

## Chapter 3

### LawTech Education: A View from Oxford

Rebecca Williams and Václav Janeček

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#### **Short bios:**

Rebecca Williams is a Professor of Public Law and Criminal Law at the University of Oxford, in association with Pembroke College. Rebecca's principal teaching interests are criminal law and public law. Her work includes examining optimum methods of decision-making and the use of criminal law as a form of regulation. Increasingly her work also focuses on the relationship of law and technology and the ways in which the law will need to develop in order to keep pace with technological developments.

Václav Janeček is a Visiting Research Fellow in Law and Technology at Masaryk University in Brno and a Research and Course Development Fellow in Law and Technology at the University of Oxford. He currently explores judicial remedies for illegal online tracking and the role of public interest in the law of damages. His work also seeks to understand how lawyers and computer scientists can learn to work together more efficiently.

#### **Abstract:**

This chapter presents the main findings of the Law and Technology Education research group at the University of Oxford and discusses the results of the group's recent interdisciplinary project (2019–2021). The chapter identifies five main areas of learning need in this area and presents two successful examples of a university-led teaching provision that aims to satisfy these needs.

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#### **Introduction: The transformation of law and legal practice**

We are on the cusp of the transformation of law and legal services through the application of Artificial Intelligence (AI). The near future will see changes to the way in which legal services are delivered and the business models underlying them (Armour and Sako, 2020), and the motivations for adopting technology to automate or augment legal practice are obvious (Armour, Parnham and Sako, 2020). From the perspective of a private enterprise, gains in efficiency can translate into reduced prices and thus greater competitiveness. From a broader public perspective these reduced prices can also translate into increased access to justice, particularly for small and medium sized businesses and individuals.

In addition, technology seems likely also to have an impact on the substance of legal practice as lawyers increasingly have to grapple with the application of their particular area of expertise to new problems arising from the use of technology. Thus, employment lawyers will have to consider the use of algorithms in hiring and monitoring staff; property lawyers will deal increasingly with digital assets; public lawyers will challenge decisions made by or with automated systems and so on. What skills, then, will lawyers need in order to be 'future ready' and how can educators empower them with the necessary skills to optimise these digital aspects of the future and their role in it?

As part of a large-scale interdisciplinary research project 'Unlocking the Potential of Artificial Intelligence for English Law',<sup>1</sup> bringing together experts in law, business, education, computer science and economics, we sought to answer both questions through two main forms of research. First, in order to identify the skills gaps we conducted a series of semi-structured interviews with a range of legal professional organisations and analysed this data both in combination with data collected by our Oxford colleagues in a survey about lawtech adoption in England and Wales (Sako, Armour and Parnham, 2020), and also in the context of wider debates and scholarship regarding 21<sup>st</sup> century skills more widely, i.e. beyond the legal profession (Janeček, Williams and Keep, 2021). Second, in order to understand the role of university law schools in the 21<sup>st</sup> century and the opportunities and challenges presented by the adoption of advanced digital technology, we combined our findings with the literature regarding legal education and with empirical data regarding trends in university law student numbers and their career destinations (Williams, Janeček and Keep, 2021).

In this chapter, we summarise our findings from these two strands of research and show how we translate our research into practice via our Law and Computer Science masters-level course<sup>2</sup> and our practice-oriented Oxford LawTech Education Programme.<sup>3</sup>

### **Our research: Skills gaps, 'future readiness' and the transformation of lawyers**

Analysis of our interviews identified five interlocking areas in which respondents felt that further education and training would be necessary (Janeček, Williams and Keep, 2021). The five skills gaps that have to be filled and that might therefore be thought of as necessary in order to achieve the 'future readiness' were:

- The ability to understand the differences in mindset between lawyers and computer scientists.
- The ability to recognise data as such when it flows through one's fingers, and in particular to recognise its value and the uses to which it might be put.
- The ability to adopt a more agile and design-oriented approach when helping clients and the ability to see the relevant issues from a systems perspective.
- Greater commercial awareness.
- An understanding of the law and ethics that might apply to digital technology in the future.

The fifth of these skills is likely to be equally applicable to all lawyers in relation both to the changes to legal practice and to the challenges facing the substantive law such as employment law with regard to algorithmic management (Adams-Prassl, 2019), administrative law with regard to automated decision making (Williams, 2021; Williams and

Melham, 2020), commercial law with regard to data trading (Janeček and Malgieri, 2020) and so on. But all five skills, especially if accumulated in one organisation or one individual, are particularly important in relation to the first of the impacts identified in the introduction, namely the ability to augment and automate legal practice. Whilst the importance may differ according to one's role in a firm, it would be helpful for all lawyers to have an awareness of the data to which they have access and the likely uses to which it might be put, even if they merely flag it to someone else in the firm.

Similarly, in terms of agility of thinking, a lawyer who cannot themselves think about how a particular issue might be assisted by technology but who can develop an instinct that 'there must be a more efficient way of doing this' and then flag that to someone else in the firm is making an important contribution. Several of our interviewees mentioned that we might therefore see the development of 'Legal Technologists' who could act as a key point of contact within a firm, helping to make greater use of data and developing technical solutions to assist, augment or automate parts of legal practice. Such people will need at the very least to be 'bilingual' enough to work with computer scientists in developing a technical solution, and may need to act as a translator between the technicians and those in more mainstream practice.

In relation to both the data and the agility, an understanding of the mindset of computer scientists could be particularly helpful. If an interdisciplinary team then comes to work on the particular data source or problem identified, it will be necessary for the lawyers involved to understand how they need to frame their instincts in order to be well understood and developed by those on the technical side. If a piece of technology is then produced as a result, it will be important for all those involved in the strategy of the firm to understand the benefits but also the potential costs involved in adopting it, so as to reach a balanced decision.

In terms of the fifth knowledge and skills gap, law and ethics, Legal Technologists would not need a detailed grasp of all the substantive areas of law and their application to technology, but they would need an understanding of the particular IP rules, professional regulations and other rules likely to be applied to the particular piece of legal tech they were developing. They would need at least a basic understanding of the areas of legal practice in which such a piece of tech might be deployed and for which it might need to be developed. They might also be able to play a role in supporting an understanding of the technology giving rise to substantive issues of law in particular departments. And finally they would be best placed to outline the advantages and disadvantages of a particular piece of tech for those in the firm making a policy decision about whether or where it should be deployed.

Our research here suggests a growing need for these five areas of knowledge and skills: (1) law and computer science mindset understanding; (2) data-oriented thinking; (3) agile systems and design thinking; (4) commercial awareness; (5) digital ethics and knowledge of the law relating to AI and digital technology. Relatedly, law firms seem to be increasingly interested in hiring talent from science, technology, engineering and mathematics (STEM) (Qian, Saunders and Ahrens, 2020) and there is thus more room for either multi-disciplinary teams or multi-disciplinary individuals, typically referred to as Legal Technologists, who would be able to bring better legal services to their clients.

## **Our research: The transformation of legal education?**

If digital technology brings about new learning needs amongst established and aspiring lawyers, it also brings about new teaching opportunities. After all, the five skills identified above do not feature in a traditional University law school curriculum. At the same time, however, it is not clear from the outset whether it should be Universities rather than practice-led professional training programmes that will satisfy these learning needs. Thus, we have also examined what all this might mean for University law schools, both in terms of the need to empower lawyers with these skills for the digital age, and also in relation to the sense more generally that lawyers should become more T-shaped (Smathers 2014), D-shaped (Runyon and Carrel, 2019) or O-shaped (O-Shaped Lawyer Research Report 2020), possessing a variety of interpersonal and commercial skills in addition to their core of legal knowledge (Williams, Janeček and Keep, 2021). On this front we have reached various conclusions relevant for this chapter.

First, benefiting from the inherent multi-disciplinarity of Universities, law schools are optimally placed for the development of more interdisciplinary 'law and' courses, particularly 'law and computer science', because as established places of learning in multiple disciplines, they have both the subject-domain and educational expertise relating to a range of areas. This clearly sets Universities apart from virtually all other educational providers.

Second, University law schools are also optimally placed to provide the life-long learning that is necessary as people are now far more likely to have 'lattice' shaped career structures with lateral moves as well as vertical ones and so need additional education for pivotal moves. Individual corporations or law firms cannot provide such education, not least because they are not in the business of education. More importantly, University law schools are a stable presence.

Third, in providing this lifelong education Universities are able to draw not just on market demand but on a strong, objective and independent peer-reviewed research base of both substantive content and also in the design and shaping of the syllabus. This research-led nature of our learning provision was highly praised even by the participants in our practice-oriented Oxford LawTech Education Programme (see below).

To summarise, Universities are very well placed to serve as interdisciplinary, life-long and research-led places of learning that could meet the current demand for training and education of lawyers in the field of digital technology. The significance of these three aspects cannot be emphasised enough. In legal practice there is often very little time to do any interdisciplinary work, let alone to do interdisciplinary research and to develop digitally powered prototypes of legal services or products. Indeed, there is no such thing as a beta-contract in law and law firms or legal institutions rarely have their own Research & Development units. It can thus be argued that if lawyers want to stay on top of their game and be 'future ready', rather than to become uncritical consumers of digital legal tools, they need to educate themselves: and independent and trustworthy educational institutions

which can combine educational and subject-domain expertise in both Law and Computer Science should try to satisfy this need.

### **From research to practice: Two case studies**

Academic research is one thing, but it is another to translate such research into practice. Our goal from the beginning was to do both. We aimed to be more ambitious than simply to identify the knowledge and skills needs that will shape lawyers' 'future readiness' and the role that Universities can play in this shift towards digital empowerment of legal services providers. We also felt the responsibility to lead the way in this regard by our own example.

Having identified the skills gaps to be filled for 'future readiness' as the first component of our research, the second was to identify how to fill them and how to empower lawyers (and computer scientists) with the necessary skills to navigate law and legal practice in the digital age. This involved two things: designing and teaching an experimental course in Law and Computer Science in 2019, jointly with the Department of Computer Science, and setting up an online learning platform for those already in practice in 2020.

### **Law and Computer Science**

Our experimental course for masters-level students in the Departments of Law and Computer Science<sup>4</sup> is interdisciplinary: it is co-convened by Prof Tom Melham from the Department of Computer Science, student numbers are capped to ensure equal numbers from each discipline, and every session is co-taught by at least one representative of each Department. The course takes place over 22 weeks from early October to March (with a 6-week winter break in the middle). Each week there is a two-hour 'theoretical' session which involves introductory lectures on the relevant material followed by group problem-solving exercises which require students from each discipline to engage with one another to solve the problems from both perspectives. The course proves to be heavily oversubscribed by students from both Departments and we therefore allow a few additional auditors to observe the expository part of these theoretical sessions.

The first block of theoretical sessions (sessions 1 to 3) is designed to introduce the two disciplines to each other and to encourage thinking about the similarities and differences between the two fields and between the professionals working in those fields, and how these might present both opportunities and challenges. The second block (sessions 4 to 7) is devoted to examining how technology can automate and augment legal practice, dispute resolution and so on and what the ethical and other challenges of doing so might be. In the third block (sessions 8 to 15), students are introduced to a different substantive area of law each week and asked to examine how the use of technology will raise new challenges for that area and how law and computer science might be expected to work together to solve those challenges. Session 16 brings together some of the key concepts and strands encountered throughout the course.

Alongside these theoretical sessions, students are introduced to a specific type of digital technology and asked to create a lawtech tool using this technology, working in groups of three students from law and three students from computer science. In 2019/2020, the

technology was blockchain-based smart contracts; in 2020/2021, students were able to choose between blockchain-based smart contracts and natural language processing (NLP) using one of a series of available datasets kindly provided by our industry partners.

The most important goal of these practical projects is meaningful inter-disciplinary collaboration, which tests their understanding of each other's assumptions, working patterns and so on. For law students the challenge is to think of the legal applications for the technology and to think about the regulatory and other legal challenges of implementing such a tool, while for computer science students the challenge is to design the tool itself. We emphasise to them that this should be seen as a process of co-creation in which both disciplines play an equal part. It regularly happens that computer scientists point out some salient legal issues and lawyers suggest better software design or systems design.

As well as their own work in groups, which spreads over 21 weeks from late October till March, the students have six formal project sessions as part of the course. The first session takes place in the second week of the whole course and introduces them to the technology (or technologies)<sup>5</sup> and collaboration and project management tools such as GitHub (a software development and version control platform ubiquitous in the computer science community and thus part of the interdisciplinary experience). At the second session the students pitch their initial ideas and receive feedback. Projects have spanned a range of topics from proxy shareholder voting to an online tool identifying risky clauses in contracts.<sup>6</sup> At the third session the students submit a timeline for completion and can bring any questions to a 'clinic'. At the fourth session they are introduced to the concept of an investor pitch and report on their progress. At the fifth session they do a dress rehearsal of their pitches and at the sixth session they do a formal presentation to academics from both Departments and external guests, who all are experts in the field of LawTech, innovation and start-up funding.

For the first cohort (2019/2020) guests from legal practice, industry and so on were only involved during the final project presentations, while for the second iteration of the course (2020/2021) we formed a panel of industry mentors to be involved throughout the whole course.<sup>7</sup> These industry mentors who have attended the first, second, fourth and final project sessions and who have also been available for informal consultation by individual teams. In the second iteration of the course, we also introduced an additional workshop on design thinking in law,<sup>8</sup> and students also had access to a special seminar series related to the wider research project 'Unlocking the Potential of Artificial Intelligence for English Law'.

The course is assessed by means of two 3,000-word essays completed during the Easter vacation, one dealing with the common themes and automation of law section of the course, the second asking a more detailed question such as algorithmic discrimination, transparency of machine learning etc, with reference to two or three legal contexts in which it arises.

The course has succeeded in addressing the skills gaps identified in our interviews. From the point of view of the first gap, addressing the differences in mindsets between lawyers and computer scientists, teaching the two disciplines together proved vital both to understand and then to try to bridge those differences, making both cohorts more 'bilingual'. We

surveyed the students at the end of the first iteration of the course and this came out very strongly in some of their comments. As one law student said: 'I was ... grateful to be able to speak to, and ask computer scientists about the technicalities of certain codes, amongst other technical discussions.' Another law student told us that: 'The worst aspect of the interdisciplinary coursework ... lies in the differences in methodology, language and culture of law and computer science and this accounted for why it was, at some points, difficult for us to agree on some salient issues. Happily this is part of the training and I developed new skills in dealing with interdisciplinary issues.'

The practical project was at least as important as the theoretical sections in this respect, probably more so. Thus, one law student told us that: '[t]he best aspect of the interdisciplinary course work ... is the practical project. This project exposed me to why and how law ... and computer science should collaborate in developing emerging technologies. For instance, in the course of the project, the lawyers on the team consistently assess some of the technical solutions proposed by the computer science students and how it will fit into the legal framework with less friction'. In addition to giving students the opportunity to work together on the practical projects and the problem questions in the theoretical sessions, it was also helpful that the first three theoretical sessions were entirely devoted to exploring these interdisciplinary challenges and thinking about how they might be resolved.

The course also responded to the need to provide lawyers with more data-oriented thinking in various ways, from considering data privacy law in one of the theoretical sessions to looking at how important it is to ensure that that data does not contain inherent discrimination or imbalances. For all our practical projects, the understanding of input and output data proved to be critical. Naturally, students undertaking the NLP-based practical project developed this skill further as they needed to organise their data meticulously before the processing began.

In order to enable students to be more agile and design-oriented in their thinking, the second block of our theoretical sessions (sessions 4 to 7) examines how various aspects of law and legal practice might be automated and encourages the students to think about what problems they are trying to solve and which discipline might best be able to provide the solution. Similarly, the discussion exercises in our theoretical sessions (especially sessions 8 to 15) require the students to think systematically about the challenges and solutions that advanced digital technologies present to the law and that law presents to these technologies. The practical projects also give them experience of this kind of approach, as does the specific design thinking workshop.

Having to present their practical projects in a pitch-like session at the end of the course as if they were a start-up company also, we hope, develops students' commercial awareness, as does their interaction with the industry mentors. Moreover, the need to manage their own project and to use wisely their allocated time and further resource budget for the project (such as our licensed software and access to computational facilities) is a way to learn these skills too.

With regard to the fifth skills gap, the third block of theoretical sessions (session 8 to 15) examines the challenges presented by technology to various different areas of law such as

employment law, property and intellectual property law, competition law, public law, criminal law and so on. These all enable our students to develop the understanding of the law and ethics applying to digital technology. Here again, we are able to add to that core of legal knowledge which is essential to legal education regardless of the need for additional skills, but in addition to develop it so that it is applicable to the future legal challenges as well as those that have already arisen.

While our research into the skills gaps has so far focused on the perspective of lawyers, there is no doubt that the course has had a positive impact in both Departments. We hope to research the equivalent skills gaps on the part of computer scientists, but it seems at least likely that the course may go some way towards filling these too. In particular, our surveys revealed that seeing their own area of expertise through the eyes of another actually allowed each discipline to reflect on itself. Thus, as one Computer Science student put it: 'it allows one to really take a step back on the code, the maths and ask ourselves higher-level questions... Interacting with lawyers permitted [us, that is computer scientists,] to confront and compare our point of view and reflect on our own knowledge and mindset, but also understand how our discipline is perceived by another. I really believe these kind of reflections are crucial for computer scientists, and traditional computer science courses could not have provided them'. Similarly, one of our Law students commented that 'this course allowed for a conversation about the law with students from another discipline and I honestly feel this increased my personal understanding of the law by leaps and bounds.'

### **The Oxford LawTech Education Programme (OLTEP)**

If interdisciplinary education of the kind just described is increasingly more relevant to students as they go through their degrees, it is even more important for lawyers in practice who did not have access to this kind of opportunity during their formal legal education. To seize the opportunities of digital technology in their work and become digitally empowered and future ready, these lawyers need relatively quickly to catch up on the learning gaps created by the rise of such technology. It therefore seemed imperative to use the ideal position of Universities, as identified above, to reach this audience too.

Accordingly, we established OLTEP, the Oxford LawTech Education Programme. OLTEP is a joint initiative by the Oxford Law Faculty and the Oxford Department of Computer Science and its mission is simple—to train future leaders in the legal market, confident providers of tech-enhanced legal services and successful innovators who can spot, analyse and utilise trends in digital technology.

Based on our research into the skills gaps, we took a systemic approach to satisfying these needs and finding the methods best-suited to fill these gaps through a practice-oriented educational programme. We partnered with several organisations, including Slaughter and May and the Government Legal Department, to understand how these learning needs can be satisfied in very concrete terms, i.e. alongside the daily duties of both public and private lawyers and their support staff and alongside all the other training they undertake. To this end, we organised a series of deep-dive interviews to tailor a pilot programme that was run at the end of 2020.<sup>9</sup>



Almost 700 participants from our partner organisations attended our two fully online modules during the initial phase and more are currently enrolled on our follow-on educational activities. During the pilot phase, one of our modules was focused on digital literacy and the mindset gaps between lawyers and IT specialists in a commercial law firm setting. The other module was focused on issues concerning the use of algorithms in the public sector.

After running the pilots, we evaluated this experience. As the follow-on feedback survey and interviews revealed, the participants 'liked the pace and the balance between using academic sources, theoretical puzzles (well [they] found them puzzling and interestingly challenging) and practical examples'. They also noted that the biggest takeaway was 'thinking about how to combine the power of CSs [computer scientists] and lawyers effectively to deal with new challenges'. Others praised '[t]he myth busting and no nonsense approach'.

Overall, we have learned that the development of the Oxford LawTech Education Programme is not without its challenges, many of which will be familiar to anyone who has designed an entirely new educational programme. These challenges are also magnified by the fact that University organisational structures often do not have any existing templates for such practice-oriented activities and because law professionals who participate in this learning opportunity typically have very high demands. Despite these challenges, there seems to be a very positive attitude towards a carefully tailored educational programme in LawTech that builds on Universities' unique ability to provide interdisciplinary, life-long and research-led education. This is positive news for Universities.

## **Conclusion**

Lawyers' clients and consumers of legal services increasingly rely on digital technology. Relatedly, law professionals are increasingly expected to be able to unlock the potential of such technology in the provision of their legal services. This applies both to the tech-enhanced process of lawyering and to the law as it applies to issues raised by digital technology. Our research has identified a concrete set of knowledge and skills that lawyers need to acquire if they want to fulfil this expectation: (1) mindset understanding between lawyers and computer scientists; (2) data-oriented thinking; (3) agile systems and design thinking; (4) commercial awareness; (5) digital ethics and knowledge of the law relating to AI and digital technology. Currently, these learning needs also represent a learning gap because most professional lawyers and University law students do not (yet) possess such knowledge and skills. To this end, our research has also identified concrete opportunities for Universities in closing this knowledge and skills gap. The aim of this chapter was to demonstrate that through the provision of interdisciplinary, life-long and research-led education—such as our academically-oriented 'Law and Computer Science' course or the practice-oriented 'Oxford LawTech Education Programme'—University law schools are very well placed to satisfy those learning needs and thus contribute to the future-readiness of the legal profession.

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<sup>1</sup> For more details, see <https://www.law.ox.ac.uk/unlocking-potential-artificial-intelligence-english-law> [last accessed 25 Feb 2021].

<sup>2</sup> For more details, see <https://www.cs.ox.ac.uk/teaching/courses/2020-2021/LawandCS/> [last accessed 25 Feb 2021].

<sup>3</sup> For more details, see <https://oltep.ox.ac.uk/> [last accessed 25 Feb 2021].

<sup>4</sup> For more details, see <http://www.cs.ox.ac.uk/teaching/courses/2020-2021/LawandCS/> [last accessed 26 Feb 2021]; <http://www.cs.ox.ac.uk/teaching/courses/2019-2020/LawandCS/> [last accessed 26 Feb 2021].

<sup>5</sup> Oxford researchers with expertise in smart contracts (Alastair Janse van Rensburg) and NLP (Matthias Qian) gave these introductions and were ready to support the projects teams from the technical side.

<sup>6</sup> For more details, see <https://www.law.ox.ac.uk/news/2020-12-07-law-and-computer-science-students-working-together-again> [last visited 26 Feb 2021]; <https://www.law.ox.ac.uk/news/2020-03-13-law-and-computer-science-final-project-presentations> [last visited 26 Feb 2021].

<sup>7</sup> Our thanks are due to Stuart Hopper for his help with setting up the industry mentor group.

<sup>8</sup> For more details, see <https://www.law.ox.ac.uk/events/design-thinking-law> [last visited 26 Feb 2021].

<sup>9</sup> For more details, see <https://www.law.ox.ac.uk/news/2020-12-18-oxford-lawtech-education-programme-pilots-first-modules> [last accessed 26 Feb 2021].