to organise as companies and/or to have multi-disciplinary partnerships, we see few examples of large law firms restructuring to take advantage of technology. Such firms appear to be focusing their efforts on legal advisory work that cannot be replicated by technology: for the human lawyers who do this work, the partnership form likely remains an advantage. Nevertheless, such firms cannot wholly outsource the deployment of AI technology, with the result that their internal structure has had to change to accommodate the MDTs.

The rest of this article is structured as follows. In the following section, we firstly consider the technological capabilities of today's AI and present findings about its impact on legal services work. We then turn to the way in which these changes in legal services work are impacting the organisational form and internal structure of large law firms. Our findings are based on a mixture of survey-based and interview data.

AI and lawyers

Today's AI and the impact of automation

Wholesale transformation of the professions by technology has long been predicted by some commentators (Susskind 2000, Susskind 2008, Katz 2012, Katz 2014, Susskind and Susskind 2015). Others respond that much of lawyers' work cannot be performed by automated systems, nor are machines likely to develop such capabilities any time soon (Remus and Levy 2017). Various recent survey-based studies, including our own work, indicate that AI usage in legal services is modest but increasing rapidly (Clay and Seeger 2018, Sako, Armour et al. 2020). But how will this extrapolate, and with what impact on lawyers and the firms in which they work?

The general literature on the future of work suggests that automation results in three distinct types of change. First, machines substitute for humans in some types of task (Autor 2015, Acemoglu and Restrepo 2020). Secondly, it should be appreciated that the productivity of workers performing tasks that cannot (yet) be automated is enhanced by automation of the first category of tasks (Autor, Levy et al. 2003, Autor 2015, Grennan and Michaely 2019). Third, the implementation of automated systems itself creates new tasks for humans—for example, design, customisation, maintenance and oversight (Acemoglu and Restrepo 2019). This means automation has mixed aggregate effects on human workers: reduced demand for those whose roles consist primarily of the first type of task alongside increased demand for roles addressing

the second and third type of task.² To apply this to legal services, the key question becomes: which tasks are which? This requires us to consider the scope of what is possible with AI.

We take “artificial intelligence” to involve the use of automated systems to perform tasks normally requiring human intelligence (Minsky 1983, Wang 2019). The last decade or so has seen a dramatic increase in the capability of AI-based systems (Wooldridge 2020). While we are still far from any kind of “artificial general intelligence” that would equal humans in the round (Long and Cotner 2019), today’s AI systems are capable of substituting for humans in an increasingly-wide range of tasks.³ In the last decade, much progress has been made using a “bottom up” inductive approach to AI known as “machine learning” (ML).⁴ Rather than deriving answers from rules—the creation of which is very labour-intensive—ML develops classifiers for recognizing patterns from the data itself (Russell and Norvig 2010).⁵ The most widely-used approach to ML is “supervised” learning, which means training a system using a set of data labelled by humans according to the dimension of interest (Ford 2018).⁶ The larger the dataset, the more effective the results (Halevy, Norvig et al. 2009). This means that ML can be deployed usefully only where there are sufficient prior examples from which to learn. So-called “transfer learning”—that is, taking concepts learned in one context and generalizing to apply them in another—while natural for humans, is still limited to modest sideways steps in ML. Consequently, tasks requiring “creative intelligence”, to solve problems for which there are no obvious prior examples of answers, also remain beyond current ML systems (Frey and Osborne 2017). It follows that AI is unlikely to substitute for human lawyers doing work that is “bespoke”—novel in character and unlikely to be repeated. Similarly, tasks involving “social intelligence”—reading the subtle verbal and non-verbal cues of human interaction—remain beyond the capacity of AI (Frey and Osborne 2017). This implies that client-facing interactions such as constructing the brief at the outset, and relaying advice once prepared, are likely to continue to require human lawyers (Flood 2019). These interactions require lawyers to assess

the in real-time the client's sentiments, motivation and reactions, to gauge the efficacy and comprehensiveness of communication, and determine whether further questions or advice are needed.

Moreover, labelling legal data will generally require human professional expertise, which is costly. Consequently, economic viability depends on usage scaling across enough examples to absorb the costs of labelling (Varian 2019). For most legal applications, these conditions are quite restrictive. Established use-cases in legal practice consequently focus on finding specified material in a large mass of documentation. To be sure, the deployment of AI in these contexts is not a new idea (Evans 1990, Susskind 1990). What has changed in recent years with the advent of machine learning is the power of the technical systems, meaning the scope of potential deployment in each context has increased.

AI and legal services work

The earliest adoption of ML was in the context of the review of electronic documents for their relevance for a discovery exercise (Grossman and Cormack 2011). Here, there are no problems with data availability—indeed, it is the very abundance of data that motivates the application.⁷ ML models are increasingly also coming to be used in due diligence for large transactions, to review large volumes of contracts for potentially problematic terms. Relatedly, ML models can also be used to review incoming day-to-day contracts for a user. In these contexts, potentially problematic terms are likely to be similar across matters, permitting economies of scale in the use of ML models. In a wide range of settings, lawyers may also make use of AI in supporting legal research. For example, ML is harnessed to analyse search results and highlight words according to relevance, and to identify citation links between cases. Looking forwards, emerging applications include ML analysis of past litigation data—not only facts and precedents, but also the records of judges and litigants—with a view to predicting outcomes in

future disputes (Aletras, Tsarapatsanis et al. 2016, Katz, Bommarito et al. 2017, Petrova, Armour et al. 2020). Finally, the application of AI to the “business of law” entails leveraging proprietary data about work patterns within an organization to enable more accurate timetabling of work, thus facilitating output-based pricing models. This type of application sits alongside more general AI-enabled human resource and client relationship management applications that have become ubiquitous in many organizations generally (Ransbotham, Kiron et al. 2017, Davenport 2018).

To explore the use of AI by lawyers in the UK, we conducted a survey of practising solicitors in conjunction with the Law Society of England and Wales (the “Law Society”) over the period November 2019 to January 2020 (Sako, Armour et al. 2020). The survey was distributed on our behalf by the Law Society, who also assisted with the survey’s drafting, to a section of its membership list. The survey invitation was initially sent to 10,000 randomly-selected Law Society members; a subsequent invitation was targeted by reference to under-represented respondent groups – in particular, junior lawyers.⁸ We received a total of 353 valid responses from solicitors.⁹ Of these, 236 (67 per cent) worked for law firms, 99 (28 per cent) worked for the in-house department of a business corporation, and 18 (5 per cent) worked for other types of organization, including those trading as “alternative business structures” (ABSs) and lawtech solutions providers. According to the most recently available Law Society data (Law Society 2019), our private practice respondent percentage is therefore somewhat lower than that of the English and Welsh solicitors’ profession as a whole (74 per cent), while our in-house response rate is slightly above the in-house profession average of 22 per cent. Our response rate among ABS-based solicitors was slightly below the 7.52 per cent English and Welsh average.

Respondents were asked about the organization they work for, and their role within it; their professional qualifications and career aspirations; their use of technology generally and AI-

assisted legal technology specifically; the expertise of colleagues with whom they work on a daily basis to complete legal work; types training they had received—and would like to receive—in relation to legal technology, and questions about their attitude to the deployment of legal technology.

The results give a sense of the relative levels of uptake across these different use-cases in the UK legal community. We asked respondents, who were lawyers in private practice in England and Wales, “In which context(s) do you currently use AI-assisted legal technology?”¹⁰ As shown in Table 1, just under half (48 per cent) of respondents indicated that they used AI-assisted technology in one or more context. More specifically, 28 per cent used it for legal research, 16 per cent for due diligence, 14 per cent for discovery-related work, 12 per cent for regulatory compliance, 10 per cent for contract analytics, 8 per cent for predictive billing and/or utilization analytics, 2 per cent for predictive analytics for litigation, and 7 per cent in any other context. Where AI is deployed in these legal services use-cases, it substitutes for humans in performing scalable tasks, and augments the productivity of human lawyers who use the output of the process. As we will see, deployment also generates new roles.

Table 1: Use of AI-assisted legal technology by solicitors in the UK

Use-case for AI-assisted legal technology	# using	# not using	% using
eDiscovery / eDisclosure / technology-assisted review	48	301	13.8%
Predictive analytics for litigation	7	342	2.0%
Due diligence	57	292	16.3%
Contract analytics	34	315	9.7%
Regulatory compliance	41	308	11.7%

Legal research	98	251	28.1%
Fee-earner utilisation analytics / predictive billing	29	320	8.3%
Other	25	324	7.2%
Any use-case for AI-assisted legal technology	169	180	48.4%

Deploying AI in legal services involves establishing a workflow with a series of steps (Armour and Sako 2020): (i) define a problem; (ii) select an ML model; (iii) prepare a relevant dataset—select and label it appropriately, while ensuring its integrity, security and relevance to the task at hand; (iv) train the model using the dataset and tests the results; (v) apply the trained model to generate outputs; (vi) review outputs for consistency; and (vii) evaluate and explain implications of the output. Of these, all steps except (v) (generate outputs) require human inputs. Moreover, these human inputs are a combination of professional knowledge across different fields including law but also in data science, software engineering, information security, project management, and design thinking. Lawyers initiate the process by defining a legal problem, but specifying the workflow upfront also requires non-lawyer expertise including in project and process management.

The point in the process at which AI substitutes for humans is step (v). At each of the other steps, human expertise—a multidisciplinary mix of this and other specialisms—supports the AI system’s functioning. Successful AI implementation necessitates close collaboration by lawyers and other professionals in multidisciplinary teams. While legal expertise is an important part, changes in work design resulting from AI adoption are likely to alter the nature of lawyers’ job, not least by shifting the boundaries of “jurisdictional domains” to which lawyers make exclusive claims (Abbott 1988). The emergence of a new expert division of

labour, between what only lawyers can do and what non-lawyers are permitted to do, is likely to be a contested process (Reed 1996).

There is evidence that some firms are seeking to recruit individuals with different disciplinary backgrounds (e.g. lawyers and data scientists separately) and integrate them together in teams; other firms are seeking individuals who themselves combine multidisciplinary backgrounds (e.g. lawyers who can code) (Qian, Saunders et al. 2020). Either way, the diffusion of multidisciplinary teams is likely to lead to the emergence of “hybrid professionals” (who develop a relational capability vis-à-vis expertise in other areas) or “organizing professionals” (who embed organizing capabilities with professional action) (Noordegraaf 2007, Blomgren and Waks 2015, Noordegraaf 2015). That is, lawyers may come to be expected not just to give legal advice, but to work with other disciplines to design and manage the provision of good quality legal services. This goes beyond senior lawyers taking on managerial positions to supervise lawyers; it embraces even junior professionals adopting managerial and technical expertise into their own professional practices and identities.

Table 2: Cross-tabulation of use of AI-assisted legal technology and participation in MDTs

		Uses any AI lawtech		
		No	Yes	Row
		(Column percentage)	(Column percentage)	Totals
Works in MDT	No	132	98	230
		80.5%	60.1%	
	Yes	32	65	97

	19.5%	39.9%	
Column	164	163	327
Totals	100%	100%	

The foregoing discussion suggests a positive association between MDTs and the deployment of AI. To test this, we asked survey respondents to indicate the types of specialist experts with whom they worked on a day-to-day basis within their organisation. Respondents were asked to select as many as were applicable from the following list: paralegals, other solicitors/lawyers, legal project managers, process mapping experts, data analysts/data scientists, and IT/legal innovation experts. Given that all respondents were practising solicitors, those who selected only “paralegals” and/or “other lawyers” can be characterised as working together only with personnel who have traditionally “legal” expertise; conversely, working with other types of expert can be taken as a proxy for engagement with multi-disciplinary teams (“MDTs”).¹¹ We used this to create an indicator variable for “MDTs”. Table 2 shows a cross-tabulation of the MDT indicator variable with whether or not a respondent used any AI-assisted legal technology on a day-to-day basis. Of 164 lawyers who did not use any AI-assisted lawtech, 132 (80.5%) did not work in MDTs, whereas of the 163 who did use AI, only 98 (60.1%) did not work in MDTs. A Chi-squared test confirms that the two variables are clearly not independent.¹² Further analysis in a multivariate setting shows that the positive correlation between MDTs and AI adoption is robust to the inclusion of control variables for the respondents’ length of career (years since qualification), use of non-AI legal technology, training received in legal technology, and organisation type (Armour, Parnham et al. 2020).

These findings suggest that the impact of AI on the work of lawyers is more than simply a question of identifying tasks for which it can substitute for humans. AI’s deployment engenders

a range of new tasks, requiring multidisciplinary expertise, to ensure successful operation of technical systems. Thus humans with legal expertise will be called on either to perform traditional tasks—such as client-facing work—that remain beyond the scope of technology, or to work in a more multidisciplinary setting performing new tasks. The first modality implies an intensification of traditional activities and knowledge. The second suggests a significant departure from both.

AI and Legal Services Firms

Organisational forms in legal services

Our findings about the way in which AI is impacting legal services work have implications for the way in which legal services firms are organised. Lawyers traditionally organise in partnerships—an organisational form in which senior employees are the residual claimants, and which fosters a consensus-based decision-making style. In many jurisdictions, use of the partnership form is mandated by professional ethics rules, which prohibit lawyers from sharing profits with non-lawyers to avoid conflicts of interest. This rule was relaxed in England and Wales by the Legal Services Act 2007, which ushered in a new regulatory regime that was specifically intended to foster experimentation with new organisational forms (Clementi 2004, Flood 2012). Under the Legal Services Act regime, lawyers are permitted to apply for licences to organise as ABSs involving ownership by non-lawyers. This can encompass companies with outside shareholders and partnerships with other types of professional.

The rationale for the introduction of ABS had two aspects that were relevant to the implementation of AI. First, it was thought that access to the corporate form would permit law firms to raise outside capital more easily. A key function of company law is to protect outside shareholders, in order to stimulate their investment *ex ante* (Kraakman, Armour et al. 2017). A business organised as a partnership, on the other hand, can only raise equity finance from its

partners. Partners may face constraints on their liquidity meaning this inhibits access to capital for the business. Commentators argue that restrictions on capital-raising impede investment in legal technology (Hadfield 2007, MacEwen, Regan Jr et al. 2008, Hadfield 2014). Removing these constraints to facilitate investment where appropriate was part of the thinking underpinning the introduction of ABS (Clementi 2004). Second, the new regime was explicitly intended to facilitate multi-disciplinary teams by removing the mono-disciplinary constraint on ownership and management in law firms (Clementi 2004).

Law firm partnerships' challenges with MDTs

We conducted 52 interviews with professionals involved in the implementation of AI in legal services.¹³ A key theme emerging from these was the difficulties faced by law firm partnerships over the implementation of MDTs. This had two related aspects. First, the recruitment, retention and motivation of key MDT members whose expertise is non-legal. Professionals with data science, project management or process engineering skills are in high demand across a range of sectors. Traditional law firms are relatively unappealing places for them, because there are only limited opportunities for internal career progression. Senior roles in a traditional mono-disciplinary law firm are open only to lawyers. As one of our law firm interviewees put it:

“[W]e’re obviously a very good firm, with a good brand name associated, but in terms of access to young talent, in the software space, they normally don’t want to join a law firm – they want to go and work for a cool software company.”

In contrast, career progression in a multi-disciplinary organisation can be independent of disciplinary background. Firms structured as a company have the additional advantage of facilitating motivation even of relatively junior personnel through stock-based pay. Stock-based pay is ubiquitous in the technology sector (Ittner, Lambert et al. 2003, Oyer and Schaefer

2005, Chang, Fu et al. 2015, Chen, Chen et al. 2016) and traditional law firms' inability to offer this is a further deterrent for relevant personnel (MacEwen, Regan Jr et al. 2008).

The second dimension in which law firms appear to struggle with implementing MDTs concerns strategic decision-making. The partnership form tends to deliver consensus-oriented decision-making. This works best when all participants share a (relatively) similar outlook—as is the case where they are all legal professionals (Hansmann 1990). In contrast, companies delegate strategic decision-making to a board of directors (Kraakman, Armour et al. 2017) who are able to make decisions on behalf of a wide range of participants. This can be more effective where strategic decisions need to be made rapidly in the face of uncertainty. Moreover, a mono-disciplinary partnership means that the firm's leadership lack expertise about the value of activities outside their discipline, and deploy personnel to oversee functions for which they lack substantive understanding.

“[Y]ou look at your average business unit in a law firm and you've got law firm partners whose skills, frankly, are in the law, trying to do account management, supervision, team management, resource allocation, QA [quality assurance], things that they're ... not qualified to do.”

These insights suggest that a corporate organisational structure likely better complements workers operating as a MDT than does a lawyer-only partnership. This hypothesis is also borne out by our survey data. Controlling for use of legal technology, prior training and career seniority, solicitors working in law firms are significantly less likely to work as part of a MDT than those working in-house in a corporation (Armour, Parnham et al. 2020).

The Clementi review saw multi-disciplinary partnerships as a way for different types of professionals to group together to provide a cluster of services for clients across a wider scope of activities than was previously possible, and the facilitation of technology as being largely

through access to financial capital. These were characterised as two distinct ways in which ABS could be deployed.

In contrast, our findings suggest that these channels interact with one another. For our interviewees, the key disadvantage for partnerships seeking to implement AI is not so much limits on the availability of financial capital, but rather, constraints on relevant human capital necessary to form MDTs. Multi-disciplinarity therefore not only facilitates increasing the scope of professional services offered to clients, but also enhances the depth of technological support in the provision of any particular set of services. Our findings therefore shed new light on the vectors through which choice of organisational form can complement the implementation of technology in legal services.

AI and organisational forms in legal services

The difficulties faced by law firm partnerships in implementing MDTs consequently puts them at a disadvantage, relative to firms organised as companies, in the implementation of AI. This in turn poses an important question: will the implementation of AI trigger a change in organisational form for law firms?

There are now over 1,100 licensed ABSs, as against a total population of over 10,000 law firms.¹⁴ About half of these ABSs have transformed from law firm partnerships (LSB 2017), and a sizeable number have consequently changed the way in which they raise finance, to invest more in technology and innovation (SRA 2014). However, the vast majority of these law-firm-to-ABS moves have been very small firms whose clients are individuals rather than businesses (LSB 2017). While there have been one or two high-profile restructurings of larger incumbent law firms that focus on the corporate sector, such as DWF—which underwent an IPO in 2019 (DWF 2019, Armour and Sako 2020)—these have very much been the exception (Aulakh and Kirkpatrick 2016). Consistently with this, amongst our the practising lawyers who responded

to our survey, only 12 worked in organizations that were ABSs, as opposed to 236 who worked for traditional law firms (Sako, Armour et al. 2020). This raises an obvious question: why have these law firms not embraced the opportunity to restructure as ABSs, given the disadvantages we find the lawyer-only partnership form faces in implementing AI?

Inertia might be a possible explanation, but this becomes decreasingly plausible over time, and it is now a decade since the opportunity to switch to ABS first became available at the start of 2011. Our analysis and results suggest, on the other hand, an economic explanation for large law firms' continued adherence to the partnership form despite the advantages of the corporate form for deploying technology. The professional partnership is a very effective form for recruiting and motivating the human capital associated with traditional legal advisory work. Such human capital is highly mobile. So long as it remains valuable, the partnership form in turn is a valuable complement to it, which would be lost by switching to the corporate form.

Our findings suggest that the implementation of AI in legal services will increase the value of the human capital of traditional legal advisers who utilise the output of AI-enabled technologies in the performance of their work—lawyers as “consumers” of AI-enabled legal services (Armour, Parnham et al. 2020). For law firms whose human capital predominantly falls into this category, the benefits of the partnership form will correspondingly increase, rather than decrease. While the pattern of AI adoption—and indeed technology adoption more generally—has been very much skewed towards larger firms (LSB 2018), presumably because of the economies of scale, large law firms who serve corporate clients will at the same time have more valuable aggregate pools of human capital than small firms who serve individual clients.

Meanwhile, some so-called “alternative legal service providers” have chosen to become ABSs in order to practice law directly.¹⁵ For example, law companies such as Elevate and UnitedLex operate as ABSs in the UK. Moreover, the Big Four accounting and audit firms all have their

legal wings – Deloitte Legal, EY Legal, KPMG Legal, PwC Legal – approved as ABSs. This enables them to practice law in areas – tax, regulatory, government investigation – that are complementary to their audit and accounting practices. Their sheer size gives them resources to invest in technology, including AI.

This implies that traditional law firm partnerships will likely continue to focus on giving (human centric) legal advice, in so doing consuming some AI-enabled legal services as inputs; and corporate in-house teams and/or independent law companies may have a comparative advantage in “producing” technologically-enabled legal services. The appropriate organizational form will be a function of whether the value of the (traditional) legal human capital that is augmented by technology is greater than the value of the AI-enabled technology. For a law firm with a traditional legal advisory business model, the value of their traditional legal capital is likely to be greater than the value that would be obtained from developing AI-enabled services in-house as opposed to buying them in. For a firm specializing in the deployment of legal technology (i.e. an ALSP law company) or the in-house team of a large corporation, the reverse is likely to be true.

Of course, this does not imply that producers of AI-enabled legal services will necessarily work in different organizations from the consumers of these services. Within a corporate in-house team, there will often be both; outside law firms have the option to acquire technology companies as subsidiaries, ALSPs are recruiting practising lawyers. Firms may be expected to combine all aspects of the value-chain for AI in legal services in this way where the associated friction between their human capital needs and their organizational form is less than the costs of contracting with another firm (Armour, Parnham et al. 2020). Yet even where such combination occurs, the choice of overall organizational form can be expected to complement the recruitment, co-ordination and motivation of the personnel associated with the most valuable assets for the business, be they human capital or technological capital. Doing both

under one roof, while not impossible, requires clarity around the scope of the legal profession, as well as aligning organizational structure to business model combinations.

AI and law firms' internal structures

While large law firms may not be changing their organisational form, the implementation of AI is nevertheless affecting their workforce composition and internal structures. Law firms have traditionally been organised around a “tournament” of junior lawyers, who compete for promotion to a limited number of partnership slots (Galanter and Palay 1993, Galanter and Henderson 2007). This gives rise to what has been termed a “funnel-shaped” internal structure (Galanter and Henderson 2007), in which a relatively large number of junior lawyers providing support to a far smaller number of partners, with an “up-or-out” approach to junior lawyer attrition.

By contrast, Veith, Bandlow et al. (2016) articulate what they term a “rocket-shaped” structure for law firms, under which the total number of junior lawyers is more closely aligned with the partnership positions that are ultimately available. This is because much of the work previously undertaken by junior lawyers is instead carried out by two distinctive “wings” of support personnel, neither of whom are on the track to partnership. In Veith et al.’s account, one of these wings sees overtly law-related work displaced to legal technicians, including paralegals and legal project managers. The second wing is more technology-focused and is overseen by technology managers.

Our interviews with law firm personnel were in multiple ways consistent with a shift from “funnel” to “rocket” shaped internal structure. Several of our law firm interviewees told us that their practices were (modestly) scaling back their reliance on permanently-employed legally qualified personnel, while also building up their lawtech capacity, including AI-assisted lawtech capacity. For example, one law firm representative observed that their practice was

experimenting with an AI-assisted workforce capacity prediction tool, which aimed to match better the supply of legal fee earners with demand, thereby reducing the firm's likelihood of over-hiring. Meanwhile, an interviewee from another firm indicated that their practice had become better at managing its legal resources requirements in recent years, allowing it to almost halve its annual trainee solicitor intake. Looking forwards, a representative from a third law firm predicted that the percentage of lawyer involvement on matters was likely to fall from its current 80 per cent to closer to 60 per cent, with a markedly increased role for "business skills professionals".

Moving from the work of lawyers on the partnership track to personnel working in the support wings, our interviews revealed a very diverse range of specialisms—more broadly so than suggested by Veith, Bandlow et al. (2016). For the "legal" wing, several of our interviewees confirmed they now employed legal project managers – a relatively new concept within the legal profession (Henderson 2011), particularly in an overtly legal services delivery context (Jomati Consultants LLP 2016). However, the more junior roles identified by our interviewees went beyond simply paralegals, and also included – amongst others – legal engineers, legal analytics specialists and eDisclosure specialists. Moreover, in relation the "technology" wing, our interviewees described a very wide range of roles, including business analysts, coders, data scientists, data architects, innovation assistants, platform engineers, process engineers and user experience ("UX") specialists, together with wider teams covering topics such as automation, data analytics, research and development ("R&D"), and transformation more generally. Together, these suggest that outside the core "partnership track", large law firms now encompass a broad range of different personnel working in MDTs. Moreover, the scope and function of these MDTs—whether "legal", "technology", or otherwise—varies somewhat across firms. Taken in the round, our findings suggest that while law firms are not changing their organisational *form*, they are significantly changing the organisational structure for their

personnel. The traditional law firm “funnel” archetype is now being superseded by structures that are more akin to the “rocket” archetype, but with greater diversity of disciplinary input than suggested by Veith, Bandlow et al. (2016).

It remains to be seen how these changes in personnel mix will affect the overall headcounts of law firms. Amongst the firms whose personnel we interviewed, the total number of MDT personnel employed in the support wings tended to be relatively small, compared with the firm’s qualified lawyer headcounts.

Conclusions

In this article, we have drawn on our mixed-methods empirical study of the use of AI in UK legal services to consider how advanced technologies of this type are changing the work of lawyers and the organisation of law firms.

The impact of AI on what lawyers do has three distinct dimensions. Most obviously, human lawyers will no longer need to do those tasks which are capable of cost-effective automation. The category of tasks capable of automation by AI is increasing, but for the foreseeable future excludes activities that do not have prior examples with which to train an automated system (“bespoke” work requiring “creative intelligence”) or which requires an understanding of social context (such as client-facing work). Moreover, training an AI model requires a sufficiently large and relevant dataset to be available, which means it will not be cost-effective in all cases where it may be technically feasible. This technology is already impacting repetitive tasks such as finding documents for a pre-trial disclosure exercise, contract review and due diligence work. It is also increasingly being used to aid legal research.

Many traditional “lawyering” tasks remain beyond this technical possibility frontier, however. For example, in a contentious context, applying legal expertise to a particular set of facts; or in a transactional context, drafting a highly customised agreement, remain matters for which

human expertise is required, as do actual interactions with clients. The advent of AI serves to intensify human lawyers' focus on this type of work: it is where their comparative advantage lies. For lawyers performing this traditional but "human-centric" work, AI may have only a limited direct impact on what they do.

However, AI is bringing considerable changes along a third margin: the creation of new roles to expedite and oversee the deployment of the relevant technical systems. Data preparation and labelling, and quality control and technical refinement of the system are continuous feedback processes that require input from a multidisciplinary team of humans. These include not only data scientists and project managers but also personnel with relevant legal expertise. The work of these legal experts looks very different to that of traditional lawyers, as it is built around multidisciplinary engagement, and it remains unclear whether the term "lawyer" is appropriate to describe their roles.

Deploying AI entails economies of scale because of the need for a large and relevant dataset to train the system. This means that its deployment in UK legal services has so far been a phenomenon limited to the largest firms, serving corporate and commercial clients. The changes to legal services work we have described are also impacting the way these firms are organised. We document how traditional law firms organised as mono-disciplinary partnerships face difficulties in recruiting, co-ordinating and motivating the multidisciplinary teams needed to deploy AI. Yet despite this, few such firms have elected to restructure their organisational form under the post-Clementi framework. Rather, the changes have been to their internal structure. The traditional "funnel-shaped" structure of many junior lawyers competing for a limited number of partnership places is being replaced with a "rocket-shaped" structure in which there are relatively few junior lawyers in the partnership tournament, along with growing numbers of auxiliary multidisciplinary teams, whose career structure offers no prospect of partnership.

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¹ This question is distinct from, but resonates with, another aspect of Philip's work, which explored the particular roles played by lawyers in managing relations between technology firms in Silicon Valley: Lewis, P. S. (2019). *Litigation in Silicon Valley Industries. Law And Technology In The Pacific Community*, Routledge: 167-196.

² The aggregate impact so far appears to have reduced demand for human workers across the economy as a whole, but varies considerably by sector: Acemoglu, D. and P. Restrepo (2020). "Robots and jobs: Evidence from US labor markets." *Journal of Political Economy* **128**(6): 2188-2244.

³ By focusing on "today's" AI—that is, the state of technical possibility within the next few years—we can ground the discussion in technical literature rather than speculation. See Armour, J. and H. Eidenmuller (2020). "Self-Driving Corporations." *Harv. Bus. L. Rev.* **10**: 87.

⁴ Russell, S. and P. Norvig (2010). *Artificial Intelligence: A Modern Approach*. London, Pearson.

⁵ Much of the most recent developments have been in a sub-field of ML known as "deep learning".

⁶ The 'supervision' lies in the identification by humans of the variable of interest in labelling the training data. In contrast, with so-called "unsupervised" learning, the model searches for and identifies patterns in the data without prior indication as to what is the variable of interest.

⁷ However, as the circumstances relevant to each dispute are highly specific, this necessitates the training of a new ML model for every dispute to which the technique is applied.

⁸ The survey was distributed anonymously using the Qualtrics platform, and had 20 questions with pre-coded responses (for the survey text, see Armour, J., R. Parnham and M. Sako (2020). *Augmented Lawyering Working Paper*, University of Oxford.). The questions were developed in light of nearly 50 open-ended interviews, and refined following a small pilot study. In light of a very low response rate to the pilot, the survey was shortened and focused to ensure it could be completed within 10 minutes. For the main survey, 10,000 potential respondents were selected at random by the Law Society of England and Wales from their register of members and sent an anonymous link to the online survey to complete. The survey link was then shared with the Law Society's Technology and Law Committee and through the Law Society's social media channels to solicit further participation from Law Society members. In order to increase survey participation, subsequent survey invitations included those aimed at under-represented groups of respondents, such as members of the Law Society's Junior Lawyers Division. For further details of the survey responses and methodology, see Sako, M., J. Armour and R. Parnham (2020). *Lawtech Adoption and Training: Findings from a Survey of Solicitors in England and Wales*. Oxford, Oxford University.

⁹ A total of 427 responses were received, of which 74 were incomplete. The overall (complete) response rate was below 4.3% (3.5%).

¹⁰ We told respondents that by "AI-assisted" we meant "technology that uses an expert system, machine learning, and/or deep learning."

¹¹ This proxy does not capture respondents' own perceptions of disciplinarity; rather, it seeks to distinguish according to the type of expertise (legal / nonlegal) possessed by the persons with whom the respondent works on a day-to-day basis.

¹² $\chi^2 = 15.289$, $p = 0.000092$.

¹³ Interviews were conducted with professionals – both lawyers and non-lawyers – working in large law firms, corporate in-house teams and so-called "alternative legal service providers". Interviewees were selected on the basis of the relevance of their organisation for our research questions. The interviews were semi-structured: an aide memoire was distributed in advance, but the conversation was permitted to deviate from this to follow relevant lines of enquiry based on early responses. All interviews were recorded and transcribed;

transcripts were edited to ensure anonymity. For further details of the interview methodology, see Armour, J., R. Parnham and M. Sako (2020). *Augmented Lawyering Working Paper*, University of Oxford.

¹⁴ The Solicitors Regulation Authority (SRA) keeps a register of licensed bodies (ABS). As of August 15, 2020, the total was 1,109. See <https://www.sra.org.uk/solicitors/firm-based-authorisation/abs/abs-search>

¹⁵ Alternative legal service providers encompass a heterogeneous range of firms that deliver aspects of legal services whilst not being “law firms” see ThomsonReuters (2019). *Alternative Legal Service Providers 2019*. <https://legal.thomsonreuters.com/content/dam/ewp-m/documents/legal/en/pdf/reports/alsp-report-final.pdf>.