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TECHNOLOGY AND CIVIL DISPUTE RESOLUTION

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EDITORS' NOTE

Technology has been infiltrating the civil justice system for some time, providing efficiencies or conveniences that were not previously possible. There are now many instances of digital uplift: video-conferencing for witness testimony or argument by counsel; email and online portals for the filing and (in some cases) service of documents; real-time court transcripts; instant messaging for case management hearings; and webpages and social media by which courts communicate with the public. While important, these types of technological change are generally not characterised as transformative or disruptive.

More recently, though, with the advent of artificial intelligence (AI), blockchain and the Internet of Things, civil justice has started to see more significant changes. These offer the prospect of a great leap forward in advancing access to justice, yet simultaneously raise concerns about the nature of the justice provided. Such changes implicate the future of the legal profession itself, with forecasts both optimistic and pessimistic. The Chief Justice of the High Court of Australia, the Hon Susan Kiefel, in speaking on social change made reference to the impact of technology as follows:

> Technology is no longer seen merely as a tool to facilitate the delivery of legal services. It is also portrayed as a possible threat, particularly in the continuing development of artificial intelligence. This might be something of a distraction. Very few commentators with an understanding of legal advice, advocacy, adjudication and dispute resolution would suggest that they could be completely overtaken by AI.[1]

The Chief Justice's observations raise the question of where the dividing line between human and machine can, or should, be drawn in the various steps that comprise dispute resolution.

The articles collected in this volume both elucidate and critique the operation and effects of technological innovation on the civil justice system. This necessarily calls into question future roles for lawyers and the education and training required for lawyers and law students.

A common theme of many articles collected here addresses concerns about how technology may be harnessed to improve access to justice while maintaining the rule of law, or core values such as equality and fairness. Further, new technologies may assist courts but they have also facilitated dispute resolution competitors. Courts have always operated with alternative dispute resolution (ADR) as a possibility, but the range of ADR has broadened. Capabilities continue to expand as technology enables online dispute resolution that can connect legal advice, problem identification and problem resolution.

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[1]   The Hon Susan Kiefel, Chief Justice of the High Court of Australia, 'Aspects of the relationship between the law, economic development and social change and the importance of stability', *2019 Queensland Bar Association Conference*, Brisbane, 2 March 2019.

Tania Sourdin, Bin Li and Tony Burke examine how technology may impact on the now accepted civil justice system objective, or overriding purpose, of the just, quick and cheap resolution of the real issues in the proceedings. However, they first question what is 'justice' and indicate that it may be located outside the formal justice system in alternative dispute resolution. Technology may therefore facilitate access to justice in this broad sense through the provision of information and the resolution of disputes without resort to courts. The authors also question the 'innovation readiness' of lawyers, judges and consumers.

Peter Cashman and Eliza Ginnivan examine technology's impact on civil justice at the two ends of the civil justice spectrum: low value disputes unique to an individual and high value claims created through the aggregation of related individual claims. Their article details the development in numerous jurisdictions of online dispute resolution (ODR) for dealing with low value disputes and raises concerns about open justice and procedural fairness. The focus then turns to class actions and the use of technology to manage claims and evidence through to settlement distribution.

James Metzger also explores ODR but from a novel perspective – the rise of platforms that promise to use blockchain technology to decentralise dispute resolution by crowdsourcing the adjudication of disputes to a worldwide pool of willing juror-arbitrators. The particular conceptions of justice that they promote are explored by examining a number of platforms and how they operate.

Concern about fairness for parties in the family law sphere is examined in greater detail by Felicity Bell. Her article highlights the dangers for vulnerable parties and children when data that perpetuates historical biases is used to fashion a variety of resolutions. The article argues for differentiated case management that can harness efficiencies for parties, but also highlights the role that lawyers can play as a central protection for those at disadvantage.

Lisa Toohey, Monique Moore, Katelane Dart and Dan Toohey add to the debate by raising the issue of 'legal design' – the application of human-centred design to law – in order to assess and foster the creation of usable, useful, and engaging legal services. The authors also point to the need to consider algorithmic fairness and questions of accessibility and digital exclusion.

While technology can facilitate dispute resolution, it also changes how the rest of the world operates. These changes then permeate the justice system, through discovery and then evidence, when disputes arise. David Caruso, Michael Legg and Jordan Phoustanis examine the Internet of Things – objects, devices, machines and buildings that incorporate data gathering, handling and transmission technology – which is already widespread, and likely to be ubiquitous in both business and domestic settings of the future. This article examines the electronically stored information gathered by these everyday objects from the perspective of the discovery process, and the admissibility and authentication of this data for use in court.

Kathy Douglas, Tina Popa, Christina Platz and Meg Colasante address the use of technology in legal education as a way to prepare law students for practice. Their article focuses on the use of video to demonstrate dispute resolution skills such as

negotiation/mediation and advocacy, supported by online discussion technology to reflect on the skills demonstrated in the video. Technology offers an opportunity to articulate required legal skills through realistic exemplars.

This volume of the Macquarie Law Journal develops the current debates in civil justice and technology, while also putting forward possible solutions. It therefore adds to a growing literature that identifies technology as both opportunity and threat, and evidences the importance of scrutiny, informed debate, and research at the intersection of law, dispute resolution, and technology. The Chief Justice of the Supreme Court of New South Wales, the Hon T F Bathurst, in speaking about artificial intelligence, observed:

> Many of the concepts involved in these technologies are unfamiliar and difficult to get your mind around without the proper education and training. A slow and deliberate response to these technologies therefore makes a great deal of sense, since our legal system forms the bedrock of our society, and these technologies have the potential to introduce significant changes in how it operates. It is therefore incumbent upon us to understand how these technologies work and how they will affect our legal system.
>
> Whatever changes we might wish to make, we must always ensure that they do not compromise the fundamental values and principles which underpin our legal system.[2]

In the context of the justice system the opportunities and threats of technology are arguably magnified, because justice itself – including equality before the law, and its central role in a democratic society – is at stake.

We would like to express our gratitude to the authors who contributed to this special edition, as well as to the academics and experts who provided peer review of submissions. The breadth and quality of the published papers underpin the strength of this edition's contribution to the growing body of much needed research in the field of law and technology.

Our appreciation and thanks are also owed to Justice Stephen Gageler of the High Court of Australia, who kindly agreed to the publication in this edition of a revised version of the lecture he delivered at the Macquarie Law School's annual Tony Blackshield Lecture in November 2018.

Finally, we wish to express our thanks to, and commend the excellent efforts of, the Student Editors. They have laboured diligently to make this publication possible while working towards their degrees at Macquarie Law School.

Felicity Bell
Michael Legg
Ilija Vickovich

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[2]   Hon T F Bathurst, Chief Justice of the Supreme Court of NSW, 'Opening Remarks', *Law Society of NSW Future of Law and Innovation in the Profession (flip) Stream Seminar*, Banco Court, Supreme Court of NSW, Sydney, 10 May 2019.

SMALL STEPS AND GIANT LEAPS: PATTERNS IN AUSTRALIAN CONSTITUTIONAL ADJUDICATION

JUSTICE STEPHEN GAGELER AC[*]

Annual Tony Blackshield Lecture, delivered at the Federal Court of Australia, Sydney 27 November 2018

I

The *Australian Constitution* ('*Constitution*') was drawn up and approved by the Australian people at the close of the nineteenth century. It entered into operation by force of Imperial statute on the first day of the twentieth century. The *Constitution* mandated the existence of a Federal Supreme Court to be known as the High Court of Australia, but left to the Commonwealth Parliament the task of creating the necessary machinery and to the Commonwealth Executive the task of making the necessary appointments. The Commonwealth Parliament created the machinery necessary for the working of the High Court by enacting the *Judiciary Act 1903* (Cth) ('*Judiciary Act*'). The Commonwealth Executive appointed the first Chief Justice and Justices of the High Court a short time later.

There was never any doubt amongst those responsible for framing the *Constitution* and amongst those responsible for framing the *Judiciary Act* that the High Court, once established, would assume the role of final arbiter of the meaning of the *Constitution*. The principle underlying the decision of the Supreme Court of the United States in *Marbury v Madison*,[1] establishing the role of that Court as the final arbiter of the meaning of the *United States Constitution*, was accepted in Australia as axiomatic.[2]

There was also never any doubt amongst those responsible for framing the *Constitution* and the *Judiciary Act* that, in performing the role of final arbiter of the meaning of the *Constitution*, the High Court would act as a living national institution, attuned to contemporary Australian circumstances. The understanding of the High Court as a living national institution attuned to contemporary national circumstances informed both sides of the conflict which occurred, in the closing stages of the framing of the *Constitution*, between Australian representatives and Imperial authorities concerning appeals to the Privy Council. The conflict resulted in the compromise that the Privy Council was to lack jurisdiction to hear appeals from the High Court in

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[*] Justice of the High Court of Australia. This is a revised version of the Tony Blackshield Lecture delivered at Queen's Square, Sydney on Tuesday, 27 November 2018. My thanks to Glyn Ayres and Duncan Wallace for their assistance and comments. The final quotation I owe to Harry Hobbs and Andrew Trotter: Harry Hobbs and Andrew Trotter, 'Lessons from History in Dealing with Our Most Dangerous' (2018) 41 *University of New South Wales Law Journal* 319, 319.

[1] 5 US 137 (1803).

[2] Cf *Australian Communist Party v Commonwealth* (1951) 83 CLR 1, 262–3.

matters concerning the constitutional powers of the Commonwealth and the States as between each other without the prior certification of the High Court.[3]

The speech made by the Commonwealth Attorney-General, Alfred Deakin, in the House of Representatives in 1902, when moving that the Bill for the *Judiciary Act* be read for a second time, laid out an understanding of how the role of the High Court as the final arbiter of the meaning of the *Constitution* would likely play out through time. Deakin drew on the earlier experience of the Supreme Court of the United States in interpreting the *United States Constitution*, with which he and other key participants in the framing of the *Constitution* were broadly familiar.

Noting that the *United States Constitution* was notoriously difficult to amend, Deakin said that the Americans had found themselves with a Constitution which might have been a 'dead letter' and a 'burden' to them 'but for the fact that they had created a Supreme Court capable of interpreting it, a court which had the courage to take that instrument, drawn in the eighteenth century, and read it in the light of the nineteenth century, so as to relieve the intolerable pressure that was being put upon it by the changed circumstances of the time'.[4] Deakin continued:

> Precisely the same situation must arise in Australia, for although it be much easier to amend our *Constitution*, it is yet a comparatively costly and difficult task and one which will be attempted only in grave emergencies. In the meantime, the statute stands and will stand on the statute-book just as in the hour in which it was assented to. But the nation lives, grows, and expands. Its circumstances change, its needs alter, and its problems present themselves with new faces. The organ of the national life which preserving the union is yet able from time to time to transfuse into it the fresh blood of the living present, is the Judiciary — the High Court of Australia or the Supreme Court of the United States. It is as one of the organs of Government which enables the *Constitution* to grow and to be adapted to the changeful necessities and circumstances of generation after generation that the High Court operates. Amendments achieve direct and sweeping changes, but the court moves by gradual, often indirect, cautious, well considered steps, that enable the past to join the future, without undue collision and strife in the present.[5]

In choosing to describe in the present tense the conduct of a national institution which had not yet then begun to function, Deakin plainly thought it beyond question that the High Court would apply to constitutional interpretation the dominant methodology of common law courts which could be traced back at least to the period that saw the framing of the English constitutional settlement of the late seventeenth century. No differently from any other subject matter of adjudication, constitutional interpretation would proceed incrementally within an historical continuum in which problems thrown up by the present would be resolved in light of contemporary circumstances, with respect for the collective wisdom and experience of the past and with concern for the effect which the present resolution of those problems would have through the doctrine of precedent on the resolution of those and other problems in the future. There would be changes in constitutional interpretation from generation to

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[3]   See Stephen Gageler, 'James Bryce and the *Australian Constitution*' (2015) 43 *Federal Law Review* 177, 194–9.

[4]   Commonwealth, *Parliamentary Debates*, House of Representatives, 18 March 1902, 5 (Alfred Deakin).

[5]   Ibid.

generation, but, in the later words of Sir Owen Dixon concerning judicial method more generally, those changes would be 'gradual and evolutionary'.[6]

Evolutionary and incremental change, to the extent no more and no less than necessary to serve the needs of a changing society, is the ideal of the common law system. When changes are viewed doctrine by doctrine over a comparatively short period, the reality can be seen sometimes to have approximated the ideal. When changes are viewed in aggregate over the entire history of the common law system, a more complicated pattern emerges. The societies which the common law system has served have not changed merely incrementally over that period. Nor has the common law system itself been characterised by merely evolutionary and incremental change.

In his important treatise on the formation of the Western legal tradition, the first volume of which was published in 1983,[7] and the second volume of which was published in 2003,[8] Professor Harold Berman contrasted what he described as 'incremental' or 'smooth' historiography characteristic of the late nineteenth century — the age of Darwin, the age of Empire, and the age in which the *Constitution* was called into existence as the political destiny of the Australian people — with the '[c]atastrophic history, dominated by social conflict', which became 'characteristic of the historical writings of the early and middle parts of the twentieth century', dominated as that time was from the perspective of the West by two World Wars.[9] Viewed from the standpoint of the late twentieth century and looking back over a millennium, the dominant theme of Western history, including Western legal history, which Berman identified, was not merely evolution and not merely revolution but the blending of the two.

Berman wrote of the Western legal tradition, of which the common law tradition has formed a distinctive although not unique part, as having been transformed by a series of revolutions — epoch-making periods in each of which a pre-existing system of social relations, beliefs and values was overthrown and replaced with a new one. The first was the period of the Papal Revolution of 1075–1122, which brought about the separation of church and state, the rediscovery of the *Institutes of Justinian* and the beginning of the scholastic tradition. The last of present relevance was the period beginning with the American Revolution of 1776 and ending with the French Revolution of 1789. In between, and critical to the emergence of the common law system in its distinct modern form, was what Berman described as the 'English Revolution' which began with the so-called 'Great Rebellion' of 1640 and came to an end with the so-called 'Glorious Revolution' of 1688. From the English Revolution emerged the constitutional settlement which Baron de Montesquieu came to describe in the 1740s in terms of the separation of legislative, executive and judicial power.[10] What also emerged was that mixture of positivism, reason and historicism epitomised by Sir Matthew Hale, who had occupied the position of Chief Justice of the Court of

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[6]   Sir Owen Dixon, *Jesting Pilate and Other Papers and Addresses*, ed Judge Woinarski (William S Hein & Co, 2nd ed, 1997) 158.

[7]   Harold J Berman, *Law and Revolution: The Formation of the Western Legal Tradition* (Harvard University Press, 1983) ('*Formation of the Western Legal Tradition*').

[8]   Harold J Berman, *Law and Revolution, II: The Impact of the Protestant Reformations on the Western Legal Tradition* (Belknap Press, 2003).

[9]   Berman, *Formation of the Western Legal Tradition* (n 7) vi.

[10]   Montesquieu, *The Spirit of the Laws*, tr Anne M Cohler, Basia Carolyn Miller and Harold Samuel Stone (Cambridge University Press, 1989).

the King's Bench at the height of the English Revolution, and this mixture came to characterise the idealised form of common law judicial methodology so ably described by Deakin in his second reading speech for the *Judiciary Act* in 1902.

Berman explained that each revolution was different but that all shared a small number of common features. Each marked a fundamental change from that which had existed before. Each sought legitimacy in a remote past and an apocalyptic vision. Each eventually produced a new body of law. Each was transformative of the legal tradition from which the common law tradition emerged while remaining within that tradition.

The patterns of a century are hardly the patterns of a millennium. The changes that have occurred within Australian society during the twentieth century do not begin to match the upheavals which Berman described as revolutions. Parallels should not too readily be drawn lest they be taken too far.

Looking back from the early twenty-first century to the changes that occurred in Australian constitutional interpretation during the first hundred years of the High Court's existence, however, it is difficult to portray the course of constitutional adjudication as conforming in all respects to Deakin's articulated common law ideal of evolutionary and incremental change. Any fair-minded and informed reader of the Court's work product is forced to acknowledge that there have been marked changes in constitutional interpretation brought about through a relatively small number of landmark decisions. The two most important of those decisions were each described as revolutionary not long after they were made,[11] and each can be seen to share in a minor way some of the features which Berman associated with transformative revolutions.

The common features that can be seen are: first, a fundamental departure from prior constitutional doctrine; second, a return to an original understanding of the *Constitution* different from that which previously prevailed, bringing with it a different understanding of the function of the *Constitution* and of the role of the Court within the Australian polity; third, the laying of the foundation for the development in time of a new body of constitutional principle; fourth, the assimilation of the changed perspective within the same overall constitutional tradition characterised by the same common law judicial methodology, the ideal form of which was described by Deakin.

How you can tell that a decision of the High Court is a landmark decision in Australian constitutional law is that Professor Tony Blackshield has written a song about it. In the balance of this lecture in Professor Blackshield's honour, I want to illustrate the observations I have just made by reference to the two decisions to which I refer. The first is *Amalgamated Society of Engineers v Adelaide Steamship Co Ltd ('Engineers'*

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11   R T E Latham, 'The Law and the Commonwealth' in W K Hancock, *Survey of British Commonwealth Affairs: Problems of Nationality 1918–1936* (Oxford University Press, 1937) vol 1, 510, 563; Michael Coper, 'Section 92 of the *Australian Constitution* since *Cole v Whitfield*' in H P Lee and George Winterton (eds), *Australian Constitutional Perspectives* (Law Book Co, 1992) 129, 131.

Case').[12] The second is *Cole v Whitfield.*[13] To add a note of Blackshieldian humour, I will borrow some libretti from the Tony Blackshield Songbook. The musical score you will need to imagine.

II THE ENGINEERS' CASE

The *Engineers' Case* is unquestionably the single most important case in Australian constitutional history. Much will be written of it as we approach its hundredth anniversary in 2020. For present purposes, I want to use it to illustrate the four common features to which I have referred.

First, we see in the *Engineers' Case* a fundamental departure from prior constitutional doctrine. The initial 17 years of the High Court's existence, from 1903 until 1920, had been dominated by what Professor Leslie Zines would refer to as a struggle for constitutional standards.[14] The struggle manifested in a strongly held difference of opinion within the Court as to the appropriateness of importing into Australian constitutional analysis two constitutional doctrines which then held sway in the United States. The first doctrine was that of 'immunity of instrumentalities', by which the Commonwealth and the States were each treated as lacking in power to make laws binding on the agencies or instrumentalities of the other. The second doctrine was that of 'reserve powers', by which subject matters of legislative power not expressly conferred on the Commonwealth were treated as reserved to the States. Both of those doctrines were supported by a body of American case law which developed after the Civil War of the 1860s and which would be swept away in their country of origin in the 1930s following changes in the composition and jurisprudence of the Supreme Court wrought by the New Deal. Viewed from Australia in the decades following federation, the body of case law appeared formidable and relatively coherent. Grouped together under the banner of 'implied prohibitions', importation of the two doctrines was justified by their Australian proponents as founded on a principle of 'necessity' inherent in the nature of federalism.

The champions in the struggle during those initial years had been Sir Samuel Griffith, who had been appointed the first Chief Justice of the High Court in 1903, and Sir Isaac Isaacs, who had joined the Court with Henry Bournes Higgins when its numbers were increased in 1905. Griffith, who favoured the application of the American-inspired doctrines, had commanded the majority, although the majority had become increasingly fragile as difficulties in the application of the doctrines had become apparent. Isaacs, who with Higgins had rejected the doctrines from the beginning, had been continuously in dissent.

The problems with the imported doctrines having become increasingly apparent, the national mood having distinctly changed during and immediately after the First World War, and the composition of the Court also having changed (most significantly with the retirement of Griffith in 1919), the scene was set in 1920 for what had previously

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[12]   *Amalgamated Society of Engineers v Adelaide Steamship Co Ltd* (1920) 28 CLR 129 ('*Engineers' Case*').

[13]   (1988) 165 CLR 360 ('*Cole v Whitfield*').

[14]   James Stellios, *Zines's The High Court and the Constitution* (Federation Press, 6th ed, 2015) ch 1.

been the minority view to become that of the majority. In written reasons for judgment published in the rarely used form of 'The judgment of Justices A, B, C and D (delivered by Justice B)', Isaacs, writing for the plurality in the *Engineers' Case*, engaged in a wholesale repudiation of what had gone before. Of the prior case law in which the two doctrines in question had been adopted and applied, Isaacs said this:

> The more the decisions are examined, and compared with each other and with the *Constitution* itself, the more evident it becomes that no clear principle can account for them. They are sometimes at variance with the natural meaning of the text of the *Constitution*; some are irreconcilable with others, and some are individually rested on reasons not founded on the words of the *Constitution* or on any recognized principle of the common law underlying the expressed terms of the *Constitution*, but on implication drawn from what is called the principle of 'necessity', that being itself referable to no more definite standard than the personal opinion of the Judge who declares it. The attempt to deduce any consistent rule from them has not only failed, but has disclosed an increasing entanglement and uncertainty, and a conflict both with the text of the *Constitution* and with distinct and clear declarations of law by the Privy Council.[15]

In the balance of the judgment of the plurality, the old doctrines were repudiated, by reference in part to early decisions of the Privy Council interpreting the scope of powers conferred by Imperial statutes on colonial legislatures, including one purportedly decided by reference to the *Constitution* in 1906[16] which Griffiths, a year later, had openly disparaged to the point of declaring the Privy Council to have exceeded its jurisdiction.[17] In the place of the old doctrines, Isaacs laid down the principle that the words of the *Constitution* were to be accorded their broad and ordinary meaning, and that it would henceforth rest 'upon those who rely on some limitation or restriction … to indicate it in the *Constitution*'.[18] The supremacy of Commonwealth law over State law, Isaacs pointed out, was expressly established by s 109 of the *Constitution* itself.[19]

> *This new interpretation*
> *Should fill us all with hope:*
> *The powers of the nation*
> *Are limitless in scope.*
> *Good legalistic arguments*
> *Should keep the States in line –*
> *And if that's not enough*
> *We can always get tough*
> *With section 109!*

The cases which had applied the old doctrines were then re-examined. Some were declared to be wrongly decided and were overruled. Others were declared to have been correctly decided, albeit for the wrong reasons, and were explained on other grounds.[20]

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15   *Engineers' Case* (n 12) 141–2.
16   *Webb v Outtrim* (1906) 4 CLR 356.
17   *Commissioners of Taxation (NSW) v Baxter* (1907) 4 CLR 1087, 1117–18.
18   *Engineers' Case* (n 12) 154.
19   Ibid 154–5.
20   Ibid 156–60.

Second, we see in the *Engineers' Case* a return to an original understanding of the *Constitution* different from that which previously prevailed, bringing with it a different understanding of the function of the *Constitution* and of the role of the Court. I use the expression 'an original understanding of the *Constitution*' in deliberate contradistinction to 'the original understanding of the *Constitution*'. Griffith and Isaacs had both been intimately involved in the framing of the *Constitution*, Griffith most prominently in the framing of the original draft which emerged from the Convention of 1891 and Isaacs in its revision into the final draft which emerged from the Convention of 1897 and 1898. Just as Sir Kenneth Bailey made the point in 1933 that it would be futile to describe either view as 'wrong',[21] it would be futile to describe the view of one but not the other as reflecting the original understanding of the *Constitution*. The *Constitution* was the product of many minds and several distinct influences. Neither Griffith nor Isaacs held *the* original understanding of the *Constitution*. Each held *an* original understanding of the *Constitution*. Each held a different original understanding of the *Constitution* and the different understanding of each was well capable of being defended by reference to orthodox legal methodology.

To attribute the difference between Griffith and Isaacs to a difference in the relative weight each attached to rival precedents of the Supreme Court of the United States and of the Privy Council, or even to the relative weight each attached to the Westminster and United States models of government, both of which had been drawn on in the framing of the *Constitution*, would not be inaccurate. But it would be incomplete. There was a deeper division between them. At the risk of oversimplification, that division can be explained as follows.

Griffith's understanding of the federal compact embodied in the *Constitution* was essentially that of a compact between polities — the federating colonies which had become the States and the newly created Commonwealth — in which the role of the High Court was akin to that of a contractual arbitrator maintaining the polities as potential antagonists within their designated spheres. It was an understanding which closely aligned with the first of the principles of federation proposed by Sir Henry Parkes and adopted by the Convention of 1891 to the effect that 'in order to establish and secure an enduring foundation for the structure of a federal government ... the powers and privileges and territorial rights of the several existing colonies shall remain intact, except in respect to such surrenders as may be agreed upon as necessary and incidental to the power and authority of the National Federal Government'.[22]

Isaacs' rival and ultimately triumphant understanding of the federal compact embodied in the *Constitution* was essentially that of a compact between people — the people or electors of the colonies who voted for those colonies to become States and who also became, on federation, the people or electors of the newly created Commonwealth. The Commonwealth and the States were representatives of the same unified people owing allegiance to the same unified Crown. The High Court had no role in policing the exercise of power by the people's representatives beyond that which the people themselves, in the nationwide referenda which adopted the *Constitution*,

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21   K H Bailey, 'The Working of the Constitution since Federation' in G V Portus (ed), *Studies in the Australian Constitution* (Angus & Robertson, 1933) 23, 44.

22   *Official Report of the National Australasian Convention Debates*, Sydney, 4 March 1891, 23 (Sir Henry Parkes).

had quite clearly committed to the Court by the terms of the *Constitution*. For the Court to attempt to do so was both unnecessary, because the people acting electorally could be expected to look after themselves, and improper, because it involved an overreaching by the judicial arm of government into the political arena where it had neither the skill-set nor the mandate to interfere. Following on from the popular movement towards federalism of the mid-1890s,[23] this was an understanding which more closely aligned with the revised principles of federation proposed to and adopted by the Convention of 1897 to the effect that 'in order to enlarge the powers of self-government of the people of Australia ... the powers, privileges, and territories of the several existing colonies shall remain intact, except in respect of such surrenders as may be agreed upon to secure uniformity of law and administration in matters of common concern'.[24]

So it was said in the *Engineers' Case*:

> When the people of Australia, to use the words of the *Constitution* itself, 'united in a Federal Commonwealth', they took power to control by ordinary constitutional means any attempt on the part of the national Parliament to misuse its powers. If it be conceivable that the representatives of the people of Australia as a whole would ever proceed to use their national powers to injure the people of Australia considered sectionally, it is certainly within the power of the people themselves to resent and reverse what may be done. No protection of this Court in such a case is necessary or proper.[25]

Third, we see in the *Engineers' Case* the laying of the foundation for the development in time of a new body of constitutional principle. And fourth, we see the assimilation of new doctrine within the same overall constitutional tradition stretching back to the time of Deakin. To introduce an element of hyperbole, although the result of the *Engineers' Case* was arrived at through application of essentially the same orthodox legal methodology which had supported the earlier doctrines it repudiated, the *Engineers' Case* was Australia's constitutional ground zero. It recalibrated the baseline for all that has followed.

The steady expansion in the practical reach of Commonwealth legislative power which has occurred since 1920, made possible by an expansive interpretation of the express provisions of the *Constitution* which confer Commonwealth legislative power, exemplified by the holdings in the *Payroll Tax Case* in 1971,[26] *Tasmanian Dam Case* in 1983[27] and the *Work Choices Case* in 2006,[28] has been built directly on the foundation of the *Engineers' Case*. And although post-*Engineers'* implications have replaced pre-*Engineers'* implications in limiting Commonwealth and State legislative and executive power, the legacy of the *Engineers' Case* has been to require those more modern implications to be linked closely to the constitutional text and structure.[29]

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[23]   See Stephen Gageler, 'Sir Robert Garran: Medio Tutissimus Ibis' (2018) 46 *Federal Law Review* 1, 5–8.
[24]   *Official Report of the National Australasian Convention Debates*, Adelaide, 23 March 1897, 17 (Edmund Barton).
[25]   *Engineers' Case* (n 12) 151–2.
[26]   *Victoria v Commonwealth* (1971) 122 CLR 353.
[27]   *Commonwealth v Tasmania* (1983) 158 CLR 1.
[28]   *New South Wales v Commonwealth* (2006) 229 CLR 1.
[29]   See, for example, *McGinty v Western Australia* (1996) 186 CLR 140, 168, citing *Engineers' Case* (n 12) 145, 155.

III   COLE V WHITFIELD

Cole v Whitfield, when it was decided in 1988, was unquestionably the most important case in Australian constitutional history second only after the *Engineers' Case*. The great accomplishment of *Cole v Whitfield* was to overcome what had until then seemed an intractable problem. Ironically, that accomplishment is now under-recognised precisely because of the lasting success that it achieved.

The unqualified prescription of s 92 of the *Constitution* that 'trade, commerce, and intercourse among the States … shall be absolutely free' was for the first 85 years of the High Court's existence the bane of its Justices and the scourge of every constitutional adviser to Commonwealth and State governments.

Before 1988, at least one third of all constitutional cases decided by the High Court were cases decided on s 92.[30] Despite several valiant attempts to do so, most notably in *McArthur's Case* in 1920[31] and the *Bank Nationalisation Case* in 1948[32], neither the High Court nor the Privy Council had been successful in articulating a coherent explanation of the section's meaning, let alone a workable criterion for its legal operation.

On his retirement as Chief Justice in 1952, Sir John Latham said that, when he died, the words of s 92 would be found written on his heart. Writing in retirement in 1957, he described the section as 'the curse of the *Constitution*' and as a 'boon to lawyers and to road-hauliers and to people who want to sell skins of protected animals or to trade in possibly diseased potatoes'.[33] Writing in 1977, Professor Geoffrey Sawer described the whole subject of s 92 as one of 'gothic horrors and theological complexities'.[34]

In *Cole v Whitfield* in 1988, a unanimous High Court, under the leadership of Sir Anthony Mason as Chief Justice, discarded the existing case law, reinterpreted the section and formulated a new standard to guide its application. The parallels to the *Engineers' Case* are significant.

The first is the deliberate and extensive departure from prior constitutional doctrine. Members of the High Court, differently constituted, would later say that 'it would be an error to read what was decided in *Cole v Whitfield* as a complete break with all that had been said in [the] Court respecting the place of s 92 in the scheme of the *Constitution*'.[35] That is so to the extent that, like the reasoning in the *Engineers' Case*, some of the reasoning in *Cole v Whitfield* was foreshadowed in some of the earlier case law. The greater error would be to treat what was decided in *Cole v Whitfield* as mere continuation of what had gone before.

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30   See Stephen Gageler, 'The Section 92 Revolution' in James Stellios (ed), *Encounters with Constitutional Interpretation and Legal Education: Essays in Honour of Michael Coper* (Federation Press, 2018) 26, 27.

31   *W & A McArthur Ltd v Queensland* (1920) 28 CLR 530.

32   *Bank of New South Wales v Commonwealth* (1948) 76 CLR 1.

33   J G Latham, 'Book Reviews' (1957) 1(2) *Melbourne University Law Review* 266, 271–2.

34   Geoffrey Sawer, 'Book Reviews' (1977) 8(3) *Federal Law Review* 376, 377.

35   *Betfair Pty Ltd v Western Australia* (2008) 234 CLR 418, 451 [11].

Of the earlier case law, the joint judgment of the High Court in *Cole v Whitfield* said this:

> No provision of the *Constitution* has been the source of greater judicial concern or the subject of greater judicial effort than s 92. That notwithstanding, judicial exegesis of the section has yielded neither clarity of meaning nor certainty of operation. Over the years the Court has moved uneasily between one interpretation and another in its endeavours to solve the problems thrown up by the necessity to apply the very general language of the section to a wide variety of legislative and factual situations. Indeed, these shifts have been such as to make it difficult to speak of the section as having achieved a settled or accepted interpretation at any time since federation.[36]

'Departing now from the doctrine which has failed to retain general acceptance', announced the High Court, 'we adopt the interpretation which ... is favoured by history and context'.[37] Starting again with the constitutional text and reading it against the background of nineteenth-century colonial history, the High Court reinterpreted the critical reference in s 92 to free trade as referring to an absence of protectionism. The section, the Court held, would be infringed only by a law which imposed a discriminatory burden on interstate trade which was protectionist in nature.

> *Discrimination is now the sole test –*
> *Local protection, implied or expressed.*
> *Outside those limits, the State knows what's best.*
> *...*
> *Once the new doctrine was fully unveiled,*
> *Dozens of precedents suddenly failed.*

Next, we see in *Cole v Whitfield*, as we saw in the *Engineers' Case*, the High Court self-consciously returning to an original understanding of the *Constitution*. Of the competing late nineteenth-century conceptions of freedom of trade available to be drawn on, the conception of equality of trade was given precedence over that of unrestrained trade.

Unlike the *Engineers' Case*, which was decided at a time when some of the principal participants in important events of the 1890s were still alive, however, the return to an original understanding in *Cole v Whitfield* involved an extensive analysis of historical material. Resort to pre-federation history, including the debates of the Conventions of 1891 and of 1897 and 1898, it was said, was permissible 'not for the purpose of substituting for the meaning of the words used the scope and effect — if such could be established — which the founding fathers subjectively intended the section to have, but for the purpose of identifying the contemporary meaning of language used, the subject to which that language was directed and the nature and objectives of the movement towards federation from which the compact of the *Constitution* finally emerged'.[38]

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36   *Cole v Whitfield* (n 13) 383–4.
37   Ibid 407.
38   Ibid 385.

And we see in *Cole v Whitfield*, as we saw in the *Engineers' Case*, a revised understanding of the *Constitution* bringing with it a revised understanding of the role of the High Court itself. The application of s 92 as reinterpreted was unavoidably evaluative, and the evaluative nature of requisite constitutional adjudication was to be openly acknowledged and embraced. Pondering the future application of the interpretation which it was then announcing, the High Court adopted a tone of cautious realism. It said this:

> The adoption of an interpretation prohibiting the discriminatory burdening of interstate trade will not of course resolve all problems. It does, however, permit the identification of the relevant questions and a belated acknowledgment of the implications of the long-accepted perception that 'although the decision [whether an impugned law infringes s 92] was one for a court of law the problems were likely to be largely political, social or economic' ...[39]

We see in *Cole v Whitfield*, as we saw in the *Engineers' Case*, the laying of the foundation for the development of a new body of constitutional principle. *Cole v Whitfield* set out the parameters of a more coherent approach to the application of s 92 of the *Constitution*, which has come to be worked out in more detail in subsequent cases on that section.[40] *Cole v Whitfield* also set the groundwork for a complementary approach which came soon afterwards to be taken in relation to the interpretation and application of the related and similarly opaque prescription in s 90 of the *Constitution* which makes 'the power ... to impose duties of customs and of excise' exclusive to the Commonwealth Parliament.[41]

Finally, we see in the wake of *Cole v Whitfield*, as we saw in the wake of the *Engineers' Case*, the assimilation of new doctrine within a continuing and enriched constitutional tradition. Two aspects of approach taken in *Cole v Whitfield* to the interpretation and application of s 92 of the *Constitution* have had a profound influence on the development of constitutional law in general since 1988. One is resort to pre-federation historical sources, including but not limited to the transcripts of the debates which occurred during the Conventions of 1891 and of 1897 and 1898, to identify the purpose of constitutional provisions and to elucidate their text. The other is insistence on a consideration of the substantive or practical operation of an impugned law in order to determine its compliance with a constitutional limitation or restriction on power. In that latter respect, *Cole v Whitfield* presaged the structured form of analysis which would come soon afterwards to be embraced in relation to the doctrine of the implied freedom of political communication, as recognised in *Australian Capital Television Pty Ltd v Commonwealth*[42] and as consolidated in *Lange v Australian Broadcasting Corporation*,[43] in which the validity of an impugned law was to be determined by enquiring as to whether the burden which it placed on conduct within an area of constitutionally protected freedom was able to be justified by reference to

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39   Ibid 408, quoting *Freightlines & Construction Holding Ltd v New South Wales* (1967) 116 CLR 1, 5.
40   See *Castlemaine Tooheys Ltd v South Australia* (1990) 169 CLR 436; *Barley Marketing Board (NSW) v Norman* (1990) 171 CLR 182; *Betfair Pty Ltd v Western Australia* (2008) 234 CLR 418; *Betfair Pty Ltd v Racing NSW* (2012) 249 CLR 217.
41   See *Ha v New South Wales* (1997) 189 CLR 465.
42   (1992) 177 CLR 106.
43   (1997) 189 CLR 520.

the law's pursuit of constitutionally permissible ends by constitutionally appropriate and adapted means.

IV   CONCLUSION

To avoid misunderstanding, my point has not been to suggest that all, or even many, landmark cases in Australian constitutional law during the twentieth century exhibited the qualities that I have attributed to the two on which I have focused. The important cases on Ch III of the *Constitution*, for example, within which can be included the *Wheat Case* in 1915,[44] *Boilermakers' Case* in 1956[45] and *Kable* in 1996,[46] were controversial at the time of decision, but they involved no large scale departure from prior case law and took considerably longer to be assimilated. Overcoming extreme temptation, I refrain from incorporating words from the Tony Blackshield 'Separation of Powers' song set to the tune of 'Three Coins in the Fountain'.

My point has been to acknowledge that, while small steps are the ideal, the history of constitutional interpretation cannot honestly be told without reference to the giant leaps. The two cases on which I have focused to demonstrate that proposition, although separated by more than half a century, have much in common. In the words of Mark Twain, which could easily have been the words of Tony Blackshield, 'history never repeats itself; but it rhymes'.[47]

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[44]   *New South Wales v Commonwealth* (1915) 20 CLR 54.
[45]   *R v Kirby; Ex parte Boilermakers' Society of Australia* (1956) 94 CLR 254; *Attorney-General of the Commonwealth of Australia v The Queen* (1957) 95 CLR 529; [1957] AC 288.
[46]   *Kable v Director of Public Prosecutions (NSW)* (1996) 189 CLR 51.
[47]   Mark Twain quoted in 'A Said Poem' in John Robert Colombo, *Neo Poems* (Sono Nis Press, 1970) 46, quoted in Harry Hobbs and Andrew Trotter, 'Lessons from History in Dealing with our Most Dangerous' (2018) 41(2) *University of New South Wales Law Journal* 319, 319.

JUST, QUICK AND CHEAP?[1]
CIVIL DISPUTE RESOLUTION AND TECHNOLOGY

TANIA SOURDIN,* BIN LI,** TONY BURKE***

Danish philosopher Soren Kierkegaard wrote 'Life can only be understood backwards; but it must be lived forwards'. The pace of life of the mid-19th century when this was written and the (comparatively) modest rate of technological change possibly allowed for a more considered reflection of past events towards moving ahead. However, the increasing rate of technological change over the past two decades and the predicted pace of technological change into the future have established 'disruption' as a catchword. The pace of justice reform is (generally) faster, the price is (often) less expensive, and society seeks unhindered access to justice — on a cheap and quick basis.

In the context of the legal landscape, this article begins by examining three levels of technological change that have impacted and will continue to impact on the operation of the civil justice system within a framework of objectives relating to expense, speed and justice. The authors argue that there appears to be a general consensus that the 'quick and cheap' resolution of civil disputes will be supported through technological developments, although whether this will meet objectives in respect of 'just' results and processes remains uncertain. The authors then explore the meaning of 'justice' and how technological innovation can bring advantages and pose challenges in terms of access to justice. This article also addresses concerns about technological change in the context of civil dispute resolution, focusing on the relationship between disruptive technologies and 'just' resolution. The readiness of the community for technological innovation is explored from the perspectives of the tech-savvy client, to the top tier firm utilising the latest artificial intelligent machinery, through to the courts striving towards satisfying 'overriding objectives' in terms of a 'Just, Quick and Cheap' civil justice system.

I   INTRODUCTION

Clearly, newer technologies, mainly linked to computing developments, have impacted and will continue to impact on the way in which human society operates and people

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[1]   Referring to the overriding purpose as defined at Section 56 (1) of the *Civil Procedure Act 2005* (NSW) which states that 'the overriding purpose of this Act and of rules of court, in their application to civil proceedings, is to facilitate the just, quick and cheap resolution of the real issues in the proceedings'. The authors note that some authors have explored these objectives in the context of experts and other justice reforms: see, eg, Gary Edmond and Mehera San Roque, 'Just(,) Quick and Cheap? Contemporary Approaches to the Management of Expert Evidence' in Michael Legg (ed), *The Future of Dispute Resolution* (LexisNexis Butterworths Australia, 2016); See Michael Legg, 'Reconciling the Goals of Minimising Cost and Delay with the Principle of a Fair Trial in the Australian Civil Justice System' (2014) 33(2) *Civil Justice Quarterly* 157.

interact.[2] As a component of human society, the justice system and associated court processes have also inevitably undergone a range of changes made possible by recently developed technologies.[3] One hope is that the use of technology will promote better access to justice, partly because it may reduce cost and delay. On the other hand, whilst the concept of justice and perceptions of justice can be linked to time and cost — 'justice delayed is justice denied',[4] there is a critical question as to whether some technologies may result in the system becoming less 'just' and more focused on objectives related to the speed of disposition of disputes and cost reduction. In this regard, there may be a range of issues that arise where justice processes are 'dehumanised' or where the speed of processing disputes impacts on the extent to which justice is perceived to have been achieved. In particular, the following three questions are relevant: how technology should influence the justice system; how 'justice' should be conceptualised; and how the budgetary issue in the civil justice system with even sophisticated technology could undermine a 'just' resolution of disputes.

First, at present, technology has the potential to better support the ways in which people experience and access the court system. For example, in Australia, courts such as the Supreme Court of New South Wales have created a social media presence to disseminate matters of public interest.[5] This type of combination of information and internet technology and legal knowledge helps laypersons understand how law works in their country and increases their possibilities to turn to law for help when they face a similar situation. The facilitation of courts in their trial work is another important advantage brought by technology to judicial processes. In some courts, these developments are more advanced than in others. For example, in 2018, the Hangzhou Internet Court became the first court in China to recognise blockchain technology as a means of storing evidence to assist in dealing with copyright infringement cases.[6]

However, views may differ in terms of how and to what extent technology should (or could) influence the justice system. Richard Susskind has suggested that technology in the justice sector can be perceived and categorised as either sustaining or disruptive.[7] He has suggested that the former supports and enhances the way that a business or a market currently operates, while the latter fundamentally challenges and changes the functioning of a firm or a sector.[8] In this article, the authors suggest technologies influence justice in additional ways and that concerns relating to justice

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[2]   As early as in 1996, Lord Woolf suggested, in the *Access to Justice — Final Report,* that the information technology should be appropriately introduced to the courts, particularly for the case management purpose: Sir Harry Woolf, *Access to Justice: Final Report to the Lord Chancellor on the Civil Justice System in England and Wales* (Final Report, 1996) ch 21.

[3]   See Tania Sourdin, 'Justice and Technological Innovation' (2015) 25 *Journal of Judicial Administration* 96 ('Justice and Technological Innovation').

[4]   See Tania Sourdin and Naomi Burstyner, 'Justice Delayed is Justice Denied' (2014) 4 *Victoria University Law and Justice Journal* 46.

[5]   See Michael Douglas, 'How Technological Change is Expanding Open Justice', *Australian Lawyers Alliance* (Blog Post, 26 April 2018) <https://www.lawyersalliance.com.au/opinion/how-technological-change-is-expanding-open-justice>.

[6]   Jimmy Aki, 'Chinese Internet Court Uses Blockchain To Combat Online Plagiarism' *CCN* (Web Page, 19 December 2018) <https://www.ccn.com/chinese-internet-court-to-use-blockchain-to-combat-online-plagiarism>.

[7]   See Richard Susskind, *Tomorrow's Lawyers: An Introduction to Your Future* (Oxford University Press, 2013) 39.

[8]   Ibid.

can also be linked to 'replacement' technologies that are directed at the replacement of humans. In this regard, it is suggested that there are three levels in which technology is already reshaping the justice system.

First, and at the most basic level, technology is assisting to inform, support and advise people involved in the justice system (supportive technology, such as online legal services in the form of legal applications ('apps')). Second, technology can replace functions and activities that were previously carried out by humans (replacement technologies, such as online mediation processes). Finally, at a third level, technology can change the way that judges and legal professionals work and provide for very different forms of justice (disruptive technology, such as artificial intelligence judges), particularly where processes change significantly, and predictive analytics may reshape the adjudicative role.[9] In this regard, more concerns relating to technology may also be linked to the capacity that it has to disrupt the justice sector and the extent to which justice values may not be aligned with disruptive approaches. For example, justice concerns have been linked to issues relating to the transparency of decision making, algorithmic bias, and enforceability.[10]

In relation to the second relevant question – how 'justice' should be conceptualised – the poorly defined objectives of the civil justice system complicate the assessment of technological impacts on the system. Although draft objectives have been promulgated at a federal level within Australia,[11] and include a focus on wellbeing,[12] in many courts there is little to indicate what is meant by justice. The legislation also provides limited guidance. For example, the *Civil Procedure Act 2005* (NSW) suggests that the objectives in NSW are that the system is 'just, quick and cheap', but there is little guidance in terms of evaluating whether such objectives have been met (and to what extent) and how 'justice' can be defined. Efforts to clarify this blurry definition of 'justice' have been demonstrated by the third wave of the access to justice movement, as the concept of justice has been linked to the exploration of access to justice notions.[13] In this regard, as indicated by the former Chief Justice Murray Gleeson, access to justice has a much wider meaning than access to litigation.[14] Therefore, it is suggested that justice can be achieved not only through litigation and the court system but with the facilitation of other additional approaches. Naturally, in some respects, the large volume of civil cases that have been shifted towards forms of Alternative Dispute Resolution ('ADR'), has been partly driven by cost pressures. That is, the civil court system has been unable to cope with increased litigation loads without extensive additional funding and, as a result, forms of ADR and the bodies that may administer the systems that surround such processes, have been introduced to increasingly divert

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9   See generally Sourdin, 'Justice and Technological Innovation' (n 3) 103.
10   See Tania Sourdin, 'Judge v Robot? Artificial Intelligence and Judicial Decision-Making' (2018) 41(4) *University of New South Wales Law Journal* ('Judge v Robot').
11   See 'Building an Evidence Base for the Civil Justice System: Draft Objectives', (Web Page, 30 May 2012) <https://www.ag.gov.au/LegalSystem/Documents/Draft%20objectives%20for%20the%20civil%20justice%20system.pdf>.
12   Ibid. The Overarching Objective is stated to be 'The Australian civil justice system contributes to the well-being of the Australian community by fostering social stability and economic growth and contributing to the maintenance of the rule of law'.
13   See Tania Sourdin, 'A Broader View of Justice?' in Michael Legg (ed), *The Future of Dispute Resolution* (LexisNexis Butterworths Australia, 2016) 23.
14   See Murray Gleeson, 'National Access to Justice and Pro Bono Conference' (Speech, Australian Pro Bono Centre, 11 August 2006) 1.

disputes away from the court system. It is, however, worth mentioning some of the
concerns that ADR may not contribute to access to justice, as its outcome is not based
on legal rights but rather on the problem-solving approach. According to Genn:

> The mediator does not make a judgement about the quality of the settlement.
> Success in mediation is defined in the mediation literature and by mediators
> themselves as a settlement that parties 'can live with'. The outcome of mediation,
> therefore, is not about just settlement, it is just about settlement.[15]

There are of course many other reasons that support the use of ADR that include
supporting relationships, reducing adversarialism and promoting more effective
outcomes. However, there is no doubt that one reason for adopting ADR has been to
reduce the public cost of civil justice.[16] In the context of technological change, which
can be perceived as heralding a new wave in the access to justice movement, it seems
probable that similar cost concerns will result in the adoption of technological changes
if they are 'cheap' — at least from a public cost perspective. Under such circumstances,
there are dangers that such changes will be adopted without regard to the quality of
justice.

The third relevant question relates to budgetary aspects. In respect of all three levels
of technological change as noted above (some of which are intertwined), there is
potential for the limited funding arrangements that exist with the civil justice system
to drive change (or the lack of change) in ways that may result in a less just system.[17]
In the context of Australia, as Morry Bailes, the past President of the Law Council of
Australia, noted in May 2018, there is a 'funding crisis' in respect of the civil justice
sector.[18] It has also been observed that addressing the crisis requires the government
to specifically deliver long-term investment in the legal assistance sector, as well as a
long-term investment in the courts.[19] Despite such calls for more financial resources,
Australian governments appear to be relying on court system structural changes to
reduce both waiting times and costs for litigants.[20] Under these circumstances, there
are concerns that technological supports will only be available if they are accessible at
the lowest public cost. Further, although the original intention of introducing
technology to the court system may be to facilitate the parties to settle disputes in a
speedier manner, limited court funding could lead to court staff reductions as the price

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[15]   Hazel Genn, 'What Is Civil Justice For? Reform, ADR, and Access to Justice' (2012) 24 *Yale Journal of Law & the Humanities* 397, 411.
[16]   Ibid 402.
[17]   See Nick Hilborne, 'Court Modernisation "Undermining Access to Justice", Lawyers tell MPs', *legalfutures* (22 May 2019) < https://www.legalfutures.co.uk/latest-news/court-modernisation-undermining-access-to-justice-lawyers-tell-mps>. Another factor that may impact on the achievement of just, cheap and quick resolution of civil disputes could be less effective case management: see David Hammerschlag, 'Dealing with Cost and Delay' in Michael Legg (ed), *Resolving Civil Disputes* (LexisNexis Butterworths, 2016).
[18]   See Melissa Coade, Jerome Doraisamy and Emma Ryan, '#Auslaw and the 2018 Budget Reveal' *Lawyers Weekly* (Web Page, 9 May 2018) <https://www.lawyersweekly.com.au/politics/23192-auslaw-and-the-2018-budget-reveal>.
[19]   Ibid.
[20]   Michael Pelly, 'Courts Merger to Put More Pressure on 'Workhorse', says Law Council', *Financial Review* (23 August 2018) <https://www.afr.com/business/legal/courts-merger-to-put-more-pressure-on-workhorse-says-law-council-20180823-h14dfy>.

for adopting online pleas and remote video hearings.[21] This could cause the problem of a lack of technical support to users, leading to disputes with less 'just' outcomes. Unfortunately, the experience of the UK has suggested that this outcome is likely.[22]

Centring around the theme of the 'just', 'quick' and 'cheap' resolution of civil disputes, this article explores the meaning of 'justice' and what advantages newer technologies have brought to the civil justice system. The authors also examine the possible challenges that technology has presented to civil justice processes. Further, the authors explore the status quo of acceptance of technology by using the legal profession, judges, and consumers as examples. The article concludes that although there are various issues that technology has caused to the civil justice landscape, and therefore more work needs to be done across the sector to address those challenges, it is undeniable that technology has facilitated the resolution of civil disputes in ways that can be just, quick and cheap.

II   TECHNOLOGY AND 'JUSTICE'

It has been noted that justice is an 'elusive concept upon which it is possible for rational and informed observers to disagree',[23] even though it is 'one of the core principles of every national legal system',[24] and that 'access to justice' is nebulous and 'survive[s] in political and legal discourse because it is capable of meaning different things to different people'.[25] These differences have meant that there is continuing disagreement amongst those who locate justice only in the court system and those who consider justice exists throughout the dispute resolution landscape.[26] It might therefore be inferred that technological impacts on justice may be assessed in the same way in terms of where technological innovations take place. For example, innovation that occurs outside the court system (or the litigation system) may not be regarded as justice-related technological innovation.

The differences in terms of the 'location' of the justice system can be partly attributed to different philosophical understandings of what 'justice' means. Put simply, more traditional and perhaps litigation supporters may consider that justice can only take place within courts as it is only through the articulation by a judge of understandings about the rule of law that justice can be done.[27] In contrast, those that inhabit the ADR landscape may consider that

> while there is an important, significant and essential role played by the judiciary in the public adjudication of civil disputes, justice is also present in the

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[21]   See Owen Bowcott, '6,500 Jobs to be Lost in Modernisation of Courts', *The Guardian* (2 May 2018) <https://www.theguardian.com/law/2018/may/02/6500-jobs-to-be-lost-in-modernisation-of-uk-courts>.

[22]   See Hilborne (n 17)..

[23]   Michael Kirby, 'Attaining Universal Justice: Realities Beyond Dreams' (2011) 1 *Dictum — Victoria Law School Journal* 7, 7.

[24]   Ibid.

[25]   Justice Ronald Sackville, 'Access to Justice: Assumptions and Reality Checks' (Speech, Access to Justice Roundtable Workshop, 10 July 2002) 19.

[26]   Ibid 19–20.

[27]   Tania Sourdin, 'The Role of the Courts in the New Justice System' (2015) 7 *Yearbook on Arbitration and Mediation* 98, 99.

relationships that exist between people and in their ethical values and that ADR supports this broader formulation of justice.[28]

The 'broader' view of justice that is articulated in respect of the civil justice system in Australia supports this definition as it is assumed that justice may involve invoking a corrective principle. However, a corrective principle may also be supported by forms of ADR, that is by agreement and recognition, as well as through court-based decision making. Justice in this context can, therefore, be described as incorporating a 'characteristic set of principles for assigning basic rights and duties and for determining what [is] the proper distribution of the benefits and burdens of social cooperation'.[29]

This view of justice is relevant in relation to how technology can support justice and the extent to which it is related to the support that technology can provide, not only in the context of defining the 'corrective principle' but also in terms of how relationships and ethical understandings are supported. Considering how technology has impacted on justice in terms of a broader civil dispute resolution perspective enables a more systemic consideration of technology within the justice sector. For example, the significance of pre-action arrangements, whereby disputants seek to finalise a dispute prior to filing with the court (see Figure 1), can be considered in this context. Newer technologies have already had a significant impact in this area, and 'boosted by online resources, these options are providing many disputants with accessible dispute resolution outside courts'.[30] Such reforms are largely separated from courts and may function with the assistance of more advanced technologies that can be applied to processes such as internal review of disputes (eg complaints handling), and schemes that incorporate requirements to arbitrate, conciliate, mediate, or use ADR or external dispute resolution ('EDR').
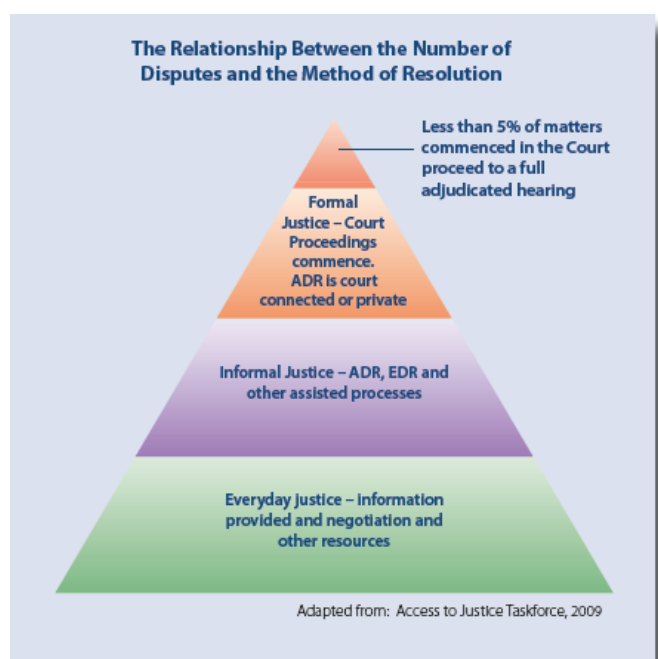

Figure 1.

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[28]   Ibid.

[29]   John Rawls, *A Theory of Justice* (Harvard University Press, reprinted 2005) 5. Rawls conceives justice as fairness.

[30]   Tania Sourdin and Naomi Burstyner, 'Australia's Civil Justice System: Developing a Multi-Option Response' (National Center for State Courts, 2013) 78–84.

Other notions of justice are linked to perceptions of fairness. In this regard, perceptions of fairness can be linked to procedural fairness (ie whether procedures, participation, and the timeliness and cost of arrangements are viewed as 'fair'), as well as the quality of the outcome, whether or not this is assessed by reference to objective or other standards.[31] In the context of technological innovation, there may be particular concerns relating to participation as well as procedural understandings. At the same time, there are clearly opportunities to enhance participatory justice, partly because technologies can support the exchange of, and access to, information.

In terms of justice engagement, technology is already changing the way in which disputes progress through the justice system. For example, 'cloud' technology can enable all participants in a dispute to have instant access to all of the information relevant to a dispute. Disputants can provide instant links to websites where documents may be held via clusters of interested parties in secured groups on the internet. Newer technologies have the capacity to improve the time taken to deal with disputes by supporting the exchange of material, enabling prompt exchanges to take place, ensuring that data is relevant and produced in a way that encourages sophisticated planning responses, and by creating more innovative processes that enable people to access justice processes with greater ease.

However, a related fairness concept may be more relevant in some jurisdictions than in others and can be linked to the extent that the outcomes are perceived to be the result of an 'even-handed' process. This has been discussed in a number of reports[32] in the context of pre-action requirements,[33] and restricting access to justice,[34] and in more detail in the literature particularly when considering ADR processes.[35] In this regard, 'even-handedness' and related notions of transparency and natural justice may raise particular issues in online dispute resolution (ODR) processes where

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[31]   Tania Sourdin, *Exploring Civil Pre-Action Requirements Resolving Disputes Outside Courts* (Report, 2012) 88.

[32]   See Rae Kaspiew et al, 'The AIFS Evaluation of the 2006 Family Law Reforms: A Summary' (2010)(86) *Family Matters* 8.

[33]   National Alternative Dispute Resolution Advisory Council, *Maintaining and Enhancing the Integrity of ADR Processes: From Principles to Practice through People* (Report, February 2011) 13–14. One salient feature of this recommendation is that it is proposed in relation to 'mandatory' ADR, which is an increasing feature of the Australian dispute resolution landscape (both within courts and tribunals and as a precondition to commencing litigation). It is possible that disputants who are required to attend an ADR process (rather than choosing to attend) may be less likely to attend and participate in good faith: at 34.

[34]   See Australian Law Reform Commission, *Discovery in Federal Courts* (Consultation Paper No 2, November 2010) 286 ('*Discovery in Federal Courts*'). The Australian Law Reform Commission referred to the Victorian Law Reform Commission, *Civil Justice Review* (Report No 14, 2008) 109–110, and noted:
> The VLRC Report identified that the implementation of pre-action protocols may be challenged on the basis that such protocols are a barrier to accessing the courts, and therefore incompatible with the right to 'have the charge heard or proceeding decided … after a fair trial' pursuant to s 24 of the *Charter of Human Rights and Responsibilities Act 2006* (Vic). However, this concern was dismissed by the VLRC on the grounds that pre-action protocols: would not bar the commencement of proceedings; are triggered before the commencement of proceedings; and support the facilitation of a fair hearing.

[35]   See, for example, Tania Sourdin, *Alternative Dispute Resolution* (Thomson Reuters, 4th ed, 2012) 20. Sourdin, at Appendix G and referring to MacCoun R, Lind E and Tyler T, *Alternative Dispute Resolution in Trial and Appellate Courts* (RAND, Santa Monica, 1992) 100 for reference to the extensive Thibaut and Walker research.

technological innovations may reduce face to face contact and where the processes used to reach an outcome may be less visible.

This pursuit of justice utilising new technologies has been examined in the context of self-represented litigants (SRLs), being parties that are susceptible to not achieving a fair/just result, and intelligent negotiation support systems.[36] Zeleznikow has noted:

> [W]e have examined the issue as to whether potential litigants can receive useful support from intelligent online dispute resolutions. We have seen that such systems can be particularly useful for self-represented litigants. The SRLs benefit not only from obtaining useful advice, but also becoming better educated about the procedures and potential outcomes for issues in dispute. We note that most ODR systems provide exactly one of either BATNA[37] [Best Alternative to Negotiated Advice] advice, support for trade-offs and facilitated communication. A truly useful Online Dispute Resolution system should be a hybrid of all three approaches.[38]

In addition to the possibilities provided by a technology-assisted ADR system, British Columbia in 2016 established its Civil Resolution Tribunal — being the first full integration of ODR into a formal tribunal system. With numerous other jurisdictions (such as the European Union) incorporating ODR as a fundamental component of their dispute resolution processes, ODR may indeed be the most visible face of new technology in the civil justice sector: 'Online dispute resolution could, therefore, be the future of ADR. As time goes on, the public will increasingly discover the benefits of alternative methods of dispute resolution when they encounter dispute resolution, for the first time, in online venues'.[39]

In relation to satisfying the overriding purpose of just, cheap and quick justice, many commentators suggest that ODR has the potential to reduce delay and broaden the range and reach of existing dispute resolution services: 'Compared to the costs of litigation or even prolonged alternative dispute resolution, the investment in online technologies is potentially both value adding and cost saving'.[40]

In Australia, the area of family law has seen widespread growth in the application of ODR in the telephone and internet-based conferencing technologies. In discussing the statistical trends of this growth, Bilinsky notes that

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[36]   John Zeleznikow, 'Can Artificial Intelligence and Online Dispute Resolution Enhance Efficiency and Effectiveness in Courts' (2017) 8(2) *International Journal for Court Administration* 30, 36.

[37]   Roger Fisher and William Ury, *Getting to YES: Negotiating Agreement Without Giving In* (Houghton Mifflin Harcourt, 1981) 104. Fisher and Ury introduced the idea of a BATNA as one's best alternative to a negotiated agreement. The reason you negotiate with someone is to produce better results than would otherwise occur. If you are unaware of what results you could obtain if the negotiations are unsuccessful, you run the risk of entering into an agreement that you would be better off rejecting; or rejecting an agreement you would be better off entering into.

[38]   Zeleznikow (n 36) 43.

[39]   Noam Ebner and John Zeleznikow, 'No Sheriff in Town: Governance for Online Dispute Resolution' (2016) 32(4) *Negotiation Journal* 297, 319.

[40]   Emilia Bellucci, Deborah Macfarlane and John Zeleznikow, 'How Information Technology Can Support Family Law and Mediation' in Witold Abramowicz, Robert Tolksdorf and Krzysztof Węcel (eds), *Business Information Systems Workshops* (Springer International Publishing, 2010) 243, 252.

most family/divorce/access/support issues take place in families where the age of the parties are often under 35. This demographic group is familiar with technology as well as having access to technology. Given the large geographic challenges faced in Australia, this factor alone is driving the use of this system.[41]

In the family area, many disputes are now dealt with through very simple technologically supported processes such as the Family Relationship Advisory Line (FRAL), Telephone and Online Dispute Resolution Service (TDRS) and, increasingly across Australia, through video conferencing (Zoom, Skype or purpose-built). These options are particularly suited to disputants who may be geographically isolated from services or one another and also in circumstances where family violence may be an issue. Some issues about the increased use of technology include concerns about factors that may impact on the 'just' result, such as privacy and confidentiality. In this regard, the Relationships Australia report actually found that there were very high rates of satisfaction with the Online Family Dispute Resolution (OFDR) services that were set up as part of the project in Queensland. Their research, therefore, suggests that online family dispute resolution processes meet objectives in terms of justice in addition to objectives relating to 'quick' and 'cheap' processes. Many factors support the continuing use of effective OFDR. The factors include:

i.   the type of technology — ease of use, reliability, accessibility and staff assistance (help desk and like supports)
ii. the skills and experience of staff
iii. the training given to staff.[42]

Other technology that supports disputants in this area includes 'supportive service technology', such as that offered by Anglicare in Tasmania where e-counselling is provided to clients in the remote north-west of that state.[43] Real-time counselling is provided online using software developed by that organisation. Partnerships have been developed with local community organisations that allow clients to use their computer facilities for counselling sessions.[44]

In consideration of the above, it is pertinent to recognise that both the location of technological innovations in the justice sector and the type of innovations may impact upon considerations relating to whether they meet justice objectives. For example, supportive technologies may not raise concerns across the justice sector. Replacement technologies may also be supported in the ADR sector and in respect of the management of disputes as discussed above in relation to OFDR. However, more disruptive technologies that may involve developed artificial intelligence (AI) may raise quite different and additional issues in terms of 'justice', particularly if they impact on perceptions relating to procedural justice as well as substantive justice, in part because both participation and transparency in terms of decision making may be reduced, which may be more relevant where evaluative and judicial adjudication processes are involved. In addition, it is also worth mentioning that no matter what

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[41]   David Bilinsky, 'Report From the ODR Conference in Buenos Aires', *Slaw* (Web Page, 3 June 2010) <http://www.slaw.ca/2010/06/03/report-from-the-odr-conference-in-buenos-aires/>.

[42]   Relationships Australia, *Development and Evaluation of Online Family Dispute Resolution Capabilities* (Report, 2011) 14–15.

[43]   See Heather Brookes and Tony Smith, 'Servicing Rural and Remote Communities through E-Counselling' (2010) 16 *Family Relationships Quarterly* 14.

[44]   Ibid 15.

types of technologies are discussed, there could be work across the justice sector that is not appropriate for technology to play a part, such as the work of the oral advocate.[45]

III   CONCERNS ABOUT TECHNOLOGICAL CHANGE

As noted above, technological innovations have resulted in a number of positive changes to the landscape of justice system. For example, in terms of supportive technologies, access to justice can be made much easier with the application of online free legal services such as apps, including Penda[46] and AskLOIS,[47] which have been developed to empower victims of family violence with access to legal, financial and safety information, and to provide online training and resources to assist community support workers assisting women experiencing family and domestic violence.[48]

As to replacement technologies, as noted above, online dispute resolution (which includes video conferencing) has at least saved travel times and disbursements whilst contributing to a faster finalisation of disputes compared with both traditional litigation processes and traditional forms of ADR that require face to face contact. Similarly, case management has been aided by replacement technologies that enable the easier exchange of material, timetabling and the insertion of advisory apps.[49]

In terms of the more disruptive technologies, the benefits are less clear although it has been suggested that where computerised sentencing has been introduced into some criminal determinations, computers can make sentencing determinations more effectively and fairly than judges, and that there could be considerable fiscal savings flowing from reductions in the amount of time currently spent by judges in determining appropriate sentences.[50] There are, of course, strong arguments to the contrary[51] where the use of AI has generated concerns that arise from algorithmic bias issues to a lack of transparency, and even the encroachment by the executive upon the judicial function.[52]

As noted above, there are, however, an additional range of concerns about technological change in the judicial sector. These may include scepticism about the extent to which technology can assist in dealing with the 'current' problems of the justice system.[53] There are also responses to the possible 'new' problems caused by the

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[45]   Chief Justice Thomas F Bathurst, 'The Role of the Commercial Bar in the Mid-21st Century' (Speech, Australian Bar Associate Conference, 16 November 2018) 7.
[46]   See *Penda* (Website) <https://penda-app.com>.
[47]   See *Women's Legal Service NSW* (Website) <https://www.wlsnsw.org.au/training/ask-lois-website/>.
[48]   'Apps and Access to Justice: How Technology Can Make a Difference', *LAWCPD* (Blog Post, 9 May 2018) <https://lawcpd.com.au/blog/apps-and-access-justice-how-technology-can-make-difference/>.
[49]   See Sourdin, 'Justice and Technological Innovation' (n 3) 99.
[50]   Mirko Bagaric and Gabrielle Wolf, 'Sentencing by Computer: Enhancing Sentencing Transparency and Predictability, and (Possibly) Bridging the Gap between Sentencing Knowledge and Practice' (2018) 25(4) *George Mason Law Review* (forthcoming). Although looking at the criminal jurisdiction, the principles stated in this article would apply equally to judgments in the civil jurisdiction: Sourdin, 'Judge v Robot?' (n 10) 1132–1133.
[51]   Bagaric and Wolf (n 50) 44.
[52]   Sourdin, 'Judge v Robot?' (n 10) 1126.
[53]   See Chief Justice Thomas F Bathurst, 'ADR, ODR and AI-DR, or Do We Even Need Courts Anymore?' (Speech, Australian Disputes Centre, Supreme Court of New South Wales, 20 September 2018) ('ADR, ODR and AI-DR').

use of technology in the sector, including how courts can preserve open justice in a technological era.[54] Another issue relates to how newer technologies may be 'taken up' in the sector and the unevenness of any take-up. The challenge of ensuring that legal technical systems are kept up to date as technology develops quickly means that technological improvements are unlikely to occur in an 'even' manner. For example, 'private' parts of the system, which includes large law firms and funded ADR organisations (such as the Australian Financial Complaints Authority) are more likely to be able to afford investment than some parts of the court's sector.[55] In this regard, current developments already suggest that there is a lack of evenness in terms of developments. Through mining litigation data and applying big data analytical tools, Lex Machina, a company owned by legal publisher LexisNexis, is able to provide law firms and corporate clients with quantified insights into judicial behaviour, venues, opposing parties and opposing counsel to assist them to make better decisions about claim construction and case strategy.[56] Thus, instead of seeking advice from a law firm regarding the costs and benefits of initiating or defending litigation, businesses can obtain that advice more quickly, inexpensively and, in some cases, more accurately from legal analytics firms like Lex Machina. However, access to such systems can be costly and therefore uneven, which raises questions about fairness (in terms of smaller law firms, legal aid, and courts) as well as whether an investment in technology could, to some extent, undermine the potential for the 'cheap' resolution of disputes. In this context, the question arises: is it possible that the legal landscape is on the cusp of a technology-driven paradigm shift of a quantum nature whereby 'Just, Cheap and Quick' are capable of truly coexisting?

In this regard, it seems likely that many technological changes will promote the just resolution of civil disputes, particularly in terms of diverse online free legal services supported by the relevant 'supportive' technologies, since the 'weaker' party with disadvantaged status in a dispute may now be able to receive appropriate legal information and advice, and power imbalances can be, at least, somehow addressed — thus increasing the possibility of obtaining a 'just' settlement (see further discussion below). There are, however, some additional challenges to the use of disruptive technologies in justice that may impact on the 'just' resolution of civil disputes, although some commentators suggest that such challenges can be dealt with appropriately and 'justice' can be achieved.[57]

Another potential benefit concerns the extent to which technology can assist with the long-term operation of the justice system. Innovation in the use of technology across society and to a limited extent in the justice system has recently focused on finding ways of accessing what is known as 'big data'. The inferential techniques being used on big data can offer great insight into many complicated issues, in many instances with remarkable accuracy and timeliness. The quality of business decision-making, government administration, scientific research and much else can potentially be

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[54]   See The Hon Chief Justice Marylin Warren, 'Open Justice in the Technological Age', (2014) 40 (1) *Monash University Law Review*.

[55]   Robert Thomas and Joe Tomlinson, 'The Digitalisation of Tribunals: What We Know and What We Need to Know', *Public Law Project* (Web Page, 5 April 2018) <https://publiclawproject.org.uk/resources/the-digitalisation-of-tribunals-what-we-know-and-what-we-need-to-know/>.

[56]   Vicki Waye, Martie-Louise Verreynne and Jane Knowler, 'Innovation in the Australian legal profession' (2018) 25(2) *International Journal of the Legal Profession* 213, 223.

[57]   Sourdin, 'Judge v Robot?' (n 10) 1126–1130.

improved by analysing data in better ways. These developments, in turn, have the potential to improve the quality of justice.[58]

Researchers at the Hague Institute for the Internationalisation of Law, studying big data's impact on the justice environment, have noted that these benefits are generally not being realised:

> For most justice systems, the goal of court information systems is to get accurate statistics about workloads, disposition times, sentence rates, appeal and reversal rates, etc. However, our research indicates that existing court IT and organisational tools and mechanisms have limited capacity to extract valuable knowledge and insights from massive data sets.[59]

Ingo Keilitz, an expert consulting with justice institutions throughout the world on measuring and improving their performance, offers the following example of how big data could affect court administration issues such as court consolidation:

> For example, court location data could be compared against a number of public databases with information from inside and outside the justice system including Zip codes, populations, demographics of the population (race, age, disability), travel times between locations, numbers and types of cases heard by different courts, levels of courts, and availability of public transportation.[60]

The result of this analysis would allow advocates and opponents of various court consolidation models to consider the effect on distance and timeliness:

> Results may allow advocates and opponents to compare various court consolidation models and say, for example, that the consolidation of courts from ten locations to three would increase the average distance and driving time to the nearest court from 3.1 miles and a ten minute commute to 4.5 miles and a fourteen minutes, where the overall average can be disaggregated by age of citizens, income levels, case type and so forth.[61]

However, whilst big data may assist in terms of making the 'system' work more effectively partly because it may enable better data to be gathered about the system, there are also concerns that the capacity to collect and explore data may have unforeseeable risks and issues. For example, in an effort to promote quick and cheap justice by way an alternative 'naming and shaming' strategy, a Chinese Court has mandated the use of a mini-program nicknamed 'Deadbeat Map' which allows users to pinpoint the location of those who have failed to pay their debts within a 500-metre radius.[62]

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[58]   David Bollier, *The Promise and Peril of Big Data* (Report, 2010) 2.

[59]   Greemn Lim, 'Courts and Big Data' *HIIL* (Web Page, 3 September 2013), cited in Naomi Burstyner et al, 'Using Technology to Discover More About the Justice System' (2018) 44 *Rutgers Computer and Technology Law Journal* 1, 14.

[60]   Ingo Keilitz, 'The Courts' Big Data: What If Only?' (2013), cited in Burstyner (n 59).

[61]   Ingo Keilitz, 'Big Data, Data Analytics, and the Access to Justice "Card"', *Made2Measure* (Blog Post, 2012) <http://made2measure.blogspot.nl/2012/11/big-data-data-analytics-and-access-to.html>.

[62]   Erin Handley and Bang Xiao, 'China Tests Opening Up Social Credit Scores to Social Media Platform WeChat with Debt Map' *ABC News* (online, 24 January 2019) <https://www.abc.net.au/news/2019-01-24/new-wechat-app-maps-deadbeat-debtors-in-china/10739016>.

There are other concerns about the capacity to meet justice objectives that are linked to the potential for a large-scale job loss that may occur across the legal sector partly because similar systems that involve predictive and related technologies to work effectively will lead to significant job sector changes. For example, according to a 2018 report from British accounting firm PricewaterhouseCoopers ('PwC'), the most affected employment segment by automation over the next 5 to 8 years will be administrative and white-collar office jobs.[63] However, a study into the impact of AI on daily commoditised legal tasks recently conducted by American academics showed that AI can already work not only faster than lawyers on certain non-core legal tasks such as reviewing legal contracts, but also in a more accurate way.[64] Despite this finding, one of the academics involved in the study insisted that automation was not synonymous with job losses, but rather AI could end up being a 'lawyer's best friend'.[65] In this regard, a number of reports and commentators have stressed that technological innovation can provide more opportunities for lawyers,[66] including completing some of the groundwork and then improving lawyers' work efficiency.[67]

At the same time, despite cost-saving benefits, technological developments have also led to new issues and increased costs in respect of some parts of the justice sector. For example, according to the Report of *Discovery in Federal Courts* released by Australian Law Reform Commission, many commentators, including Acting Justice Ronald Sackville of the New South Wales Supreme Court, have noted the distorting effect that technology has had on discovery costs associated with court proceedings. It was observed that it was here that extraordinary and disproportionate costs were frequently incurred by parties to the litigation.[68] Again, this echoes the question above as to whether such new costs on discovery will still be in line with the 'cheap' resolution of disputes for parties.

Concerns about the judicial role in the context of more disruptive technological innovation have so far been the subject of limited commentary; however, there are also justice concerns in this arena.[69] Some have suggested that in the judicial decision-making process, artificial intelligence cannot take over entirely because of the biases possessed by the automation systems, particularly when it comes to the sentencing

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63 'How will Automation Impact Jobs?' *pwc UK* (Web Page, 6 February 2018) <https://www.pwc.co.uk/services/economics-policy/insights/the-impact-of-automation-on-jobs.html>.

64 Nirit Abermann, 'AI vs Lawyers: The Ultimate Showdown', *Wall Street Pit* (Web Page, 7 March 2018) <https://wallstreetpit.com/114557-ai-lawyers-ultimate-showdown/>.

65 Ibid.

66 See, eg, Roger Smith, 'Ten Ways in which Technology can Expand Access to Justice', *Law, Technology and Access to Justice* (Web Page, 12 February 2018) <https://law-tech-a2j.org/digital-information/ten-ways-in-which-technology-can-expand-access-to-justice/>; John Zeleznikow, '*Don't Fear Robo-Justice. Algorithms Could Help More People Access Legal Advice*', *The Conversation* (Web Page, 23 October 2017) <http://theconversation.com/dont-fear-robo-justice-algorithms-could-help-more-people-access-legal-advice-85395>; Michele M Leering, 'Enhancing the Legal Profession's Capacity for Innovation: The Promise of Reflective Practice and Action Research for Increasing Access to Justice' (2017) 34(1) *Windsor Yearbook of Access Justice* 189.

67 See Stephanie Palmer-Derrien, 'New Technologies are Throwing Out the Book on Law Procedures, and Aussie Legaltech Startups are Helping Them Do It', *smartcompany* (Web Page, 16 January 2019) <https://www.smartcompany.com.au/startupsmart/news/legaltech-startups-ai-blockchain/>.

68 *Discovery in Federal Courts* (n 34) 160.

69 Sourdin, 'Judge v Robot?' (n 10) 1133.

outcome in a criminal case.[70] Others have noted that in the civil justice arena there is potential, in the longer term, for Judge AI to replace lower level tribunal and lower tier judicial decision making, and it seems likely that Judge AI will develop in a range of other ways.[71] In some jurisdictions, such as China, Judge AI may play a more prominent role.[72] In relation to the civil system, however, and as noted previously, in the absence of a clear focus on 'justice' and related objectives (including well-being), there is a risk that a focus on cost and delay will mean that there is a temptation to automate more decision making particularly at lower levels of the court system. In terms of the ADR system, a focus on 'quick and cheap' at the expense of a justice objective may result in automated non-human decision making which may not be perceived to be 'just'.

Given the issues noted above, it is not surprising that the introduction of technology in the justice system has generated much discussion within the many different interest groups involved in the system about the capacity of technological reforms to meet justice objectives. An additional issue in this area relates to technological readiness which partly explains the variation in views above but also partly explains why there may be an 'uneven' capacity to meet justice objectives. Prior to considering whether effective measures can sustain the advantages while curbing the disadvantages of technological innovation, it is useful to consider how technological innovation may be received by end-users in the justice sector.

IV   INNOVATION READINESS

Historically, the justice system has been slow to adjust to change. As the new millennium approached, the then Justice Kirby wrote about the slow rate of change within the sector:

> A lawyer from Dickens' time, walking out of Bleak House into a modern Australian court on an ordinary day, would see relatively few changes. Same wigs and robes. Same elevated Bench and sitting times. Very similar basic procedures of calling evidence and presenting argument. Longer judgments: but still the same structure of facts, law and conclusion. Contrast, if you will, the astonishment of a physician from Guy's Hospital in London, from the middle of the last century, wandering into the electronic world of bleepers and monitors, of CAT scans, genomic tests and automated diagnosis of a modern Australian hospital. We have made progress in the law and in the courts, including the past twenty-five years. But not as much as other professions. Will it stay this way?[73]

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[70]   See Beverley Head, 'Law is Falling Far Behind the Tech', *InnovationAus.com* (Web Page, 27 November 2017) <https://www.innovationaus.com/2017/11/Law-is-falling-far-behind-the-tech>.

[71]   Sourdin, 'Judge v Robot?' (n 10) 1118. Other developments could include the creation of template decisions to assist judges in civil matters.

[72]   See, eg, Cao Yin, 'Courts Embrace AI to Improve Efficiency', *China Daily* (online, 16 November 2017) http://www.chinadaily.com.cn/china/2017-11/16/content_34595221.htm. By the end of 2017, over 100 courts in China have used robots to improve efficiency, although at this stage those robots seem to be only helpful in terms of answering disputing parties' questions regarding the legal procedure and the simple substantive legal inquiries, rather than making decisions in place of human judges.

[73]   Michael Kirby, 'The Future of Courts — Do They Have One?' (1998) 9(2) *Journal of Law, Information and Science* 141, 143–44.

Recently, Chief Justice James Allsop upheld the courts' role in the adoption of technology in the law and in legal practice:

> As core public institutions, courts need to take a leading role in the responsible implementation of technology in the law and in legal practice, with a specific emphasis on problem solving and the facilitation of the just resolution of disputes in a quick and inexpensive manner, while still maintaining the fundamentally human character of the courts.[74]

This observation raises a question about whether the justice sector is 'ready' for technological innovation. The concept of readiness can be in itself a self-delusionary enthusiastic willingness to participate. Many parents will attest that childhood races commencing with words of 'Ready, Set, Go' generally have the attention of most of the participants at 'Ready', though at that critical 'Go' moment, many more find themselves still on the back foot. The level of readiness is perhaps something that can only truly be measured post the event — failure at 'Go' suggests (irrespective of the efforts to be 'ready') that the readiness factor has shortcomings. Accordingly, legal innovation readiness is difficult to achieve and measure, particularly when the task is to prepare and adapt to technological innovations that are developing more rapidly than at any other time. The timeframe whereby the music marketplace prepared and adopted CD's in place of Vinyl records, only to itself be replaced by online music, was for most involved an extremely fast transition — a disruption to the generally accepted rate of change accommodated by the market.

Much has been made of the concept of 'disruption' since its critique in 'The Innovators Dilemma',[75] and recently Richard Susskind provided a succinct summation:

> What Christensen highlights is that by the time market leaders react to the change, it's often too late. A popular example of such a phenomenon is Kodak. They invented much of digital camera technology. Yet they didn't themselves embrace it and by the time they recognized the market had shifted, other players had rapidly come to dominate. The point is that because the market can move quickly, leaders can find it very hard to adapt in time.[76]

Newer technology is sweeping forward with a groundswell of new opportunities towards improving legal efficiencies — new processes whereby the 'quick' and 'cheap' resolution of civil disputes could indeed become the norm as opposed to the exception. However, there is also a risk that a lack of readiness will mean that technological reform will be led by tech giants and major commercial interests who may be less concerned with meeting 'justice' objectives (from a societal perspective). Readiness for disruption is perhaps a contradiction, however the 'cart before the horse' analogy would appear to apply for civil dispute resolution. The clients (and potential clients) are increasingly tech-savvy — their readiness to adapt to online legal services, the latest phone app, and online video communication is unquestionable — particularly in the

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[74] Chief Justice James Allsop, 'Technology and the Future of the Courts' (TC Beirne School of Law, University of Queensland, 26 March 2019) 1.

[75] See Clayton M Christensen, *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail* (Harvard Business School Press, 1997).

[76] Oliver Duchesne, 'Threats to Traditional Legal Practice: An Interview with Richard Susskind — Part 2', *Priori* (Blog Post, 31 October 2018) <https://www.priorilegal.com/blog/threats-to-traditional-legal-practice-an-interview-with-richard-susskind-part-2>.

desire to obtain quick and cheap justice. Arguably, the cart is full and eager for the horse to come to the fore.

A   *The Profession*

Considering the readiness of the legal profession in relation to technological advances is difficult (in accordance with the above critique of readiness), particularly given the significant differences that apply across the sector (for example, Judge v Tribunal Member, large firm v small, government lawyer v in-house). It appears clear, however, that technological advances have spawned a somewhat reluctant acceptance that the pyramid business model sustained by significant billable hours, which served to provide healthy remuneration packages for a select number of partners, is on its last legs. This, of course, applies mostly to the larger firm which, while being in the minority as to the number of firms, provide significant influence that trickles down through the mid and small law firms.[77] Adopting new strategies and models so as to survive/accommodate the significant changes that the new technologies will bring is perhaps the only option towards a state of readiness.

The 2016 profile of solicitors in NSW highlights the significance of the sole practitioner, accounting for the second highest percentage of practising lawyers at 18.6% — second only to single principal firms (employing on average 2.2 Solicitors) at 26%. In light of the above, the readiness of the legal profession in relation to innovation (at least in NSW) would appear to have three discrete and markedly different journeys. Top tier and large firms with enviable budgetary resources are able to invest into incorporating and developing the latest technologies;[78] small to mediums firms are attempting to keep up as best they can but generally with only administrative preparedness;[79] while the new breed of sole practitioner is using technology towards what has been described as Uberisation within the legal profession.[80]

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[77]   Law Society of New South Wales, *NSW Profile Of Solicitors* (Final Report, 2016) 20–21.
[78]   Sarah Smith, 'Allens Hub for Technology, Law & Innovation Launches to Confront the Future of Law', *Allens><Linklaters* (Web Page, 24 November 2017) <https://www.allens.com.au/med/pressreleases/pr24nov17.htm>. According to the Allens media release: 'The Allens Hub will see 22 UNSW academics work closely with staff from Allens to explore disruptions to the law, lawyers and the legal system such as reliance on data-driven decision-making and new kinds of biological, artificial and legal 'persons''.
[79]   'An Industry in Transition 2017: Legal Benchmarking Results', *Macquarie Bank* (Web Page, 2017) <https://www.macquarie.com/dafiles/Internet/mgl/au/docs/noindex/macquarie-2017-legal-benchmarking-full-results.pdf> ('An Industry in Transition'). The Macquarie Bank benchmarking report stated:
         A survey of legal practitioners in Australia conducted by Macquarie Bank and released earlier this month uncovered a digital divide already existing in law firms; smaller firms invested in back office efficiency tools such as accounts automation, and only the larger firms spent up on data mining, predictive analytics and artificial intelligence. Almost a quarter of small law firms have no technology beyond the very basic administrative tools.
[80]   Charmaine Kane, 'Law Council of Australia Raises Concerns about Uberisation of Profession by Technology'*, ABC News* (online, 28 September 2018) <https://www.abc.net.au/news/2018-09-28/law-council-of-australia-raises-concerns-about-uberisation/10306298>. In 2018, Law Council of Australia raised concerns about Uberisation of profession by technology. Professor Margaret Thornton from the Australian National University (ANU) described the growing practice of lawyers doing piece work for firms or individual clients as the 'Uberisation' of law.

Fortunately, it would seem reasonable to infer that 'quicker and cheaper' legal services will be the by-product of innovation as adopted by all levels of the legal profession. Large firms are already making significant cost and time improvements by way of implementation of new technologies[81] (although passing on cost savings will be potentially dictated by market forces), while sole practitioners are now providing 'partner-level expertise at almost half the hourly rate' with the additional benefit of a direct line of contact between solicitor and client ensuring time efficiencies in relation to correspondence.[82]

B   *The Judges*

Exploring the topic of technological readiness and Judges (including Magistrates and Tribunal Members/Commissioners) is an area of perhaps unparalleled complexity and uncertainty. The overriding purpose to deliver a just outcome quickly and cheaply promotes a stressful work setting for the judiciary, and recent commentary about judicial mistakes,[83] procrastination,[84] and the notion that judges are existing in a bubble highlights the current problematic environment.[85]

Furthermore, perhaps no other area of the legal profession is more susceptible to the concept of inertia, as referenced earlier by Michael Kirby. In relation to the United Kingdom and internationally in general, it has been noted:

> Although it is *sine qua non* that courts ought to reflect advances in society, historically in the United Kingdom and elsewhere, the courts and to a lesser extent, the legal profession, have been amongst the most conservative professional domains in terms of technology adoption and in harnessing advances in technology to improve practice.[86]

Offering further Judicial commentary in the area, the Hon T F Bathurst AC provided the following:

> Nevertheless, the influence of technology on dispute resolution has already been significant. Those disappointed with the slow uptake, particularly in the Courts, should take heed of Amara's law — that we tend to overestimate the effect of technology in the short run and underestimate its effect in the long run. In any event, supportive technology is used in the Courts as a matter of course — we now have e-filing, e-discovery, real time transcription services, electronic courtrooms,

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[81]   An Industry in Transition (n 79) 31. See the case study 'Transforming legal practice with artificial intelligence (AI) — we've got happier real estate lawyers, the work product is much more consistent … [and] we've achieved time and cost savings of around 30%'.

[82]   Anna Patty, 'Digital Disruption Expected to Make Legal Services Cheaper', *Sydney Morning Herald* (online, 29 March 2017) <https://www.smh.com.au/business/workplace/digital-disruption-expected-to-make-legal-services-cheaper-20170327-gv7fhd.html>.

[83]   Georgina Mitchell, 'I Knew I Must be Making Mistakes': Magistrate's Tears in Court', *Sydney Morning Herald* (online, 22 November 2018) <https://www.smh.com.au/national/nsw/i-knew-i-must-be-making-mistakes-magistrate-s-tears-in-court-20181122-p50hkt.html>.

[84]   Jerome Doraisamy, 'Are Judges Succumbing to the 'Seductive Power of Procrastination' with Writing Judgments?', *Lawyers Weekly* (Web Page, 26 November 2018) <https://www.lawyersweekly.com.au/wig-chamber/24523-are-judges-succumbing-to-the-seductive-power-of-procrastination-with-writing-judgments>.

[85]   Ibid.

[86]   Jane Donoghue, 'The Rise of Digital Justice: Courtroom Technology, Public Participation and Access to Justice' (2017) 80(6) *The Modern Law Review* 995, 997.

the use of video links and 'safe rooms' for vulnerable witnesses and the use of devices on the bench and at the bar table. In NCAT, some hearings are conducted via telephone where it is the most timely and effective way to hear the matter.[87]

Noteworthy in the above extract is the reference to numerous supportive technologies, yet replacement and disruptive technologies remain elusive in terms of judicial input, as perhaps does the 'readiness' quotient.

Independent of perceptions of inherent reluctance on the part of (some) judges to disrupt 'their' well-established procedures for the facilitation of quick and cheap justice, even the most innovation-ready judge remains reliant on the Executive to provide the funding package sufficient for the implementation of the latest technologies.[88] As legal minds (on the shop floor) within the legal profession are supplemented with 'big data AI sourced answers' to intricate legal questions, the position whereby 'your Honour' is considered the brightest legal mind in the Court may turn on not only the innovative readiness of the judge, but access (by way of sufficient funding) to the latest technologies.

There are also other issues about how technology can be integrated and used effectively in courts and tribunals, which often operate 'legacy' systems with content management features that make it difficult to add and support more sophisticated systems. Court filing systems remain paper based in many areas, and there are cultures operating within the litigation system that may find it difficult to adapt to newer technologies.

Conceivably no other area of the legal profession has a greater need to strive towards a sophisticated understanding that will in turn support readiness to embrace many of the new technologies available. Considerations of Judge AI, whereby there will be 'an increasing emphasis on artificial intelligence to deal with smaller civil disputes and the more routine use of related technologies in more complex disputes', highlight that the process of change is indeed underway[89] – so far, however, with little judicial input as changes take place in the External Dispute Resolution ('EDR') and tribunal area. The ethical issues that emerge in terms of the judicial role and Judge AI, and developments in this area so far, assume that the 'human touch' will remain central to the judicial role. Incorporating technology will not remove 'the importance of responsive judging and a need to better understand and explore the impact that people experience when a human judge deals with their concerns'.[90]

C   The Consumers

The consumers (the clients and the litigants) are arguably more ready to adopt new technologies in the interests of just, quick and cheap dispute finalisation. However, again there is an 'uneven' readiness that can be linked to geographical location, age, economic circumstances as well as other factors that can be linked to vulnerability. The challenge likely to emerge will be 'how consumers will be able to discriminate effectively between the plethora of different service providers that are likely to

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[87]   Bathurst, 'ADR, ODR and AI-DR' (n 52) 4.
[88]   See *NSW Budget Estimates 2018–19* (Budget Paper No 3, 2018) ch 6.
[89]   Sourdin, 'Judge v Robot?' (n 10) 1114.
[90]   Ibid 1133.

emerge'.[91] This has prompted the development of websites such as Law Choice Australia,[92] and the inference may be that modes of advertising (and strategies to receive high priorities in the Google searches) will be key determiners as to the services being used.

In addition, consumers are always ready (with perhaps some sceptical caution) for 'free' services. Apart from the introduction of free online legal consultation by many law firms,[93] the Legal Services Commission of South Australia[94] as well as some apps supported by the public sector that provide free legal services to clients, there is little available to those with complex problems. In this regard some issues that people face may even be linked to confusion or even technological uncertainty (eg Robo debt).[95] However, such services may enable people with legal problems to have access to a legal chat line and obtain information and/or links to relevant sources of law without having to wait on a telephone line to talk with a lawyer. Not only is such a process quicker and more effective, but it may promote greater accessibility and confidentiality.

The 'tech-savvy' consumer (as referred to previously) is already armed (and proficient) with the latest smartphone capable of providing '24 hours a day, 7 days a week' access to whatever can be downloaded or linked to. In conjunction with the widespread community rhetoric (and general reality) that dispute resolution by way of the legal process is currently too expensive and too slow, this innovative readiness of the consumer is perhaps the latent driving force that will catalyse the legal disruption. Many clients will no longer tolerate expensive slowness — particularly where aspects such as the 'billable hour' has hindered the motivation of legal representatives towards a timely resolution. To this end, those companies, including the United Kingdom's Robot Lisa[96] — whereby costs are upfront and the matter is essentially conducted (as far as possible) utilising Chatbot technology without the intervention of a legal practitioner, could become the legal service provider model of an innovative ready consumer. The scope to which this unbundling of legal services may become available in the Australian jurisdiction may (at least in the short term) be more limited than the UK on account of legal regulatory differences. However, as recently highlighted by Michael Legg: 'The confluence of concerns about the affordability of legal services and the greater use of technology to provide legal information and related services means that more potential clients are likely to seek limited scope services'.[97]

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91   Waye (n 56) 222.
92   See *Lawchoice Australia* (Website) <http://www.lawchoice.com.au>.
93   Waye (n 56) 230.
94   See *Legal Services Commission of South Australia* (Website) <https://lsc.sa.gov.au>.
95   Heidi Pett and Colin Cosier, 'We're all talking about the Centrelink debt controversy, but what is 'robodebt' anyway?', *ABC News* (online, 3 March 2017) <https://www.abc.net.au/news/2017-03-03/centrelink-debt-controversy-what-is-robodebt/8317764>.
96   See *Robot Lawyer LISA* (Website) <http://robotlawyerlisa.com/>. LISA is an acronym for Legal Intelligence Support Assistant. The company's website provides the following as their mission: Focus on making access to legal services cost effective, time saving, insightful and transparent for consumers and businesses to acquire their legal needs by using technology wherever possible in the first instance before moving on to garner human lawyer support, if at all necessary or desired.
97   Michael Legg, 'Recognising a New Form of Legal Practice: Limited Scope Services' (2018) 50 *Law Society of NSW Journal* 74.

V   CONCLUSION

This article has focused on the relationship between civil dispute resolution and technology, and the ever-increasing complexities that are being realised by way of supportive, replacement and disruptive technologies. In this regard, no matter how technology has impacted on justice, it is undeniable that there are many tangible advantages that technology has brought and will bring to the justice system. The authors argue that in the context of Australian civil justice, technology will often assist to achieve the objectives of the civil justice sector in terms of the quick and cheap resolution of civil issues.[98]

In terms of objectives relating to justice, there are many considerable advantages that the technological revolution can provide. Given the geographical limitations and remote access issues that can arise in a vast and relatively sparsely populated country such as Australia, and the reality that disputes can include international, national and local interaction, supported technological solutions are likely to exert a significant influence on the justice system into the future. In addition, the 'digital divide' issues that existed in the past are decreasing because simpler technologies have evolved and internet access has increased across communities. Each of these factors, coupled with growing technological competencies and preferences, means that technological approaches are likely to be extended into the future.

Those within the litigation system have noted that technology changes have the potential to dramatically transform the way in which dispute resolution is carried out.[99] Within the court system, e-callovers,[100] e-filing,[101] video conferencing and applications[102] are now commonplace in many jurisdictions. Technology courts, virtual courts or cyber courts now exist in many jurisdictions,[103] and the presence of such initiatives may produce more participatory court processes, and enhance 'participatory' justice as well as better communication and document management. Other changes have occurred in the handling, collation, and storage of information and in the way that research occurs. The information available online increases access to court systems and can assist parties to better observe and understand what takes place within the court system.

Newer communication approaches have the potential to overtake the limitations of e-mail and offer new collaborative styles and processes. Together with online meeting facilities, the interactions that have traditionally slowed down capacity to respond 'on time' can now be instantaneous. In addition, parties constantly communicating in groups can develop more sophisticated and timely solutions to process issues as well as the final outcome of the case. Creating rules around these interactions to ensure that due process is followed will be the new challenge for justice agencies. Many Australian ADR environments now use Facebook, Twitter and YouTube to engage with business, consumers, and stakeholders about dispute

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[98]   *Civil Procedure Act 2005* (NSW) s 56.
[99]   See Bathurst, 'ADR, ODR and AI-DR' (n 52).
[100]   For example, New South Wales Land and Environment Court.
[101]   For example, Federal Court of Australia.
[102]   Bail applications are commonly carried out by video in the Supreme Court of New South Wales.
[103]   See 'Technology Court', *Judiciary* (Web Page)
         <http://www.judiciary.gov.hk/en/crt_services/tech_crt.htm>.

resolution and to support dispute avoidance and self-managed negotiation strategies.[104]

Newer technologies present a range of challenges for court legislators and are giving rise to new litigation industries that provide forensic oversight of data analysis processes, encryption and 'cloud' collaborative processes between litigation participants. All of these technologies might support timeliness. In light of this, there may be a challenge posed by this new technology and industry — that of ensuring that courts and tribunals adapt in order to remain relevant and that courts and tribunals have additional input in respect of justice objectives.

The potential for technological innovations to pave a supportive, replacement and disruptive path to facilitate a tripartite union of the overriding principles as defined under the *Civil Procedure Act 2005* (NSW) and similar legislation is unquestionable.[105] And yet the difficulty of certainty arises on account of the complex diversity of the legal landscape which requires consideration of almost polar opposite extremes, such as:

i. bush courts (run over two days incorporating 44 matters and utilising two lawyers) to Supreme Court matters that may involve teams of lawyers and a senior counsel[106]
ii. top tier firms with multi-million-dollar budgets to office-less sole practitioners
iii. litigants represented by teams of lawyers and senior counsel, through to self-represented litigants.

All sectors will be impacted by the latest technologies. To the extent that 'cheaper' and 'quicker' justice will be obtained (albeit with challenges) appears likely, perhaps certain. And yet the illusiveness of truly satisfying the 'just' component remains the most significant challenge. Greater awareness and access to information of the consumer is significant in this disruptive environment, and while measurements of speed and expense may be noteworthy, it will perhaps be the consumer's critique of a process to deliver a 'just' outcome that may be of ultimate importance. As established at a time not conflicted by today's complex technological challenges — 'Not only must justice be done; it must also be seen to be done'.[107] Justice may also require some component of human creativity that cannot, for example, be readily replicated by AI which may, in any event, fail to provide litigants with 'human' experience.[108] In addition, the clear articulation of what is meant by 'justice' is critical in ensuring that future developments are measured and considered in terms of clear benchmarks.

There is, however, undeniably a strong relationship between 'quick' and cheap' objectives and the attainment of justice. Although the complexities that have been

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104   'The Victorian Department of Justice and Web 2.0', (Web Page, 31 December 2009) cited in Tania Sourdin and Chinthaka Liyanage, The Promise and Reality of Online Dispute Resolution, in Australia, available at <https://www.mediate.com/pdf/sourdin_liyanage.pdf> 483, (accessed 08 March 2019).
105   See, eg, *Civil Procedure Act 2010* (Vic).
106   David Lewis and Allan Clarke, 'Two Lawyers, Three Days, and 44 Cases: Is Bush Court in the NT the Fast Food of Justice?', *ABC News* (online, 16 February 2019) <https://www.abc.net.au/news/2019-02-16/background-briefing-northern-territory-bush-court/10817642>.
107   *R v Sussex Justices; Ex parte McCarthy* [1923] All ER Rep 233, [1924] 1 KB 256.
108   Sourdin, 'Judge v Robot?' (n 10) 1124.

outlined in this article cannot be condensed to a single sentence, NSW Barrister Philippe Doyle Gray provided a brief summation (albeit in relation to costs, but applicable to the three overriding purpose elements of just, quick and cheap justice) 'You can repeat slogans, like just, quick and cheap, which is s 56 of the *Civil Procedure Act 2005*, but the only way that $11,000 became $990 [for my client] is because somebody embraced technology'.[109]

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[109]   Law Society of New South Wales, *FLIP — The Future of Law and Innovation in the Profession: Commission of Inquiry* (at 28 March 2017) 37.

DIGITAL JUSTICE: ONLINE RESOLUTION OF MINOR CIVIL DISPUTES AND THE USE OF DIGITAL TECHNOLOGY IN COMPLEX LITIGATION AND CLASS ACTIONS

PETER CASHMAN[*], ELIZA GINNIVAN[**]

This article focuses on two ends of the civil justice spectrum. At one end are high-volume, low-value disputes confined to specific facts and legal issues unique to the disputing parties. Many of these disputes do not presently enter the traditional civil justice system. At the other end are complex legal proceedings which encompass the claims of multiple litigants with similar causes of action against one or more 'common' defendants, such as class actions or mass tort proceedings. At both ends of the spectrum, there is a tension between the desire for individualised justice and the need to facilitate the resolution of claims in a manner which is efficient, economical, transparent and procedurally fair. We examine how digital technology is being deployed to resolve disputes at both ends of this spectrum. In the first part of the paper, we focus on the use of technology to resolve high-volume, low-value disputes which share a common objective: the resolution of high-volume claims at low-transaction cost. In particular, we examine the increasing adoption of processes and procedures from the world of commerce to resolve disputes in the public justice system. In the second part of the article we examine how new technologies can facilitate the conduct and resolution of large scale, complex class action litigation in the higher courts through client intake, claim management, discovery processes, trial procedures and the implementation of settlements. We conclude that online dispute resolution methods have the potential to achieve, and in many instances do in fact achieve, the economical and expeditious resolution of claims in a manner which is transparent and procedurally fair.

I INTRODUCTION

This article focuses on the use of digital technology to enhance justice outcomes at both ends of the civil justice spectrum. At one end are large numbers of relatively low-value disputes in which the issues are confined to the specific facts and legal issues unique to the parties in dispute. Many of these disputes do not presently enter the traditional civil justice system as the transactional costs to resolve them are disproportionate to the amount in dispute. At the other end are large, complex legal proceedings which encompass the claims of substantial numbers of persons with causes of action against one or more 'common' defendants, and which share common issues that may facilitate resolution through class actions or mass tort proceedings. We examine a number of recent developments in which digital technology is being deployed to resolve disputes at both ends of this spectrum. Although these digital technology innovations differ in the methodologies they use, they have a common objective – the resolution of high-volume claims at low transaction cost. Both ends of

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this civil claims justice spectrum share the goals of facilitating access to justice in a manner which is transparent, procedurally fair, economical and expeditious.

In the first part of the article, we focus on the use of digital technology to resolve high-volume, low-value disputes. In particular, we examine the increasing uptake of online dispute resolution ('ODR') platforms in public justice systems for the resolution of such disputes. These ODR platforms have adopted processes and procedures that were developed in the commercial realm to deal with high-volume disputes by consumers of products and services. One leading example is eBay, which resolves over 60 million disputes per year using ODR methodology. In this article, we explore the opportunities and challenges ODR presents for the resolution of high-volume, low-value disputes through the prism of fundamental principles of the civil justice system.

In the second part of the article, we focus on the use of digital techniques and new and emerging technologies in the management and resolution of large scale complex litigation, including class actions, in the higher courts. We examine a number of ways in which new technology, at lower cost and with less delay, may better facilitate the conduct and resolution of large scale complex litigation, including through client intake, claim management, discovery processes, trial procedures and the implementation of settlements.

At each end of this spectrum, as in many other areas of civil dispute resolution, there is a tension between the desire for individualised justice and the need to facilitate the resolution of large numbers of claims efficiently and economically. This tension exists from the inception of discrete individual claims through to the resolution of mass litigation. How this tension is resolved has important implications for the parties in dispute and the administration of justice.

Reform of the civil justice system is a continuous and iterative process to improve the system and ensure it meets community expectations. In a rapidly changing society that is increasingly reliant on digital technology in all areas of life, the justice system often lags behind. However, changes in technology and civil procedure can play an important role in facilitating access to justice, bringing about improvements in efficiency and outcomes, and in reducing costs and delay across the civil litigation spectrum. ODR is increasingly being implemented as a major reform in civil justice systems in Australia and internationally. At present, various Australian governments, including in New South Wales, are considering how to incorporate ODR into the civil justice system. As we seek to demonstrate, ODR methods have the potential to achieve, and in many instances do in fact achieve, the economical and expeditious resolution of claims in a manner which is transparent and procedurally fair.

II DIGITAL JUSTICE THROUGH ONLINE DISPUTE RESOLUTION OF HIGH-VOLUME LOW VALUE INDIVIDUAL CLAIMS

A Origins of ODR

ODR involves the use of information and communications technology to help parties resolve disputes.[1] Within a court and tribunal system, ODR is a digital platform that allows people to progress through dispute resolution for low-value disputes, from the commencement of a claim to final determination, entirely online. This process may involve different methodologies, including the use of information delivered through 'guided pathways', blind bidding, hybrid alternative dispute resolution (including facilitated negotiation and early neutral evaluation, either with human input or artificial intelligence algorithms), digital communication (such as remote or video participation in hearings and asynchronous messaging), and uploading and responding to evidence online.

ODR can empower parties to resolve disputes early, freeing up court and judicial resources to deal with complex and serious matters. It can streamline court processes and expand methods of access, reducing the need for extensive physical court infrastructure. In this part of the article, we examine ODR initiatives in Australia and other countries. We then consider ODR alongside three core principles of the civil justice system: access to justice, procedural fairness and open justice. These principles were selected as a starting point because an ideal ODR platform will incorporate these principles while facilitating the just, quick and cheap resolution of disputes. We examine opportunities and considerations for the implementation of ODR in Australian civil justice systems and lessons learned from ODR implementation around the world to date.

ODR was initially developed in the commercial sphere as a means of dealing with high-volume, low-value, consumer disputes arising from online transactions on e-commerce websites such as Amazon, eBay and PayPal. In these disputes, parties are often geographically distant and jurisdictionally distinct. The complexity and expense of going to court is disproportionate to the amount in dispute. ODR allowed buyers and sellers to resolve straightforward disputes expeditiously and at low cost, usually by agreement. Offering an in-built dispute resolution mechanism also served the commercial interests of these companies as parties often continued or increased their consumer activity after resolving a dispute online, regardless of the outcome.[2]

The potential of ODR to resolve disputes efficiently and effectively eventually attracted the attention of governments, courts and tribunals around the world. In the last six years, ODR has been incorporated into domestic justice systems and processes in several ways, including as an external process that feeds into a formal determination, as the default platform for a new tribunal, and integrated into a pre-existing court

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[1]   'Expanding Access to Justice through Online Dispute Resolution', *The Digital Edge* (American Bar Association, 13 February 2018) <https://legaltalknetwork.com/podcasts/digital-edge/2018/02/expanding-access-to-justice-through-online-dispute-resolution/>.

[2]   Colin Rule, 'Quantifying the Economic Benefits of Effective Redress: Large E-commerce Data Sets and the Cost-Benefit Case for Investing in Dispute Resolution' (2012) 34(4) *University of Arkansas at Little Rock Law Review* 767, 772.

(otherwise known as 'court-annexed' or 'court-integrated' ODR). ODR is also used to resolve disputes between jurisdictionally distinct parties under multilateral agreements. Court-integrated ODR has been used to greatest effect in high-volume, low-value disputes, where parties are usually unrepresented and their preference is for rapid resolution of the claim.

ODR has the potential to transform the efficiency and effectiveness of the justice system for low-value disputes. ODR can make dispute resolution more accessible for people in the community with unmet legal needs. Proponents claim that ODR improves efficiency and upholds high standards of justice, while simultaneously 'bridging the justice gap' by reducing barriers of cost, delay and complexity that can limit access to justice.[3] ODR has been presented as a solution for courts and tribunals experiencing budget cuts, resource constraints and poor performance oversight on the progression and determination of disputes.

While ODR contributes to ongoing efforts to use technology to improve the civil justice system, it also represents a fundamentally different approach to reform.[4] Rather than digitising litigation procedure and practices (which we explore in the second part of this article), successful ODR models re-engineer how dispute resolution processes can be designed to benefit users.[5] This includes inverting dispute resolution design and redirecting investment to the early stages of dispute resolution, rather than to court or judicial resources.[6] This process of redesign distinguishes ODR from previous justice innovations that use technology to streamline or enhance existing processes. Further, by uncoupling court process from both physical premises and paper-based processes, and rethinking the procedures required to deliver a just system, proponents contend that ODR has the potential to overcome the intrinsic tension between 'efficiency' and 'justice' in the civil justice system.[7]

B   *ODR in Australia*

Court and tribunal ODR is in its infancy in Australia.[8] While ODR is utilised within some state-funded alternative dispute resolution schemes, the Australian Dispute Resolution Advisory Council notes that ODR has not enjoyed the support and

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[3]   See, eg, Orna Rabinovich-Einy and Ethan Katsh, 'The New New Courts' (2017) 67(1) *American University Law Review* 165, 188 ('The New New Courts'); Ethan Katsh and Orna Rabinovich-Einy, 'Access to Digital Justice' in Ethan Katsh and Orna Rabinovich-Einy (eds), *Digital Justice: Technology and the Internet of Disputes* (Oxford University Press, 2017) 39, 51 ('*Digital Justice*').

[4]   Online Dispute Resolution Advisory Group, Civil Justice Council, *Online Dispute Resolution for Low Value Civil Claims* (Report, February 2015) 4 [1.3]–[1.4] <https://www.judiciary.uk/wp-content/uploads/2015/02/Online-Dispute-Resolution-Final-Web-Version1.pdf>.

[5]   Ibid 4–5 [1.3]–[1.7]; Rabinovich-Einy and Katsh, 'The New New Courts' (n 3) 167.

[6]   Lord Justice Michael Briggs, *Civil Courts Structure Review* (Final Report, July 2016) 115 [12.6] <https://www.judiciary.uk/wp-content/uploads/2016/07/civil-courts-structure-review-final-report-jul-16-final-1.pdf> ('*Civil Courts Structure Review*').

[7]   Orna Rabinovich-Einy and Ethan Katsh, 'A New Relationship Between Public and Private Dispute Resolution: Lessons from Online Dispute Resolution' (2017) 32(4) *Ohio State Journal on Dispute Resolution* 695, 697.

[8]   Law Council of Australia, *The Justice Project Final Report – Part 2: Dispute Resolution Mechanisms* (August 2018) 10.

development that should be expected in a country with a geographically remote population that is an early adopter of technology.[9]

In 2018, the NSW Government indicated its support for integrating aspects of ODR into existing court process and infrastructure, providing a faster, cheaper way for parties to access the civil justice system.[10] This commitment seeks to further the guiding principle of the *Civil Procedure Act 2005* (NSW) and the *Civil and Administrative Tribunal Act 2013* (NSW); to ensure that civil disputes are dealt with in a way that is just, quick and cheap.[11] In NSW, ODR will build on existing digital initiatives to streamline court processes such as the Online Court, e-Registry, eSubpoenas and Audio Visual Link technology.

Two other notable civil justice system ODR projects are the Victorian Civil and Administrative Tribunal (VCAT) small claims project and the Legal Services Commission of South Australia family law platform. The VCAT project involves piloting an ODR platform in a number of small claims with a view to expanding the platform in the area of small claims and possibly minor criminal and larger civil matters.[12] Australian-based firm Modron has been engaged to develop the platform, which will incorporate video chat and text chat. The Legal Services Commission of South Australia has received seed funding from the Commonwealth Government for a national ODR platform to assist separating couples to resolve family law disputes.[13] This platform will help parties reach an agreement by providing relevant supporting information, such as agreements that have assisted other couples and previous judgments, to illustrate how judges have treated similar disputes.[14]

C   *International Examples of ODR*

ODR projects have been introduced in a number of countries. We refer below to some recent developments in Canada, the United Kingdom, the Netherlands, the United States and the European Union.

1   *Canada*

Established in British Columbia in 2012,[15] the Civil Resolution Tribunal ('CRT') is Canada's first online tribunal and the first in the world to be integrated into a public

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[9]   Australian Dispute Resolution Advisory Council, 'Online Dispute Resolution and ADR' (Research Paper, 16 September 2016) 4 <https://docs.wixstatic.com/ugd/34f2d0_cb997768a4574613b8e1d2f972769040.pdf>.

[10]   NSW Government, 'Budget Estimates 2018-19'(Budget Paper No 3, 30 June 2018) 6-3 <https://www.budget.nsw.gov.au/sites/default/files/budget-2018-06/6._Justice_Cluster-BP3-Budget_201819.pdf>.

[11]   *Civil Procedure Act 2005* (NSW) s 56; *Civil and Administrative Tribunal Act 2013* (NSW) s 3.

[12]   Victorian Civil and Administrative Tribunal (VCAT), 'VCAT Online Dispute Resolution Pilot Online' (YouTube, 13 September 2018) 00:03:46–00:04:03 <https://www.youtube.com/watch?time_continue=45&v=1cuKRgj-0ng>.

[13]   Legal Services Commission of South Australia, Submission No 65 to Law Council of Australia, *The Justice Project* quoted in Law Council of Australia (n 8) 10.

[14]   Ibid.

[15]   *Civil Resolution Tribunal Act* SBC 2012, c 25 ('*Civil Resolution Tribunal Act*'); *Civil Resolution Tribunal Rules*, CRC, c 2017 ('*Civil Resolution Tribunal Rules*').

justice system.[16] It is currently the mandatory forum for small claims disputes under $5,000 and strata property claims of any amount. In April 2019, the CRT will begin determining some motor vehicle accident and injury claims up to $50,000.[17]

The CRT's mandate is to provide 'accessible, speedy, economical, informal and flexible' dispute resolution services.[18] It does this through a participatory and collaborative approach to dispute resolution which assists parties to reach a consensual agreement, with adjudication as a last resort. The CRT has four stages:

1. Solution Explorer: a free online tool which uses 'guided pathways' to help a person navigate options to resolve their dispute.[19]
2. CRT Intake and Negotiation: The initiating party enters the details of the claim. Notice is served on the other side and parties have the opportunity to negotiate directly.
3. Facilitation: An expert facilitator helps parties reach a consensual agreement using mediation, conciliation or early neutral evaluation. [20] If an agreement is reached, this can be turned into a binding order.[21] If the parties cannot resolve the dispute, the facilitator helps parties prepare for adjudication.[22]
4. Adjudication: A tribunal member considers the parties' evidence and arguments (usually in written form) and then issues a binding determination.[23] Hearings usually occur 'on the papers', but telephone or video conferencing hearings can be held if credibility or complex issues arise.[24]

The CRT's performance is rigorously evaluated through detailed qualitative and quantitative analysis.[25] The CRT publishes selected statistics in a monthly blog.[26] Such data reveals that the majority of claims (70 percent) are resolved at the facilitation stage and very few claims require adjudication. Most participants (69 percent) agreed that the process was easy to understand and 82 percent agreed they were treated fairly throughout the process.[27]

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[16]   'Online Dispute Resolution & Public Interest Design, with Shannon Salter', *Lawyerist* (Lawyerist.com, 31 January 2018) <https://legaltalknetwork.com/podcasts/lawyerist-podcast/2018/01/157-online-dispute-resolution-public-interest-design/> ('Online Dispute Resolution & Public Interest Design, with Shannon Salter').

[17]   'Welcome to the Civil Resolution Tribunal', *Civil Resolution Tribunal* (Web page, 2019) <https://civilresolutionbc.ca/>.

[18]   *Civil Resolution Tribunal Act* SBC 2012, c 25, s 2(2)(a).

[19]   Shannon Salter, 'Online Dispute Resolution and Justice System Integration: British Columbia's Civil Resolution Tribunal' (2017) 34(1) *Windsor Yearbook of Access To Justice* 112, 120 ('British Columbia's Civil Resolution Tribunal').

[20]   Ibid 121. The *Civil Resolution Tribunal Act* and *Civil Resolution Tribunal Rules* set out this process.

[21]   Salter, 'British Columbia's Civil Resolution Tribunal' (n 19) 121.

[22]   Ibid.

[23]   Ibid.

[24]   Ibid.

[25]   'Online Dispute Resolution & Public Interest Design, with Shannon Salter' (n 16).

[26]   'CRT Statistics Snapshot: September 2018', *Civil Resolution Tribunal* (Blog) <https://civilresolutionbc.ca/crt-statistics-snapshot-september-2018/>.

[27]   'Participant Satisfaction Survey – April to September 2018', *Civil Resolution Tribunal* (Blog, 9 October 2018) <https://civilresolutionbc.ca/participant-satisfaction-survey-april-september-2018/>.

2 *United Kingdom*

Another international example of the aspirational use of ODR is the United Kingdom's ('UK') £1 billion *Transforming Our Justice System* reform program, a wide-ranging courts modernisation program that aims to reduce the justice staffing pool by 5,000 and save £265 million a year through lower administration and judicial costs, fewer physical hearings and fewer courthouses.[28]

Through this program, the entire process for civil money claims will be automated and digitised by 2020.[29] The 'Money Claim Online' pilot, launched in March 2018, is the initial release of this platform.[30] Money Claim Online is a starting point for the development of the 'digital by design and by default online court',[31] a single online system for criminal, civil, family and tribunal cases.[32] Money Claim Online allows people with money claims up to £10,000 to issue a claim, file a defence and attend mediation.[33] It also allows without-prejudice offers to be made and accepted, and constructs agreements based on these terms.[34] The website will be expanded to include facilities for negotiation and settlement, questioning parties and adjudicating between them, and online hearings.[35] The pilot has collected data on user experience and dispute resolution pathways, which revealed that 80 percent of users said the service was very good and easy to use.[36] The number of matters in which defences were filed rose from 22 percent to 40 percent and the default rate dropped from 53 percent to 24 percent.[37] Fifteen percent of cases were referred to mediation but only 27 percent of those went to the mediation appointment.[38] In a related development, the proportion

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[28] Committee of Public Accounts, *Transforming Courts and Tribunals* (House of Commons Paper No 56, Session 2017–19) 4.

[29] Lord Chancellor, Lord Chief Justice and Senior President of Tribunals, 'Transforming Our Justice System' (Policy Paper, Ministry of Justice and HM Courts and Tribunals Service, September 2016) 11 <https://www.gov.uk/government/publications/transforming-our-justice-system-joint-statement>.

[30] The pilot will end in November 2019; Sir Terence Etherton, 'Civil Justice After Jackson' (Conkerton Memorial Lecture 2018, Liverpool Law Society, 15 March 2018) 16 [33] <https://www.judiciary.uk/announcements/speech-by-sir-terence-etherton-mr-civil-justice-after-jackson/>.

[31] Sir Terence Etherton, 'The Civil Court of the Future' (Lord Slynn Memorial Lecture, 14 June 2017) <https://www.judiciary.gov.uk/wp-content/uploads/2017/06/slynn-lecture-mr-civil-court-of-the-future-20170615.pdf> 16 [48].

[32] Lord Chancellor, Lord Chief Justice and Senior President of Tribunals, 'Transforming Our Justice System' (n 29) 6.

[33] The County Court Online Pilot 2018, Civil Practice Direction 51S <https://www.justice.gov.uk/courts/procedure-rules/civil/rules/practice-direction-51s-the-county-court-online-pilot>.

[34] Lord Chancellor, Lord Chief Justice and Senior President of Tribunals, 'Transforming Our Justice System' (n 29) 12.

[35] Ibid 12.

[36] Ibid 12.

[37] Clare Galloway, Service Manager, Civil Money Claims Team, HM Courts & Tribunals Service cited in Nick Hilborne, 'Judiciary Threatens to Pull Out of Online Court Pilot over Lack of Communication From Officials', *Legal Futures* (Web Page, 7 March 2018) <https://www.legalfutures.co.uk/latest-news/judiciary-threatens-pull-online-court-pilot-lack-communication-officials>; Sir Etherton, 'Civil Justice After Jackson' (n 30) 17 [33].

[38] Clare Galloway cited in Nick Hilborne (n 37).

of incorrectly completed divorce forms dropped from 40 percent to under 1 percent among users of the Digital Divorce Service.[39]

ODR processes are also utilised for appeals against parking and traffic fines in the UK's Traffic Penalty Tribunal. Parties can upload evidence, including video and voice files, to an online platform for instant sharing.[40] Continuous online hearings through asynchronous messaging between the parties and the adjudicator can take place over several days.[41] Decisions made on this information alone (e-decisions) are the norm, but telephone and face to face hearings are available in certain circumstances.[42] Decisions are uploaded for viewing by the parties and then sent by post if the decision has not been viewed within two days, though this is rarely necessary.[43] Around 80 percent of Traffic Penalty Tribunal cases are resolved through e-decisions.[44] Seventy-five percent of appeals are closed within 21 days.[45] Telephone enquiries have been reduced by 30 percent and there has been a significant saving in the costs incurred by local authorities in dealing with disputes.[46]

3   *The Netherlands*

Rechtwijzer ('Signpost to Justice') was an online platform for resolving relationship disputes, such as divorce and separation, landlord-tenant disputes and employment disputes.[47] Due to the ongoing nature of the relationships in many of these disputes, the platform focused on facilitating consensual and sustainable results.[48] *Rechwijzer* enabled an online dialogue between the parties and also offered mediation, adjudication and neutral review of all agreements.[49] However, funding for the website was discontinued as it was deemed financially unsustainable after three years.[50]

4   *United States*

In the United States, Matterhorn is a cloud-based ODR platform currently in use in 40 courts across eight states. It can be bought off-the-shelf and adapted to court systems

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39   HM Courts and Tribunals Service, 'Reform Update' (Reform Update, May 2018) 4 <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/717789/HMCTS_Reform_Update_19May2018.pdf>.

40   Robert Thomas and Joe Tomlinson, 'The Digitalisation of Tribunals: What We Know and What We Need to Know' (Research Paper, Public Law Project, 5 April 2018) 23 <https://publiclawproject.org.uk/wp-content/uploads/2018/04/The-Digitalisation-of-Tribunals-for-website.pdf>.

41   Ibid 23–4.

42   'How Your Appeal will be Decided', *Traffic Penalty Tribunal* (Web Page) <https://www.trafficpenaltytribunal.gov.uk/how-your-appeal-will-be-decided/>.

43   JUSTICE Working Party, *What is a Court?* (Report, May 2016) 17 <https://2bquk8cdew6192tsu41lay8t-wpengine.netdna-ssl.com/wp-content/uploads/2016/05/JUSTICE-What-is-a-Court-Report-2016.pdf>.

44   JUSTICE Working Party (n 43) 18.

45   Ibid.

46   Ibid 17-8.

47   HiiL, *Rechtwijzer 2.0: Technology that puts justice in your hands* <http://www.hiil.org/project/rechtwijzer>.

48   Ibid.

49   Ibid.

50   Joint Technology Committee, 'Case Studies in ODR for Courts: A View from the Front Lines' (Resource Bulletin, 29 November 2017) 16 <https://www.ncsc.org/~/media/files/pdf/about%20us/committees/jtc/jtc%20resource%20bulletins/2017-12-18%20odr%20case%20studies%20final.ashx>.

that deal with high-volume claims, including small civil claims and claims about non-compliance with child support payments.[51] It features real time or asynchronous communication, sends reminders to parties about upcoming dates for filing documents and hearings, and is optimised for mobile phone use. A third party (facilitator, mediator or arbitrator) can assist with the resolution of claims.

Matterhorn user data has demonstrated its platform increases access to justice and user satisfaction while decreasing the burden on court resources. Thirty-nine percent of users reported that they would not have been able to attend court in person to resolve their dispute.[52] Ninety percent found the website easy to use and 92 percent understood the status of their case throughout the online process.[53] Cases closed in 14 days rather than the 50 days recorded for traditional court processes, and court staff completed their work in 20 percent of the time.[54]

Like Matterhorn, Modria is a customisable ODR platform for US and international courts. Modria provides parties with a diagnosis of their issue and the likely process for resolution, which helps them to decide whether to proceed with their case.[55] If they do proceed, the platform collects intake information and opens a web chat between the parties to facilitate a resolution.[56] Either party can request that the dispute be escalated to a mediator or arbitrator.[57] The dispute resolution process can be tailored to different types of disputes, from simple debt cases to complicated child custody cases.[58] This ODR platform has resolved more than one million disputes around the world and claims to resolve cases in half the time taken by traditional processes.[59]

5   *European Union*

The European Union's ODR platform facilitates the resolution of consumer complaints arising from online transactions in European Union countries.[60] The ODR platform provides a single point of entry for disputes between consumers and traders, and channels consumer disputes to one of over 300 certified external ADR bodies.[61] The platform allows parties to choose their own language and includes automatic translation. The platform mandates deadlines to ensure a prompt resolution, such as

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[51]   'What is Matterhorn', *Matterhorn* (Web Page) <https://getmatterhorn.com/tour/what-is-matterhorn>.

[52]   Ibid.

[53]   'Ticket and Minor Infraction Resolution Results: Multiple Courts', *Matterhorn* (Web Page) <https://getmatterhorn.com/get-results/traffic-court/ticket-minor-infraction-resolution-results/>.

[54]   Ibid.

[55]   'Modria', *Tyler Technologies* (Web Page) <https://www.tylertech.com/solutions-products/modria/ODR>.

[56]   Ibid.

[57]   Ibid.

[58]   Ibid.

[59]   Ibid.

[60]   European Union, European Commission, *Report from the Commission to the European Parliament and the Council On the Functioning of the European Online Dispute Resolution Platform Established under Regulation (EU) No 524/2013 on Online Dispute Resolution for Consumer Disputes*, COM(2017) 744 Final, 13 December 2017, 2 <https://ec.europa.eu/info/sites/info/files/first_report_on_the_functioning_of_the_odr_platform.pdf>.

[61]   Ibid 1, 4.

30 days for negotiation and 90 days for ADR.[62] More than 24,000 disputes were submitted in the first year of operation and 44 percent were resolved bilaterally outside the platform in the initial negotiation stage.[63]

In April 2018, the European Union launched the *New Deal for Consumers* policy. One objective of the policy is to give consumers better tools to enforce their rights and to obtain compensation. As part of this strategy, the European Commission stressed the importance of strengthening ODR.[64] As such, it seems likely that the European Union will adopt more ODR processes in the coming years.

D   *Evaluating ODR*

These examples demonstrate the enormous potential of ODR to reform the civil justice system by increasing access, resolving disputes earlier and reducing costs. The integration of ODR into the public justice system can both improve efficiency and reframe the way the civil justice system operates in relation to high-volume, low-value disputes.

For governments, courts and tribunals, ODR's most attractive feature is its potential to reduce the cost of the administration of justice. ODR can achieve this by: allowing courts to process large numbers of claims with little human input; potentially increasing the number of claims filed that require little cost to manage, thereby increasing fee revenue; reducing the human resources and physical infrastructure required to administer justice; freeing up judicial and registry resources to focus on areas of high demand or significant delay or backlog such as crime or complex civil litigation; and reducing the time needed to assist self-represented litigants navigate a complex justice system and comply with procedural requirements.

The cost-efficient administration of justice is an appropriate goal of civil justice system reform. Yet in designing and implementing system innovations, it is necessary to look beyond ostensibly 'objective' improvements in efficiency, timeliness and effectiveness in order to assess more qualitative elements of the justice system that have no tangible economic value or easily defined metric. These elements include considerations such as access to justice, transparency, procedural due process, fairness and the level of satisfaction of participants in the process.

When considering reforms that will reshape how justice is done, it is pertinent to use the principles underlying the civil justice system as the guiding lights by which to chart a path of reform. This is particularly important when adopting technology developed in the profit-oriented commercial sphere for use within the public justice system, which is necessarily guided by other considerations in addition to the bottom line.

Due to the nature of the exercise of judicial power, court-integrated ODR requires a different set of norms, values and outcomes to private or commercial ODR. While some commercial ODR initiatives incorporate aspirational values that align with civil

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[62]   Ibid 2.

[63]   Ibid 4, 7.

[64]   For an assessment of the effectiveness of the EU Consumer platforms and a comparison with those developed in Brazil, see Maria José Schmidt-Kessen, Rafaela Nogueira and Marta Cantero, 'Success or Failure? - Effectiveness of Consumer ODR Platforms in Brazil and in the EU' (Research Paper No 19-17, Copenhagen Business School) <http://ssrn.com/abstact=3374964>.

justice goals, such as transparency, due process and fairness, commercial ODR is mostly an unregulated field operating within only the constraints of contract.[65] Commercial ODR may have opaque rules, questionable consumer protection and a lack of independent or appellate review.[66] In contrast, courts are subject to institutional norms and legal requirements, and must accommodate evidentiary and procedural rules.[67] These issues can be disregarded in commercial ODR design but are essential to any public justice ODR platform.[68]

A central question is whether ODR is an improvement on the traditional civil justice system. Insofar as ODR facilitates the resolution of disputes that would never have entered into or been resolved through the civil justice system, it represents an obvious improvement. From the perspective of those in dispute, ODR will either facilitate the resolution of disputes that otherwise would not have been resolved or provide a less expensive, more expeditious and no less satisfactory resolution than would otherwise have been achieved through the traditional civil justice system.

Yet it is important that the purported benefits of ODR are not simply taken on face value. International experience indicates that proponents will be expected to demonstrate, using evidence, that ODR achieves the objectives it sets out to accomplish. Claims that ODR will improve dispute resolution has attracted scrutiny in the UK, where the legal profession and not-for-profit sector have expressed concerns that the proposed Online Court may reduce access to justice, reduce the fairness of the outcomes, diminish the integrity of the justice system or privilege efficiency over due process. The UK Committee of Public Accounts has required the HM Courts and Tribunals Service to publicly report how its digital justice reforms will improve access to justice.[69] In Australia, the desire to evaluate ODR with reference to evidence was reflected in the Law Council of Australia's *Justice Project Report*.[70] The report recommended investment in research which could inform the uptake of ODR in Australia, particularly in relation to the impact of ODR on disadvantaged users, having regard to their technological and legal capability and the necessary safeguards to support disadvantaged users.[71]

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[65] Noam Ebner and John Zeleznikow, 'No Sheriff in Town: Governance for Online Dispute Resolution' (2016) 32(4) *Negotiation Journal* 297, 307; Kanake Chinthaka Liyanage, 'The Regulation of Online Dispute Resolution: Effectiveness of Online Consumer Protection Guidelines' (2012) 17(2) *Deakin Law Review* 251, 264 Robert J Condlin, 'Online Dispute Resolution: Stinky, Repugnant, or Drab' (2017) 18(3) *Cardozo Journal of Conflict Resolution* 717, 733. Recent attempts to introduce a voluntary code of conduct include the International Council for Online Dispute Resolution's Standards; 'ICODR Standards', *International Council for Online Dispute Resolution* (Web Page) <https://icodr.org/standards/>.

[66] See generally Suzanne Van Arsdale, 'User Protections in Online Dispute Resolution' (2015) 21(Fall) *Harvard Negotiation Law Review* 107, 127.

[67] Michael Legg, 'The Future of Dispute Resolution: Online ADR and Online Courts' (2016) 27(4) *Australasian Dispute Resolution Journal* 227, 227 ('The Future of Dispute Resolution').

[68] Salter, 'British Columbia's Civil Resolution Tribunal'(n 19) 117.

[69] Committee of Public Accounts (n 28) 6.

[70] Law Council of Australia, *The Justice Project* (Final Report, August 2018) <https://www.lawcouncil.asn.au/files/web-pdf/Justice%20Project/Final%20Report/Justice%20Project%20_%20Final%20Report%20in%20full.pdf>.

[71] Law Council of Australia, *The Justice Project Final Report – Part 1: People with Disability* (August 2018) 8 <https://www.lawcouncil.asn.au/files/web-pdf/Justice%20Project/Final%20Report/People%20with%20Disability%20%28Part%201%29.pdf>.

ODR's data collection capabilities present an excellent opportunity to collect robust and meaningful data to assess whether ODR achieves the goals of providing transparent, procedurally fair, economical and expeditious justice for high-volume, low-value disputes.[72] Leading international ODR platforms are utilising justice system principles as a framework to collect data to evaluate system design and performance. The CRT's highly detailed evaluation framework measures many metrics including the time taken from filing a claim to resolution, the cost to an individual to obtain that resolution, the proportion of decisions overturned on appeal and the fairness of the process.[73]

A solid evidence base built around justice principles can inform the design of an appropriate platform and allows stakeholders to assess whether, firstly, ODR is an improvement on traditional justice processes and, secondly, whether the platform strikes the right balance between the sometimes competing civil justice values of fairness and efficiency.

E   *Using Foundational Principles to Assess ODR*

In this section of the article, we examine the opportunities and challenges presented by ODR through the lens of three foundational principles of the civil justice system: access to justice, procedural fairness and open justice. These well-accepted legal principles have been adopted as evaluative criteria in leading international ODR projects, including the UK's emerging Online Court and the CRT in Canada.[74] For each of these principles, we will examine opportunities, considerations and examples in practice from international ODR projects.

1   *Access to Justice*

Access to courts and tribunals is an essential element of the rule of law and is a human right enshrined in international law.[75] Judicial resolution in a public setting enhances

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[72]   The Productivity Commission has recognised that '[d]ata and evaluation have important and mutually-reinforcing roles in analysing and improving the civil justice system'; Productivity Commission, *Access to Justice Arrangements* (Inquiry Report No 72, 3 September 2014) 880.

[73]   See generally 'Online Dispute Resolution & Public Interest Design, with Shannon Salter' (n 16).

[74]   'Ensuring access to justice' is one of three principles that have informed HM Courts and Tribunals Service's court estates reform program and the Civil Resolution Tribunal; see Ministry of Justice and HM Courts and Tribunals Service, 'Proposal on the provision of court and tribunal estate in England and Wales' (Consultation Paper, 16 July 2015) 7 <https://consult.justice.gov.uk/digital-communications/proposal-on-the-provision-of-court-and-tribunal-es/user_uploads/reform-estates-national-consultation_official-sensitive_final_050815.pdf>; Sandy, CRT Resolution Support Clerk, 'How the CRT Is Improving Access to Justice', *Civil Resolution Tribunal* (Web Page) <https://civilresolutionbc.ca/crt-improving-access-justice/>. See below for a discussion of the CRT's evaluation of access to justice and procedural fairness.

[75]   Access to Justice Taskforce, Attorney General's Department, *A Strategic Framework for Access to Justice in the Federal Civil Justice System* (Report, September 2009) 2 <https://www.ag.gov.au/LegalSystem/Documents/A%20Strategic%20Framework%20for%20Access%20to%20Justice%20in%20the%20Federal%20Civil%20Justice%20System.pdf> ('*Strategic Framework*'); *Universal Declaration of Human Rights,* GA Res 217A (III), UN GAOR, UN Doc A/810 (10 December 1948) art 8, 10; *International Covenant on Civil and Political Rights*, opened for signature 16 December 1966, 999 UNTS 171 (entered into force 23 March 1976) art 14.1.

the legitimacy of the legal system by building public respect, trust and confidence in the system.[76] Binding decisions communicate and reinforce norms of social and economic behaviour while creating precedent and developing the law.[77] Access to a court to resolve a dispute provides the benefits of a (largely) publicly funded, open process that provides a determinative outcome and methods for enforcement. Unlike other dispute resolution options, a court is expected to exercise this decision-making power while being consistent, transparent and impartial.

Although courts and tribunals are the enduring symbol of justice, it is estimated that only three to four percent of civil disputes end up in courts or tribunals, with the vast majority resolved through other means.[78] Despite this, the accessibility of these forums is crucial. The remainder of the civil justice system, including informal and non-legal dispute resolution, operates in the shadow of the mandatory and coercive powers of the courts.

Access to justice is a key goal of the civil justice system.[79] Yet for each dimension of access to justice, there are multiple barriers preventing entry. Attending a court or tribunal is a significant personal undertaking. In addition to the obstacles of cost, procedural complexity and delay, the psychological and emotional toll of entering into an adversarial dispute resolution process dissuades many people from taking their legal matter to a court or tribunal.

Failing to provide meaningful access to justice means that disputes may go unresolved at great social or financial cost.[80] People may resort to private or non-binding agreements, capitulate to the stronger party's demands, or simply put up with a problem if it requires too much effort or expense to resolve. If people cannot readily defend their rights, enforce their rights or seek justice, the rule of law is weakened and unfair or illegal activity can flourish.[81]

ODR is one means to remove or diminish the profound barriers caused by the cost, time and delay involved in going to court.[82] There are two main structural changes associated with ODR that increase access to justice.

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[76]   Professor Dame Hazel Genn, 'Online Courts and the Future of Justice ' (Birkenhead Lecture, Gray's Inn, 16 October 2017) 6 <https://www.ucl.ac.uk/laws/sites/laws/files/birkenhead_lecture_2017_professor_dame_haz el_genn_final_version.pdf>.

[77]   Ibid 6.

[78]   Christine Coumarelos et al, 'How Are Legal Problems Finalised in Australia?' (*Updating Justice* No 19, Law and Justice Foundation of NSW, February 2013) 3 <http://www.lawfoundation.net.au/ljf/site/templates/UpdatingJustice/$file/UJ_19_Finalisati on_Aus_FINAL.pdf>.

[79]   Access to Justice Taskforce, *A Strategic Framework* (n 75) 62–3.

[80]   Nigel J Balmer and Pascoe Pleasence, 'From the Frying Pan to the Fire: The Impact of Small Businesses' Legal Problems' (*Updating Justice* No 52, Law and Justice Foundation of NSW, June 2017) <http://www.lawfoundation.net.au/ljf/site/templates/UpdatingJustice/$file/UJ_52_Frying_p an_business.pdf>; Victorian Small Business Commissioner, 'The Costs of Participating in Business-to-Business Disputes at the Victorian Civil and Administration Tribunal (VCAT)' (Information sheet, 2014) 2 <https://www.vsbc.vic.gov.au/wp-content/uploads/2014/08/vsbc-business-dispute-costs.pdf>.

[81]   Access to Justice Taskforce, *A Strategic Framework* (n 75) 62–3

[82]   Rabinovich-Einy and Katsh, 'The New New Courts' (n 3) 169.

(a)   Remote and Asynchronous Dispute Resolution

The first is a decoupling of the justice process from physical locations. An ODR platform can connect an individual to other parties, facilitators and adjudicators who may be geographically distant.[83] With remote participation being the default, parties can participate from wherever they are – a reversal of the traditional justice system's requirement that all parties be at the same place to progress or resolve a matter. This makes justice more accessible by reducing the need for parties, especially for people in rural, regional or outer metropolitan areas, to travel significant distances and incur transport fees to attend a courthouse or wait weeks or months for an infrequent circuit court visit.

The second change is the move from a synchronous (at the same time) to an asynchronous (at different times) process. ODR allows people to progress a dispute whenever it is convenient. In traditional court processes, all parties (as well as the judge, the court and registry staff) are required to be present at the same time and place, usually in person. This can cause delays due to scheduling conflicts and the unavailability of court resources. Court processes usually occur during business hours, meaning that if parties are self-represented, they must take time off work or arrange childcare to attend a hearing. Allowing people to progress disputes at a time that is convenient to them improves the flexibility of the civil justice system, increases the court's capacity to handle cases and reduces the barriers to justice created by court processes which require parties to be gathered at the same place and time.[84]

As ODR reduces the cost and time consequences of going to court to resolve or respond to a dispute, more people who have been marginalised or excluded by the court's traditional operating system may begin to utilise the courts. This can include people with an 'unmet need' (a justiciable legal claim) who were prevented from accessing the courts due to geographical or financial constraints, including disadvantaged people, caregivers or people with a disability;[85] and people who have 'lumped it' because the time, cost and complexity of using a traditional court process were not worth it for the amount in dispute.[86]

(b)   Alternative Dispute Resolution

A key principle of access to justice is that disputes should be resolved as early as possible, in a manner proportionate to the amount or issues in dispute. Alternative dispute resolution ('ADR') is a common method of obtaining early and appropriate resolution. ADR is also a core component of commercial ODR platforms and a feature of successful ODR platforms used in the context of public justice.

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83   Shannon Salter and Darin Thompson, 'Public-Centred Civil Justice Redesign: A Case Study of the British Columbia Civil Resolution Tribunal' (2016-17) 3 *McGill Journal of Dispute Resolution* 113, 135 ('Public-Centred Civil Justice Redesign').

84   Rabinovich-Einy and Katsh, 'The New New Courts' (n 3) 203.

85   See, eg, Joint Technology Committee (n 50) 7.

86   In his Interim Report, Lord Justice Briggs discussed the concept of 'The Line', below which the aggregate costs of legal representation in litigation are disproportionate to the amount in contention. Most people consulted stated that the value of the dispute would need to be between £50,000 and £100,000 to go over The Line. Lord Justice Briggs concluded this represented a real barrier to access to justice; Lord Justice Briggs, *Civil Courts Structure Review* (n 6) 46.

ADR in ODR increases access to justice by allowing people to resolve disputes at the earliest opportunity, at minimal cost and by consent (where appropriate). Intelligent system design can offer bespoke dispute resolution options which suit the needs of the parties – for instance, conciliation if resolution is likely, or early neutral evaluation if one party requires an objective appraisal of the merits of their case.

Most ODR models incorporate at least two standard ADR tools: negotiation and facilitation (which can include conciliation or mediation). In Canada's CRT, ADR is the default method for resolving disputes, reversing the traditional model of presuming adjudication is the end point and ensuring that only the most intractable disputes, or those where agreement is not appropriate, result in a judicial determination.[87] ODR takes the concept of ADR offering a 'multi-door courthouse' to its ultimate form: a system designed to tailor both technology and dispute resolution processes to the parties' specific needs.[88]

(c)   Pre-action Protocols

ODR's emphasis on resolving disputes early reflects the objectives of pre-action protocols. Pre-action protocols are procedural mechanisms to facilitate the resolution of disputes before they result in full court proceedings.[89] They involve threshold requirements that parties must, or are expected to, comply with before starting a court case.

Evidence from the UK, where pre-action protocols have been in place for over 20 years, has shown that these procedures focus attention on the key issues at an early stage, encourage greater openness between the parties and facilitate the resolution of many cases that would have otherwise proceeded to litigation.[90] In Australia, threshold requirements are already a feature of some court processes and there are some 'pre-action' requirements for some types of cases in some Australian jurisdictions. For instance, in the NSW Supreme Court Possession List, parties are expected to have narrowed the issues in dispute and discussed the possibility of settling the dispute by ADR before the initial hearing.[91] However, attempts to introduce more wide-ranging pre-action protocols in Victoria and New South Wales have been unsuccessful.[92] Embedding a checklist of requirements that a party should consider or must comply with before commencing a claim through an ODR platform can help narrow the issues

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[87]   Darin Thompson, 'Creating New Pathways to Justice Using Simple Artificial Intelligence and Online Dispute Resolution' (2015) 1(2) *International Journal of Online Dispute Resolution* 4, 10 ('Creating New Pathways').

[88]   Ayelet Sela, 'Streamlining Justice: How Online Courts Can Resolve the Challenges of Pro Se Litigation' (2016) 26(Winter) *Cornell Journal of Law & Public Policy* 331, 384 ('Streamlining Justice').

[89]   Peter Cashman, 'Civil Procedure, Politics and the Process of Reform' in Michael Legg and Miiko Kumar (eds), *Ten Years of the Civil Procedure Act 2005 (NSW)* (Lawbook Co, 2015) 225, 229.

[90]   Tamara Goriely, Richard Moorhead and Pamela Abrams, 'More Civil Justice? The Impact of the Woolf Reforms on Pre-action Behaviour' (Research Study 43, The Law Society and Civil Justice Council, 2002) xiii <https://orca.cf.ac.uk/44483/1/557.pdf>.

[91]   Supreme Court of New South Wales, *Practice Note No. SC CL 6: Supreme Court Common Law Division - Possession List*, 10 August 2012, cl 15 <http://www.lawlink.nsw.gov.au/practice_notes/nswsc_pc.nsf/a15f50afb1aa22a9ca2570ed00 0a2b08/ae3b414fa0c27a5bca2579c6007cac2e?OpenDocument>.

[92]   Cashman (n 89) 227.

in dispute and encourage ADR. This can encourage the parties to resolve the dispute in a timely and proportionate way.

(d)   The Digital Divide

ODR relies on parties having both digital access (access to a working internet connection) and digital ability (the ability to use the internet to navigate an online platform). However, sizeable segments of the Australian population are digitally excluded due to a lack of digital access and ability.[93] Practical barriers to digital access include black spots and intermittent broadband, especially in rural and regional Australia; accessibility of websites; the affordability of internet connection; and the limited opening hours and resources of free internet providers such as libraries.
This 'digital divide' can present a barrier for people accessing an internet-based platform like ODR. There is a strong relationship between digital ability and socio-economic status. Australians with low levels of income, education and employment are significantly less digitally literate.[94] They are also more likely to experience legal problems and less likely to resolve their legal problems than other people in the community.[95] A platform that does not address the connection between disadvantage, low digital skills and exclusion from the legal system risks entrenching this marginalisation.

The accessibility of ODR is at the forefront of the discussion around digital inclusion initiatives in the UK. Two landmark reports have explored how to reduce digital exclusion for civil justice system users.[96] Under the UK's reform program, the Good Things Foundation has been funded to provide face-to-face support and assistance in navigating online forms for users of digital justice pilots through community-based Online Centres in libraries, churches and GP clinics.[97]

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[93]   See generally JUSTICE Working Party, *Preventing Digital Exclusion from Online Justice* (Report, April 2018) 4 <https://2bquk8cdew6192tsu41lay8t-wpengine.netdna-ssl.com/wp-content/uploads/2018/06/Preventing-Digital-Exclusion-from-Online-Justice.pdf>; Julian Thomas et al, *Measuring Australia's Digital Divide: The Australian Digital Inclusion Index 2017* (Report, 2017) <https://digitalinclusionindex.org.au/wp-content/uploads/2016/08/Australian-Digital-Inclusion-Index-2017.pdf>.

[94]   Thomas et al (n 93) 5.

[95]   Hugh M. McDonald and Zhigang Wei, 'Resolving Legal Problems: The Role of Disadvantage' (*Updating Justice* No 19, Law and Justice Foundation of NSW, June 2018) 1 <http://www.lawfoundation.net.au/ljf/site/templates/UpdatingJustice/$file/UJ_56_Resolution_disadvantage.pdf>.

[96]   JUSTICE Working Party (n 93); Catrina Denvir et al, 'Assisted Digital Support for Civil Justice System Users: Demand, Design and Implementation' (Final Research Report, Civil Justice Council, April 2018) <https://www.judiciary.uk/wp-content/uploads/2018/06/cjc-report-on-assisted-digital-support.pdf>.

[97]   Good Things Foundation and HM Courts and Tribunal Service, 'HM Courts and Tribunals Service Face-To-Face Assisted Digital Service: A Handbook for Online Centres' (Handbook, 20 March 2018) <https://www.onlinecentresnetwork.org/sites/default/files/online_centre_handbook_v.1.pdf>.

2   *Open Justice*

Transparency is a core part of the justice system and open justice is a hallmark of the exercise of judicial power.[98] The principle requires court proceedings to be open and subject to public and professional scrutiny. Courts will not act contrary to this principle save in exceptional circumstances.[99] Open justice has been described as 'one of the most pervasive axioms of the administration of justice in common law systems' and 'a fundamental tenet of Australian democracy'.[100]

Open justice has several practical manifestations. Proceedings are conducted in an open court, which the public and press can access, and judgments are accessible. Information and evidence presented in court are communicated to those present, and fair and accurate reporting of judicial proceedings conducted in open court is permitted.[101]

Open justice ensures judicial accountability and protects against the risk of a court abusing its decision-making powers.[102] Open justice also maintains confidence in the integrity and independence of the courts, educates the public about judicial application of the law and reduces the likelihood of people bringing vexatious claims or giving false evidence.[103]

As in other jurisdictions, in NSW there is a presumption that substantive civil hearings occur in public.[104] However, open justice can be restricted, particularly where it is necessary to secure the proper administration of justice or when it is otherwise in the public interest.[105] Suppression orders, hearing evidence 'in camera' or hearing certain interlocutory matters in the absence of the public are some ways open justice is altered in NSW. Moreover, open justice only requires scrutiny of the judicial process and, therefore, does not apply to every process and procedure of courts and tribunals.[106] There is no freestanding right for the public to access court documents filed in proceedings and held as part of the court record.[107] Material that is not admitted into evidence or read in open court is generally not available, even after the conclusion of the proceedings.[108] Transcripts of proceedings are not readily available and are not generally free.

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98   Murray Gleeson, 'The Judicial Method: Essentials and Inessentials' (2010) 9(4) *The Judicial Review* 377, 384.

99   *Commissioner of the Australian Federal Police v Zhao* (2015) 255 CLR 46, 60 [44] (French CJ, Hayne, Kiefel, Bell and Keane JJ).

100   Justice James Spigelman, 'The Principle of Open Justice: A Comparative Perspective' (2006) 29(2) *University of New South Wales Law Journal* 147, 150; Chief Justice Marilyn Warren, 'Open Justice in the Technological Age' (2014) 40(1) *Monash University Law Review* 45, 45.

101   Jason Bosland and Jonathan Gill, 'The Principle of Open Justice and the Judicial Duty to Give Public Reasons' (2014) 38(2) *Melbourne University Law Review* 482, 483–4.

102   Justice Spigelman (n 100) 154.

103   Sharon Rodrick, 'Open Justice, the Media and Avenues of Access to Documents on the Court Record' (2006) 29(3) *University of New South Wales Law Journal* 90, 94.

104   See, eg, *Local Court Act 2007* (NSW) s 54.

105   *Hogan v Hinch* (2011) 243 CLR 506, 531 [21] (French CJ); *John Fairfax & Sons Limited v Police Tribunal of NSW* (1986) 5 NSWLR 465, 476–7 (McHugh JA, Glass JA agreeing at 467).

106   Rodrick (n 103) 95.

107   *John Fairfax Publications Pty Ltd v Ryde Local Court* (2005) 62 NSWLR 512, 521 [31] (Spigelman CJ, Mason and Beazley JJ agreeing at 503).

108   Rodrick (n 103) 129.

Open justice presents a challenge for ODR given that digital processes can both expand and constrain open justice. Removing processes and decisions from a publicly viewable forum could make the justice system more opaque, resulting in a loss of scrutiny of judicial decision-making. Judges, reform officials and peak legal professional organisations have expressed concern about the loss of transparency in the Online Court in the UK.[109] Some NGOs have asserted that ODR by its nature threatens open justice, especially when criminal proceedings are involved.[110] Journalists have emphasised the importance of public and media access to court proceedings to ensure visibility and scrutiny of the judicial process.[111]

On the other hand, digital technology can radically enhance open justice by making processes and proceedings more observable and transparent. ODR can increase public participation and engagement by allowing people who cannot access the court in person to view proceedings.[112] This can include through streaming or broadcasting hearings, making messaging transcripts available and creating a publicly searchable database of online court files.[113] Members of the judiciary in the UK have recognised that 'our digital courts must be open courts' and are optimistic that embedding open justice in digital platforms presents a technical challenge rather than an insuperable obstacle.[114]

In the development and implementation of ODR, the meaning and importance of 'open justice' may also face scrutiny from the parties themselves. Many parties would prefer to resolve their disputes privately. In the process of resolving a dispute, there is often disclosure of private and confidential information, including medical data and financial records. The user-centric focus of ODR platform design, which involves understanding the end users' needs and expectations, may lead to new iterations of open justice for online platforms.

Open justice has traditionally intersected with other rights, including in respect of reputation, the right to privacy and the right to a fair trial.[115] On a digital platform, the tension between these rights is amplified, with new challenges arising in information privacy, the prevention of cyber-hacking, and data storage and security. Concerns about information security is reportedly one of the main barriers to the adoption of ODR especially, as ODR platforms which are entirely online are vulnerable to data breaches in a way that current case management systems are not.[116]

The permanence of information and evidence exchanged via ODR is another contentious issue. Digital platforms generally record all information exchanged in a

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109   See, eg, Sir Etherton, 'Civil Justice After Jackson' (n 30) 19 [39].
110   Paul Magrath, 'Court Reform and Open Justice: Responses to the Public Accounts Committee's Transforming Courts and Tribunals inquiry', *Transparency Project* (Blog, 12 June 2018) <http://www.transparencyproject.org.uk/court-reform-and-open-justice-responses-to-the-public-accounts-committees-transforming-courts-and-tribunals-inquiry/>.
111   See, eg, Committee of Public Accounts (n 28) 13 [22].
112   JUSTICE Working Party (n 43) 43.
113   See, generally, Legg, 'The Future of Dispute Resolution' (n 67) 234.
114   Sir Ernest Ryder, 'Securing Open Justice' (Speech, Max Planck Institute Luxembourg for Procedural Law & Saarland University, 1 February 2018) 2, 5 [8] <https://www.judiciary.gov.uk/wp-content/uploads/2018/02/ryder-spt-open-justice-luxembourg-feb-2018.pdf>; Lord Justice Briggs, *Civil Courts Structure Review* (n 6) 50 [6.69].
115   Justice Spigelman (n 100) 158.
116   'Expanding Access to Justice through Online Dispute Resolution' (n 1); Condlin (n 65) 750.

dispute. This means that sensitive information could continue to be available and potentially misused in the future. Parties may be dissuaded from using a service if they cannot be certain that their information will remain confidential. [117] ODR platforms that promote open justice will be required to carefully balance various rights and take privacy and data collection and storage issues into account.

For all its novel applications, ODR also represents the next phase in the evolution of open justice in response to technology changes from both within and outside the court. The concept of an 'open court' has been adapted to contemporary civil justice procedures, such as the increased reliance on written submissions, affidavits and statements to provide evidence-in-chief rather than in-person oral evidence (which was traditionally a key aspect of 'open court' by virtue of it being communicated in public).[118] An observer of court hearings will frequently witness documents and witness statements simply being tendered and admitted into evidence without any open disclosure of their contents.

The courts themselves are spearheading the expansion of open justice by leveraging technology. For example, in NSW, the Supreme Court publishes easy-to-read summaries of significant cases and maintains a Twitter account to alert the public of upcoming decisions. To engage a broader audience beyond those who can attend court in person, some higher courts in Australia and internationally facilitate recordings of proceedings which can be viewed in real time or after the event. The Supreme Court of the United States began audio recording hearings in 1955. Proceedings before the High Court of Australia, the Supreme Court of the United States and the Supreme Court of the United Kingdom, among others, can now be viewed online. It is both necessary and appropriate that the concept of open justice reflect its technological and legal context, and the expectations of the community it serves.

Justice system bodies that have adopted ODR technology have implemented different approaches to transparency. In Canada, the CRT's *Information and Access Policy* provides a framework for openness in respect of the CRT's decision-making process, which balances transparent decision-making with protecting the privacy of parties and witnesses. In the UK, methods under discussion to ensure open justice in the eventual Open Court include live streaming of virtual court proceedings (both online and via 'viewing booths' installed in court buildings)[119] and providing booths within court buildings to allow the public to access approved parts of certain court files.[120]

The degree of open justice required in ODR is a vexed question. A leading judicial proponent of the UK's Online Court, Lord Justice Briggs, is confident that 'modern IT can facilitate better public access to civil proceedings than exists at present'.[121] Other senior members of the judiciary believe that the 'delivery of justice should be as open

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[117]   Thomas and Tomlinson (n 40) 30.
[118]   Rodrick (n 103) 90–1.
[119]   Sir Etherton, 'The Civil Court of the Future' (n 31) 18 [56]; Sir Etherton, 'Civil Justice After Jackson' (n 30) 19 [39]. Note that the Prison and Courts HC Bill (2016-17) 170, cl 34 included provision for public participation in proceedings conducted by video or audio. This bill did not proceed due to the general election.
[120]   Lord Justice Briggs, *Civil Courts Structure Review* (n 6) 25 [4.11]; Sir Etherton, 'The Civil Court of the Future' (n 31) 18 [56].
[121]   Lord Justice Briggs, *Civil Courts Structure Review* (n 6) 53 [6.85].

to scrutiny as Parliamentary debate'.[122] Others argue this level of openness would be unnecessary and undesirable in most civil proceedings.[123] How this tension will be resolved in the development of ODR systems in Australia remains to be seen.

3   *Procedural Fairness*

Procedural fairness is the fairness of the *process* through which a substantive decision is made.[124] Procedural fairness is an aspect of the general principle that parties are entitled to a fair hearing. This is enshrined in multiple places in Australian law, including the Australian Constitution, procedural rules and the court's inherent power to prevent abuse of its process.[125]

The requirements of procedural fairness change depending on the circumstances of the individual case or the type of case.[126] Procedural fairness generally requires that parties are given a reasonable opportunity to lead evidence, make submissions, present a case and cross-examine witnesses.[127] The overarching consideration is 'fairness', which is evaluated in the context of the case itself and having regard to the interest of justice generally, including the need to facilitate the timely and economical resolution of disputes.[128]

The content of procedural fairness has evolved over time. Traditional civil proceedings often involved full party control of pre-trial stages through to a full hearing with both parties legally represented. More recently, proactive judicial managerial control can lead to, amongst other things, restricting the number of witnesses; not requiring oral submissions; restricting the length of written submissions; limiting the ambit of discovery of documents; and refusing applications for adjournment.[129] The transition from party control of civil proceedings to more proactive judicial case management has given rise to contentious issues about procedural fairness.[130] These concerns also arise within ODR, in which case management is entrenched into the process through platform design.

Yet overall, ODR presents an opportunity to strengthen procedural fairness by allowing creative thinking about how to make the process fairer. Dimensions of procedural fairness in ODR include the role of legal representation, digital innovations

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122   Sir Etherton, 'The Civil Court of the Future' (n 31) 18 [56].
123   Judge Nigel Bird, 'Open Justice in an Online Post Reform World: A Constant and Most Watchful Respect' (2017) 36(1) *Civil Justice Quarterly* 23, 32.
124   Rebecca Hollander-Blumoff and Tom R Tyler, 'Procedural Justice and the Rule of Law: Fostering Legitimacy in Alternative Dispute Resolution' [2011] *Journal of Dispute Resolution* 1, 3.
125   See, eg, *Civil Procedure Act 2005* (NSW) s 62(4).
126   *Russell v Duke of Norfolk* [1949] 1 All ER 109, 118 (Tucker LJ) quoted in *R v Commonwealth Conciliation and Arbitration Commission; Ex parte Angliss Group* (1969) 122 CLR 546, 552.
127   *Civil Procedure Act 2005* (NSW) s 62(4). Note that parties do not have the right to cross-examine witnesses in the Small Claims Division.
128   *National Companies & Securities Commission v News Corporation Ltd* (1984) 156 CLR 296, 312 (Gibbs CJ, Brennan J agreeing at 326).
129   Michael Legg, 'Reconciling the Goals of Minimising Cost and Delay with the Principle of a Fair Trial in the Australian Civil Justice System' (2014) 33(2) *Civil Justice Quarterly* 157, 169 ('Reconciling the Goals'). See section 62(3) of the *Civil Procedure Act 2005* (NSW) as to directions that a court can make that may restrict the 'fairness' of a trial.
130   See, eg, Sonya Joy Willis, 'The Case for Case Management: Justice, Efficiency and Procedural Fairness in Australian Civil Procedure' (PhD Thesis, The University of Sydney, 2018).

to improve the justice experience, creating a level playing field through platform design and user testing to inform fairness settings.

(a)   Legal Representation

Legal representation is a key way that parties have traditionally obtained procedural fairness in legal matters. However, either by preference or design, the individuals in dispute, rather than their lawyers, are the primary participants in ODR platforms.[131] The intention is that legal representation is not a prerequisite to successfully resolving a claim, so a party will not be substantially disadvantaged if they do not have a lawyer. This reverses the standard court model of adversarial dispute resolution where 'equality of arms' means both parties are legally represented.

The presumption of no legal representation in ODR platforms reflects the reality of low-value claims. In most traditional court matters, the costs of legal representation far outweigh the value in dispute so most people are unrepresented, often to their detriment. In the NSW Local Court, self-represented litigants make up 25 percent of plaintiffs and 42 percent of defendants in defended claims.[132] This is a large proportion of parties navigating a complex legal system without support.

Even if both parties do not need, or choose not to use, legal representation in the ODR context, a power imbalance may still exist between the parties. This may arise from disparity between their resources, education and experience, cultural factors or the comparative ability of the parties to reduce the issues in dispute into a justiciable claim or defence.

Courts already recognise that they must be diligent to ensure self-represented litigants are afforded procedural fairness.[133] In a similar vein, successful ODR platforms must go further than simply digitising pre-existing procedural rules, which would replicate the current barriers self-represented litigants face. International ODR platforms have done this through translating legal rules and forms designed for legal professionals into plain language and avoiding the term 'self-represented litigant' (a phrase which denotes an exception rather than the rule).[134]

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[131]   Lord Justice Briggs, *Civil Courts Structure Review* (n 6) 41 [6.22]–[6.26]; *Civil Resolution Tribunal Act* s 20(1).

[132]   Suzie Forell and Catriona Mirrlees-Black, 'Data Insights in Civil Justice: NSW Local Court' (Report, Law and Justice Foundation of NSW, November 2016) 8 <http://www.lawfoundation.net.au/ljf/site/templates/reports/$file/Local_Court_Report_2016.pdf>.

[133]   See Supreme Court of NSW, 'Representing yourself in civil proceedings in the Supreme Court of New South Wales' (Fact Sheet, March 2015) <http://www.supremecourt.justice.nsw.gov.au/Documents/Services%20and%20Support/Self%20Represented%20Litigant%20Fact%20Sheet%20Version%2013.docx>; See *Hodder Rook & Associates Pty Ltd v Genworth Financial Mortgage Insurance Pty Ltd* [2011] NSWCA 279, [38]–[42] (Young JA) for a discussion regarding the court's duty in relation to self represented litigants.

[134]   Salter, 'British Columbia's Civil Resolution Tribunal' (n 19) 124–5; Sela, 'Streamlining Justice' (n 88) 337–9; Thompson, 'Creating New Pathways' (n 87) 8-9.

(b)   The User Experience of Procedural Justice

The concept of 'procedural *justice'* as distinct from 'procedural *fairness'* has gained greater prominence in discourse about ODR because it adopts a technology-driven focus on human-centred design and the user experience. 'Procedural justice' arises from an individual's perception of the fairness of a process, which can be shaped by their experience of control/voice, neutrality, respect, and trust in the decision-maker.[135] Unlike procedural fairness, procedural justice is not an objective legal principle, but an individual's subjective belief about how they were treated in a given situation.[136]

When a party loses a case in a court setting, they will often be more satisfied by the outcome if they feel that the proceedings were procedurally fair. Similarly, delay has a corrosive impact on party and public perceptions of the justice system. One interesting yet unsurprising finding from research on consumer perceptions of ODR in a commercial context is that expedition enhances satisfaction with the process, even when the outcome is unfavourable to the party.

The digital flexibility of ODR allows experimentation to strengthen procedural justice. Big data collection and analysis and targeted qualitative research can offer ideas for platform and process design. In this regard, findings from the emerging field of research into procedural fairness in ODR are instructive.

For instance, self-represented litigants report a preference for communicating with judges using 'lean' text-based messages but receiving responses through 'rich' media such as video messages.[137] This increases their sense of being 'heard' and reduces feelings of hopelessness, stress and frustration.[138] In another study, parties preferred receiving interpersonal cues from a remotely-based decision maker (for example, a picture of the decision maker or biographical details) because knowing who was determining the dispute enhanced participants' belief that their contribution was valued.[139]

In the first study, self-represented litigants reported a more meaningful experience through asynchronous messaging because it gave them more time to compose responses than at an in-person hearing.[140] Separately, litigants who found an online platform easy to use were more likely to view the process as fair and feel positive about the court.[141]

Determining what 'standard' of procedural fairness should be upheld by ODR forums is a vexed question. Some research findings indicate users have the same expectations

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[135]   Hollander-Blumoff and Tyler (n 124) 3.
[136]   Ibid 9.
[137]   Sela, 'Streamlining Justice' (n 88) 377.
[138]   Sela, 'Streamlining Justice' (n 88) 377, 381–2.
[139]   Youyang Hou et al, 'Factors in Fairness and Emotion in Online Case Resolution Systems' (Conference Paper, CHI Conference on Human Factors in Computing Systems, 6–11 May 2017) 2511, 2519 <https://repository.law.umich.edu/cgi/viewcontent.cgi?article=2995&context=articles>.
[140]   Sela, 'Streamlining Justice' (n 88) 359–361.
[141]   Youyang Hou et al (n 139) 2520.

of procedural justice in ODR as they have with the traditional courts.[142] However, people interact with and expect differing standards of service online.[143] Expectations for transparency, voice and respect are likely to be different. Given the scope for digital technology to improve fairness at relatively little cost, ODR should aim to deliver high standards of procedural fairness.

(c) Levelling the Playing Field through System Design

A goal of procedural justice is to treat parties fairly by providing an equal opportunity to present their case. Yet parties themselves are rarely equal. Most cases are characterised by parties with dramatically different resources. 'One-shotters' (who use court once or infrequently) often confront 'repeat players', who utilise the court system regularly and generally have the upper hand in litigation because they have superior knowledge of the legal process, ready access to specialist expertise, and can influence precedent.[144] Parties with deep pockets can also draw out proceedings in order to force the other party to settle or capitulate.[145] Offsetting this power imbalance can be difficult in a forum historically designed for, and often by or under the influence of, repeat players.

ODR can level the playing field through design features that minimise power imbalances between the parties.[146] This can involve identifying power imbalances in the current system and mitigating unfair advantages through ODR platform and process design. International solutions include both innovative uses of technology and procedural reform, including adopting fixed procedural options to mitigate any unfair advantage of repeat players;[147] enforcing time limits to prevent orchestrated strategic delay;[148] adopting 'gateway checks' (similar to pre-action protocols); and incorporating expert knowledge or artificial intelligence to guide users towards resolution without expert assistance from a lawyer.[149]

(d) User Data to Improve Fairness

Collecting and utilising data on user experience can guide the development of a fair and efficient ODR platform. Data can be used to design reforms, improve court performance, reduce system demand, and develop iterative changes to the platform design itself.[150] This can include both qualitative and quantitative data, which can be collected through online forms, IP addresses (for ascertaining geographical location and use patterns), or online user surveys (to measure user satisfaction). ODR

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[142]   Ibid 2519.
[143]   Catrina Denvir et al (n 96) 47.
[144]   Marc Galanter, 'Why the "Haves" Come Out Ahead: Speculations on the Limits of Legal Change' (1974) 9(1) *Law and Society Review* 95, 98–103.
[145]   Legg, 'Reconciling the Goals' (n 129) 172.
[146]   See, eg, Joint Technology Committee (n 50) 6.
[147]   See, eg, Ayelet Sela, 'The Effect of Online Technologies on Dispute Resolution System Design: Antecedents, Current Trends, and Future Directions' (2017) 21(3) *Lewis & Clark Law Review* 633, 659.
[148]   See, eg, Joint Technology Committee (n 50) 8.
[149]   Thompson, 'Creating New Pathways' (n 87) 4.
[150]   Joe Tomlinson, 'Measuring to Know and Measuring to Manage: An ODR Access to Justice Audit', *Law, Technology and Access to Justice* (Blog, 1 August 2018) <https://law-tech-a2j.org/odr/measuring-to-know-and-measuring-to-manage-the-proposal-for-an-access-to-justice-audit-of-odr-procedures/>.

developers have utilised human-centred design, which focuses on end-user experience, to guide data collection and in turn shape the 'fairness' of the ODR platform and process. In the Canadian CRT, this began with extensive user testing in the early design stages and continues through qualitative user surveys and website feedback.[151] The feedback helps to determine whether the process is providing procedural justice and has informed changes to improve the fairness of the platform.[152]

This would represent a significant advance given the limited user feedback currently sought by Australian courts. Current civil justice data collection is limited, with only a few metrics used and with limited qualitative studies about the user experience.[153] Data quality and completeness is compromised by aging case management systems, a lack of uniform or adequate definitions and the costs and errors of manual data entry.[154] However, by prioritising data collection and iterative improvements based on the analysis of results, ODR can shape a platform which ensures that each unique user experiences a high standard of procedural fairness. Collecting more and better data will reveal how ODR design can improve the dispute resolution process and may shed light on what may prevent disputes from occurring.

E   *Conclusions concerning ODR in High-Value, Low-Value Individual Disputes*

ODR platforms have the potential to resolve large numbers of small-scale disputes more expeditiously, at lower cost to the parties and the public, and with greater user satisfaction compared to traditional civil litigation processes and procedures. However, in the design and implementation of such platforms, important objectives in terms of access to justice, open justice and procedural fairness need to be accommodated. We have sought to outline how this might be achieved with reference to ODR innovations in other countries and some findings from empirical research. The alignment of an ODR platform to these goals needs to be established using evidence, and not merely asserted.

II   THE USE OF DIGITAL TECHNOLOGY IN LARGE, COMPLEX LITIGATION IN THE HIGHER COURTS

Class actions and the resolution of mass disputes give rise to a number of challenging problems for litigants, lawyers, judges and the legal system. All too often class action litigation is protracted and costly. Although class actions were designed to facilitate access to justice, this encompasses more than mere access to the courts by the commencement of a class action proceeding. The ongoing delay in many class actions erodes the confidence of class members in the justice system and the substantial

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[151]   Salter, 'British Columbia's Civil Resolution Tribunal' (n 19) 124; Salter and Thompson, 'Public-Centred Civil Justice Redesign' (n 83) 124–5.

[152]   Salter and Thompson, 'Public-Centred Civil Justice Redesign' (n 83) 122.

[153]   The Productivity Commission collects basic civil justice data; Productivity Commission, *Report on Government Services* (24 January 2019) ch 7 <https://www.pc.gov.au/research/ongoing/report-on-government-services/2019/justice/courts>.

[154]   For an analysis of civil justice data quality and completeness for the purposes of answering policy questions in NSW, see Law and Justice Foundation of NSW, *Data Insights in Civil Justice* (Report series, 2016–8) <http://www.lawfoundation.net.au/ljf/app/5141D05E8AC0EF1D85258078004EC072.html>.

transaction costs erode the net amounts that they receive if the case is successfully resolved.

However, as with the resolution of high-volume, low-value *individual disputes*, digital technology and online dispute resolution mechanisms can facilitate the more economical and more expeditious resolution of *mass claims* in a manner which is both procedurally fair and transparent.

In this section we examine, with reference to several recent and current class actions in Australia and North America, the use of digital technology in the development and maintenance of client data bases by lawyers; the review of voluminous documentation produced on discovery; the filing and exchange of court documents and evidence by parties; the judicial management of documentation and evidence; the conduct of trials; and the administration of settlement distribution schemes.

A   *The Commencement of Litigation: The Development and Management of Client Data Bases by Lawyers*

Prior to and after the commencement of litigation, lawyers often desire to sign up substantial numbers of those with claims as clients, even though this is not necessary to commence a class action. In cases funded by a commercial litigation funder prior to the relatively recent endorsement of common fund orders,[155] it was often considered necessary to enter into contractual litigation funding agreements with large numbers of claimants and to obtain documentary information and instructions from them concerning the nature and quantum of their individual claims. In commercial parlance, this is known as 'book building'.

Even after the advent of common fund orders it may be necessary in some cases to take instructions from all prospective class members.[156] Such documentary information obtained from claimants may encompass:

1. fee and retainer agreements and costs disclosure documents provided by the law firm(s) conducting the litigation;
2. litigation funding agreements provided by the litigation funder;
3. instructions concerning the nature of the circumstances giving rise to each individual claim;
4. instructions and documents concerning the nature, extent and quantum of the individual damages suffered by each claimant; and
5. records or information in the possession of third parties needed as evidence to prove causation (for example, in the case of personal injuries arising out of

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[155] Common fund orders have been endorsed by the Full Federal Court in *Money Max Int Pty Ltd v QBE Insurance Group Ltd* (2016) 245 FCR 191, 192 and further upheld by the recent decisions of the Full Federal Court in *Lenthall v Westpac Life Insurance Services Ltd* (2018) 363 ALR 698, 715 [63] and the NSW Court of Appeal in *Brewster v BMW Australia Ltd* [2019] NSWCA 35, [117] following a joint sitting of both courts.

[156] In the class action arising out of the Montara oil spill, claims for losses by Indonesian seaweed farmers were not commenced within the applicable limitation period. Thus, the proceeding was commenced after individual instructions were obtained from 15,000 group members with each seeking an extension of time for the purpose of pursuing their claim. The lead applicant succeeded in obtaining an extension of time in respect of his claim; *Sanda v PTTEP Australasia (Ashmore Cartier) Pty Ltd (No 3)* [2017] FCA 1272.

defective products) or the nature and extent of personal injuries or economic loss.

Current methods for obtaining such instructions and information encompass:

1. Collection through websites established by law firms and in some instances courts;
2. The distribution, execution and return of agreements by electronic means;
3. The use of standard form questionnaires which may be completed electronically;[157] and
4. The distribution of newsletters and other information, including FAQs, to claimants by electronic means.

When proceedings are to be commenced, many courts, including the Federal Court of Australia, have introduced procedures for the electronic filing of pleadings, court documents and evidence (as discussed below). In some class actions it may be necessary to establish databases of group members who have exercised their right to opt out of the proceeding. Relatively conventional and readily available digital processes and programs have been adopted to gather and process these types of information. There are numerous off-the-shelf computer programs available for these purposes.[158]

B   *The Conduct of Litigation: Reviewing Voluminous Documentation Produced on Discovery*

It is not unusual in large complex litigation generally, and in class actions in particular, for a large volume of documentation to be reviewed and produced by way of discovery. With increases in the use of computers and advances in digital technology there has been an exponential increase in the volume of electronic information that may be relevant to litigation.[159] As Justice Vickery has noted:

> We are now dealing with very large numbers. A major commercial bank in the world today produces some 2 terabytes of Electronically Stored Information (ESI) every minute, and some as much as 2.5 TB per minute. To put this in perspective: A terabyte (TB) is a multiple of the unit 'byte' for digital information. One terabyte is one trillion bytes or 1,000 gigabytes. It is estimated that over 85 million pages of Word documents would fill one terabyte. It would contain electronic information equivalent to an 8 foot stack of CD's or about 150 DVD's. A single TB would hold all 350 episodes of The Simpsons or a pile of 80,000 telephone books.[160]

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157   Some of the pitfalls of using standard questionnaires (or online systems) rather than client interviews are illustrated by the case of *Robert v Cashman* [2000] NSWSC 770 [53]–[64] (Whealy J).

158   See, eg, the off-the-shelf programs reviewed at 'Legal Software', *Software Advice* (Web Page, 15 June 2019) <https://www.softwareadvice.com/au/legal/>.

159   See, eg, Justice Peter Vickery, 'Managing the Paper: Taming the Leviathan' (2012) 22(2) *Journal of Judicial Administration* 51, 52.

160   Justice Peter Vickery, 'New Horizons for the Bar in the Age of Technology' (Conference Paper, Australian Bar Association Conference, 7 July 2017) 17. <https://austbar.asn.au//uploads/pdfs/abaconf2017/Vickery,%20the%20Hon.%20Justice%20 Peter_New%20Horizons%20for%20the%20Bar%20in%20the%20Age%20of%20Technology.p df> ('New Horizons for the Bar').

Historically, the process of document review has been time consuming and expensive. The substantial cost incurred in the traditionally time consuming and inefficient methods used for the manual review of such documents has led to various procedural changes which have substantially attenuated the ambit of or the right to discovery in some types of cases. Various law reform proposals have also been directed at narrowing the criteria for the discoverability of relevant or potentially relevant documents.[161]

In many cases, lawyers for the litigants will seek to reach an agreement on protocols for the electronic exchange of documentary information, subject to judicial supervision and approval. Before the digital revolution, each potentially relevant document was reviewed manually. With the advent of computer technology, various key words became customarily used for the electronic scanning of documents in order to sort the wheat from the chaff. Key words could be used individually or in combination to conduct electronic searches. This involves the use of Boolean operators, connecting search words using terms such as 'and', 'or', ''not' and 'near', or mathematical symbols to define and refine searches by combing or limiting search terms.[162] This methodology is also used in internet search engine technology.

The limitations of Boolean search technology are well known and have been the subject of detailed empirical research. From such research it is clear that Boolean searches often miss a substantial number of relevant documents. In fact, traditional key word Boolean search methods may miss the majority of relevant documents. In one study, 67 percent of relevant documents were only found when techniques other than Boolean search were used.[163]

Traditional methods of document review are also very expensive. A study by the Rand Institute for Civil Justice ('Rand Institute') found that traditional linear discovery accounts for 73 percent of e-Discovery costs in the United States.[164] Rand Institute research found that parties in civil litigation could possibly lower the high costs of large scale electronic discovery by using predictive coding (discussed below) to reduce the number of documents requiring human review, although the cost effectiveness of such

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[161] See, eg, Victorian Law Reform Commission, *Civil Justice Review* (Report No 14, 28 May 2008) ch 6; Australian Law Reform Commission, *Managing Discovery of Documents in Federal Courts* (Report No 115, 25 May 2011) chs 4–6.

[162] George Boole was an English mathematician who developed an algebraic method described in his book *The Mathematical Analysis of Logic* (1847) and further elaborated in *An Investigation of the Laws of Thought* (1854).

[163] Douglas W Oard, *Search and Retrieval for ESI*, College of Information Studies and Institute for Advanced Computer Studies, University of Maryland, College Park, Maryland MD United States, March 10, 2010. Oard and his co-authors have conducted significant research and published numerous papers on the design and evaluation of electronic methods for the review of documentary evidence in civil litigation; 'Doug Oard's Research Page' (Web Page, 2 Jan 2015) <https://ece.umd.edu/~oard/research.html#image>.

[164] Nicholas M Pace and Laura Zakaras, 'The Cost of Producing Electronic Documents in Civil Lawsuits: Can They Be Sharply Reduced Without Sacrificing Quality?' (Research Brief, Rand Institute for Civil Justice, April 2012) 1 <https://www.rand.org/pubs/research_briefs/RB9650.html>.

coding is yet to be determined.[165] Thus, as Justice Vickery has observed: 'If the age of technology has produced the problem – it can also assist in providing the answer'.[166] In the United States, the Text Retrieval Conference ('TREC') periodically reviews empirical research on the effectiveness of text retrieval methods.[167] It is administered by the US National Institute of Standards and Technology ('NIST'), an agency of the US Department of Commerce. As Judge Grimm of the US District Court for the District of Maryland has noted, it is a research collaboration 'aimed at studying the e-discovery review process to evaluate the effectiveness of a wide array of technologies'.[168] As he observes:

> There is room for optimism that as search and information retrieval methodologies are studied and tested, this will result in identifying those that are most effective and least expensive to employ for a variety of [electronically stored information] discovery tasks.[169]

As another United States District Court Judge has observed:

> Whether search terms or 'keywords' will yield the information sought is a complicated question involving the interplay, at least, of the sciences of computer technology, statistics and linguistics … Given this complexity, for lawyers and judges to dare opine that a certain search term or terms would be more likely to produce information than the terms that were used is truly to go where angels fear to tread.[170]

More sophisticated electronic search methods have been developed recently and deployed in large complex litigation, including class actions, where a large body of electronically stored information ('ESI') may be in issue. This involves the use of Technology Assisted Review ('TAR'), whereby a person with expertise in the subject matter of interest reviews a subset of the documents with a view to identifying those of relevance and developing a set of coding or search terms which can then be applied to the whole body of documents. This is often an iterative process which, when combined with sophisticated 'intelligent' software, can produce much more reliable identification of relevant documents. The process involves predictive coding and continuous active learning ('CAL'), including the use of algorithms derived from statistical modelling to identify documents that are conceptually similar to a sample of documents that were subjectively reviewed by a person or persons with knowledge and expertise in the subject matter of interest. Other TAR methods are based on systematic

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165   Nicholas M Pace and Laura Zakaras, *Where the Money Goes: Understanding Litigant Expenditures for Producing Electronic Discovery* (Rand Corporation, 2012) 66 <https://www.rand.org/content/dam/rand/pubs/monographs/2012/RAND_MG1208.pdf>.

166   Justice Vickery, 'New Horizons for the Bar' (n 160) 17.

167   See generally 'Text REtrieval Conference (TREC)', *TREC* (Web Page, 30 May 2019) <http://trec.nist.gov>. The TREC workshops encompass research in information retrieval in a wide range of areas and disciples, not confined to law. A number of scholarly articles on electronic search methodologies are published in the journal *Artificial Intelligence and Law* (Springer). See also Ellen M Voorhees and Donna K Harman (eds), *TREC Experiment and Evaluation in Information Retrieval* (The MIT Press, 2005).

168   *Victor Stanley, Inc. v. Creative Pipe, Inc.* 250 FRD 251, 262 (D Md, 2008).

169   Ibid.

170   *US v O'Keefe* 537 F Supp 2d 14, 24 (DDC, 2008).

rules that emulate the expert decision making process.[171] As Justice Vickery has noted, TAR is often used as part of a suite of technologies.[172]

An independent person may be engaged to assist in the review process.[173] Also, as part of the iterative process, validation methods based on a sample of documents are usually used in order to obtain some measure of how effective the TAR process is. This will often involve measuring the percentage of responsive documents that TAR identifies, the percentage of non-responsive documents identified and the degree of volatility of the process, based on the percentage of documents that have changed from one designation category to another between rounds of the process.[174] The process does not work on non-text documents, such as old hard copies, photographs, diagrams or drawings, and is of limited application with spreadsheets.[175]

In 2012, a US Federal District Court endorsed the use of TAR to review ESI in appropriate cases.[176] The Supreme Court of Victoria was the first court in Australia to order the use of TAR techniques to assist in the process of discovery in civil litigation.[177] In the first Victorian case in which TAR was ordered, 4 million documents had been produced on discovery. After the elimination of duplicates, this was reduced to 1.4 million. According to Justice Vickery, a junior solicitor taking one minute to review and catalogue each document manually would have taken 583 working weeks, or 10 years, to compete the task. Hence, TAR was ordered to expedite and simplify the process.[178] This resulted in a reduction to 300,000 documents, 210,000 of which were likely to be irrelevant, thus reducing the pool to 100,000 documents.[179]

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[171]   Erick Gunawan and Tom Pritchards, Technology and the Law Committee, 'Technology Assisted Review' (Research paper, Law Institute of Victoria, 24 November 2017) 1 <https://www.liv.asn.au/getattachment/Professional-Practice/Areas-of-Law/Technology-and-the-Law/Resources/20171124_LP_TechnologyAndTheLaw_TAR_V04.pdf.aspx>.

[172]   These include de-duplication technology; near duplication technology; email threading technology; and automated privilege detection; Justice Vickery, 'New Horizons for the Bar' (n 160) 19.

[173]   For example, in *McConnell Dowell Constructors (Aust) Pty Ltd v Santam Ltd (No 1)* (2016) 51 VR 421, Vickery J of the Victorian Supreme Court appointed a special referee to assist with questions arising from discovery and inspection of voluminous documents, in particular the use of electronic discovery processes such as TAR or predictive coding review.

[174]   See generally John Tredennick et al, *TAR for Smart People: How Technology Assisted Review Works and Why it Matters for Legal Professionals* (Catalyst, 3rd ed, 2018); Gordon V Cormack and Maura R Grossman, 'Evaluation of Machine-Learning Protocols for Technology-Assisted Review in Electronic Discovery' (Conference Paper, ACM SIGIR Conference on Research and Development in Information Retrieval, 6–11 July 2014) < http://plg2.cs.uwaterloo.ca/~gvcormac/calstudy/study/sigir2014-cormackgrossman.pdf>; Thomas Davey and Michael Legg, 'Predictive Coding: Machine Learning Disrupts Discovery' (2017) 32 *LSJ: Law Society of NSW Journal* 82.

[175]   Gemma Thomas, 'Five Tips for Successful Use of Technology Assisted Review (TAR)', *Pinsent Masons* (Web Page, 15 February 2018) <https://www.out-law.com/en/articles/2018/february/five-tips-for-successful-use-of-technology-assisted-review-tar/>.

[176]   *Da Silva Moore v Publicis Groupe* 287 FRD 182, 183 (SDNY 2012).

[177]   See *McConnell Dowell Constructors (Aust) Pty Ltd v Santam Ltd (No 1)* (2016) 51 VR 421, 422; *McConnell Dowell Constructors (Aust) Pty Ltd v Santam Ltd (No 2)* [2017] VSC 640; Supreme Court of Victoria, *Practice Note SC Gen 5: Technology in Civil Litigation,* 2 July 2018.

[178]   'Technology Assisted Review Plays Key Role in Litigation', *Supreme Court of Victoria* (News Update, 14 December 2016) <https://www.supremecourt.vic.gov.au/news/technology-assisted-review-plays-key-role-in-litigation>.

[179]   Justice Vickery, 'New Horizons for the Bar' (n 160) 31.

As the Supreme Court of Victoria noted, TAR has been endorsed by a number of courts in other countries, including the High Court of England and Wales,[180] the High Court of Ireland,[181] and the Federal District Court in the United States.[182] TAR has also been used in a number of other international cases.[183] More recent judicial scrutiny of this process has focused on issues concerning the objections of parties; proportionality; mechanisms for cooperation and transparency; the initial selection of test documents or 'seed sets'; recall and precision; and validation and audit practices.[184] TAR has been deployed in a number of Federal Court of Australia class action proceedings,[185] and is currently being used in the VW 'diesel gate' litigation presently pending in the Federal Court of Australia.[186] In that litigation, five class actions and a proceeding seeking penalties instituted by the ACCC are all progressing concurrently before Foster J.[187] The problem of voluminous discovery documentation has loomed large. At the time of writing, the respondents in the VW litigation had identified over 100 million documents to be reviewed for relevance, most of which are in German. TAR has also been used in proceedings in the Supreme Court of Queensland.[188] In terms of cost, Justice Vickery has estimated that TAR would cost only one fifth or less compared with a manual review.[189] In one Australian matter, TAR was used to review 778GB of data, equivalent to 6.6 million documents. This was reportedly reduced in 31 hours to 157,000 by deploying only one lawyer, a service provider and an independent consultant.[190]

C   *The Filing and Exchange of Court Documents and Evidence by Parties*

The electronic filing and exchange of court documents, pleadings and evidence has become the norm in many Australian courts. This has saved time and cut costs for both litigants and the courts. The Federal Court of Australia was one of the first courts in the world to adopt an electronic filing system. This development does not require further elaboration here.

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[180]   *Pyrrho Investments Ltd v MWB Property Ltd* [2016] EWHC 256 (Ch). In *David Brown v BCA Trading Ltd* [2016] EWHC 1464 (Ch), 17.6 million potentially discoverable documents were initially reduced to 3.1 million using de-duplication technology.

[181]   *Irish Bank Resolution Corporation Ltd Quinn* [2015] IEHC 175. In that case, the High Court of Ireland noted that technology assisted review using predictive coding is at least as accurate as and probably more accurate than manual or linear methods in identifying relevant documents and would facilitate a more economical and expeditious discovery process; *Irish Bank Resolution Corporation Ltd Quinn* [2015] IEHC 175, [66]–[67].

[182]   *Rio Tinto Plc v Vale SA* 306 FRD 125 (SDNY 2015).

[183]   Justice Vickery, 'New Horizons for the Bar' (n 160) 25.

[184]   James A Sherer, David Choi and Csilla Boga-Lofaro, 'Court Guideposts for the Path to Technology Assisted Review Adoption' (2018) 35(2) *Computer and Internet Lawyer* 1, 2.

[185]   See, eg, *Money Max Int Pty Ltd v QBE Insurance Group Ltd* (2016) 245 FCR 191; *Petersen Superannuation Fund Pty Ltd v Bank of Queensland Ltd (No 2)* [2017] FCA 1231 (6 October 2017).

[186]   *Cantor v Audi Australia Pty Ltd (No 3)* [2017] FCA 1079.

[187]   Ibid.

[188]   See, eg, *Parbery v QNI Metals Pty Ltd* (2018) 358 ALR 88; *Parbery v QNI Metals Pty Ltd* [2018] QSC 180; *Parbery v QNI Metals Pty Ltd* [2018] QSC 276.

[189]   Justice Vickery, 'New Horizons for the Bar' (n 160) 33.

[190]   'eDiscovery in SA - Basic guide to Technology Assisted Review for SA', *Terry Harrison* (Web Page, 10 July 2018) <http://www.terryharrison.co/blog/2018/7/10/ediscovery-in-sa-basic-guide-to-technology-assisted-review-for-sa>.

D   *The Judicial Management of Documentation and Evidence*

In many cases, voluminous documentation in the higher courts is stored in electronic and readily searchable form. Various commercial service providers are available in Australia to facilitate this.

E   *The Conduct of Trials*

In many instances, 'electronic trials' have been conducted whereby the court and the parties may access and use in the hearing, and in oral and written submissions, extensive computer based information rather than hard copies. For example, this occurred in the VW litigation, specifically at the hearing concerning whether the cars in issue were fitted with illegal 'defeat devices'.[191]

Whilst the use of such computer based technologies has made forensic information access and management considerably more convenient than the traditional paper based modus operandi, this has not been without significant financial cost. Commercial service providers are usually appointed, and approved by the court, to obtain, process, store and facilitate access to, and the retrieval of, digital information. Often additional technology personnel will also be deployed by the parties. The commercial cost of these services is considerable.

However, in many class actions and in other forms of 'mega' litigation, Justice Sackville's observation applies: 'It would have been virtually impossible to conduct the trial without the use of modern technology'.[192] In a number of cases, it has been estimated that there had been a substantial reduction in trial time through the use of modern technology.[193]

Although electronic trials have become relatively commonplace, there has been relatively little use of technology to facilitate participation in hearings by remote advocates and witnesses. This usually only occurs in limited circumstances, usually when dealing with interlocutory or procedural matters and often only with either the consent of the parties or judicial approval.[194] There is often judicial resistance given the perceived benefits of having witnesses give evidence in person in court.[195]

F   *Concluding Litigation*

The tension between the desire for individualised justice and the need to deal with large numbers of claims continues to manifest itself at the conclusion of class action and mass tort proceedings. Where an 'opt out' class action is converted to a closed

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191   *Cantor v Audi Australia Pty Ltd (No 3)* [2017] FCA 1079.

192   *Seven Network Ltd v News Ltd* [2007] FCA 1062, [10].

193   See Anna Olijnyk, 'Justice and Efficiency in Mega-Litigation' (PhD thesis, University of Adelaide, 2014) 196 <https://digital.library.adelaide.edu.au/dspace/bitstream/2440/91442/3/02whole.pdf>. This text is now also available as a book; Anna Olijnyk, *Justice and Efficiency in Mega-Litigation* (Hart Publishing, 2019).

194   Robert Size, 'Taking Advantage of Advances in Technology to Enhance the Rule of Law' (2017) 91(7) *Australian Law Journal* 575, 585.

195   See, eg, *Campaign Master (UK) v Forty Two International (No 3)* (2009) 181 FCR 152, 171 [78] (Buchanan J) cited in Size (n 194) 586; *Blackrock Asset Management Services Australia Ltd v Waked (No 2)* [2011] FCA 479 [46] (Perram J) cited in Size (n 194) 586.

class, often to facilitate settlement, there is a need to process large numbers of claims from persons who seek to 'opt in'.

Where a settlement agreement is reached between the parties and approved by the court, there is often a need to devise and implement claims processing procedures to determine eligibility for payment and to quantify the amounts to be paid to large numbers of class members.

If the case is not settled and proceeds to trial, the judgment will usually only deal with the individual claim(s) of the lead plaintiff(s) and some or all of the issues common to the claims of the class members. If the lead plaintiff is successful, there will need to be judicial or administrative procedures implemented to deal with the 'individual' issues arising in each of the claims of the remaining class members. These judicial or administrative procedures may need to deal with issues of causation and reliance that may arise in product liability or shareholder class actions. Such procedures will also need to encompass methods of quantifying the economic value of large numbers of individual claims.

For example, in the current VW litigation in the Federal Court of Australia, the trial of the five class actions on behalf of consumers who purchased the vehicles in question will involve primarily the determination of the individual claims of the five lead applicants, together with a number of common questions applicable to the claims of the remaining class members. If the applicants are successful, a further 90,000 claims by class members will need to be resolved.

To date in Australia, in each of the abovementioned stages (namely, the commencement, conduct and conclusion of class action and mass tort litigation), considerably greater use of new and emerging technologies might have been employed to reduce transaction costs and to expedite the resolution of disputes and the implementation of settlements.

In the following part of the article, we provide some examples of how settlement administration and implementation might be improved in the future, drawing on a number of current or completed cases.

G   *The Administration of Settlement Distribution Schemes*

In recent years, there has been ongoing controversy over the cost and delay associated with the implementation of class action settlements in Australia. This issue attracted considerable controversy in connection with the settlement of the Victorian bushfire litigation, which experienced substantial delays and large transaction costs. The problem was exacerbated by a decision not to make interim payments pending the evaluation of all claims. The delays and costs were due in large measure to the individualised assessment of each group member's claim by humans (including lawyers, loss adjusters and medical personnel). In part, this arose out of the volume and complexity of the claims, which encompassed claims arising from personal injuries, property damage and business losses. For example, the settlement of the Kinglake bushfire case involved around 1,800 personal injury claims and over 9,000 property damage and economic loss claims.

Until recently, a practice had developed whereby the solicitors conducting the class action proceedings sought to appoint themselves as the administrators of any settlement, a process which, at least until recently, had received judicial approval. In many cases, the evaluation and resolution of claims during the settlement process have been carried out by the same solicitors who acted for the class members in the litigation. Thus, lawyers acting as advocates for their clients one day become appointed as adjudicators of their clients' claim the next. This is often said to be justified by their familiarity with the issues in question, the adoption of independent review procedures and ongoing judicial scrutiny.

In some instances, this has been imposed as a term or condition of the proposed settlement. This has attracted some judicial comment.[196] There have also been recent recommendations for reform, including from the Australian Law Reform Commission, which has recommended that there should be a tender process so that any interested party may tender for such work, with a decision to be made by the court based on questions of costs and efficiency.[197]

In the United States it has been customary for independent persons be appointed as trustees under judicial supervision to implement many class action, mass tort and bankruptcy settlements.[198] In some recent Australian class action settlements independent persons have been appointed to process claims and make payments, by agreement of the parties and with the approval of the court.[199] For present purposes we do not express a view as to *who* should administer settlements. However, we contend that there is room for improvement in *how* such settlements are implemented.

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[196] In *Liverpool City Council v McGraw-Hill Financial, Inc (now known as S and P Global Inc)* [2018] FCA 1289, [77], Lee J raised the prospect of tenders being sought for the purpose of administration of the settlement but permitted the solicitors to be appointed as administrators of the scheme, subject to external scrutiny of their costs.

[197] Australian Law Reform Commission, *Integrity, Fairness and Efficiency–An Inquiry into Class Action Proceedings and Third-Party Litigation Funders* (Report 132, 24 January 2019) 9 <https://www.alrc.gov.au/publications/integrity-fairness-and-efficiency%E2%80%94-inquiry-class-action-proceedings-and-third-party>.

[198] There is a considerable body of literature dealing with claims resolution facilities established in connection with class actions, mass tort litigation and Chapter 11 bankruptcy proceedings in the United States; see, eg, Deborah R Hensler, 'Assessing Claims Resolution Facilities: What We Need to Know' (1990) 53(4) *Law and Contemporary Problems* 175; Deborah R Hensler, 'Alternative Courts? Litigation-Induced Claims Resolution Facilities' (2005) 57 *Stanford Law Review* 1429; Francis E McGovern, 'The What and Why of Claims Resolution Facilities' (2005) 57(5) *Stanford Law Review* 1361; Frances E McGovern, 'Second-Generation Dispute System Design Issues in Managing Settlements' (2008) 24(1) *Ohio State Journal on Dispute Resolution* 53; Frances E McGovern, 'Distribution of Funds in Class Actions - Claims Administration' (2009) 35(1) *Journal of Corporation Law* 123. Two examples of recently established claims resolution facilities include the facility established in 2015 pursuant to the Joint Chapter 11 Plan of Reorganisation of New England Pharmacy, Inc, the Tort Trust Agreement in respect of claims arising out of contaminated injections, and the claims resolution facility adopted as part of the plan of re-organisation of Garlock Sealing Technologies LLC et al in 2018 in connection with asbestos claims. Claims resolution facilities have also been set up in connection with international disputes; see, eg, Frances E McGovern, 'Dispute Systems Design: The United Nations Compensation Commission' (2009) 14 *Harvard Negotiation Law Review* 171.

[199] In the consumer class action in the Federal Court on behalf of purchasers of Nurofen, the settlement agreement provided for the appointment of an accounting firm as settlement administrator. The settlement was approved by Nicholas J in 2017; *Hardy v Reckitt Benckiser (Australia) Pty Ltd* [2017] FCA 341.

In particular, it is clear that settlements can be designed and implemented in a manner which makes greater use of new digital technologies which will expedite and reduce the cost of claims resolution. However, the use of digital technology in litigation has to be tailored to the substantive, doctrinal and evidentiary requirements for proof of both liability and damages. In the absence of agreement between the parties during the conduct of litigation, or an agreed and court-approved methodology (in the case of class actions) for resolving claims where there is a settlement, the parties and the court are constrained by the relevant substantive law and procedural rules applicable to the dispute.[200] Even in the event of a settlement, strict legal and evidentiary rules may be required to be applied in the resolution of each individual claim. However, many if not most, settlements provide for some degree of relaxation of strict legal and evidentiary requirements in respect of both proof of eligibility for payment and the quantification of the amount(s) to be paid. Settlement distribution schemes usually seek to 'achieve a broadly fair division of the proceeds, treating like group members alike, as cost-effectively as possible'.[201]

As Gilsenan and Legg note, 'settlement distributions need to balance fairness and precision with efficiency'.[202] They analyse a number of settlement distribution schemes adopted in a range of Australian class actions, encompassing shareholder claims,[203] cartel cases,[204] and mass tort and product liability proceedings.[205] In their

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[200]   In class actions, any settlement is required to obtain court approval and the court is required to be satisfied that the proposed settlement is fair and in the interests of the group members. In the Federal Court context, see *Federal Court of Australia Act 1976* (Cth) s 33V; Federal Court of Australia, *Practice Note GPN-CA: Class Actions Practice Note*, 25 October 2016, [14.1]–[14.6]. The court will also supervise the implementation of any settlement distribution scheme.

[201]   *Camilleri v The Trust Company (Nominees) Ltd* [2015] FCA 1468, [5] (Moshinsky J) citing *Mercieca v SPI Electricity Pty Ltd* [2012] VSC 204, [37]–[39] ('*Mercieca*'). In *Mercieca*, Emerton J approved a settlement notwithstanding the possibility that the claims assessment principles may be more generous in respect of some group members compared with others: at [38]. See also *Stanford v DePuy International Ltd (No 6)* [2016] FCA 1452, [118] (Wigney J).

[202]   Rebecca Gilsenan and Michael Legg, 'Australian Class Action Settlement Distribution Scheme Design' (Research Report No 1, IMF Bentham Class Action Research Initiative, 1 June 2017) 4 <http://www.cari.unsw.edu.au/sites/cari.unsw.edu.au/files/class-action-settlement-distribution-design-CARI-paper.pdf/>.

[203]   See, eg, *Dorajay Pty Ltd v Aristocrat Leisure Ltd* [2009] FCA 19, [20] (Stone J); *Hobbs Anderson Investments Pty Ltd v Oz Minerals Ltd* [2011] FCA 801, [22] (Emmett J); *Inabu Pty Ltd v Leighton Holdings Ltd (No 2)* [2014] FCA 911, [13] (Jacobson J). In a more recent case, Murphy J approved of the loss assessment methodology proposed for the settlement distribution scheme in *Caason Investments Pty Limited v Cao (No 2)* [2018] FCA 527, [100], [106].

[204]   See, eg, *Darwalla Milling Co Pty Ltd v F Hoffman-La Roche Ltd (No 2)* (2006) 236 ALR 322 cited in Gilsenan and Legg (n 202) 11 nn 43; *Jarra Creek Central Packing Shed Pty Ltd v Amcor Ltd* [2011] ATPR 42-361 cited in Gilsenan and Legg (n 202) 11 nn 43; *Wright Rubber Pty Ltd v Bayer AG (No 3)* [2011] FCA 1172 cited in Gilsenan and Legg (n 202) 11 nn 43; *De Brett Seafood Pty Ltd v Qantas Airways Limited* cited in Gilsenan and Legg (n 202) 11 nn 43. As Gilsenan and Legg note, the four class actions that settled had settlement distribution schemes that were structured along similar lines: at 12.

[205]   According to Gilsenan and Legg, the types of settlement schemes adopted in product liability and mass tort cases are varied: at 17–22. Some cases adopt global sum settlements with individualised distribution such as the Kilmore-East Kinglake bushfire class action in *Matthews v AusNet Electricity Services Pty Ltd* [2014] VSC 663. Others have adopted process settlements involving a two stage procedure for determining individual entitlement and assessment of quantum, such as in the LCS ® Duofix ™ Femoral Components class action in respect of components of knee replacement implants, which was heard in *Casey v DePuy International Ltd (No 2)* [2012] FCA 1370, and other Victorian bushfire cases, such as *Thomas v Powercor*

perceptive analysis, they also refer to matrix or grid settlements which are common in the United States but have only rarely been used in mass tort class actions in Australia.[206]

In the United States, claims resolution facilities have been developed not only in connection with the settlement of class actions, aggregated mass tort claims,[207] and bankruptcy proceedings, but also for the resolution of claims which are not aggregated. As Dodge notes, many of the most innovative recent claims structures, including the BP Gulf Coast Claims Fund and the fund established in the aftermath of the Costa Concordia disaster, use a new 'bottom-up' model of 'disaggregative' mass claim resolution instead of the familiar 'top-down' model.[208]

Importantly, many claims resolution mechanisms have been implemented to resolve individual disputes in a manner which precludes their aggregation, such as mandatory individual arbitration clauses in consumer and employment contracts. Since these clauses are unilaterally drafted by corporations with a view to precluding class action litigation, questions have arisen as to their fairness and enforceability. To date, at least in the United States, they have received considerable judicial support, including from the Supreme Court of the United States.[209]

As one author has suggested, the rise of 'private disaggregation' has the potential to create a dramatic shift in the legal landscape given that this new approach to dispute resolution is driving many of the most innovative claims resolution mechanisms which are emerging. Such mechanisms often streamline procedures and the resolution of substantive issues or shift the cost to the defendants, thus facilitating the pursuit of claims that may otherwise not be pursued, at least outside of the context of class actions, because the transaction costs exceed the potential recovery.[210] This may also resolve claims that might not otherwise be certified as suitable for a class action and avoid the systemic costs and delays inherent in aggregate litigation.

Australia Ltd [2011] VSC 614, *Perry v Powercor Australia Ltd* [2012] VSC 113 and *Place v Powercor Australia Ltd* [2013] VSC 6.

[206] Gilsenan and Legg (n 202) 22–3. They refer to the United States silicone gel breast implant litigation and the national football league players' concussion injury litigation: at 23. As they note, a matrix was used in *Amom v New South Wales* [2016] NSWSC 1900 a case involving the false imprisonment of young people. The matrix allocated compensation based on various factors such as false imprisonment, strip search, degree of humiliation, degree of discomfort and age. They also note that reference was made to a US grid style payment scheme in *Stanford v DePuy International Ltd (No 6)* [2016] FCA 1452, [105], [108]: at 22, nn 92.

[207] Multi District Litigation (MDL) procedures provide for the transfer and consolidation of large numbers of cases filed in different federal courts to one judge for all pre-trial proceedings where the cases give rise to common issues (e.g. product liability claims involving the same product).

[208] Jaime Dodge, 'Disaggregative Mechanisms: Mass Claims Resolution without Class Actions' (2014) 63(6) *Emory Law Journal* 1253, 1253.

[209] See, eg, *AT&T Mobility LLC v Concepcion* 563 US 333 (2011). The Court held that federal arbitration legislation preempted a Californian state law that invalidated most class action waivers in consumer contracts on the grounds of unconscionability; see also the recent decision in *Epic Systems Corporation v Lewis* 584 US ___ (2018) where the Court (by a 5:4 majority) upheld a binding arbitration clause in an employment contract thus preventing collective class action litigation. For an examination of the status and enforceability of mandatory foreign arbitration clauses under Australian law, see Richard Garnett, 'Arbitration of Cross-Border Consumer Transactions in Australia: A Way Forward?' (2017) 39(4) *Sydney Law Review* 569.

[210] Dodge (n 208) 1258.

Whether or not claims resolution mechanisms arise out of aggregated or disaggregated claims, individualised assessment of claims can be combined with a matrix or grid and standardised payments in designing claims resolution facilities. A good example of a 'hybrid' claims resolution mechanism that combined simplified and expedited claims resolution options with more traditional requirements to establish proof of eligibility for payment and quantify damages is the Claims Resolution Facility established by the Dalkon Shield Claimants Trust in the aftermath of the Dalkon Shield litigation in the United States.

<div align="center">H   Some Historical Lessons from the Dalkon Shield Litigation</div>

After approval of a Plan of Reorganisation by the United States Bankruptcy Court, the Dalkon Shield Claimants Trust was established to resolve over 300,000 claims by women worldwide for personal injuries and economic loss arising out of their use of the Dalkon Shield IUD.[211]

Claimants were given a *choice* of four options. Under Option 1, claimants could elect to receive an expedited payment of a fixed minimal amount simply by claiming that they had used the Dalkon Shield and had been injured by it. No proof was required of use of the device or of any injury suffered. Although the payment amount was modest, over 100,000 claimants chose this option.

Under Option 2, much higher fixed or lump sum amounts were payable according to the type of injury suffered. To be eligible for payment under this option, claimants had to submit documentary proof that they had used the Dalkon Shield IUD and medical records or other evidence to prove that they had suffered the particular injuries for which compensation was claimed. Importantly, it was not necessary to establish or prove any causal connection between the use of the IUD and the injuries suffered. Although reasonably substantial, the payments were standardised for each injury and were lower in amount than what the 'tort value' of the claim would be if the matter had been determined by a court. A very substantial number of the claimants elected this option.

Under Option 3, a claimant could seek payment of the full amount of the 'tort value' of the claim, which would be assessed by independent trustees. Claimants retained the right to have the amount determined by a court (or, alternatively, though binding arbitration) if the amount offered by the trustees was rejected. However, in order to obtain compensation under this option, claimants had to establish not only use of the IUD and proof of injury, but also a causal connection between use of the IUD and the injury in question on the basis of medical evidence.

Under Option 4, they could elect to defer resolution of their claim (for example, if it was not yet known whether they were permanently infertile or if medical or other evidence was in the process of being obtained).

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[211]   The policies and procedures of the Dalkon Shield Claimants Trust are examined in detail by the chair of the trust: Georgene M Vairo, 'The Dalkon Shield Claimants Trust: Paradigm Lost (or Found)?' (1992) 61(3) *Fordham Law Review* 617. See also Kenneth R Feinberg, 'The Dalkon Shield Claimants Trust' (1990) 53(4) *Law and Contemporary Problems* 79.

One obvious advantage of this claims resolution methodology is that it provided claimants with options that could be chosen depending on the level of proof that they were able to provide. Whilst standardised or 'cookie cutter' amounts were payable under Options 1 and 2, claimants could elect to proceed under Option 3, which facilitated payment of the full *individualised* amount according to the nature and severity of the injuries suffered and the economic losses incurred. For present purposes, it is important to note that the scheme encompassed two options (Options 1 and 2) that were conducive to the use of electronic technology to process claims expeditiously and at minimal transaction cost to the parties, the Claimants Trust or the court. Most claims were resolved under these two options.

It is perhaps also important to note that the large amount of the fund established to provide for payments was non-reversionary. In other words, the defendant did not get any of the surplus funds if all claims were resolved and paid without exhausting the fund, which turned out to be the case. Any surplus was also paid to claimants, pro-rated on the amount of their first payment in lieu of any amount for exemplary or punitive damages (which were not payable, per se).

This methodology of combining various options, which varied according to the level of proof required, and which can facilitate the resolution of most claims expeditiously and at minimal cost, can be adapted to other types of claims resolution. Importantly, it offers claimants options which *they* can choose.

I   *Some Lessons from the Vioxx Case and Recent Class Action and Mass Tort Litigation in the United States*

The problem of establishing causation and quantifying damages for large numbers of claimants looms large in many if not most class action and mass tort litigation. In the *Vioxx* product liability litigation in the United States and Canada, innovative and interesting use was made of technology in connection with the processing of large numbers of personal injury claims following a US$4.85 billion settlement of claims in the United States in 2007. An electronic damages calculator was established on a website which enabled individual claimants to input relevant data with a view to calculating their individual damages entitlement under the terms of the settlement.[212]

A computer based questionnaire was used to enable the Claims Administrator to determine qualifying claimants' 'Basis Points' (Step 1). Such basis points were based upon: (a) age at the time of injury from Vioxx use; (b) duration of Vioxx use and (c) the level and seriousness of the injury. Thereafter, at Step 2, there were adjustments depending on the timeframe and frequency of Vioxx use, leading to the calculation of a sub-total of 'award' points. Step 3 involved reductions based on risk factors, and Step 4 involved additional reductions for other significant risk factors.

Finally, the total number of award points was calculated. The Qualifying Claimant's Total Award Point Estimate was only an estimate. The Total Award Points the Qualifying Claimant ultimately received was based solely upon a review of his or her medical records by an independent Claims Administrator. To the extent there were

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[212] The calculator was previously located at 'Official Vioxx Settlement Calculator', *Official Vioxx Settlement* (Web Page) <www.officialvioxxsettlement.com/calculator> but the domain website has since been listed for sale by the owner.

discrepancies between the information entered electronically and the Qualifying Claimant's medical records, the Qualifying Claimant's medical records took precedence.

Although the value of each Award Point could not be known until all claims participating in the Settlement Program were evaluated, an electronic calculator enabled the claimant to quantify the total dollar value of the claim based on a range of potential settlement values for the Qualifying Claimant's claim. The website settlement calculator was accessible online.

The deadline for registration of claims expired on 15 January 2008. Over 58,000 claims were registered. As of 29 February 2008, more than 44,000 of 47,000 eligible claimants had enrolled in the Program. This constituted over 93 percent of all eligible claimants. This enrolment percentage exceeded the 85% threshold established in the settlement agreement. The defendant retained a right to walk away from the Agreement unless 85 percent of eligible claimants alleging a heart attack, stroke, death, or more than 12 months Vioxx usage, enrolled in the Program. Eligible claimants were those who had filed a lawsuit as of 9 November 2007, alleging that they had suffered a heart attack or stroke as a result of ingesting Vioxx.

In order for an eligible claimant to qualify for an initial payment if their claim was determined to be compensable, that Claimant had to enrol his or her claim on or before 29 February 2008. Eligible claimants who enrolled as of 29 February 2008 had a 31-day grace period to submit to the Claims Administrator additional documentation, including properly executed releases and medical authorisation forms. All eligible claimants had to enrol before 1 May 2008, in order to participate in the Settlement Program.

Each enrolled claimant was required to submit a Claims Package before 1 July 2008. A claims package needed to include: (1) medical records as outlined in Exhibit 1.3.1 of the Settlement Agreement; (2) Plaintiff or Claimant Profile Form (and amendments); and (3) a claims form (to be completed online using a secure server).

As has been noted elsewhere, although the use of grids and formulas has been widespread in mass tort and class action settlements in the United States to address the tensions between collective and individual evaluation of claims, there are often practical information problems, including where exposed individuals may not have fully manifested problems or where there are inherently subjective claims for psychological injuries.[213] There has been critical scrutiny of settlement mechanisms in a number of the United States mass tort cases.[214]

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[213]   American Law Institute, *Principles of the Law of Aggregate Litigation* (2010) 54 citing Paul H Edelman, Richard A. Nagareda and Charles Silver, 'The Allocation Problem in Multiple Claimant Representations' (2006) 14 *Supreme Court Economic Review* 95.

[214]   For example, for a critique of the settlement in the diet drug product liability litigation, see Alexandra D Lahav, 'The Law and Large Numbers: Preserving Adjudication in Complex Litigation' (2007) 59(2) *Florida Law Review* 383 ('The Law and Large Numbers'). See also Deborah R Hensler, 'Revisiting the Monster: New Myths and Realities of Class Action and Other Large Scale Litigation' (2001) 11(2) *Duke Journal of Comparative and International Law* 179.

Some courts have attempted to circumvent the conundrum of a choice between individualised and mass tort resolution of claims by adopting statistical sampling techniques or the judicial determination of bellwether cases.[215] In the Vioxx litigation, the values adopted in the settlement matrix were derived from a series of bellwether cases conducted over several years.[216] In some instances, judges have proposed non-binding bellwether cases for informational purposes.[217]

Undoubtedly, economic losses by shareholders are more easily calculable than personal injury claims in mass tort litigation. However, even in shareholder class action settlements, settlement distribution schemes usually need to utilise complex statistical methods for determining the 'inflated' price paid by those claiming loss. The challenge is to disentangle, using multivariate statistical techniques such as regression analysis, the loss said to be due to culpable conduct from other market factors having an impact on share price.[218] In the settlement of the shareholder litigation against Merck,[219] the Settlement Notice set out a Plan of Allocation which incorporated various tables, accessible online, to enable calculations of losses.[220]

Similarly, financial losses by consumers or businesses arising out of commercial computerised transactions are often readily calculable by electronic means. For example, sophisticated computer-based claims processing methods have been developed by a commercial service provider in connection with the recent US$6 billion-plus settlement in the class action arising out of claims that merchants paid excessive fees to accept Visa and Mastercard credit cards in violation of antitrust laws in the United States.[221] This was designed to allow merchants to provide information to expedite claims processing. Twenty-one million settlement notices were sent out. The Class Administrator proposes to provide class members with the ability to access the claims website, with a unique code to permit them to view the manner in which their claim value is calculated. Class members may accept or disagree with data on the claim form or the website. The claim form and website will also explain how to challenge the data. The fairness hearing is scheduled for 7 November 2019, but, at the time of writing, the settlement is on appeal. Curiously, persons wishing to opt out can only do so by letter sent in the post and not by email or online.

In a recent pharmaceutical mass tort settlement in the United States, a commercial service provider developed an electronic 'Claims Facilitator' that calculated monetary amounts for individual claimants based on an award matrix that took account of the age of the claimants and the severity of their injuries.[222] Through a secure website, Special Masters appointed by the court had unrestricted access to claimant data, whereas plaintiff law firms were limited to viewing data on their clients and to limited data fields. An interactive online claims submission platform was implemented for use

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[215]   A number of examples are cited in Lahav, 'The Law and Large Numbers' (n 214) 609–12.
[216]   Alexandra D Lahav, 'The Case for "Trial by Formula"' (2012) 90(3) *Texas Law Review* 571, 592 ('The Case for "Trial by Formula"'); see generally Howard M Erichson and Benjamin C Zipursky, 'Consent Versus Closure' (2011) 96(2) *Cornell Law Review* 265, 277–80.
[217]   Lahav, 'The Case for "Trial by Formula"' (n 216) 609.
[218]   These methods are discussed in Gilsenan and Legg (n 202) 7–9.
[219]   *In re Merck & Co Inc Vioxx Securities Litigation* MDL 1658 (SRC, 2003).
[220]   'In re Merck & Co., Inc. Vioxx Securities Litigation', *Merck Vioxx Securities Litigation* (Web Page, 10 January 2019) <https://www.merckvioxxsecuritieslitigation.com/>.
[221]   *In Re Payment Card Interchange Fee and Merchant Discount Antitrust Litigation* MDL 1720 (DEDNY, 2005)
[222]   'Epiq Results', *Epiq* (Web Page) <https://www.epiqglobal.com/en-au/results>.

by claimants and their lawyers. This facilitated the electronic submission of medical records and other data.

These relatively sophisticated, reasonably expeditious and (comparatively) inexpensive claims resolution methodologies stand in marked contrast to some of the labour intensive, expensive and protracted mechanisms used in resolving many Australian class actions to date. However, claims resolution methodologies need to be tailored to the nature of the disputes in question. In many cases, the preferable option is to incorporate various options that may be chosen by the class members themselves rather than those designing or implementing settlements. This would enable the claimants to choose between 'standardised' and 'individualised' methods. Some recent class action settlements in Australia have incorporated this methodology.

The only advantage (at least from the perspective of the legal profession) of traditional claims processing procedures primarily reliant on human resources is that they generate substantial legal fees. Where such fees are deducted from settlement amounts otherwise payable to claimants, this gives rise to obvious concern. To some extent, this revenue generator has been an impediment to the deployment of more cost effective digital solutions.

However, commercial service providers who have been involved in the adoption of innovative digital technologies and processes in United States' class action and mass tort litigation have recently become involved in the Australian market. Thus, there have been some Australian cases in which advanced computer based technology has been used in the administration of settlements.

III   CONCLUSIONS

At each end of the civil justice spectrum, traditional methods for the resolution of civil disputes through the courts are not readily capable of facilitating the resolution of such matters in a quick, just and inexpensive manner.

As with ODR platforms used for the resolution of minor civil disputes referred to in the first part of this article, the resolution of mass claims through claims resolution facilities established at the conclusion of class action or mass tort litigation should also seek to facilitate access to justice in an economical, expeditious, transparent and fair manner.

Recently deployed ODR methodologies for dealing with minor civil disputes may be adapted for resolving mass claims in class actions. Similarly, claims resolution methods adopted in recent mass tort and class action litigation can be adapted for resolving high-volume but small value individual claims outside the class action context.

There is no one-size-fits-all ODR model. Each is required to be tailored and modified to the specific and idiosyncratic features of the disputes in question and the characteristics of the parties to such disputes. This requires not only technological innovation and creative thinking from the outset, including in the design of ODR platforms and procedures, but also user feedback and evaluation methodologies that will facilitate ongoing iterative adjustment in the light of practical experience and insight. However, digital technology is not a panacea at either end of the civil claims

spectrum. There may be increased commercial costs associated with a number of digital innovations. There is an ongoing need for creative thinking and both qualitative and quantitative empirical research. Transaction costs, timeliness, and consumer satisfaction are important variables that need to be evaluated as an integral part of civil justice reform.[223]Although guiding principles have been adopted in legislation and procedural rules in various jurisdictions with a view to achieving the just, expeditious and inexpensive resolution of civil litigation, cost and delay continue to loom large in most if not all class action proceedings. It is not unusual for cases to take more than 5 years to resolve even prior to settlement administration and for legal costs to be in the tens of millions of dollars.

In the design and implementation of claims settlement procedures, rigidly adhering to the requirements of due process and the application of the substantive law in the resolution of multiple individual claims will exacerbate the problems of delay and cost. On the other hand, a preoccupation with efficiency and expedited claims processing may give rise to inequality and rough justice.[224]

One method of circumventing these extremes is to avoid a binary choice between individualised and mass claims resolution methodologies, and to incorporate various options in the claims resolution process that vary the level of proof with the quantum and speed of payment so as to give the claimants a choice as to which to elect. Whichever approach is to be adopted, the tension between the desire for individual justice and the need to resolve disputes quickly, efficiently and economically needs to be creatively resolved. In doing so, procedural due process considerations need to be accommodated if technological innovation is going to be able to bring about digital justice.

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[223]   As Justice Vickery has observed, there are some fundamental design parameters for courts adopting technology and designing workable systems which he describes at the '*Surfer*' principles: simplicity in operation; user consultation; reliability; flexibility; efficiency and robust security and back-up systems; Justice Vickery, 'New Horizons for the Bar' (n 160) 2–3.

[224]   The competing demands between compensation on the merits or rough justice are discussed by Michael Legg, 'Class Action Settlement Distribution in Australia: Compensation on the Merits or Rough Justice?' (2016) 16 *Macquarie Law Journal* 89.

THE CURRENT LANDSCAPE OF BLOCKCHAIN-BASED, CROWDSOURCED ARBITRATION

JAMES METZGER[*]

Online dispute resolution ('ODR') is in a state of rapid change and development. ODR platforms, such as British Columbia's Civil Resolution Tribunal, have been granted expanding mandates and the types of disputes that are being referred to these platforms has been increasing. To date, the existing platforms have been largely centralised; that is, either associated with the court system or organised by a centralised authority or administrator. More recently, however, many platforms have begun to emerge that promise to use blockchain technology to decentralise dispute resolution by crowdsourcing the adjudication of disputes to a worldwide pool of willing juror-arbitrators.

This article seeks to survey the current landscape of these blockchain-based, crowdsourced arbitration platforms, in order to explain how each intends to operate, the similarities and differences amongst them and the conception of 'justice' that each one promotes. The goal of this overview is to achieve a better understanding of the promises of dispute resolution that each platform aims to produce. This kind of understanding is necessary to advance further discussion and consideration of the likely realities, including the normative limitations, of using these technologically-based solutions for the resolution of disputes.

I   INTRODUCTION

Online dispute resolution ('ODR') has been a significant and growing part of legal and dispute resolution systems for almost twenty years.[1] Broadly considered, ODR describes an ever- widening 'array of online procedures and technological tools that disputants and neutrals use to resolve disputes.'[2] Some of the earliest ODR platforms were developed by private companies in order to address small-scale consumer disputes in the e-commerce space. One of the best known of these platforms is the eBay Resolution Centre, which is generally cited as resolving at least 60 million disputes per year.[3] Other private forms of ODR can be found on platforms such as net-arb.com, SettleToday.com and from the e-commerce website Alibaba.[4]

More recently, ODR has begun to be integrated to work more directly with state and national court systems, with platforms such as the developing United Kingdom Online

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[1]   See Orna Rabinovich-Einy and Ethan Katsh, 'The New New Courts' (2017) 67(1) *American University Law Review* 165, 188.
[2]   Ayelet Sela, 'The Effect of Online Technologies on Dispute Resolution System Design: Antecedents, Current Trends, and Future Directions' (2017) 21(3) *Lewis & Clark Law Review* 633, 634.
[3]   See, eg, Colin Rule and Chittu Nagarajan, 'Leveraging the Wisdom of Crowds: The eBay Community Court and the Future of Online Dispute Resolution' (Winter 2010) *ACResolution Magazine* 4, 5; See also Sela (n 2) 636.
[4]   See Sela (n 2) 651–2.

Solutions Court,[5] and the now defunct Rechtwijzer, which facilitated separation and divorce arrangements in the Netherlands.[6] Probably the most developed of these court-integrated ODR platforms is British Columbia's Civil Resolution Tribunal ('CRT'),[7] which has been in operation since 2016.[8] The CRT has mandatory jurisdiction over small claims up to CAD $5,000, strata property claims,[9] and, as of 1 April 2019, motor vehicle accident injury disputes for damages claims up to CAD $50,000.[10] The intention of the British Columbia Parliament is for the CRT to increase the monetary threshold until it becomes the mandatory forum for all small claims disputes, the current jurisdictional limit for which is CAD $35,000.[11]

Amongst the factors that these private ODR and court-integrated ODR platforms have in common is that both are centralised; in other words, established and operated by a singular, central authority. In the case of the eBay Resolution System or Alibaba's e-commerce resolution platform, it is the company itself that provides the service and issues the decision, with the courts as a potential backup source of dispute resolution if there is a reason to escalate the dispute beyond the ODR mechanism.[12] For the court-integrated platforms, the centralised authority is the State, the laws of which establish the system of justice that the ODR platforms facilitate.

More recently, private developers have begun to create ODR platforms that seek to use blockchain technology to decentralise the delivery of dispute resolution to disputing parties in any location through a worldwide network of self-selecting juror-arbitrators, all of whom interact through decentralised apps ('dApps') built on top of the blockchain. The ostensible goal of these emerging platforms is to provide a new kind of access to justice, which is necessary because, as the founders of one of these platforms put it, '[e]xisting dispute resolution technologies are too slow, too expensive and too unreliable for an online real-time world. A fast, inexpensive, transparent and decentralised claim adjudication system will be a key institution for the Internet Age.'[13] Each of these platforms, in some way, seek to remove dispute resolution from centralised authorities and organisations by creating a streamlined, technologically-based solution that, in the eyes of the creators, will dramatically reduce costs and delays whilst still providing disputing parties with a fair and considered decision.

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5   See Dorcas Anderson, 'The Convergence of ADR and ODR Within the Courts: The Impact on Access to Justice' (2019) 38(1) *Civil Justice Quarterly* 126, 133–5.

6   See generally Michael Legg, 'The Future of Dispute Resolution: Online ADR and Online Courts' (2016) 27(4) *Australasian Dispute Resolution Journal* 227, 230. The government and court-supported Rechtwijzer platform has now been privatised and is being operated as Justice42. See *Justice42* (Website).

7   See 'Welcome to the Civil Resolution Tribunal' *Civil Resolution Tribunal* (Website) <https://civilresolutionbc.ca>.

8   Shannon Salter, 'Online Dispute Resolution and Justice System Integration: British Columbia's Civil Resolution Tribunal' (2017) 34(1) *Windsor Yearbook of Access to Justice* 112, 122.

9   Ibid; *Civil Resolution Tribunal Act*, SBC 2012, c 25, pt 10.

10   See 'Motor Vehicle Accidents and Injuries' *Civil Resolution Tribunal* (Website) <https://civilresolutionbc.ca/how-the-crt-works/getting-started/motor-vehicle-accidents-and-injuries>.

11   Citing to then current maximum small claim of $25,000: Salter (n 8) 122; See BC Reg 120/2017, sch 1. Increasing the jurisdiction of the Small Claims Court to CAD $35,000.

12   Centralised alternative dispute resolution ('ADR') is also a possibility for these disputes which might involve the use of a mediator or arbitrator operating within an acknowledged common framework.

13   Federico Ast and Clément Lesaege, 'Kleros: A Protocol for Decentralized Justice' in *Dispute Revolution: The Kleros Handbook of Decentralized Justice* (2019).

The ability of these platforms to provide this kind of result leads to many normative questions relating to conceptions of justice and fairness and whether decentralised dispute resolution platforms are genuinely capable of providing either.[14] These questions revolve around such issues as to the integrity of the platforms generally and, more specifically, the integrity of the juror recruitment and selection process; the sufficiency of game theory and crypto-economic principles to provide a system of fairness that can underpin the platforms' design and operation; and whether the incentives and penalties that are designed to ensure honest juror participation are likely to be effective. Before these normative issues can be sorted out, however, it is both useful and necessary to obtain a more comprehensive picture of the basic landscape of these decentralised, blockchain-based platforms to understand better how many currently exist in various stages of implementation and development and how each intends to provide justice for disputants once they are actually operating. This article aims to provide just this picture.

Part II of the article will set out an overview of the blockchain and decentralised justice mechanisms in general. Part III will then describe the current state of the dApp development by identifying the platforms that currently exist, explaining what stage of development each seems to be at, and how each intends to deliver justice to the disputants through the platform design. It should be noted that it is reasonably easy to post a plan for starting work on a dApp, so the list may not be entirely complete as new platforms emerge with a great deal of speed. Part IV will offer some concluding remarks and will look ahead at some of the challenges and normative questions that will (or should) likely face the purported providers of this new form of justice.

II   DECENTRALISED JUSTICE ON THE BLOCKCHAIN

Central to these platforms being able to provide the kind of dispute resolution promised is the existence of blockchain technology, which in turns allows for the creation of smart contracts, and finally the ability for programmers to develop the dApps that work on top of and in conjunction with the blockchain. The aim of this Part of the article is to explain each of these concepts with an eye toward understanding how each is necessary for the operation of the platforms that will be discussed in the next Part.

'A blockchain is, in the simplest of terms, a time-stamped series of immutable record [*sic*] of data that is managed by cluster computers not owned by any single entity. Each of these blocks of data (i.e. block) are secured and bound to each other using cryptographic principles (i.e. chain).'[15] These records, especially when a cryptocurrency like Bitcoin or Ethereum is involved, may consist of information such as credits and debits, or might record the ownership of property by providing a record of the deed.[16] One way that blockchains are often described is as a distributed ledger that contains all of these records in ways that are independently verifiable.

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[14]   For an introduction to some of these normative questions see James Metzger, 'Decentralized Justice in the Era of Blockchain' (2018) 5(2) *International Journal of Online Dispute Resolution* 69.

[15]   See Ameer Rosic, 'What is Blockchain Technology: A Step-By-Step Guide for Beginners' *Blockgeeks* (Website, 1 March 2019) <https://blockgeeks.com/guides/what-is-blockchain-technology/>; See also Max Raskin, 'The Law and Legality of Smart Contracts' (2017) 1(2) *Georgetown Technology Law Review* 305, 318.

[16]   Raskin (n 15) 318.

One method for verifying the information contained on the blockchain is that – so far as the blockchains that will power the dispute resolution dApps discussed below are concerned – all of the information recorded is publicly available.[17] As explained by Vitalik Buterin, the founder of the Ethereum blockchain:

> [A] public blockchain is a blockchain that anyone in the world can read, anyone in the world can send transactions to and expect to see them included if they are valid, and anyone in the world can participate in the *consensus process* – the process for determining what blocks get added to the chain and what the current state is. As a substitute for centralized or quasi-centralized trust, public blockchains are secured by cryptoeconomics – the combination of economic incentives and cryptographic verification using mechanisms such as proof of work or proof of stake, following a general principle that the degree to which someone can have an influence in the consensus process is proportional to the quantity of economic resources that they can bring to bear [sic].[18]

Thus, all that is required to view the transactions that have taken place across the entirety of the blockchain in an internet connection.[19]

Although the digital records listed and stored on the blockchain are public, the identities of the parties that are engaging in those transactions remain private and, at least in theory, impossible to trace to an identifiable person. Instead, blockchain transactions are recorded using public keys – essentially random strings of numbers and letters – that correspond with a user's public account. The user will also have a private key – a separate string of numbers and letters – that allows account holders to access their own cryptocurrency from their own digital wallets.[20]

The other method of verifying the recorded information, as well as ensuring that the information is safe and reliable, is related to the decentralised nature of the blockchain. Each block of information passes through a series of networked computers, called 'nodes', each of which is verifying the transaction that has been made on the blockchain.

> Blockchain technology removes fraudulent transactions. Compared with existing methods of verifying and validating transactions by third-party intermediaries, blockchains' security measures make blockchain validation technologies more transparent and less prone to error and corruption. While blockchains' use of digital signatures helps establish the identity and authenticity of the parties involved in the transaction, the completely decentralized network connectivity via the Internet allows the most protection against fraud. Network connectivity allows multiple copies of the blockchain to be available to all participants across the distributed network. The decentralized, fully distributed nature of the blockchain makes it practically impossible to reverse, alter, or erase information contained in it.[21]

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17   See Wulf Kaal and Craig Calcaterra, 'Crypto Transaction Dispute Resolution' (2017) 73(1) *Business Lawyer* 109, 114.

18   Vitalik Buterin, 'On Public and Private Blockchains', *Ethereum Blog* (Blog Post, 6 August 2015) <https://ethereum.github.io/blog/2015/08/07/on-public-and-private-blockchains/>. Also explaining that private blockchains are possible.

19   Kaal and Calcaterra (n 17) 111.

20   See ibid 111 stating that blockchain users enjoy 'absolute privacy' within the blockchain ecosystem.

21   Kaal and Calcaterra (n 17) 115 (citations omitted).

Put another way, the decentralised network uses a set of shared rules to verify each piece of information that is recorded in the chain. 'Information already contained in a verified blockchain cannot be overwritten without reaching consensus with the entire network to propagate the altered information. So, while this is not to say that . . . invalid data cannot be posted, a strong effort is needed to do so.'[22]

Because the blockchain has these independent, but interrelated, verification mechanisms – public view and decentralisation – the promise is that transactions carried out on the blockchain will be safe and reliable because they can be easily and definitively verified, with very little ability for bad actors to manipulate, falsify or change the records. Of course, the reality of safety and trust on the blockchain is still being determined, especially in light of high-profile cryptocurrency thefts,[23] such as the hack of cryptocurrency exchanges Mt Gox,[24] Poloniex,[25] and Bitfinex,[26] as well as the hacking of mobile phones that allowed for access to user's cryptocurrency wallets.[27]

Blockchain technology has also facilitated the creation of 'smart contracts' that allow for peer-to-peer agreements to be arranged over the blockchain. In essence, a smart contract is a piece of code that is embedded in the blockchain infrastructure.[28] The code allows for the translation of 'legal prose into an executable program.'[29] The result is the creation of an algorithm that 'carr[ies] out one or several pre-established operations, according to the '*if…., then…*' principle. In other words, as soon as the necessary execution conditions are met, the operation is automatically carried out.'[30] Examples of smart contracts are Apple's iTunes built in agreement that purchased songs can only be played on a limited number of devices;[31] an automated banking transfer that is set to occur following a defined event;[32] or the payout of a sports wager that occurs immediately following the outcome of the match.[33] Each of these examples

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22   Raskin (n 15) 318 (citation omitted).
23   See generally Mike Orcutt, 'Once Hailed as Unhackable, Blockchains Are Now Getting Hacked', *MIT Technology Review* (News Article, 19 February 2019) <https://www.technologyreview.com/s/612974/once-hailed-as-unhackable-blockchains-are-now-getting-hacked/>.
24   See Robert McMillan, 'The Inside Story of Mt. Gox: Bitcoin's $460 Million Disaster', *Wired* (News Article, 3 March 2014) <https://www.wired.com/2014/03/bitcoin-exchange/>.
25   Pete Rizzo, 'Poloniex Loses 12.3% of its Bitcoins in Latest Bitcoin Exchange Hack', *Coindesk* (News Article, 5 March 2014) <https://www.coindesk.com/poloniex-loses-12-3-bitcoins-latest-bitcoin-exchange-hack>.
26   Reuters, 'Bitcoin Worth $72M Was Stolen in Bitfinex Hack in Hong Kong', *Fortune* (News Article, 3 August 2016) <http://fortune.com/2016/08/03/bitcoin-stolen-bitfinex-hack-hong-kong/>.
27   Kate Rooney, 'Hacker Lifts $1 Million in Cryptocurrency Using San Francisco Man's Phone Number Prosecutors Say', *CNBC* (News Article, 21 November 2018) <https://www.cnbc.com/2018/11/21/hacker-lifts-1-million-in-cryptocurrency-using-mans-phone-number.html>.
28   See, eg, Primavera De Filippi and Aaron Wright, *Blockchain and the Law: The Rule of Code* (Harvard University Press, 2018) 74; Laila Metjahic, 'Deconstructing the DAO: The Need for Legal Recognition and the Application of Securities Laws to Decentralized Organizations' (2018) 39(4) *Cardozo Law Review* 1533, 1538–39; Olivier Hari and Ulysse Pasquier, 'Blockchain and Distributed Ledger Technology (DLT): Academic Overview of the Technical and Legal Framework and Challenges for Lawyers' (2018) *International Business Law Journal* 423, 434; Raskin (n 15) 309–10; Kaal and Calcaterra (n 17) 116.
29   Raskin (n 15) 309.
30   Hari and Pasquier (n 28) 434 (emphasis in original).
31   Wulf and Calcaterra (n 17) 116.
32   Raskin (n 15) 310.
33   Metjahic (n 28) 1539.

demonstrates how the programming of a smart contract can have 'control over the physical and digital objects needed to effect execution.'[34]

This automatic execution is key to the operation of smart contracts as it allows for the smart contract to be decentralised. Rather than requiring human intervention to execute, the contract executes itself following the occurrence of some defined, possibly real-world, event.[35] 'A smart contract does not rely on the state for enforcement, but is a way for contracting parties to ensure performance.'[36] The contents of the smart contract, like all other information recorded on a public blockchain, is available to be viewed by anyone with an internet connection.[37] However, even though the terms of the contract are publicly accessible, the identities of the contracting parties are still represented by the random string of numbers and letters that comprise the user's public key. This means that parties could enter into a smart contract on the blockchain without ever knowing who is on the other side of that contract.[38] Because the contract is self-executing, there is not necessarily a need to know the identity of the counterparty because performance and execution is guaranteed through the automation built into the code.

What is still largely undetermined is how parties, particularly when those parties are unknown to one another, are to settle disputes that arise following the automatic execution of a smart contract. It is possible that parties can still rely on traditional and existing courts and ADR processes such as mediation and arbitration to address smart contract issues.[39] But, reliance on these institutions may not be so simple. In the first instance, there may be complications regarding whether and how a court has jurisdiction over the dispute or over one or all of the parties to the smart contract.[40] Even if a court had jurisdiction over known parties, issues of contract interpretation may arise, especially because the contract is not written in plain language, but rather in the language of executable computer code.[41] The code may not be capable of straightforward interpretation, even by other computer programmers,[42] and may not be flexible enough as a language to represent the parties' intent in forming the contract or defining their relationship that is to be governed by it.[43]

A further issue with respect to contract terms is that courts will necessarily be addressing issues that have arisen after the self-execution of the smart contract. In other words, rather than the likely usual circumstance where a party to a contract does not perform some obligation, whether taking action or making payment, and the court can address the issues of breach prior to the execution of the performative terms of the contract, a court addressing issues on smart contracts will be looking at the circumstances after the contract has already executed itself.[44] It is unclear how a court

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34   Raskin (n 15) 309–10.
35   The information about real-world events can be imported into the contract code through the use of 'oracles', or external, possibly centralised sources (eg, information from the New York Stock Exchange): See Metjahic (n 28) 1540.
36   Raskin (n 15) 310.
37   See Metjahic (n 28) 1539.
38   Ibid.
39   See Filippi and Wright (n 28) 74; Wulf and Calcaterra (n 17) 136.
40   See Wulf and Calcaterra (n 17) 135–36 (citing sources on jurisdictional issues).
41   See Filippi and Wright (n 28) 84; Wulf & Calcaterra (n 17) 136.
42   See Wulf and Calcaterra (n 17) 136.
43   See Filippi and Wright (n 28) 84–85; Hari and Pasquier (n 28) 444.
44   See Raskin (n 15) 311.

would be able to unwind, much less stop, smart contract execution since that step is built into the code and cannot, easily or altogether, be altered.[45] Further, however, it is unclear how a court is to deal with circumstances that were not obviously contemplated by the parties because the specific circumstance is not written into the code and the contract has already executed itself. An example of this situation is if a traveler entered into a smart contract with a travel insurer for a payment to be made in the event that the traveler's flight arrived late.[46] The smart contract would execute itself and make payment to the traveler even if the flight was late because the traveler was solely responsible for the flight delay.

The use of voluntary ADR could be one method of working around these complications, but traditional ADR may not be an ideal solution for at least a couple of reasons. First, the problem of anonymity remains an issue. A party wishing to engage in mediation or arbitration offline would have to know with whom they have been dealing in order to arrange the proceedings.[47] Compounding the problem is that even if the identity of the party is known, or can be discovered, all parties would have to agree to participate in the process in order for it to work.

More fundamental to the use of the blockchain, however, is that any of these resolution mechanisms, whether the courts or traditional ADR, are centralised procedures that defeat the proffered benefits of transacting on an entirely decentralised system within a decentralised network. Those that are using the blockchain may want to ensure that they are never forced to interact with the centralised world once they have engaged with the decentralised blockchain. Thus, it may be preferable to have an online, on-blockchain protocol of dispute resolution that can be written into the smart contract that would avoid the issues associated with identification, jurisdiction and centralisation of the dispute resolution process.

III   DISPUTE RESOLUTION ON THE BLOCKCHAIN

The platforms discussed below are offered by their developers as the solution to the problems just described. Each platform promises to provide a method of resolving disputes that gives parties to a smart contract an option to include an automatically available dispute resolution mechanism that can be encoded directly into the contract. The smart contract itself would still ultimately be self-executing, but the dispute resolution mechanism would allow for the automation of the execution to be suspended pending the outcome of the dispute. How that outcome is determined is one of the factors that differentiate these platforms from one another. Understanding the similarities and differences amongst the platforms may help to determine if one or another contains elements that might be more desirable to support, on either a practical or normative analysis. Understanding the platforms may also assist in identifying the normative questions that should be further considered in terms of the procedural fairness that can be offered by decentralising dispute resolution in the way that these platforms propose.

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[45]   Ibid.

[46]   Hari and Pasquier (n 28) 443.

[47]   See Filippi and Wright (n 28) 85.

A   *OpenLaw*

At the most basic end of the spectrum are platforms that merely facilitate the drafting and implementation of a smart contract, without also providing a dispute resolution protocol. One example of this is OpenLaw.[48] OpenLaw presents itself as primarily a resource for the legal industry as it is pitched toward lawyers who are engaged in advising clients on smart contracts. As explained on its website, 'Using OpenLaw, lawyers can more efficiently engage in transactional work and digitally sign and store legal agreements in a highly secure manner, all while leveraging next generation blockchain-based smart contracts.'[49] OpenLaw is an open source repository for smart contract templates, with more than 500 currently available.[50] OpenLaw also provides what it calls 'Legal Markup' language, which allows drafters to modify the existing templates with plug-in code to enable features such as 'if → then logic, aliasing, multi-variable expressions, hidden variables, and . . . basic calculations.'[51]

This is hardly the only source for smart contract templates,[52] but does demonstrate a still reasonably early effort to disseminate smart contract drafting principles to the greater legal community. The issue of resolving disputes related to those contracts is, however, not addressed.

B   *Mattereum Protocol*

A further step toward blockchain-based dispute resolution has been made by the developers of the Mattereum Protocol ('Mattereum'), which describes itself as a way of 'turning law into code.'[53] The foundation for the Mattereum is the use of what is known as a Ricardian contract, which was invented in 1995 by Mattereum's Chief Scientist, Ian Grigg.[54] A Ricardian contract is a method of converting a plain-language document, including a natural language contract, into a digital, computer-readable format that can also be electronically signed by the parties and recorded on the blockchain.[55] The advantage of the Ricardian contract is that even after it is digitised, it still retains its natural language format, so it can still be read by people without needing expertise in programming languages and computer code.[56] This goes some way toward alleviating the issue referred to above of misunderstanding and complexity of interpretation that come from the rigidity and limitations of using code to express basic contract and relational terms.

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[48]   *Open Law* (Website) <https://openlaw.io>.
[49]   *Open Law* (Website) <https://openlaw.io/faq>.
[50]   *Open Law* (Website) <https://app.openlaw.io/templates>.
[51]   *Open Law* (n 50).
[52]   See, eg, *Contract Vault* (Website) <https://www.contractvault.io>; *GitHub* (Website) <https://github.com/topics/smart-contract-template>; Arjuna Kok, 'Write a Simple Contract On Top of Eretheum' *Coinmonks* (Blog Post, 2 May 2018) <https://medium.com/coinmonks/write-a-simple-contract-on-top-of-ethereum-92b543594e84>.
[53]   See *Mattereum* (Website) <https://mattereum.com>.
[54]   See Vinay Gupta et al, 'Smart Contracts Real Property' (Working Paper, Matereum) 2, 2 <https://mattereum.com/upload/iblock/af8/mattereum_workingpaper.pdf> ('Mattereum Working Paper'); Iftikhar Alam, 'What Are Ricardian Contracts? A Complete Guide' *101 Blockchains* (Website, 28 Oct 2018) <https://101blockchains.com/ricardian-contracts/>.
[55]   Gupta et al (n 54) 9; Alam (n 54).
[56]   Gupta et al (n 54) 9.

Mattereum's focus is on using these Ricardian contracts as the basis for creating an infrastructure within which property ownership, tokenisation of property and eventually full transfer and sale of property can occur entirely on the blockchain. As explained in late 2018 in its Summary White Paper, Mattereum has taken the initial concept of using Ricardian contracts and has begun to apply it to an actual piece of owned property – a Stradivarius violin worth USD $9,000,000.[57] To build the infrastructure that allows for asset management and governance and to bridge the gap between the blockchain and the real-world (in which the physical violin actually exists), Mattereum has instituted what it calls a 'governing committee' that will have 'legal decision-making powers over the instrument, protecting and curating it on behalf of the token holders and posterity, in accordance with a written constitution.'[58] This concept of the 'governing committee' seems (though it is unclear exactly how since the governing committee is never mentioned again in the Mattereum White Paper) to intersect with the related concept of the 'automated custodian',[59] which is to be created for each asset managed by the smart contract.[60] The automated custodian is the term given to the entity that is designated the 'legal owner and *registrar*, maintaining the authoritative register of interests in the asset.'[61] As legal owner at least for the duration of the smart contract, the registrar is able to enter into sub-contracts, including licenses, or subdivide ownership of the asset through the use of shares or digital tokens, so long as such sub-agreements are in accordance with the governing constitution.[62]

To use the example of the violin, the constitution might provide that the violin cannot merely remain in a vault appreciating in value, but instead has to be played publicly.[63] The constitution might specify that the violin must be played in no fewer than six concerts per year in no fewer than three countries.[64] The registrar of the asset would then be obligated to ensure that no subsidiary agreements were made that would defeat this governance requirement.[65] The governance structure could also establish a 'curatorial board' to make decisions such as which violinists should have priority to play the instrument, which concerts and countries are to be preferred and when and how the instrument should be serviced and maintained.[66]

The conditions that are placed on the violin can be administered through the use of digital 'tokens', the creation of which is available on blockchains such as Ethereum.[67] Mattereum envisions the use of two separate kinds of tokens related to the assets – financial benefit (or security) tokens and right of use (or utility) tokens.[68] The financial

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[57]   The Mattereum Team, 'Mattereum Protocol: Turning Code into Law' (Summary White Paper, Mattereum) 1, 1 <https://cms.mattereum.io/upload/iblock/784/mattereum-summary_white_paper.pdf> ('Mattereum White Paper').

[58]   Ibid 1.

[59]   Ibid 3.

[60]   See ibid.

[61]   Ibid (emphasis in original).

[62]   Ibid.

[63]   See ibid 3, 11.

[64]   Ibid 3.

[65]   Ibid 11.

[66]   Ibid.

[67]   See, eg, Daniel Frumkin, 'What Are Ethereum Tokens? ERC-20, ERC-223, ERC-721, and ERC-777 Tokens Explained' *Invest in Blockchain* (Blog Post, 30 July 2018) <https://www.investinblockchain.com/what-are-ethereum-tokens/>.

[68]   Mattereum White Paper (n 57) 10.

benefit tokens would essentially represent an investment interest in the asset and grant the holder a right to be paid a portion of the asset's value upon sale or to receive a portion of the income generated through licensing. The right to use token could be granted to give a token holder the right to 'access, possess, play, remix, display, or otherwise interact with the asset.'[69] As with all public blockchain records, all contract and governance terms, the register of assets and the list of holders of tokens would be publicly available, though the identities of any individuals would not be.

The Mattereum White Paper claims that the focus as it has been developing this infrastructure has been on dispute avoidance rather than on dispute resolution,[70] which may explain why very little mention is made about the actual plan to resolve disputes. Interestingly, the Mattereum Working Paper does address initial ideas about resolving disputes that may arise regarding the assets, but these ideas are all framed in terms of a vaguely defined arbitration process.[71] The Mattereum Working Paper makes several references to the decentralised nature of the enterprise,[72] yet the introduction of arbitration as the means to resolve disputes first refers to the necessity of a 'body of law' to be applied,[73] as well as a reference to the Convention on the Recognition and Enforcement of Foreign Arbitral Awards.[74] The main reference to arbitration then refers to the use of 'arbitration associations',[75] which are described in terms that suggest that the authors are contemplating centralised, existing arbitration providers (though the ultimate meaning is unclear and never fully defined).[76]

This does not necessarily mean that there is a failure in not providing fully decentralised dispute resolution, and as the normative questions around decentralised dispute resolution continue to evolve, it may be that decentralised dispute resolution is not a good idea at all,[77] but it does point to a lack of clarity as to where Mattereum's priorities lie. The Working Paper does provide a clue as to Mattereum's priorities as an investment vehicle and property management business rather than as a developer interested in advancing blockchain-based dispute resolution. In the Business Model section, the Mattereum Working Paper states:

> We believe that the correct approach to this space is not to directly intermediate any of the value flows (this is, after all, meant to be a decentralization exercise!) but rather for Mattereum to have a dual nature: setting up the infrastructure, and then acting as a (lead) investor in the companies that are coming into the space to build businesses in the ecosystem [sic].[78]

If Mattereum is intended to be more of an investment and property management platform, rather than a dispute resolution oriented one, it should not be that much of a surprise that its approach to resolving blockchain-based disputes is fairly rudimentary. Still, it is a step forward in attempting to use the technology to address disputes that arise on the blockchain.

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69   Ibid.
70   Ibid 2.
71   See Gupta et al (n 54) 20.
72   Ibid 8, 18, 45.
73   Ibid 8.
74   Ibid.
75   Ibid 20.
76   Ibid.
77   See Metzger (n 14).
78   Gupta et al (n 54) 18.

C *Rhubarb Fund*

Many of the remaining platforms to be discussed use some form of crowdsourcing of decision-making by putting disputes to a public vote. One of the simpler of these kinds of platforms is Rhubarb Fund ('Rhubarb') which presents itself as a kind of hybrid dispute resolution and investment vehicle. As described in its White Paper, 'Rhubarb . . . is changing the way disputes are resolved by developing, funding, and promoting rapid distributed consensus mechanisms (RDCM's) that make faster, cheaper, and more democratic forms of civil justice possible'.[79] To provide this consensus-based dispute resolution, Rhubarb is going to be issuing its own proprietary digital token, the RHUCoin.[80] Holders of RHUCoin, or at least those that obtain RHUCoins through the Initial Coin Offering ('ICO'), are described as investors in Rhubarb, who will 'share in future appreciation derived from expanding usage of, and demand for, new forms of distributed dispute resolution, legal settlement administration, and other evolutions in decentralised law that Rhubarb develops and/or invests in.'[81] Rhubarb is positioning itself not just as a contract administrator or provider or as a dispute resolution platform, but rather states that it will serve 'both as an investor in legal tech and a developer and promoter of 'new law' innovations using blockchain, cryptocurrency, and other distributed processes.'[82]

The RCDM method of dispute resolution being provided and facilitated by Rhubarb takes the form of a 'poll verdict' which is simply the result of a poll of all RHUCoin holders who submit votes as jurors.[83] The mechanism for resolution of disputes through Rhubarb is relatively straightforward: the party raising the dispute posts it on Rhubarb's dispute portal, along with proposed resolution options. The example provided by Rhubarb is that an insured has a dispute with her insurer over an auto insurance claim.[84] The insured posts the dispute and proposes three solutions on which jurors can vote: the insurance company pays the full amount of the claim; the insurance company pays half the amount of the claim; or the insurance company pays nothing. Jurors may also be given an option to suggest further resolution options. The party registering the dispute can then decide the maximum number of jurors that can register votes and the distribution of the background and experience of those jurors. For example, if the insured was a New South Wales resident, she could designate that the matter be decided by a maximum of 1000 jurors, with 400 of them to be consumer advocates, 250 insurance professionals and 350 NSW consumers. The parties can then agree as to the effect of the decision reached by the jury – the outcome can be treated as arbitrative and binding; mediative and non-binding; or as a form of expert opinion for the parties to consider.[85]

In order to register a vote, the jurors deposit one of their RHUCoins and submit their decision. It is unclear whether or how Rhubarb intends to prevent the parties from holding RHUCoins and deciding their own cases or whether and how jurors will be

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79   'Rhubarb Fund ICO: Pre-Sale White Paper' (White Paper, RHUbarb Fund, 1 November 2018) 2, 2 ('Rhubarb White Paper').
80   Ibid.
81   Ibid 3.
82   Ibid.
83   Ibid 8.
84   See 'How Poll Verdicts Work' *RHUbarb* (Website) <https://www.rhucoin.com/how-rhu-works.aspx>; See also Rhubarb White Paper (n 79) 8–9.
85   Rhubarb White Paper (n 79) 9.

restricted from voting more than once. This lack of clarity speaks to the necessity of further inquiry into normative questions related to the integrity of the platforms and the integrity of juror voting.

The end result of the voting is a set of consensus decisions – the overall consensus of all jurors and the consensus decision of each designated group of jurors, each of which may provide the parties with useful information, particularly where the overall result is non-binding.[86] Jurors who do not vote with the overall consensus will forfeit their deposited RHUCoins, which will be redistributed pro-rata to the jurors in the consensus group.[87] Incentives are also provided for jurors who suggest resolution options that become the consensus. Those jurors must deposit more than the standard 1 RHUCoin in order to suggest an option but will receive a five-times bonus return if their suggested option achieves overall consensus.[88] In this way, the RDCM process is described by Rhubarb as 'self-funding.'[89]

As of this writing, Rhubarb has 22 cases open for voting,[90] each of which allow voters to earn RHUCoins, which are not yet generally available either through the ICO or direct purchase on a token exchange.[91] In addition, three cases are listed as closed and one as having been settled by the parties. The ICO is scheduled to take place sometime in the first half of 2019.[92]

D   *Jury.Online*

Jury.Online, which has been in operation since September 2018,[93] is another hybrid platform, combining the ability for consumers to invest in ICO projects with a dispute resolution mechanism for issues associated with those investments.[94] Jury.Online contains fairly specific requirements for deal offerors who are posting deals, in the form of smart contracts, to the platform. Primarily, any deal offered through Jury.Online must include a set of 'Milestones' that are intended to give investors guidance as to whether the terms of the deal are being fulfilled and to serve as the basis for any disputes that may arise.[95] The smart contract must also include a method for dispute resolution, which may include identifiers for the pool of judges that will be used to resolve the dispute.[96]

The actual dispute resolution process is not entirely clearly described at present. The process is referred to both as arbitration (in text under the heading 'Refund')[97] and as

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86   See ibid.
87   Ibid.
88   Ibid 10.
89   Ibid.
90   *RHUbarb* (Website) <https://www.rhucoin.com/active-polls/>.
91   See, eg, 'Professional Trading Now Open to Everyone' *Bitfinex* (Website) <https://www.bitfinex.com/> ('Bitfinex').
92   See *RHUbarb* (Website) <https://www.rhucoin.com/our-story.aspx>.
93   Ibid.
94   See *Jury.Online* (Website) <https://jury.online>.
95   See 'Jury.Online White Paper' (White Paper, No 2.5, Jury.Online, 15 March 2019) <https://about.jury.online/images/Jury_Online_V2_5_Whitepaper.pdf> ('Jury.Online White Paper') 5.
96   Ibid 4.
97   Ibid 7.

mediation (in the heading 'Mediation Decision-Making Procedure'),[98] suggesting there may be some confusion about the effect of process and terminology. The intent from the description seems to be that Jury.Online will be providing a binding resolution, but this is not clear either, pointing again to questions surrounding the integrity of the platform and the decision-making process that is being utilised. A party that wishes to initiate a dispute will have to do so within the parameters, including time-frame, established by the terms of the smart contract (e.g. within three days of a Milestone).[99] Initiating the dispute will then automatically trigger the process for appointing the judges who will decide the outcome. The judges will come from a 'pool', also recorded on the blockchain, that is a constantly-updating list of active judges, any of which may be selected to resolve the dispute.[100] It appears that the current mediator/judge pool can be viewed on Jury.Online's website.[101]

The pool of judges could come from this set of 'mediators' who are registered by Jury.Online, but the smart contract could also designate that the judges be selected from a third-party service provider.[102] The judges remain anonymous from the parties and anonymous from each other. Though the parties do not know the identities of the judges, the competence of the judges is revealed to the parties, though the Jury.Online White Paper does not specifically state how this is to be communicated.[103] The parties could also agree to appoint a known judge, rather than anonymous random judges,[104] though it is not clear if this choice would have to be designated in the smart contract or could be addressed when the dispute arises. Judges are incentivised to participate in the process, and to render reasoned decisions, because they are rated based on the judgments they make and receive compensation for rendering decisions. According to the Jury.Online White Paper, these incentives should cause judges to resolve disputes 'fairly and correctly, rather than to randomly pass their verdicts,'[105] but nothing is provided to indicate how the developers of the platform are conceiving of gauging or measuring either fairness or correctness. These issues point to further normative concerns regarding the effectiveness of incentives being provided to decision makers.

E   *Aragon Network*

Aragon Network ('Aragon') describes itself as 'the world's first digital jurisdiction.'[106] It purports to provide dispute resolution solutions for decentralised autonomous organisations ('DAOs'), which can be defined as 'a set of smart contracts that encode the bylaws of the entire organisation' and that are 'designed to run autonomously on a blockchain and ... solely controlled by code, without any need for human involvement.'[107] The human side of DAO operation is, of course, that these organisation have real-world utility and facilitate transactions between people, possibly resulting in disputes. Aragon proposes to offer a means to resolve these disputes through its network.

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98   Ibid.
99   Ibid.
100   Ibid 6, 8.
101   See *Jury.Online* (Website) <https://about.jury.online/mediators>.
102   Jury.Online White Paper (n 95) 8.
103   See ibid.
104   Ibid.
105   Ibid.
106   See *Aragon Network* (Website) <https://aragon.org/network>.
107   Metjahic (n 28) 1543–44.

First, Aragon states that agreements entered into between a person and the DAO will be in some kind of human-readable, natural language form, as well as a computer-readable one.[108] This human-readable agreement appears as if it will differ in some respect from the Ricardian contract promoted by Mattereum, since Aragon is not adopting Mattereum's protocol, which it describes as not suitable for 'blockchain-native' entities that do not have a physical, real-world analogue, such as a piece of property.[109] The parties to each side of the agreement will have to deposit collateral in the form of an Aragon Network Token ('ANT') that will remain deposited for the life of the contract in case a dispute arises.[110] The disputes related to these agreements will then be adjudicated in Aragon's network courts, which operate as arbitral forums.[111] Following the initiation of the dispute, Aragon's system will randomly select five jurors who have 'activated' their reputation, which is earned by having previously been in the majority of deciding judges in prior disputes.[112]

Aragon's courts operate on two related game-theory principles. The first, which is used by other platforms discussed below, is the Schelling Point.[113] A Schelling Point assumes that there will be a consensus result that independent actors would arrive at because it is a logical outcome.[114] For example, a simple Schelling Point would be that if a person was to be meeting a stranger in Sydney and neither party had previously suggested a meeting time and place, both parties might independently suggest meeting at noon at Town Hall because that would be a natural and common time and place. The assumption that jurors will arrive at a Schelling Point, and that that Schelling Point will necessarily be the 'correct' outcome for the dispute, is further established through the system of reputation debits and credits that are associated with the jurors' decisions. Any juror that is part of the Schelling Point consensus will earn reputation, whilst any juror who is outside of the consensus will be penalised with a deduction of reputation. The ability of the Schelling Point to provide for a normatively justified 'correct' result is another issue related to platforms such as Aragon that requires further consideration.

Aragon adds another layer of game theory meant to deter or eliminate the possibility of juror bribery by requiring that all jurors agree to a code of conduct that defines their responsibilities as jurors.[115] The sample code provided in the Aragon White Paper includes terms such as that a juror will flag their case for review if either party attempts to bribe the jury, and will vote for the non-bribing side, or that the juror will dismiss any case in which both parties seek to bribe the jury.[116] This mechanism is described as a 'metagame with a Nash equilibrium that favours honest jurors over malicious agents and dishonest jurors attempting to influence court decisions.'[117] Fees have to be

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108   See 'Aragon Network' (White Paper, Aragon Network, 29 August 2018)
       <https://github.com/aragon/whitepaper> ('Aragon White Paper').
109   Ibid.
110   Ibid 1.
111   Ibid.
112   Ibid 2–3; See also Tatu Karki and Aragon, 'Aragon Network Jurisdiction Part 1: Decenatralized
       Court' *Aragon Network* (Website, 18 July 2017) <https://blog.aragon.org/aragon-network-
       jurisdiction-part-1-decentralized-court-c8ab2a675e82/>.
113   See generally Aragon White Paper (n 108).
114   See Thomas Schelling, *The Strategy of Conflict* (Harvard University Press, Cambridge, 1960).
115   Aragon White Paper (n 108) 3.
116   Ibid.
117   Ibid.

staked by the parties to the dispute, which are distributed to the jurors.[118] This again raises issues regarding the ability of incentives, particularly game theory-based incentives, to moderate juror behaviour.

Appeals are available following the adjudication of a dispute, but judges will be limited to those with the highest reputation and the fees that the parties will have to stake will also increase.[119] Aragon's hierarchical court structure also includes a supreme court, which 'enforces and encodes the community values of the Aragon Network.'[120] The supreme court will have final appellate review over any disputes that escalate to that level and the supreme court jury will be composed of the top nine judges who received the most payouts based on their prior decisions within the network.[121]

F   *Jur*

Jur similarly promises to provide a solution for parties to create and enter into smart contracts that can include a built-in dispute resolution mechanism via Jur's platform.[122] Jur also uses a system of game theory incentives, supported by its token also called 'Jur' to encourage participation and honest, considered decision-making. In Jur's system, the parties to a contract can designate the dispute resolution mechanism as either open or closed.[123] If open is selected, then any Jur token holder may serve as a juror. If a 'Closed Hub' is chosen, only a subset of vetted jurors who meet designated conditions may decide a dispute.[124] No fee is charged to either party in the dispute and the jurors are compensated solely by the redistribution of tokens from non-majority jurors to the majority ones.[125] The parties are required to propose a resolution option, which the jurors will consider when voting.[126]

Jur's redistribution of tokens to the majority is unique amongst the existing platforms. Rather than distributing tokens pro-rata to all jurors in the majority, Jur will only redistribute tokens to those jurors that were *necessary* to comprise the majority, in other words the first votes cast on what ends up as the majority side.[127] For example, if 15 tokens were voted in a dispute of A v B, 10 for A and five for B, the five tokens that were voted for B would be forfeit as B lost the dispute. However, only 5.1 votes were needed to establish the majority for A. So, the five tokens forfeit by the B voters will be redistributed pro-rata only to those 5.1 voting jurors who voted for A first. The number of votes on each side will also always be visible to all jurors.[128]

According to the Jur White Paper, this system should incentivise jurors to vote for the minority at the time of vote-casting if they believe the minority has the right position and will ultimately prevail (rather than simply voting with the then-majority to ensure retention of tokens), since a juror will only be rewarded with more tokens if enough of

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[118]   Ibid 4.
[119]   See ibid.
[120]   Ibid 2.
[121]   See Karki and Aragon (n 112).
[122]   See *Jur* (Website) < https://jur.io>.
[123]   Jur, 'Decentralized Dispute Resolution Infrastructure' (White Paper, V.0.3, Jur) 8, 15
            <https://jur.io/content/uploads/2018/07/JUR-WhitePaper-v0.3-eng.pdf> ('Jur White Paper').
[124]   Ibid.
[125]   Ibid 20.
[126]   Ibid 45.
[127]   Ibid 21, 44.
[128]   Ibid 44.

the other jurors side with the minority to make that juror's majority vote 'count'.[129] Jur's system will also restrict voting for the majority when the majority votes exceed that of the minority vote by 200%, so as not to allow for an insurmountable advantage for the then-majority. These innovations may address some of the issues associated with platform design and operational integrity. The effectiveness of any incentives in this area, however, still requires further consideration.

G   *OATH Protocol*

OATH Protocol ('OATH') seeks to provide a dispute resolution mechanism that can be incorporated into any smart contract,[130] rather than seeking to provide smart contract drafting as well.[131] OATH assumes that any community user with blockchain experience has both common sense and sufficient knowledge to be able to evaluate evidence and make reasoned decisions to decide disputes.[132] This seems to be another way of expressing reliance on consensus decision-making to support the claims of fairness in resolving these blockchain disputes.

OATH makes specific reference to the selection of common law juries as a point of comparison for its eventual jury pool, since juries are an initially random collection of community members who come together to resolve disputes in court. OATH claims, without providing additional proof of the claim, that where a jury makes a decision '[a]ll community members share the consensus that underlies the verdict ...'[133] OATH, therefore, describes its model as essentially transporting the jury system onto the blockchain. The blockchain technology, in turn, is described as being able to 'ensure the authentication of smart contract agreements and immutability of the evidence provided by the parties.'[134] No further proof is offered to support the claim that evidence should be considered 'immutable' merely because it is related to an agreement that is on the blockchain, since that evidence is likely to relate to real-world activities and real-world actions rather than existing entirely on the network.

OATH's most unique feature seems to be its commitment to a diverse set of jurors that will be selected from its pool by its algorithm. OATH states that whilst the identity of all jurors will remain anonymous, any juror that registers will have to provide information such as 'age, gender, nationality, occupation and education level.'[135] OATH's algorithm will then select most of the jurors to decide a particular dispute based on those categories. Rather than redistributing tokens, OATH will assign each juror a credit level, with increased credit given to jurors who vote in a majority decision and credit being deducted from those who render 'serial wrong judgments.'[136] A higher credit rating results in higher rewards and increased odds of being selected for future disputes. Jurors will also earn arbitration fees, to be paid out of tokens deposited by the disputing parties. This system seems to be an attempt to address some issues of the integrity of the juror recruitment process, though questions surrounding the

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[129]   Ibid.
[130]   See *Oath Protocol* (Website) <https://oaths.io/en/>.
[131]   See Yin Xu, 'OATH Protocol: Blockchain Alternative Dispute Resolution Protocol' (White Paper, No 2.5.0, Oath Protocol) 2 <https://oaths.io/files/OATH-Whitepaper-EN.pdf>.
[132]   Ibid 7.
[133]   Ibid 8.
[134]   Ibid.
[135]   Ibid.
[136]   Ibid 9.

effectiveness of incentive structures once those jurors are chosen to determine a matter still remain.

The parties to a smart contract that designates OATH as the dispute resolution protocol will include a resolution plan in the smart contract code. This plan can consist of specifics such as the number of jurors, the percentage of votes needed to prevail, and the category requirements of the jurors to be selected.[137] Once a dispute is initiated, OATH sends out notifications to the prospective juror pool, with information including the arbitration fees and other 'key details of the case.'[138] Jurors can then decide whether they wish to participate in the decision. It is possible that not enough jurors will elect to decide the case, in which case OATH will 'reject' the parties' resolution plan and require that they amend it to further incentivise juror participation, such as by increasing the award to jurors or decreasing the number needed.[139] This suggests that market forces may be dictating, at least to some degree, the dispute resolution processes available to the parties. OATH, however, states that the revision of the resolution plan 'allows the parties to control and manage the cost of resolving their dispute.'[140]

Jurors are incentivised to participate in the process actively by taking part in deliberation discussions about the evidence submitted by the parties. Jurors may earn bonus payouts and additional credit if they address 'critical points' and participate in the discussion.[141] Just who is to identify a critical point and how it is to be assessed is not disclosed or otherwise explained. Appeals may be initiated for additional fees to the parties and the smart contracts are programmed to accept up to two appeals.[142]

H *Juris*

Juris is the most structured of the current set of blockchain-based, dispute resolution options.[143] Juris also uses its own token, the 'JRS', to incentivise juror behaviour, but before jurors are even necessary, the mechanism for resolving disputes is based more on a staged ADR strategy than an immediate referral to resolution by jury.[144] Juris refers to this staged approach as the 'Juris Protocol Mediation and Arbitration System.'[145] Juris also incorporates what it describes as a 'novel reputation system based on prior certification, ongoing community activity, machine learning, and graph analysis.'[146]

Juris' materials include a mission statement with three goals: '(1) To make smart contracts on any blockchain safe, robust, human, legally enforceable, and open source; (2) To make access to civil justice and legal help as widely and publicly available as The Internet; (3) To bring effective, peaceful, fair and balanced dispute resolution to the

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[137]   Ibid 10.
[138]   Ibid 11.
[139]   Ibid.
[140]   Ibid.
[141]   Ibid 14.
[142]   Ibid 15.
[143]   See *Juris* (Website) <https://jurisproject.io>.
[144]   See Adam Kerpelman et al, 'Justice Everywhere, From Nowhere' (White Paper, No 2, Juris, 18 September 2018) 3, 3 <https://drive.google.com/file/d/1318klGEYL4g02VudL-C-BCnvpKujTnbF/view> ('Juris White Paper').
[145]   Ibid.
[146]   Ibid.

billions underserved and overcharged by established legal infrastructure.'[147] To accomplish this mission, Juris has devised its Protocol, which consists of three dispute resolution steps.

The first is named 'SELF Mediation' which occurs on an embedded layer of Self-Enforced Library Functions ('SELF').[148] The SELF Mediation provides the parties with a 'range of popular mediation tools and techniques intended to facilitate resolution of any conflicts.'[149] These tools are available on Juris' platform through its user dashboard. Use of the SELF Mediation tools does not require the deposit of any JRS, so there is effectively no additional cost to the parties.

Should the parties not be able to resolve their dispute using these mediation tools, the dispute moves to the next stage: SNAP, or Simple Neutral Arbitrator Poll, judgment.[150] Proceeding to a SNAP judgment will require that the parties stake JRS as a fee to be paid to the poll participant voters. The Juris platform will provide all 'Jurists', or those people who are registered with Juris, the opportunity to view information regarding the dispute and to register their opinion. The parties will receive the result of the poll, as well as a 'brief opinion from the [voting] group.'[151] The parties may then use this polling information to return to the SELF Mediation layer and resolve the dispute without further cost.

If the parties still fail to resolve their dispute, the final stage is a binding PANEL, or Peremptory Agreement for Neutral Expert Litigation, judgment.[152] This determination, which Juris states will be enforceable according to United Nations treaty, will be made by a panel consisting only of Jurists with the highest reputation level, known as 'High Jurists.'[153] As explained in the Juris White Paper, 'This panel will be selected by UN mandated rules, and convene virtually through the Juris Platform. They will have a pre-determined amount of time to hear additional arguments from the parties, request, collect, and review additional evidence, consider arguments, etc.'[154] The panel can ask questions of either party and may seek to hold video-based hearings.[155] A presiding High Jurist will render a decision on behalf of the panel, which will be binding on the parties.[156]

The initial pool of Jurists is to consist of 'existing, certified, arbitrators and legal professionals.'[157] As the Jurist pool grows, Jurists will be classified in one of three tiers. High Jurists are those with the highest reputation and can make PANEL judgments. Good Standing Jurists are experienced with the platform and have contributed to prior decisions, and therefore are able to fully participate in SNAP poll judgments. Finally, Novice Jurists are those that are new to sign up and are able to contribute to

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[147]   Ibid 7.
[148]   Ibid 17.
[149]   Ibid.
[150]   Ibid.
[151]   Ibid.
[152]   Ibid.
[153]   Ibid.
[154]   Ibid.
[155]   Ibid 34.
[156]   Ibid.
[157]   Ibid 18.

discussions during the SNAP poll period and register a vote, but that vote will not be included in the vote tallies communicated to the parties.[158]

There is also a structure for Jurists to increase their reputation (or have it decreased).[159] Reputation can be enhanced by contributing to discussions during the SNAP polls. The usefulness of a participant's contributions can be measured by soliciting ratings from other participants, similar to GitHub or Reddit. Juris also anticipates a system of peer review amongst the High Jurists that take part in PANEL judgments, which can produce a set of endorsements that can be fed back into the Juris reputation platform. These endorsements can then be used as 'the raw data for a directed weighted graph', which in turn will produce a 'trust metric' for each Jurist.[160] Here, again, some issues of juror integrity seem to be implicated by Juris' reputation-based structure, but the broader issues about fairness and overall platform integrity require further analysis.

I   *Kleros*

The final platform to discuss is the most developed, and perhaps the most ambitious, of the dispute resolution providers to emerge to date – Kleros.[161] Kleros is thus far the only dispute resolution platform to have a functioning dApp, which is currently in operation for an actual, ongoing use case. The current dApp follows from an earlier beta test of the platform that commenced in July 2018.[162]

Kleros uses its own token, the Pinakion ('PNK') as the game theory mechanism to incentivise jurors to act reputably. As with Aragon, OATH and other platforms, Kleros relies on the Schelling Point to prevent jurors from making random, arbitrary determinations.[163] The Schelling Point is administered by requiring that jurors put some of their holdings of PNK into escrow whilst the dispute is being determined. As with the other platforms, jurors who are in the decision majority will have their escrowed tokens returned and any jurors who are in the minority will forfeit their tokens for pro-rata redistribution to the majority jurors. The expectation is that jurors will make reasoned, informed decisions and will 'vote the true answer, because they expect others to vote for the true answer. . . In this simple case, the Schelling Point is honesty.'[164]

Kleros operates through a system of hierarchically arranged sub-courts, with the deeper levels of court requiring more expertise of the members who elect to serve as jurors in that sub-court.[165] More general levels of court likely require less knowledge and expertise. People who want to serve as jurors in any Kleros court must hold PNK. This is because staking PNK is the means by which jurors will be selected to be part of a jury panel. The parties will designate in their smart contract the sub-court in which a dispute will be decided and how many jurors are to comprise the initial jury panel

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[158]   Ibid.
[159]   Ibid 45.
[160]   Ibid.
[161]   See *Kleros* (Website) <https://kleros.io>.
[162]   For a description of the beta test, see Metzger (n 14) 72–3.
[163]   See Clément Lesaege and Federico Ast, 'Kleros' (Short Paper, No 1.0.6, Kleros, November 2018) 1, 2 <https://kleros.io/assets/whitepaper.pdf>.
[164]   Ibid (emphasis in original).
[165]   See generally ibid 10.

for a first-level dispute. In a simple example, the parties might provide that the initial jury is to be a panel of three. The jurors will then be chosen based on how many jurors have staked how many tokens in the sub-court. For example, if Person A stakes 500 tokens and Person B stakes 1000 tokens and Person C stakes 2000 tokens, then the odds of B being selected as a juror are twice as great as A and the odds of C being chosen are four times as great as A (and twice as great as B). PNK could initially be obtained by receiving an 'airdrop' of tokens, available only to those who registered an early interest in Kleros, or by participating in Kleros' Interactive Initial Coin Offering. Currently, PNK may be purchased directly on token exchanges, such as Bitfinex,[166] Ethfinex,[167] and IDEX.[168]

This system is currently in operation with the ongoing use case, which is a curated list of trusted tokens listed on the Bitfinex exchange.[169] Anyone can submit a token for inclusion on the list, though it is likely that the token developers or backers will be the ones to submit.[170] Once submitted, anyone in the community may challenge the inclusion of a token on the list for failure to meet specified criteria.[171] A challenge requires depositing Ethereum currency ('ETH') as an arbitration fee, which will have to be matched by the submitter for the matter to proceed (and not be forfeited by the submitter).[172] Following a challenge, the Kleros dispute resolution protocol is activated and PNK holders who have staked tokens in the curated list sub-court and been chosen to serve as jurors can access the court dashboard to view evidence uploaded by the parties and register their determination on whether the inclusion criteria are or are not satisfied.[173] Appeals can be brought following a decision, but an appeal will always require double the number of jurors plus one (i.e. an initial panel of three will have an appeal panel of seven) with a proportionate increase in the arbitration fee.[174] Theoretically, there could be an unlimited number of appeals (unless limited by contract terms), but appeals may become too expensive for the parties to continue. As of this writing, 45 tokens have been submitted with 36 tokens having been accepted onto the list.

IV   CONCLUSION

It should be apparent that the ongoing development of these blockchain-based dispute resolution platforms open up a host of normative questions that deserve consideration before we should feel comfortable that the parties in dispute can actually receive the kind of 'justice the platforms promise. As raised above, a primary issue for consideration is whether the Schelling Point is a satisfactory mechanism on which to base the assumption that a group of unidentifiable, dispersed people who may have different legal and cultural understandings of a particular dispute will be able to

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[166]   See Bitfinex (n 91).
[167]   *Tokinex* (Website) <https://www.ethfinex.com>.
[168]   See *Idex* (Website) <https://idex.market/eth/pnk>.
[169]   Viewing the dApp requires use of a Web3 browser, such as Metamask, so links will not be provided since the page is not immediately publicly accessible. More information can be found at 'The Blockchain Dispute Resolution Layer' *Kleros* (Website) <https://kleros.io>.
[170]   See Stuart James, 'Kleros x Ethfinex TCR: A Deep Dive Explainer' *Kleros* (Blog, 7 March 2019) <https://blog.kleros.io/kleros-ethfinex-tcr-an-explainer/>.
[171]   See Stuart James, 'The Ethfinex Listing Guide' *Kleros* (13 March 2019) <https://blog.kleros.io/the-ethfinex-listing-guide/>.
[172]   Lesaege and Ast (n 163) 7.
[173]   James (n 171).
[174]   Lesaege and Ast (n 163) 8.

coalesce around a 'correct outcome.' Related to these fundamental issues of game theory and crypto-economics are issues about the likely effectiveness of particular incentive structures to protect against jurors making arbitrary determinations or trying to game the system solely to avoid penalties. There are further issues associated with the juror pool, since the prospective jurors are initially a self-selecting group who are comfortable using blockchain technology, potentially limiting the general availability of jurors, which in turn reflects on the integrity of the jury system and the integrity of the platform. Beyond the limitation of juror participation that is dictated by the familiarity with technology, juror participation may be further limited as there may also be an economic barrier to entry. For example, the Kleros curated token list court currently requires that prospective jurors stake 80,000 PNK, with a value as of this writing of over $600 AUD,[175] for the possibility of being selected as a juror.[176] Even though the majority of that stake is likely to be returned to any juror (whether in the majority or minority of a decision), it is still a large investment in tokens that must precede participation.

The landscape of blockchain-based dispute resolution is new and rapidly changing. Some of the platforms described in this article may not succeed, but others may point the way forward not only for disputes that arise on the blockchain, but perhaps for some that begin in the physical world. The descriptions provided and questions raised in this article are intended to give a sense of the current state of the landscape and to set the stage for further exploration and research into the new world of resolving disputes that these platforms are creating.

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[175]   See Bitfinex (n 91).
[176]   James (n 171).

FAMILY LAW, ACCESS TO JUSTICE, AND AUTOMATION

FELICITY BELL*

Family law has historically been an area that many people end up traversing with only limited legal assistance. With increasing interest in artificial intelligence in legal services has come an expanding range of family law applications. Many of these applications have potential to assist clients, lawyers and courts. However, clients will continue to need, and seek out, human lawyers to assist them in family law matters. Especially in the case of vulnerable parties and children, technology may not be an appropriate substitute for human family lawyers.

I   INTRODUCTION

Several years ago, artificial intelligence (AI) was foretold – often in gleeful headlines[1] – to spell the demise of the legal profession. This initial dramatic prognosis has given way to a more nuanced and qualified understanding of how AI is impacting the provision of legal services and how it may affect legal professionalism.[2] Scholarship examining the impact of automation on governmental and administrative decision-making, the rule of law, and legal values, is rapidly developing.[3] At the same time reports, media releases, and other industry and professional literature propound the many uses of AI in law, among other areas.[4] The idea of applying AI to legal problems is not new, having been investigated since the 1970s.[5] Yet the rapid developments of recent years have propelled its applications further and, in so doing, generated new and immediate concerns as well as opportunities.

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1   See Gary E Marchant, 'Artificial Intelligence and the Future of Legal Practice' (2017) 14(1) *SciTech Lawyer* 20, 21.

2   See, eg, Dana Remus and Frank Levy, 'Can Robots Be Lawyers: Computers, Lawyers, and the Practice of Law' (2017) 30(3) *Georgetown Journal of Legal Ethics* 501; Tanina Rostain, 'Robots versus Lawyers: A User-Centered Approach' (2017) 30(3) *Georgetown Journal of Legal Ethics* 559; Benjamin Alarie, Anthony Niblett and Albert H Yoon, 'How Artificial Intelligence Will Affect the Practice of Law' (2018) 68 (Supplement 1) *University of Toronto Law Journal* 106; Sergio David Becerra, 'The Rise of Artificial Intelligence in the Legal Field: Where We Are and Where We Are Going' (2018) 11 *Journal of Business, Entrepreneurship & Law* 27; Sean Semmler and Zeeve Rose, 'Artificial Intelligence: Application Today and Implications Tomorrow' (2017-18) 16 *Duke Law & Technology Review* 85.

3   See especially Monika Zalnieriute, Lyria Bennett Moses and George Williams, 'The Rule of Law and Automation of Government Decision-Making' (2019) 82(3) *Modern Law Review* 425, 426–7.

4   See, eg, *CodeX TechIndeX: Stanford Law School* (Web Page) <https://techindex.law.stanford.edu/>; Michael Mills, 'Artificial Intelligence in Law: The State of Play 2016' (Discussion Paper, Thomson Reuters Legal Executive Institute, 23 February 2016).

5   Whilst there is a recently found interest in this topic amongst the legal community, academic discussions and research in this discipline first occurred upon the birth of the internet two decades ago: see John Zeleznikow, 'Can Artificial Intelligence and Online Dispute Resolution Enhance Efficiency and Effectiveness in Courts' (2017) 8(2) *International Journal for Court Administration* 30, 35 ('Efficiency and Effectiveness in Courts').

In its loosest sense, artificial intelligence refers to software processes which can carry out tasks that, if performed by a person, would be considered evidence of intelligence.[6] Distinction is made between 'general' AI and 'narrow' AI. In precisely defined tasks, such as playing the ancient board game of Go,[7] narrow AI processes can outperform humans. However, the AI 'robolawyer'[8] with the broad range of skills which humans possess, is still some time off.[9] As discussed in Part II, 'AI' is a loose term to describe a collection of tools and functions. In this article it is used to denote a range of different automated systems and processes which have in common their capacity to mimic aspects of legal services, in this case with particular reference to family law.

In relation to the justice system, Professor Tania Sourdin has categorised technological effects as coalescing around three impacts: supporting those involved in the system; replacing elements of the system that were previously conducted by humans; and disrupting or fundamentally transforming the system.[10] She notes that, to date, most reforms have involved the first two categories (supporting and supplementing).[11] We can differentiate, for example, between supporting a decision-maker to make their decision (such as by guiding them through a series of steps) as opposed to actually automating the decision process.[12] However, the expansion of AI into administrative decision-making,[13] and the growth in online dispute resolution options – including under the auspices of the court system – suggests that the third category is developing quickly.

Meanwhile, some North American scholars have suggested that lawyers practising in family law will continue to enjoy greater job security when compared to their colleagues in other areas of law, given the importance of human interaction for family law clients.[14] Yet the imperatives of financial strain and the difficulty of obtaining legal aid already raise access to justice concerns and compel many in the direction of less than full legal representation, whether they are partially represented, self-represented and/or accessing other kinds of legal information, advice and support systems.[15]

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6   Jerry Kaplan, *Artificial Intelligence: What Everyone Needs to Know* (Oxford University Press, 2016) 1.

7   See, eg, *AlphaGo Home* (Web Page) <https://deepmind.com/research/alphago/>.

8   Jason Koebler, 'Rise of the Robolawyers: How Legal Representation Could Come to Resemble TurboTax' (April 2017) *The Atlantic* <https://www.theatlantic.com/magazine/archive/2017/04/rise-of-the-robolawyers/517794/>.

9   Though some predict that this will be achieved by 2050: Seth D Baum, Ben Goertzel and Ted G Goertzel, 'How Long Until Human-Level AI? Results from an Expert Assessment' (2011) 78(1) *Technological Forecasting & Social Change* 185.

10   Tania Sourdin, 'Justice and Technological Innovation' (2015) 25(2) *Journal of Judicial Administration* 96, 96 ('Justice and Technological Innovation').

11   Ibid.

12   Zeleznikow, 'Efficiency and Effectiveness in Courts' (n 5) 37.

13   See, eg, Zalnieriute, Bennett Moses and Williams (n 3); Dominique Hogan-Doran, 'Computer Says "No": Automation, Algorithms and Artificial Intelligence in Government Decision-Making' (2017) 13(3) *The Judicial Review* 345.

14   Noel Semple, 'Personal Plight Legal Practice and Tomorrow's Lawyers' (2014) 39(1) *Journal of the Legal Profession* 25 ('Personal Plight Legal Practice'); Samuel V Schoonmaker IV, 'Withstanding Disruptive Innovation: How Attorneys Will Adapt and Survive Impending Challenges from Automation and Nontraditional Legal Services Providers' (2017) 51(2-3) *Family Law Quarterly* 133.

15   John Dewar, Barry W Smith and Cate Banks, 'Litigants in Person in the Family Court of Australia' (Research Report No 20, Family Court of Australia, 2000) 16, use the term 'partially represented' to denote litigants who may have lawyers come and go. The authors observe that although a person may appear in court without legal representation does not mean that the

Access to justice in family law matters has been identified as a serious problem in Australia (and indeed in other common law jurisdictions, such as Canada and England and Wales).[16] This is a key reason why developments in the categories described by Sourdin have already impacted and have the potential to further impact the way that family law legal services are delivered.

Automated systems hold out many possibilities for improving information provision and supporting decision-makers; for replacing some elements of legal work; and even, as Sourdin notes, 'where predictive analytics may reshape the adjudicative role'.[17] Many of its applications can be of use to family law clients and to family lawyers themselves. At the same time, it is important to be wary of seeing automated systems as too ready a solution in the face of constraints on the family law system and what Professor John Dewar termed 'the normal chaos of family law'.[18]

Part III discusses some of the reasons that family lawyers may be seen as necessary in family law disputes but also constraints on access to justice and problems with the family law system. Part IV describes some examples of automation in family law, while Part V examines specific issues associated with increasing use of automated systems, and Part VI concludes.

II   'AI', 'LEGALTECH' AND OTHER UMBRELLA TERMS

Artificial intelligence is an umbrella term which may encapsulate many different methods and lacks an agreed or consensus meaning.[19] As someone joked on Twitter, 'If it is written in Python, it's probably machine learning. If it is written in PowerPoint, it's probably AI'.[20] AI might also be referred to generically as automated systems.[21] Despite the reference to 'intelligence', '[a]n AI system is not really "reasoning" or "thinking" but is following a set of pre-programmed or computational steps... or mathematically analysing a huge amount of data to infer a probability'.[22]

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person has not accessed some form of legal advice or information beforehand. Differing definitions of 'self-represented' exacerbate problems for evidence-based decision-making: see Elizabeth Richardson and Tania Sourdin, 'Mind the Gap: Making Evidence-Based Decisions about Self-Represented Litigants' (2013) 22(4) *Journal of Judicial Administration* 191, 194–95.

16   See, eg, Michael Saini, Rachel Birnbaum and Nicholas Bala, 'Access to Justice in Ontario's Family Courts: The Parents' Perspective' (2016) 37(1) *Windsor Review of Legal and Social Issues* 1, 1-2 n 2; Asher Flynn and Jacqueline Hodgson (eds), *Access to Justice and Legal Aid: Comparative Perspectives on Unmet Legal Need* (Hart Publishing, 2019); John Eekelaar and Mavis Maclean, *Family Justice: The Work of Family Judges in Uncertain Times* (Hart Publishing, 2013) ('Family Justice').

17   Note that Sourdin discusses some of the many issues around technology supplanting the judicial role but this is not the focus here: Tania Sourdin, 'Judge v Robot: Artificial Intelligence and Judicial Decision-Making' (2018) 41(4) *University of New South Wales Law Journal* 1114, 1117 ('Judge v Robot').

18   John Dewar, 'The Normal Chaos of Family Law' (1998) 61(4) *The Modern Law Review* 467.

19   Ellen Broad, *Made by Humans: The AI Condition* (Melbourne University Press, 2018) xix.

20   @matvelloso (Mat Velloso) (Twitter, 22 November 2018, 5:25PM AEST) <https://twitter.com/matvelloso/status/1065778379612282885?lang=en>; Python is a programming language: *Welcome to Python.org* (Web Page) <https://www.python.org/>.

21   Broad (n 19) xx.

22   Michael Legg and Felicity Bell, 'Artificial Intelligence and the Legal Profession: A Primer' (Law Society of NSW and UNSW Law, 2019) 2, available at FLIP Stream (Web Page) <https://www.allenshub.unsw.edu.au/news/artificial-intelligence-and-legal-profession-primer>.

AI has developed considerably since its early iterations, though progress has not been linear but rather marked by a series of cycles – rapid development and generous funding punctuated by 'AI winters'.[23] The current surge in interest has been fuelled by the greatly increased processing power (at considerably less relative cost) of computers, including personal computers and devices, and the massively increased volumes of electronic information or data that are available.

The history of AI and law, a discipline established decades ago, is illustrative. From this period onwards academics investigated 'expert systems', using decision trees, to solve legal problems.[24] These types of system are representative of existing knowledge and are pre-programmed with logical rules and definitions. They may also employ mathematical formulae and weightings of different variables. Their outputs might be an assessment of a legal situation, or the automatic completion of a form.[25]

During the 1990s, there was interest in the AI and law community not only in expert systems based on explicit rules but in 'case based reasoning systems', which attempted to derive those rules from an existing body of case law.[26] The limitations of these approaches led to investigation of neural nets as a means of overcoming them. Neural nets are systems structured in a way that mimics the (projected) architecture of the human brain as a network of interconnected nodes. Exploration of the possibilities of neural nets has occurred, as explained in Part IV, in the development of systems for family law disputes.[27]

Professor Kevin Ashley has noted that 'legal expert systems are still widespread in use',[28] and some of their applications are discussed below. However, Ashley considers that they will not revolutionise the delivery of legal services.[29] Rather, it is advances in cognitive computing, or machine learning, that are galvanising interest, and massive investment, today.[30] Neural networks are one subset of methods which fall under the umbrella of 'machine learning'. In particular, 'deep' neural networks (with multiple 'hidden' layers), used for 'deep learning', are behind many publicised AI developments.[31]

Sometimes referred to as 'data-driven systems', machine learning programs 'infer formal relations… from unstructured data'.[32] Rather than being pre-programmed with rules, the program itself identifies patterns and correlations in training data and creates a mathematical or statistical model which is then applied to new data.

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[23]   Toby Walsh, *It's Alive! Artificial Intelligence from the Logic Piano to Killer Robots* (La Trobe University Press and Black Inc, 2017) 49–50.

[24]   Kevin D Ashley, *Artificial Intelligence and Legal Analytics: New Tools for Law Practice in the Digital Age* (Cambridge University Press, 2017) 8–9.

[25]   Ibid 9.

[26]   See Michael Aikenhead, 'The Uses and Abuses of Neural Networks in Law' (1996) 12 *Santa Clara Computer & High Technology Law Journal* 31, 44–46 nn 43–48.

[27]   John Zeleznikow and Andrew Stranieri, 'The Split-Up System: Integrating Neural Networks Reasoning in the Legal Domain' (Conference Paper, International Conference on Artificial Intelligence and Law, 21–24 May 1995) 185; John Zeleznikow, 'The Split-Up Project: Induction, Context and Knowledge Discovery in Law' (2004) 3(2) *Law, Probability and Risk* 147.

[28]   Ashley (n 24) 10.

[29]   Ibid.

[30]   Walsh (n 23).

[31]   See, eg, Anthony Elliott and Julie Hare, 'The Revolution Will Not Be Televised – The AI Challenge', *The Australian* (Sydney, 18 April 2019) 27.

[32]   Rostain (n 2) 561.

Supervised machine learning refers to providing the program with labelled training data – in other words, indicating the outputs which are sought. An image recognition program could be trained with photos already labelled as to what they depict (or more precisely, what a human has determined they depict),[33] for example, an apple or an orange. The goal then might be for the program to correctly classify a new image as one or the other, or as something else. Using all the data available – in this case, every pixel of every image – the program uses inductive reasoning to deduce the 'rules' which match the data to the correct labels. The program can then itself 'learn' the relationships between inputs and outputs. Importantly, it can continue to adjust its model as it is provided with new data. Unsupervised learning, on the other hand, is where the software is provided with data (such as many images of fruit) and left to identify patterns on its own.[34] Supervised learning is more common in legal applications.[35]

It would be a mistake, however, to think that humans do not have control or input over how systems are created. Rather, as David Lehr and Professor Paul Ohm explain, at every step in what may be a complex process, human input is required.[36] The question to be addressed, the data, the choice of algorithm or 'the software code that explores the relationships between the input information and the answers',[37] and weighting mechanisms, are all crucially important factors. Essentially, the programs are doing statistical analysis, but with the potential for millions of data points to be input, and billions of relationships modelled – in other words on a much more complex scale.

An application of machine learning which is important to legal applications is natural language processing (NLP), 'a collective term referring to automatic computational processing of human languages'.[38] This includes both algorithms that take human-produced text as input, and algorithms that produce natural looking text as outputs'.[39] The natural language of humans is complex because it is contextual – sentence order is important and words have multiple meanings.

Developments in machine learning and NLP have generated renewed interest in the legal applications of AI,[40] and in 'LegalTech' (technology and software with legal applications) more generally. It can be difficult to discern technology that makes use of AI (even broadly defined) and that which does not. The latter might include more conventional software for billing or document storage, for example. As explained above, an expansive definition of AI is adopted here to refer to automated systems

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33   For the difficulties that this may generate: see Broad (n 19).
34   John Markoff, 'How Many Computers to Identify a Cat? 16,000', *New York Times* (online, 25 June 2012) <https://www.nytimes.com/2012/06/26/technology/in-a-big-network-of-computers-evidence-of-machine-learning.html>.
35   David Lehr and Paul Ohm, 'Playing with the Data: What Legal Scholars Should Learn about Machine Learning' (2017) 51(2) *University of California, Davis Law Review* 653.
36   Ibid 673.
37   Warren E Agin, 'A Simple Guide to Machine Learning' (2017) 14(1) *SciTech Lawyer* 5.
38   Jason Brownlee, 'What is Natural Language Processing?', Machine Learning Mastery, (Web Page, 22 September 2017) <https://machinelearningmastery.com/natural-language-processing/>.
39   Yoav Goldberg, *Neural Network Methods in Natural Language Processing* (Morgan & Claypool Publishers, 2017) xvii.
40   Michael Mills and Julian Uebergang, 'Artificial Intelligence in Law: An Overview' [2017] (139) *Precedent* 35.

which, unlike more general 'LegalTech', are capable of substituting for lawyers or elements of legal work in relation to complex processes.

Supervised machine learning is very useful in certain legal contexts – for example, where a huge number of documents must be reviewed in discovery. Provided that the documents are electronically readable (or can be converted to a readable format), the software can review and learn to classify them as either discoverable, or not.[41] Other AI legal tools may use some form of simple expert system where an internet bot, or question and answer tree, guides the user through a series of steps.

By blending expert systems with machine learning, it is also possible to design tools which also learn from the examples with which they are provided, increasing their sophistication. There are many such programs available, particularly in the United States.[42] The Law Society of England and Wales predicts that as these types of system become ever more sophisticated and fluent in natural language processing, they will increasingly be manned 'by robots with the ability to test queries against a vast database of past information in seconds – as IBM Watson demonstrates for medicine'.[43] Typically, the more they are used, the more such programs learn, and therefore they continue to improve as they address more queries.[44]

Substantial claims have been made generally about the capacity of legal AI or automated systems (and indeed, technology in general) to improve access to justice.[45] This may occur through clients being able to do their legal work themselves; through clients doing some elements of their own legal work (unbundling);[46] or through lawyers using technology to themselves work more efficiently and pass costs savings on to their clients. The US Legal Services Corporation, in its 'vision' for improving access to justice through the use of technology, described a strategy with five components, including the development of expert systems 'to assist lawyers and other services providers'.[47]

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[41]   Thomas Davey and Michael Legg, 'Machine Learning Disrupts Discovery' [2017] (32) *Law Society Journal* 82.

[42]   Stanford University, CodeX Techindex, 'Document Automation', <http://techindex.law.stanford.edu/companies?category=2>.

[43]   Tara Chittenden, 'Capturing Technological Innovation in Legal Services' (Research Report, The Law Society of England and Wales, 25 January 2017) 12.

[44]   See, eg, Christopher Knaus, 'NDIA denies Cate Blanchett-voiced 'Nadia' virtual assistant is in doubt', *The Guardian* (online, 22 September 2017) <www.theguardian.com/australia-news/2017/sep/22/ndia-denies-cate-blanchett-voiced-nadia-virtual-assistant-is-in-doubt>.

[45]   See generally Lois R Lupica, Tobias A Franklin and Sage M Friedman, 'The Apps for Justice Project: Employing Design Thinking to Narrow the Access to Justice Gap' (2017) 44(5) *Fordham Urban Law Journal* 1363; Jessica Frank, 'A2J Author, Legal Aid Organizations, and Courts: Bridging the Civil Justice Gap Using Document Assembly' (2017) 39(2) *Western New England Law Review* 251; David Luban, 'Optimism, Skepticism and Access to Justice' (2016) 3(3) *Texas A&M Law Review* 495, 502.

[46]   Sourdin, 'Judge v Robot' (n 17) 1118; Michael Legg and John Corker, 'Unbundling for Access to Justice and for Commercial Law', *Presentation to Future of Law and Innovation in the Profession (FLIP) Conference*, Sydney, 14 September 2018.

[47]   LSC: Legal Services Corporation, *Report of the Summit on the Use of Technology to Expand Access to Justice* (Report, December 2013) 2.

III   FAMILY LAWYERING

Family law is often seen as necessitating skills which are not strictly technical or legal, and indeed might fall into the category of 'life skills' which are attained through experience rather than formal training. The idea that family law is qualitatively different to other areas of practice has been largely embraced by family lawyers, possibly in part as a reaction to the traditional view of family law as a 'low status' branch of legal practice.[48] The characterisation of family law as a separate, specialist area of law is also sometimes connected to the espousal of non-litigiousness by lawyers. Family law involves clients who are likely to be traversing one of the most difficult periods in their lives (and hence, not be in an optimal position to make important decisions) and, importantly, where the interests of vulnerable non-parties, namely children, often require consideration. One former judge has described family law as involving value judgments about deeply personal aspects of life.[49] All these factors, which are explicated in greater detail below, indicate some of the complexities involved in automating family law.

Nevertheless, non-lawyer or 'self-help' options are not at all new to family law. For example, with the introduction of 'no-fault' divorce in many states of the United States in the 1970s, divorce 'kits' and self-help books proliferated.[50] In the 1990s, as well as printed materials, software (available for purchase on CD-ROM, for example) could be used to simplify the completion of forms.[51] Information about family law has been around on the internet for a long time, and has already produced a cultural change toward self-help.[52] Generally, people are more likely to seek information on the internet, including in areas which would once have been considered to require professional advice. [53] One Canadian study suggested that this is a factor driving self-representation, more so than a general dislike or mistrust of lawyers.[54]

The arguments that were made about these kinds of materials at the time are essentially the same as those raised about the considerably more sophisticated options now available. These concern whether they might violate prohibitions on unauthorised practice of law, by crossing over from being mere provision of legal information to constituting legal advice.[55] More generally, there is a debate as to whether providing

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[48]   Martha Minow, '"Forming Underneath Everything That Grows": Toward a History of Family Law' [1985] (4) *Wisconsin Law Review* 819, 819; John H Wade, 'The Professional Status of Family Law Practice in Australia' (1985) 8(1) *University of New South Wales Law Journal* 183.

[49]   Nahum Mushin, 'Ethics in Family Law – Beyond Legal Principles and into Value Judgments' (2018) 30 (Special Issue) *Singapore Academy of Law Journal* 427.

[50]   See, eg, Warren H Resh, 'More on Do-It-Yourself Divorce Kits and Services' (1973) 37(2) *Unauthorized Practice News* 59.

[51]   *Unauthorized Practice of Law Commission v Parsons Technology Inc*, 1999 WL 47235 (ND Tex, 1999), vacated, 179 F 3d 956 (5th Cir, 1999); In Australia: see *Attorney-General (WA) v Quill Wills Ltd* (1990) 3 WAR 500, 503-4 (Ipp J).

[52]   See, eg, Rosemary Hunter, Jeff Giddings and April Chrzanowski, 'Legal Aid and Self-Representation in the Family Court of Australia' (Research Paper, Griffith University Socio-Legal Research Centre, May 2003).

[53]   Jonathan Crowe et al, 'Understanding the Legal Information Experience of Non-Lawyers: Lessons from the Family Law Context' (2018) 27(4) *Journal of Judicial Administration* 137, 137.

[54]   Julie Macfarlane, *The National Self-Represented Litigants Project: Identifying and Meeting the Needs of Self-Represented Litigants* (Final Report, May 2013) 35.

[55]   See generally Emma Beames, 'Technology-Based Legal Document Generation Services and the Regulation of Legal Practice in Australia' (2017) 42(4) *Alternative Law Journal* 297.

people with such self-help options fulfils an important social good (enabling access to legal services for those who would otherwise not be able to access it affordably), or leaves people vulnerable to poor quality information or advice. This is discussed in Part V.

In terms of quality, there is another relatively long-standing debate concerning the degree to which family lawyers are, and should be, specialists. American researchers Lynn Mather and Craig McEwen distinguished between family law 'specialists and generalists', identifying these groups as constituting separate 'communities of practice'.[56] Other studies have reported that family lawyers 'have claimed for themselves special characteristics'[57] setting them apart from other legal practitioners.[58] Australian family lawyers *do* largely seem to identify as a separate, distinct and unique group of legal practitioners. They have been described as 'close knit and relatively homogenous'[59] and sharing a 'cohesive legal culture'.[60] Legislation to merge the Family Court and Federal Circuit Court, introduced to the Senate in late 2018,[61] was criticised by lawyers concerned about the impact of a loss of family law specialisation within the courts.[62] The appointment to the family law courts of judges lacking in family law expertise has also been a source of complaint.[63] Reporting on its recent inquiry into the family law system, the Australian Law Reform Commission (ALRC), while recommending significant structural reforms in order to close the 'jurisdictional gap' between State matters (such as child protection and family violence intervention orders) and Federal family law matters, emphasised the continuing importance of specialisation.[64]

This is significant because family law specialisation is associated with non-litigiousness, according priority to the wellbeing of clients and their children, and interpersonal skills including management of conflict. Studies indicate that rather than increasing discord, specialist family law solicitors tend to be resolution focused.[65]

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[56]   Lynn Mather and Craig A McEwen, 'Client Grievances and Lawyer Conduct: The Challenges of Divorce Practice' in Leslie C Levin and Lynn Mather (eds), *Lawyers in Practice: Ethical Decision Making in Context* (University of Chicago Press, 2012) 63, 66.

[57]   Cf Christine Piper, 'How Do You Define a Family Lawyer?' (1999) 19(1) *Legal Studies* 93, 93.

[58]   Bren Neale and Carol Smart, '"Good" and "Bad" Lawyers? Struggling in the Shadow of the New Law' (1997) 19(4) *Journal of Social Welfare and Family Law* 377; Katherine Wright, 'The Role of Solicitors in Divorce: A Note of Caution' (2007) 19(4) *Child and Family Law Quarterly* 481 ('A Note of Caution').

[59]   Rosemary Hunter et al, 'Legal Services in Family Law' (Research Report, Law Foundation of New South Wales, December 2000) xii, 340–3 ('Legal Services').

[60]   Jill Howieson, 'The Professional Culture of Australian Family Lawyers: Pathways to Constructive Change' (2011) 25(1) *International Journal of Law, Policy and the Family* 71, 81 ('Professional Culture').

[61]   Federal Circuit and Family Court of Australia Bill 2018 (Cth); Federal Circuit and Family Court of Australia (Consequential Amendments and Transitional Provisions) Bill 2018 (Cth).

[62]   See, eg, Law Council of Australia, Submission No 2 to the Australian Law Reform Commission, *Review of the Family Law System* (16 November 2018); Nicola Berkovic, 'Lawyers fight for Family Court', *The Australian* (Sydney, 29 November 2018) 6.

[63]   'What Can be Done to Fix the Family Law System?', *ABC Radio AM* (Thomas Oriti, 6 October 2018) <https://www.abc.net.au/radio/programs/am/what-can-be-done-to-fix-the-family-law-system/10346244>.

[64]   Australian Law Reform Commission, *Family Law for the Future: An Inquiry into the Family Law System – Final Report* (Report No 135, March 2019) ch 4 ('Family Law for the Future').

[65]   Neale and Smart (n 58); Piper (n 57); referring to a new 'hybrid profession': Wright, 'A Note of Caution' (n 58); Craig A McEwen, Lynn Mather and Richard J Maiman, 'Lawyers, Mediators and the Management of Divorce' (1994) 28(1) *Law and Society Review* 149; Janet Walker, 'Is

While solicitors adopt different styles as required,[66] the 'ideal' family lawyer type has shifted in the last few decades to embrace this.[67] Mather and McEwen identified the norm of the 'reasonable lawyer' acting in divorce matters who 'should anticipate likely case outcomes, argue only for "realistic" positions (not whatever the client wants), show respect for other lawyers, and avoid unnecessary conflict in settling cases'.[68] In England and Wales, the 'new breed' of family lawyer was described as conciliatory rather than adversarial,[69] possibly the result of legal and mediation practice converging.[70] Dr Jill Howieson's Australian study found that 'the family lawyers tended towards a more conciliatory approach to family lawyering and used a blend of lawyering approaches in their work to achieve constructive outcomes'.[71]

Family lawyers have ethical duties not only to the administration of justice and to their clients, but also to ensure that children's interests are properly considered.[72] In Australia, there has also been a concerted effort over many years to divert people away from engaging in adversarial litigation in family law and toward agreed resolutions.[73] Parties in dispute over the parenting of children are intended to attend Family Dispute Resolution (FDR), a form of family mediation, prior to commencing court proceedings.[74] At the time that this became mandatory, the federal Government set up 'Family Relationship Centres' around the country to provide (among other services) FDR. There are not currently any similar mandatory processes for property disputes; however, the ALRC has recommended their introduction.[75] One group of academics has commented that it is part of a family lawyer's obligation to encourage clients to resolve disputes outside of court and 'clients need to be reminded that "divorce is not

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There a Future for Lawyers in Divorce?' (1996) 10(1) *International Journal of Law, Policy and the Family* 52; John Eekelaar, Mavis Maclean and Sarah Beinart, *Family Lawyers: The Divorce Work of Solicitors* (Hart Publishing, 2000) ch 1; Hunter, 'Legal Services' (n 57); Rosemary Hunter, 'Adversarial Mythologies: Policy Assumptions and Research Evidence in Family Law' (2003) 30(1) *Journal of Law and Society* 156.

66   See Howieson, 'Professional Culture' (n 60) 81.
67   See, eg, Michael King, '"Being Sensible": Images and Practices of the New Family Lawyers' (1999) 28(2) *Journal of Social Policy* 249, 249.
68   Mather and McEwen (n 56) 66.
69   King (n 67); Neale and Smart (n 58); Katherine Wright, 'The Divorce Process: A View from the Other Side of the Desk' (2006) 18(1) *Child and Family Law Quarterly* 93; Wright, 'A Note of Caution' (n 58).
70   See generally Eekelaar and Maclean (n 16) 32–8; Howieson, 'Professional Culture' (n 58) 93; Neale and Smart (n 58) 383; Lisa Webley, 'Gate-Keeper, Supervisor or Mentor? The Role of Professional Bodies in the Regulation and Professional Development of Solicitors and Family Mediators Undertaking Divorce Matters in England and Wales' (2010) 32(2) *Journal of Social Welfare and Family Law* 119; Wright, 'A Note of Caution' (n 58).
71   Howieson, 'Professional Culture' (n 60) 80; see also Jill Howieson, 'Family Law Dispute Resolution: Procedural Justice and the Lawyer-Client Interaction' (PhD Thesis, University of Western Australia, 2008).
72   Nicholas Bala, Patricia Hebert and Rachel Birnbaum, 'Ethical Duties of Lawyers for Parents Regarding Children of Clients: Being a Child-Focused Family Lawyer' (2017) 95(3) *Canadian Bar Review* 557.
73   See, eg, Margaret Harrison, *Finding a Better Way: A Bold Departure from the Traditional Common Law Approach to the Conduct of Legal Proceedings* (Family Court of Australia Report, April 2007).
74   *Family Law Act 1975* (Cth) s 60I ('*FL Act*'); Joe Harman, 'Should Mediation be the First Step in all Family Law Act Proceedings?' (2016) 27(1) *Australasian Dispute Resolution Journal* 17.
75   Australian Law Reform Commission, 'Family Law for the Future' (n 64) 261–2.

a zero sum game;" they may both be better off with a fair, nuanced settlement that takes account of their circumstances than a regime imposed by a court'.[76]

Professor Barbara Glesner Fines has argued that, despite massive changes to family structures – notably that fewer people marry, and more marriages end in divorce – 'the core of family law practice has remained unchanged'.[77] Specifically, Glesner Fines claims that what she characterises as the dual challenge and reward of family law – assisting those in personally difficult circumstances – remains at the heart of family law professionalism.[78]

The corollary to Glesner Fines' argument is that human lawyers are essential to family law matters, which is explained by Canadian academic Noel Semple as follows:

> A client who is divorcing from a co-parent, or contesting the care of an older relative, is often best served by a settlement that creatively identifies options that work well for everyone involved, within the framework of the law. Cost-effectively securing such an outcome may require an advocate with a personal reputation within a local community of practice and a working knowledge of what outcomes are considered reasonable by other lawyers and judges within the local legal culture.[79]

Here, Semple emphasises the human aspects of professionalism which cannot be replaced, even by sophisticated software, to suggest that family law is relatively more 'sheltered' from the incursion of technology into legal services. The benefits of automated options must, however, be considered by reference to the current family law system, which, as reflected in *Family Law for the Future*, is widely regarded as a broken one.[80] Human family lawyers also come in for their share of criticism – whether for charging exorbitant fees, increasing discord among separated families, or generally lacking competence.[81] Accordingly, despite claims about the importance of human family lawyers, certain aspects of family law make it susceptible to automation – the first being affordability and accessibility, and the second, larger-scale problems with the efficiency of the family law system.

Firstly, unaffordability of legal services is a fundamental issue in family law. Litigants are individuals, rather than corporations, and separation typically generates enormous financial pressures as parties face disentangling financial affairs and financing the running of two households instead of one.[82] Moreover, family problems

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[76]   Bala, Herbert and Birnbaum (n 72) 580, quoting Robert H Mnookin, *Bargaining with the Devil: When to Negotiate and When to Fight* (Simon & Schuster, 1st ed, 2010) 217.

[77]   Barbara Glesner Fines, 'Fifty Years of Family Law Practice - The Evolving Role of the Family Law Attorney' (2012) 24(2) *Journal of the American Academy of Matrimonial Lawyers* 391, 392.

[78]   Ibid.

[79]   Semple, 'Personal Plight Legal Practice' (n 14) 34.

[80]   See, eg, Australian Law Reform Commission, 'Family Law for the Future' (n 64) 123 [4.43].

[81]   See, eg, Zoë Durand, *Inside Family Law: Conversations from the Coalface* (Longueville Media, 2018); Michaela Whitbourn, 'Family Court Judge Blasts "Bitter, Aggressive" Litigation Culture in Sydney', *Sydney Morning Herald* (online, 13 December 2017) <https://www.smh.com.au/national/nsw/family-court-judge-blasts-bitter-aggressive-litigation-culture-in-sydney-20171213-h03nv5.html>.

[82]   Patrick Parkinson and Brian Knox, 'Can There Ever Be Affordable Family Law?' (2018) 92(6) *Australian Law Journal* 458, 458.

generate significant emotional stress which can lead to ill health.[83] The Law and Justice Foundation's survey of legal need in Australia found that '[r]elationship breakdown was one of several problem types that acted as a trigger and appeared to trigger debt, legal action and other family problems'.[84] In Australia, as in many other common law jurisdictions, government funding of legal aid continues to decline, and a large proportion of people do not qualify for legal aid yet are unable to afford the cost of engaging a lawyer[85] – the 'missing middle' of the legal services market.[86] In many discussions of family law and technological advances, including the use of automated systems, it is this missing middle who are the expected or intended beneficiaries. Professor Ben Barton has argued that lawyers in the US initially ignored or underestimated automated options (typically low-cost online providers of legal services and forms) to their peril.[87] This was because, initially, these services were directed toward people who would otherwise have accessed no legal advice at all. With time, however, these services became attractive to the missing middle.[88] That is, as they have become more established, online providers have begun to compete with lawyers as their rates are greatly discounted when compared with those of attorneys.[89] Another benefit to automation might be to increase access to accurate family law information and services. Ease of access might include avoiding courts but could also extend to avoiding formal dispute resolution procedures, or face-to-face interactions with lawyers and/or the other party.

The second issue relates to the first, and concerns problems of delay and inefficiencies in the court system.[90] For years the Australian family law system has been plagued by claims about delays and backlogs.[91] In 2017, the House of Representatives Standing Committee on Social Policy and Legal Affairs reported that

> delays from court filing to the commencement of a trial can be as high as 36 months in both the Family Court and the Federal Circuit Court of Australia (Federal Circuit Court) … [which] can increase the risk of harm to families... [I]n remote or regional areas, delays can be even greater.[92]

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83   Christine Coumarelos et al, *Legal Australia-Wide Survey: Legal Need in Australia* (Law and Justice Foundation of New South Wales, August 2012) vol 7, xvi.

84   Ibid 15.

85   Ibid 38; see also Andrew Higgins, 'The Costs of Civil Justice and Who Pays' (2017) 37(3) *Oxford Journal of Legal Studies* 687.

86   Productivity Commission, *Access to Justice Arrangements* (Inquiry Report No 72, 2014) vol 2, 875; Margaret Castles, 'Expanding Justice Access in Australia: The Provision of Limited Scope Legal Services by the Private Profession' (2016) 41(2) *Alternative Law Journal* 115, 117.

87   Benjamin Barton, 'The Lawyer's Monopoly: What Goes and What Stays' (2014) 82(6) *Fordham Law Review* 3068.

88   Samuel V Schoonmaker IV, 'Withstanding Disruptive Innovation: How Attorneys Will Adapt and Survive Impending Challenges from Automation and Nontraditional Legal Services Providers' (2017) 51(2) *Family Law Quarterly* 133.

89   Gerard J Clark, 'Internet Wars: The Bar against the Websites' (2013) 13(2) *Journal of High Technology Law* 247.

90   See Zeleznikow, 'Efficiency and Effectiveness in Courts' (n 5).

91   See, eg, Chief Justice Alastair Nicholson, 'Legal Aid and a Fair Family Law System' (Speech, Legal Aid Forum Towards 2010, 1999); Nicola Berkovic, Inquirer, 'Break-Up So Hard to Do', *The* Australian (Sydney, 3 November 2018) 17; Opinion, 'Expedite Family Law Reforms', *The Australian* (Sydney, 28 August 2018) 15.

92   House of Representatives Standing Committee on Social Policy and Legal Affairs, Parliament of Australia, *A Better Family Law System to Support and Protect Those Affected by Family Violence* (Report, 2017) 56 nn 32, 34; see also Pricewaterhouse Coopers, Submission to the Attorney-General's Department, *Review of Efficiency of the Operation of the Federal Courts:*

Certainly, within family law, delays have severe impact, not just on parties but upon their children. For victims of domestic violence, for example, risk of homicidal violence from their former partner is at its highest post-separation, and children may be left in inappropriate or unsafe situations.[93] *Family Law for the Future* referred to 'multi-year delays in reaching final hearing' in the Family Court.[94] Perhaps unsurprisingly, the ALRC's espousal of non-court options for dispute resolution, such as arbitration, is clearly directed to alleviating the courts' workload and providing parties with faster access to resolution.[95]

Issues of delay and court overwork are real and substantial, and require address.[96] As discussed in Part V, however, automation does not necessarily present a complete or straightforward solution to these issues, which are long-standing, cultural and structural. While there are individual applications which may be very useful, it is important to scrutinise each in its particular context.

IV   EXAMPLES OF AUTOMATION IN FAMILY LAW

A   *Information Provision and Automated Drafting*

The most long-standing application of automated systems to family law is for tailoring information and in some cases generating drafts of documents or forms. The US Legal Services Corporation recommended the use of document assembly applications to facilitate the drafting of legal documents, including 'by litigants themselves'.[97] Another group of US authors have explained the benefits of such tools in terms of access to justice:

> Instead of finding static court forms online to download, print, and complete by hand, litigants can now use interactive A2J Guided Interviews, created with A2J Author, which walks the user through the litigation process step-by-step. As litigants answer a series of questions, a form is assembled in the background using HotDocs document assembly software…[98]

The Networked Society Institute (NSI), in its review of automated legal advice tools, noted that they cover a spectrum of uses, including those designed for consumers to use themselves, exclusively for lawyer use, or something in between (such as preparing an initial draft of a document for a lawyer to review).[99] The NSI noted that the tools available are becoming more sophisticated, can provide more precise information to clients, and in some cases, can generate documents based on responses received.[100] In

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Final Report (April 2018) <https://www.ag.gov.au/LegalSystem/Courts/Documents/pwc-report.pdf>.

93   Australian Law Reform Commission, 'Family Law for the Future' (n 64) 298 [10.10].

94   Ibid 332 [10.135].

95   See, eg, ibid 279 [9.1].

96   Greg Howe, 'The Family/Federal Circuit Court Restructure: What's all the fuss about?' (2018) 40(10) *The Bulletin* 6; Australian Law Reform Commission, 'Family Law for the Future' (n 62) 223 [5.160].

97   LSC: Legal Services Corporation (n 47) 2.

98   James E Cabral et al, 'Using Technology to Enhance Access to Justice' (2012) 26(1) *Harvard Journal of Law and Technology* 241, 251.

99   Judith Bennett et al, 'Current State of Automated Legal Advice Tools' (Discussion Paper No 1, Networked Society Institute, University of Melbourne, April 2018) 22−25.

100   Ibid.

the United States and United Kingdom, family law document automation seems to presently encompass only simple and non-contentious items such as prenuptial agreements, uncontested divorces and name changes.[101]

There is already a significant volume of family law information available online and for free. Aside from legislation and case law, organisations provide factsheets on different issues. Professor Jonathan Crowe et al noted a proliferation of legislation, case law, 'websites, factsheets, self-help guides and other material', authored variously by government services, non-government organisations or individuals.[102] For some years the Family Court itself has provided 'do-it-yourself' kits for different forms.[103] There are also some interactive types of online tools for family law matters in Australia, for example to obtain a divorce.[104] One recent suggestion has been to implement an online questionnaire to be completed at the time of filing an application, in which each party could explain the steps they have taken to resolve or narrow the dispute.[105]

Despite the volume of information, non-lawyers seeking family law information in the online environment reportedly find it difficult traverse its complexities, and hard to evaluate the credibility of different sources.[106] The potential benefit, then, of using automated tools is to more precisely direct non-lawyers to relevant information. Chatbots or more complex expert systems can walk a user through a series of steps to answer simple legal queries or be directed to curated information.[107] For example, an Australian family law client intake system is Settify, an online portal whereby potential clients can provide their instructions online prior to their first face-to-face meeting with a lawyer, by answering a series of questions.[108] This is intended to save clients' and lawyers' time by generating a set of comprehensive instructions prior to the first meeting.

B   *'Predictive' Analytics*

The technology discussed above can be seen as promoting easier and more affordable access to justice (via information and in assisting people to complete forms and documents in simple and uncontentious matters). The use of 'predictive' analytics is geared more toward finding efficiencies by indicating a range of likely outcomes, thereby enabling people to better understand their legal position or options.

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[101]   See, eg, 'Products for Your Big Life Changes' *LegalZoom* (Web Page) <https://www.legalzoom.com/personal/marriage-and-divorce/>; 'Find the Right Amicable Service' *Amicable* (Web Page) <https://amicable.io/services> self-describes as 'the UK's only divorce service that works with couples to help you reach fairer agreements'.

[102]   Crowe et al (n 53).

[103]   'Do It Yourself Kits', *Family Court of Australia* (Web Page, 14 February 2019) <http://www.familycourt.gov.au/wps/wcm/connect/fcoaweb/forms-and-fees/court-forms/diy-kits/>.

[104]   See, eg, *Online Divorce Applications* (Web Page) <www.onlinedivorceapplications.com.au>.

[105]   Parkinson and Knox (n 80) 466.

[106]   Crowe et al (n 53) 141.

[107]   Robert Ambrogi, 'This Week in Legal Tech: Everyone's Talking About Chatbots', *Above the Law* (Web Page, 17 April 2017) <https://abovethelaw.com/2017/04/this-week-in-legal-tech-everyones-talking-about-chatbots/?rf=1>.

[108]   See Settify (Web Page) <www.settify.com.au>.

Many have observed the importance of prediction to what lawyers do.[109] Big data analytics or predictive analytics is a way of analysing a massive quantity of data to reveal meaningful patterns. 'Big data' refers to the vast quantities of electronic data existing in the world, which continue to grow at an incredible rate.[110] Large quantities of data, extremely powerful computers, and advances in machine learning all mean that extracting patterns from data is much easier, and the results more accurate.[111] Through different types of analysis, it is also possible to make predictions from this data. Predictive analytics does not (and cannot) explain *why* something is so – it just identifies the existence of a pattern.

As explained in Part II, statistical and computational modelling of legal cases is not new.[112] Initial models worked on information retrieval – locating or retrieving similar cases in order to analyse whether the case in question was sufficiently similar to those cases to match the outcome. Ashley has explained that by connecting 'features' of cases with particular outcomes, a program can discern a pattern and use that to make predictions about the outcome of cases with similar features.[113] Features might include any number of things: those we might term 'external' (and which are likely technically irrelevant to the merits of the case) such as who the judge was, who the lawyers were, whether the plaintiff/applicant was a natural person or a company, where the application was filed, and so on. They might also include those 'internal' or case-specific features more readily recognised as going to the merits, such as factual information about the events which have generated the claim.

A differentiator of programs is the extent to which the program must be told by humans about which features to use.[114] Early programs required the relevant features to be identified, which involved humans determining those features which seemed to be important, either based on analysis of key cases, or from research.[115] Describing the 'Split-Up' system, Professor John Zeleznikow has explained how relevant features were identified:

> In developing Split-Up, Australian Family Law experts were used to identify factors pertinent to a property distribution following divorce. A data set of past cases was then fed to machine-learning programs. Thus, Split-Up learned the way in which judges weighed factors in past cases... The way the factors combine was not elicited from experts as rules or complex formulas. Rather, values on the 94 variables were extracted from cases previously decided, so that a neural network could learn to mimic the way in which judges had combined variables.[116]

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[109]   Mark K Osbeck and Michael Gilliland, 'Outcome Prediction in the Practice of Law' [2018] (50) *Foresight: The International Journal of Applied Forecasting* 42.

[110]   Viktor Mayer-Schönberger and Kenneth Cukier, *Big Data: A Revolution That Will Transform How We Live, Work and Think* (First Mariner Books, 2014) 8.

[111]   Ibid 1–3.

[112]   See Ashley (n 24); Zeleznikow, 'Efficiency and Effectiveness in Courts' (n 5) 35.

[113]   Ashley (n 24) 107.

[114]   Ibid 110.

[115]   Ejan Mackaay and Pierre Robillard, 'Predicting Judicial Decisions: The Nearest Neighbour Rule and Visual Representation of Case Patterns' (1974) 3(3-4) *Datenverarbeitung im Recht* 302, 306, cited by Kevin D Ashley and Stefanie Brüninghaus, 'Automatically Classifying Case Texts and Predicting Outcomes' (2009) 17(2) *Artificial Intelligence and Law* 125, 129; Ashley (n 24) 108–9.

[116]   Zeleznikow, 'Efficiency and Effectiveness in Courts' (n 5); see also Sourdin, 'Justice and Technological Innovation' (n 10) 101.

The program would then determine the weight that should be given to different features and could use this information to reach conclusions about new, or future cases.

More recently, the hope is that by using capabilities in reading text, a program will be able to analyse a mass or corpus of documents to *itself* identify (and weigh) the relevant features.[117] Instead of relying on a human to manually program the features needed, they are extracted automatically from the textual data (such as the text of judgments) using machine learning. A recent example is the study of Nikolaos Aletras et al, who analysed certain judgments of the European Court of Human Rights (ECHR). Reportedly, these researchers were able to infer the outcome of cases with 79 per cent accuracy,[118] though their study has been criticised.[119] Among its limitations was the use of judgments in substitute for the materials filed by the parties in each case. In other words, an analysis of the text of a judgment which had already been written, was used to 'predict' the outcome of the case.[120] As Pasquale and Cashwell argue, '[a] truly predictive system would use the filings of the parties, or data outside the filings, that was in existence before the judgement itself'.[121] The method of Aletras et al disregards the ways that judges draft their judgment so as to support their final conclusions, including the ways that facts are interpreted,[122] undermining the apparently impressive accuracy of the results.

Within subject-specific domains, commercial providers now offer forms of legal predictive analytics.[123] For example, Lex Machina,[124] among the first of its kind to offer such a service, analyses patent decisions. From its repository of thousands of decisions, it extracts information such as whether a certain lawyer has a good track record with a particular type of case, or whether a certain judge is likely to be amenable to a certain type of motion. Proponents of this type of analytics argue that this is empowering to consumers of legal services, who can judge a lawyer's track record on objective data.[125]

The difficulties in applying data analytics to judgments are that judgments tend to have no set format in terms of structure; factual disputes are not accounted for; and there may be insufficient data available to make reliable predictions, especially in a small jurisdiction such as Australia. One commentator has noted that

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[117]   Ashley (n 24) 13.

[118]   Nikolaos Aletras et al, 'Predicting Judicial Decisions of the European Court of Human Rights: A Natural Language Processing Perspective' [2016] (2) *PeerJ Computer Science* 92.

[119]   Frank Pasquale and Glyn Cashwell, 'Prediction, Persuasion, and the Jurisprudence of Behaviourism' (2018) 68 (Supplement 1) *University of Toronto Law Review* 63.

[120]   Ibid 68–9.

[121]   Ibid 70.

[122]   Ibid 119.

[123]   Some examples include Fastcase, Ravel Law (including Judge Analytics), Lex Machina and CARA.

[124]   Originally the Stanford IP Litigation Clearinghouse. It was subsequently acquired by LexisAdvance: 'LexisNexis Acquires Premier Legal Analytics Provider Lex Machina', *Lex Machina* (Web Page, 23 November 2015) <https://lexmachina.com/media/press/lexisnexis-acquires-lex-machina/>.

[125]   See, eg, Robert Ambrogi, 'Rating Lawyers by their Wins and Losses', *Above the Law* (Web Page, 13 February 2017) <https://abovethelaw.com/2017/02/this-week-in-legal-tech-rating-lawyers-by-their-wins-and-losses/>.

under the strong influence of the current AI hype, people try to plug in data that is dirty and full of gaps, that spans years while changing in format and meaning, that's not understood yet, that's structured in ways that don't make sense, and expect those [data] tools to magically handle it.[126]

Further, the effectiveness of some machine learning algorithms may mean that there is a tendency towards 'over-fitting' – finding patterns in training data which are not present in the real world.[127] There are likely to also be biases present in family law data related to gendered patterns of labour, and so on.[128] If data is historic, it is questionable how social changes occurring since the 1970s could be accounted for. On the other hand, if only more recent judgments are used, the smaller sample size may present problems. There have also been numerous legislative changes to the *Family Law Act 1975* (Cth) itself – a key issue would be the changes to the treatment of superannuation in the early 2000s,[129] which would have significantly impacted property division. Finally, if the data comprised only of judgments and excluded settled or non-litigated cases, this would represent essentially a collection of 'outlier' data, as the majority of separations do not proceed to final hearing and judgment. While this is arguably how a system based on precedents (judgments) works, the benefit of a lawyer's input is that person's experience of settled as well as litigated cases.

In their extensive critique of the study by Aletras et al, Pasquale and Cashwell commented that

there is a danger that the model could be deployed by bureaucrats at the [Court] to prioritize certain petitions, given that the Court is deluged with thousands of petitions each year and can only decide a fraction of those cases. Without a clear understanding of how the model is predicting the success of a claim, [this] would be irresponsible …[130]

In the family law setting, for example, suppose that gender is highly significant in determining property division – which is likely, given the differences in earnings of men and women over time. Should this be built into an algorithmic model which 'predicts' what property division should be? Or should it be excluded? If it is to be excluded, will it be possible to do this, as there may be any number of other data points from which gender could be inferred?[131]

It is worth bearing Pasquale and Cashwell's caution in mind, and the limitations discussed above, when considering the application of predictive analytics to family law decisions. The Federal Court has publicised its development of an AI system, using IBM software, with the goal of identifying factors which are correlated to judicial (or

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[126]   Monica Rogati, 'The AI Hierarchy of Needs', *Hackernoon* (Blog Post, 1 August 2017) <https://hackernoon.com/the-ai-hierarchy-of-needs-18f111fcc007>, cited by Philip Segal, 'Legal Jobs in the Age of Artificial Intelligence: Moving from Today's Limited Universe of Data Towards the Great Beyond' (2018) 5(1) *Savannah Law Review* 211, 219–20.
[127]   See Sourdin, 'Judge v Robot' (n 17) 1126–30.
[128]   Lyria Bennett Moses and Noam Peleg, 'Why have a lawyer when you can have a robot?' (Presentation to National Family Law Conference Brisbane, 5 October 2018).
[129]   *Family Law Legislation Amendment (Superannuation) Act 2001* (Cth).
[130]   Pasquale and Cashwell (n 119) 78.
[131]   Bennett Moses and Peleg (n 128).

negotiated, if consent orders are included) distribution of property.[132] While this might be possible – and the Court has indicated that such a system would be used for the assistance of parties – it has potentially concerning implications for justice and fairness,[133] some of which are discussed below in Part V.

C   *Online Dispute Resolution*

The methods described in the preceding two sections may be combined for use in online dispute resolution (ODR). ODR is a broad term encompassing both alternative dispute resolution (ADR) which is conducted online, and systems of online courts.[134] Broadly speaking, it might include online portals (as recommended in the United States Legal Services Corporation (LSC) plan for access to justice). Via such portals, people can be triaged and directed to appropriate assistance. The LSC also envisaged self-represented parties being guided 'through the entire legal process.'[135] The established Civil Resolution Tribunal in British Colombia provides such a portal for people looking to resolve some civil disputes,[136] including family law.

Generally, it has been suggested that ODR is especially suitable for family law disputes.[137] The complete physical (and possibly temporal) separation of the parties in particular lends itself to family mediation or family dispute resolution (FDR), especially in cases involving allegations of violence. It is argued that another benefit is that the technology creates a record of interactions,[138] (though given that what transpires in FDR is inadmissible, this may not be especially useful), and may reduce the effect of power imbalances in relationships.[139] In 2011, Mark Thomson reported on a project piloted in Queensland to delivery FDR services online.[140] Thomson noted that the resulting web-based platform included video communication, and also:

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[132]   'Federal Court Registrar Jessica Der Matossian on FLIP Inquiry Series: Behind the Buzzwords – AI' Law Society of NSW (*FLIP Inquiry Series: Podcasts*, 12 December 2018) <https://www.lawsociety.com.au/advocacy-and-resources/advocacy/flip/flip-inquiry-series-behind-buzz-words/podcasts>; see also 'Mr Warwick Soden – Biography', *Future Justice 2018* (Web Page) <http://www.futurejustice2018.com/1584>.

[133]   See, eg, Emilia Bellucci and John Zeleznikow, 'Developing Negotiation Decision Support Systems that Support Mediators: A Case Study of the Family_Winner System' (2006) 13(2) *Journal of Artificial Intelligence and Law* 233.

[134]   Michael Legg, "The Future of Dispute Resolution: Online ADR and Online Courts" (2016) 27(4) *Australasian Dispute Resolution Journal* 277; Dory Reiling, 'Beyond Court Digitalization with Online Dispute Resolution' (2017) 8(2) *International Journal for Court Administration* 2.

[135]   Later, the launch of portals in Alaska and Hawaii was announced: LSC: Legal Services Corporation (n 47) 2.

[136]   Civil Resolution Tribunal, 'Civil Resolution Tribunal' (2018) <https://civilresolutionbc.ca/>; and MyLawBC, Separation, Divorce & Family Matters, <https://mylawbc.com/paths/family/>.

[137]   Tania Sourdin and Chinthaka Liyanage, 'The Promise and Reality of Online Dispute Resolution in Australia' in Mohamed S Abdel Wahab, Ethan Katsh and Daniel Rainey (eds), *Online Dispute Resolution: Theory and Practice – A Treatise on Technology and Dispute Resolution* (Eleven International Publishing, 2012) 499 n 3.

[138]   Noam Ebner, 'E-Mediation' in Mohamed S Abdel Wahab, Ethan Katsh and Daniel Rainey (eds), *Online Dispute Resolution: Theory and Practice – A Treatise on Technology and Dispute Resolution* (Elven International Publishing, 2012) 357, 377.

[139]   Ibid.

[140]   Mark Thomson, 'Alternative Modes of Delivery for Family Dispute Resolution: The Telephone Dispute Resolution Service and the Online FDR Project' (2011) 17(3) *Journal of Family Studies* 253; see also Relationships Australia, 'Development and Evaluation of Online Family Dispute Resolution Capabilities' (Final Report, 30 March 2011).

- screen features including small windows (pods) which can be scaled, resized and repositioned and hold a variety of information;
- visual sharing of information, including document sharing, online demonstration and whiteboard feature;
- ability to record notes which can subsequently be emailed to [FDR Practitioner]; and
- secure access to functionalities via [FDR Practitioner] authorisation.[141]

As this example shows, ODR may just involve traditional ADR processes which are conducted online or through electronic means. It is promoted as being cheaper, faster, more flexible, and offering more convenience than traditional ADR.[142] Importantly though, humans may have a smaller role to play – it is possible for AI to 'become the third party that performs the mediation or decision making'.[143] A well-known model for such services is eBay's ODR system, created by Modria,[144] which deals with millions of disputes each year and settles 90 per cent of them with no input from eBay.[145] Modria is also involved in systems that are and have been used for family disputes, such as Rechtwijzer (discussed below) and the Civil Resolution Tribunal.

Zeleznikow has reported on several 'intelligent negotiation support systems' with application to family law, including Split-Up and Family_Winner.[146] In various writings, he has suggested that a system such as Split-Up could be used to inform parties about the probable outcome of their case (dependent, of course, on how facts would be determined) and therefore support negotiations.[147] Zeleznikow has maintained, however, that ODR systems should incorporate advice about likely outcome, support the parties to make 'trade-offs', and also facilitate communication.[148] Moreover, he commented that ODR 'should not be fully automated'[149] – the systems Zeleznikow described are to support decision-making rather than to take over this function.[150]

ODR has not 'taken off' to the degree which might perhaps be expected considering the pervasive issues of cost and delay in traditional family law litigation.[151] One reason

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[141]   Thomson (n 140) 256.

[142]   John Zeleznikow, 'Methods for Incorporating Fairness into the Development of an Online Family Dispute Resolution Environment' (2011) 22(1) *Australasian Journal of Dispute Resolution* 16, 16 ('Methods for Incorporating Fairness').

[143]   Legg (n 134), citing Scott Shackelford and Anjanette Raymond, 'Building the Virtual Courthouse: Ethical Considerations for Design, Implementation, and Regulation in the World of ODR' [2014] (3) *Wisconsin Law Review* 615, 628; Suzanne Van Arsdale, 'User Protections in Online Dispute Resolution' (2015) 21(1) *Harvard Negotiation Law Review* 107, 118–19.

[144]   Colin Rule, 'Making Peace on eBay: Resolving Disputes in the World's Largest Marketplace' (Fall 2008) *AC Resolution*.

[145]   Ben Barton, 'Modria and the Future of Dispute Resolution', *Bloomberg Law* (Web Page, 1 October 2015) <https://biglawbusiness.com/modria-and-the-future-of-dispute-resolution/>.

[146]   Split-Up, Family_Winner, AssetDivider; Zeleznikow, 'Methods for Incorporating Fairness' (n 142).

[147]   Zeleznikow, 'Efficiency and Effectiveness in Courts' (n 5) 39–41.

[148]   Ibid 43.

[149]   Ibid.

[150]   Ibid 36.

[151]   Ibid; see also Australian Law Reform Commission, *Review of the Family Law System* (Discussion Paper 86, October 2018) ('Review of the Family Law System'); Opinion (n 91); Berkovic (n 91).

for this may be an existing under-utilisation of mediation and arbitration options.[152] People in dispute over the care of children are notionally required to attend FDR prior to filing in court.[153] However, the high number of exemptions granted – at least as reported in one study[154] – suggests that FDR attendance is still the exception rather than the norm. There is no requirement to attend any out of court dispute resolution process in property disputes, though *Family Law for the Future* has recommended that this be changed.[155] Other barriers to adoption may include the lack of a unifying representative organisation of family law mediators,[156] a reluctance on the part of lawyers to encourage their clients to take up external mediation options, and seemingly a continuing preference for barristers as mediators. A final issue is that at present, FDR can only be performed by a Family Dispute Resolution Practitioner accredited by the federal Attorney-General's Department.[157] This means that while people are free to use an ODR process to attempt to resolve their family law parenting issues, they would not be able to obtain a s 60I certificate to later enable court filing. For people approaching FDR as simply a hurdle to be overcome prior to filing, there would be little incentive to use an ODR process. As Professor Patrick Parkinson and former judge Brian Knox SC have observed, channelling parties into alternative dispute resolution options will require, above all, 'cultural change',[158] regardless of whether that process is online or not. Semple has said that the primary task of 'good family law professionals' is not to litigate but to '[keep] separating people out of family court by securing their legal rights through settlement negotiation and other forms of alternative dispute resolution'.[159] This is premised, however, on lawyers' continuing involvement in ADR processes.

Overseas there have been well-publicised attempts to increase the use of ODR in family law matters. An ODR platform for separating couples called Rechtwijzer ('Signposts to Justice') operated in the Netherlands from 2014 to 2017. Although the platform had been available since 2007, its newer iteration resulted from a partnership between the Dutch Legal Aid Board, the Hague Institute for the Internationalization of Law (HiiL), and Modria. Separating couples paid €100 for access to the program, which guided them through various aspects of their lives and preferences upon separation. Dutch Judge Dory Reiling explained that it included 'online forms, chat functionality, calculation tools, and the ability to get help from an expert'.[160] Upon identifying points of agreement, the program would offer a solution, which the former partners could accept or reject. An evaluation of Rechtwijzer found that users found their experience satisfactory but many nevertheless wanted a third party to review their agreement.[161]

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152 See Parkinson and Knox (n 82) 464–65.

153 *FL Act* (n 74) s 60I.

154 Harman (n 74).

155 Australian Law Reform Commission, 'Review of the Family Law System' (n 151) ch 5.

156 Joe Harman, 'The Field of Dreams' (2018) 29(1) *Australasian Dispute Resolution Journal* 33.

157 *FL Act* (n 74) s 10G.

158 Parkinson and Knox (n 82) 467.

159 Noel Semple, 'A Third Revolution in Family Dispute Resolution: Accessible Legal Professionalism' (2017) 34(1) *Windsor Yearbook of Access to Justice* 130 ('A Third Revolution').

160 Reiling (n 134) 3.

161 Esmee A Bickel, Marian A J van Dijk and Ellen Giebels, 'Online Legal Advice and Conflict Support: A Dutch Experience' (Report, University of Twente, March 2015) 31, cited by Sourdin, 'Judge v Robot' (n 17) 1122.

This feature was later included, and reportedly nearly 60 per cent of those who used the platform proceeded through to finalising an agreement and registering it.[162]

Rechtwijzer was said to be used in around 700 Dutch divorces a year,[163] though as Professor Richard Moorhead has pointed out, this approximates to only one per cent of all divorces in the Netherlands.[164] Financial difficulties reportedly caused the cessation of the ODR platform.[165] In a post sub-titled 'Why online supported dispute resolution is hard to implement', Maurits Barendrecht of HiiL speculated about some of the reasons Rechtwijzer had not succeeded but reached no definite conclusions.[166] Barendrecht did note lessons from traditional voluntary mediation – that there are multiple and complex reasons for people to wish to avoid such processes.[167] Rechtwijzer has now been succeeded by a new platform, Uitelkaar.nl, which assists ex-partners to design their own separation agreements.[168]

Citing Rechtwijzer, various Australian organisations announced their intention to pursue a similar form of ODR. In 2016, Rechtwijzer representatives were in Australia promoting their efforts at increasing access to justice,[169] and in 2017 the Australian federal government provided 'seed funding' to National Legal Aid (NLA) to create an ODR platform.[170] It is unclear whether the proposed platform would be only for parenting matters or would encompass property disputes as well.[171] Though NLA's chairman claimed at the time that up to 20 per cent of family law disputes could be resolved online, no basis for this estimate was given.[172] Given that Rechtwijzer captured only a very small percentage of Dutch divorces after its years of operation, the 20 per cent projection seems highly optimistic. It is also possible that a family law ODR system would capture people who would have attended some form of family

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[162]   Maurits Barendrecht, 'Rechtwijzer: Why Online Supported Dispute Resolution is Hard to Implement', *Law Technology and Access to Justice* (Blog Post, 20 June 2017) <https://law-tech-a2j.org/odr/rechtwijzer-why-online-supported-dispute-resolution-is-hard-to-implement/>.

[163]   Carol Matlack, 'Robots are Taking Divorce Lawyers' Jobs, Too', *Bloomberg* (Web Page, 30 June 2016) <https://www.bloomberg.com/news/articles/2016-06-30/robots-are-taking-divorce-lawyers-jobs-too>

[164]   Barendrecht (n 159) estimated 'a market share of 2-3 per cent of the separation market'; see also Richard Moorhead, 'After the Rechtwijzer Energizer', *Lawyer Watch* (Blog Post, 31 March 2017) <https://lawyerwatch.blog/2017/03/31/after-the-rechtwijzer-energizer/>.

[165]   Roger Smith, 'Goodbye Rechtwijzer: hello Justice42', *Law Technology and Access to Justice* (Blog Post, 31 March 2017) <https://law-tech-a2j.org/advice/goodbye-rechtwijzer-hello-justice42/>.

[166]   Barendrecht (n 162).

[167]   Ibid; see further Part V below.

[168]   Uitelkaar (Web Page) <https://uitelkaar.nl/> ('An independent lawyer checks whether the agreements are legally correct and balanced for both parties'). As Barendrecht (n 162) notes, it is too early to know how this new platform is performing.

[169]   See, eg, 'Negotiating Your Divorce Online', *The Law Report* (ABC Radio National, 12 July 2016) <http://www.abc.net.au/radionational/programs/lawreport/resolving-disputes-online/7585364>.

[170]   Matthew Denholm, 'Quick E-Divorce to Save Couples Time and Money', *The Australian* (Sydney, 8 August 2017), 5.

[171]   The reporting of the story, which references 'e-Divorce' in its headline, is also quite misleading given that obtaining a divorce online has been possible in Australia since 2009: Federal Magistrates Court, *Annual Report 2009/10*. Indeed since January 2018 paper copies of divorce orders are no longer posted, with the divorce order being electronic only: see <http://www.federalcircuitcourt.gov.au/wps/wcm/connect/fccweb/how-doi/divorce/apply-for-a-divorce/apply-for-divorce>.

[172]   Denholm (n 170).

mediation or dispute resolution regardless, rather than attracting people who would otherwise *not* have attended and proceeded to file in court. Clearly, a shift from face-to-face family mediation or FDR to an online or partially automated process, while it may be cost-effective for government funded FDR services, does not carry the same benefits as diverting more people away from litigation.

V   ASSISTING AND 'RESPONSIBILISING'

In *Family Law for the Future*, the ALRC noted that those litigating family law disputes represent only a very small proportion of all people who go through separation. Most people (70 per cent) resolve parenting disputes without recourse to the family law system.[173] Forty per cent of parents resolve their property disputes via discussion, and it is projected that this rate is higher for separating couples without children.[174] Of matters which do enter the system, the 'vast majority' settle.[175] This includes those which proceed as far as a trial, with over 40 per cent of these settling during trial or prior to judgment being delivered.

Those matters which do enter the family law system, however, frequently involve families and individuals with multiple complex needs. In the Australian Institute of Family Studies' (AIFS) *Evaluation of the 2006 Family Law Reforms,* co-occurrence of complex problems, such as family violence, addictions and mental health problems, was noted to feature in family law matters.[176] These findings were confirmed in AIFS' 2014 study.[177] Such findings are not confined to Australia. For example, Professor Janet Johnston et al, when writing of the United States, have observed that 'conflict-ridden divorcing families' are likely to be beset by multiple serious problems.[178] The legal problems of individuals generally tend to cluster and are interconnected and interdependent.[179] In the case of groups who are already socially marginalised, the prevalence of multiple interconnected problems is greater.[180]

Academics in the United Kingdom have identified within family law a renewed focus on individual autonomy and a corresponding narrowing of the concept of

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[173]   Australian Law Reform Commission, 'Family Law for the Future' (n 64) 79, citing Lixia Qu et al, 'Post-Separation Parenting, Property and Relationship Dynamics after Five Years' (Report, Attorney-General's Department, Commonwealth, 2014) xvi.

[174]   Australian Law Reform Commission, 'Family Law for the Future' (n 64) 79 n 2.

[175]   Ibid 80 [3.3].

[176]   Rae Kaspiew et al, *Evaluation of the 2006 Family Law Reforms* (Report, Australian Institute of Family Studies, December 2009) 29–30; In the United States, it has been observed that 'intransigent conflict-ridden divorcing families' are likely to be beset by multiple serious problems: Janet Johnston et al, 'Allegations and Substantiations of Abuse in Custody-Disputing Families' (2005) 43(2) *Family Court Review* 283, 291.

[177]   Rae Kaspiew et al, *Evaluation of the 2012 Family Violence Amendments: Synthesis Report* (Report, Australian Institute of Family Studies, October 2015) 16; see also Family Law Council, *Families with Complex Needs and the Intersection of the Family Law and Child Protection Systems: Terms 1 & 2* (Interim Report, June 2015).

[178]   Johnston et al (n 176).

[179]   Rosemary Hunter, 'Doing Violence to Family Law' (2011) 33(4) *Journal of Social Welfare and Family Law* 343, 354; Pascoe Pleasence et al, *Causes of Action: Civil Law and Social Justice* (Legal Services Commissioner, 1st ed, 2004).

[180]   Jess Mant and Julie Wallbank, 'The Mysterious Case of Disappearing Family Law and the Shrinking Vulnerable Subject: The Shifting Sands of Family Law's Jurisdiction' (2017) 26(5) *Social and Legal Studies* 629, 639–42 ('The Mysterious Case').

vulnerability.[181] It has been argued that the privileging of individual autonomy permits a corresponding reduction in State responsibilities for welfare generally, including family law legal services.[182] By shrinking the boundaries of vulnerability, and repositioning all those outside it as capable and 'responsibilised',[183] legal aid has been significantly reduced. Constraining the category of people who may be identified as vulnerable is, however, to overlook the significant issues facing many of those who now fall outside the definition of vulnerability and are therefore rendered ineligible for legal aid.

The construction of fewer individuals as vulnerable and in need of assistance, and of more as able to independently manage their own legal matters, is occurring against a backdrop of enormous growth in 'informal' sources of legal support.[184] Scholars note that, as in Australia, a 'plethora of informal, self-help resources … can be accessed online'.[185] Yet, many people will struggle to use these resources effectively:

> The scalar shift here is political, intending the majority to take personal responsibility for managing their own disputes. But, many people living in circumstances that require specific and holistic advice or formal intervention will inevitably experience significant difficulty both in locating these sources of help and making use of any information or guidance they are able to access.[186]

In other words, despite comparative ease of access and low cost, there are many reasons why some people will not be able to access automated options; the most disadvantaged, who may also be most in need of legal help, may face too many complex and interconnected difficulties and have too few resources.[187] In her Canadian study of self-represented parties, Macfarlane noted that: 'Many … expressed the need for more than on-line resources, however good – a need for human contact and support as they navigate the justice system and prepare their case to the best of their ability'.[188]

For these reasons, despite problems of affordability, access, and efficiency in the family law system, automated options must be critically examined in their context. In the United States, facilitating access to justice has long been the counter-argument to concerns voiced about legal advice or drafting offered by legally-unqualified entities, and lawyers and their representative organisations are accused of protectionism when unauthorised practice issues are raised.[189] However, some academics have queried

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[181]   Ibid; Alison Diduck, 'Autonomy and Family Justice' (2016) 28(2) *Child & Family Law Quarterly* 133; Alison Diduck, 'Autonomy and Vulnerability in Family Law: The Missing Link' in Julie Wallbank and Jonathan Herring (eds) *Vulnerabilities, Care and Family Law* (Routledge, 2013) 95.

[182]   Mant and Wallbank, 'The Mysterious Case' (n 180) 639.

[183]   Ibid 641.

[184]   Ibid.

[185]   Ibid 643.

[186]   Ibid 638.

[187]   Coumarelos (n 83) xv; Geoff Mulherin, 'Law and Disadvantage' in Michael Legg (ed) *Resolving Civil Disputes* (LexisNexis, 2016) 225, 249 [16.79].

[188]   Macfarlane (n 54) 67.

[189]   Cody Blades, 'Crying Over Spilt Milk: Why the Legal Community is Ethically Obligated to Ensure LegalZoom's Survival in the Legal Services Marketplace' (2015) 38(1) *Hamline Law Review* 31; Lauren Moxley, 'Zooming Past the Monopoly: A Consumer Rights Approach to Reforming the Lawyer's Monopoly and Improving Access to Justice' (2015) 9(2) *Harvard Law and Policy Review* 553; Ben Barton, 'Lessons from the Rise of LegalZoom', *Bloomberg Law* (Web Page, 18 June 2015) <https://biglawbusiness.com/lessons-from-the-rise-of-legalzoom>.

whether automation is really a panacea for access to justice issues.[190] Nick Robinson, for example, has pointed out that in the case of will-writing, affordable options not involving lawyers have been widely available for many years – firstly as paper forms, then as computer software, and now online – yet this has not changed the proportion of Americans dying intestate.[191] In other words, though more people may use the non-lawyer option, there has been no overall increase in people making wills. This example illustrates the complexity of access to justice, or the reasons why people do not access justice options, which include not knowing there is a legal issue, personal stress or distress, inconvenience, fear or mistrust of the legal system, or lacking faith in the system's effectiveness – it is more than just affordability, though this clearly plays a key role.[192]

In family law matters, it seems likely that cost is a significant barrier,[193] especially to people wishing to consult a lawyer or litigate. The ALRC noted that litigation involves 'prohibitive' costs for most people.[194] Those most likely to benefit from low-cost automated options, however, are not those most in need, but rather people whose affairs are uncomplicated, relationships are not characterised by coercion, control or fear, and who are able to afford the costs of the service. Robinson essentially makes this point when he observes that online document drafting providers such as LegalZoom are marketed squarely to the middle classes.[195]

A   *Affordability and Access to Legal Options*

Some of the possibilities and limitations of automation for access to justice can be illustrated by a recent Australian example. 'Ailira', the 'Artificially Intelligent Legal Information Research Assistant', can provide tailored advice and help to victims of domestic violence, including drafting applications for civil protective orders.[196] Its website explains: 'Ailira can log incidents of domestic violence so as to create a time-stamped paper-trail. She can generate Intervention Orders, accompanying affidavits and background letters based on those logs'.[197] This is a worthy goal and there is nothing to suggest that Ailira's developers are not making a serious attempt to create a product which will be helpful to persons in need of protection (PINOPs). Ailira may not, however, be well-suited to PINOPs, for reasons detailed below.

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[190] Catherine J Lanctot, 'Regulating Legal Advice in Cyberspace' (2002) 16(3) *St. John's Journal of Legal Commentary* 569; Nick Robinson, 'When Lawyers Don't Get All the Profits: Non-Lawyer Ownership, Access, and Professionalism' (2016) 29(1) *Georgetown Journal of Legal Ethics* 1; Francesca Bartlett, 'An Uncomfortable Place for Technology in the Australian Community Legal Sector' (Presentation to International Legal Ethics Conference VIII, University of Melbourne Law School, Melbourne, 7 December 2018).

[191] Robinson (n 190).

[192] Rebecca L Sandefur, 'What We Know and Need to Know About the Legal Needs of the Public' (2016) 67(2) *South Carolina Law Review* 443, 445, 449-50; see also Schoonmaker (n 88).

[193] Semple, 'A Third Revolution' (n 159).

[194] Australian Law Reform Commission, 'Family Law for the Future' (n 64) 196 [6.5], 248 [8.8].

[195] Robinson (n 190).

[196] 'Ailira – Domestic Violence Assistant Beta Testing Now Open', *Cartland Law* (Web Page) <https://www.cartlandlaw.com/ailira-domestic-violence-assistant-beta-testing-now-open/>. The program was initially funded by the D3 Digital Challenge "Keeping Women Safe" program in South Australia: see 'Ailira wins Government Grant to Help Victims of Domestic Violence', *Cartland Law* (Web Page) <www.cartlandlaw.com/ailira-wins-government-grant-to-help-victims-of-domestic-violence/>.

[197] Ibid.

The first issue is whether Ailira is addressing a presently existing legal need.[198] It is not clear that the drafting of the application is the major hurdle facing a PINOP when it comes to seeking protection. There is extensive literature on the barriers faced by complainants in reporting family violence, which are both psychological (including the experience of being subjected to coercion and control)[199] and structural[200] rather than procedural. In addition, in Australia it is generally the police who play 'a major role… in applying for protection orders' and have specialised units focused on domestic violence.[201] In some jurisdictions police have compelling obligations to investigate family violence, and to apply for protective orders.[202] In New South Wales, where police must apply for protective orders if they suspect that a family violence offence has been, is being, or is likely to be committed against a PINOP, the vast majority of applications are made by police.[203] In some instances a PINOP may make a private application. This generally happens if the police have refused to make an application, the person is mistrustful of police and hence prefers to proceed independently, or if two parties are making cross-applications. Ailira might, therefore, enable more people to effectively apply themselves, though there are differing views as to whether it is preferable for police, or PINOPs, to make the application.[204]

The second issue is whether Ailira is capable of drafting Intervention Orders effectively. Translating a narrative of a person's experience of violence into a legally relevant account is a challenging task, as Dr Jane Wangmann's research in NSW found.[205] There is the challenge of knowing what is legally relevant, and what is not. A PINOP might unwittingly self-incriminate by disclosing incidences of his or her own criminal acts or other issues such as migration status – statements such as these would be difficult for an automated system to identify. Professor Richard Moorhead has also noted the ethical complexity of constructing a legal narrative in a more mundane

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[198]   The concept of 'legal need' is to capture problems which individuals may not themselves identify as legal issues: see generally Hazel Genn, *Paths to Justice: What People Do and Think About Getting to Law* (Hart Publishing, 1999).

[199]   See, eg, Special Taskforce on Domestic and Family Violence in Queensland, *Not Now, Not Ever: Putting an End to Domestic and Family Violence in Queensland* (Report, 28 February 2015) 301.

[200]   See, eg, Australian Law Reform Commission, *Family Violence and Commonwealth Laws – Improving Legal Frameworks: Final Report* (Report No 117, November 2011) 51–54 [1.18]-[1.26] ('*Family Violence: Improving Legal Frameworks*'); Australian Law Reform Commission, *Family Violence: Improving Legal Frameworks – Consultation Paper* (Consultation Paper No 9, June 2010) 214 [4.224].

[201]   Australian Law Reform Commission, *Family Violence: Improving Legal Frameworks* (n 201) 958–59 [20.16].

[202]   Ibid 244–45 [5.72]-[5.77].

[203]   *Crimes (Domestic and Personal Violence) Act 2007* (NSW) s 49; Jane Wangmann, 'Incidents v Context: How Does the NSW Protection Order System Understand Intimate Partner Violence' (2012) 34(4) *Sydney Law Review* 695.

[204]   This was recommended by the Victorian Law Reform Commission, *Review of Family Violence Laws* (Report, February 2006) [5.80]-[5.93]; on the other hand, the NSW Law Reform Commission had previously stressed the importance of police making complaints on behalf of PINOPs: New South Wales Law Reform Commission, *Apprehended Violence Orders* (Report No 103, October 2003) [3.8]; see also Heather Douglas, 'Do We Need a Specific Domestic Violence Offence?' (2015) 39(2) *Melbourne University Law Review* 434. The debate about mandatory arrest policies in the domestic violence context also illustrates this complexity: see, eg, Rachel Camp, 'Pursuing Accountability for Perpetrators of Intimate Partner Violence: The Peril and Utility of Shame' (2018) 98(6) *Boston University Law Review* 1677, 1703–4, n 132.

[205]   Wangmann's research was focused on cross-applications: she reviewed 156 such applications, as well as conducting court observation: Wangmann (n 203) 702–3.

example. He utilised DoNotPay, globally touted as the world's first 'legal chatbot'.[206] By answering a series of questions, the app generated a letter for Moorhead challenging his (fictitious) parking fine. Moorhead noted that the resulting missive contained an untruth which had not formed part of his instructions.[207] Among other things, this illustrates the ethical challenge of translating a person's narrative into a legal complaint via an AI system. Wangmann has explained further that the focus of the complaints which she reviewed tended to be on a specific incident or incidents, thereby disregarding the ongoing pattern of behaviour constituting coercion and control (notwithstanding the intent of the legislation to capture such patterns). While Ailira might enable *more* incidents to be described, it still appears to retain this structure. It is not clear whether Ailira will be able to advise users on brevity, or if it will encourage or discourage lengthy complaints.

The third issue is whether the infrastructure of the justice system can follow through on the application process. This is not a fault of Ailira but rather reflects the reality that ultimately, seeking to increase the use of Intervention Orders will require increased resourcing of police and courts. Wangmann's research in NSW and that of Rosemary Hunter conducted in Victoria found that the average time for civil protective order applications to be dealt with in court was around three minutes.[208] If Ailira enabled considerably more PINOPs to apply for protective orders, there would need to be additional resourcing of courts to hear and determine such applications and of police to be capable of enforcing the orders once made.

The concept of Ailira as a means of increasing access to justice for PINOPs has some salient points for family law. There is the question of unmet legal needs, and whether they will actually be addressed by a given program. At times, it also seems to be assumed that the use of technology, and automated systems in particular, will always be cost-saving. Yet, even aside from the cost of developing, building, training and testing a program, if the technology achieves its goal of increasing access, the opposite may be true.

Finally, increasing affordable options should not be a substitute for adequate funding of courts, Legal Aid, or community legal services. Using the example of family violence, Professor Paul Gowder has commented that:

> [T]he victim of domestic violence who needs help from the legal system to protect herself ... does not merely need an analysis of the relationship between the facts of her situation and the legal standards for a restraining order. She often needs the human and interpersonal assistance provided by lawyers – someone to listen to those facts and take her account of them seriously, who is credible to police and to courts, and who has the social capital as well as the courage...[209]

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[206]   Richard Moorhead, 'DoNotLie – A quick post on ChatBot ethics', *LawyerWatch* (Blog Post, 1 February 2018) <https://lawyerwatch.blog/2018/02/01/donotlie-a-quick-post-on-chatbot-ethics/>.

[207]   Ibid.

[208]   Wangmann (n 203) 712–13, citing *Crimes (Domestic and Personal Violence) Act 2007* (NSW) s 49; Rosemary Hunter, *Domestic Violence Law Reform and Women's Experience in Court: The Implementation of Feminist Reforms in Civil Proceedings* (Cambria Press, 2008) 81-82.

[209]   Paul Gowder, 'Transformative Legal Technology and the Rule of Law' (2018) 68 (Supplement 1) *University of Toronto Law Journal* 82, 85.

As well as ensuring that a complaint is not self-incriminating and does not contain untruths or other inappropriate material, a lawyer can assess if the PINOP has other legal issues associated with the abusive situation, such as family law, employment, migration or debt matters, which, in the absence of specific questions, an automated system would not be able to do. In the case of Ailira, it would be supposing the PINOP has a potential victim's compensation claim that she is not advised about. This raises in turn the spectre of professional negligence and liability, and who might bear that responsibility.[210] Documenting some of the online sources that offer family law assistance to Australians, Tahlia Gordon has noted that non-lawyer providers have professional looking websites, and that information about the provider's non-lawyer status is often difficult to locate, or is not disclosed.[211]

B   *Justice and Fairness*

Civil justice regimes involve, inter alia, a trade-off between efficiency and individual rights.[212] Justice Perry of the Federal Court has commented that 'the efficiencies which automated systems can achieve, and the increasing demand for such efficiencies, may overwhelm an appreciation of the value of achieving substantive justice for the individual'.[213] The application of automated systems in family law raises a number of fairness and justice concerns, both at a structural and an individual level.

At the individual level, Zeleznikow's example of the 'Family_Winner' system for family dispute resolution is illustrative.[214] He explains:

> [S]olicitors at Victoria Legal Aid and mediators at Relationships Australia were very impressed with the manner in which Family_Winner suggested trade-offs and compromises. However, they had one major concern: that by focusing upon interest-based negotiation, the system had ignored issues of justice.[215]

Of course, this problem arises in any form of privatised dispute resolution and is especially pertinent in family law, as Professors John Eekelaar and Mavis Maclean discuss comprehensively in their book, *Family Justice*.[216] It is well-illustrated in Australia by the strict approach initially taken by the court in determining whether a financial agreement would be binding on the parties.[217] A key issue is the potential

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[210]   See generally Beames (n 55).
[211]   Tahlia Gordon, 'The Unregulated Cowboys that May be "Engaging in legal practice"' (Presentation, FLIP Regulatory Subcommittee, Law Society of NSW, 9 April 2019), referring to Online Divorce Applications (n 104) and *AU Divorce* (Web Page) <https://www.audivorce.com.au/>.
[212]   Eekelaar and Maclean, *Family Justice* (n 16) ch 9.
[213]   Melissa Perry, 'iDecide: Administrative Decision-Making in the Digital World' (2017) 91(1) *Australian Law Journal* 29, 33.
[214]   Zeleznikow, 'Methods for Incorporating Fairness' (n 142) 19.
[215]   Ibid.
[216]   Eekelaar and Maclean, *Family Justice* (n 16); see also Penelope E Bryan, 'Reclaiming Professionalism: The Lawyer's Role in Divorce Mediation' (1994) 28(2) *Family Law Quarterly* 177.
[217]   See *Black v Black* (2008) 216 FLR 422, 430 [45], which adopted a strict approach to compliance with the legislation before a financial agreement would be binding; Patrick Parkinson, 'Setting Aside Financial Agreements' (2001) 15(1) *Australian Journal of Family Law* 26.

vulnerability of one party, especially in the context where family violence is alleged.[218] There are many positives to privatised dispute resolution in family law – time and cost savings, control and ownership of the outcome, preservation of relationships – yet the combination of automation and privatisation raises additional concerns. In family law matters, perhaps more so than any other area of law, personal and social concerns are germane – the pursuit or non-pursuit of legal options may be driven by a multitude of factors which are not susceptible to quantification or cost-benefit analysis. For example, a person may forgo their property entitlement in order to avoid a dispute, for many personal reasons – care for the other party, fear of the other party, concern for children, and so on. Moreover, family law decisions are highly discretionary. As Parkinson has noted, there are no principles of quantification which can guide the resolution of property disputes.[219] Thus, applying a mathematical approach to family law matters should be pursued with caution, as it has the potential to result in unjust outcomes.

It has been argued that 'in divorce hearings, algorithms can automatically assess the individuals' property, financial background, and calculate the amount of time spent together to create a fair agreement'.[220] This assertion, however, rests on the assumption that what a particular subset of other separating couples (since no system will have access to the decisions of every separated couple) decided was fair is necessarily fair for the individuals in question. The assumption that the experience of a population provides the 'fairest' outcome for everyone cannot be made lightly.

The problems with transposing fairness to an individual and the experience of a broader group is brought into stark relief by the use of algorithmic risk assessments, such as COMPAS,[221] which is used in the United States criminal justice system. Lehr and Ohm have noted the many places in the machine learning process where decisions must be made – about the questions to be asked, the choice of algorithms, and so on.[222] There is little consensus on how 'fairness' might be defined, let alone reproduced in a machine learning system.[223] Further, the training data itself may be the product of biased human thinking or historic discrimination – such as the over-policing and over-incarceration of certain communities.

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[218]   Estimates as to prevalence vary, but see, eg, Lawrie Moloney et al, *Allegations of Family Violence and Child Abuse in Family Law Children's Proceedings: A Pre-Reform Exploratory Study* (Research Report No 15, Australian Institute of Family Studies, May 2007) which suggested that over half of family law cases involved allegations of violence and/or child abuse.

[219]   Patrick Parkinson, 'Why are Decisions on Family Property So Inconsistent?' (2016) 90(7) *Australian Law Journal* 498, 498–9.

[220]   Daniel Ben-Ari et al, '"Danger, Will Robinson?" Artificial Intelligence in the Practice of Law: An Analysis and Proof of Concept Experiment' (2017) 23(2) *Richmond Journal of Law & Technology* 2.

[221]   The Correctional Offender Management Profiling for Alternative Sanctions: see Julia Angwin et al, 'Machine Bias', *Propublica* (Web Page, 23 May 2016) <https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing>.

[222]   Lehr and Ohm (n 35).

[223]   For a discussion of differing approaches to fairness: see Sam Corbett-Davies et al, 'A computer program used for bail and sentencing decisions was labeled biased against blacks. It's actually not that clear', *The Washington Post* (Web Page, 17 October 2016) <https://www.washingtonpost.com/news/monkey-cage/wp/2016/10/17/can-an-algorithm-be-racist-our-analysis-is-more-cautious-than-propublicas/?noredirect=on&utm_term=.a245872bbe95>; Broad (n 19) ch 7.

In common with decisions about bail, parole, and sentencing, family law decisions are largely 'predictive'. Rather than being a decision adjudicated on past events (as most judicial decisions are), knowledge of past events is used to determine what is in children's best interests, or (to a lesser extent) what a person's financial needs will be, going into the future. In family law, however, there is no data *at all* as to whether the decision – whether made by the parties themselves, or judicial determination – actually did represent the best or fairest outcome. The only possible measure of this (which is a poor one) is whether the parties returned to litigate further.

When it comes to analysing past cases in order to try and predict future outcomes, there are normative concerns about a rigid or isolated interpretation. In other words, just because past decisions on a certain issue tend one way, this does not mean that they *should* have tended that way, or that the immediate case in point should have that same outcome. AI lacks what is referred to as 'common sense' – generalised knowledge of social context and the human world.[224] In law, this includes an understanding of the idiosyncratic way that the common law has developed and continues to develop, but also more nebulous policy concerns and the importance of the rule of law. Pasquale and Cashwell question 'the social utility of prediction models as applied to the judicial system', fearing 'that their deployment may endanger core rule-of-law values'.[225]

While the common law is based on precedent, appellate courts frequently develop the law. Lyria Bennett Moses and Janet Chan have noted that '[r]elying on past data, including past settlements, when making settlement decisions creates a feedback loop so that an initial bias … is perpetuated'.[226] This would be problematic in family law where social norms have changed, leading to legal change; where laws themselves have changed; or simply where past decisions available are not reflective of present circumstances. This has ramifications for the use of data analytics of decisions and consent orders, especially if AI-generated predictions were used to make determinations about Legal Aid funding or otherwise hinder a person accessing the court. In a worst-case scenario, people might settle based on the prediction of software even though a court would not have found the same way,[227] or be denied Legal Aid when they should have received assistance. Thus, while it might be argued that the ready availability of data is empowering for individual consumers – they can more rationally assess their case's chances of success, for example – it might also have a chilling effect, further entrenching pronounced disparities of access.

There are many potentially useful access-to-justice applications for automated systems. Access to better quality and more reliable information about the family law system would be beneficial, for instance. Access to justice need not mean access to lawyers or courts. In family law matters, it might simply be people understanding their legal options and being able to choose the resolution option they prefer, without excessive wait times or cost, and in circumstances of safety.

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[224] Gillian K Hadfield, *Rules for a Flat World* (Oxford University Press, 2017) 25.
[225] Pasquale and Cashwell (n 119).
[226] Lyria Bennett Moses and Janet Chan, 'Using Big Data for Legal and Law Enforcement Decisions: Testing the New Tools' (2014) 37(2) *University of New South Wales Law Journal* 643, 668.
[227] Frank Pasquale and Glynn Cashwell, 'Four Futures of Legal Automation' [2015] (63) *UCLA Law Review Discourse* 26, 43.

Research into human decision-making also suggests that technology can be highly useful as an organisational, corrective, and supplemental tool.[228] Ailira, for instance, may produce a useful first draft of a complaint which a lawyer, domestic violence support worker, or police officer could review. Yet interest in efficiencies and self-help options should not lead to financial efficacy being prioritised above all, nor should it result in a 'two-tiered' justice system[229] where those who cannot afford 'real' lawyers are reduced to making do with automated options.

VI   CONCLUSION

Some commentators have claimed, ambitiously, that 'most' disputes can be solved by artificial intelligence and that family lawyers are not immune from the impact of AI.[230] In contrast, Semple, as noted above, suggests that 'personal plight lawyers' will continue to be needed and sought out, even in the face of increasing automation of legal services, due to the importance for individuals of connecting with a human lawyer when confronting family law or other personal matters.[231]

Family lawyers are frequently gatekeepers to the family law system and their influence on clients is substantial.[232] Yet, family law also involves emotional work on the part of the lawyer as clients usually seek, and require, more than 'pure' or mechanistic legal advice. The difficulties that clients may have – as Gowder's comment[233] quoted in the previous Part illustrates – tend to be vastly more substantial than needing to know the steps of a legal process, though clearly this is also important. Some argue that this limits opportunities for automation in family law,[234] but the opposite is also claimed. One former family law judge suggests that the majority of matters brought to United States family courts are 'non-legal' disputes over parenting,[235] where people are more in need of sensible advice about managing time and communicating (which apps may be able to provide) than legal counsel.[236] It is these non-legal elements, however, which are important for 'problem-solving' lawyers, as this necessarily involves aspects which are relational and contextual. Carrie Menkel-Meadow has summarised the steps which lawyers need to consider when advising clients, which include the client's goals, 'underlying needs or interests', and what is important to them and requires resolution. Menkel-Meadow suggests that lawyers must consider 'the legal, social, economic, political, psychological, moral, ethical and organizational issues, benefits, and risks implicated in the matter'.[237] This holistic picture of a lawyer's task demonstrates the

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[228]   See National Research Council, *Complex Operational Decision Making in Networked Systems of Humans and Machines: A Multidisciplinary Approach* (National Academies Press, 2014).

[229]   Remus and Levy (n 2) 551.

[230]   Ben-Ari et al (n 220).

[231]   Semple, 'Personal Plight Legal Practice' (n 14).

[232]   Patrick Parkinson, Atlanta Webster and Judy Cashmore, 'Lawyers' Interviews with Clients about Family Violence' (2010) 33(3) *University of New South Wales Law Journal* 929.

[233]   Gowder (n 209).

[234]   Semple, 'Personal Plight Legal Practice' (n 14); Schoonmaker (n 88).

[235]   Lydia Dishman, 'This App Helps Divorced Parents Stop Fighting Over Custody and Save Money', *Fast Company* (Web Page, 17 January 2019) <https://www.fastcompany.com/90290963/this-app-helps-divorced-parents-stop-fighting-over-custody-and-save-money>.

[236]   Adieu is one example of a startup using artificial intelligence to help humans resolve conflict, starting with separation and divorce: *Adieu* (Web Page) <https://www.adieu.ai/>.

[237]   Carrie Menkel-Meadow, 'When Winning isn't Everything: The Lawyer as Problem Solver' (2000) 28(4) *Hofstra Law Review* 905, 909–10.

importance of situating the client and the problem in order to discern the specific legal questions involved; and considering the ramifications of any action in a broad way. Yet, unbundling has been used in family law matters for some time, demonstrating that a disaggregation of tasks is possible.[238]

In terms of AI's impact on the profession of law, Remus and Levy predict that the least impact will be felt on 'unstructured' areas of practice and those where personal interaction is required.[239] In a good example for family law, they explain 'legal prediction software programs address only courts and case law, but lawyers must routinely predict many other things, such as how an opponent will react to a settlement offer'.[240] In family law, lawyers must also have regard to the best interests of the child.

AI innovations in family law can thus far only supplement the work of lawyers. Yet there are undoubtedly potential benefits, such as reducing the cost to consumers and increasing access to justice, in some circumstances. Both family lawyers and litigants may benefit from such increased efficiencies. Professor Rebecca Aviel has discussed the importance of differentiated case management in family law, which she describes as 'a multistream system that endeavors to tailor the level of procedural intricacy to the degree of conflict and complexity presented by their particular circumstances'.[241] Aviel refers to the value of triaging or 'sorting' to accord appropriate priority to family law matters, using intake procedures, and also leveraging metrics to gain a more accurate picture of how case management is working. In other words, she describes processes at which AI is likely to excel. Lawyers may use AI technology themselves to increase the efficiency of what they do, clients may already have made use of technology themselves, or lawyers may wish to refer their clients to technological assistance. It will be important, though, that family lawyers have a clear understanding of the limitations and pitfalls of automated systems as well as their potential benefits and uses. This is particularly so in relation to the use of automation by courts and governments in pursuit of efficiency. Especially in the case of vulnerable clients and children, self-help automated options may be useful tools, but will not be appropriate substitutes for professional family lawyers.

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[238]   Semple, 'A Third Revolution' (n 159) 142–3.
[239]   Remus and Levy (n 2).
[240]   Ibid 526.
[241]   Rebecca Aviel, 'Family Law and the New Access to Justice' (2018) 86(5) *Fordham Law Review* 2279, 2282.

MEETING THE ACCESS TO CIVIL JUSTICE CHALLENGE: DIGITAL INCLUSION, ALGORITHMIC JUSTICE, AND HUMAN-CENTRED DESIGN

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Access to justice is crucial for a well-ordered society and a functioning economic system. This article focuses on what technology offers as a 'fourth wave' in access to justice, namely a unique range of mechanisms to help meet the extensive legal need in Australia. The article sets out a number of case studies to illustrate the scope of technological change in civil justice, ranging from specialist delivery of legal information to automation platforms. Evident amongst the possibilities offered by technology are also concerns and challenges for ensuring that access to justice is appropriately realised. This paper explores two of the most significant challenges — digital inclusion and algorithmic justice. Two very different potential solutions are then discussed — Black Box Tinkering and human-centred design, referred to contextually as Legal Design.

I   INTRODUCTION

Access to justice is a foundational pillar of our society; a promise that all who need the assistance of the law should be able to access our courts and other institutions of justice. As Genn observes, the existence of justice institutions is a public good, crucial for a well-ordered society and for a functioning economic system.[1] Cappelleti and Garth set out two requirements for access to justice — first, that the system must be accessible, with access not contingent on financial means or expertise. Secondly, that any system delivering access to justice must ensure that results 'are individually and socially just'.[2] Further, they note that the concept of access to justice has changed substantially over time, with the mechanisms by which we can 'make rights effective' developing along with successive reforms to the civil justice system. By virtually any measure, the Australian civil justice system has struggled to provide accessibility, with cost and complexity being the two primary obstacles to achieving access to justice in the civil sphere.

There is great promise in the potential for technology to help make rights effective for the millions of individuals with civil justice problems. Susskind argues that technology will greatly accelerate changes in legal practice, resulting in a commoditised,

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1   Hazel Genn, 'What Is Civil Justice For? Reform, ADR, and Access to Justice' (2012) 24(1) *Yale Journal of Law & the Humanities* 397, 398.
2   Mauro Cappelletti and Bryant Garth, 'Access to Justice: The Newest Wave in the Worldwide Movement to Make Rights Effective' (1978) 27(2) *Buffalo Law Review* 181, 182 ('The Newest Wave').

segmented and unbundled approach to the delivery of legal services.[3] While some lawyers lament the impact this will have on their traditional monopoly, others, especially younger professionals, embrace the disruptive possibilities that technology offers to   make legal knowledge, processes and institutions available for all who need them — and that

> redesigned civil justice processes should be more than an abstract topic for discussion; the collective knowledge and tools to make it happen are available today. Our current access to justice crisis serves as a call to reimagine and redesign public justice processes for civil disputes, centred on the needs of the public.[4]

However, focusing on access cannot come at the cost of individual and systemic justice. There is an increasing body of literature that identifies the risks and challenges of safely, ethically, and effectively using 'big data', particularly in the criminal sphere,[5] but also in the civil law. In this article we approach these questions as relative novices in the field of technology, but with a concern for the systemic possibilities and concerns of technology in ensuring access to civil justice.

Part 2 of this article sets out the context of civil justice need in Australia, before focusing in Part 3 on how successive 'waves' of access to justice have offered innovation to address issues of access, efficiency and cost. Technology offers what might be termed a 'fourth wave' in access to justice. Lawyers have been quick to identify that it offers enormous potential for civil cases, which are often (although not always) relatively high volume, low value disputes. In Part 4, we draw together current perspectives on this fourth wave as a method for delivering access to justice, highlighting examples of technological innovation with the potential to greatly improve the user experience of civil justice.

In Part 5 we identify two emerging challenges to technological solutions that are very important to consider when it comes to effective solutions to the access to justice. The first relates to digital inclusivity, and the challenge of addressing the digital divide amongst users. The second is Algorithmic Bias and the need for algorithmic justice — a concept that recognises the potential concerns about the design of artificial intelligence ('AI') and other algorithm-based justice innovations and recognising the potential for unintended negative impacts on human rights. We then explore two very different potential solutions to ameliorate these concerns. First, Black Box Tinkering — a method that offers opportunity for greater transparency in developing algorithms. This solution is focused on examining solutions that have already been created. Secondly, human-centred design, or more contextually specific, Legal Design thinking — a concept that focusses on embedding user-driven insights into how technological solutions are created from the outset. Here, we advocate for the use of Legal Design thinking methodologies to ensure technological solutions are designed from the outset to meet the needs of end users of legal technology, and not just the needs as they are perceived by system experts such as lawyers and policymakers.

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3   Richard Susskind, *The End of Lawyers? Rethinking the Nature of Legal Services* (Oxford University Press, 2010) ch 2.

4   Shannon Salter and Darin Thompson, 'Public-Centred Civil Justice Redesign: A Case Study of the British Columbia Civil Resolution Tribunal' [2017] (3) *McGill Journal of Dispute Resolution* 113, 136.

5   Lyria Bennett Moses and Janet Chan, 'Algorithmic Prediction in Policing: Assumptions, Evaluation and Accountability' (2018) 28(7) *Policing & Society* 806, 811–2.

II   CIVIL JUSTICE NEED IN AUSTRALIA

As Sandefur has noted, the idea of a 'civil justice problem' is not how a typical member of society is likely to conceptualise the problem that they are having with their former or current spouse, their bank, their phone company, their employer, or the local council. Sandefur observes, 'people often describe these situations using terms that suggest that they may not see them as actionable, in the sense of being something one would try to do something about or change'.[6] The landmark Australian study of legal need, undertaken by the Law and Justice Foundation of New South Wales ('the Legal Need Study'), nonetheless clearly depicts the ubiquity of civil disputes and their negative impact on the lives of ordinary people.[7] Generalising from their large dataset, it should be expected that approximately 42 per cent of Australian adults have experienced a civil justice problem in the last twelve months — with large numbers of people experiencing substantial problems resulting from housing disputes, family disputes, disputes with government, or consumer disputes.[8]

Another critical finding from the Legal Need Study was the impact of social disadvantage on legal need. For example, the data showed that people living with a disability were 2.2 times as likely to experience legal problems when compared with the general population.[9] Unemployment correlated with a 1.6 times increase, and single parents were twice as likely to experience legal issues.[10] These factors also increased the severity of legal problems that were encountered:

> ... [t]hat is, when compared to their counterparts, people aged 15–64 years, people with a disability, single parents, people with post-school qualifications, people who had been unemployed, people who had lived in disadvantaged housing and people whose main language was English had significantly higher odds both of experiencing legal problems overall and of experiencing substantial legal problems.[11]

At the same time, those most likely to experience legal problems are also unlikely to have the means to pay for legal advice. The 2014 Productivity Commission Inquiry Report on *Access to Justice Arrangements* found the cost of legal services prevented effective access for the vast majority of Australians.[12] Chief Justice Wayne Martin, in his address to the Community Legal Centres Association of Western Australia, explained:

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6   Rebecca L Sandefur, 'Bridging the Gap: Rethinking Outreach for Greater Access to Justice' (2015) 37(4) *University of Arkansas at Little Rock Law Review* 721, 724.

7   Christine Coumarelos et al, *Legal Australia-Wide Survey: Legal Need in Australia* (Report No 7, 2012), cited in New South Wales Department of Justice, 'Civil Justice Action Plan: Improving Access to Justice for Everyday Problems' (December 2018) 2. <https://www.justice.nsw.gov.au/lsb/Documents/LSB/civil-justice-action-plan.pdf>.

8   Christine Coumarelos et al, *Legal Australia-Wide Survey: Legal Need in Australia* (Report No 7, 2012) (*Legal Need Study*).

9   Ibid 68.

10   Ibid.

11   Ibid 69.

12   Australian Productivity Commission, *Access to Justice Arrangements* (Inquiry Report No 72, 2014) 6.

> The hard reality is that the cost of legal representation is beyond the reach of many, probably most ordinary Australians... In practice access [to the legal system] is limited to substantial business enterprises, the very wealthy, and those who are provided with some form of assistance.[13]

This quote indirectly recognises a second group that is often overlooked in the context of access to justice, which is small and medium sized enterprises ('SMEs'). A 2018 study by the Australian Small Business and Family Enterprise Ombudsman adopted a different methodology to that of the Legal Need Study, asking SMEs about their experience with 'business disagreements'.[14] They found that while the surveyed SMEs were willing to consult lawyers, they seldom proceeded to more formal dispute resolution options due to the costs — not just financial, but also time costs and the impact on their health and wellbeing.[15] Where SMEs did pursue formal dispute resolution, the reported average cost was $130,000 per dispute,[16] an amount that would cause financial strain to many small businesses.

Other studies on legal need have focused on information provision. For example, a study funded by the Australasian Institute of Judicial Administration focusing upon information provision in family law disputes found that people involved in parenting disputes 'struggled to negotiate the complex legal information environment, including identifying and reconciling different sources of information'.[17] Participants in that study also reported that even if they obtained formal legal advice, they did not rely on it, did not feel it was accessible, and overall formal advice was ranked fairly evenly in the participants' minds with non-personalised but more accessible advice found online.[18] However, participants greatly favoured personalised interactions over online sources, but again ranked formal sources such as advice lines similarly with the utility of speaking to friends and colleagues.[19]

III   RESPONDING TO CIVIL JUSTICE NEEDS — FOUR WAVES OF ACCESS TO JUSTICE

In early 2019 the New South Wales Government established an *Access to Justice Innovation Fund*, seeking innovative solutions from not only legal professionals but 'community groups, creative and digital agencies, and social entrepreneurs', to access to justice problems.[20] Similarly, the Victorian Legal Services Grants Program, which traditionally supported a range of programs designed to advance access to justice, focused its 2019 round on innovation and technology, funding technological solutions

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13   Chief Justice Wayne Martin, 'Creating a Just Future by Improving Access to Justice' (Address, Community Legal Centres Association Western Australia, 24 October 2012) 3.
14   Australian Small Business and Family Enterprise Ombudsman, *Access to Justice: Where do Small Businesses Go?* (Report, 2018) 21.
15   Ibid at 15.
16   Ibid at 17.
17   Jonathan Crowe et al, '"I'll just Google that!" Online Searches and the Post-Separation Family Law Information Experience' (2019) 44 *Alternative Law Journal* (advance).
18   Jonathan Crowe et al, 'Bargaining in the Shadow of the Folk Law: Expanding the Concept of the Shadow of the Law in Family Dispute Resolution' (2018) 40(3) *Sydney Law Review* 319, 330.
19   Ibid 331.
20   'A Civil Justice Action Plan for New South Wales: Factsheet — December 2018', *New South Wales Department of Justice* (Web Page, December 2018) 1 <https://www.justice.nsw.gov.au/lsb/Documents/LSB/civil-justice-strategy-fact-sheet.pdf>.

to access to justice problems impacting Victorian communities.[21] However, even before the advent of technological solutions, governments have long sought mechanisms to overcome cost and other access barriers.

In his magnum opus on access to justice, Cappelletti describes the evolution of these mechanisms as being like waves in the access to justice movement.[22] The first wave, emerging in the 1960s, was the creation of legal aid schemes to allow litigants of limited financial means to access legal services. As Justice Ronald Sackville explains; in Australia it was not until mid-1970s that the Whitlam Government established the Australian Legal Aid Office, and established legal aid as a government concern, albeit one that was subsequently taken over by state governments.[23] The limitations of legal aid, however, are well documented — including an inevitable lack of adequate resources to provide access for all. At the time of the 2013 Productivity Commission Report, only 8 per cent of households met the income and asset test for legal aid, 'leaving the majority of low and middle-income earners with limited capacity for managing large and unexpected legal costs'.[24]

Cappelletti's second wave reflects the paradox of many legal rights — that they are relatively low value, so as to make individual enforcement unlikely due to an inefficient use of resources. But at a societal level these disputes are significant and impact large numbers of people. This is known as the problem of 'diffuse interests':

> The basic problem they present — the reason for their diffuseness — is that either no one has a right to remedy the infringement of a collective interest or the stake of any one individual in remedying the infringement is too small to induce him or her to seek enforcement action.[25]

Consumer disputes represent a classic example of diffuse interests. As the Legal Need Study identified, they are routine transactions for most people, and are the most likely category of legal issue that people are likely to encounter, with over 20 per cent of the surveyed participants indicating that they had experienced a consumer issue in the last year.[26] Further, the study notes, consumer disputes tend to more disproportionately impact those already experiencing socioeconomic disadvantage: '[A]ge, disability status and education were the strongest significant predictors of experiencing consumer problems, and main language, employment status, family status, main income and gender were also significant'.[27]

The primary response of the justice system to the diffusion problem is to establish procedural rules to assist with procedural barriers to representing diffuse interests, such as modifying the civil procedure rules of standing, and facilitating the pursuit of rights that belong to a group rather than an individual.   In Australia, these have included mechanisms for class actions, the use of ombudsmen, as well as allowing

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[21]   'Victorian Legal Services Board Grants Program: 2019 Funding Round Open', *Victorian Legal Services Board* (Web Page, 6 December 2018) <http://lsbc.vic.gov.au/?p=6259>.

[22]   Mauro Cappelletti, 'Alternative Dispute Resolution Processes within the Framework of the World-Wide Access-to-Justice Movement' (1993) 56(3) *Modern Law Review* 282, 283.

[23]   Justice Ronald Sackville, 'Some Thoughts on Access to Justice' (2004) 2(1) *New Zealand Journal of Public and International Law* 85, 91.

[24]   Australian Productivity Commission 2014 (n 12).

[25]   Cappelletti and Garth, 'The Newest Movement' (n 2) 194.

[26]   *Legal Need Study* (n 8) 59.

[27]   Ibid 73.

public interest matters to be pursued under the fiat of the Attorney-General as 'guardian of the public interest' in a process known as a relator action.[28] The advantages but also the many shortcomings of both of these instruments are now well documented — in the case of a relator action, they are seldom used, and the giving of a fiat is a non-reviewable exercise of the Attorney-General's discretion. Mantziaris writes:

> Relator actions are idiosyncratic ... proceedings are conducted by counsel for the relator upon the undertaking that the relator will indemnify the Attorney-General against any cost order and that it will observe any limitation upon the submissions to be made. In law, the relator proceeding is treated as an action conducted and controlled by the Attorney-General rather than the relator.[29]

Class actions in Australia have been the subject of an Australian Law Reform Commission inquiry in 2018.[30] The Final Report was critical of many aspects of class actions as they have evolved, including the involvement of litigation funders changing the dynamic of a class action and impacting the essential features of class action litigation.[31]

Ombudsmen should be considered the triumph of the 'second wave' and the unsung heroes of the Australian civil justice system. The first ombudsman office was established in Western Australia in 1971, and by the end of the millennium had spread to 9 different ombudsmen around the country, at both state and federal level.[32] Twenty years on there are well over 20 ombudsmen, both publicly-funded and industry-funded, all with different remits and powers.[33] While the operation of each role is subject to its own policies and procedures, typically ombudsmen have investigative and reporting powers, and a civil dispute resolution mandate that will allow them to assist consumers with grievances against government departments or businesses under their jurisdiction. Resolution suggestions made by an ombudsman will typically be non-binding on the consumer but depending on the scheme may be binding rather than advisory for the business. Ombudsman schemes are a relatively low-cost method of offering access to justice for a high volume of consumer disputes — for example, the Telecommunications Ombudsman was established in 1993 as an independent organisation funded though compulsory contributions from telecommunications businesses.[34] In 2017-2018, the Telecommunications Ombudsman processed over 160,000 complaints, primarily from residential customers, with a median complaint value of $429, and commenced over 17,000 conciliations. Over two thirds of resolutions involved a financial outcome of some kind for the consumer.[35]

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[28]   Christos Mantziaris, 'The Federal Division of Public Interest Suits by an Attorney-General' (2004) 25(2) *Adelaide Law Review* 211.

[29]   Ibid 218.

[30]   Australian Law Reform Commission, *Integrity, Fairness and Efficiency — An Inquiry into Class Action Proceedings and Third-Party Litigation Funders* (Report No 134, 2018).

[31]   Ibid 153-177.

[32]   Dennis Pearce, 'Ombudsmen in Australia' in Rob Gregory and Philip Gidings (eds) *Righting Wrongs: The Ombudsman in Six Continents* (IOS Press, 2000) 93, 93.

[33]   See, eg, 'Industry Ombudsmen & Dispute Resolution', *Australian Competition and Consumer Commission* (Web Page) <https://www.accc.gov.au/contact-us/other-helpful-agencies/industry-ombudsmen-dispute-resolution>.

[34]   'About Us', *Telecommunications Industry Ombudsman* (Web Page) <https://www.tio.com.au/about-us>.

[35]   Telecommunications Industry Ombudsman, *Annual Report 2017-2018* (Report, 2018) 14.

The 'Third Wave', at the time of Cappelletti and Garth's writing, was emerging as new ways to 'relate and adapt the civil process to the type of dispute' and the recognition that 'traditional contentious litigation in court … might not be the best possible way to provide effective vindication of rights'.[36] In other words this third wave represented a shift of emphasis, acknowledging that courts should not necessarily be the dominant institutions for the resolution of civil disputes. Cappelletti and Garth emphasise the need for civil justice processes to be proportionate to what is required in an individual dispute; a concept that is now recognised in the litigation context in most Australian civil procedure rules as the 'overriding purpose'.

This third wave has therefore seen not only an expansion of tribunals directed towards simplifying processes to reduce costs and the need for legal representation but, importantly, legislated support for mediation or conciliation as a precondition to adjudication of the issues. The *Consumer, Trader and Tenancy Tribunal Act 2001* (NSW) had an object of enabling proceedings to be determined in an 'informal, expeditious and inexpensive manner'.[37] Its successor, the New South Wales Civil and Administrative Tribunal, sought to 'resolve the real issues in proceedings justly, quickly, cheaply'.[38] Case management within the courts was also subject to the same imperative. Part 6 of the *Civil Procedure Act 2005* (NSW) included provisions granting the courts broad discretionary powers to 'facilitate the just, quick and cheap resolution of the real issues in the proceedings'.[39] The Act also directs courts to consider the proportional relationship between the 'importance and complexity of the subject-matter in dispute' with the costs of the proceedings.[40] The Uniform Civil Procedure Rules also contain extensive powers for courts to refer parties to external dispute resolution providers where it is considered appropriate. By doing so, the courts help to facilitate access to justice by diverting away cases not needing judicial attention and freeing court time for those cases where litigation is of real individual or systemic value.

Since the time of Cappelletti and Garth's original analysis, much has changed. This is due in large part to post-1970, third wave attempts to improve access to civil justice through the establishment of alternative dispute mechanisms that effectively sparked a movement towards use of technology. While Susskind focusses on the prospects for legal careers and the future nature of legal practice, his observations are equally relevant to the future of access to justice. We argue that the same factors identified by Susskind as precipitating an 'evolve or perish' imperative also represent a fourth wave of access to justice. Specifically, Susskind identifies that disruptive legal technologies can replace 'mundane legal work', that legal services will become unbundled and commoditised, and that 'new ways of sourcing will emerge and these will often be combined in the conduct of individual pieces of legal work' known as 'multi-sourcing'.[41] He also points to legal consumers sharing and recycling legal work, and only sourcing bespoke advice when it is absolutely required.[42] The flipside for access to justice is this — a diverse ecology of technologically-driven, primarily online service

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36   Cappelletti and Garth, 'The Newest Movement' (n 2) 225.
37   *Consumer, Trader and Tenancy Tribunal Act 2001* (NSW) s 3, as repealed by *Civil and Administrative Tribunal Act 2013* (NSW) s 3.
38   *Civil and Administrative Tribunal Act 2013* (NSW) ss 3, 36.
39   *Civil Procedure Act 2005* (NSW) s 56.
40   Ibid s 60.
41   Susskind (n 3) 270–3.
42   Ibid.

providers, both public and private, delivering legal services that no longer rely on costly individual human intervention. Some current manifestations of this fourth wave are set out in Part IV below.

IV   RIDING THE FOURTH WAVE — TECHNOLOGICAL CHANGE IN CIVIL JUSTICE

In this section we set out a number of case studies to illustrate the scope of the fourth wave of access to justice. The field of legal technology has changed rapidly — for example, in a cutting edge symposium published in the *Harvard Journal of Law and Technology* in 2012, technological advances of that time included court and legal aid websites (mostly text albeit with data management systems and standard classification technology behind them),[43] mobile and search engine optimisation to make material more accessible, and an increasing focus on multimedia content. Other innovations at that time included remote assistance via live online chat or forums, and the emergence of interactive, question-based assembly of court documents through technology such as A2J Author and self-validating smart forms.[44] In a very short space of time, there has been a veritable explosion of new companies, initiatives and technologies, making a comprehensive analysis impossible. Instead, our emphasis is on a survey of innovations that have the potential to greatly impact access to justice in civil disputes.

A   *Technological Advancements in Conventional Service Delivery*

This category of fourth wave initiative focusses on existing public service providers such as courts offering new ways of delivering conventional services. For example, in many jurisdictions e-Courts have become commonplace, as have electronic filing and online call-overs. Sourdin categorises this as 'supportive justice technology'.[45] Other types of technology include audio-visual links, which help minimise attendance costs for some types of proceedings, and as a result in New South Wales over 70 per cent of court appearances now take place by video link.[46] Electronic discovery and electronic data rooms have become commonplace in complex litigation.[47]

B   *Technologies to Better Distribute Conventional Legal Information*

Perhaps the greatest promise of technology is its potential to democratise law by narrowing the gap between experts and non-experts and facilitating self-help. There is nothing new about the idea of websites and self-help centres providing user-friendly, free or low cost online tools like court forms, videos and legal information. In America, state-wide websites like LawHelp by Pro Bono Net were developed to specifically to

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[43]   Jane Ribadeneyra, 'Web-Based Legal Services Delivery Capabilities' (2012) 26(1) *Harvard Journal of Law & Technology* 246, 248.

[44]   Ibid 251.

[45]   Tania Sourdin, 'Justice in the Age of Technology: "The Rise of Machines is Upon Us"' [2017] (139) *Precedent* 4, 4.

[46]   '$19.3 million technology boost for NSW Courts', *New South Wales Department of Justice* (Web Page, 26 June 2017) <https://www.justice.nsw.gov.au/Pages/media-news/media-releases/2017/technology-boost-for-nsw-courts.aspx>.

[47]   See, eg, 'Litigation using Electronic Discovery', *Federal Court of Australia* (Web Page) <http://www.fedcourt.gov.au/law-and-practice/practice-documents/practice-notes/gpn-tech/electronic-discovery>.

address access to justice concerns in the wake of shrinking legal aid budgets.[48] In Australia, a free domestic violence website, Ask LOIS, was launched by the Women's Legal Service NSW in 2012.[49] Ask LOIS provides free legal online resources and information for issues relating to family law, divorce, and domestic and family violence. Some of the free educational tools include free online monthly workshops, a resource library, case studies and a domestic violence service directory.[50]

Legal advice can also be provided in 'kit' form, where technology is largely used to disseminate free advice to a large audience — as opposed to the advice being delivered in a technological form per se. For example, a recent collaboration between The Law School at the University of Newcastle (UON), University of Technology Sydney (UTS) and the NSW State Government developed and launched an online first-in-class support kit to aid lawyers in identifying and combating elder abuse.[51] This kit was distributed in soft copy (.pdf format) as well as paper copy.

There is also a tendency to convert legal information into a standalone app. While there is a great deal of variation in the content of different apps, they all can be accessed directly from a user's mobile phone or other device, avoiding the need to use a search engine or remember the name of the service. For example, Penda is a free app developed by the Women's Legal Service Queensland (WLSQ) in collaboration with the Financial Rights Legal Centre with Funding from Financial Literacy Australia, to support victims of domestic family violence by providing free 'financial, person safety and legal information' along with nationwide referrals.[52] Penda was launched with much fanfare at the Parliament House in 2017, with hopes that it will help break the cycle of domestic and family violence.[53]

C   *Unbundled Generators of Legal Documentation*

The unbundled service model, which is a focus of Susskind's work,[54] disaggregates the steps in the lawyer-client relationship, allowing the possibility of clients completing part of the required work themselves, and greatly reducing the cost of pursuing their civil matter.[55] There is wide variation on how unbundled services are delivered and enabled through technology. For example, it can allow potential litigants to seek general strategic advice, from a paid or pro bono service, but undertake drafting work themselves. Legal document generators such as LawHelp and A2J accelerate the

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48   Ribadeneyra (n 43).

49   'Ask LOIS', *Women's Legal Service NSW* (Web Page)
        <https://www.wlsnsw.org.au/training/ask-lois-website/>.

50   Ibid.

51   Ben Murphy, 'Legal toolkit launches to combat elder abuse' (28 March 2019) *Newcastle Weekly*
        20; 'First-of-its-kind resource aids legal practitioners in identifying elder abuse', *The National
        Tribune* (Web Page, 21 March 2019) <https://www.nationaltribune.com.au/first-of-its-kind-
        resource-aids-legal-practitioners-in-identifying-elder-abuse/>; 'First-of-its-kind resource aids
        legal practitioners in identifying elder abuse', *University of Newcastle: Newsroom* (Web Page,
        20 March 2019) <https://www.newcastle.edu.au/newsroom/featured-news/first-of-its-kind-
        resource-aids-legal-practitioners-in-identifying-elder-abuse>.

52   Women's Legal Services QLD, 'Penda App Launched at Parliament House, *Penda* (Web Page, 12
        September 2017) <https://penda-app.com/2017/09/12/penda-app-now-available-for-
        download/>.

53   Ibid.

54   Susskind (n 3).

55   Raymond H Brescia et al, 'Embracing Disruption: How Technological Change in the Delivery of
        Legal Services Can Improve Access to Justice' (2014–15) 78(2) *Albany Law Review* 553, 564.

production of legal documents and reduce the need for a lawyer to develop a full understanding of the client's legal issues. The client can create their own legal document simply by filling in an online form. In Australia, the Consumer Action Law Centre assists potential litigants by using a guided form to generate a letter of complaint to the litigant's financial services provider. The guided form also generates a letter of demand for a refund to target 'sham' insurance companies that offer ineffective extended warranties.[56]

Technology often provides a tangible financial benefit for those seeking civil justice, particularly when recovery amounts outweigh legal fees. It can also lead to the client having the best of both worlds by remaining in control of their own legal matter at the same time as obtaining small discrete segments of legal representation when it is most needed. For example, as early as 2009, the website LawHelp Interactive 'generated more than 145,000 forms' for pro bono solicitors, legal aid advocates and self-represented individuals in the United States.[57] Legal services are also being segmented and 'unbundled' in technological offerings from specialists to law firms and in-house lawyers. The traditional focus has been on legal precedents and information, but new start-ups like the UK startup FromCounsel_, are focusing on using a greater level of AI to supplement expert legal counsel advice.[58]

In Australia, legal services provider Plexus offers a subscription-based service called Promotion Wizard that allows companies running promotions to generate customised terms and conditions via an interactive module. In addition to generating terms and conditions, the service also generates documentation to apply for the correct state -or territory- based permits.[59] Plexus also has a partnership with the Victorian Department of Justice, creating rule based expert systems to help community lawyers process youth justice cases.[60] These services are based on branched decision making using automation software.[61] This is generally seen as a precursor to genuine machine learning that many consider the foundation for AI.

In each of these examples, the end user is able to generate legal documents without requiring detailed knowledge of the relevant laws or needing to clearly understand how their individual situation correlates with the law. These technologies are reliant to varying degrees on the user understanding and correctly interpreting their situation, and inputting it correctly, meaning that there are threshold barriers for potential litigants to make use of the technology. While these services can be greatly empowering to some people, others who are on the wrong side of the 'digital divide' (discussed below) will struggle to benefit.

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56   See 'Resources and Toolkits', *Consumer Action Law Centre* (Web Page) <https://consumeraction.org.au/resources-and-toolkits/>.

57   'About Us', *LawHelp* (Web Page) <https://www.lawhelp.org/about-us>.

58   'Product', *FromCounsel_* (Web Page) <https://www.fromcounsel.com/product.html>.

59   'Promotion Wizard', *Plexus* (Web Page) <https://www.plxs.com.au/promotion-wizard/>.

60   'Plexus Gateway', *Plexus Gateway* (Web Page) <https://legalgateway.co/general/plexus-impact>.

61   Andrew Mellett, 'Legal A.I.: High on Artificial, Low on Intelligence', *Plexus* (Web Page, 17 November 2017) <https://www.plxs.com.au/legal-a-i-high-on-artificial-low-on-intelligence/>.

D   *Chat Bots, 'Big Data', and Artificial Intelligence-Driven Technology*

The advent of smart phones has also opened other opportunities for mobile apps to increase access to justice using AI.[62] AI is a broad category that can include natural language processing to answer questions (as in the technology, or Alexa, or Siri), several variants of machine learning, through to robotics. One of the most sophisticated examples of usable AI today is Google Duplex, an intelligent voice activated assistant that can make phone calls and interact with callers at the other end.[63] In the USA, the chatbot AI-powered legal counsel app, DoNotPay stands as the benchmark civil action legal app used to 'sue anyone by pressing a button'.[64] Initially it was the brainchild of 18 year old Joshua Browder who created the app to tackle parking tickets.[65] Today it claims to offer nationwide legal advice in the United States aimed at protecting individual rights against a range of corporate and state violations such as unfair pricing practices, breaches of data and privacy laws, and the issuance of unfair bank fees.[66]

The legal apps field is expected to develop rapidly. Examples include the JustFix.nyc app, which connects tenants with legal and support services when facing difficulties dealing with neglectful landlords,[67] and the RightsNOW app, which is designed to provide real-time legal information by a verbal answer to a spoken question.[68] In much the same way, the Google search function is being transformed by AI through automatic analysis of web content and machine learning.[69] AI is expected to play a growing role in these legal apps, although at the present time, much of what is touted as AI is not what consumers might expect, and some is more aptly described as marketing hype.

The use of technology by government agencies, courts and tribunals can potentially reduce the cost of providing existing labour-intensive services, and allow savings to be diverted to provision of additional services to fill the access to justice gap. This increase in access to justice through technological efficiencies can be expected to grow significantly. However, it will not be without controversy, especially to the extent governments show increased reliance on use of algorithms, 'big data' and AI to assist in decision making.[70] This will be discussed further below.

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[62]   Lois R Lupica, Tobias A Franklin and Sage M Friedman, 'The Apps for Justice Project: Employing Design Thinking to Narrow the Access to Justice Gap' (2017) 44(5) *Fordham Urban Law Journal* 1363, 1385.

[63]   Jeffrey Grubb, 'Google Duplex: A.I. Assistant Calls Local Businesses To Make Appointments' (YouTube, 8 May 2018) <https://www.youtube.com/watch?v=D5VN56jQMWM>.

[64]   Jon Porter, 'Robot lawyer DoNotPay now lets you "sue anyone" via an app', *The Verge* (Web Page, 10 October 2018) <https://www.theverge.com/2018/10/10/17959874/donotpay-do-not-pay-robot-lawyer-ios-app-joshua-browder>.

[65]   Ibid.

[66]   Ibid.

[67]   See 'About Us', *justfix.nyc* (Web Page) <https://www.justfix.nyc/our-mission>.

[68]   See 'Our Product', *RightsNOW* (Web Page) <https://www.rightsnowapp.com/our-product>.

[69]   Cade Metz, 'AI is transforming Google Search. The rest of the web is next', *Wired* (News Article, 4 February 2016) <https://www.wired.com/2016/02/ai-is-changing-the-technology-behind-google-searches/>.

[70]   Julia Dressel and Hany Farid, 'The Accuracy, Fairness, and Limits of Predicting Recidivism' (2018) 4(1) *Science Advances* 1.

E   *Automation Platforms*

A final category of technological innovation is that of automation platforms, which provide services to institutions that advance access to justice, but typically do not engage in the provision of any legal services. Drupal is an open source content management platform that is used by a range of for-profit institutions. Drupal has led to the creation of DLaw, an open source code but subscription-based library for the creation of public information websites such as Legal Aid websites. The service increases the level of appeal of websites and enhances their useability for a range of users without the need for technical programming expertise, meaning that legal information providers with even a basic level of knowledge can increase access to legal information by providing mobile-friendly and disability-accessible information.[71]

An additional level of sophistication is offered by the Australian innovation Josef, an automation platform that is available to both law firms and pro-bono service providers and provides the tool for non-technologically minded lawyers to create chatbots. As the founders of Josef explain, 'the builder allows any legal organisation or community legal centre to build their own chatbot based on their area of expertise and then once they've built they can launch it themselves without the need for a developer or any coding experience'.[72] Health Complaints Assist is one example of a platform built using this technology. It was created and funded by a Melbourne-based health law firm and could be considered as a part pro-bono and part marketing exercise.[73]

V   CORE CONSIDERATIONS FOR BETTER ACCESS TO JUSTICE

The previous parts of this article have set out the possibilities that technology can offer to advance access to justice. In this Part we offer a critical examination of three important and distinct challenges that technology presents for the genuine advancement of access to justice. As indicated in the introduction above, it is widely accepted that access to justice encompasses both procedural and substantive justice — so it is not enough to offer more people the chance to seek redress in the civil justice system if the results do not maintain a satisfactory level of integrity and accuracy. Conversely, accurate results from a technical perspective cannot be achieved if those results are achieved in an untimely way, at great expense, or in a way that is not accepted by society or consistent with human rights frameworks.

With these goals in mind, we identify two key challenges that must be met in order to deliver access to justice imperatives — digital inclusivity and algorithmic justice. We then discuss two technological solutions that assist in facilitating this — black box tinkering and inclusive human-centred design. We set out each of these in turn below.

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71   'Websites', *OpenAdvocate* (Web Page) <https://openadvocate.org/websites/>.
72   George Nott, 'Legal chatbot builder Josef making justice more accessible', *Computerworld* (News Article, 7 June 2018) <https://www.computerworld.com.au/article/642083/legal-chatbot-builder-josef-making-justice-more-accessible/>.
73   See 'Reporting Healthcare Complaints', *Health Complaints Assist* (Web Page) <https://healthcomplaintsassist.com.au/>.

A   *Challenge 1: Digital Inclusivity*

Critics of legal technology often argue that proponents ignore challenges faced by users in adopting and adapting to legal tech innovations. These barriers include cost, digital exclusion, and trust. The digital divide severely impacts the impact of technological solutions in communities where they are most needed. For example, older people, people with disabilities, indigenous people, people from lower socioeconomic communities, rural and remote communities, and people for whom English is a second language, represent both groups of acute legal need but also the least capable of accessing digital services. Simply having access to a device or internet connection is also insufficient. There is a question of how more vulnerable groups have the time, language skills and even mental bandwidth to deal with complex information in a digital environment. Studies identifying the phenomenon referred to as 'mental bandwidth' define it as 'the amount of space available in one's head for processing'.[74] These studies have discovered that those living with high levels of financial stress or living in poverty show decreased ability to cognitively process additional or new information. As such, technological advancements must be those that take into consideration the sociological challenges faced by end users.

In October 2018, the Law Council of Australia was commissioned by the Australian Human Rights Commission to produce recommendations to government, community and business on aspects relating to human rights and technology.[75] In the Report titled *Human Rights and Technology*, the Law Council of Australia voiced concerns that 'unequal access to technologies can exacerbate inequalities, especially where access is affected by factors such as socio-economic status, geographical location and cultural or linguistic diversity'.[76] Perhaps the most telling comments were these:

> ...technological innovations can affect societal inequality ...A key concern identified by Justice Project stakeholders was that policymakers frequently overlook the realities of target groups' digital exclusion (and underlying language and literacy barriers), in their overreliance on online solutions at the expense of more effective and targeted strategies.[77]

Underlying this Report was the recognition that the voices of 'target groups' were being ignored. However, gathering data on key groups is problematic. For example, there is often limited information on the digital literacy of users of legal services,[78] and the diverse needs of disabled users and non-neurotypical users is still poorly featured in technological developments.

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[74] The term 'mental bandwidth' has been popularised in mainstream media and used loosely. It is, however, a technical term used in the field of psychology and sociology: see, eg, Avik Basu, Jason Duvall and Rachel Kaplan, 'Attention Restoration Theory: Exploring the Role of Soft Fascination and Mental Bandwidth' (2018) *Environment and Behaviour* (advance).

[75] Law Council of Australia, Submission to Australian Human Rights Commission, *Human Rights and Technology* (25 October 2018).

[76] Ibid 6.

[77] Ibid.

[78] See Tania Sourdin and Naomi Burstyner, 'Justice Delayed Is Justice Denied' [2014] (4) *Victoria University Law and Justice Journal* 46, 54–5; researchers have also found that in New South Wales, the court database, 'JusticeLink' did not even identify the number of self-represented litigants: Suzie Forell et al, *Data Insights in Civil Justice: NSW Supreme Court* (Report, October 2018) 13.

In response to this, research is starting to identify and track digital exclusion impacts on legal technology introductions and advances. Digital exclusion relates to a group or an individual's ability to access, use and interact with digital technology. Recognition that digital exclusion, literacy and accessibility is becoming a global concern is evidenced by the growth in global reports tracking digital exclusion — such as the Lloyds Bank UK Consumer Digital Index and the Australian Digital Inclusion Index, both of which seek to identify barriers to a user's digital availability, affordability, relevance and readiness.[79]

In 2018, the Australian Digital Inclusion Index produced a Report titled *Measuring Australia's Digital Divide: The Australian Digital Inclusion Index 2018*.[80] In that Report, it was found that whilst Australia had made some inroads over the years, more work was needed.[81] They reported that the most digitally excluded groups included (in ascending order) 'low income households (41.3), mobile-only users (42.7), people aged over 65+ (46.0), people who did not complete secondary school (47.4) and people with disability (49.2)'.[82]

There were also substantial differences between rural and urban areas, particularly for Indigenous Australians.[83] Other research has suggested that a lack of digital literacy skills can result in high levels of vulnerability within groups, including fundamental human rights concerns such as restrictions on the ability of members within these groups to vote and obtain gainful employment.[84]

Some aspects of digital inclusivity may improve over time. For example, the number of individuals with access to affordable internet continues to increase, as the price of devices and network access decreases. This allows technology to become more accessible to marginalised groups. However, care needs to be taken to ensure that these groups, already identified as being amongst the most likely to experience civil disputes significantly impacting their lives,[85] can locate, discriminate between, and apply information and advice that they require. Hough points out that online services have to be created in a variety of formats for individuals with differing technological abilities. [86]

Hough's work also articulates the spectre of 'a digital divide that institutionalizes a two-tiered system incapable of delivering appropriate justice to low-income persons'.[87] There is an argument that mainstreaming of digital resources will allow this two-tiered system to emerge even more strongly as market forces impact the legal profession.[88] As technological options expand, we can expect that the pool of lawyers

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80   See, eg, *Lloyds Bank UK Consumer Digital Index 2019* (Report, 2019).
80   Julian Thomas et al, *Measuring Australia's Digital Divide: The Australian Digital Inclusion Index 2018* (Report, 2018).
81   Ibid.
82   Ibid 6.
83   Ibid.
84   Amy Antonio, 'Democratising the Digital Divide: Civics and Citizenship Curriculum, Australian Aboriginal Communities and Social Media' (2013) 31(1) *The Social Educator* 35, 39.
85   *Legal Need Study* (n 8).
86   Bonnie Rose Hough, 'Let's Not Make It Worse: Issues to Consider in Adopting New Technology' (2012) 26(1) *Harvard Journal of Law & Technology* 256, 260.
87   Ibid 257.
88   See, eg, Mark Lloyd, 'The Digital Divide and Equal Access to Justice' (2002) 24(4) *Hastings Communications and Entertainment Law Journal* 505, 525-8.

providing face-to-face legal advice to clients will shrink due to forces of supply and demand. As the legal profession contracts, the digital divide will increase in the sense that the elite, well-connected and wealthy will retain access to human lawyers, with others relying on online information and potentially AI to meet our legal needs. [89]

B   *Challenge 2: Algorithmic Bias and the Algorithmic Justice Movement*

Algorithms provide the processes or rules to enable machine learning and AI.[90] Algorithms are often discussed in terms of their capabilities to detect online social or preference patterns, such as when viewers watch a YouTube video and similar or related videos are suggested on the sidebar.[91] Algorithms have also been used for facial recognition purposes ranging from opening an iPhone to judging a beauty contest.[92] Algorithms are often viewed as an access to justice panacea. As it relates to legal practice, algorithms power AI developments to create 'smart contracts' based on block chain technology that are described as automated contingency contracts based on '"if-then" statement'.[93] In Australia, smart contracts are a reality, having already come into use by companies like AgriDigital, who piloted the 'world's first ever sale using a pilot blockchain ledger and smart contract code'.[94]

Algorithms have also been used to automate due diligence for property and merger and acquisition work. Recently Allens' innovative award-winning Real Estate Due Diligence App (REDDA) used AI to simplify due diligence for real estate leases.[95] This was heralded by the then Allens' Chief Legal & Technology Services Officer Beth Patterson as providing '…real-time access to flagged issues, faster turnaround and greater efficiency in a large matter'.[96] Given these developments are relatively new, there is currently little case law or legislation in place. However, commentators agree that like any other legal aspect, applicable laws will guide disputes arising from the use of smart contracts and due diligence apps.[97] Concerns often arise, however, as to which parties will straddle the cost and responsibility burden when algorithmic breakdowns occur.

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[89]   Nellie Bowles, 'Human Contact Is Now a Luxury Good', *The New York Times* (online, 23 March 2009) <https://www.nytimes.com/2019/03/23/sunday-review/human-contact-luxury-screens.html>

[90]   An algorithm is defined as 'a procedure for solving a mathematical problem … in a finite number of steps that frequently involves repetition of an operation … commonly used nowadays for the set of rules a machine (and especially a computer) follows to achieve a particular goal': *Merriam-Webster* (online at 17 June 2019) 'algorithm' (def 2).

[91]   Amanda R Matos, 'Can Algorithmic Justice Save Us From the Coming Artificial Intelligence Dystopia?', *Feministing* (Web Page, 17 November 2017) <http://feministing.com/2017/11/17/can-algorithmic-justice-save-us-from-the-coming-artificial-intelligence-dystopia/>.

[92]   Sam Levin, 'A beauty contest was judged by AI and the robots didn't like dark skin', *The Guardian* (online, 9 September 2016) <https://www.theguardian.com/technology/2016/sep/08/artificial-intelligence-beauty-contest-doesnt-like-black-people>.

[93]   Ibid.

[94]   Michael Bacha, 'Smart contracts in Australia: Just how clever are they?', *PiperAlderman* (Web Publication, 16 August 2017) <https://www.piperalderman.com.au/publications/ip-technology-telecommunications/article/28836>.

[95]   Levin (n 92); see also Allens Linklaters, 'REDDA Recognised at PCA Awards' (Media Release, 14 May 2018).

[96]   Allens Linklaters, 'REDDA Recognised at PCA Awards' (Media Release, 14 May 2018).

[97]   Bacha (n 94).

Regardless of the possible costs, often bias impacts on how technology delivers justice. Algorithmic Bias refers to situations when one group or individual is unfairly favoured or discriminated over another. A great example of bias relates to the case between Vishal Vora and online retailer eBay. In 2014, the *Observer* reported on a case filed in the United Kingdom by Vishal Vora against eBay concerning the company's buyer return policy launched in 2013. Here, Vora claimed the return policy was biased against sellers, effectively encouraging increases in fraudulent claims.[98] Vora disclosed to the *Observer* that that on two occasions involving the sale of a Baby Bjorn bouncer and an iPhone, eBay had automatically refunded buyers without a proper assessment of claims, or evidence of damage.[99] In the case of the Baby Bjorn bouncer, Vora reported that he discovered evidence that the item was being used on social media despite claims otherwise by the buyer. This transpired to Vora who demanded the buyer return the item, only to have the buyer report him to the local police.[100] As a result, Vora ultimately took the buyer to court, at a cost of £70, only to be awarded £65.[101] While Vora was able to settle out of court with eBay for an undisclosed amount for a refund involving the sale of the iPhone, the case of the Baby Bjorn bouncer highlights the perils of seeking civil remedies against individuals.[102]

Algorithmic Bias not only occurs when the rules that form part of an algorithm in technology are inherently biased. It can also occur when new technology 'glitches' or fails to perform the required rules resulting in a bias, or worse, when there is a combination of both scenarios. In Australia, the 'Robodebt Scandal' involving Centrelink's automated computer system designed to detect welfare fraud, provides a possible example of the worst case scenario. In 2016, Centrelink developed and commenced use of a computer system that effectively sought to uncover welfare fraud and accidental overpayments by matching tax records to welfare payments.[103] The benefit of the system was that it removed a layer of human oversight, instead automatically generating letters of demand to welfare recipients that included explanations for any discrepancy between tax records and welfare records.[104] The efficiency of the system meant that Centrelink was able to detect and send letters in

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[98]   Anna Timms, '"Sitting duck" eBay sellers take a stand against the scammers', *The Guardian* (online, 13 January 2019) <https://www.theguardian.com/money/2019/jan/13/ebay-sellers-scams-buyer-protection>.

[99]   Ibid.

[100] Ibid.

[101] Ibid.

[102] Ibid.

[103] Shalailah Medhora, 'Over 2000 people died after receiving Centrelink robo-debt notice, figures reveal', *ABC Triple J Hack* (Web Page, 18 February 2019) <https://www.abc.net.au/triplej/programs/hack/2030-people-have-died-after-receiving-centrelink-robodebt-notice/10821272>; see also Anna Timms, 'When eBay goes wrong, who pays the price?', *The Guardian* (online, 17 February 2014) <https://www.theguardian.com/money/2014/feb/17/ebay-goes-wrong-debt-collectors>; Anna Timms, 'eBay accused of failing its sellers as fraudulent buyers manipulate the system', *The Guardian* (online, 21 May 2017) <https://www.theguardian.com/money/2017/may/21/ebay-accused-failing-sellers-buyers-manipulate-system-protection>.

[104] Shalailah Medhora, 'Over 2000 people died after receiving Centrelink robo-debt notice, figures reveal', *ABC Triple J Hack* (Web Page, 18 February 2019) <https://www.abc.net.au/triplej/programs/hack/2030-people-have-died-after-receiving-centrelink-robodebt-notice/10821272>.

respect of 20,000 discrepancies a week.[105] This far outweighed the old system where human oversight only identified some 20,000 discrepancies per year.[106]

However, there were problems both with the algorithm used and the sudden ramping up of number of discrepancies found. A Senate Committee Report found 'the system was so flawed that it was set up to fail'.[107] One of the algorithms used often falsely calculated debt as owing due to the averaging of taxable income over the year, instead of only reducing the amount of welfare payable at the times of the year the welfare recipient was earning more than the threshold amount.[108] Further, the sudden increase in debt letters resulted in millions of phone calls being unanswered as welfare recipients tried to contact Centrelink to discuss the alleged debt. Welfare recipients were therefore redirected to online resources that were not easily accessible or understandable to many people. It is therefore claimed some people paid the incorrect amount when they could properly have disputed it. Other people apparently had payments improperly stopped when they were unaware of the claim because the letter was sent to the wrong address, or when they were unable to speak to a staff member or understand the online resources they were redirected to.

As the highly automated system continued, many alleged debts were sold to private debt collectors with the onus on the debtor to prove the amount of debt calculated. This was a highly problematic outcome for a vulnerable population with the debt recovery system going back over a six year period despite online departmental advice that welfare recipients were only required to keep records for six months.[109] The Senate report found 'this lack of procedural fairness disempowered people, causing emotional trauma, stress and shame'.[110] The use of this automated process was strongly criticised for unfairly targeting a vulnerable segment of the population,[111] as well as breaching the Government's model litigant policy by sending official demands for a debt based on a computer generated approximation instead of actual evidence.[112] Such claims have resulted in the Victorian Legal Aid filing a test case in the Federal Court of Australia in February 2019, on behalf of Ms Masterton against the Department of Human Services, the regulatory body at the heart of the Robodebt Scandal.[113]

Similar scenarios concerning failed algorithms have been identified also in criminal justice contexts, involving the use of machine learning and AI to assist judges. In the United States, there has been controversy over use of the Correctional Offender Management Profiling for Alternative Sanctions ('COMPAS') sentencing tool that uses

[105]   Ibid.
[106]   Ibid.
[107]   Senate Standing Committee on Community Affairs, Parliament of Australia, *Design, Scope, Cost-Benefit Analysis, Contracts Awarded and Implementation Associated With the Better Management of the Social Welfare System Initiative* (Report, 21 June 2017) 107.
[108]   Ibid.
[109]   Ibid.
[110]   Ibid.
[111]   Medhora (n 104).
[112]   Paul Karp and Christoper Knaus, 'Centrelink robo-debt program accused of enforcing "illegal" debts', *The Guardian* (online, 4 April 2018) <https://www.theguardian.com/australia-news/2018/apr/04/centrelink-robo-debt-program-accused-of-enforcing-illegal-debts>.
[113]   Cameron Houston and Chris Vedelago, 'Centrelink wipes "robo-debt" at centre of test case', *The Sydney Morning Herald* (online, 5 May 2019) <https://www.smh.com.au/national/centrelink-wipes-robo-debt-at-centre-of-test-case-20190505-p51kac.html>.

AI and machine learning to predict the chance of recidivism.[114] Another issue is the use of AI and data analysis for law enforcement. These criminal law examples are equally instructive for the civil justice context, where similar challenges arise. The use of this technology is growing rapidly but has largely escaped legal or political accountability to date.[115] In NSW, for example, it was identified in the criminal law context that the algorithm used by law enforcement to select suspects was racially biased.[116] Only 3 per cent of the State's population is Indigenous and yet despite this, of those chosen by the algorithm, more than 50 per cent were Aboriginal or Torres Strait Islander.[117]

One problem with machine learning is that the exact basis for the decision-making by the computer is often unclear to human operators. This creates a concern that rights to procedural fairness are breached because the algorithm on which the decision is made is not transparent.[118] A second significant problem is concern about whether the decision-making is biased (perhaps due to machine learning from a biased data set),[119] this concern being compounded by the lack of transparency of the basis for the decision.

The brief discussion above highlights the need for better oversight by the legal community into algorithmic process used in technology.[120] In the State of the Profession Address to the NSW Young Lawyers in Sydney on 21 September 2017, Justice Margaret Beazley commenced her speech by stating:

> It goes without saying that law is not and will not be immune from the influence of the algorithm. The challenge for the legal system in general and the legal profession in particular is, I am going to suggest, twofold. First, there is the question of how to keep up to date with new technologies. And secondly, there is the question of how best to use technology to serve our clients and further the administration of justice. This second point is fundamental to the efficient and effective administration of the legal system...[121]

Justice Margaret Beazley observed that it was the duty of the legal system and legal practitioners to develop knowledge of emerging technology and not leave the development 'in the hands of technology experts'.[122]

In other parts of the world, the University of Helsinki's Legal Tech Lab stands at the forefront of discussing questions of algorithmic fairness and justice by design, considering how the architecture of technology must import concepts of access, justice and fairness. They encapsulate the problem of algorithmic justice in the following terms:

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[114]   Dressel and Farid (n 70).
[115]   Andrew G Ferguson, 'Policing Predictive Policing' (2017) 94(5) *Washington University Law Review* 1109, 1168–71.
[116]   Ibid.
[117]   Deven R Desai and Joshua A Kroll, 'Trust but Verify: A Guide to Algorithms and the Law' (2017) 31(1) *Harvard Journal of Law and Technology* 1, 23.
[118]   See, eg, *Loomis v Wisconsin*, 137 US 2290 (2017).
[119]   Osonde A Osoba and William Welser IV, *An Intelligence in Our Image: The Risks of Bias and Errors in Artificial Intelligence* (Report, 5 April 2017).
[120]   Desai and Kroll (n 117).
[121]   Justice Margaret Beazley, 'Law in the Age of the Algorithm' (Address, State of the Profession New South Wales, 21 September 2017) 1 [2].
[122]   Ibid 2 [6].

It is not possible to understand automation bias simply from the perspective of legal scholarship, as this requires insight into how algorithms reflect structural biases of their training data and how such shortcomings could be avoided. For example, removing possibly discriminating factors is not sufficient and bias in the formal sense of computer science differs from the term's socio-legal meanings.[123]

Avoiding algorithmic injustice is challenging, due largely to the inaccessible nature of technology for most non-experts. Desai and Kroll also caution the use of 'wild data,' stating systems using public data will require 'ongoing monitoring and evaluation' to ensure models remain accurate. This warning comes in the wake of Microsoft's failed Twitter chat-bot Tay. The benign system was initially designed with a teenage girl's persona but quickly became racist and foul-mouthed when fed information from online trolls.[124] In the legal tech sector, the 2016 Alameda County rolled out a new court case-management system, resulting in the wrongful arrest, imprisonment and forced registration as sex offenders of community members.[125]

C   Solution 1: Black Box Tinkering

Desai and Kroll call for technical accountability and make a case to suggest that the creators of technology should make known or publish algorithms so they can be analysed.[126] This may help in some situations, but Perel and Elkin-Koren warn that transparency of algorithms is insufficient of itself to ensure accountability. Simply publishing a coded and mathematically complex algorithm is not enough to meet the information needs of non-experts. Similarly, the disclosure of input and output data would only serve to produce vast quantities of information which is uninterpretable and incapable of scrutiny by the majority of the public.[127] Instead, Perel and Elkin-Koren propose a reverse engineering technique coined 'Black Box Tinkering', a method that would involve presenting an algorithm with different scenarios to reveal 'the [inner] blueprints of its decision making process'.[128]

Unlike observational studies, Black Box Tinkering can reflect on more than just what is publicly disclosed, and also examine the practical workings of the algorithm. For example, a recent experiment using this tinkering method conducted by King, Pan, and Roberts on China's political censorship on social media platforms revealed that social media content was utilised in over 60 per cent of the sites under review. Consequently, the Chinese public now know their social media submissions are automatically targeted. This in turn allows the public to 'demand that algorithmic systems comply with public interests such as due process, equal protection, and freedom of expression'.[129] However, Black Box Tinkering is unlikely to be suited to all

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[123]   'Legal Tech Lab: Research', *University of Helsinki Legal Tech Lab* (Web Page, 13 October 2018) <https://www.helsinki.fi/en/networks/legal-tech-lab/research>.

[124]   Hannah Francis, 'Microsoft's teenage chatbot, Tay, turns into a racist, abusive troll', *The Sydney Morning Herald* (online, 25 March 2016) <https://www.smh.com.au/technology/microsofts-teenage-chatbot-tay-turns-into-a-racist-abusive-troll-20160325-gnqvro.html>.

[125]   Margaret Hagan, 'Participatory Design for Innovation in Access to Justice' (2019) 148(1) *Daedalus* 120, 121 ('Participatory Design').

[126]   Ibid.

[127]   Maayan Perel and Niva Elkin-Koren, 'Black Box Tinkering: Beyond Disclosure in Algorithmic Enforcement' (2017) 69(1) *Florida Law Review* 181, 184-5.

[128]   Ibid.

[129]   Ibid.

types of AI, or to always provide the specificity needed for public confidence or procedural fairness.

This is of a special concern for software used by the Government in decision-making that may raise questions about the integrity of the Government's processes. It is advised that software is programmed to allow for the evaluation of applicable guarantees. It should be clear to competent observers that 'the evidence explain[s] both the goals of the system and the fact that it meets those goals'.[130] In the Australian context, the country's Chief Scientist has proposed the creation of a certification mark — a so called 'Turing Stamp' to indicate to consumers that a particular piece of technology uses algorithms that meet a benchmark level of ethical behaviour.[131] However, from a computer science perspective, any requirement that would allow humans to be completely satisfied of a transparent algorithm and ability of the system to clearly meet its goals is likely to place limitations on use of systems based on machine learning, where the nature of the decision making is typically not easily explainable in human terms. This restriction may therefore seem unfeasible, and a realist would expect that the development of new technology will continue to outpace the regulation of the new technology.

D   *Solution 2: Human-Centred Design: The Emergence of Legal Design*

It would be unthinkable to design a utilitarian object such as a chair without regard for the consumer, the end user for whom it is intended that the object will become a part of their daily lives. If the chair was intended to serve as a piece of assistive technology to help a physically frail person to stand up and sit down with greater ease, but the chair was actually more cumbersome to use than a regular chair, then it would be considered an outrageous failure. To those who approach the world from a design perspective, civil litigation would have to be considered an outrageous failure — while its expressed aim is to allow ordinary people to vindicate their rights, the system is designed to be used primarily by highly-skilled experts whose services are out of reach of the intended beneficiary of the system. There is thus a great deal of work to be done to ensure that the civil justice system is redesigned with the end user in mind.

Margaret Hagan, from the Stanford Legal Design Lab, was one of the first to coin the term Legal Design. Hagan defines it as a user focused ideology viewed as a process, mindset and set of mechanics to achieve human-centred design:

> Legal Design is the application of human-centered design to the world of law, to make legal systems and services more human-centered, usable, and satisfying. Legal Design is a way of assessing and creating legal services, with a focus on how usable, useful, and engaging these services are. It is an approach with three main sets of resources — process, mindsets, and mechanics — for legal professionals to use. These three resources can help us conceive, build, and test better ways of doing things in law, that will engage and empower both lay people and legal professionals.[132]

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[130]   Desai and Kroll (n 117).

[131]   Alan Finkel, 'What will it take for us to trust AI?', *World Economic Forum*, (News Article, 12 May 2018) <https://www.weforum.org/agenda/2018/05/alan-finkel-turing-certificate-ai-trust-robot/>.

[132]   Margaret Hagan, *Law by Design* (Open Law Lab, 2017) (*Law by Design*).

Technological innovation in the absence of Legal Design is fraught with risk.[133] Likewise, efforts to merely gather user-feedback in the absence of implementing a solution also have damaging implications,[134] leaving users frustrated as they attempt to navigate accessing justice. However, for years, legal systems have struggled to properly break down barriers to justice using human-centred design tools readily available, instead relying heavily on legal practitioners and government agencies to speak on behalf of users. This has caused advocates of Legal Design to observe that 'new legal technologies and services, whether aiming to help people expunge their criminal records or to get divorced in more cooperative ways, have not been adopted by the general public. Instead, it is primarily lawyers who use them'.[135]

Central to Legal Design is the mindset that users are key to innovating legal systems. This ideology fits with the basic access to justice tenets set out by the United Nations, where access to justice focuses on fulfilment of the rule of law, aimed at making the delivery of justice impartial and non-discriminatory.[136] In adopting that mindset, the Legal Design methodology becomes iterative involving 'five main steps: understanding, synthesis, brainstorming and prototyping, testing and refinement', where technology is one of many tools to achieve outcomes.[137]

User insights have unfortunately not been a central feature of civil justice innovation, and testing and refinement is often done by experts rather than end users. The time taken to elicit proper user insights will impact on user adoption. For instance, a satellite-connected legal kiosk project in Arizona called *Computers that Speak of the Law* failed because the intended beneficiaries in Navajo and Hopi communities were not consulted in the process, resulting in the communities finding that the kiosks created for them were not sufficiently user friendly.[138] This lesson is reinforced by Salter and Thompson who emphasise that technology needs to take into account users throughout the entire process. They observe that

> generally speaking, one of the biggest challenges in designing a justice system around the public is the necessary shift in emphasis away from the needs of people who provide justice processes towards the people who use them. There needs to be a rebalancing between the interests and perceptions of the people who work in the justice system, and the public for whom they work. This rebalancing requires a break with tradition.[139]

As such, technology's role in shaping solutions only plays a part when it can increase the effectiveness of user experience by simplifying, aiding or empowering the user to engage with the legal system. Alex Smith, the innovation manager of global law firm Reed Smith, was recently quoted saying: '[w]hile tech is exciting, it's important to map

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133	Hagan, 'Participatory Design' (n 125).
134	Julia Perry et al, *Access to Justice Roundtable: Proceedings of a Workshop July 2002* (Report, 2002).
135	Hagan, 'Participatory Design' (n 125) 120.
136	'Access to Justice', *United Nations and the Rule of Law* (Web Page) <https://www.un.org/ruleoflaw/thematic-areas/access-to-justice-and-rule-of-law-institutions/access-to-justice/>.
137	Hagan, *Law by Design* (n 132).
138	Ibid.
139	Salter and Thompson (n 4) 125.

and redesign the system properly… The people and process driving the justice system are probably more important in such sensitive areas as any technology'.[140]

Legal Design is a new and exciting field for lawyers with an interest in access to justice. While it is still emerging as a distinct field of academic inquiry, Legal Design offers a structured method to encourage an iterative and user-focused process of law reform and innovation that allows for miscalculations and mistaken assumptions to be made and corrected before a purported solution is released to an end user. It offers the ability to integrate methods of information delivery that suit a range of users, for example through the integration of visual law. This allows for a greater understanding by ordinary people of their rights and obligations in contexts such as an employment contract.[141]

A second advantage of Legal Design thinking is that it explicitly embraces interdisciplinary thinking; another aspect of innovation that has often been overlooked in many parts of the civil justice system. As Holloway states:

> …design thinking looks beyond the immediate boundaries of the problem to ensure the right question is being addressed. Using interdisciplinary teams, design thinking incorporates diversity and leverages different paradigms and tool sets from each profession to analyze, synthesize, and generate insights and new ideas. The interdisciplinary nature of design thinking also ensures that innovations are naturally balanced between the technical, business, and human dimensions.[142]

The potential contribution of Legal Design to access to justice is only just starting to be realised. Yet, it is important to point out that technological innovation is not the only output of Legal Design, and in fact, a critical feature of Legal Design theory is that it cannot be started without the end user in mind. The process requires a genuine understanding of the end user(s), placing an emphasis on practitioners immersing themselves in that user's world so they can design interventions based on end user perspectives, rather than from a pre-determined solution. Legal Design also requires practitioners to be comfortable with using creative means, as opposed to solely analytical means to solve difficult problems.

VI   CONCLUSION

This article has painted a picture of the need for innovation in the civil justice context, pointing to the need for real and effective access to justice to meet the unmet legal need in Australia. It has then tracked some of the major trends in technological innovation, and the core questions that remain for using technology to achieve improved access to civil justice. Since the 1970s, various mechanisms have been deliberately introduced into the civil justice system to facilitate access to justice, with varying degrees of success. The advent of low-cost legal technology will forever change the access to

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[140]   Jonathan Ames, 'Technology is driving force of legal shake-up', *Raconteur* (Web Page, 19 February 2015) <https://www.raconteur.net/risk-management/technology-is-driving-force-of-legal-shake-up> quoted in Magda Ibrahim, 'How technology is granting public access to justice' (Web Page, 30 November 2018) <https://www.raconteur.net/risk-management/technology-public-access-justice>.

[141]   'Home', *Comic Book Contracts* (Web Page) <https://www.comicbookcontracts.com/>.

[142]   Matthew Holloway, 'How Tangible is Your Strategy? How Design Thinking Can Turn Your Strategy Into Reality' (2009) 30(2–3) *Journal of Business Strategy* 50, 51.

justice landscape. One major consequence is that reform is now no longer the sole domain of governments using legislation and policy-driven reform. Instead, private providers and those with a passion for change can themselves innovate, and they face relatively low entry barriers. For the first time in history, non-government actors can engage with civil justice issues and make a real difference to those whose lives or livelihoods are impacted by civil disputes. Those currently riding the fourth wave promote legal technology as a panacea at best and, at the very least, an objective-tool capable of offering simplified, cost effective access to civil justice.

However, the decision to create and deploy legal technology to enhance access to justice always carries numerous design considerations, many of which are value-laden in relation to accessibility, digital exclusion, efficiency, cost, fairness and equity. It remains to be seen whether the current plethora of hackathons and seed grants designed to inspire next generation legal entrepreneurs will revolutionise the system, or instead create a bewildering array of disconnected and competing apps without overall addressing the current complexity of the law and its processes.

Three key points are worth reiterating for future policy and research. First, there is a mistaken assumption that digital exclusion and literacy divides are largely resolved, leading many to assume that technology can plug gaping pro bono gaps left from diminishing legal aid budgets. These assumptions need to be challenged with ongoing clear data – not just on the capacity of citizens to access tools, but their ability to effectively use and understand them.

The second challenge can be easily identified but less easily resolved — namely that enthusiasm for innovation can overshadow the complexities required to properly administer justice. Caution should not obstruct attempts to engage in these fourth wave reforms, but caution is certainly required. As the Australian Human Rights Commissioner Edward Santow has observed: at the same time the technology offers the promise of 'foster[ing] inclusion and accessibility', there are potential human rights implications.[143] We argue that the way forward is vigilant and active engagement by legal actors from across the sector, supported by and supporting the broader community. It is essential that legal practitioners actively participate in the creation of legal technology, or at the very least, provide ongoing legal analysis and empirical research, making legal technology accountable to upholding sound legal doctrines and principles.

Great care needs to be taken to ensure that algorithms are created in a socially responsible fashion, and do not to serve to entrench already existing prejudices and assumptions in the legal system, or trample on due process considerations. Koulu cautions that a failure to do this will cause algorithms to be yet an additional barrier to access to justice rather than a facilitator of access to justice.[144] Similarly Justice Steven Rares observes:

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[143]   Edward Santow, 'Putting Human Values into the Machine' (2018) 27(3) *Human Rights Defender* 13, 14.
[144]   Riikka Koulu, Lila Kaillo and Jenni Hakkarainen, *Law and Digitalization: An Agenda for the Future* (Report No 1, May 2017) 7.

a system of justice is an institution for the redress of grievances. It can only command the respect of a society's members if they trust that it is an impartial, equal, transparent and principled system that gives effect to the rule of law.[145]

The third challenge is one of emphasis. It is important that technological innovation should not displace non-technological innovation, as the refinement and improvement of substantive and procedural laws is an ongoing task. Equally, it is imperative that broad stakeholder perspectives be incorporated into the development process — with none more important than those being impacted by the technology, or end users. In the past, the law has been accused of failing to listen to the voices of the most vulnerable, instead opting to consider policy-maker views over the end user. Failure to address end user and societal needs has come at a price from a literal cost and efficiency standpoint, and more importantly an access to justice stance; resulting in poorly devised systems being unapproachable, inaccessible or inherently biased.

In this paper we suggest that approaches like Legal Design, which places an emphasis upon the end user, should be used as a plank for future legal technology. To date, Legal Design approaches are relatively nascent concepts for legal practice, education and research. Little exploratory research and even lesser empirical data exists to give guidance to legal practitioners, technological developers, academia and policy makers on Legal Design approaches, usage, applicability or effectiveness. They nonetheless offer a useful set of precepts for thinking about legal innovation, and an important framework for keeping user needs and experience front and centre of reform processes. Likewise, more research and guidance is required to aid legal practitioners and educators on the necessary skills and capabilities required to develop a 'Legal Design' mindset that places emphasis on experimentation. There is also the question of what other innovative approaches are being utilised in legal practices to achieve better access to civil justice systems and how these innovations are impacting on legal practice business models and the institutions what administer civil justice (such as courts and tribunals). These are just a few possible areas ripe for future exploration and testing to ensure that legal technology enhances and optimises access to civil justice.

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[145]   Justice Steven Rares, 'Is Access to Justice a Right or a Service?' (Speech, Access to Justice: Taking the Next Steps Symposium, 26 June 2015).

THE AUTOMATION PARADOX IN LITIGATION: THE INADEQUACY OF PROCEDURE AND EVIDENCE LAW TO MANAGE ELECTRONIC EVIDENCE GENERATED BY THE 'INTERNET OF THINGS' IN CIVIL DISPUTES

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Recent advances in technology and a collective appetite for technological integration have resulted in the design of many 'everyday' objects, devices, machines, and buildings that incorporate data gathering, handling and transmission technology, commonly referred to as the Internet of Things. This article examines the procedural and evidential implications and challenges of collecting and exchanging electronically stored information gathered by these everyday objects. In particular, the article examines the discovery of that data in the context of court proceedings, and highlights the novel challenges presented by the format and location of the data. The article also considers the way in which this data is presented in court and issues relating to the admissibility and proper weight of evidence extracted from the Internet of Things. In particular, the article focuses on the circumstances in which the hearsay rule may affect the furnishing of such data, and how issues of identity and provenance are affected by the unique format and character of the evidence.

I   INTRODUCTION

Advances in technology and a collective appetite for technological integration have resulted in the design of many 'every-day' objects, devices, machines and buildings that incorporate data gathering, handling and transmission technology. These things have not previously been computerised or connected to an information exchange network. The technology, capable of continuously perceiving, monitoring, recording and transmitting information, represents a substantial advancement in both the function and pervasiveness of technology in daily private and professional life. Technology that automatically gathers and records data from the external environment has and will continue to increase the volume of multiplatform information that would previously have been unobserved, unmeasured and unrecorded. The advent of autonomous technology which is interlinked to human need by network has been referred to as 'ubiquitous computing' and 'ambient intelligence'.[1] It has also been recognised as the 'third wave' of computing. A consequence of the advent of the third wave of computing is that the volume of information that is recorded and stored is increasing. Furthermore, the proportion of available information that is recorded and stored as data is also increasing, resulting

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in the availability of more contemporaneous evidence to issues in question. It has been estimated that data generated by these objects, devices, machines and buildings – often collectively referred to as the 'Internet of Things' ('IoT') – will account for about 10 percent of the data on Earth by 2020.[2]

Our focus is the consequence of third wave computing for litigation. In Part II, we explain the third wave of computing and the manner in which the IoT operates. Part III examines the retrieval, handling and discovery of that data in the context of court proceedings, and highlights the novel challenges presented by the format and location of the data. We then consider the presentation of IoT-derived electronic evidence in court and issues relating to its admissibility. In Part IV, we consider the circumstances in which the hearsay rule may affect the furnishing of such data, and Part V examines how issues of identity and provenance are affected by the unique format and character of the evidence. We conclude that IoT-derived evidence presents significant challenges to present legal tests and methods for its authentication.

II   THE INTERNET OF THINGS

A   *Third Wave eObjects*

The 'third wave' of computing involves the insertion of intuitive devices into our everyday devices and surrounds. This technology is intuitive in that it independently responds to and monitors our daily needs. The broader effect of this third wave is the embedding of data gathering, handling and transmission devices in a variety of objects, devices, machines, buildings and environments that previously were neither computerised nor connected to the internet or local information exchange network.[3] An epitomical example is a Fitbit, a fitness tracking watch, which monitors and records the wearer's heart rate and geolocation and transmits this information via Bluetooth technology to another mobile device, and to the internet, via remote server. This is obviously not the traditional analogue function of the watch.

Third wave devices have sensory technology with the capacity to transmit, via network, data gathered by the device to other devices or storage platforms. These devices are commonly referred to as enhanced objects ('eObjects'). An eObject has been defined as an 'object that is not inherently computerised, but into which has been embedded one or more computer processors with data-collection, data-handling and data-communication capabilities'.[4]

The IoT provides a collective term for eObjects. The IoT may be understood as a network connecting eObjects. The network, usually the internet, facilitates the transmission of data gathered by eObjects to other devices, which are often also

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[2]   Anthony Adshead, 'Data set to grow 10-fold by 2020 as internet of things takes off', *ComputerWeekly.com* (online, 9 April 2014) <https://www.computerweekly.com/news/2240217788/data-set-to-grow-10-fold-by-2020-as-internet-of-things-takes-off>.

[3]   Texas Instruments Inc has classified eObjects and applications into six categories: wearables, health care, building and home automation, smart manufacturing, smart cities and automotive: Texas Instruments, 'Internet of Things', (Web Page) <http://www.ti.com/ww/en/internet_of_things/iot-applications.html>.

[4]   Kayleen Manwaring and Roger Clarke, 'Surfing the Third Wave of Computing: A Framework for Research Into eObjects' (2015) 31(5) *Computer Law and Security Review* 586, 599.

eObjects or data storage devices such as servers, mobile telephones, and hard drives. Those devices retain their 'traditional' or 'primary' functionality and are embedded with electronics, software, sensors, and network connectivity that enables them to collect, record and communicate data (which may concern or relate to the function or performance of the device).[5] To illustrate, many of the appliances within a typical residential apartment may be eObjects, including the air-conditioner, lights, refrigerator, and robotic vacuum cleaner. The electronically stored information ('ESI'), generated by eObjects, which are connected by the IoT, is a database regarding, for example, the lifestyle conditions and habits of the occupants of the residence.

The IoT progresses network computing beyond two-way person-to-person interactions to exchanges between persons and machines, and machine-to-machine interactions.[6] The IoT has significance for the commercial applications that it can facilitate. It also provides 'unprecedented visibility into people, the physical world they occupy and the interaction between the two'.[7]

This database – the ESI – is the information trove for discovery and the trial. Enhanced objects are the means to that value. In the following discussion, we examine the ESI generated from eObjects in the context of information gathering as part of the pre-trial process, namely through the use of court discovery and subpoena processes in the Federal Court of Australia[8] and, with respect to its admissibility, under the Australian Uniform Evidence Law ('UEL').[9]

B   *ESI generated by the IoT*

ESI is an elastic term in the digital age where new and varied devices are increasingly capacitated to produce and store electronic data. ESI may be divided into three categories. First, data resulting from active human input to an electronic device, for example, emails, text messages and like messages, digital scale or speed camera read outs. Second, data resulting from passive human input to an electronic device, for example, data on geographic location collected by carrying a mobile phone, or heartrate and personal vitals collected by a wrist-worn fitness monitor. Third, data resulting from operation of pre-programmed automated devices, which operate independently of human input, for example, temperature data gathered by a computerised air conditioner or refrigerator. An eObject pre-programmed to gather data in the manner of the third category may, however, be overridden by active human input. For example, persons may change or interrupt programmed settings.

The first category of ESI, which is generated by active human input and operation of devices, is familiar to courts (and society generally) as a category of data produced from the use of technology. The human plays an active and direct role in producing and transmitting the data. The technology provides a conversion and delivery method

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5   International Telecommunications Union, *Overview of the Internet of Things – Recommendation ITU-T Y.2060* (06/2012); Telstra Corporation Limited, *Millennials, Mobiles and Money* (2016) 56.
6   Andrew Whitmore, Anurag Agarway and Li Da Xu, 'The Internet of Things – A Survey of Topics and Trends' (2015) 17(2) *Information Systems Frontiers* 261, 261.
7   Telstra Corporation Limited, *Millennials, Mobiles and Money* (2016) 56.
8   *Federal Court of Australia Act 1976* (Cth); *Federal Court Rules 2011* (Cth) ('*FCR*').
9   *Evidence Act 1995* (Cth); *Evidence Act 1995* (NSW); *Evidence Act 2008* (Vic); *Evidence Act 2001* (Tas). All sections of law referenced herein are to the UEL, unless otherwise stated.

for the human input, as in the case of sending an email, or the technology may perform more readily discernible,[10] calculated functions as a result of human command, as in the case of digital scales or speed cameras. In either example, the ESI that may be later sourced is data that was produced by direct and deliberate human operation of the device.

The second and third categories of ESI have the shared characteristic of being recorded without direct or active human input to generate the particular data. ESI gathered by the passive operation of technology is the purview of eObjects. Assuming a power source, the eObject is programmed to capture data of particular types without the need for ongoing or direct human input. The passive involvement of the human element in eObjects dramatically expands the circumstances and environments through which eObjects can capture data. This accounts for their (i) mobility, (ii) volatility and vulnerability, and (iii) autonomy in ways unique from first and second wave computing.[11] These aspects are elaborated on below.

1   *Mobility*

Mobility is a characteristic of many eObjects. The commercial attraction of the eObject system often relates to its mobility for the consumer. Mobility is assisted by the expansion of wireless networks which allow the eObject to remain connected, for example, in outdoor settings or even in flight, which the need for hard-line internet connections previously excluded from network access. The miniaturisation of eObjects, especially as compared to the computing devices of the first wave, also enables their portability. The result is a pervasive network and portable eObjects that can remain operational and connected without interruption. Indeed, the primary reason for the interruption of many eObjects is the need for them to be recharged, and even this need is diminishing with the development of inexpensive portable charging devices. The data amassable from the uninterrupted recording and connectivity of eObjects, regardless of the environment, can increasingly provide a complete data set with respect to the matters the eObject is designed to capture, as well as, perhaps, matters that it was not designed to observe or capture. As technology improves, so too will the quality of the data captured, but the importance at present is the capacity of the eObject to capture a comprehensive and uninterrupted data set, owing to the mobility of the device.

2   *Volatility and vulnerability*

The observations made in respect of mobility require stable operational environments both for the eObject and the network to which it is connected. Ordinary experience dictates that networks, regardless of size (eg, home or office) or environment of operation (eg, indoor or outdoor), may function haphazardly and, accordingly, so too might the technology of the eObject itself. This will lessen as technology advances but, still, the operation of eObjects is potentially volatile. This volatility is more probable as a result of mobility. Mobility more readily permits changes in the circumstances and

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10   Encoding obviously performs programmed, calculated functions to deliver even the most basic human to computer commands, such as converting type touches to electronic text, but because the keyboard letter touched appears directly on the visual platform, the computerised calculations are less discernible than technology which calculates unknown commands.

11   Kayleen Manwaring, 'Kickstarting Reconnection: An Approach to Legal Problems Arising from Emerging Technologies' (2017) 22 *Deakin Law Review* 53, 53.

environment of the human user, the eObject, and the IoT environment in which the eObject may be operating. The consequence is that their operation and captured data may be subject to flux and the changes that result may not be traceable or recorded. This can render the records of eObjects uncertain and raise evidential questions regarding the reliability of presented data to accurately demonstrate a state of affairs at a given time.[12]

The result of this volatility is that it may provide a basis for questioning the integrity of the data captured through an eObject. The eObject is, of course, also potentially vulnerable to direct and intentional interference or manipulation. Vulnerability and security concerns are heightened for eObjects, as they are typically less secure than analogue or immobile devices. They are more likely to be lost or stolen, or used by an unauthorised or unidentified operator in a physical sense (ie physical interference). They are also open to remote hacking and interference as a corollary of their network connectivity.[13] This direct potential for interference is the complement to the potential for indirect interference provided by mere mobility and raises the same questions, evidentially, for the integrity of the eObject-produced record.

3   *Autonomy*

Autonomy is the capability of eObjects to make decisions and initiate operation absent direct human operation or instruction to perform particular tasks. Autonomy is an increasingly prevalent characteristic of ambient technologies. The level of autonomy may be regarded as a continuum from, at the rudimentary level, the capacity to record and communicate data absent human instructions to do so, to, at the advanced level, the operation of the eObject itself based on programming, stimulus and/or independent data processing and decision-making.[14] The autonomous function of the eObject is governed, macroscopically, by source code. The source code is a set of instructions which the eObject effectively communicates to itself to take actions. The eObject tells various components of itself to take action based on the programming or sensory data captured by other parts of its constituent componentry and code. This gives rise to issues as to whether the ESI of eObjects ought to be subject to hearsay or analogous principles in the same way as human testimony, on account of the ESI being the testimony of the eObject, which may be based on other source code level communications of the eObject. There are questions as to whether further analogous principles need to be developed to manage these 'black box' dangers, but this is beyond the scope of this article.[15]

Technologically, eObjects are an advancement in the mobility of ambient networked devices capable of producing ESI. Enhanced objects, themselves, may be regarded as physical evidence. The eObject itself, however, is rarely the end but rather the start of an evidential interrogation. The coding of the eObject is pertinent to consideration of the ESI it records. For present purposes, we assume verified or verifiable source code.

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[12]   Ibid 63.
[13]   Ibid 65.
[14]   Ibid 80.
[15]   For a comprehensive consideration see, Andrea Roth, 'Machine Testimony' (2017) 126(6) *Yale Law Review* 1972. For specified forensic applications, see also, Edward J Imwinkelried, 'Computer Source Code: A Source of the Growing Controversy Over the Reliability of Automated Forensic Techniques' (2017) 66 *DePaul Law Review* 97.

Our concerns are the procedural and evidential responses that should be taken to the uncertainty arising from the volatility and vulnerability inherent in the mobilised use of autonomous eObjects, which are discussed in detail below. We commence with the procedural issues.

III   DISCLOSURE OF IOT-DERIVED ESI IN LITIGATION

The civil procedures of discovery and subpoenas are permitted in civil litigation because they increase the likelihood that a judgment or settlement will be correct and fair by facilitating knowledge of the facts. The ability to inspect an opponent's documents places parties on an equal footing and avoids 'trial by ambush'.[16] Despite the compelling arguments for discovery, it also necessitates cost and delay. In particular, approaches to discovery that leave 'no stone left unturned' can be oppressive and undermine the justice that discovery was meant to facilitate.[17]

The ESI generated from an eObject places the above competing views of discovery in stark relief, because the ESI provides increased visibility into the interaction between people and with the physical world they occupy.[18] This added visibility can provide data, and as discussed below, evidence, that can be crucial to accurate fact-finding and justice. However, the volume of ESI can also substantially increase the cost and burden of discovery.[19]

This section of the article examines the application of the procedures for discovery, and to a lesser extent subpoenas, to the ESI generated by eObjects that form part of the IoT. The third wave of computing generates substantial challenges for civil procedure, but those challenges are not as great as they might have been. This is because courts have previously had to grapple with the second wave of computing, or Web 2.0, when the internet went from providing static pages to providing two-way communication, most notably through social media.[20] The main focus of the analysis will be the rules and procedure of the Federal Court of Australia.

A   *ESI and Documents*

The threshold question is whether ESI generated by eObjects is discoverable and, if so, what regimes or rules apply. Australian court rules dealing with discovery have typically focused on 'documents'. While historically the documents in issue were paper-based, the court rules have moved with the times and ESI will meet the definition of a document.[21] In the Federal Court of Australia, 'document' is defined in the Dictionary in Schedule 1 of the court rules as including:

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[16]   Michael Legg, 'Discovery – A Comparative Approach to Reform' in Miiko Kumar and Michael Legg (eds), *Ten Years of the Civil Procedure Act 2005 (NSW)* (Thomson Reuters, 1st ed, 2015) 99.

[17]   *Expense Reduction Analysts Group Pty Ltd v Armstrong Strategic Management and Marketing Pty Ltd* (2013) 250 CLR 303, [47]; *Palavi v Radio 2UE Sydney Pty Ltd* [2011] NSWCA 264, [101].

[18]   Telstra Corporation Limited (n 5) 56.

[19]   *Australian Rugby Union Limited v Canterbury International (Australia) Pty Ltd (No 1)* [2012] FCA 497, [4]-[6].

[20]   Whitmore, Agarway and Xu (n 6) *261*.

[21]   Bernard Cairns, *Australian Civil Procedure* (Thomson Reuters, 11th ed, 2016) [10.170].

(a) any record of information mentioned in the definition of document in Pt 1 of the Dictionary to the *Evidence Act 1995* (Cth); and (b) any other material, data or information stored or recorded by mechanical or electronic means.[22]

The Evidence Act definition is discussed below in relation to the UEL. However, data stored or recorded by electronic means would capture ESI created by an eObject.

B   *ESI Relevant to Issues in the Proceedings*

While ESI is subject to discovery, the more specific question is when ESI from an eObject may be sufficiently relevant to an issue in proceedings that an order for discovery would be made.[23] Many courts have refined the general approach of requiring relevance by imposing stricter standards so that litigation is conducted in a manner that reduces cost and delay.[24] In the Federal Court, 'standard' discovery may be obtained for documents that are 'directly relevant to the issues raised by the pleadings or in the affidavits'.[25] This requirement is discussed further below. Similarly, ESI may be the subject of a subpoena provided the data being sought is both relevant to the proceedings and sufficiently described.[26]

So how might IoT data be used in litigation so that it might be subject to discovery, or a subpoena? Data from personal devices, cars and homes could be used to determine the location of a person. Most modern cars are equipped with a 'global positioning system' ('GPS'). Cell towers record the time that a mobile phone user passes by.[27] The thermostat in a house can record the presence of a person in specific rooms in their home, thus creating a record of occupancy.[28] The radio-frequency identification ('RFID') tags on inventory, assets and even employees' identification badges can be tracked to determine location.[29]

Vehicle data could also be used to determine if an accident was due to a mechanical fault, driver error or fatigue. Data from residential and commercial buildings may be used to detect whether windows and doors were locked or opened at a particular time so as to assist in insurance claims. Data from an internet-connected refrigerator might provide evidence about the condition of a comestible suspected of causing food

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22   *Federal Court Rules 2011* (Cth) (*FCR)* sch 1 (definition of 'document').
23   Cairns (n 21) [10.100]-[10.130].
24   See Legg (n 16) 104-109 discussing the scope of discovery in Australia, the United Kingdom and the United States of America.
25   *FCR* r 20.14. Directly relevant is further defined as meaning that the document meets at least one of the following criteria: (a) the documents are those on which the party intends to rely; (b) the documents adversely affect the party's own case; (c) the documents support another party's case; (d) the documents adversely affect another party's case.
26   Miiko Kumar, Michael Legg and Ilija Vickovich, *Civil Procedure in New South Wales* (Thomson Reuters, 3rd ed, 2016) [12.390].
27   Samuel Greengard, *The Internet of Things* (MIT Press, 1st ed, 2015) 60-61.
28   Dennis Kennedy, 'Preparing for the "Internet of Things"'*, ABA Journal*, 1 July 2014.
29   Greengard (n 27) 62. RFID uses electromagnetic fields to automatically identify and track tags attached to objects. Passive tags collect energy from a nearby RFID reader's interrogating radio waves. Active tags have a local power source (such as a battery) and may operate hundreds of meters from the RFID reader.

poisoning.[30] Similarly, in logistics, monitoring of shipping conditions could detect if items such as food become too hot or too cold at any point.[31]

The IoT could allow for a home monitoring system for elderly care which combines monitoring of medication and a patient's vital signs with an ability to communicate so as to order more medication when needed or, alert doctors or family members to a health problem.[32] If that medication were subsequently found to have side-effects, depending on the dosage, the IoT data would provide proof not only of consumption of the medication but of the dose administered. While old prescriptions or over-the-counter purchase receipts are discarded, the data proving consumption could still exist.

The IoT can also be used by utilities. The 'smart grid' for electricity involves each device on the network being given sensors to gather data (power meters, voltage sensors, fault detectors, etc) and being equipped with two-way digital communication between the device in the field and the utility's network operations centre.[33] In the Kilmore East Bushfire class action in the Supreme Court of Victoria, one of the main allegations concerned the cause of a powerline failing.[34] IoT data may record events causing powerline fatigue and the actions taken by the utility to address powerline failure, which could assist in determining causation.

Similarly, a water network can use devices to ensure the quality of drinking water. Between 1 July and 30 September 1998, increased levels of the parasites Cryptosporidium and Giardia were detected in Sydney's water supply. As a result, Sydney Water Corporation issued a series of 'boil water alerts'.[35] The so-called Sydney Water Crisis of 1998 led to a government inquiry and two class actions. IoT data, in addition to generating real-time measures of water quality to allow for corrective action, may be available to prove the existence of contaminants.

Lastly, the data from wearables such as a Fitbit could provide important information about a person's wellbeing before or after a personal injury. A law firm in Canada sought to use a client's Fitbit history in a personal injury claim. The client was a personal trainer who wanted to show that her activity levels had fallen below baseline

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[30]   Kennedy (n 28).

[31]   Chi Li, 'Maersk — Reinventing the Shipping Industry Using IoT and Blockchain', *HBS Digital Initiative* (online, 28 June 2018).

[32]   In August 2015, Google and Dexcom (a company that produces continuous glucose monitoring systems) announced plans to produce a dime-sized, cloud-based disposable monitor that communicates the glucose values of diabetes patients in real-time, directly to parents and medical providers: Peter Lefkowitz, 'Making Sense of the Internet of Things' (2015) 59 *Boston Bar Journal* 23, 25. Another example is the GlowCap, a "smart pill-bottle cap" produced by Vitality (and connected to the AT&T mobile broadband network) that contains a wireless chip which can text or phone a patient a reminder if they have forgotten to take their medication. It also has a button that, when pressed, sends a refill request to a person's local pharmacy. See Robin Kester, 'Demystifying the Internet of Things: Industry Impact, Standardization Problem, and Legal Considerations' (2016) 8(1) *Elon Law Review* 205, 211.

[33]   Greengard (n 27) 70-72.

[34]   *Matthews v AusNet Electricity Services Pty Ltd* [2014] VSC 663, [75].

[35]   See PL Stein, "The Great Sydney Water Crisis of 1998" (2000) 123 *Water, Air, and Soil Pollution* 419; Stewart Smith, *The Quality of Sydney's Drinking Water: Current Issues*, NSW Parliamentary Library Research Service, Briefing Paper No. 16/1998.

for someone of her age and profession, and thus, she was entitled to compensation.[36] In a criminal context, Fitbit data has been used against a person as a basis for establishing perjury. The person claimed that they had been sleeping when they were sexually assaulted. However, the Fitbit data showed that the person 'had been awake and walking around the entire night, not sleeping as she had claimed'.[37] In the Federal Circuit Court of Australia, in a matter dealing with parenting arrangements the ESI from a Fitbit worn by a child was unsuccessfully relied upon to demonstrate that the child's sleep problems were linked to contact with the father.[38]

The above examples demonstrate the numerous and wide-ranging situations in which ESI from eObjects may be relevant to a civil dispute. This then necessitates consideration of who or what to approach in order to obtain that ESI.

C   *Control of IoT Data*

Obtaining IoT data for litigation requires consideration of the appropriate person or entity from whom to request the data generated by an eObject. This raises in turn issues about ownership of the data and who has access to it. In the Federal Court, standard discovery refers to documents 'that are, or have been, in the party's control'. *Control* is defined in the Dictionary to the rules to mean, in relation to a document, 'possession, custody or power'. *Possession* typically refers to ownership, *custody* to the physical holding of the document (even if there is no ownership) and *power* to an enforceable right to obtain possession.[39]

ESI from an eObject may be within the control of a number of entities. The user of the device, the manufacturer of the device, the retailer/provider of the device, the entity that operates the network, the entity that collects and manages the data produced by the device, or some combination of these may all exercise control. The entities that hold the data, if they become parties to litigation, may be required to provide discovery. Even if not a party, they may be required to produce the ESI through the use of a subpoena. However, a person to whom a subpoena is directed is not required to seek out documents not in the person's own possession and power in order to produce them to the court.[40]

The extent of the obligation imposed in relation to a discovery order and the accessibility of ESI is illustrated by a Victorian decision, *Hanks v Johnston (No 3)*,[41] which dealt with the discovery in a defamation claim of text messages that were thought to have been lost when an Apple iPhone was replaced. Although not addressing IoT as such, Dixon J was satisfied that any iCloud backup of text messages that could be accessed employing particular computer software was within the 'power' of the plaintiff in the relevant sense. Importantly, for the plaintiff to access the backup

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36   Kate Crawford, 'When Fitbit is the Expert Witness', *The Atlantic* (online, 19 November 2014) <https://www.theatlantic.com/technology/archive/2014/11/when-fitbit-is-the-expert-witness/382936/>.

37   Nicole Chauriye, 'Wearable Devices as Admissible Evidence: Technology is Killing our Opportunities to Lie' (2016) 24(2) *Catholic University Journal of Law and Technology* 495, 509-510.

38   *Oster v Houli* [2015] FCCA 398, [14].

39   Cairns (n 21) [10.140].

40   *Air Pacific Ltd v Transport Workers Union of Australia* (1993) 40 FCR 1.

41   [2016] VSC 629.

data in his iCloud, all that was needed was his user ID and password and the relevant software. Permission or assistance from Apple were not needed in order to gain access.[42] Similarly, ESI from an eObject that a party can access, even if in the cloud, will be discoverable.

In any particular case it will be a matter of fact as to whether a party to the litigation has the power, or not, to access ESI generated from their eObjects. For some eObjects, such as a Fitbit, the owner will be able to download data, as access to the data is part of the functionality that the user requires. However, for ESI from eObjects where access to the data may not be needed, such as the temperatures recorded by a thermostat in determining whether to heat or cool a room, it may not be in the possession, custody or power of the party.

However, even where a party or third party has the requisite control over the ESI, for discovery or a subpoena to be effective the data must be maintained and accessible. An entity may routinely destroy ESI as part of its usual business operations. As a result, a number of further crucial questions arise: what ESI is tracked or stored, and for how long is the data retained? As explained above, some eObjects record on a continuous basis and amass large volumes of data, but as a result that data may not be stored for very long.[43] In others, the data may exist but its preservation may be complicated by issues of cost, burden and contractual obligations.[44]

In *Hanks v Johnston (No 3),* the ability to access ESI depended on it having been retained by Apple in the iCloud, which in turn, depended on both contractual obligations and the operation of the device. Dixon J observed that

> there is uncertainty about the timing of iCloud backups. Automatic iCloud backups occur periodically when the device is screen-locked, connected to a power source and connected to the Internet via a WiFi network. The terms of use state that the last three backups will be stored in the iCloud but space is limited and backup will be subject to other use of the available storage.[45]

Access to ESI created by an eObject may also turn on being able to access the eObject. If the ESI has not been transmitted via the internet to a storage device, such as a server, then the data may have to be downloaded from the eObject. For example, in a US personal injury action by a car driver against the manufacturer of the tyres used on the car, the defendant sought access to the Airbag Control Module ('ACM'). The ACM may have recorded relevant information such as vehicle speed, the driver's braking, and whether the seatbelt was being worn. Usually the data in the ACM is only accessed periodically by a mechanic when the airbag is subject to some form of maintenance. Consequently, the ACM held the relevant data, as it had not been downloaded at the time of the accident. However, the ACM along with the vehicle were not retained by the plaintiff as they were delivered to a salvage yard which destroyed them. In

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42   *Hanks v Johnston (No 3)* [2016] VSC 629, [34].
43   Ibrar Yaqoob et al, 'Internet of things forensics: Recent advances, taxonomy, requirements, and open challenges' (2019) 92 *Future Generation Computer Systems* 265, 266.
44   Ignatius Grande and Mark Michels, 'The Internet of Things: "You Ain't Seen Nothin' Yet"', *Hughes Hubbard & Reed LLP* (online, October 2014) 11 <https://www.hugheshubbard.com/news/the-internet-of-things-you-aint-seen-nothin-yet>.
45   *Hanks v Johnston (No 3)* [2016] VSC 629, [36].

response, the defendant sought an adverse inference instruction be given to the jury.[46] In this case the judge accepted that the crash investigators would have known that the ACM might have contained important information. However, the concern with both eObjects and the ESI that they generate is that a party may not appreciate that they have relevant 'documents' that are subject to discovery obligations.

In Australia the intentional destruction of documents may result in various sanctions, including dismissal of proceedings, the striking out of a defence or adverse inferences being drawn.[47] However, here the greater concern is with the inadvertent destruction of documents due to a lack of comprehension as to what and how ESI is created by an eObject. In such a situation a party might unwittingly fail to comply with the court orders made in relation to discovery. This would result in the party being in default of a court order, which would then allow further orders such as an award of costs, dismissal of proceedings and the entry of judgment.[48] There is no requirement of 'intentional default or contumelious conduct' for an order to be made, although the circumstances of the default will be important in the Court's weighing of the proper exercise of the discretion conferred by the rule.[49] Contempt orders would also be available, although they are unlikely to be readily made for an inadvertent contravention.[50] Nonetheless, the growth in the existence of ESI from the IoT will impact on a party's preservation obligations.

### D	*Finding the ESI Needle in the IoT Haystack*

As explained in the introduction, IoT will account for about 10 percent of the data on Earth by 2020. Although courts have sought to limit discovery through altering court rules and actively crafting discovery orders as part of case management, there will clearly be situations where the growth in ESI impacts the discovery process.[51] ESI may be relevant to issues in dispute as argued above, but the volume of data may make finding the relevant data costly and onerous. In particular, the nature of the ESI generated by eObjects as part of the IoT is that a massive amount of data is generated but only a small amount of that data may be relevant to the particular dispute.

The issue may be illustrated by two examples. A six-hour flight on a Boeing 737 from New York to Los Angeles generates 120 terabytes of data that is stored on the plane.[52] Depending on the nature of the dispute only some of the eObjects on the plane and only some of the data recorded may be relevant. Another example is that in 2013 the average household with two teenage children owned 10 internet connected devices, but by 2022 it is estimated the same household will own roughly 50 internet-connected devices.[53] Those devices are eObjects and depending on the dispute may

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46	*Below v Yokohama Tire Corporation*, 15 CV 529 (WD Wisc, 2017). For an Australian example see Luke Mortimer, 'Tiny data recorder in your car could have big impact', *Daily Mercury* (online, 25 November 2017) <https://www.dailymercury.com.au/news/tiny-data-recorder-in-your-car-could-have-big-impa/3274389/>.

47	See eg *Palavi v Radio 2UE Sydney Pty Ltd* [2011] NSWCA 264, [70]-[71], [93]-[95].

48	*FCR* r 5.22, 5.23, 1.32; *Speedo Holdings BV v Evans (No 2)* [2011] FCA 1227.

49	*Lenijamar Pty Ltd v AGC (Advances) Ltd* (1990) 27 FCR 388.

50	Paul Matthews and Hodge Malek, *Disclosure* (Sweet & Maxwell, 5th ed, 2017) [17.31]-[17.33].

51	*City of Swan v McGraw-Hill Companies Inc* [2014] FCA 1271, [24].

52	Greengard (n 27) 56.

53	OECD, *Building Blocks for Smart Networks - OECD Digital Economy Papers, No. 215* (OECD Publishing, 2013) 4. The report also estimates that by 2022 there will be 14 billion connected devices in the OECD, compared to 1.7 million at the time the report was written.

have generated valuable information, but it will be necessary to determine which devices and which data are relevant, and where the date is stored.

The parties and the courts need to 'navigate a path between providing discovery so as to assist efficient resolution of disputes on the merits, and avoiding discovery abuse that harms parties and other court users' with increased costs and delay.[54] The tools for navigating that path are a combination of court rules, practice notes, active case management, lawyer competence and technology solutions.

Standard discovery in the Federal Court Rules seeks to keep a tight rein on the documents subject to discovery through the combination of direct relevance, reasonable search and party control.[55] Further, the rules allow for 'non-standard and more extensive discovery'[56] where needed.[57] However, all discovery is subject to court control. The increase in ESI generated by the second wave of computing and social media was addressed by the courts via a focus on relevance, necessity and proportionality.[58] The last of these factors may be particularly important in an IoT world. Proportionality is reflected in Federal Court practice notes:

> 10.7 A Request must be proportionate to the nature, size and complexity of the case – ie, the Request should not amount to an unreasonable economic or administrative burden on the Discovery Respondent.

> 10.8 If the Court approves a Request, a Discovery Respondent's search for and production of documents pursuant to a Request must be: made in good faith, uninfluenced by any negative impact on the Discovery Respondent (other than legitimate considerations such as genuine legal professional privilege or commercial confidentiality), and should be comprehensive, but proportionate.[59]

A court is required to balance the time, cost and burden of providing discovery of the relevant ESI against the possibility that relevant information will be found.[60] Both defendants and plaintiffs should be encouraged to use proportionality arguments offensively and defensively to control the cost, delay, and burden of overbroad discovery requests.[61] The unrestrained collection and production of IoT data could be 'costly, wasteful, and much of the data could be of little value'.[62] However, for the court and the parties to perform their roles it is essential that they understand the underlying technology and what is involved in accessing the relevant ESI.

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[54]   Legg (n 16) 100.
[55]   *FCR* r 20.14.
[56]   Ibid r 20.15.
[57]   Ibid.
[58]   Chief Justice T F Bathurst, 'Tweeters, Posters and Grammers Beware: Discovery and Social Media Evidence'(Tenth Information Governance and EDiscovery Summit, 21 June 2016) [17], [24].
[59]   Federal Court of Australia, *Central Practice Note: National Court Framework and Case Management (CPN-1)*, 25 October 2016, [10.7]-[10.8]. See also Federal Court of Australia, *General Practice Note: Technology and the Court*, 25 October 2016, [3.1]-[3.5].
[60]   *Slick v Westpac Banking Corporation (No 2)* [2006] FCA 1712, [41]-[43].
[61]   Brian Morris, 'The 2015 Proposals to the Federal Rules of Civil Procedure: Preparing for the Future of Discovery' (2014) 41 *Northern Kentucky Law Review* 133, 147.
[62]   Christopher Suarez, 'Forensics and Electronic Discovery in an IoT Era', *TYL Magazine* (online, 25 April 2018) <https://www.americanbar.org/groups/young_lawyers/publications/tyl/topics/resources-technology/forensics-and-electronic-discovery-an-iot-era/>.

An important part of the above equation is knowledge of the available technology solutions for accessing and retrieving the relevant data from the eObject or the data storage locations to which the ESI was transmitted. Past experience with technology creating large volumes of data to search, such as with the proliferation of email, was that technology also provided solutions such as technology assisted review ('TAR'), which uses supervised machine learning to rapidly review large volumes of data. TAR reviews written documents that are in electronic form by identifying patterns in the data. The program is provided with a set of documents referred to as a 'seed set' that has been reviewed by a human (lawyer) and labelled as 'relevant, not relevant, privileged, or not privileged'.[63] Using this information, the program codes the documents that may be discoverable. The lawyer reviews a sample of these documents and identifies any errors which are then fed back to the program. This process continues until the program is sufficiently accurate. From the lawyer's seed set and corrections, the software creates 'a predictive model, a kind of profile'[64] of the different types of documents, and this 'mathematical model... can then predict the classifications of other documents in that dataset'.[65] Ultimately, the program generates a probability that a particular item is relevant or not relevant. TAR has been found to be more accurate than human review, as well as quicker and cheaper.

Where the ESI from the IoT is text, then TAR may be able to be employed. However, for many eObjects the ESI may not be words or phrases from human language, but rather numerous measurements of physical characteristics such as temperature, speed or location – in short, numbers. As pointed out above, the function of some eObjects will necessitate easy user access to their ESI. Even commercial uses, such as the Onboard Network System on the Boeing 737 are designed to facilitate ease of access, with the collected ESI being made available to flight, cabin and maintenance teams for both onboard functions and offboard analytics.[66] However, other eObjects like embedded sensors detect changes in environmental factors with a view to facilitating some action, such as turning lights or heating on or off, but the ESI is not readily accessible by the user. In such a situation resort may need to be made to an expert in IoT forensics.

The IoT creates a number of challenges for traditional digital forensics due to the heterogeneous infrastructure of the IoT. Enhanced objects employ diverse proprietary formats. There is limited visibility and a short survival period for the ESI unless it is transferred to some form of data storage. ESI in the IoT environment is spread across multiple platforms including device, communications networks and in the cloud. There is uncertainty as to what, where and how ESI is stored.[67] As a result, research has been undertaken to develop digital forensics techniques, models and methodologies for use in the IoT context. As ESI can reside in multiple locations or

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[63] Matthew Paulbeck, 'The Ethics of Predictive Coding: Transparency and Judgment-Formed Seed Sets' (2017) 30(4) *Georgetown Journal of Legal Ethics* 971, 971.

[64] Kevin D Ashley, *Artificial Intelligence and Legal Analytics: New Tools for Law Practice in the Digital Age* (Cambridge University Press, 1st ed, 2017) 241.

[65] Shannon Brown, 'Peeking Inside the Black Box: A Preliminary Survey of Technology Assisted Review (TAR) and Predictive Coding Algorithms for Ediscovery' (2016) 21 *Suffolk Journal of Trial & Appellate Advocacy* 221, [2.1] (see generally for a comprehensive technical overview of the TAR process).

[66] Victoria Wilk and Tri Phan, '737 MAX Advanced Onboard Network System' (2014) 55 (3) *Boeing Aero Magazine* 5.

[67] Maxim Chernyshev et al, 'Internet of Things Forensics – The Need, Process Models, and Open Issues' (2018) 20(3) *IT Professional* 40, 41-42; Yaqoob et al (n 43) 266.

architecture layers, different areas of digital forensics' expertise and tools, such as for smart phones, servers or the cloud, may need to be employed.[68]

The court, the parties and the lawyers will need to weigh what is technically possible and at what cost, with the expected significance of the ESI to the dispute so as to ensure discovery is 'comprehensive, but proportionate'.[69]

E   *Lawyer Competence*

A majority of US States have introduced a requirement that lawyers be technologically competent, following a change to the American Bar Association's Model Rule 1.1 in 2012. The Comment to the rule specifies that 'a lawyer should keep abreast of changes in the law and its practice, including the benefits and risks associated with relevant technology'.[70] No such express requirement currently exists in any Australian jurisdiction. However, the Uniform Solicitors Rules provide that lawyers should 'deliver legal services competently, diligently and as promptly as reasonably possible'.[71] For a lawyer dealing with discovery that involves ESI generated by an eObject, competence with technology is necessary to be able to comply with court rules, practice notes and orders. The need for lawyers to have technology competence is illustrated by the Federal Court practice note which states:

> 10.10 Where a Request has been approved by the Court, a Discovery Respondent must, if requested to do so by a Discovery Applicant, provide a brief description of the steps taken by the Discovery Respondent to conduct a good faith proportionate search to locate discoverable documents, such as what records have been searched for, what search criteria or terms have been used, or what databases have been searched.

> 10.11 Where a Discovery Respondent asserts that documents are unavailable or burdensome to access and discover, the Discovery Respondent must clarify to the Discovery Applicant (unless there is demonstrably no need to do so), how the Discovery Respondent manages, stores, accesses, destroys and disposes of documents. The Court may require a Discovery Respondent to depose to such information.[72]

The Discovery Respondent will require the assistance of their lawyer to be able to describe how the search to locate documents was undertaken in a good faith and proportionate manner. Further, legal assistance will be part of explaining how documents are managed, stored, accessed and destroyed, especially as the explanation may need to be given to the court.

However, the level of competence required is more difficult to specify in the abstract given the diverse nature of eObjects and the ESI they generate. The lawyer must have a basic understanding of how the underlying technology works, what ESI is created

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[68]   Chernyshev et al (n 67) 43-45; Yaqoob et al (n 43) 269-272.
[69]   *Central Practice Note: National Court Framework and Case Management* (n 59) [10.8].
[70]   American Bar Association, *Model Rules of Professional Conduct* (2015) Comment 8 to Rule 1.1.
[71]   *Legal Profession Uniform Law Australian Solicitors' Conduct Rules 2015* (at 1 July 2015) r 4.1.3.
[72]   *Central Practice Note: National Court Framework and Case Management* (n 59) [10.10]-[10.11]. See also *FCR* rr 20.16, 20.17 which requires a list of documents not searched for or that was in the party's control but no longer is.

and where the ESI may be stored. In addition, the lawyer must comprehend any technology solution such as TAR or IoT forensics to be able to defend what was, or was not found, during the discovery process. However, the lawyer does not need to have the competence of an expert in the area of the IoT or its constituent parts.

F　*Privacy and Discovery*

Users of social media who found themselves in litigation were surprised to find that their social media posts or tweets that were relevant to the litigation had to be disclosed and were not able to remain private. Similarly, ESI from an eObject can be required to be disclosed regardless of privacy. Access to private records for litigation recognises the particular position of courts as an arm of the state charged with resolving disputes by reference to evidence to arrive at correct results. For example, in *Lowery v Insurance Australia Ltd*, Basten JA stated that 'the ultimate justification for compulsory production and disclosure of information which might otherwise remain confidential, is the legitimate furtherance of judicial proceedings'.[73]

Yet the courts do have powers and procedures for limiting the disclosure of private information. Where documents or information are required to be disclosed as part of court proceedings, the party obtaining the material cannot, without leave of the court, use it for any purpose other than the litigation, at least until the material is admitted into evidence.[74] Courts are also able to assess the need for privacy or confidentiality by weighing it against open justice, and if the former prevails, making orders to prevent the publication or disclosure of information.[75] The diverse nature of eObjects and the data they collect mandates that careful attention be given to whether private or confidential information may exist in the ESI and requires protection beyond that provided by the 'implied undertaking'.

IoT-derived ESI has been shown to be potentially subject to the court's discovery and subpoena powers as part of the pre-trial steps in civil litigation. The article now turns to examine that ESI in the context of evidence for trial.

IV　IoT-derived electronic evidence under the Uniform law: hearsay

A　*Documentary form*

As earlier indicated, we approach our analysis on the premise that the electronic evidence derived from the IoT is to be furnished to the court in documentary form. This premise is not critical to the points we make regarding issues of hearsay and authentication. That is, our points hold if the relevant evidence is to be adduced in electronic form. We take the premise of documentary form because it is the typical

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[73]　*Lowery v Insurance Australia Ltd* (2015) 90 NSWLR 320, [10] (Basten JA).

[74]　*Hearne v Street* (2008) 235 CLR 125, 154-155 [96] (Hayne, Heydon and Crennan JJ). The principle is often referred to as the "implied undertaking" or the "Harman undertaking" after *Harman v Secretary of State for Home Department* [1983] 1 AC 280. It is an obligation of substantive law that applies to the parties to litigation and to third parties, including lawyers, expert witnesses and any other person who comes into possession of the material knowing it to have been obtained by way of court process.

[75]　See, for example, *Federal Court of Australia Act 1976* (Cth) Pt VAA.

form in which electronic evidence is presented and because it allows our critique of the UEL provisions to be housed against the familiar framework of documentary evidence.

The UEL defines a 'document' as 'any record of information' and inclusively provides for 'anything on which there is writing', 'anything on which there are marks, figures, symbols or perforations having a meaning for persons qualified to interpret them' and 'anything from which sounds, images or writings can be reproduced with or without the aid of anything else'.[76] This definition, no doubt, includes ESI.[77]

The contents of a document, including an electronic record or data, may be admitted into evidence through the tender of that document or one of a number of alternative means specified in s 48 of the UEL, including tendering a copy of the evidence or:

> if the document in question is an article or thing on or in which information is stored in such a way that it cannot be used by the court unless a device is used to retrieve, produce or collate it—tendering a document that was or purports to have been produced by use of the device.[78]

In *Wade v DPP*,[79] it was held that closed circuit television footage is clearly a document capable of reproduction using an appropriate device to reproduce the images.[80] By analogy, data may be converted by a device with the appropriate software into a comprehensible format and therefore may be admitted through s 48(1)(d) of the UEL. The data extraction and transformation process may need to be supported by the expert testimony of the forensic computer technician who performed the work. The Australian Law Reform Commission explained that the purpose behind this provision is to enable admission of secondary evidence of the contents of modern information storage media and, in particular, data and electronic information in a comprehensible form, such as through a printout or via the display of the information using software.[81]

A party wishing to adduce evidence of the contents of a computer record may do so by way of a hard copy document, including by tendering the printout of some electronic file where appropriate.[82] The abolition of the 'best evidence rule' conveniently allows electronic evidence to be tendered absent debate over originality, as the concept of and distinction between 'copy' and 'original' is not a straightforward one.[83] The simplicity and feasibility of doing so depends on the nature of the data or electronic record to be adduced; a digital photograph can be easily printed or displayed in a graphic form, whereas some gathered data, such as the geolocation data from a fitness tracker, may not so easily be reproduced without active data processing and presentation.

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[76]   UEL s 3 (definition of 'document').
[77]   See, for example, *Sony Music Entertainment (Australia) Ltd v University of Tasmania* (2003) 129 FCR 472.
[78]   UEL s 48.
[79]   (2014) 41 VR 434
[80]   Ibid [24].
[81]   Australian Law Reform Commission, *Evidence (Interim)* (Report No 26, 1985) vol 1, 26 [651]; see also Stephen Odgers, *Uniform Evidence Law* (Thomson Reuters, 13th ed , 2018) 272.
[82]   Justice Peter Brereton, 'Evidence In Civil Proceedings: An Australian Perspective On Documentary And Electronic Evidence' (Speech, National Judges College of the Supreme People's Court of The People's Republic of China, September 2007).
[83]   Allison Rebecca Stanfield, 'The Authentication of Electronic Evidence' (Doctoral Thesis, Queensland University of Technology, 2016) 12.

B   *Previous representation made by a person*

Relevant documentary evidence without an original use is hearsay. Documents are traditionally scribed by a person and vulnerable to inaccuracy. Acknowledging the raft of exceptions that are tantamount to hearsay being a rule of re-inclusion, the UEL hearsay rule purports to prevent unreliable evidence of intended previous representations by precluding the admission of representations which cannot be challenged for meaning.[84] Section 59 acknowledges the fallibility of representations made by people, whether that be a result of a self-held or pressured motive to record untruths, poor recollection, or an inability to recall with precision. Traditional documentary evidence may contain representations of fact adduced to prove the truth of those facts. The introduction of autonomous data-generating technology, such as that integrated into eObjects, has introduced a new species of documentary evidence that is, arguably, not subject to the perils of paper documents prepared by humans.[85]

IoT-derived evidence is not directly generated by a person. It is produced as a result of encoding written by a human, but assuming the verifiable and proper function of that code, the IoT evidence objectively records in accordance with the code. It is unaffected, at the point of its ambient recording, by human error, bias or motivations; again, other than those deliberately or unwittingly forming part of the program as a result of the originating source code of the eObject.[86] Some familiar territory that cross examination would demand be traversed in respect of such statements, hence the application of the hearsay rule, need not be trodden in the case of ESI produced from the proper function of an eObject. Concerns about recollection, dishonesty, deceitfulness and fabrication, interpretation of information, understanding of events or observations, bias or prejudice, details lost in transmission and the dangers of inaccuracy in repetition[87] are averted in the absence of human involvement in the generation of the electronic evidence distilled as a document.

This evaluation rests on the rationale of the hearsay rule restricting it to representations made by persons. Section 59(1) of the UEL provides:

> (1) Evidence of a previous representation made by a person is not admissible to prove the existence of a fact that it can reasonably be supposed that the person intended to assert by the representation.

The electronic evidence derived from IoT that is adduced to prove facts asserted by its representations may be regarded as exempt from the hearsay rule depending on the scope of 'made' for the purposes of s 59.

The compilation of ESI that is wholly generated by the operation of an eObject can be regarded as outside hearsay and need not be subject to any exceptional admission

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84   UEL, s 59.
85   See discussion below concerning 'black box' issues and the analogous concerns relating uniquely to electronic evidence.
86   In a related context, see, Peter B Imrey and A Philip Dawid, 'A Commentary on Statistical Assessment of Violence Recidivism Risk' (2015) 2(1) *Statistics and Public Policy* 25.
87   Australian Law Reform Commission, *Uniform Evidence Law* (Report No 102, February 2006), [7], [7.9].

requirement.[88] To what extent can second and third category generations of electronic evidence, as we have outlined those categories, be regarded as not 'made' by a person?

C   *Passively-generated representations*

Second and third category eObjects record data, which would constitute previous representations for the purpose of s 59 if later reduced to tangible output in the form of documentary evidence, without direct command or instruction from a person for that data to be recorded.

Second category eObjects require a direct computer-human interaction. Examples of these eObjects include a car that gathers, records and transmits data about automotive performance and geolocation, or an electric toothbrush that tracks and transmits data on battery life and usage. These devices record data (representations) as a result of their operation by a person. Those representations are not however, commanded, instructed or the result of the person directing the eObject to produce a particular record. The data is causally created by human operation of the eObject but the causative effect is with respect to the eObject operating – the human does not cause any particular data to be recorded. The recording of the data is a consequence of the operation of the eObject. The content of the data recorded is caused by the source code of the eObject, which operates by derivative rather than direct result of the usage of the eObject by a person. To illustrate using a non-technological example: Person A sets fire to a house in the view of Person B. Person B shouts "fire, fire!". A feat of Romanian gymnastics is required with the meaning of causation to allow a conclusion that A has made B make the representation of "fire, fire!" The representation of B derived from what A did, but the representation was made by B, it was not made by A. Absent a direct input from a person to produce a particular data set, such that the technology may be regarded as a mere medium (ie the sending of texts or emails) it is difficult to conclude that that data is made by a person.

It might be argued that the operation of second category eObjects results in the person indirectly making the representations recorded as data. This would capture the recording of data by eObjects where that data was recorded as a derivative result of the operation of the eObject by a person. That approach would require the meaning of 'made' in s 59(1) to include representations directly or indirectly made by a person. Where direct or indirect inference or cause is pertinent to the test, the UEL provides for that language, 'direct or indirect' to be expressly stated (see, eg, s 55). In the absence of such language, indirect causation can be regarded as outside the scope of 'made' for the purposes of s 59(1). This position against indirect scope of the provision is supported by the restriction of the hearsay prohibition to intentional, as opposed to unintentional, assertions.

Third category eObjects are more readily detached from human input. These eObjects, as we have defined, record data according to programming that is built into the autonomous function of the device. Provided there is power to the device and it is 'on', the device records data regarding ambient conditions irrespective of any human input, indeed, for as long as the power is connected. Persons may affect the recording of a third category eObject. For example, leaving the windows open or closed will affect air

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88   See the reasoning in decisions such as *Mehesz v Redman (No 2)* (1980) 26 SASR 244, 252 concerning computer analysis and record generation.

control temperature readings on air conditioners, as will the number of foodstuffs placed in a refrigerator. These human activities, however, could not be regarded as sufficiently proximate to the data recorded by the eObject such that they 'make' the representations.

It appears that the greater the automation of the technological (eObject) device, and the more passive the human input, the more irrefutable it is that the data recorded will not be subject to hearsay restriction, to the extent that the data provides relevant representations.[89] The inapplicability of a fundamental evidential safeguard against unreliable evidence, the hearsay rule, to a burgeoning source of evidence, namely third wave technology, should be of concern. The bases of those concerns may be centred around the difficulties inherent in authentication of IoT-derived electronic evidence.

An example introduces the problem. Revert to the exemption of third category eObjects from the hearsay rule as recording representations not made by persons. That presumes persons were passive with respect to the source data from which the eObject records. As observed in describing the three categories, the third category (just as the second) may be overridden by direct human input. Taking actions to deliberately increase the temperature of a room or appliance will, of course, alter the data autonomously recorded by the sensory capacities of the eObject. In that case, the present answer on the hearsay prohibition may be turned around: the data recorded by the eObject reflects representations that may be attributed to a person and regarded as being made by them. If Person A lights the fire and then threatens to harm Person B unless Person B yells, "fire, fire!" it can far more readily be concluded that the representation was made by Person A, at least causatively. Similarly, if a room is heated or cooled, the person doing that may be regarded as making the representations of high or low temperatures the eObject in the air conditioner records. The point is that in these examples, as a matter of principle, the hearsay rule has work to do because the ambivalence of technology which grounds our exclusion of its data from the rationale of hearsay, is replaced with an appreciation that the eObject, like Person B, has been the vehicle for the making of representations of another person. The response to all this may be, of course, that it is a matter of evidence in each case as to whether admissibility rules will apply. The retort to that tautologous criticism is how will we know or detect if the autonomously operating eObject has been altered or manipulated?

V   IOT-DERIVED ELECTRONIC EVIDENCE UNDER THE UNIFORM LAW: AUTHENTICATION

A   *The Humanity of Authentication*

The authentication of evidence traditionally introduces two critical aspects of evidence to the court: its identity and its provenance. Doctrinally, authentication requires that a party adducing evidence prove that the evidence is what the party claims it to be, by identifying what it is, its authorship, its provenance, the chain of custody or possession and, in the case of electronic evidence, the proper functioning of the device that generated the evidence. In the case of documentary evidence, authentication is

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[89]   Odgers (n 81) 364-5.

typically via the testimonial evidence of the author of or someone with personal knowledge about the document.[90]

How is ESI produced from an eObject within the IoT authenticated? The inclination would be to treat IoT-derived evidence like any other electronic evidence. It looks the same as other pre-third wave evidence when presented to court – it is being adduced as a document. The provenance may also be neatly explained as a print out from the relevant device, for example, a FitBit device. But, if IoT-derived electronic evidence has been changed, deliberately or accidentally as discussed earlier, its very authenticity is called into question in a manner that may not be addressed, in like fashion to situations where manipulation concerns involve non-electronic-derived or first category electronic-derived forms of real evidence. The critical difference is the absence of human input in the ordinary functioning of the device.

The absence of human input denies the traditional, ubiquitous means by which courts sought to establish the authenticity of evidence and give confidence and credence to their decisions regarding real evidence – namely, human testimony. In 1999, Bryson J enumerated the traditional bases on which the authenticity of evidence was established, all of which relied on human input. His Honour said:

> …the authenticity of a document may be proved by the evidence of the person who made it or one of the persons who made it, or a person who was present when it was made, or in the case of a business record, a person who participates in the conduct of the business and compiled the document, or found it among the business's records, or can recognise it as one of the records of the business.[91]

Bryson J laid emphasis to the essentiality of human input into the determination of authentication. He said:

> The Court acts almost always on narrations which must have a human origin…For the Court to feel confident that it should act on any narration it is very important to have a human witness who has pledged, by oath or affirmation, that the narration is true: someone who is responsible for it.[92]

In the context of electronic evidence, this requires the party to prove that the evidence is what it purports to be, requiring that its identity, manner of generation, origin, provenance and handling history are proved. In relation to traditional, first category computer-generated evidence, denoted by active human input, this required that the proper or ordinary function of the computer or device, at the time the evidence was generated, be addressed.[93] Authentication could, in most cases, be achieved through the admission of an affidavit by a person who, at the time when the evidence was generated or afterward, had responsibility for the creation or keeping of the evidence.[94]

On this, the 20th anniversary of these remarks, the courts are faced with a dramatically increased, and increasing, amount of electronic evidence. The third wave challenge of

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[90]   Cf the position in the USA, in which metadata has been used as a means to authenticate electronic evidence: *Lorraine v Markel* 241 FRD 534 (D. MD, 2007).
[91]   *National Australia Bank Ltd v Rusu* (1999) 47 NSWLR 309 ('*Rusu*'), [17].
[92]   Ibid [34].
[93]   Odgers (n 81) 349.
[94]   UEL ss 170, 171.

electronic evidence is the removal of human input from the operation of the technology capturing the electronic evidence. Previous technology produced outputs which, whilst calculated and compiled by machine, did so at points in time which were set and commanded by human input. This provided for a human connectivity to the chronology of the generation of electronic evidence. Autonomous recording, storage and transfer removes human direction or oversight of the data. Accessing IoT-derived electronic evidence is a distillation of intangible evidence, the recording of which may not have been commanded or visited by a human being until the point of download. Autonomous computing relocates the human element to a retrospective point of access, where previous waves of computing required point of capture by human input.

The absence of human input removes the IoT-derived evidence from the purview of the hearsay rule because the automation of recording eliminates the potential human foibles and infractions against which hearsay guards. The paradox is that this pathway to admissible use relies on the very divorce of the IoT from human input, monitoring or awareness that derogates from the capacity of the human-centric trial to authenticate IoT-derived electronic evidence. This derogation is likely to become more significant as future waves of autonomous technology decreasingly rely on human input; whilst humans increasingly rely on these technologies.

The automatic paradox in litigation is consistent with, and an extension of the general, or workforce, automation paradox.[95] The workforce paradox finds the need for human labour contributions increases as automation of workforce tasks increases; even if the human contributions required are different in type from previous labour tasks, which have been tasked to technology. The paradox is that the increase in automated tasking does not decrease the need for human tasking. This is consistent with the automation paradox in litigation which depends on human input to authenticate outputs of autonomous technology. The workforce paradox sees the increasing need for human input to perform tasks derivative from increased automation. The litigation paradox shares the same quality of requiring human input when the autonomous operation of the technology should seemingly suggest the capitulation of human involvement.

The unique problems in authenticating IoT-derived evidence may be illustrated by comparison to authenticating traditional forms of real evidence. Take, for example,[96] the knife produced by the Crown on a violence charge where it is said to be the relevant weapon. If the knife is shown to have been collected from the scene, there is a prima facie basis for its authentication. If counter arguments suggest the knife has not been kept according to chain of custody rules, has been altered, or has otherwise been the subject of tampering, the court may exclude the knife from evidence altogether as not being the evidence it purports to be (which may result in the *nolle prosequi* of the prosecution case). It is more likely that this contest will be left to the course of trial and affect the weight to be accorded the knife as a piece of evidence. We note that the point at which authentication arises for consideration is unsettled. One line of authority suggests it is a pre-condition to admissibility, another line of authority indicates it is a matter for the tribunal of fact going to the weight of the evidence. We discuss this below. Presently, the point is that, regardless of the line of authority followed, the

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[95]	See, eg, James Bessen, 'The Automation Paradox', *The Atlantic* (online, January 19 2016) <https://www.theatlantic.com/business/archive/2016/01/automation-paradox/424437/>.

[96]	Noting that while an example from the criminal trial perspective has been selected as particularly memorable, the same principles apply in the civil trial context.

authentication of the knife is an argument that is within the structure of the UEL and the tenets of the adversarial trial to resolve because its provenance is almost certainly a contest of human testimony.

Take, for further example, the document in a civil dispute that the plaintiff claims to be genuine and the defendant claims to be forged. Support for their respective arguments may involve allegations that certain machines were used to produce a signature; they may rely on expert evidence regarding technological processes that could have imitated a signature. The reliance on technology in these supposed contentions still locates the use of technology as an extension of direct human input. Whether technological devices were used to produce the signature, just as in cases where the claim is forged handwriting, the evidence regarding the contentions is dependent on human input and direct human involvement.

In the case of second and third category eObjects forming the IoT, the human input is absent. The ESI is reduced to a tangible form at a later point in time than its capture. The human who downloaded and produced (printed) the data may be able to speak to that process, but for IoT-derived evidence the point of capture, storage and network transfers have all occurred without human command, or even awareness. In the inverse situation, where deliberate manipulation is involved, the autonomous eObject is not able to produce a record or metadata that would indicate any particular interference.

The circumstances in which electronic evidence derived from eObjects may be susceptible to undetected and even undetectable (depending on the self-diagnostic programs and capacity of the eObject) alteration are increased from earlier, immobile technology. The mobility of eObjects, and the consequential volatility and vulnerability that result, provides a myriad of circumstances in which their initial or transferred capture of data could be changed. We outline a non-exhaustive list.

First, electronic evidence is liable to be unalterably and untraceably manipulated, intercepted and/or modified. This is especially for eObjects which by virtue of their mobility frequently transmit over networks that may be private or public with different security protocols in place. Security concerns may be divided into two deliberate forms: those relating to human or automated cyber-attack on the IoT, and those relating to physical (real-world) intervention with a data storage medium. In the latter case, signs of interference may be more readily detectable but the effect of that interference on intangible electronic data may remain inscrutable.

Secondly, electronic evidence from eObjects may be similarly altered by inadvertent or accidental actions. For example, placing cold or hot objects, insulation or conducting materials around eObjects taking temperature readings may manipulate the data in unintended ways. Whilst these extrinsic matters could themselves be the subject of evidence, akin to whether an eyewitness is wearing prescribed spectacles, in the case of electronic evidence the occurrence or otherwise of the extrinsic matters affects the output electronic evidence such that uncertainty arises with respect to whether it is what it purports to be. The same is not true of tangible forms of evidence that human sensory capacity (sight, for most evidence) can adjudge as at least meeting the threshold provenance requirement of authentication.

Thirdly, electronic evidence may mislead or misrepresent on account of ineffectual or intermittent use by humans. For example, a motion sensor may be incorrectly orientated towards a nearby wall or closed area rather than toward an open area that it ostensibly monitors, resulting in data that may misrepresent activity in the open space. Similarly, a wearable fitness tracker may be worn at some times and not others, or may be worn by several persons at various times. Absent testimony, these differentiations may be inscrutable and, in such a case, the authenticity of the electronic evidence is linked to human testimony in such a way that there is no independent basis for the electronic evidence to assert its own provenance. This is contrary to the general approach to machine generated evidence as being what it purports to be.

Finally, eObject-derived electronic evidence must be stored and extracted, and may need to be processed, in order to be presented in a comprehensible form as evidence. The integrity of each of these processes is vital to ensuring the tangible form purports the intangible form, and each process is susceptible.

ESI is unique, in the sense that the intangible data, being information itself, is evidence, as opposed to some tangible storage medium containing the information. The authenticity of the digital media must be examined by reference to the information itself. It has been suggested that the identity of the information (that is, what it purports to be) and its constancy (that is, that it has not been altered or modified without a precise record of that alteration or modification) are the key characteristics of authenticity and the notions of 'immutability' or 'integrity' encompassed by authentication.[97] The integrity of electronic evidence depends largely on the authorship and authenticity of the enabling technology. This traditionally depended on the proper operation of the device that created the ESI, and required that the electronic record had been extracted and handled without altering or omitting any information.[98] The authenticity of the evidence, in particular, is determined by whether the ESI has been altered or modified since its creation (and whether any such modification has been recorded precisely).[99]

Electronic evidence must be what it purports to be. No matter where this task is assigned in the trial process, discussed below, it is made difficult on account of electronic evidence being a reduction of the intangible to the tangible. This reduction has been problematic for all generations of technology-derived evidence, including the traditional non-autonomous technologies dependent on human input. Determining the origin, provenance and vulnerability to contamination of data generated and transmitted by IoT linked eObjects is especially challenging, given the absence of human input, and so therefore are the resulting lacunae that can arise in testimony of commands, chronology and visual confirmation regarding data.

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[97]   George L. Paul, *Foundations of Digital Evidence* (American Bar Association, 1st ed, 2008), 36.
[98]   See Stanfield (n 83) 11; see also Yatan Dahiya and Sunita Sangwan, 'Developing and Enhancing the Security of Digital Evidence Bag' (2014) 1(2) *International Journal of Research Studies in Computer Science and Engineering* 14-25. See also Paul (n 95) 15ff.
[99]   Stanfield (n 83) 11.

B *Traditional authentication*

It has been suggested that the court will use two criteria to measure the weight of electronic evidence. One, probative value, which takes heed of the authorship, authenticity, correct operation of a device and reliability of the evidence (and the device that generated it). Two, whether the evidence has been properly extracted and handled (and if necessary, transformed into comprehensible format).[100] The authenticity of electronic evidence may be disputed through challenging the provenance and historic handling of the ESI. Challenges focus on exposing uncertainties over how the electronic evidence came into existence and its treatment since then, including any transformations, alterations or adulterations. Examples include: scrutiny over the identity of the operator of the relevant device; scrutiny over the reliability of the relevant computer software; a claim that the ESI was altered, manipulated or damaged between the creation of the ESI and the commencement of proceedings; or a claim that the ESI was altered, manipulated or damaged when it was extracted for the purpose of the proceedings.[101]

We have outlined the significance of the authentication problem for IoT-derived electronic evidence compared with traditional approaches to authentication of tangible and human input-derived computer evidence. We explained the particular authentication points for ESI derived from eObjects in consequence of outlining how the mobility of many eObjects promotes authentication issues arising from their volatility and vulnerability. The uniform law nonetheless provides that evidence is admissible if it is 'relevant in [the] proceeding' and is not excluded by provisions of the UEL.[102] Evidence is relevant where 'if it were accepted, [it] could rationally affect (directly or indirectly) the assessment of the probability of the existence of a fact in issue in the proceeding'.[103]

The law is unsettled with respect to whether challenges to authentication are matters of law or matters of fact under the UEL. If they are the former, they rightly arise for the tribunal of law to determine in consideration of the admissibility of evidence. This view was espoused by Bryson J in the New South Wales Supreme Court.[104] If authentication is not a question going to admissibility but rather a matter left to determinations of fact and assessments of the probative value of evidence, questions of authentication do not independently arise in determining admissibility and are matters of fact to be left to the tribunal of fact. This view was advanced by Perram J in the Federal Court,[105] in rejection of the Bryson J view. The relevant debate is about whether a challenge to the authenticity of evidence is a question of law, for the tribunal of law to determine as a prerequisite to admissibility and as a separate and independent question from that of relevance, or, whether it is a question of fact such that authentication does not arise as a requirement of admissibility. The outcome of that debate ultimately pertains to who should determine an authentication question and at which point/s of trial. That outcome does not, and does not purport to, address how challenges to authentication can be adequately resolved given the significance and

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[100] Stanfield (n 83) 11; see also Dahiya and Sangwan (n 96) 14-25; see also Paul (n 95) 36.
[101] Stanfield (n 83) 187.
[102] UEL s 56.
[103] UEL s 55(1).
[104] *Rusu.*
[105] *Australian Competition and Consumer Commission v Air New Zealand Limited (No 1)* [2012] FCA 1355 ('*Air NZ*').

novelty of authentication issues that can arise with respect to electronic evidence deriving from eObjects in the IoT.

In circumstances where data is generated by a device or computer, it is possible that no such person is available, or exists, to provide that testimonial evidence. For data generated while an eObject is being used or operated by a human, the human can give evidence about the use or operation of the device but not about the data generated concurrently by the device. For evidence generated autonomously by the ordinary independent operation of the eObject, an expert may provide evidence on the processes by which the ESI was generated, as was recently the case in Canada in respect of data extracted from a wearable fitness tracker.[106] The expert however, is limited to testimony of the same type as given for first category technology – testimony regarding ordinary process and function. It has been suggested that the authentication of electronic evidence is a 'trivial showing' and a formality subordinate to the substantive interrogation of the proper function of the system, software or device that generated the evidence.[107] Conventionally, the admissibility of electronic evidence has been determined by the question of whether the device that generated the evidence was functioning correctly, or as it would be expected to operate, at the time the evidence was generated.

This inquiry is facilitated by the presumptions contained in ss 146 and 147 of the UEL, which are rebuttable upon furnishing evidence that the device malfunctioned or functioned in an unexpected way when generating the evidence. The operation and significance of these provisions is discussed later. The ESI gathered by action of eObjects in passivity of human input defies human sensitivity or awareness of its timing and manner of collection. Electronic evidence is typically authenticated by methods which are limited to analysis of computer coding to determine if the machine functions according to its code. Putting aside issues regarding the accessibility of that code,[108] and assuming the code is verifiable, the examples we have given earlier indicate that the proper functioning of the technology can be an incomplete answer to the authenticity of the electronic evidence produced. This owes to the reduction of the intangible to the tangible and the absence of human activity in the point of information collection, which would otherwise serve as a check and balance.

The authentication problem for IoT-derived evidence is that of knowing what we are accepting. Returning to earlier examples, even if a dispute arises, we know the knife is a knife, even if there is a problem in its handling; we know the forged document is a document disclosing some contract or bequest, even if it does so fraudulently. How do you authenticate something the provenance of which is not traceable to the time of its creation but only the time of its output? What is the reference point? Whether it is a legal or factual criterion, the question is: what is being prima facie accepted?

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[106]   Parmy Olsen, 'Fitbit Data Now Being Used in the Courtroom', *Forbes* (online, 16 November 2014) <https://www.forbes.com/sites/parmyolson/2014/11/16/fitbit-data-court-room-personal-injury-claim/#762ecff97379>.
[107]   Stanfield (n 83)12.
[108]   See, eg, Imwinkelried (n 15) 97.

C   *Unknowing acceptance*

The following example illustrates the point. We first frame the example using output from a first category device, a mobile phone. The example is true and, as will be apparent, may be familiar. Person X flies from Sydney to Paris. Upon landing in Paris, X turns off 'flight mode' on their smartphone and takes a photo from the plane window of a 'Welcome to Paris' sign affixed to the terminal building. Person X returns the phone to their pocket, disembarks, collects baggage and departs for their hotel. Following a rest, X retrieves their phone and sends the photo via MMS to a friend at home, in Sydney. The friend replies by text, 'that is an odd sign to see in Sydney…' Person X, momentarily confused, looks again at the photo just sent and now observes it is geotagged and time-stamped as taken in Sydney, Australia at 22.03 (22.05 was the departure time of the flight from Sydney to Paris and it was close to if not at this time that X recalls switching the phone to 'flight mode'). Unrecognised and unknown to X, at the time of taking the photograph aboard the landed plane, the phone's settings had not updated, given the switch from flight mode and the change of continent, and the photo was logged with a Sydney geolocation and Australian timestamp.

Consider if this photo was to be adduced in court proceedings to establish place or time of its generation by X, or any other matter referable to its recording of time and place. In our example, of course, there would be evidence to negate the authenticity of the photograph as being taken at the time and place recorded. There is the visual content of the photo itself ('Welcome to Paris'); the associated response from the friend expressing surprise; the flight itinerary showing X had a booked flight to Paris and the evidence of Person X indicating the circumstances in which the photograph was taken. Authentication is often established through testimonial evidence but can also be shown through circumstantial evidence. All this evidence permits of a finding, in contradiction of the metadata of time and place, that the photo is not authentic, that is, it is not a photo taken in Sydney at 22.03 local time, as it purports. The point however, is that that finding is entirely dependent on evidence directly from or deriving from human oversight and input into the making of the photo.

Assume the photo had not included the welcome sign. Rather, the eager tourist X had simply taken a 'touchdown photo' of the runway and other nondescript surrounds. There would be no visual alert in the output photo to query the authenticity of the metadata for the photo; it could be a runway in Australia. Assume the photo was not sent by X to a friend, but that X simply took the photo for posterity. Assume X does not look at the photo until some distant time in the future, months or years, in chance reminiscing. The human input that could indicate the dubious provenance of the photo would not exist or, likely, be significantly eroded by memory. There would not be anything revealed by the metadata itself, or the encoding of the photo feature of the smartphone, to suggest error with respect to the metadata. In the United Kingdom and the United States, metadata accompanying files has been successfully employed as a means of authenticating ESI.[109] More importantly, why would the metadata be checked in the first place? For instance, the photo could be shown as not taken in Sydney by certified photos of runways in Sydney airport, but why would such a survey of airports be undertaken? The photo, retrieved at a point sometime after its creation, would appear in all respects as it purports, a photo taken in Sydney at the recorded

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109   *Greene v Associated Newspapers* [2005] QB 972; *Lorraine v Markel* (2007) 241 FRD 534, [15] – [16].

time, and there would be a dearth of material to suspect, let alone from which reasonable inferences could point,[110] to the contrary.

In the modified example, there would be little if anything from the photo itself, its associated metadata or the smartphone device to suggest it was other than a photo taken in Sydney. This is possible in situations where the electronic evidence is produced by first category technology that remains controlled by active human input. The potential for second and third category technology, passive eObjects, to record erroneous data is palpable given their recording of information at times and places autonomously from human awareness or command. The advent and proliferation of autonomous technology demonstrate the difficulty in forcing their authentication into traditional approaches that rely on the tangible form of the evidence and the safeguard of human input.

### D	*Determining authenticity*

As we have discussed, the admissibility of electronic evidence is often dealt with by reference to whether the device functioned properly at the time the evidence was generated. The rebuttable presumptions contained in ss 146 and 147 of the UEL are relevant to the inquiry. Section 146 provides that:

> (1) This section applies to a document or thing:
>   (a) that is produced wholly or partly by a device or process; and
>   (b) that is tendered by a party who asserts that, in producing the document or thing, the device or process has produced a particular outcome.
>
> (2) If it is reasonably open to find that the device or process is one that, or is of a kind that, if properly used, ordinarily produces that outcome, it is presumed (unless evidence sufficient to raise doubt about the presumption is adduced) that, in producing the document or thing on the occasion in question, the device or process produced that outcome.

Section 147 provides a similar presumption for documents (only) in the context of the production of business records (applying a similar test to the business records hearsay exception).

The presumption in s 146 of the UEL relates to documents (which itself is broadly defined) and 'things'. In *North Sydney Leagues' Club Ltd v Synergy Protection Pty Ltd*,[111] Beazley JA, with whom MacFarlan and Whealy JJA agreed, said:

> Section 146... does not declare the presumed fact to be the fact. Rather, the Court first needs to be satisfied, viz '[i]f it is reasonably open to find' that the device is of a certain kind and performs a certain function before the presumption operates. The presumption will not arise if there is evidence that raises a doubt about the presumption. Evidence that raises 'a doubt' does not need to be of the same quality or of the same probative strength as evidence that is required to satisfy the civil standard.[112]

110	See UEL s 58.
111	(2012) 83 NSWLR 710.
112	(2012) 83 NSWLR 710, [60]; see also Odgers (n 81) 1287; Australian Law Reform Commission, *Evidence (Interim)*, (Report No 26, 1985) vol 1, 26 [705].

The presumption weighs in favour of evidence generated by technology being generally reliable and trustworthy and eliminates the need to prove the working accuracy or proper function of the device. The primary issue addressed by the provision is the inefficiency in proving the provenance, accuracy and genuineness of every photocopy, copied media storage device, tape recording or other form of evidence produced in the normal course of a device's operation. Of course, the presumption is rebuttable by evidence sufficient to raise doubt about the proper operation of the relevant device. That evidence need not meet the same quality as would be required under the civil standard of proof. A party opposing the admission of the evidence bears the burden of furnishing sufficient evidence that the document has been produced by the device in accordance with the usual functioning and output of that device. While the burden of proof shifts, by operation of the statutory presumption, the party opposing the admission of the evidence need only provide sufficient evidence to raise doubt. This, says the court, is a substantially less onerous burden than the civil standard,[113] in that the party need not prove that the contrary is true.

Section 56 of the *Evidence Act 1929* (SA) now provides a like test to that of the UEL, although the South Australian provision removes any probabilistic comparison as it only requires 'evidence to the contrary' of the presumptive positions to displace the presumption. The previous, now repealed, s 59B of the South Australian evidence law provided for the following incremented test:

> (1) Subject to this section, computer output shall be admissible as evidence in any civil or criminal proceedings.
> (2) The court must be satisfied—
>> (a) that the computer is correctly programmed and regularly used to produce output of the same kind as that tendered in evidence pursuant to this section; and
>> (b) that the data from which the output is produced by the computer is systematically prepared upon the basis of information that would normally be acceptable in a court of law as evidence of the statements or representations contained in or constituted by the output; and
>> (c) that, in the case of the output tendered in evidence, there is, upon the evidence before the court, no reasonable cause to suspect any departure from the system, or any error in the preparation of the data; and
>> (d) that the computer has not, during a period extending from the time of the introduction of the data to that of the production of the output, been subject to a malfunction that might reasonably be expected to affect the accuracy of the output; and
>> (e) that during that period there have been no alterations to the mechanism or processes of the computer that might reasonably be expected adversely to affect the accuracy of the output; and
>> (f) that records have been kept by a responsible person in charge of the computer of alterations to the mechanism and processes of the computer during that period; and
>> (g) that there is no reasonable cause to believe that the accuracy or validity of the output has been adversely affected by the use of any improper process or procedure or by inadequate safeguards in the use of the computer.

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[113]   Odgers (n 81) 1286; *North Sydney Leagues' Club Ltd v Synergy Protection Pty Ltd* (2012) 83 NSWLR 710, [60].

The factors listed are a 'checklist' concerning the production, storage and communication of ESI that are relevant to its reliability and provenance. The factors remain based on authentication of machine output being human-centric. As technology records, stores and transfers data independent of human input or monitoring, these legal provisions, regardless of their extent and descriptiveness, become decreasingly fit for purpose because the questions they are asking and the inquiries they permit to be made will decreasingly reveal any basis to query or doubt the operation and output of the autonomous technology. Enhanced objects connected to the IoT are part of a networked autonomous evidence gathering system which, excluding the provision of power supply, remains largely and increasingly uninterrupted or commanded by human input. The notable involvement of human input is to retrieve prior recorded and stored data.

E   *The adequacy of authentication provisions*

The presumptions concerning both the admissibility and the authenticity of computer-generated evidence in the UEL do not expressly address (a) the security around the device that generated the relevant data, (b) security over the data during transmission and in storage, (c) the authenticity of the ESI itself, as opposed to the reliability and authenticity of the process or device that generated it.[114]

Issues (a) and (b) are of particular concern, as data is, once obtained, so easily and irreversibly modified, often with little trace of the alteration if the alteration is affected by an expert hand, without the author or user of that data being aware of the alteration. This is particularly the case in circumstances where an eObject is connected to a network such as the internet, and data can be intercepted and modified intra or post transmission. In a submission to the Australian Law Reform Commission, the Law Society of New South Wales submitted that s 146 envisages application to machine-produced evidence such as photocopies and other simple processes, which are not applicable to far more sophisticated processes such as the generation of data by computers, especially in light of the facts that such data can be affected by 'bugs' and inherent software infirmities, or may be carefully and untraceably manipulated and accessed by powerful viruses and hackers.[115]

Issue (c) appears to have been addressed in Canada through the imposition of the following burden on a party seeking to adduce electronic evidence:[116]

> [T]he person seeking to introduce an electronic record [in any legal proceeding] has the burden of proving its authenticity by evidence capable of supporting a finding that the electronic record is what the person claims it to be.

This places the emphasis on proving the identity and integrity of the ESI itself, as opposed to the system that generated it, although whether this is practically achieved is doubted by some proponents.[117] The provision performs the task of allocating

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[114]   See Stanfield (n 83) 38; see also Emmanuel Laryea, 'The Evidential Status of Electronic Data' (1999) 3 *National Law Review* 1 [27].

[115]   Litigation Law and Practice Committee of the Law Society of New South Wales, Submission E 103, 22 September 2005, 173; Stanfield (n 83)192.

[116]   *Uniform Electronic Evidence Act* (1998) (Can) s 3.

[117]   Ken Chasse, 'The Admissibility of Electronic Business Records' (2011) 8(2) *Canadian Journal of Law and Technology* 105.

burdens and standards with respect to the presentation of electronic evidence. That is an entirely helpful and appropriate function for evidence law. Regarding the substance of what is to be achieved, the provision can be attacked as trite and, thereby, otiose. For as long as trials are conducted according to principles of rational verdicts, it is trite to suggest a party leading evidence needs to establish the evidence is what the party claims.[118] A party seeking to establish their case knows this is necessary as a matter of the plausibility of their case, and it is otiose to tell them so. Such criticisms may be returned to the other as, in one sense, most if not all the rules of evidence may be argued as trite to the protagonist seeking to persuade a rational deliberative process by the presentation of probative evidence. The important point for present purposes is that, as we have discussed, particularly apropos acceptance, the person seeking to introduce the electronic record, as well as those to whom it is presented, may have no reason to think it is other than that which it purports to be, notwithstanding it is not at all what it purports. The law is trite and thereby unhelpful if it merely asserts the requirement of provenance in the age of trials adjudged by IoT-derived evidence.

Similar issues arise whether the presumptions do not apply or have been rebutted. The ordinary means of authentication of machine-generated evidence is by proving that the machine was functioning correctly at the time that the evidence was generated, which may be achieved by way of lay testimony by somebody operating the relevant machine or by an expert who is able to examine its historical performance. This may involve the use of metadata or an operation log, or evidence from a specialist in 'computer forensics', which is an emerging discipline relating to the identification, preservation, analysis and presentation of ESI.[119] Indeed, a forensic data-handling expert may also be involved in the storage, extraction and 'translation' of ESI in order to copy, process and present the ESI. In such a circumstance, they may be required to provide evidence about how they handled the evidence and preserved its evidentiary integrity.[120] However, this inquiry fails to account for how the data was created and collected, what data was and was not recorded that could have been, the provenance of the data from the time it was recorded to the time it was extracted or collected for the purpose of the proceeding, and the security of the data during transmission and storage. The proper function of the device that generated evidence is merely one aspect of the identity and authenticity inquiry that must be undertaken to justify the admission of the evidence, or at least, to justify a substantial weighting being accorded to the evidence. It does not address the quality and completeness of the ESI, the storage and security of the ESI, or the constancy or integrity of the ESI itself. As such, these provisions may be critiqued as inadequate or incomplete to deal with authenticity of computer-generated evidence.[121]

Stephen Mason suggests that the authenticity of electronic evidence ought to be assessed according to five criteria. First, whether the data itself has changed since it was created, and if so, whether there is an accurate and reliable method of recording the changes. Secondly, whether the data can be demonstrated to have been continuously secure and unaltered between the time it was obtained for legal proceedings and its submission into evidence. Thirdly, whether techniques used to obtain and process the data can be tested. Fourthly, whether the data is proven to have

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[118]   Whether a question of law or fact, evidence must be authenticated at some point (if not multiple points) in the trial, cf, above re Bryson and Perram JJ positions.
[119]   Stanfield (n 83) 124.
[120]   Ibid 125-126.
[121]   See ibid 191.

been generated by the purported device. Fifthly, whether technical evidence of the data's integrity as being trustworthy and reliable has been furnished.[122] This approach is reminiscent of the repealed s 59B in South Australian evidence law. The starting criterion remains problematic for the reasons we have discussed. How is 'whether the data itself has changed since it was created' to be questioned and evidenced? In cases of fraud or like actions, retrieval of data or computer images may evidence the alteration or destruction of electronic records from that which purportedly appear on current searches of the stored data.[123] Those cases rely on the manipulation being deliberate and the product of human input. The growth of autonomous methods of amassing electronic evidence present a significant hindrance to the content or presentation of 'change' in the electronic record. The issue of authentication is not necessarily that there has been alteration but that the original record is erroneous. A matter which the absence of human oversight makes difficult to detect or even pinpoint to an origin for analysis.

We acknowledge our criticisms of existing and proposed authentication provisions and methods, without providing a framework for their replacement. Our purpose is to identify the lacunae in the existing law with respect to authentication that, principally, results from a human-centric paradigm for the authentication and rationalisation of evidence. That paradigm must shift as evidence is increasingly presented from autonomous technological functions. Regarding how authentication might be better achieved in third and future wave autonomous technology is, we suggest, a question for computational science and its associated engineering disciplines. With respect to the shift needed in the law, the question to be confronted is whether there is need and merit to distinguish between evidence generated by computational processes based on the ordinary level and requirement of human input. This bedrock question may inform safeguards the law puts in place with respect to accepting the provenance and use of certain types of electronic evidence.

V   CONCLUSION

The unique character of IoT-derived ESI, relative to traditional documentary evidence, and the volume that is and will continue to be (increasingly) generated, necessitate careful consideration of whether pre-trial litigation procedures and intra-trial evidentiary rules sufficiently deal with the unique character of this ESI. First, issues relating to the obtaining of ESI arise, including how and from where or whom the relevant data may be obtained. This turns on whether the possessor of the data is a party to the litigation, and how and where the data is stored. Much of the data generated by eObjects is stored on the cloud and is discoverable by anyone with access to that data through the relevant eObject or through other means. Once the identity, availability, and possession of the ESI are determined, the question turns to whether discovery (or production by different means, such as by way of subpoena or notice to produce) is justified, and how it may be put into effect so as to minimise the cost and delay of litigation. This may require the court, the legal representatives and the parties to carefully consider the necessity and utility of the discovery of IoT-derived information, and how discovery orders can be crafted in either a restrictive or prescriptive way. The volume of data may necessitate a creative or technology-assisted

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122   Stephen Mason (ed), *Electronic Evidence* (LexisNexis Butterworths, 3rd, 2012) [5.01]-[5.37].
123   This case strategy is often underpinned by seeking pre-action orders, such as Anton Piller or search orders.

solution, to ensure proportionality between the possible utility of the process and its cost.

We argued that IoT-derived evidence is not subject to the hearsay rule. The inapplicability of this evidential safeguard is magnified by the difficulties inherent in the authentication of IoT-derived electronic evidence. Despite being the output of largely or wholly autonomous technology operating absent human input or intervention, this IoT-derived ESI requires or relies on humans to authenticate it. The more divorced the data generation is from human input, the greater the need to verify its identity, integrity, provenance and authenticity. Putting pragmatic difficulties aside, the very nature of IoT-derived electronic evidence, and the eObjects that generate it, necessitates especial attention to addressing integrity and authenticity, as (i) electronic evidence is liable to be unalterably and untraceably manipulated, intercepted or or modified; (ii) electronic evidence from eObjects may be altered by inadvertent or accidental actions; and (iii) electronic evidence may mislead or misrepresent on account of ineffectual or intermittent use by humans. The UEL does not provide mechanisms that are apposite to these foibles of IoT-derived ESI.

We have discussed why certain legislative presumptions concerning relevance and authenticity prescribed by the UEL fall short of addressing crucial concerns around the security of the eObject that generated the relevant data, the security of the data during transmission and storage, and the authenticity of the ESI itself, as opposed to the reliability and authenticity of the process or device that generated it. The absence of a robust and prescriptive process or legislative test for the authentication of such evidence raises concerns about whether IoT-derived electronic evidence falls into an evidentiary fissure that lacks sufficient prophylactic measures to properly regulate its admission and assessment. A doctrinal safeguard ought to be the subject of further discourse and, perhaps, reform.

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TECHNOLOGY AIDED LEARNING IN DISPUTE RESOLUTION AND EVIDENCE: COMBINING VIDEO WITH ONLINE ANNOTATION/DISCUSSION IN A BLENDED LEARNING DESIGN

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The legal industry is expanding its use of technologies, which stimulates legal education practitioners to extend technology-enhanced learning opportunities. Law teachers can adopt innovative pedagogy to use the media of video to demonstrate dispute resolution skills such as negotiation/mediation and advocacy, supported by online discussion technology for granular analyses of skills demonstrated in the video. When teaching legal skills in two courses, Negotiation and Dispute Resolution (NDR) and Evidence, we argue that there is value in adopting a blended learning design that prepares students for practice through video and online annotation/discussion. The skills demonstrated by practitioners and built by students through this method offers scaffolds toward active student generation of authentic legal capability (eg practice through role-play) and written artefacts (eg a file note and cross-examination questions). This article explores the use of granular video annotation/discussion and key considerations for law teaching when adopting a blended learning design. It outlines two examples and provides a road map of how to approach blended learning when using video annotation/discussion in the legal education context.

I   INTRODUCTION

In Australia, legal education increasingly acknowledges the need to teach about digital technology, and law schools have included elective and core curricula dealing with such issues.[1] There are now subjects that provide the opportunity to build computer applications to solve legal problems and core courses include information on issues such as smart contracts and blockchain. For example, *FineFixer*, an application devised to help the public implement strategies to deal with fines, was initially developed by RMIT University students in an elective course and was later made available through the Moonee Valley Legal Service, funded by a grant from the Victoria Law Foundation.[2] Understanding blockchain arguably should be part of contract courses due to the nature of blockchain providing a verifiable trail to changes in contract terms.[3] A major area of development is online dispute resolution (ODR) and the changing nature of judging. Whilst alternative dispute resolution (ADR) has long been part of the legal landscape, providing the opportunity for dispute resolution that

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[1]   Law Society of New South Wales, *The Future of Law and Innovation in the Profession* (Report, 2017) 76-80 ('*FLIP Report 2017*').
[2]   Moonee Valley Legal Service, 'About Fine Fixer', *Fine Fixer* (Web Page, 11 March 2019) <https://finefixer.org.au/about-finefixer/>.
[3]   Jake Goldenfein and Andrea Leiter, 'Legal Engineering on the Blockchain: 'Smart Contracts' as Legal Conduct' (2018) 29(2) *Law and Critique* 141.

is quicker, lower cost and more informal than litigation,[4] ODR options are also now becoming more widespread. Tania Sourdin canvasses the various initiatives in ODR including online negotiation, mediation or decision-making portals and 'bots' as judges.[5] However, there has been some robust criticism of this approach due to concerns about ODR methods not providing the same standard of justice as traditional courts.[6] This is because the experience of ODR is markedly different from the experience of a court hearing with the accompanying procedural protections. Alongside changes to courts and dispute resolution are changes to the organisation of law firms, the use of artificial intelligence in basic legal work such as discovery, and outsourcing of common tasks such as research.[7] These developments point to an unsettled state of emergent technology in the legal landscape that adds to a context of digital advancement with caution for legal university educators.

Law students will not only encounter digital disruption in the nature of their legal work, but they are also experiencing change in the teaching of the law curriculum at university. Higher education is evolving with faculty staff increasingly engaged 'with options and technologies, including collaboration tools, video and media'[8] where video, as a visualisation medium, taps into 'the brain's inherent ability to rapidly process visual information, identify patterns, and sense order in complex situations.'[9] However, making sense of complex material is not necessarily guaranteed without the appropriate scaffolded learning experiences that are designed and supported by a sound understanding of online pedagogy.[10] To provide quality learning experiences, digital technologies are best used as tools of participation and communication to foster collaborative knowledge construction.[11] Academics have long argued in legal education that there is value in teaching legal skills in substantive areas of law,[12] and teaching legal skills in higher education through the use of technology is intended to enhance student learning and engagement with digital change. While digital video can be used to scaffold learning for students and encourage reflection,[13] it has often been used in legal education primarily for passive experiences. By combining video with online annotation or discussion it is possible to develop a more impactful learning design that improves student learning.[14] A recent study that contrasted passive viewing of a

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4   Laurence Boulle and Rachael Field, *Australian Dispute Resolution Law and Practice* (LexisNexis Butterworths, 2017) ch 1.

5   Tania Sourdin, 'Judge v Robot: Artificial Intelligence and Judicial Decision-Making' (2018) 41(4) *University of New South Wales Law Review* 1114.

6   Riikka Koulu, *Law Technology and Dispute Resolution: The Privatisation of Coercion* (Taylor & Francis, 2018).

7   *FLIP Report 2017* (n 1).

8   New Media Consortium and EDUCAUSE Learning Initiative, *NMC Horizon Report: 2018 Higher Education Edition* (Report, 2018) 35 <https://library.educause.edu/~/media/files/library/2018/8/2018horizonreport.pdf>.

9   Ibid 37.

10   Lillian Corbin and Lisa Bugden, 'Online Teaching: The Importance of Pedagogy, Place and Presence in Legal Education' (2018) 28 *Legal Education Review* 1, 10.

11   Kwok-Wing Lai, 'Digital Technology and the Culture of Teaching and Learning in Higher Education' (2011) 27(8) *Australasian Journal of Educational Technology* 1263, 1264.

12   Bobette Wolski, 'Why, How, and What to Practice: Integrating Skills Teaching and Learning in the Undergraduate Law Curriculum' (2002) 52(1-2) *Journal of Legal Education* 287.

13   Negin Mirriahi et al, 'Identifying Engagement Patterns with Video Annotation Activities: A Case Study in Professional Development' (2018) 34(1) *Australasian Journal of Educational Technology* 57.

14   Meg Colasante, 'Using Video Annotation to Reflect On and Evaluate Physical Education Pre-Service Teaching Practice' (2011) 27(1) *Australasian Journal of Educational Technology* 66, 83.

demonstration video of a cardiopulmonary resuscitation procedure with student annotation of the same video found that students who engaged with discussion via annotation experienced improved learning through increased concentration.[15]

Other studies have shown that there is value in scaffolding skills through the viewing of video of an industry representative performing a task or sharing professional practice insights.[16] This kind of learning design incorporates an authentic approach to learning where 'real world' skills are taught.[17] Use of video combined with online discussion can be a highly effective method of adopting digital technology in legal education.

This article explores the use of video in two courses (subjects) in a Juris Doctor program. *Negotiation and Dispute Resolution* (NDR) teaches the legal skills of negotiation and mediation while *Evidence* teaches advocacy. Through various learning and teaching investment grants from RMIT University, videos and curriculum designs were developed to prepare students with the legal skills and knowledge required to engage in role-plays or engage in legal writing tasks. The theory of blended learning was used in the learning designs to ensure that use of video and video-based discussion in the online environment was purposefully aligned to the face-to-face learning experiences. Blended learning refers to the intentional combination of online and face-to-face teaching and learning modes within the one course.[18] In the designs discussed in this article, students actively engage with the video material through peer co-construction in online annotation and discussion. In the NDR course, we filmed a video with an industry partner that demonstrated the skills used in conducting a mediation. The students discussed sections of the video online to learn about mediation theory and practice and later demonstrated these skills in a weekend intensive class devoted to role-playing. In the Evidence course, a video was made of a cross-examination. Students watch the video and then discuss aspects of cross-examination practice online in a discussion forum. They later demonstrate their learning regarding the skill of cross-examination by crafting their own questions to a new scenario. A summary of the two courses is provided in Table 1 below (and detailed descriptions are provided in Section VII).

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[15]   Po-Sheng Chui et al, 'A Video Annotation Learning Approach to Improve the Effects of Video Learning' (2018) 55(4) *Education and Teaching International* 459.

[16]   Narelle Lemon et al, 'Video Annotation for Collaborative Connections to Learning: Case Studies from an Australian Higher Education Context' In Laura Wankel et al (eds), *Improving Student Engagement and Retention through Multimedia Technologies: Including Video Annotation, Multimedia Apps, Videoconferencing, and Transmedia Storytelling Volume 6, Part F Cutting-Edge Technologies in Higher Education series*. (Emerald Group Publishing Limited, United Kingdom, 2013) 181, 185; Negin Mirriahi et al, 'Effects of Instructional Conditions and Experience on Student Reflection: A Video Annotation Study' (2018) 37(6) *Higher Education Research & Development* 1245.

[17]   Kathy Douglas, Meg Colasante and Amanda Kimpton, 'Exploiting Emerging Video Annotation Technology and Industry Engagement to Authentically Prepare Students for the Complex World of Work' in T Thomas et al (eds), *Research and Development in Higher Education: Learning for Life and Work in a Complex World* (Higher Education Research and Development Society of Australasia, 2015) vol 38, 1; Anthony Herrington and Jan Herrington 'What is an Authentic Learning Environment?' in Anthony Herrington and Jan Herrington (eds), *Authentic Learning Environments in Higher Education* (Idea Group, 2006).

[18]   Michael Moore, 'Foreword' in Curtis Bonk and Charles Graham (eds), *The Handbook of Blended Learning: Global Perspectives, Local Designs* (Pfeiffer Publishing, 2006).

Table 1. Summary of the use of video-based discussion in the two case examples

Course (Subject)	Legal skills demonstrated in video	Legal practitioner input in video	Discussion technology
Negotiation and Dispute Resolution (NDR)	Negotiation/mediation skills	Lawyer/mediator and parties enacting a mediation session	Discussion Board
Evidence	Advocacy skills	Barrister enacting cross-examination of a witness	Discussion Board

In this article, we first discuss the value of the legal skill demonstrated to the law students in these courses. Next, we outline the value of combining face-to-face student experiences with technology through the theory of blended learning. Later, after providing our two case examples, this article culminates with a roadmap of specific steps when using blended learning and video in the legal education context. [19] Drawing upon research conducted in an initial video annotation project we used those research findings to underpin blended learning designs for the two courses of NDR and Evidence which are intended to be transferable to other university legal skills teaching contexts.

II   ADR PEDAGOGY

ADR includes the key legal skills of negotiation and mediation, which are both knowledge areas and legal skills that are commonly taught in courses titled Dispute Resolution.[20] Law school offerings in this pedagogical area can combine civil procedure and ADR or offer ADR courses that are subjects in their own right.[21] In late 2016, the Law Admissions Consultative Committee revised the Model Admission Rules for legal practice, altering Civil Dispute Resolution (formerly Civil Procedure) to include the teaching of ADR and thus including it in the core required areas for admission to legal practice.[22] This course area will often include learning about the knowledge and skills used by a mediator in disputes through experiential role-plays.[23]

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[19]   We use the term 'roadmap' to connote a series of suggested steps for an approach to learning and technology. Our roadmap adapts and builds on a roadmap of the first author's in a "how to" guide for teaching (Web Page, 30 June 2019).
<https://emedia.rmit.edu.au/learningpatterns/content/blended-learning>. See for another roadmap example: Monash University, *Education Technology Roadmap* (Web Page, 12 March 2019) <https://www.monash.edu/learning-teaching/innovation/tech-roadmap>.

[20]   Judy Gutman, Tom Fisher and Erika Martens, 'Why Teach Alternative Dispute Resolution to Law Students? Part One: Past and Current Practices and Some Unanswered Questions' (2006) 16(1-2) *Legal Education Review* 125.

[21]   Kathy Douglas, 'The Teaching of ADR in Australian Law Schools: Promoting Non-Adversarial Practice in Law' (2011) 22(1) *Australasian Dispute Resolution Journal* 49.

[22]   Law Admissions Consultative Committee, *Model Admission Rules 2015* (at 11 March 2019) <https://www.lawcouncil.asn.au/files/web-pdf/LACC%20docs/212390818_8_LACC_Model_Admission_Rules_2015.pdf>.

[23]   Edwin Greenebaum, 'On Teaching Mediation' (1999) 2 (Fall) *Journal of Dispute Resolution* 115.

Additionally, this area may also include consideration of the role of the lawyer[24] in the ADR processes. Lawyers are said to gain a 'standard philosophical map'[25] through their legal education. This map usually privileges the role of litigation in dispute resolution and arguably derives from the nature of legal pedagogy. Put simply, the focus on adversarial means of dispute resolution in a legal curriculum (such as litigation) can influence law students and encourage an adversarial mindset in them as lawyers. The focus in law schools on the teaching of appellate decisions and the use of Socratic or case-based teaching methods has been said to promote an adversarial approach in students' orientation to conflict.[26] ADR learning can temper this traditional adversarial mindset and promote a collaborative problem-solving frame for law students when considering legal problems.[27]

Role-play is one teaching approach aimed at drawing out negotiation skills as compared to adversarial skills, and which can be supported through purposeful online preparation and face-to-face enactment. One of the benefits of the wide use of role-play in ADR courses is that the pedagogy adopted is more active[28] than in most traditional law courses. It employs experiential learning approaches that incorporate authentic learning scenarios and is therefore an important tool for skills development and the practical application of negotiation/mediation theory.[29] Nadja Alexander and Michele LeBaron argue that role-plays, while sometimes effective, can be overused with many students disconnecting from set roles, particularly where the scenarios and characters are culturally inappropriate.[30] New thinking in ADR pedagogy, whilst still largely endorsing thoughtfully designed role-plays used in a targeted manner,[31] also advocates a variety of learning and teaching practices including adventure learning[32] (where students venture out of the classroom to engage in 'real life' negotiations), and online learning.[33] The next step in ADR pedagogy is arguably the use of blended learning. This kind of pedagogy can provide an additional layer of deep learning for

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[24] Suzanne J Schmitz, 'Giving Meaning to the Second Generation of ADR Education: Attorneys' Duty to Learn about ADR and What They Must Learn' (1999) 1 (Spring) *Journal of Dispute Resolution* 30.

[25] Leonard Riskin, 'Mediation and Lawyers' (1982) 43(1) *Ohio State Law Journal* 29, 43.

[26] Leonard Riskin and John Westbrook, 'Integrating Dispute Resolution Into Standard First Year Courses: The Missouri Plan' (1989) 39(4) *Journal of Legal Education* 509.

[27] Tom Fisher, Judy Gutman and Erika Martens, 'Why Teach Alternative Dispute Resolution to Law Students? Part 2: An Empirical Survey' (2007) 17(1) *Legal Education Review* 67.

[28] Paul Ramsden, *Learning to Teach in Higher Education* (Taylor & Francis, 2nd ed, 2003).

[29] Melissa Conley Tyler and Naomi Cukier, 'Nine Lessons for Teaching Negotiation Skills' (2005) 15(1-2) *Legal Education Review* 61; Greenebaum, (n 23); Michael Moffitt, 'Lights, Camera, Begin Final Exam: Testing What We Teach in Negotiation Courses' (2004) 54(1) *Journal of Legal Education* 91.

[30] Nadja Alexander and Michelle LeBaron, 'Death of the Role-Play' in Christopher Honeyman, James Coben and Giuseppe De Palo (eds), *Rethinking Negotiation Teaching: Innovations for Context and Culture* (DRI Press, 2009) 179.

[31] Noam Ebner and Kimberlee Kovach, 'Simulation 2.0: The Resurrection' in Christopher Honeyman and James Coben (eds), *Venturing Beyond the Classroom* (DRI Press, 2010) 245.

[32] James Coben, Christopher Honeyman and Sharon Press, 'Straight Off the Deep End in Adventure Learning' in Christopher Honeyman and James Coben (eds), *Venturing Beyond the Classroom* (DRI Press, 2010) 109.

[33] David Matz and Noam Ebner, 'Using Role-Play in Online Negotiation Teaching' in Christopher Honeyman and James Coben (eds), *Venturing Beyond the Classroom* (DRI Press, 2010) 293.

students via online experiences such as the viewing of video and annotation.[34] In the same ways, learning about advocacy (discussed next) can be taught through engagement with video and online discussion.

III   ADVOCACY PEDAGOGY

An adversarial system of trial, as is used in Australia, requires lawyers to have a range of advocacy skills to present and persuade a trial judge of contentious facts. Advocacy skills are taught in the second of our case examples, that of Evidence (see Table 1).

In an adversarial system, a party's principal objective is to persuade the court that their client's version of the facts should be accepted in order to secure a favourable outcome. Thus, advocacy skills are crucial for law students who ought to be equipped with a range of skills for practice, including oral and written communication skills, persuasive argument and cross-examination. These crucial skills can be taught in a range of subjects in a law degree including in civil litigation,[35] evidence law,[36] or specific advocacy electives. Anthony Hopkins emphasises the need for 'active-learning' through simulations by having students adopt and perform the role of prosecution and defence lawyers in a mock-trial.[37] However, this approach to assessment design is not without challenges as it is dependent on sufficient hours in the course to teach both theory and practice, availability of moot-court facilities, and the course being led by a lecturer with trial and advocacy experience.[38]

There are a variety of technological tools that can aid in the teaching of advocacy simulations and these tools are part of 21st century legal pedagogy.[39] For instance, in New South Wales, Joel Butler and Rachel Mansted have attempted to bridge the gap between legal education and legal practice by developing a course where students can undertake mooting, appellate advocacy, and legal practice skills in a mock law-firm environment.[40] As part of the preparation and teaching techniques, the authors relied on an in-class deconstruction of an advocacy simulation video. The use of video and visual media in teaching law courses can be particularly beneficial in leading to positive student engagement and enhanced communications skills.[41] The use of specifically made videos demonstrating advocacy skills can be particularly helpful to

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[34]   Judy Gutman and Matthew Riddle, 'ADR in Legal Education: Learning by Doing' (2012) 23(3) *Australasian Dispute Resolution Journal* 194; Kathy Douglas, Josephine Lang and Meg Colasante, 'The Challenges of Blended Learning Using a Media Annotation Tool' (2014) 11(2) *Journal of University Teaching and Learning Practice* 1, 3-4.

[35]   Jacqueline Horan and Michelle Taylor-Sands, 'Bringing the Court and Mediation Room Into the Classroom' (2008) 18(1-2) *Legal Education Review* 197.

[36]   Andrew Palmer, 'A Proof-Oriented Model of Evidence Teaching' (2002) 13(2) *Legal Education Review* 109.

[37]   Anthony Hopkins, 'Teaching Evidence Law within the Framework of a Trial: Relating Theory to Practice as Students Take to Their Feet and Take Responsibility for the Trial Narrative' (2009) 2(1-2) *Journal of the Australasian Law Teachers Association* 173.

[38]   Ibid, 182-4.

[39]   John Sonsteng et al, 'Teaching the Art of Effective Advocacy in the 21st Century: A Paradigm Shift' (2018) 44(1) *Mitchell Hamline Law Review* 163.

[40]   Joel Butler and Rachel Mansted, 'The Student as Apprentice: Bridging the Gap Between Education, Skills and Practice' (2008) 1 *Journal of the Australasian Law Teachers Association* 287.

[41]   Penelope Carruthers et al, 'Enhancing Student Learning and Engagement in the Juris Doctor through the Rich Tapestry of Legal Story-Telling' (2017) 1 *Journal of the Australasian Law Teachers Association* 26.

offer a model of practical skills that students are striving to attain, such as cross-examination. By combining video with annotation or discussion exercises students are actively engaged in learning by being prompted to critique, apply their own learning, or reflect on their observations. The next section explores how the combination of two modes of learning - interwoven online and classroom activities to form blended learning - can assist to foster active learning and increase student engagement in advocacy and dispute resolution.

IV   BLENDED LEARNING

Blended learning in the broadest sense combines two or more learning modes.[42] More specifically it is known as the combination of online teaching and learning with face-to-face classroom experience.[43] However, it is more than this. It includes co-dependency between modes and scaffolding across activities rendering the design more than a combination, but an effective blend.[44]

A key benefit of blended learning is its ability to support an active learning environment with the use of technology.[45] As a component of blended learning, an online discussion environment allows greater time for reflection during the discussion process. As Charles Graham notes, when engaged in an online interaction, 'learners have time to more carefully consider and provide evidence for their claims and provide deeper, more thoughtful reflections'.[46] In a study undertaken by Kylie Burns et al, active learning was shown to be effective in engaging students in high level thinking around law and legal issues.[47] In their study, 25 students responded positively to the use of technology where there remains active interaction with lecturers and clear assessment criteria. However, Burns et al note that this positive response is more likely to be linked to improved student satisfaction than to improved learning outcomes.[48]

Charles Dziuban et al studied the concept of blended learning and its relationship with the teaching and learning environment.[49] In their study, the authors concluded that information technology, as a main driver of information, remains essential to our education system.[50] The authors further concluded that technology should be adopted into education not only to enhance learning and support active learning but also to assist educators. Limitations to blended learning are related to the learning objectives affiliated with each course. First, it is important to assess whether the course is suited for blended learning and, further, the pedagogical implications must be contemplated and risks must be pre-assessed. Face-to-face environments may be the best for spontaneous interaction; however, where 'control of pace' is beneficial to the learning

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42   Moore (n 18).

43   Charles Graham, 'Blended Learning Systems: Definition, Current Trends, and Future Directions', in Curtis Bonk and Charles Graham (eds), *The Handbook of Blended Learning: Global Perspectives, Local Designs* (Pfeiffer, 2006).

44   Francine Glazer, 'Introduction' in Francine Glazer (ed), *Blended Learning: Across the Disciplines, Across the Academy* (Stylus Publishing, 2012).

45   Kylie Burns et al, 'Active Learning in Law by Flipping the Classroom:An Enquiry Into Effectiveness and Engagement' (2017) 27(1) *Legal Education Review* 163, 164.

46   Graham (n 43) 18.

47   Burns et al (n 45) 167.

48   Ibid.

49   Charles Dziuban et al, 'Blended Learning: The New Normal and Emerging Technologies' (2018) 15(1) *International Journal of Educational Technology in Higher Education* 1.

50   Ibid 3.

goal, an online learning experience will offer a better environment. If the pedagogical implications of blended learning are not thought through, the approach risks incorporating the worst aspects of each of the learning modes utilised, leading to the opposite of the intended outcome.[51] Second, the learning objectives must be clear and the skills must be identified to select the best mode.[52] Hence, it is important that when using blended learning, educators not only focus on benefits but also contemplate limitations to attempt to minimise these prior to and during the implementation of the model. Further, educators should adjust the model and consider ways of improvement based on the experiences of using blended learning.

Even though blended learning can provide a more active learning environment, law lecturers using blended learning increasingly report that students attend class underprepared.[53] A response to this issue has been the development of an inverted model of blended learning, frequently referred to as a flipped classroom approach, which addresses the overburdened curriculum and student. This is achieved by (a) reducing the load of new materials covered within class time and (b) by encouraging student engagement via exploring new concepts and interacting with each other and their teachers, to overall develop a stronger relationship between the pre-class, in-class and post-class learning opportunities.[54] In fact, Burns et al, who employed flipped learning, reported that students came to class with a better understanding of the material, with the academics having more time in class to work on practical skills and provide guidance and feedback, resulting in an overall improvement of class performance.[55] The use of terminology such as flipped classroom becomes redundant when the key thrust of the learning design focuses on the purposeful alignment of online learning and preparatory activities to on-campus learning experiences. Law lecturers would arguably benefit from more examples of blended learning designs and the insights gained in the use of this approach to learning. Next, we outline the value of video-based discussion in a blended learning format.

V   VIDEO-BASED DISCUSSION

Online video provides students with the affordances of repeat access to information.[56] This can be contrasted with traditional forms of face-to-face learning where students have no direct control or repeat access to information gained through in-class attendance and video viewing. Having video records available for as-required access means not having to rely on memory to recall specific content such as demonstrated practices.[57]

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[51]   Graham (n 43).
[52]   Moore (n 18) xxvi.
[53]   Melissa Castan and Ross Hyams, 'Blended Learning in the Law Classroom: Design, Implementation and Evaluation of an Intervention in the First Year Curriculum Design' (2017) 27 *Legal Education Review*, 143, 148.
[54]   Ibid 144.
[55]   Burns et al (n 45) 167.
[56]   Grainne Conole and Karen Fill, 'A Learning Design Toolkit to Create Pedagogically Effective Learning Activities (2005) 8 *Journal of Interactive Media in Education*; Peter J Rich and Tonya Trip, 'Ten Essential Questions Educators Should Ask When Using Video Annotation Tools' (2011) 55(6) *TechTrends* 16.
[57]   Kim Koh, 'The Use of Video Technology in Pre-Service Teacher Education and In-Service Teacher Professional Development', in Swee Fong Ng (ed.), *Cases of Mathematics Professional Development in East Asian Countries: Using Video to Support Grounded Analysis* (SpringerVerlag, Singapore, 2015) 229.

In isolation, video has been identified as an acquisition medium,[58] which can be viewed relatively passively apart from basic student controls of start, stop, and replay.[59] Depending on the pedagogical purpose, this may be enough. However, when the pedagogical purpose requires the development of complex discipline-specific practices, simply viewing a demonstration video may not support development of a deep understanding of legal skills represented in the video. The speed of the audio-visual content and/or slick editing can render video as providing cognitive overload experiences or alternatively entertainment fixation, unless students are carefully guided toward considered analysis, such as through strategic use of video controls or the video being chunked into smaller segments.[60] Video has great potential to contribute to student learning via opportunities 'to experience visual portrayals and discussions of issues centered around... [concepts such as] advocacy'; skills which may 'go largely unseen unless the student is already working... in specific areas of the field.'[61] Video representations can address the *how-to* of practice, but recordings need to be used in a way that helps students to also address the *why*. [62]

Various industries and university disciplines use videos to demonstrate profession-relevant skills. For example, medical schools that use video to illustrate concepts and practices for interviewing patients in community settings found that students improved their knowledge of interviewing and their self-awareness within this process.[63] Beyond watching the videos, the medical students post their observations onto an online discussion board, supported by a moderator who challenges assertions, probes students for deeper reflections, and rounds the discussion with a summary. In another example, in-service teachers view video of their own or others' mathematic teaching practices to then respond to various set questions in an online survey tool.[64] This approach—involving isolated text responses rather than group discussion—led to recommending (a) using a facilitator to scaffold the analysis, and (b) trialling collaborative rather than individual approaches to allow in-depth group analysis of practices viewed.

Video annotation or discussion via a tandem thread, for example as part of the learning designs of the two case examples in this paper, provides the opportunity for students to engage with video material in an active rather than passive mode via discourse.[65] The video can be developed by the student, industry, or by the teacher/s of a course.[66] Learning from video can be heightened by collaborative group discussion and student

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58   Diana Laurillard, *Teaching as a Design Science: Building Pedagogical Patterns for Learning and Technology* (Routledge, 2012).

59   Dongsong Zhang et al, 'Instructional Video in E-learning: Assessing the Impact of Interactive Video on Learning Effectiveness' (2006) 43(1) *Information & Management* 15.

60   Salvatore Alaimo and Shinyoung Park, 'Use of Video in Philanthropic and Nonprofit Studies Programs' (2018) 8(2) *Journal of Nonprofit Education and Leadership* 122.

61   Ibid 133.

62   Ibid.

63   John M Wiecha et al, 'Collaborative e-Learning Using Streaming Video and Asynchronous Discussion Boards to Teach the Cognitive Foundation of Medical Interviewing: A Case Study' (2003) 5(2) *Journal of Medical Internet Research* e13.

64   Marc Kleinknecht and Jürgen Schneider, 'What Do Teachers Think and Feel When Analyzing Videos of Themselves and Other Teachers Teaching?' (2013) 33 *Teaching and Teacher Education* 13.

65   Colasante (n14) 66.

66   Meg Colasante and Kathy Douglas, 'Prepare, Participate, Connect: Active Learning with Video Annotation' (2016) 32(4) *Australasian Journal of Educational Technology* 68, 69.

reflection by allowing the student to engage in critical discussion with their peers.[67] For example, when using annotation after each student group has commented, teachers or industry representatives can mark their annotations and provide feedback.[68] Such an approach to the use of video requires careful planning and communication with students to optimise student learning. Video annotation, or tandem electronic discussion, enhances student learning by providing the opportunity for reflection and group dialogue regarding visual, digital representations.[69] Video-based discussion can help students master employment skills (such as legal practice skills) and promote critical reflection.[70] When developing video for discussion it may be useful to frame the design in the practice of a particular industry such as mediation.[71]

VI   EVOLUTION OF A LEARNING DESIGN

This stage of our own practice represents a key reflection point in the evolution of designing blended learning with video-based discussion in the law discipline at RMIT. A subject in the Juris Doctor, Evidence, was one case in a multiple case study in 2011 that examined active video-based learning utilising a video annotation tool (MAT) for professional learning-based curriculum.[72] The cases involved nine classes of students and their teachers from various disciplines and across vocational education and undergraduate courses, and one postgraduate course, Evidence, which is one of the law discipline courses under focus in this article).

There were several key lessons learnt from the multiple case study,[73] four of which are summarised in row A of Figure 1 below. First, the curriculum design utilising video-based discussion must be carefully developed to fit with the subject. The learning should be authentic to the discipline and the activities purposefully designed for the students to be motivated to achieve as intended. The online learning through the use of media should reference other learning activities and flow seamlessly for optimum results. Additionally, teachers need to plan carefully when blending a learning design ensuring that they link intended learning outcomes with the technology.[74] The course design generally should include assessment to motivate students to make the appropriate time commitment.[75] It is also important to ensure learning objectives and

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[67]   Alan D Greenberg and Jan Zanetis, *The Impact of Broadcast and Streaming Video in Education; What the Research Says and How Educators and Decision Makers Can Begin to Prepare for the Future* (Commissioned CISCO to Wainhouse Research Report, March 2012).

[68]   Colasante (n 14) 66.

[69]   Negin Mirriahi et al (n 13).

[70]   Meg Colasante, 'Using a Video Annotation Tool for Authentic Learning: A Case Study' in Siew-Mee Barton, John Hedbery and Katsuaki Suzuki (eds), *Proceedings of Global Learn Asia Pacific* (Association for the Advancement of Computing in Education 2011) 981.

[71]   For the mediation industry we developed a learning model that provides guidance regarding developing an authentic video for peer discussion: Kathy Douglas, Tina Popa and Christina Platz, 'Teaching Mediation Using Video and Peer Discussion: An Engaged Video Learning Model' (2019) 29(1) *Australasian Dispute Resolution Journal* 182.

[72]   This research was funded by a $46,000 university Learning and Teaching Investment Fund Grant.

[73]   Douglas, Lang and Colasante (n 34).

[74]   Ibid 14.

[75]   Meg Colasante and Josephine Lang, 'Can a Media Annotation Tool Enhance Online Engagement With Learning? A Multi-Case Work-In-Progress Report' in Jose Cordeiro, Markus Helfert and Maria J Martins (eds), *Proceedings of the 4th International Conference of Computer Supported Education* (Science and Technology Publications, 2012) vol 2, 455.

the assessment of the annotation of video or electronic discussion are constructively aligned.[76] One assessment option is to require students to draft a reflective report about the annotation or discussion forum.

Second, not only does the pedagogical design need to be purposeful, but teachers need to carefully plan how they will communicate the activity purpose to the students, to increase their understanding and motivation to engage. It is crucial to articulate a narrative of purpose for annotating video to encourage student engagement.[77] Students need to understand why they are using the video medium and how subsequent online discussion will assist learning. Teachers should also practice with the technology to ensure that it is effective and easy to use for students.

Third, the cost of time and effort can form a barrier to both teachers and students. If the technology takes too long to learn or to use, the teachers may not make best use of the inherent affordances and/or students may resort to using surface approaches to learning or even reject the activity. In the multiple case study, teachers highlighted the cost of their own time in using a blended learning approach in trialling new technological approaches to teaching.[78] There are also costs of professional development and technological support.[79] There is usually a significant production cost to developing a video; however, the use of mobile devices with video capability can limit that cost.

Fourth, one of the key findings of the multiple case study was the potential of using the affordances of the video annotation tool to foster purposeful video-based discussion across diverse contexts that adopt authentic learning designs. The adoption of video annotation/discussion that promotes peer debate and learning has significant potential that is worth exploring.[80] Lastly, it is important when using these kinds of learning designs that students need to be given timelines to complete the group work, video annotations, and reflections as the learning design requires a considerable time commitment.[81]

Figure 1. Evolution of active online video-based discussion from lessons learnt from the initial multiple case study (A), to current practice (B).

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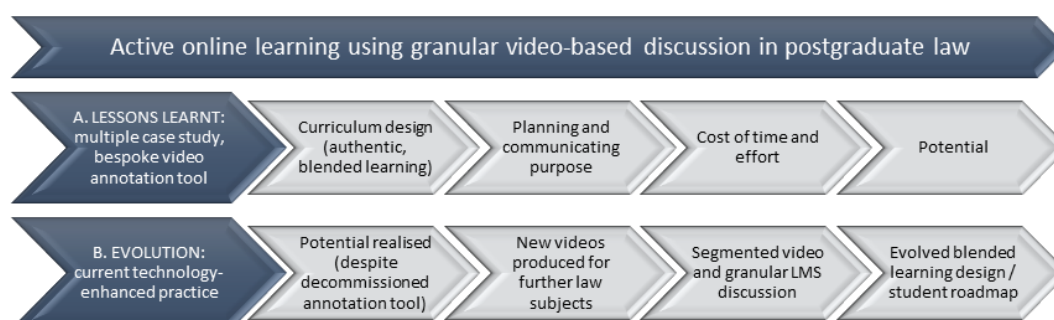
[76]   Judith McNamara and Kelley Burton, 'Assessment of Online Discussion Forums for Law Students' (2009) 6(2) *Journal of University Teaching and Learning Practice* 1.
[77]   Douglas, Lang and Colasante (n 34) 15.
[78]   Ibid.
[79]   Ibid 16.
[80]   Ibid 17-8.
[81]   Ibid.

Since the multiple case study of 2011, the use of video-based discussion for active learning in law at RMIT University has evolved from the effects of continual scholarly reflection, additional funding, and a change in video-based discussion technology. These changes are reflected in the case examples detailed in the next section, such as how technology-enhanced practices continue into current practice and are represented in summary in row B of Figure 1. First, the potential of online video-based discussion has been carried over into other practices without reliance on a bespoke tool. The decommissioning of the annotation tool (MAT) meant that promising and proven practices needed to change to a more sustainable format.

Second, while video remains the key representational and demonstration medium, there is now an expanded range of cases due to additional funding mechanisms and collaborations with industry bodies. The experience of the initial 2011 advocacy video for the Evidence course has been applied to further video examples. In 2013 the negotiation/mediation video and learning design was developed for the NDR course and implemented in 2014.[82] In 2017, funding allowed for a new video to be made for the Evidence course, implemented in 2018, that extended the focus from general advocacy to the specific skill of cross-examination and the development of legal writing skills.[83]

Third, the technology to enable student discussion on the finer points of the practical legal skills demonstrated in the videos changed from a bespoke video annotation tool to the routine affordances of a learning management system (LMS). While the annotation tool effectively enabled pin-point peer discussion, the readily available affordances of an LMS contribute to a reliable learning environment in which to conduct video-based discussion, utilising basic video upload functions and discussion forum threads. The remaining missing feature, the ability for students to anchor discussion to pin-point video segments at various granulations (from seconds to minutes of footage), was largely mitigated by teacher segmentation of videos into key chunks of demonstration content.

We next outline two examples of the use of this blended learning approach, before presenting a blended learning roadmap drawn from these examples.

VII   CASE EXAMPLES OF BLENDED LEARNING USING VIDEO-BASED DISCUSSION IN TEACHING NEGOTIATION/MEDIATION AND ADVOCACY

The case examples provided in this section explain the implementation of video-based discussion in the blended learning design of two postgraduate law courses, *NDR* and *Evidence*. Each blended learning design considers the semester-wide pedagogy involving seamless and purposeful learning across both online and classroom spaces. Each course has a particular legal skill set that students develop through video demonstration with industry practitioner input, plus student peer discussion on the skills to draw out the underpinning knowledge explicitly or implicitly on display in the videos. Detailed descriptions are provided on the two courses below, which extends the summary provided in the introduction (see Table 1).

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[82]   The project was funded by a $20,000 University Global Learning by Design Learning and Teaching Grant..

[83]   This project was funded as part of a $40,000 College Digital Uplift Learning and Teaching Grant.

A   *Negotiation and Dispute Resolution | Mediation Skills*

The key skills that have been identified in teaching this course are negotiation and mediation skills with an emphasis on underpinning communication skills. The design aims to prepare students for a written journal assessment that requires students to critically reflect on their own performance in role-plays as well as those of their peers. The course is delivered across three on-campus weekend intensives.

Prior to attending the first intensive, students are asked to study the underpinning theory of conflict, negotiation, and mediation topics online through the LMS. Students engage with readings and a negotiation/mediation video that is broken up into various parts and hosted on the learning management system. The aims are for students to familiarise themselves with the readings and videos and to integrate theory and practice.

Communication skills such as active listening, the ability to ask open-ended questions, and reframing are relevant for development of negotiation and mediation skills. For this course, these skills are best learnt through role-play and the learning design prepares students for the demonstration of these skills. The negotiation/mediation video was segmented into shorter videos linked to separate discussion board threads (see Figure 2 below) to support video-based discussion. The aim was to provide the students with an opportunity to watch the video and to identify and learn the articulated negotiation and mediation skills via the active learning of peer discussion. The video developed for NDR demonstrates a legal dispute with two parties and a mediator. This video was developed in a joint project with the Alternative Dispute Resolution Committee of the Victorian Bar, and actors in the video were barristers who were mediation trainers. By demonstrating a business partnership dispute, the video provided an authentic legal scenario for the students to engage with.

The conflict depicted in the video relates to dissatisfaction with a partnership arrangement. During the video the mediator, who is a barrister and mediation trainer, demonstrates the various stages of a mediation, including introductions, opening statements, setting the agenda, private sessions, negotiations, and agreement writing. The mediator also demonstrates various negotiation/mediation communication skills including asking open and closed questions, establishing rapport, summarising and reframing statements and assisting parties to negotiate a settlement. For example, in the video the mediator shows active listening regarding the partnership dispute by his open body language, strategic nodding to indicate that he is hearing the parties, and frequent eye contact. The mediator also asks open prompting questions that helps the parties to expand on their concerns about challenges in the partnership and on occasion reframes the concerns raised to take any 'blaming' language out of the assertion.

Figure 2. Example of Video and Discussion Board

In the discussion that ensues from watching the video material, students debate key ideas in the online discussion board. Students discuss each video segment in a tandem threaded discussion, linking the mediator's practices that they are viewing with legal theory. Questions are set by the lecturers to guide students and help them to deeply focus on the important aspects of the video. The lecturer also monitors the discussions while asking questions to prompt in depth discussion and critical thought. This is the key to preparing students for negotiation and mediation in the face-to-face environment. The blending of the activity means that when students attend class for the intensive weekend they already possess familiarity with the negotiation/mediation process and are prepared to demonstrate negotiation and mediation skills in the role-plays. Hence the online activities prepare students for the on-campus learning experiences.

Next the students reflect on their online discussions. They consider which two discussion board posts best demonstrates their own understanding of the theory, its practical application, and critical engagement with peers, and then submit these posts for assessment. The actions of reflecting on their learning online and choosing their areas of strength provides a meta-assessment of what they have learned.

Ultimately, students are required to write a journal for assessment critically reflecting on their role-play experiences and critiquing their own skills and performance as well as those of their peers.[84] In this journal, students culminate their integration of theory with practice, with reference to negotiation and mediation,[85] for this course. To assist them with their reflection students are provided with a detailed marking guide after each role-play to help guide them to assess their performance as well as the performance of their peers. Reflective writing is discussed during the face-to-face classes to scaffold this kind of assessment and links are made with the reflections in the discussion boards conducted online.

## B	*Evidence | Advocacy Skills*

As discussed earlier, advocacy is a critical skill that law students must be equipped with as part of their legal education. Advocacy involves teaching written and oral communication skills, as well as court-specific skills such as cross-examination. In the course Evidence, which is delivered over a semester, the video-based discussion task features in two parts: video discussion board and a file note to counsel. The watching and commenting on the video and writing of the file note occurs in the online environment. The online experiences are combined with face-to-face weekly classes. Students commence their study of evidence principles by first learning about the nature of the adversarial system of justice. While the Evidence course is predominantly practice-orientated, students nevertheless engage with doctrinal analysis of legislation and case law underpinning the legal system. For example, students must engage with and understand the legal rules about introducing types of evidence (such as opinion or hearsay evidence), before they can apply their learning in practice.

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[84]	Michael G Moore, *The Handbook of Distance Education*, (Routledge, 2nd ed, 2007); Katalin J Kabat, 'Time, Space, and Dialogue in a Distance-learning Class Discussion Board' (2014) 11(2) *E-Learning and Digital Media* 162.

[85]	Judith McNamara and Rachael Field, 'Designing Reflective Assessment for Workplace Learning in Legal Education' (Conference Paper, ATN Evaluation and Assessment Conference, 29-30 November 2007).

To facilitate the learning of the nature of the adversarial system, it is imperative to identify the relevant skills that students ought to acquire from a practice-orientated subject such as Evidence. Students learn advocacy skills, cross-examination skills, and persuasive argument as these are all articulation skills a lawyer must possess for court advocacy.

During the course, students view a video of a lawyer cross-examining a witness. The scenario depicted in the video forms a demonstration as the starting prompt for the video-based discussion task. Students are provided with three documents to accompany the video. The first explains the background scenario leading to a criminal indictment, the second contains a witness statement to be used in court proceedings, while the third document is a transcript of the video. The video itself depicts a scene where the defendant's lawyer cross-examines the prosecution's witness (see Figure 3). The purpose of the task is to provide students with a practical demonstration of selected areas of Evidence law, with students viewing a video of a mock cross-examination in preparation for further learning engagement.

The Evidence video centres on a scenario where the accused is charged with murder and a key witness has provided testimony to the police. The video depicts the accused's defence barrister cross-examining the prosecution's key witness in the stand. During the video the defence barrister asks the witness numerous leading questions, such as: 'It was in these circumstances you say you identified Mr Wolfe as one of the men who had got out of the Ford Falcon?' The defence barrister also demonstrates admissibility of various forms of evidence including prior inconsistent statements, identification evidence, and privilege. Further, the video demonstrates the application of the rule in *Browne v Dunn*,[86] which provides that that when a witness is giving evidence and counsel intends to call evidence that contradicts the witness' testimony, counsel must put the substance of the contradictory evidence to the witness to afford them an opportunity to explain, accept, or deny the contradictory evidence. In the video the defence barrister provides the witness with a copy of his police statement and proceeds to question the witness on the inconsistency between the written statement and the oral testimony. Students are required to identify the barrister's conduct to discuss the impact that failure to comply with the rule would have on admissibility of the evidence. In addition, the video shows oral communication skills, persuasive argument through questioning, and active listening skills to the witness' testimony, which are all integral skills of court advocacy.

After viewing the video students are required to answer five questions, as set by the lecturers and as relating to the video, on a discussion forum. Students are directed to various parts of the video and prompted to discuss whether certain evidence ought to be admissible, or to demonstrate an understanding of the consequences of failure by counsel to comply with court rules. The discussion forum provides an opportunity for students to apply the knowledge they have gained from engaging with legal theory and watching the video to engage in meaningful debate with their peers.

After engaging in dialogue with their peers on the online discussion board (similarly to NDR) students reflect on their learning in the discussion forum through the process of selecting their preferred online discussion contributions to submit for assessment purposes.

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86   (1893) 6 R 67.

Finally, students actively apply the knowledge they have gained by generating authentic legal artefacts. After reviewing a new written hypothetical scenario and instructions, students are required to prepare a file note to a barrister that critically analyses the legal issues arising out of the scenario. They are also required to draft a set of questions intended to be put to the witness in cross-examination on the legal issues identified. The design requires students to develop legal writing skills to prepare these questions.

Figure 3. Example of Cross-Examination Video
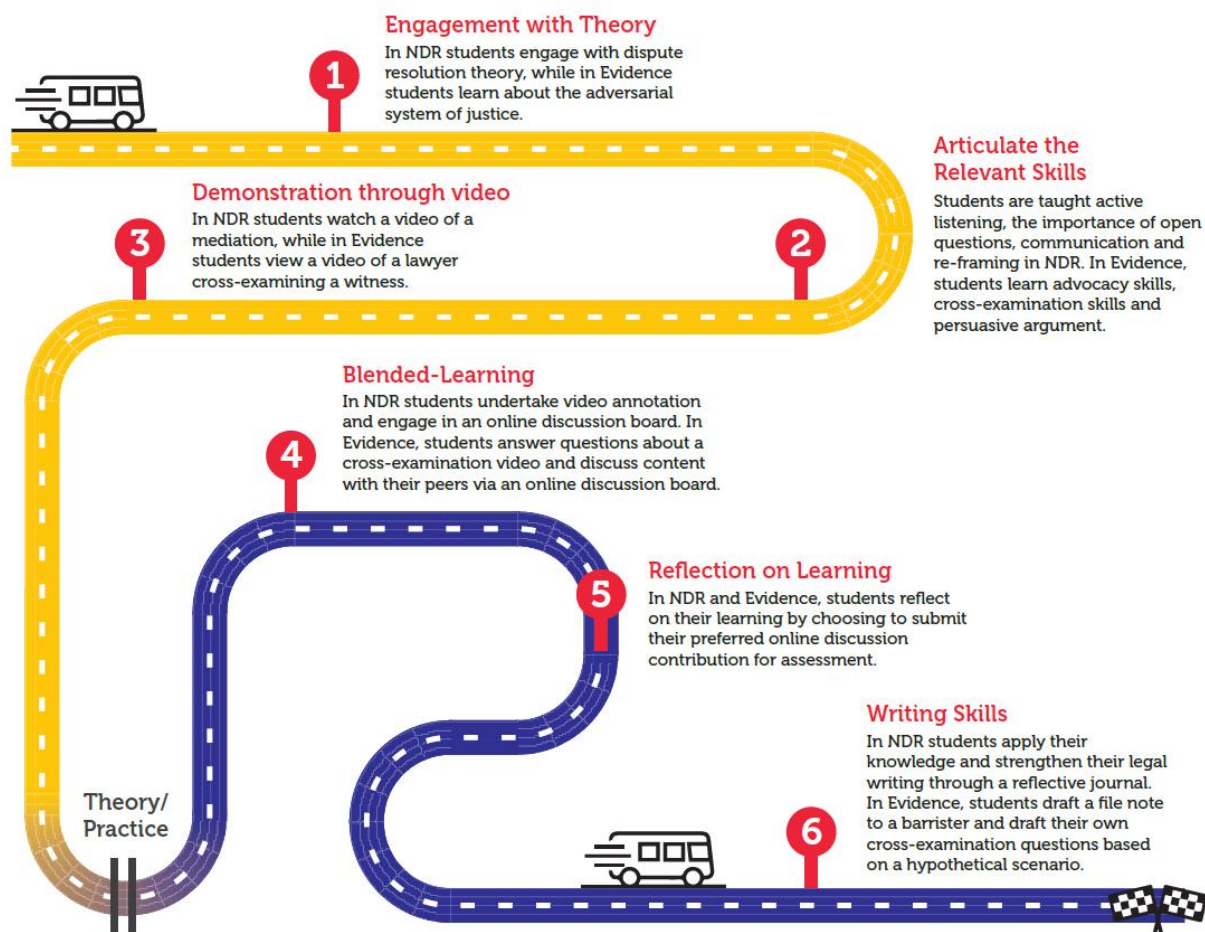

VIII   BLENDED LEARNING ROADMAP

This article presented two case examples of blended learning utilising video-based discussion. From these, a single roadmap is extrapolated, intended to assist other university teachers who may choose to use this curriculum design model for their own legal teaching. We have drawn out the common features of the two case examples of NDR for negotiation/mediation skills, and Evidence for advocacy skills, to draw out six key steps in a student's journey through the respective courses (see Figure 4). Each step is annotated with a summary of what this entails for the NDR and Evidence case examples.

This roadmap utilises the pedagogical benefits discussed in earlier sections of this paper. It employs digital technology in the form of online video and peer discussion technology, as well as access to readings and other theoretical documentation. These resources enable engagement with theory to both learn and eventually articulate required legal skills (negotiation/mediation and advocacy), which are also demonstrated via authentic legal demonstrations in video. However, this is not a passive learning experience. Students participate in online peer dialogue to actively discuss and debate the skills represented in the video demonstrations, in reference to the theory. This provides for deeper learning opportunities and preparation for on-campus learning experiences (eg role-play) thus forming purposefully aligned blended learning courses. Assessment tasks support the blend by tasking students to studiously reflect on their video-based discussions in order to evaluate their best work to submit for assessment purposes. Further assessment tasks in the respective courses involve

generating written artefacts to further demonstrate legal skill application (eg a critical reflection journal on role-played legal skills, a file note, and cross-examination questions).

Figure 4. Legal skill building: A roadmap for blended learning curriculum incorporating video-based discussion.

Engagement with Theory
In NDR students engage with dispute resolution theory, while in Evidence students learn about the adversarial system of justice.

1

Articulate the Relevant Skills
Students are taught active listening, the importance of open questions, communication and re-framing in NDR. In Evidence, students learn advocacy skills, cross-examination skills and persuasive argument.

2

Demonstration through video
In NDR students watch a video of a mediation, while in Evidence students view a video of a lawyer cross-examining a witness.

3

Blended-Learning
In NDR students undertake video annotation and engage in an online discussion board. In Evidence, students answer questions about a cross-examination video and discuss content with their peers via an online discussion board.

4

Reflection on Learning
In NDR and Evidence, students reflect on their learning by choosing to submit their preferred online discussion contribution for assessment.

5

Writing Skills
In NDR students apply their knowledge and strengthen their legal writing through a reflective journal. In Evidence, students draft a file note to a barrister and draft their own cross-examination questions based on a hypothetical scenario.

6

Theory/Practice

IV CONCLUSION AND NEXT STEPS

An integral aspect of law studies is the need to equip law students with skills necessary for legal practice, such as mediation and advocacy. In this paper the authors have explored the use of blended learning utilising video-based discussion as a means of teaching law students these crucial legal skills. The blended learning designs involve a combination of both traditional face-to-face modes of learning and online learning using video and technology. Video-based discussion can promote active blended learning by creating an opportunity for students to not only view a video of a legal skill, but also to apply it through online discussion in preparation for face-to-face learning activities. This type of learning design facilitates a more interactive method of learning when compared with traditional forms of teaching as students are actively engaged with media and are also encouraged to engage with their peers. A roadmap extrapolated from our two examples is offered with the intention of transferability or adaptability to other university legal courses.

To further examine the evolution of blended learning practices utilising video-based discussion in the law discipline at RMIT University, a further research project has commenced. The methodological approach involves a multiple case study with a longitudinal focus. The two classes of NDR and Evidence discussed in this paper form the cases of the new study. Additionally, the original case involving Evidence in the 2011 multiple case study will be drawn upon to illustrate and/or challenge 'how certain conditions and their underlying processes change over time'.[87]

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[87] Robert K Yin, *Case Study Research: Design and Methods (Applied Social Research Methods)* (SAGE Publications, 5th ed, 2014) 53.

CONTRIBUTORS

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Tania Sourdin is a Professor and the Dean of the University of Newcastle Law School and was previously the Foundation Chair and Director of the Australian Centre for Justice Innovation (ACJI) at Monash University in Australia. Professor Sourdin has led national research projects and produced important recommendations for Alternative Dispute Resolution (ADR) and justice reform. She has also been a co-investigator in two ARC projects relating to artificial intelligence (AI) and law. She is the author of a number of books, articles, and papers, and has published and presented widely on a range of topics including ADR, justice innovation, justice issues, mediation, conflict resolution, collaborative law, artificial intelligence, technology and organisational change. She has retained a practice focus and has worked for more than 30 years as a lawyer, including 25 years in various senior part-time tribunal positions, and as a mediator. Since 2014, she has been the NBN industry dispute resolution adviser.

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