GRIFFITH JOURNAL
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Law and Human Dignity in the Technological Age

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LAW & HUMAN DIGNITY IN THE TECHNOLOGICAL AGE:

EDITORIAL

I INTRODUCTION

We are in an era of automation, disruptive technology, and artificial intelligence. We now utilise gadgets and applications which the generations preceding us would find unfathomable. We have the ability to converse with robots through virtual assistants, and 3D print what comes to mind. We have taken the ideas from science fiction, and made them a scientific *reality* — creating innovation at a pace incomparable to any other industrial advancements of our past. Of course, we don't often think about what an amazing — and colossal — feat this actually is. On the contrary, we utilise its convenience as much as possible, without giving too much thought to the logistics of this paradigm. Notwithstanding the fact that we have been quick to reap the benefits of this, we are yet to give vital consideration to the influence these developments will *continue* to deliver; the virtual assistant in your mobile is not the climax of the innovation we've yet to see.

When asked to actually ponder our future in light of this technological advancement, public opinion, expert literature, conspiracies, pop culture (etc.) seem to formulate two dominant perspectives.

The first predominantly embodies fear. The hypothetical scenarios and "what if's?" come to surface. That is: what if robots wage war against us; what if we cannot control them; what if we create intelligence so great, robots have the ability to think independently?

However, the latter perspective is one of enthusiasm, integration, and forward thinking. Indeed, people with this perspective may ask some of the same questions as the former, but with different purpose. For example, they may ask about the possibility of self-aware robots, but because they want to be ready for them — they want to draft reform and embrace this possibility. As Donna Haraway — author of *Simians, Cyborgs, and Women: The Reinvention of Nature* — puts it:

> '[…] a cyborg world [could] be about lived social and bodily realities in which people are not afraid of their joint kinship with animals and machines, not afraid of permanently partial identities and contradictory standpoints.'[1]

Whatever your standpoint —fear or enthusiasm — the same questions arise: what are the repercussions of sentient beings? How will we regulate the spread of automation and its effects on human dignity? What law reform is necessary so we can best integrate with smart technology? Is there still more to learn from the science fiction? Will our privacy be unencumbered?

We, at the *Griffith Journal of Law & Human Dignity,* sought to answer these questions, through the novel scholarship of academics with an interest in the area. Accordingly, the editorial board (after much drafting) settled on the following mission statement to guide our call for papers:

> In an age that blurs the boundaries of code, humanity, and machine, artificial intelligence is touted as both progress and peril. What might this mean for the future of law and human dignity? What proposals can we make to resolve prominent issues that are developing? This special issue invites contributions that address and question law & human dignity and their nexus with technology in the twenty-first century and beyond.

After close to two years of planning, our special issue, *Law & Human Dignity in the Technological Age* has finally come to fruition. Through this issue, you will see that the articles in which it's comprised are not only a perfect reflection of our mission statement, but answer the aforementioned questions with such profound insight. This will become evident in my mere introduction of the manuscripts.

II THE ARTICLES

The special issues opens with the outstanding and thought-provoking piece by Raúl Madden, entitled *Equity, "Revenge Porn," & Cambridge Analytica: The Doctrine of Confidence as a Protection for Human Dignity in the Technological Age.* Madden demonstrates a need for a substantive right to privacy in Australia, considering the misuse of private information that is facilitated and amplified by technological advances.

[1] Donna Haraway, *Simians, Cyborgs, and Women: The Reinvention of Nature* (Routledge, 1st ed, 1990) 154.

The essay is enshrined in the fundamental aspects of human dignity, and how vital they are — both now, and in the future.

We then move on to Mark Brady's individual article entitled, *Is Australian Law Adaptable to Automated Vehicles?* The article carefully considers the impact of disruptive technology, specific to self-driving vehicles. Brady perceptively engages in the various realities that come with automated cars which Australian law is not currently equipped for. His considerations include criminal law, compulsory third party insurance, and the Australian Consumer Law. Brady does not merely contemplate these examples, but proposes possible reform avenues for each — posing vital discussion to ensure we are ready for such innovation.

An article written by the esteemed Professor Julian Webb then follows. *Information Technology & the Future of Legal Education: A Provocation,* is an astute account of the difficulties faced by legal education, law, and legal practice, regarding the recent — and substantial —developments in information and communications technologies (also known as "ICTs").

From there, we then move into the world of crypto-currency. Zeina Abu-Meita and Nick Inglis have written an interesting piece entitled *Financial Equality, The Ignored Human Right: How E-Currencies Can Level the Playing Field,* which adds a necessary extra dimension to the issue. They consider financial disasters — such as those in Greece — and suggest early regulation on universal financial care, to prevent a similar outcome in other parts of the world.

Lachlan Robb writes a wonderful piece titled, *Thanatopolitics Through Technophobia: Using Charlie Broker's Black Mirror to Reflect Upon Humanity in the Face of Advanced Technology.* Robb writes an in-depth analysis of the *Black Mirror* episode entitled *Men Against Fire,* and contextualises it through both the use of other popular culture and science fiction examples, and also with real life examples. He considers the fear that some have regarding developing technology, and notes that we must hone in on this fear — control it — through awareness, as demonstrated in the episode.

Proceeding that, we look to Dr David Tuffley's work: *Human Intelligence + Artificial Intelligence = Human Potential.* The article gives a sophisticated overview of artificial intelligence and the various issues that come with its progression. He notes that artificial

intelligence is not necessarily a specifically "good" or "bad" thing, but rather an extension of our intelligence as humans. He considers the risks of movement towards an artificially intelligent era, exploring the benefits, potential guidelines, and ultimately the promotion of utilisation.

Finally, we end with a jointly written article by the equally impressive Pamela Finckenberg-Broman, Morgan Broman, and Mark Brady. The article —*Law & Technology: The Legal & Social Implications of Sentient Robots* —considers the possibility of self-aware robots in a very unique way. They suggest that once this phenomenon comes to fruition, robots can no longer be considered purely an item used for human benefit. If we fail to recognise this shift, the authors suggest that robots are essentially slaves, with their only purpose to be objectified by the human race.

III WHAT NEXT?

At this point, we have already seen massive developments in technology. We have seen a pocket-sized computer come to fruition in the smartphone. We have seen a virtual assistant become a common house-hold appliance. However, as demonstrated by the articles in this special issue, there is plenty of innovation to come. Whether we like it or not, whether we are scared and excited; the age is upon us. It is time to give thought to the range of vital possibilities to come. It is time to contemplate how we can integrate with the future of technology, and benefit from what we are calling, The Technological Age.

Vanessa Antal

Editor-in-Chief

EQUITY, "REVENGE PORN," & CAMBRIDGE ANALYTICA: THE DOCTRINE OF CONFIDENCE AS A PROTECTION FOR HUMAN DIGNITY IN THE TECHNOLOGIAL AGE

RAÚL MADDEN*

Breach of confidence is an equitable action that is increasingly significant for the protection of human dignity in the technological age. Its scope extends beyond the economic interests which more frequently invoke equity, to protecting dignity where an individual's privacy interests have been violated. This paper considers the history of case development that consolidated the ability of confidence to protect dignity in its own right. It then looks at two contemporary contexts where new technologies necessitate the application of confidence to dignitary concerns: specifically, "revenge porn" cases where an individual abuses an intimate partner's trust and privacy and in "data breach" situations where much larger entities release information of a data subject improperly. It is finally theorised that equity's basis in conscience makes confidence well suited to protecting interests that are dignitary, rather than economic, in character. The contribution of this paper to the existing field of literature is to establish the growing utility of the doctrine of confidence as a private law action to deter and redress misuses of private information that are facilitated and amplified by technological advances.

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CONTENTS

I INTRODUCTION

As technology develops, so do opportunities to inflict emotional injury and degradation on another person in ways more drastic and further reaching than previously imagined. The type of interest concerned in these cases is often an individual's privacy, which is usually categorised as having its basis in human dignity.[1] The equitable doctrine of breach of confidence, particularly in Australia, is one private law cause of action that has been invoked successfully to redress dignitary abuses. This paper is about the ability of the confidence doctrine to adapt, along with technological evolution, to protect human dignity. It begins by outlining the relationship between personal information, dignity, and confidence (Part II). Next, it traces a history of the application of confidence in relation to privacy, establishing a significant personal and dignitary space within its scope of protection beyond its commonly recognised capacity to protect commercial and proprietary interests (Part III). Following that, our discussion looks at how confidence has developed a deeply necessary private law response to "revenge porn" cases as well

[1] *Australian Broadcasting Commission v Lenah Game Meats Pty Ltd* (2001) 208 CLR 199, 227 (Gleeson CJ) ('*Lenah*'); *Campbell v MGN Ltd* [2004] UKHL 22, 50–51; Luciano Floridi, 'On Human Dignity as a Foundation for the Right to Privacy' (2016) 29 *Philosophy and Technology* 307, 308.

as instances of how new technologies can facilitate egregious emotional abuse in relationships between individuals (Part IV). Beyond protecting dignity in interpersonal relationships, confidence might provide solutions in "data" contexts where business or government entities misuse personal information with which they have been entrusted (Part V). Finally, it is theorised that equity's foundation in conscience might explain why confidence has, and may further, protect dignity (Part VI). The contribution of this paper is to establish the usefulness of breach of confidence as a private law action, to address increasing opportunities presented by technological advancements for individuals and larger entities to misuse information in a manner which abuses the dignity of the subject.

II DIGNITY, PERSONAL INFORMATION, & CONFIDENCE

In the broad context of personal information and data, dignity is considered a foundational interest forming the basis of privacy protections. As distinct from economic or proprietary interests, dignitary interests are predicated on the inherent value of a human being. Immanuel Kant theorised that 'what has a price can be replaced by something else as its *equivalent*; what on the other hand is raised above all price and therefore admits of no equivalent has a dignity'.[2] Kant distinguishes:

> [W]hat is related to general human inclinations and needs [which] has a *market price* [and] that which constitutes the condition under which alone something can be an end in itself [which] has not mere relative worth, that is, a price, but an inner worth, that is *dignity*.[3]

For Kant, autonomy — being what gives us the capacity for morality — confers upon us an 'unconditional, incomparable worth'.[4] Luciano comments that 'the protection of privacy should be based directly on the protection of human dignity, not indirectly through other rights such as that to property or to freedom of expression'.[5] Though there is no shortage of theories attempting to explain the content of human dignity,[6] it is satisfactory for now, to proceed on the basis that the interests of human dignity constitute

[2] Immanuel Kant, *Groundwork for the Metaphysics of Morals*, tr Mary J Gregor (Cambridge University Press, 2006) [trans of: *Grundlegung zur Metaphysik of Morals* (1785)] 42.
[3] Ibid.
[4] Ibid 43.
[5] Floridi (n 1) 308.
[6] See Ariel Zylberman, 'Human Dignity' (2016) 11 *Philosophy Compass* 201.

a primary value from which personal privacy derives, as differentiated from economic or proprietary interests.[7]

Warren and Brandeis, in the classic 1890 American privacy article, advocated that tort law should protect privacy interests on the basis of 'inviolate personality',[8] which Bloustein in 1964 conceived as positing 'the individual's independence, *dignity* and integrity … [defining] man's essence as a unique and self-determining human being'.[9] They reasoned that this principle — distinct from that of private property — already protected personal writings and productions not just against theft and physical appropriation, 'but against publication in any form', and its logical extension is 'to protect the privacy of the individual from invasion either by the too enterprising press, the photographer, or the possessor of any other modern device for recording or reproducing scenes or sounds'.[10] As these advances in technology 'rendered it possible to take pictures surreptitiously', they theorised that 'doctrines of contract and of trust are inadequate to support the required protection, and the law of tort must be resorted to'.[11] While American case law has subsequently produced four separate privacy torts,[12] in Australia, the development of confidence has afforded the predominant private law privacy protection.

The elements of confidence are usually: that the information is confidential; that it was originally imparted in circumstances that attach an obligation of confidence; that there has been, or threatened, an unauthorised use of the information to the detriment of the party communicating it.[13] However, that information was obtained by means (such as theft) other than it being confidentially imparted by the subject is not fatal to a confidence action, as it is 'unconscionability' that forms the basis for finding a breach of confidence.[14] According to Gleeson CJ in the High Court case of *Lenah*, '[t]he real task is to decide what

[7] It is not inconceivable that in some factual circumstances, however, both interests could intersect or be difficult to separate: see *Campbell v MGN Ltd* [2004] UKHL 22, 51, 53, 57 (Lord Hoffmann).
[8] Samuel D Warren and Louis D Brandeis, 'The Right to Privacy' (1980) 4 *Harvard Law Review* 193, 205.
[9] Edward J Bloustein, 'Privacy as an Aspect of Human Dignity: An Answer to Dean Prosser' (1964) 39 *New York University Law Review* 962, 971 (emphasis added).
[10] Warren and Brandeis (n 8) 205.
[11] Ibid 211.
[12] *Lake v Wal-Mart Stores Inc*, 582 NW 2d 231, 235 (Minn, 1998).
[13] *Lenah* (n 1) 222 (Gleeson CJ), quoting *Coco v AN Clark (Engineers) Ltd* [1969] RPC 41, 47 (Megarry J).
[14] *Franklin v Giddins* [1978] Qd R 72, 80; *Lord Ashburton v Pape* [1913] 2 Ch 469; See also Megan Richardson, 'Breach of Confidence, Surreptitiously or Accidentally Obtained Information and Privacy: Theory Versus Law' (1994) 19 *Melbourne University Law Review* 673.

a properly formed and instructed *conscience* has to say about publication'.[15] Some types of personal information — such as that 'relating to health, personal relationships or finances' and 'certain kinds of activity, which a reasonable person, applying contemporary standards of morals and behaviour, would understand to be meant to be unobserved' — are identifiable as private.[16] In many instances, 'that disclosure or observation of information or conduct would be highly offensive to a reasonable person or ordinary sensibilities' is a 'useful practical test of what is private'.[17]

In Australia, it has been acknowledged that 'the foundation of much of what is protected, where rights of privacy, as distinct from rights of property, are acknowledged, is *human dignity*'.[18] As Australia's appellate courts have not established (nor conclusively rejected) a privacy tort, Gleeson CJ stated that 'the law would protect what might reasonably be called a right of privacy, although the name accorded to the cause of action would be breach of confidence'.[19] Not only is breach of confidence relevant to how an individual might use digital technology to abuse the trust or privacy of another individual, but also to how larger — private and public — entities might do the same. The European Parliament has acknowledged the link between data and dignity by approving the *General Data Protection Regulation*, which requires that measures be taken 'to safeguard the data subject's *human dignity*'.[20]

Stephen Kennedy writes that '[t]he protection of human dignity cannot be divorced from the protection of human data'.[21] He identifies three social threats to the protection of personal data: objectification, commodification, and politicisation. These categories help us to conceive why confidence is a pivotal private law action in relation to misuses of personal information by larger entities — potentially private and public — that are driven by the interests of profit or politics. This article now discuss how confidence came to be of utility in privacy litigation, before looking at the specific 'revenge porn' and data

[15] *Lenah* (n 1) 227 (Gleeson CJ) (emphasis added).
[16] Ibid 226 (Gleeson CJ).
[17] Ibid.
[18] Ibid (emphasis added).
[19] Ibid 224, citing *Hellawell v Chief Constable of Derbyshire* [1995] 1 WLR 804, 807 (Laws J).
[20] *Position (EU) No 6/2016 of the Council at First Reading with a View to the Adoption of a Regulation of the European Parliament and of the Council on the Protection of Natural Persons with regard to the Processing of Personal Data and on the Free Movement of Such Data, and Repealing Directive 95/46/EC (General Data Protection Regulation)* [2016] OJ C 159/1.
[21] Stephen Kennedy, 'Data and Dignity — Protecting the Truth of Real Things' (2017) 7 *Journal of Christian Legal Thought* 20, 20.

breach contexts of how confidence might apply to when individuals and larger entities can use new technologies to assail dignitary interests.

III A HISTORY OF CONFIDENCE AS A PROTECTION OF PERSONAL INFORMATION

'*Three things are to be helpt [sic] in Conscience,*
Fraud, Accident and things of Confidence'.[22]

Confidence is an old, but not antiquated, doctrine with relevance beyond the commercial. From Sir Thomas More's explanatory couplet, it appears that in the sixteenth century a few things were known about 'confidence': its basis was in equity's underpinning concept of conscience, and it was of core significance to Chancery as one of three conceived categories of equitable actions. '*Things of confidence*', as More used the term, refers — more broadly than the doctrine of confidence itself — to the jurisdiction of equity to intervene when a party had placed their trust in another and this trust was betrayed.[23] Our present discussion focuses on the narrower notion of confidence, the specific cause of action, having its basis in 'an obligation of conscience arising from the circumstances in or through which the information was obtained'.[24]

Private and personal information was the subject matter of many of the early reported English confidence cases. These cases illustrate how equity developed to protect privacy in technologically simpler times. In a series of early cases, confidence was invoked to protect privacy, although it tended to restrain publication on contractual or proprietary bases.[25] Even where it was claimed that publication of private letters 'was intended to

[22] *Coco v AN Clark (Engineers) Ltd* [1969] RPC 41, 46 (Megarry J), quoting Sir Thomas More (Lord Chancellor). Notably, 'confidence' here referred to a broader principle of 'trust' 'extending to all cases where one party placed reliance on another's good faith': see, eg, Mike Macnair, 'Equity and Conscience' (2007) 27 *Oxford Journal of Cultural* Studies 659, 677.

[23] Macnair (n 22) 677: '*Confidence'*, as an equitable jurisdiction, as referred to in More's couplet, 'is a synonym for trust, but this was wider than technical trusts, extending beyond fiduciary relations in the narrow sense (agency and partnership) to all cases where a party placed reliance on another's good faith … As the equity jurisdictions expanded and developed … they never completely lost their conceptual links to this core'.

[24] *Moorgate Tobacco v Philip Morris Ltd (No 2)* (1984) 156 CLR 414, 438 (Deane J).

[25] *Prince Albert v Strange* (1849) 41 ER 1171, 1178: The employee of a printing business, engaged by the royal family to make copies of private family sketches, made unauthorised copies and sold them to a third party who wished to hold a showing of the sketches and publish a catalogue describing them. It was held that '*the object and effect is to make known to the public more or less of the unpublished work and composition of the author, which he is entitled to keep wholly for his own private use and pleasure, and to withhold altogether, or so far as he may please, from the knowledge of others*' (emphasis added); *Pollard v Photographic Company* (1888) 40 Ch D 345, 350: 'the bargain between the customer and the

wound [the plaintiff's] feelings, and could have no other effect',[26] it was held that the sender retained 'sufficient property in the original letters to authorise an injunction unless she has by some act deprived herself of it'.[27]

In *Argyll v Argyll*, which concerned secrets orally confided in a marital relationship, restraint was imposed even in the absence of contractual or proprietary elements.[28] A 1966 article observed that in most of the earlier cases, it was accepted that breach of confidence *could* merit restraint of publication in its own right.[29] Where there was a proprietary or contractual right at law, there was really no need to have *equity* act in the situation,[30] aside from providing an injunctive relief which is especially useful in matters when a non-fungible interest such as privacy is at stake. Indeed, in later trade secret cases too, where there was no contract, confidence alone was deemed sufficient.[31] Dickie concludes that while trade secrets have financial value and [false] attacks on reputation can be protected by tort, 'it is clearly the sentiments or sensitivity of the plaintiff that alone are being protected' in some early confidence cases.[32] Reflecting on *Argyll,* he noted that if the court were to allow a:

> successful petitioner in a divorce action to breach confidences of trust that occurred during the marriage, it would not only provide the petitioner with double relief — divorce and divulgence — but would also cause many presently happily married couples to speak with a far more guarded tongue, foreseeing the dismal day when bliss has fled and such disclosures are the cause of a union's dissolution.[33]

Confidence, clearly, has a capacity to protect dignity in interpersonal, or intimate, relationships, which are the subject of Part IV. Equity's conscience endeavours to 'enforce a communal moral standard' and developed in response to injustices that the common

photographer includes, by implication, an agreement that the prints taken from the negative are to be appropriated to the use of the customer only'.
[26] *Gee v Pritchard* (1818) 36 ER 670, 671 (Lord Eldon).
[27] Ibid 678 (Lord Eldon).
[28] *Duchess of Argyll v Duke of Argyll* [1967] 1 Ch 302.
[29] Hans J Dickie, 'Restraint of Breach of Confidence: Duchess of Argyll v Duke of Argyll' (1966) 24 *Faculty of Law Review* 115, 120, citing *Prince Albert v Strange* (1849) 41 ER 1171, 1178.
[30] Ibid.
[31] *Saltman Engineering v Campbell Engineering* (1947) 65 RPC 203.
[32] Hans J Dickie, 'Restraint of Breach of Confidence: Duchess of Argyll v Duke of Argyll' (1966) 24 *Faculty of Law Review* 115, 122.
[33] Ibid.

law was unequipped to rectify.[34] As privacy interests became the subject of increasing concern in society and of litigation, unsurprisingly the ability of confidence to protect privacy interests was discovered. It eventually became clear that these interests need not be articulated as something with profit-generating potential.[35]

A series of mostly 1980s English and Australian cases illustrate the versatility of confidence in protecting privacy interests. Significantly, in England in 1988, it was affirmed that confidence applies to information about non-marital intimate relationships.[36] In the same year, an injunction was granted to prevent defendants from publishing that two doctors had contracted AIDS.[37] In Australia, confidence protected the identity of an informant.[38] It also restrained publication of secret Aboriginal cultural knowledge.[39] These cases concern sexual, health-related, safety, and cultural subject matters, the privacy of which courts deemed suitable for protection via confidence. Collectively, they suggest a continuation of *Argyll*'s trajectory of elucidating the utility of confidence as a dignitary protection. Also significant for confidence in relation to dignity is the finding that a duty of confidence may arise independently of 'a transaction or a relationship between the parties', when in the circumstances there is sufficient 'notice' that it would be just to preclude publication.[40] This solidifies the understanding of confidence as an action that goes beyond the contractual and into the personal aspects of life.

There are a couple of English cases from the 2000s about celebrities and the media where not a lot of the damage claimed could be described as dignitary.[41] *Douglas v Hello!* concerned a celebrity wedding where the couple, who planned to sell exclusive photographs to one media outlet, successfully complained that photographs were

[34] Richard Hedlund, 'The Theological Foundations of Equity's Conscience' (2015) 4 *Oxford Journal of Law and Religion* 119, 123, 139.
[35] Jennifer Stuckey, 'The Equitable Action for Breach of Confidence: Is Information Ever Property?' (2003) 26 *Sydney Law Review* 402, 404 and 406: 'the analysis that confidential information is a species of intangible property is juristically misguided and unhelpful'. This is 'revealed in the situation where the confidential information disclosed or misused is of a personal nature for such information may have no appreciable commercial value'.
[36] *Stephens v Avery* [1988] Ch 449.
[37] *X v Y* [1988] 2 All ER 648.
[38] *G v Day* [1982] 1 NSWLR 24.
[39] *Foster v Mountford and Rigby Ltd* (1976) 29 FLR 233.
[40] *Attorney-General v Guardian Newspapers Ltd (No 2)* [1990] 1 AC 109, 281.
[41] See, eg, I D F Callinan, 'Privacy, Confidence, Celebrity and Spectacle' (2007) 7 *Oxford University Commonwealth Law Journal* 1.

surreptitiously taken by another.[42] *Campbell v MGN*, despite concerning a celebrity, shows that a person's privacy can be protected in response to media publication of their drug addiction and rehabilitation efforts.[43] The "public interest" defence did not defeat the confidence claim despite the plaintiff's high profile and previous denial of drug use.[44] Taking influence from UK human rights legislation,[45] and citing *Douglas*,[46] Lord Hoffman identified that, in private information contexts, the 'underlying value which the law protects' is 'the protection of human autonomy and dignity — the right to control the dissemination of information about one's private life and the right to the esteem and respect of other people'.[47] Like *Prince Albert* and *Argyll*'s invocation of confidence by aristocracy, *Douglas* and *Campbell* might give the impression that confidence is more useful for the rich and famous than for ordinary members of the public. They did, however, lead to further developments which galvanised confidence as a protection for the dignity of ordinary people.

In *Campbell*, Nicholas LJ acknowledged that English equity protected against wrongful use of private information via breach of confidence but argued that in these contexts the action should be considered as a tort of 'misuse of confidential information',[48] on the basis that the action has 'firmly shaken off the need for an initial confidential relationship', having 'clearly changed its nature'.[49] *Google Inc v Vidall-Hall* endorses this view, asserting that 'there are now two separate causes of action: an action of breach of confidence and one for misuse of private information',[50] characterising the latter as a tort.[51] At the least, English courts acknowledge the role of confidence in producing the tort that protects against misuse of private information, if not satisfied that confidence is conceptually or practically adequate for the task. Arguably, however, equity should have continuing influence on the development of privacy protection; even if tort is the preferred basis of English privacy protection, there is no need to sever the tort from its equitable roots.[52]

[42] *Douglas v Hello! Ltd* [2006] QB 125.
[43] *Campbell v MGN Ltd* [2004] UKHL 22.
[44] Ibid.
[45] *Human Rights Act 1998* (UK) cl 42. This had a significant impact on the development of English confidence and tort in relation to privacy, which although interesting, is a discussion for another time.
[46] *Douglas v Hello! Ltd* [2001] QB 977.
[47] *Campbell v MGN Ltd* [2004] UKHL 22, [50]–[51].
[48] Ibid [14].
[49] Ibid [15].
[50] *Google Inc v Vidall-Hall* [2015] EWCA Civ 311, [21].
[51] Ibid [43].
[52] As English approaches are less stringent about fending off what might be called 'fusion'.

This is not farfetched, since equity 'emerged out of the Lord Chancellor's power to hear complaints from those whom the common law had failed',[53] and since equitable confidence was the first cause of action in England to step in to protect personal privacy when tort historically did not. Privacy interests are coloured by the changing social and technological circumstances by which they are surrounded. As flexibility and adaptability are hallmarks of equity, it is perhaps well equipped in relation to privacy. Perhaps even beyond the scope of confidence, then, we could plausibly suggest that equity might be the most appropriate source of law to protect privacy interests, given its more evolutionary nature as compared with the common law and its ability to expand organically without the dilatory process of legislative reform.[54]

In Australia, confidence remains the primary private law privacy protection. As Gleeson CJ stated in *Lenah*, dignity is also the underpinning value of personal privacy as protected by confidence in Australia.[55] In *Doe v ABC*, confidence was applied where the ABC broadcasted the identity of a woman who was raped by her estranged husband, noting that victims of sexual assault often experience feelings of 'humiliation, shame and guilt' which can be compounded when inflicted by a former partner.[56] The 'highly offensive' test is useful, but not determinative.[57] The essence of what is protected against is not the offensiveness of the information itself, but the offensiveness of the behaviour of publishing information, which would 'rob the person to whom the information relates of their right to keep their personal or confidential information private'.[58] Importantly, Hampel J rejected the view that equitable damages cannot include 'distress type damages'.[59] She identified the type of loss claimed as 'damages for personal injury, the affront to the plaintiff's feelings, and the effect on her personally of the breach of

[53] Hedlund (n 34) 123.
[54] Law reform commissions have been commendably productive in generating reports concerning the creation of a statutory cause of action for serious invasions of privacy since 2008. However, no legislation has materialised so far pursuant to these reports: New South Wales Law Reform Commission, *Remedies for the Serious Invasion of Privacy in New South Wales* (Report No 57, 3 March 2016); Australian Law Reform Commission, *Serious Invasions of Privacy in the Digital Era* (Report No 123, 3 September 2014); Victorian Law Reform Commission, *Surveillance in Public Places* (Report No 18, May 2010); Australian Law Reform Commission, *For Your Information: Australian Privacy Law and Practice* (Report No 108, 12 August 2008).
[55] *Lenah* (n 1) 226.
[56] *Doe v ABC* [2007] VCC 281, 36, 39, 49.
[57] See Part II above. 'The requirement that disclosure or observation of information or conduct would be highly offensive to a reasonable person of ordinary sensibilities is in many circumstances a useful practical test of what is private': *Lenah* (n 1) 226 (Gleeson CJ).
[58] *Doe* (n 56) 38, [115].
[59] Ibid 48 [143].

confidence', as distinct from 'loss of a commercially exploitable idea or process … or a commercially exploitable reputation or image, as was the case in *Campbell* and *Douglas*'.[60] The most appropriate compensatory method was to award monetary damages for pain and suffering caused by the actionable breach, and loss occasioned by it.[61] Although presiding in a lower court, Hampel J was willing to utilise the space left open by *Lenah* and hold that the facts in *Doe* also gave rise to damages in tort.[62] She acknowledged that this development is 'intertwined with the development of the cause of action for breach of confidence' and that the value of privacy 'springs from the importance of the law recognising and protecting human dignity'.[63]

Doe illustrates how things of emotional impact can concern equity's conscience which fastens upon parties who are careless of the impact of divulging another's sensitive personal information. As technology has enabled media to reach a broad audience through electronic communication including televised reports, the need for a private law action — namely, confidence — to protect the dignitary interests of autonomy to determine to whom they impart sensitive personal facts is vividly apparent. This section has outlined how, over time, confidence has protected private information and developed a distinctly dignitary aspect to its protective scope. The next section, in the context of the internet and social media, reaffirms how breach of confidence protects dignity alongside changing social and technological surroundings.

IV CONFIDENCE & DIGNITY IN INTIMATE RELATIONSHIPS: INTERNET, SOCIAL MEDIA, & REVENGE PORN

What is referred to by the term "revenge porn" exemplifies how technological change enables new means of inflicting emotional abuse in the context of relationships between individuals. It is often:

> characterised as an act in which one ex-partner exerts revenge on another by maliciously, and without consent, distributing sexually-explicit photos online, most commonly by

[60] Ibid 48 [145].
[61] Ibid 48 [145].
[62] Ibid 61 [157].
[63] Ibid 49 [148].

> either uploading onto a "revenge porn" website or simply distributing by email or smart-phone.[64]

Undoubtedly, non-consensual distribution is nonetheless reprehensible and actionable without malice.[65] 'Image-based sexual abuse' is a more broadly encompassing term to refer to 'non-consensual creation and or distribution of private sexual images'.[66] It is important to recognise that "revenge porn", although a media-friendly and attention-grabbing term, is just one type of many image-based sexual abuses and not a catch-all phrase.[67] Bambauer remarks that '[t]he cost of distributing analog photos was an effective barrier to most non-consensual sharing [of explicit images]; it was simply too much work … But, as sexting proves, the smartphone has made intimate media ubiquitous'.[68] The internet presence of "revenge porn" is far-reaching, with over 3,000 websites being estimated to have existed in 2015.[69] An Australian Parliamentary committee has undertaken an expansive discussion of the issue in terms of its prevalence, its impact, as well as existing and suggested avenues for legal responses.[70] The magnitude of image-based sexual abuse and 'revenge porn' as a social issue in turn makes it a pressing legal issue.[71]

A good Australian litigation lawyer, when approached by a client who had been subjected to the dignitary insult of their former intimate partner having uploaded private sexual images online, would have breach of confidence in mind (aside from advising them that the matter should be reported to the police).[72] *Giller v Procopets* is appellate authority for

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[64] Ian Ward, 'A Revenger's Tragedy' (2017) 11 *Pólemos* 437, 441.
[65] Ibid 441.
[66] Clare McGlynn and Erika Rackley, 'Image-Based Sexual Abuse' (2017) 37 *Oxford Journal of Legal Studies* 1, 1.
[67] See, eg, McGlynn and Rackley (n 69) 2; See also Clare McGlynn, Erika Rackley and Ruth Houghton, 'Beyond "Revenge Porn": The Continuum of Image-Based Sexual Abuse' (2017) 25 *Feminist Legal Studies* 25.
[68] Derek Bambauer, 'Exposed' (2012) 98 *Minnesota Law Review* 2025, 2029.
[69] McGlynn, Rackley and Houghton (n 57).
[70] Senate Legal and Constitutional References Committee, Parliament of Australia, *Phenomenon Colloquially Referred to as 'Revenge Porn'* (Report, February 2016).
[71] Melanie Ehrenkranz, 'Facebook Revenge Porn Case Shows How Police Let a Predator Get Away' *Gizmodo* (online, 14 January 2018) <http://gizmodo.com/facebook-revenge-porn-case-shows-how-police-let-a-perpe-1822024163>; Jenny Kleeman, 'YouTube Star Wins Damages in Landmark UK 'Revenge Porn' Case', *The Guardian* (online, 17 January 2018) <https://www.theguardian.com/technology/2018/jan/17/youtube-star-chrissy-chambers-wins-damages-in-landmark-uk-revenge-porn-case>.
[72] Some jurisdictions have already enacted criminal provisions to specifically respond to 'revenge porn': See, eg, *Crimes Amendment (Intimate Images) Act 2017* (NSW). Governments of others have indicated an intention to do so: Felicity Caldwell, 'Revenge Porn to Become a Criminal Offence under Labor', *Brisbane*

applying confidence to "revenge porn" and consequently awarding equitable compensation for emotional distress, arising from a factual situation that occurred in 1996 where videotape was the means through which explicit footage was recorded.[73]

A significant aspect of *Giller* in relation to equity's ability to protect dignitary interests is the court's discussion of the applicability of equitable compensation as a remedy. Equitable compensation was the only way in which the majority considered that justice could be done on the facts following the High Court's prescribed approach of adapting recognised actions — rather than creating new ones such as a privacy tort — to meet new situations and circumstances .[74] Only Maxwell P upheld Giller's separate tort claim for 'intentional infliction of emotional distress'.[75] There are three findings integral to the applicability of confidence and the corollary capacity to award equitable compensation in a case where the publication of private information constituted distress damage rather than damage to an economic interest. First, the Court of Appeal overturned the trial judge's finding that — because Giller did not (and could not, as the damage had been done) seek an injunction — she could not recover damages under Victoria's version of the *Lord Cairns Act*,[76] a version of the legislation that conferred on the Chancery court a discretionary ability to grant damages (equitable compensation) in addition to or instead of specific performance or an injunction.[77] Neave JA said of the provision (s 38) that it gives the court jurisdiction to award 'damages' 'if the cause of action is such as to give the court jurisdiction to grant an injunction' even if the injunction would have been refused on the discretionary factors, and that nothing in the section suggests 'that the power was intended to be exercisable only where an application for injunction had actually been made.[78]

Second, the Court rejected the view of the trial judge. Victoria's appeal court in *Giller* held that "mere distress", short of a demonstrated psychiatric injury, could form the basis for

Times (online, 22 November 2017) <https://www.brisbanetimes.com.au/queensland-election-2017/revenge-porn-to-become-a-criminal-offence-under-labor-20171122-p4yx5i.html>.
[73] *Giller v Procopets* (2008) 24 VLR 102: The events complained of occurred in 1996, significantly before 2008 by which time videotapes had been rendered technologically redundant.
[74] Ibid 255 (Gleeson CJ).
[75] Ibid 114 [478] (Neave JA), as distinct from a conceivable privacy tort.
[76] *Supreme Court Act 1986* (Vic) s 38.
[77] *Giller* (n 73) [137] (Ashley JA), [406]–[407] (Neave JA).
[78] Ibid 96 [406]–[407].

awarding damages in breach of confidence.[79] Neave JA explained that equitable principles provide a basis for ordering equitable compensation for 'distress or embarrassment' as a consequence of a breach of confidence. He noted the availability of equitable remedies, especially injunctions, to restrain the publication of material because of its private nature without having to demonstrate the potential consequence of psychiatric injury or financial loss.[80] It would be inconsistent, then, to impose a barrier to equitable compensation for the harm the plaintiff has suffered once the breach has occurred.[81] To refuse equitable relief by way of granting compensation where no other remedy was available 'would illustrate that something was wrong with the law',[82] as '[a]n inability to order equitable compensation to a claimant who has suffered distress would mean that a claimant whose confidence was breached before an injunction could be obtained would have no effective remedy'.[83] The Victorian *Lord Cairns Act* would also be satisfactory to provide a basis for damages,[84] which 'can be awarded in some circumstances where common law damages are not recoverable', and is not limited to protecting property interests.[85]

Third, aggravated damages were considered appropriate since the breach was deliberate and had the effect of humiliating, embarrassing, and distressing the plaintiff.[86] The affirmation of the applicability of equitable compensation as a remedy for breach of confidence in a "revenge porn" abuse in *Giller* illustrates and provides an optimistic authority for the application of equity to protect a person's dignity where the common law would leave the injustice without remedy. This is not surprising given equity's, and thus confidence's, basis in conscience (as reminded in *Lenah*) and its nature of flexibility and adaptability to novel circumstances.

More recently, *Wilson v Ferguson* revisited — and affirmed — the application of confidence to "revenge porn".[87] During the course of a romantic relationship, the couple, who were also colleagues, exchanged sexual photographs and videos on the

[79] Ibid 1 [1] (Maxwell P), 31 [143], 32 [148], 34 [159], 34 [160] (Ashley JA), 96 [408] (Neave JA).
[80] Ibid 100 [423].
[81] Ibid 100 [423].
[82] Ibid, quoting *Cornelius v De Taranto* [2001] EMLR 12 [66]–[77], [69].
[83] Ibid 100 [424].
[84] *Supreme Court Act 1986* (Vic) s 38.
[85] *Giller* (n 73) 101 [428].
[86] Ibid [1], 34, [159], 34 [160], 105 [442], 106 [446].
[87] *Wilson v Ferguson* [2015] WASC 15.

understanding that these were to be kept private. In retaliation for the plaintiff terminating the relationship, the defendant sought revenge by publishing 16 explicit photographs and two explicit videos of the plaintiff on his Facebook page.[88] Mitchell J of Western Australia's Supreme Court held that the appropriate relief was an injunction to prohibit further publication of the images, which had been removed by this point and equitable compensation 'to compensate … as far as money can, for the humiliation, anxiety and distress which has resulted [from the breach]'.[89]

This type of abuse is obviously of a dignitary nature. The defendant's actions were clearly driven by a desire to cause 'extreme embarrassment and distress', or in his own words, to see the plaintiff 'fold as a human being'.[90] She was 'absolutely horrified, disgusted, embarrassed, and upset' by the publication, and particularly 'humiliated, distressed, and anxious because her and the defendant worked at the same site' and many of their friends and colleagues would view the images.[91] Mitchell J had no difficulty in applying the elements of confidence.[92] Importantly, he applied *Giller* in relation to awarding equitable compensation for 'noneconomic loss comprising the embarrassment or distress occasioned by the disclosure of private information in breach of confidence'.[93] He found that the applicable version of the *Lord Cairns Act* does not prevent this and that *Giller* 'represents a development in the equitable doctrine in Australia'.[94]

Reflecting on post-*Giller* technological advancement, Mitchell J observed that in 1996 'it would have been difficult to predict the current pervasiveness in Australian society of the internet, social media platforms utilising the internet and the portable devices which interface the internet and those platforms'.[95] The fact that these changes have so 'dramatically increased the ease and speed with which communications and images may be disseminated to the world' often means that 'there will be no opportunity for

[88] Ibid [17]–[42].
[89] Ibid [1]–[2].
[90] Ibid [33].
[91] Ibid [33].
[92] Ibid [55]–[59].
[93] Ibid [71].
[94] Ibid [74], [76]; citing *Doe v ABC* [2007] VCC 281 and *Australian Broadcasting Corporation v Lenah Game Meats* (2002) 208 CLR 119.
[95] Ibid [79].

injunctive relief to be obtained between the time the defendant forms the intention to distribute the images of the plaintiff and the time when he or she achieves that purpose'.[96]

He reflected that:

> [N]ot uncommonly for a young couple in a sexual relationship, [the plaintiff and defendant] shared intimate images with each other using their mobile phones during their relationship. This practice has introduced a relatively new verb — sexting — to the English language.[97]

These contemporary conditions, and the 'damaging distress and embarrassment' caused by broader dissemination of such communications, 'should inform the way in which equity responds to a breach of the obligation of confidence'.[98] Equitable compensation was thus appropriate as:

> the relief which is given in response to a breach of that obligation should, however, accommodate contemporary circumstances and technological advances, and take account of the immediacy with which any person can broadcast images and text to a broad, yet potentially targeted, audience.[99]

Giller's approach of awarding compensation not only 'avoids the obligation being effectively unenforceable in many cases' but also 'may be seen as giving effect to the "*cardinal principle of equity that the remedy must be fashioned to fit the nature of the case and the particular facts*"'.[100] The development of confidence in these types of dignitary cases is an 'incremental adaptation of an established equitable principle'.[101] On that note, it might be worth considering whether punitive damages might be applicable in similar cases.[102]

The relationship between equity and other areas of law is relevant. Confidence has the advantage, as held in *Wilson*, that it is unnecessary to prove that the plaintiff suffered any

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[96] Ibid [80].
[97] Ibid [79].
[98] Ibid [81].
[99] Ibid [81].
[100] Ibid [82], quoting *Warman International Ltd v Dwyer* (1995) 182 CLR 544, 559 (emphasis added).
[101] Ibid [82].
[102] However, *Harris v Digital Pulse* (2003) 56 NSWLR 298 presents hurdles for recognition of exemplary damages in equity; Cf *Canson Enterprises Ltd v Boughton & Co* [1991] 3 SCR 534 for the Canadian position. See also David Morgan, '*Harris v Digital Pulse:* The Availability of Exemplary Damages in Equity' (2003) 29 *Melbourne University Law Review* 377.

psychiatric injury, as the reasonableness of the plaintiff's reaction to what happened to her 'are matters within ordinary human experience'.[103] It would be unjust to require a plaintiff to prove actual damage such as a psychiatric illness as is required to establish the tort of intentional infliction of emotional distress.[104] Evolution or legislation of a privacy tort need not be mutually exclusive, or diminutive, of the continued significance of breach of confidence. It might make conceptual sense to have two separate causes of actions, which operate side-by-side when appropriate: invasion of privacy, a tort, for the obtainment of information if wrongful; and breach of confidence as the traditional equitable response to the publication of the information regardless of how the information was obtained. The English approach of a tort evolving *from* equity is a possibility but could offend those who warn sternly against 'fusion fallacy' — that is, the alteration of common law or equity principles by reference to the principles of the other.[105] Alternatively, as suggested earlier,[106] an expansion of equity further into the realm of privacy might be most appropriate given the dynamic nature of privacy interests. This seems sensible in light of the common law's relative rigidity and legislative hesitancy. It has been suggested that, to capture the general law protections, a statutory cause of action might supplant, thereby abolishing, equitable and common law developments.[107] This, however, would uproot the organic ability of equity to grow as a privacy protection, in favour of planting legislative protections — which, given the rate at which Parliament tends to respond to privacy interests — might not grow in response to future social and technological changes and observations.

Without expectation of confidence, interpersonal relationships of all kinds — familial, friendships, romantic, sexual — would be stifled or severely hindered because of the nature of matters that are discussed and shared in these types of relationships. Jeffrey Rosen considers this type of privacy as:

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[103] *Wilson* (n 87) [102].
[104] See *Wilkinson v Downton* (1897) 2 QB 57; *Nationwide News Pty Ltd v Naidu* (2007) 71 NSWLR 417; *Wainwright v Home Office* [2004] 2 AC 406; *Giller* (n 73).
[105] It is thought that perpetrators of this fallacy would conclude that the *Judicature Acts* were 'not devised to administer law and equity concurrently but to 'fuse' them into a new body of principles comprising neither of law nor of equity but of some new jurisprudence conceived by accident, born by misadventure and nourished by sour but high-minded wet nurses': R P Meagher, J D Heydon and M J Leeming, *Meagher, Gummow and Lehane's Equity: Doctrines and Remedies* (Butterworths, 4th ed, 2002) 57.
[106] See page 9 of this article.
[107] Australian Law Reform Commission, *Serious Invasions of Privacy in the Digital Era* (Report No 123, 3 September 2014) 72.

> indispensable to freedom … necessary for the formation of intimate relationships, allowing us to reveal parts of ourselves to friends, family members, and lovers that we withhold from the rest of the world. It is, therefore, imperative as a precondition for friendship, individuality, and even love.[108]

People trust their intimate partners with a lot of things, including their dignity. Fittingly, breach of confidence is demonstrably capable of playing a role in protecting dignity in interpersonal relationships.[109]

V FILLING IN THE GAPS: CONFIDENCE & DATA

Given the enormity of recent "data breach" events that have attracted media attention, breach of confidence might have potential as a powerful private law protection in situations where a social media company, or other private or government entity, abuses (or loses) their control over data entrusted to it by its users, clients, customers, or subjects. The utility of confidence when these entities disseminate information unconscionably is especially worth considering since equitable compensation is not fettered by common law notions of foreseeability and remoteness.[110] Hobbes characterised the state as a 'Leviathan', wielding ultimate powers, derived from and comprised by the surrendered powers of its subjects.[111] Today though, the state is not the only entity with Leviathan-like powers, nor the only entity that could be theorised similarly.

Could social media companies, and companies with the power to harvest and analyse multitudes of data, be conceived as holding state-like powers over their (data) subjects, which was (often unwittingly) generated by the user signing up to and conducting parts of their lives on these companies' platforms? The relationships between these parties are of further concern. As Cambridge Analytica demonstrates, it is far from unimaginable that a social media entity would — whether by design or mismanagement — allow a third party access to a data subject's private information. It is also not unimaginable that this data could be used politically, in the process of a political campaign, to harvest millions

[108] Jeffrey Rosen, *The Unwanted Gaze: The Destruction of Privacy in America* (Vintage Books, 2000) 11, quoted in *Australian Broadcasting Corporation v Lenah Game Meats* (2002) 208 CLR 119, 324.
[109] See, eg, *Kwok v Thang* [1999] NSWSC 1034.
[110] See, eg, Teck H Ong, 'Equitable Damages: A Powerful but Often Forgotten Remedy' (1999) 4 *Deakin Law Review* 61, 63; *Commonwealth Bank of Australia v Smith* (1991) ALR 453.
[111] See, eg, Thomas Hobbes, *The Leviathan* (Cambridge University Press, first published 1651, 1909 ed).

of psychological profiles of data subjects. Were this to happen, it is, again, not unimaginable that a government could gain access to this information in a seismic power grab of control over its citizens.

Stephen Kennedy's analysis proffers three categories of social factors that generate disrespect for the dignity of data subjects. First, "*objectification*" is the 'ensemble of social factors that cause more and more distance between people so that we more readily regard one another as mere objects, statistics rather than real people'.[112] It follows that those who hold our data are more likely to abuse it because they will never have to justify this to us, face to face.[113] Second, "*commodification*" is the 'ensemble of social factors that further alienates us into viewing one another as mere bundles of economic desires'. Privacy is thus undermined by values of contemporary marketing, where information that actually 'give(s) shape and substance to who we are' is conceived as neutral and depersonalised.[114] Third, "*politicisation*" is the 'ensemble of social factors that increases alienation by training us to regard one another as mere bundles of political preferences'.[115] Rather than participants in rational engagement with political issues, we are treated as 'mere objects for mass manipulation'.[116] The activities of Cambridge Analytica exemplify all three of these factors and indicate the sweeping significance of data breaches as a social and legal issue.

Cambridge Analytica is a company — a 'data analytics' firm — that worked on Donald Trump's presidential campaign.[117] In 2018, revelations emerged that Cambridge Analytica gained unauthorised access to tens of millions of Facebook accounts.[118] This information was used to build psychological profiles of voters so they could be more specifically targeted, or manipulated.[119] That decision-making figures in a company

[112] Kennedy (n 21) 20.
[113] Ibid.
[114] Ibid 20–21.
[115] Ibid 21.
[116] Ibid.
[117] Carol Cadwalladr and Emma Graham Harrison, 'Revealed: 50 Million Facebook Profiles Harvested for Cambridge Analytica in Major Data Breach', *The Guardian* (online, 18 March 2018) <https://www.theguardian.com/news/2018/mar/17/cambridge-analytica-facebook-influence-us-election>.
[118] Ibid.
[119] Carol Cadwalladr, '"I Made Steve Bannon's Psychological Warfare Tool": Meet the Data War Whistleblower', *The Guardian* (online, 18 March 2018) <https://www.theguardian.com/news/2018/mar/17/data-war-whistleblower-christopher-wylie-faceook-nix-bannon-trump>; Paul Lewis, 'Trump Adviser John Bolton Worked with Cambridge Analytica on Youtube Voter Experiment', *The Guardian* (online, 24 March 2018) <https://www.theguardian.com/us-news/2018/mar/23/john-bolton-cambridge-analytica-videos-donald-trump>.

would undertake such an activity, disregarding the sensitivity of the information they sought to use, demonstrates an '*objectification*' where the basic respect owed to another person is ignored, a '*commodification*' where this is ultimately done as a matter of "business as usual", and '*politicisation*' where those who seek powerful offices are on the purchasing end of this type of data analysis. These categories, in this context, not only spur consideration of the wrongfulness of, motivations for, and the products of, violating a data subject's *privacy*, but they are also especially relevant to the *autonomy* of an individual, conceivably the root of human dignity,[120] in the sense that a thorough data profile can be created to enable third parties to consolidate data profiles for the purpose of surreptitiously subverting an individual's decision making as a dignified participant in a democracy. Alarmingly, Cambridge Analytica's parent company holds contracts with the United States State Department, with its key former employee reporting that:[121] 'The company has created psychological profiles of 230 million Americans. And now they want to work with the Pentagon? It's like Nixon on steroids.'[122] Cambridge Analytica exemplifies all three threats to personal data *par excellence* (*objectification*¸ *commercialisation*, and *politicisation*) and demonstrates the increasing exigency for the private law to protect the dignitary concerns of data subjects that are held legitimately, or, in this case, illegitimately.

Cambridge Analytica spawns several legal issues concerning data protection and the need for members of the public to have some form of private law recourse, not least the breach of confidence that occurs if such information is imparted or misused by "data analytics" firms. The relevance of confidence in terms of how this information is used is strikingly obvious in light of the ability of private companies, through highly advanced technology, to subjugate human dignitary interests on such a broad and deep scale for commercial and political gains. The Office of the Australian Information Commissioner has released a statement that the Office 'is making inquiries with Facebook to ascertain whether any

[120] Kant (n 2) 43.
[121] Cadwalladr (n 119).
[122] Ibid; Australia's acting Privacy Commissioner has reported that, following confirmation from Facebook, that 'the information of over 300,000 Australian users may have been acquired and used without authorisation': Office of the Australian Information Commissioner, 'Investigation into Facebook Opened' (Media Release, 5 April 2018) <https://www.oaic.gov.au/media-and-speeches/statements/facebook-and-cambridge-analytica>.

personal information of Australians was involved'.[123] The Commissioner stated that he 'will consider Facebook's response and whether any further regulatory action is required', listing powers conferred by the *Privacy Act 1988* (Cth).[124] These include: investigating an alleged interference with privacy, exercising regulatory action powers or powers to accept an enforceable undertaking, making a determination, or applying to the court for civil penalty provisions.[125] Subsequently, the Acting Commissioner has opened an investigation under the Act.[126] As Richardson points out, though, the main limitation of statutory data protections is that these rely on decisions of public officials, rather than allowing individuals the 'power directly to vindicate their legal rights'.[127]

The general law — comprised of common law and equity — might be well equipped to 'produce a set of data protection norms'.[128] Torts of negligence and intentional infliction of emotional distress may occasionally be applicable, but are not easily invoked, in 'information' contexts.[129] In England, a product of the evolution of confidence, the 'misuse of private information' tort, might be readily applicable.[130] The Cambridge Analytica debacle may generate further support for legislative reform or judicial progress towards an Australian 'invasion of privacy tort', which would provide more reason for companies to be careful about illegitimately gaining access to data in the first place.[131]

Confidence, however, should be considered as one cause of action, within a framework of potential privacy protections, that itself allows for private law redress whereby individuals can personally take action when their data is abused. It has equity's advantage of the potential to look at the issue from outside the immediately apparent lenses of

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[123] Office of the Australian Information Commissioner, 'Statement from the Australian Information and Privacy Commissioner on Facebook and Cambridge Analytica' (Media Release, 20 March 2018) <https://www.oaic.gov.au/media-and-speeches/statements/facebook-and-cambridge-analytica>.
[124] Ibid.
[125] *Privacy Act 1988* (Cth).
[126] Office of the Australian Information Commissioner, 'Investigation into Facebook Opened' (Media Release, 5 April 2018) <https://www.oaic.gov.au/media-and-speeches/statements/facebook-and-cambridge-analytica>.
[127] Megan Richardson, 'The Battle for Rights — Getting Data Protection Cases to Court' (2015) 2 *Oslo Law Review* 23, 24.
[128] Ibid 29.
[129] *Swinney v Chief Constable of Northumbria Police Force* [1997] QB 464; *James Rhodes v OPO* [2015] UKSC 32.
[130] *Google Inc v Vidall-Hall* [2015] EWCA Civ 311.
[131] See Tanya Alpin, 'The Future of Breach of Confidence and the Protection of Privacy' (2007) 7 *Oxford University Commonwealth Law Journal* 137; Megan Richardson, 'Whither Breach of Confidence: A Right to Privacy for Australia' (2002) 26 *Melbourne University Law Review* 381.

contract and formal consent and could apply to both the social media entity that initially held and passed on the data as well as the data analytics firm that subsequently divulged it. The application of its elements is of course dependent on, and open to further analysis in each factual situation.[132] Even so, *prima facie*, that a data-subject would fairly think information to be viewable to only a selected group of people would indicate that the information is, first, of a confidential nature and, second, imparted in circumstances attaching such an obligation. That modern formulations of confidence do not even require a pre-existing relationship, or expression or confidentiality, between parties — especially given the imbalanced power relationship between data-holders vis-a-vis equity's protection of the vulnerable — invites consideration that people assume that their data will not be used for the purpose of manipulating deeply personal information in an objectifying, commodifying, and politicising manner.[133] Equity might even be willing to set aside 'terms and condition' agreements — which are considered perfunctory and rarely read or understood by users — on the basis that it would be unconscionable to enforce them. The third element of confidence — that publication caused detriment — could be satisfied by the distress or dignitary harm inflicted by abusing the data subject's privacy interests. Significantly, this element does not impose the burden on the plaintiff of having to prove economic or psychiatric damage. Finally, and importantly, remembering that 'the real task is to decide what a properly informed conscience has to say about publication' indicates that the profit motive should not be looked on as a satisfactory excuse for using a data subject's private information in a way that objectifies, commodifies, or politicises their information in the manners described by Kennedy.[134]

Interestingly, in English law, surreptitious access to a person's computer hard drive appears to, in itself, entail a breach of confidence, rather than any subsequent misuse of that information.[135] As Lord Neuberger states: 'It is of the essence of the claimant's right to confidentiality that he can choose whether, and, if so, to whom and in what circumstances and on what terms, to reveal the information which has the protection of the confidence'.[136] Helpfully, courts have considered information to remain confidential,

[132] See also *Australian Broadcasting Commission v Lenah Game Meats Pty Ltd* [2001] 208 CLR 199, 222 (Gleeson CJ), quoting *Coco v AN Clark (Engineers) Ltd* [1969] RPC 41, 47 (Megarry J).
[133] *Attorney-General v Guardian Newspapers Ltd (No 2)* [1990] 1 AC 109, 281.
[134] See also *Australian Broadcasting Commission v Lenah Game Meats Pty Ltd* [2001] 208 CLR 199, 222 (Gleeson CJ).
[135] *Imerman v Tchenguiz* [2011] 2 WLR 592.
[136] Ibid 619–620 (Lord Neuberger MR).

even if conveyed to a limited audience, unless it has reached the 'public domain', being 'so generally accessible that, in all the circumstances, it cannot be regarded as confidential'.[137] Thus, limited publication to online 'friends' might not in itself defeat a plaintiff's confidence claim when their data was non-consensually passed on by a social media platform. The broad protective scope of confidence may posit 'something quite significant by way of a [general law] data protection right, despite the constraints on the doctrine's focus on confidential, not just personal, information'.[138] Further, the prospect of having to defend against multiple individual actions, or against 'class actions', might have more of a preventative impact on potential data abusers.

VI CONSCIENCE AND CONFIDENCE

The confidence cases about dignitary interests cited in this paper — concerning material from private sketches,[139] letters,[140] print photographs,[141] news publications,[142] television reports,[143] video footage,[144] to the advent of internet technologies such as social media and smartphones[145] — show the trajectory of technological development leading into the digital age and the parallel exigency for the law to maintain pace alongside these developments and their potential to aid in the abuse of human dignity — '[e]quity, after all, is about more than the vindication of monetary interests'.[146] Equity's basis in "conscience" can explain its ability to protect dignity. The courts accept that "conscience" is the basis for invoking the doctrine of confidence.[147] Underlying this must be an implicit acceptance that our conscience is the "alarm" in our head that tells us, even if we were to contemplate abusing the confidence of a person who had imparted sensitive personal information, that there is a basic level of respect — dignity — that constitutes a line that we do not cross even in moments of fury or in pursuit of profit. Equity's conscience is

[137] *Attorney-General v Guardian Newspapers Ltd (No 2)* [1990] 1 AC 109, 281–282 (Lord Goff).
[138] Richardson (n 127) 32.
[139] *Prince Albert v Strange* [1849] Eng R 255.
[140] *Gee v Pritchard* (1818) 36 ER 670.
[141] *Pollard v Photographic Company* (1888) 40 Ch D 345.
[142] *Campbell v MGN Ltd* [2004] UKHL 22; *Douglas v Hello! Ltd* [2006] QB 125.
[143] *Doe v ABC* [2007] VCC 281.
[144] *Giller* (n 73)
[145] *Wilson* (n 87)
[146] Duane Rudolph, 'Workers, Dignity, and Equitable Tolling' (2017) 15 *Northwestern Journal of Human Rights* 126, 159.
[147] *Moorgate Tobacco v Philip Morris Ltd (No 2)* (1984) 156 CLR 414, 438 (Deane J); *Australian Broadcasting Commission v Lenah Game Meats Pty Ltd* [2001] 208 CLR 199, 227 (Gleeson CJ).

reflective of the human conscience, the inner court in our head that issues a mental injunction that tells us that the envisaged conduct is unacceptable.[148] Equity is a product of a human need for a space in the law that uses conscience to fill in the voids in the common law that would otherwise allow unconscientious treatment of others. Similarly, equity in Aristotle's logic is what fills the gaps in "law" where its application would deliver an unforeseen injustice.[149] Having a private action that enables a person — in a personal relationship, or as a data subject in relationships with data holders — to take private action against the party who abuses their trust over sensitive personal information is one such area of law where equity had developed a concept that the law sorely needs to protect human dignitary interests.

VII CONCLUSION

As technological development has shown, this action is of increasing relevance. It has potential as a social counterbalance against technological advancement. Section III traced the history of confidence developing as a privacy protection, which gradually became more clearly applicable to dignitary abuses. Section IV discussed a contemporarily relevant way in which confidence protects dignity, with regard to the recent phenomenon of "revenge porn", a context concerning interpersonal relationships where an individual abuses the trust and privacy of another. Section V considered breach of confidence in contexts where the abuser of personal information (or data) is a corporate or government body, which — as the Cambridge Analytica outrage illustrates — bears drastic social significance. If one thing should be taken from this paper, it is that confidence presents a means of redressing, and potentially deterring the types and scope of dignitary abuses that can, now in the digital age, easily be inflicted on people by other individuals, or companies, or governments.

[148] Irit Samet, 'What Conscience Can Do for Equity' (2012) 3 *Jurisprudence* 13, 33.
[149] See Eric Zhand, 'The Application of Universal Laws to Particular Cases: A Defence of Equity in Aristotelianism and Anglo-American Law' (1996) 59 *Law and Contemporary Problems* 263.

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Foster v Mountford and Rigby Ltd (1976) 29 FLR 233

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IS AUSTRALIAN LAW ADAPTABLE TO AUTOMATED VEHICLES?

MARK BRADY *

Recent deaths involving automated vehicles have sparked calls for legislative reform. Scholars argue that the law lags behind new and disruptive technological innovations. Automated vehicles are hailed as the next step in the shifting paradigm of disruptive technology. With the introduction of automated land vehicles, changes will occur in many areas of law and society. These changes will impact notions of property, identity, and the physical landscape of Australia, including the architecture of the future fleet of motor vehicles and the infrastructure surrounding mass road transport. The legal framework in Australia appears fairly well adapted to the introduction of automated vehicles. There are several structures in place that allow the law to investigate and adapt to new technology. This article seeks to outline some of the social and legal impacts arising from the introduction of highly automated vehicles. It is structured in three parts. First it defines the Society of Automotive Engineers ("SAE") standard for automated vehicles and outlines a brief history of automated vehicles. Then it considers some different areas of law intersected by the introduction of automated vehicles; criminal law, privacy law, personal injury, and product liability. Finally, it reflects on some of the potential physical and social impacts surrounding the introduction of automated vehicles. It concludes with whether the Australian law is adaptable to this new and disruptive technology.

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CONTENTS

I INTRODUCTION

The problem with a human driven motor vehicle is the human driver. Humans get distracted,[1] they get drowsy,[2] they lose concentration,[3] they fall asleep,[4] they get overwhelmed,[5] they make mistakes,[6] and they all differ in experience and ability.[7] Vehicle control by human beings leads to potential errors at every stage.[8] According to Miller, the human:

> perceives, decides, and reacts (or responds) based on current stimuli with subsequent behaviour also being a function of both memory (short and long term) and psycho-physiological capability … everything the [hu]man perceives, be it through a sensing process or through his memory, is a source of potential error.[9]

Combine these 'sources of error' with the control of a motor vehicle, travelling at high speed, weighing on average well over 1500 kilograms,[10] and it is a recipe for disaster. Put 1.28 billion vehicles on the road,[11] and disaster becomes inevitable. The familiarity of motor vehicle use and resultant accidents tends to blunt the catastrophic social and economic costs of having a mechanised mass transport system based around individual humans piloting heavy vehicles at high speeds.

In the United States, according to the National Highway Traffic Safety Administration 2015 summary of traffic data, 'the total value of societal harm from

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[1] Amy Brueckner, 'Distracted Driving: How Technological Advancements Impede Highway Safety' (2011) 115 *Penn State Law Review* 709, 711.
[2] Queensland University of Technology, CARRS-Q Centre for Accident Research & Road Safety, 'State of the Road: Sleepiness and Fatigue' (April 2015) 1.
[3] Kaarin J Anstey et al, 'Cognitive, sensory and physical factors enabling driving safety in older adults' (2005) 25(1) (Jan) *Clin Psychol Rev* 45, 46-48.
[4] State of the Road: Sleepiness and Fatigue (n 2) 1.
[5] Klaus Bengler et al, 'Three Decades of Driver Assistance Systems: Reviews and Future Perspectives' (2014) (Winter) *IEEE Intelligent Transportation Systems Magazine* 6, 12.
[6] Miller C O, 'The Design-Induced Part of the Human Error Problem in Aviation' (1976) 42 *Journal of Air Law and Commerce* 119, 120-121.
[7] Anstey et al (n 3) 46-59.
[8] Miller (n 6) 125.
[9] Ibid.
[10] See, eg, Statista, The Statistics Portal, *Number of vehicles in use worldwide 2006-2015* (Web page) <https://www.statista.com/statistics/281134/number-of-vehicles-in-use-worldwide/>; Department of Infrastructure and Regional Development, *New passenger vehicle fuel consumption trends, 1979 to 2013*, (Bureau of Infrastructure, Transport and Regional Economics 2013) 66; Patrick Blain, 'Steel Perspectives for the Automotive Industry' (Organisation Internationale des Constructeurs d'Automobile, 2012) 1, 9.
[11] Australian Bureau of Statistics, *Motor Vehicle Census*, Australia, (Catalogue No 9309.0, 31 Jan 2015).

motor vehicle crashes was $836 billion'.[12] In the US there were 7.277 million motor vehicle crashes in 2016,[13] including 37,461 fatalities.[14] Proportionate figures are available for Australia. In Australia, the numbers of fatalities plateaued over the past decade at around 1,300 fatalities annually.[15] Additionally, in 2016 almost 33,000 people sustained serious and life-threatening injuries due to road accidents; with this trend steadily increasing.[16] The annual cost of motor vehicle collisions in Australia is estimated to be $33.16 billion.[17]

Improvements in road design,[18] public education campaigns,[19] and changes in driver attitude towards dangerous driving behaviours like speeding and drink driving,[20] and the inclusion of passive safety systems within vehicles,[21] have reduced but not eliminated accidents on the road.[22] In a context where one death, or one accident causing injury, is one too many,[23] the ongoing social cost of human driven vehicles has led to calls for the implementation of a safer mass transport system in Australia.[24] After addressing accident causing factors such as road

[12] Lawrence Blincoe et al, 'The Economic and Societal Impact of Motor Vehicle Crashes, 2010 (Revised)' National Center for Statistics and Analysis, (National Highway Traffic Safety Administration, 2015) 1.
[13] US Department of Transportation, 'Summary of Motor Vehicle Crashes 2016', *National Highway Traffic Safety Administration* (Web Page, September 2018), <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812580>.
[14] Blincoe et al (n 12) 2.
[15] National Transport Commission 'Cooperative Intelligent Transport Systems - Final Policy Paper' (2013) 1; see also, Department of Infrastructure, Regional Development and Cities, (Road Deaths Australia Report, 2017).
[16] Bureau of Infrastructure, Transport and Regional Economics, 'Road Trauma Australia 2016 Statistical Summary' (Department of Infrastructure and Regional Development, 2016) 1; Cooperative Intelligent Transport Systems (n 15) 2.
[17] Frederick Litchfield, 'The cost of road crashes in Australia 2016: An overview of safety strategies' (2017) Australian National University Report, iv.
[18] Jessica Edquist et al, 'Road Design Factors and their Interaction with Speed Limits' Monash University Accident Research Centre, (2009) 3-24.
[19] Joe Motha, 'Road Safety in Australia: A Publication Commemorating World Health Day 2004' Australia Transport Safety Bureau (2004) 38.
[20] Ibid 125-126.
[21] See generally, Bengler et al (n 5).
[22] Bureau of Infrastructure, Transport and Regional Economics, 'Impact of road trauma and measures to improve outcomes' (Department of Infrastructure and Regional Development, 2014) 8-14.
[23] Motha (n 19) 8.
[24] Cooperative Intelligent Transport Systems (n 15) 1.

design, passive vehicle safety and preventable behaviour,[25] the obvious next step is to eliminate the driver.[26]

Automated and connected land vehicles ("automated vehicles") remove the driver from the equation and have the potential to perform 'at safety levels significantly higher than human drivers'.[27] In the United States and Europe, there has been extensive development of automated vehicle technology,[28] and policy,[29] over the last several years. Legislators have now begun to prepare for the arrival of automated vehicles,[30] with safety as their primary goal.[31] Proponents claim automated vehicles have the ability to 'dramatically improve the safety, efficiency and mobility' of mass transportation,[32] and to 'significantly reduce property damage, injuries, and casualties'.[33] Automated vehicles are claimed to enable a situation where 'artificial intelligence acts on behalf of a human with life or death consequences'.[34] However, the automation of the motor vehicle is not a sudden technological innovation.[35] It must be seen as the next step in a long process of evolution where, in the name of safety,[36] intelligent systems have reached a point

[25] Anna Devlin et al, 'Designing Safer Roads to Accommodate Driver Error' (Curtin–Monash Accident Research Centre, 2011) 21.
[26] Dr Sven A Beiker, 'Legal Aspects of Autonomous Driving: The need for a legal infrastructure that permits autonomous driving in public to maximize safety and consumer benefit.' (2012) 52 *Santa Clara Law Review* 1145, 1146.
[27] Bengler et al (n 5) 10.
[28] See, eg, Andrew P Garza, '"Look Ma, No Hands!": Wrinkles and Wrecks in the Age of Autonomous Vehicles' (2012) 46 *New England Law Review* 581, 587-588; Beverley Lu and Matthew Michaels Moore, 'Autonomous Vehicles for Personal Transport: A Technology Assessment' (2011) *Social Science Research Network* 1 <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1865047>; Frank Douma et al, 'Self-Driving Vehicles and Policy Implications: Current Status of Autonomous Vehicle Development and Minnesota Policy Implications' (2015) 16(2) *Minnesota Journal of Law Science & Technology* 735; Jamie Patrick Hopkins and Sophia H Duffy, 'Sit, Stay, Drive: The Future of Autonomous Car Liability' (2013) 16 *SMU Science and Technology Law Review* 453, 453-456.
[29] See generally, Andrew R Swanson, '"Somebody Grab the Wheel!": State Autonomous Vehicle Legislation and the Road to a National Regime' (2014) 97(4) *Marquette Law Review* 1085.
[30] Rachael Roseman, 'When Autonomous Vehicles Take Over the Road: Rethinking the Expansion of the Fourth Amendment in a Technology-Driven World' (2013-2014) 20(1) *Richmond Journal of Law & Technology* 11, 11-14.
[31] Swanson (n 29) 1108.
[32] Beiker (n 26) 1146.
[33] Ibid 1150.
[34] Ibid 1152.
[35] Kyle Graham, 'Of Frightened Horses and Autonomous Vehicles: Tort Law and its Assimilation of Innovations' (2012) 52 *Santa Clara Law Review* 101.
[36] Gary E Marchant and Rachel A Lindor, 'The Coming Collision Between Autonomous Vehicles and the Liability System' (2012) 52 *Santa Clara Law Review* 1321, 1330; see also, Bengler et al (n 5).

where they can now intervene between a driver's control inputs and the vehicle's automated response.[37]

The recent public death of a pedestrian following a collision with a Volvo XC90 operated by Uber,[38] and the driver of a Tesla Model X,[39] have heightened already intense media scrutiny into automated vehicles.[40] There have been calls for the banning of automated vehicles until manufacturers can guarantee the safety of their products for the general public.[41] There have been similar arguments for changing law in relation to this disruptive technology in Australia.[42] This

[37] Bengler et al (n 5) 7.
[38] See, eg, 'Disturbing and Heartbreaking Footage of Fatal Self-driving Crash Released', *ABC News* (Online, 22 March 2018) < https://www.abc.net.au/news/2018-03-22/self-driving-uber-fatal-crash-footage-released/9575624>; Lacey Johnson, 'Arizona Suspends Uber's Autonomous Cars After a Death. What's Next for Driverless Cars?' (Online, 27 March 2018) *GTM Mobility* <https://www.greentechmedia.com/articles/read/uber-autonomous-cars-death#gs.S7qkBSM>; George Nott, 'Could an autonomous vehicle death happen on Australian roads too?' (Online, 4 April 2018) *CIO* <https://www.cio.com.au/article/635727/could-an-autonomous-vehicle-death-happen-australian-roads-too/>; The Engineer, 'Last week's poll: responses to Uber crash', (Online, 27 March 2018) *The Engineer* <https://www.theengineer.co.uk/uber-crash/>.
[39] See, eg, Victor Tangermann, 'Tesla Model X in Autopilot Killed a Driver. Officials Aren't Pleased With How Tesla Handled It' (Online, 2 April 2018) *Futurism* <https://futurism.com/officials-tesla-model-x-autopilot-killed-driver/>; Jackie Wattles, 'Tesla Model X was in autopilot before fatal crash' (Online, 31 March 2018) *CNN Tech* <http://money.cnn.com/2018/03/31/technology/tesla-model-x-crash-autopilot/index.html>; Megan Rose Dickey, 'Tesla Model X fatal crash investigation' (Online, 8 June 2018) *Tech Crunch* <https://techcrunch.com/story/tesla-model-x-fatal-crash-investigation/>; Dana Hull and Tim Smith, 'Tesla Model X driver death raises questions about autopilot' (Online, 1 April 2018) *Financial Review* <http://www.afr.com/technology/tesla-model-x-driver-death-raises-questions-about-autopilot-20180331-h0y75x>.
[40] See, eg, Zia Wadud, 'Transportation Research Part A: Policy and Practice' (2017) 101 *Elseiver* 163, 163-164; Faiz Siddiqui, 'Tech firms, government officials put the brakes on testing self-driving vehicles after fatal Uber crash' (Online, 27 March 2018) *The Washington Post* <https://www.washingtonpost.com/news/dr-gridlock/wp/2018/03/27/arizona-governor-suspends-testing-of-ubers-self-driving-cars-i-was-very-disturbed-by-video-of-fatal-crash/?noredirect=on&utm_term=.c40e5f890985>; Disturbing and heartbreaking, (n 38); Johnston, (n 38); Nott (n 38); Last week's poll: responses to Uber crash, (n 38); Joel Hruska, 'Uber, Lyft Want to Ban Personal Use of Self-Driving Cars in Urban Areas' (Online, 5 February 2018) *Extreme Tech* <https://www.extremetech.com/extreme/263294-uber-lyft-want-ban-personal-use-self-driving-cars-urban-areas>; James F Zender, 'Should We Ban Autonomous Vehicles?' (Online, 29 March 2018) *Psychology Today* <https://www.psychologytoday.com/us/blog/the-new-normal/201803/should-we-ban-autonomous-vehicles>; Matt McFarland, 'The backlash against self-driving cars officially begins' (Online, 10 January 2017) *CNN Tech* <http://money.cnn.com/2017/01/10/technology/new-york-self-driving-cars-ridesharing/index.html>.
[41] See, eg, Eric Newcomer, 'Uber's Autonomous Cars Banned in Arizona After Fatal Crash' (Online, 27 March 2018) *Bloomberg Technology* <https://www.bloomberg.com/news/articles/2018-03-27/uber-s-autonomous-cars-suspended-by-arizona-after-fatal-crash>; Hruska, (n 40); Zender, (n 40); McFarland, (n 40).
[42] See, eg, Craig Duff, 'Australia lags most countries on readiness for autonomous cars, says report' (Online, 18 January 2018) *News.com.au* <http://www.news.com.au/technology/innovation/motoring/australia-lags-most-countries-on-readiness-for-autonomous-cars-says-report/news-

reactionary tendency, to call for increased regulation of new and potentially disruptive technology, is not new.[43] For more than a century there have been technological innovations that have significantly changed, or disrupted, both human society and the physical landscape.[44] When a major scientific advancement arrives there are always people who claim 'the law lags behind technology' and that law must 'catch up' with new technology.[45] Automated vehicles are seen as a disruptive technology, with the potential to significantly alter current social and legal paradigms.[46] In order to understand the adaptability of a system of law, to cope with new technologies, the first thing to consider is why law is often seen as lagging behind new and disruptive technologies.[47]

When automated vehicles arrive they will likely have a significant impact on many areas of law.[48] They will alter the way civil liability claims are handled following

story/11c5b9d91a8709c0f2ffcb5967627142>; Sandeep Gopolan, 'Legal lessons for Australia from Uber's self-driving car fatality' (Online, 20 March 2018) *The Conversation* <http://theconversation.com/legal-lessons-for-australia-from-ubers-self-driving-car-fatality-93649>; Adi Snir, 'Dealing with the Law Lag' *LegalVison* (Blog Post, 6 May 2016) *LegalVision* <https://legalvision.com.au/dealing-with-the-law-lag/>; David Mercer, 'Technology and the law: dealing with the "law lag"', David Mercer, (Online, 4 July 2011) *Weekend Australian* <https://www.theaustralian.com.au/archive/business/technology-and-the-law-dealing-with-the-law-lag/news-story/b312d05074f757b67cfbe74d9d85615c?sv=2324c990c642936b884b2f9a8cfbbd12>; John Ahern, 'Keeping up with the technology in the changing legal landscape' (Online, 16 November 2016) *InfoTrack* <https://www.infotrack.com.au/blog/keeping-up-with-the-technology-in-the-changing-legal-landscape/>; Beverley Head, 'Law is falling far behind the tech' (Online, 27 November 2017) *InnovationAus.com* <https://www.innovationaus.com/2017/11/Law-is-falling-far-behind-the-tech>.

[43] See generally, Kieran Tranter, 'Disrupting Technology Disrupting Law' (2017) *Law, Culture and the Humanities* <https://doi.org/10.1177/1743872117704925>; Arthur Cockfield and Jason Pridmore, 'A Synthetic Theory of Law and Technology' (2007) 8 *Minnesota Journal of Law Science & Technology* 475; Bennett Moses, 'Adapting the Law to Technological Change: A Comparison of Common Law and Legislation' (2003) 26(2) *UNSW Law Journal* 394, 396; Lyria Bennett Moses, 'Agents of Change: How the Law "Copes" with Technological Change' (2011) 20(4) *Griffith Law Review*, 763, 764.

[44] See, eg, Graham (n 35); Vivek Wadhwa, 'Laws and Ethics Can't Keep Pace with Technology' (2014) *MIT Technology Review* <https://www.technologyreview.com/s/526401/laws-and-ethics-cant-keep-pace-with-technology/>; Douglas W Allen and Yoram Barzel, 'The Evolution of Criminal Law and Police during the Industrial Revolution' (2007) *Research Gate* <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.186.1779&rep=rep1&type=pdf>.

[45] Bennett Moses, Agents of Change (n 43).

[46] Stephen P Wood et al, 'The Potential Regulatory Challenges of Increasingly Autonomous Motor Vehicles' (2012) 52 *Santa Clara Law Review* 1423, 1501; Bengler et al (n 5) 10.

[47] For law as 'technology' see, Eugene McNamee, 'An Egg Shaped Bowl: Law, Invention, Technology' (2012) 37 *Australian Feminist Law Journal* 83.

[48] Maurice Schellekens, 'Self-driving cars and the chilling effect of liability law' (2015) 31 *Computer Law & Security Review* 506.

motor vehicle accidents,[49] and raise questions about criminal law and data security regarding malevolent hacking causing them to crash.[50] Additionally, there are serious issues raised in relation to privacy laws protecting personal information transmitted in the data stream of automated vehicles.[51] Product liability law is also set to impact the use and operation of automated vehicles where showing which party is responsible for a malfunction may prove difficult.[52] Questions arise as to whether or not the artificial intelligence controlling the automated vehicle is the 'driver' for the purposes of an accident investigation.[53] This article considers whether the current legal frameworks have the capacity to adapt to new and disruptive technology, in particular to highly automated vehicles.

This article is structured in three parts. Part one describes the SAE standard for the different levels of automation and outlines a brief history surrounding the development of automated vehicles and the artificial intelligence controlling them. Part two examines several different areas of Australian law affected by the introduction of automated vehicles; criminal law, privacy law, personal injury and product liability. Part three will discuss possible impacts of automated vehicles on both society and the physical landscape of Australia. This article will conclude by stating whether Australian law is adaptable to the disruptive technology of highly automated vehicles.

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[49] Mark Brady et al, 'Automated Vehicles and Australian Personal Injury Compensation Schemes' (2017) 24 *Torts Law Journal* 32.

[50] See Frank Douma and Sarah Aue Palodichuk, Criminal Liability Issues Created by Driverless Cars, (2012) 52(4) *Santa Clara Law Review* 1157.

[51] Chasel Lee 'Grabbing the Wheel Early: Moving Forward on Cybersecurity and Privacy Protections for Driverless Cars' (2017) 69(1) *Federal Communications Law Journal* 25, 32; Dorothy J Glancy, 'Privacy in Autonomous Vehicles' (2012) 52(4) *Santa Clara Law Review* 1171, 1194; Jay P Kesan et al, 'A Comprehensive Empirical Study of Data Privacy, Trust, and Consumer Autonomy,' (2016) 91 (2) *Indiana Law Journal* 267.

[52] See generally, Mark Brady et al, Submission to National Transport Commission, in response to the *National Transport Commission Regulatory Options of Automated Vehicles: Discussion Paper*, 4 July 2016 <https://www.ntc.gov.au/media/1426/ntc-discussion-paper-regulatory-options-for-automated vehicles-may-2016-kieran-tranter-griffith-law-school-jul-2016.pdf>.

[53] For an examination of 'driver' and 'person in control' of a vehicle see, Brady et al, Automated Vehicles (n 49).

II A BRIEF HISTORY OF AUTOMATED VEHICLES

Automated vehicles have captured the imagination of people for almost 100 years.[54] In the early 20th century, automated vehicles were considered a futuristic yet achievable dream.[55] An automated vehicle is defined as 'a vehicle that includes a set of technologies allowing it to perform complex mobility tasks with little or no human intervention'.[56] One of the first real automated vehicles was created by Stanford University to perform functions as a robotic lunar rover.[57] Nicknamed the 'Stanford Cart' this vehicle was notoriously slow; taking a long time to travel only very short distances.[58] In 1979, it took almost 5 hours to navigate a room full of chairs.[59] Growth of modern automated road vehicles really only started with the United States Defence Advanced Research Projects Agency ('DARPA') grand challenges in the early 21st century.[60] Compared with the Stanford Cart, these vehicles were much faster.[61] The development of the current automated vehicle fleet is a direct result of the integration of digital computer control with modern passenger vehicle operating systems.

Technological augmentation of driver systems began with early safety improvements, such as antilock brakes, cruise control, electronic stability control and traction control.[62] Following this, the architecture of motor vehicles began to be increasingly computer controlled. Eventually, manufacturers integrated electronic power steering into the control systems of motor vehicles which permits the computer to steer a vehicle, where necessary.[63] The computer control of all major systems in modern passenger vehicles enable the functioning of advanced driver assistance systems such as adaptive cruise control, lane

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[54] Fabian Kroger 'Automated Driving in its Historical and Social Contexts' in Markus Maurer, J Christian Gerdes, Barbara Lenz, Hermann Winner (Eds) *Autonomous Driving: Technical, Legal and Social Aspects* (Springer, Berlin, 2016) 41-68.
[55] Ibid.
[56] Dana Sanchez, 'Collective technologies: autonomous vehicles' (Australian Council of Learned Academies, 2015) 4 <https://acola.org.au/wp/PDF/SAF05/2Collective%20technologies.pdf>.
[57] Jenn U, 'The Road to Driverless Cars: 1925 – 2025' (Blog Post, 2016) *Engineering.com* <https://www.engineering.com/DesignerEdge/DesignerEdgeArticles/ArticleID/12665/The-Road-to-Driverless-Cars-1925--2025.aspx>.
[58] Ibid.
[59] Ibid.
[60] Defense Advanced Research Projects Agency, <http://www.darpa.mil/about-us/about-darpa>.
[61] Jenn U (n 57).
[62] See Bengler et al (n 5).
[63] Bengler et al (n 5) 9.

departure warning, automatic reverse parking and valet parking.[64] Many manufacturers now offer semi-automated vehicle systems as standard equipment in their latest road-going models.[65] In certain circumstances the automated control systems of current vehicles can override the human drivers' control inputs altogether.[66]

Automated vehicles detect their environment using a variety of sensors and, via internal maps or GPS, navigate the surrounding terrain.[67] To understand how automated vehicles operate we must consider the artificial intelligence that controls an automated vehicle.[68] A robotic artificial intelligence operates the automated vehicle and makes decisions based on complex algorithms and machine logic.[69] In making these decisions, the artificial intelligence implies an ethical consideration (reflecting the underlying ideology of the programmers),[70] towards the safety of human passengers, other road users, and pedestrians.[71]

A *Levels of Automation*

The SAE standard J-3016[72] incrementally categorises the different levels of human control or monitoring, of automated systems between non-automated, semi-automated, and fully automated vehicles. The SAE standard has been broadly

[64] Bengler et al (n 5).
[65] These include; NVidia, Volkswagen, Baidu, Uber, Volvo, Fiat-Chrysler, Apple, Intel, BMW, Audi, Google, NuTonomy, Bosch, Tesla, Ford, and Five AI, see Christina Mercer, 'Which companies are making driverless cars?' (2018) *Techworld* <https://www.techworld.com/picture-gallery/data/-companies-working-on-driverless-cars-3641537/>.
[66] Bengler et al (n 5) 9-10.
[67] For a comprehensive analysis of the operation of automated vehicles, see Harry Surden and Mary-Anne Williams 'Technological Opacity, Predictability, and Self-Driving Cars' (2016) 38 *Cardozo Law Review* 121; see also, Alex Davies, 'What is Lidar, Why do Self-Driving Cars need it, and can it see Nerf Bullets?', *Wired* (Online, 6 February 2018) <https://www.wired.com/story/lidar-self-driving-cars-luminar-video/>.
[68] See Roderick Currie, 'Developments in Car Hacking' (White Paper 2015, The Sans Institute InfoSec Reading Room, 5 December, 2015).
[69] See Qing Li et al, 'Springrobot: A Prototype Autonomous Vehicle and its Algorithms for Lane Detection' (2004) 5(4) *IEEE Transactions on Intelligent Transportation Systems* 300.
[70] Tom Simonite, 'Artificial Intelligence Seeks an Ethical Conscience' *Wired*, (Online, 7 December 2017) <https://www.wired.com/story/artificial-intelligence-seeks-an-ethical-conscience/>.
[71] See generally, Keith Frankish and William M. Ramsey (eds) *The Cambridge Handbook of Artificial Intelligence* (Cambridge University Press, 2011).
[72] Bryant Walker Smith, in 'SAE Levels of Automation', *Center for Internet and Society* SAE Standard J3016 (Stanford University, 2013).

adopted; by the UK in 2015,[73] Australia in May 2016,[74] and the US in September 2016.[75] The different levels of automation are displayed in the SAE standard J-3016 as follows:

Level	Name	Narrative definition	Execution of steering and acceleration/ deceleration	Monitoring of driving environment	Fallback performance of *dynamic driving task*	System capability (*driving modes*)	BASt level	NHTSA level
Human driver monitors the driving environment								
0	No Automation	the full-time performance by the *human driver* of all aspects of the *dynamic driving task*, even when enhanced by warning or intervention systems	Human driver	Human driver	Human driver	n/a	Driver only	0
1	Driver Assistance	the *driving mode*-specific execution by a driver assistance system of either steering or acceleration/deceleration using information about the driving environment and with the expectation that the *human driver* perform all remaining aspects of the *dynamic driving task*	Human driver and system	Human driver	Human driver	Some driving modes	Assisted	1
2	Partial Automation	the *driving mode*-specific execution by one or more driver assistance systems of both steering and acceleration/deceleration using information about the driving environment and with the expectation that the *human driver* perform all remaining aspects of the *dynamic driving task*	**System**	Human driver	Human driver	Some driving modes	Partially automated	2
Automated driving system ("system") monitors the driving environment								
3	Conditional Automation	the *driving mode*-specific performance by an *automated driving system* of all aspects of the *dynamic driving task* with the expectation that the *human driver* will respond appropriately to a *request to intervene*	System	**System**	Human driver	Some driving modes	Highly automated	3
4	High Automation	the *driving mode*-specific performance by an *automated driving system* of all aspects of the *dynamic driving task*, even if a *human driver* does not respond appropriately to a *request to intervene*	System	System	**System**	Some driving modes	Fully automated	3/4
5	Full Automation	the full-time performance by an *automated driving system* of all aspects of the *dynamic driving task* under all roadway and environmental conditions that can be managed by a *human driver*	System	System	System	**All driving modes**	-	

[76]

[73] Department for Transport (UK), *The Pathway to Driverless Cars: Summary Report and Action Plan* (2015).
[74] National Transport Commission, 'Regulatory Options for Automated Vehicles: Discussion Paper', (2016).
[75] National Highway Traffic Safety Administration, 'Federal Automated Vehicles Policy: Accelerating the Next Revolution in Roadway Safety' United States Department of Transport, Washington, 2016, 9, <https://www.transportation.gov/sites/dot.gov/files/docs/AV%20policy%20guidance%20PDF.pdf>.
[76] SAE Standard J3016, in 'SAE Levels of Automation', Bryant Walker Smith, 2013, *Center for Internet and Society*, Stanford University.

For the purposes of this article, references to automated vehicle apply to highly automated vehicles, of level 4 or 5, unless otherwise stated. As the introduction of automated vehicles approaches there are increasing calls to regulate them.[77] It is significant, for the discussion surrounding disruptive technology, that questions regarding the law's ability to adapt to new and disruptive technology are answered.[78] Automobiles were first introduced to public roads in the late 19th century and at that time there were demands around the world to regulate the new and often dangerous technology.[79] Some of the proposed regulation would appear absurd by today's standards. Indeed, in England, although originally aimed at dreadnoughts, there was a law requiring a person to walk in front of early motorised vehicles carrying a red flag in their hand.[80] While UK legislators were apprehensive about this new and potentially disruptive technology, Australia in contrast welcomed motorised vehicles.[81]

III AUTOMATED VEHICLES AND AUSTRALIAN LAW

When the first automobiles were introduced in the late 19th century, Australia was proactive in adopting the new and disruptive technology.[82] Australia put in place frameworks for registering and licensing motor vehicles and drivers respectively.[83] While other countries viewed the new technology of automobiles as frightening and in need of controlling,[84] Australia historically embraced new technology.[85] In the 21st century this can be seen by Australia's proactive approach towards adopting disruptive technology, most notably in the ongoing examination and discussion surrounding the introduction of automated vehicles on Australian roads.

[77] See, Cockfield and Pridmore (n 43); Moses, Adapting the Law (n 43) 396; Bennett Moses, Agents of Change (n 43) 764.
[78] See generally, Tranter, Disrupting Technology Disrupting Law (n 43); Cockfield and Pridmore (n 43); Moses, Adapting the Law (n 43) 396; Bennett Moses, Agents of Change (n 43) 764.
[79] Graham (n 35).
[80] *Locomotive Act 1865* (Imp) s 3(2).
[81] See, Kieran Tranter, 'The History of the Haste-Wagons': The Motor Car Act (1909) (Vic.), emergent technology and the call for law' (2005) 29 *Melbourne University Law Review* 843.
[82] Ibid.
[83] Ibid 848-855.
[84] Graham (n 35).
[85] See, Tranter, History of the Haste-Wagons (n 78).

Australia has a well-developed system of law reform in relation to changing the law in Australia. For example, bodies such as the Australian Law Reform Commission,[86] the Victorian Law Reform Commission,[87] the New South Wales Law Reform Commission,[88] the National Transport Commission,[89] and Parliamentary enquiries, whether at the state or Federal level, enable Australia to make legislative change in a timely manner.[90] When this is combined with research and development, Australia is well placed to enquire into legislation regarding disruptive technology. The introduction of automated vehicles brings with it new concerns, in relation to safety, privacy, and civil litigation. To understand the effects of automated vehicles when they are introduced, it is necessary to look at some potential intersections of automated vehicles and Australian law, starting with the most serious concern; the effect automated vehicles will have on the criminal law.

A *Automated Vehicles and Criminal Law*

At higher levels of automation, automated vehicles have the potential to remove many laws from the criminal statutes. When the fully automated vehicle fleet is integrated into society the driving task will no longer be undertaken by the occupants of a vehicle; rendering many laws surrounding the operation of a motor vehicle obsolete. Laws relating to drink driving, speeding, and licensing are likely to be unnecessary as the occupant will be have no control input at higher levels of automation. Moreover the operation of an automated vehicle causing death or serious injury to another person may not attract the same criminal sanctions as presently in force; as the occupants will likely be considered no more at fault than if they were a passenger in a taxi or bus, for example. This will also yield a corresponding reduction in the tasking of law enforcement to traffic matters.

[86] *Law Reform Commission Act 1973* (Cth): Established the Law Reform Commission to, 6(1)(a) review laws to which this Act applies with a view to the systematic development and reform of the law.
[87] Established under the *Victorian Law Reform Commission Act 2000* (Vic).
[88] Established under the *Law Reform Commission Act 1967* (NSW).
[89] Established under the *National Transport Commission Act 2003* (Cth).
[90] See generally, Joint Standing Committee on Road Safety (Staysafe) *Driverless Vehicles and Road Safety in NSW*, Report 2/56 September 2016; Parliament of the Commonwealth of Australia, 'Social issues relating to land-based automated vehicles in Australia', *House of Representatives Standing Committee on Industry, Innovation, Science and Resources,* (2017).

Automated vehicles, however, may still be vulnerable to unlawful interference, in particular the hacking of an automated vehicle causing it to crash.

The 2015 hacking of a Jeep Cherokee highlighted the vulnerability of the modern digitised motor vehicle to malevolent interference by third parties.[91] With a reporter in the vehicle at the time, the Jeep Cherokee was remotely hacked by researchers who were able to disable the brakes and control systems ultimately causing it to crash.[92] This practical example served as a wakeup call to manufacturers' and the public showing how susceptible the modern motor vehicle is to unauthorised interference. A malevolent entity, wanting to damage automated transport, could override the in-vehicle computer and give new instructions to the vehicle control system causing it to crash.[93] Alternatively, it might interpose a false input signal causing the automated vehicle to change its vector, direction, or course heading.[94] Were this to occur with multiple vehicles at once it would be catastrophic for public safety. Determining whether Australian law is adaptable to automated vehicles regarding the unauthorised hacking of an in-vehicle control system requires evaluation of the existing law that protect against interference with automated vehicles.

Under the *Telecommunications, (Interception and Access) Act*,[95] the *Commonwealth Criminal Code,*[96] and the *Telecommunications Act*,[97] there are several provisions which cover the unauthorised interference with an in-vehicle computer or computer system.[98] These are general provisions, aimed at prevention of interference with 'restricted' computers, which may be applicable to automated vehicles with minor amendments. All that is really required is the recognition of the 'in-vehicle computer' of an automated vehicle as being 'restricted' for the purposes of the Act. Amending the Telecommunications Acts to include automated

[91] Andy Greenburg, 'Hackers Remotely Kill a Jeep on the Highway—With Me in It', *Wired* (Online, 27 July 2015) <https://www.wired.com/2015/07/hackers-remotely-kill-jeep-highway/>.
[92] Ibid.
[93] See generally, Currie (n 68).
[94] Ibid.
[95] *Telecommunications (Interception and Access) Act 1979* (Cth).
[96] *Commonwealth Criminal Code Act 1995* (Cth), '(*Commonwealth Criminal Code*)', ss 100, 474, 476-8.
[97] *Telecommunications Act 1997* (Cth).
[98] *Commonwealth Criminal Code* (n 96) ss 474, 477.

vehicles as a form of 'restricted' communication would likely rectify this. Further, the general provisions are supported, and supplemented by the anti-terrorism provisions under the *Commonwealth Criminal Code*.[99] The *Criminal Code* provides coverage where a terrorist attack is made inter alia with the intention of advancing a political, religious, or ideological cause.[100] Although there are large areas across Australia which are sparsely populated, automated vehicles in Australia will likely carry many thousands of people and such interference could nevertheless be deadly. A further concern, beyond the potential threat of hacking, is the amount of data that automated vehicles are set to generate and the vulnerability of the information contained in the data stream to interferences with individual personal privacy.

B *Data Privacy & Automated Vehicles*

An operational automated vehicle fleet will be continuously communicating with infrastructure, other vehicles, and the Internet. This ongoing communication may contain information about the vehicle's owner, the control system parameters, the surrounding environment, and also about the identity of the occupants and the vector, velocity, and vehicle location in the data stream. The information generated will be in the order of four terabytes of data each eight hours of operation.[101] Data mining technology sift through such massive amounts of data and derive person specific information from it, enabling the profiling of a person's private life to a very high degree.[102]

Cross-referencing the data stream from an automated vehicle against other seemingly innocuous information enables personal information about an individual to be identified with pinpoint accuracy.[103] In Australia, the *Privacy Act* applies only to 'personal information', defined as 'information or opinion about an identified individual, or an individual who is reasonably identifiable, whether or

[99] *Commonwealth Criminal Code* (n 96) s 100.
[100] Ibid ss 100.1(b), (c).
[101] Patrick Nelson, 'Just one Autonomous Car will use 4,000 GB of data/day' *Networked World* (Online, 7 December 2016) <http://www.networkworld.com/article/3147892/internet/one-autonomous-car-will-use-4000-gb-of-dataday.html>.
[102] See Lee (n 51).
[103] Ibid.

not true and whether or not in material form'.[104] In Australia, the recent decision in '*Privacy Commissioner v Telstra Corporation Limited ("Telstra"),*[105] has left the information contained within a data stream open to data mining,[106] without adequate legal protection. In *Telstra*, the Full Federal Court considered whether data, generated by the use of a mobile telephone, was information 'about' a person, and upheld the decision in *Telstra Corporation Limited and Privacy Commissioner,*[107] stating:

> The questions that are asked must be framed in terms of the definition. They cannot be asked against a different frame of reference that has, as its starting point, the question: is it possible to use this information or opinion or to marry it with other information by using a computerised search engine or in some other way to ascertain the identity of an individual. The starting point must be whether the information or opinion is about an individual. If it is not, that is an end of the matter and it does not matter whether that information or opinion could be married with other information to identify a particular individual.[108]

Accordingly, where personal information is not specifically identified in an individual data stream it falls outside the protection of Australian privacy legislation.[109] However, when information contained in the data stream, which of itself does not identify a person, is combined with other data streams it may enable them to be identified in minute detail. The combined information streams allow private data mining firms to unlock for identification the places a person visits, and what they do, which can include potentially harmful information such as the social, political, sexual proclivities of the individual.[110]

Privacy legislation in Australia is, therefore, ill prepared to deal with the introduction of automated vehicles, as the qualifying term 'reasonably identifiable' is too broad allowing data not specifically about a person to go unprotected.[111]

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[104] *Serious Invasions of Privacy in the Digital Era* (n 4) 41–53.
[105] *Privacy Commissioner v Telstra Corporation Limited* [2017] FCAFC 4 (19 January 2017).
[106] See Lee (n 51).
[107] *Telstra Corporation Limited and Privacy Commissioner* [2015] AATA 991 (18 December 2015).
[108] Ibid [95].
[109] *Privacy Commissioner v Telstra Corporation Limited* [2017] FCAFC 4, [57–65] (Kenny and Edelman JJ).
[110] See Lee (n 51).
[111] *Privacy Act 1988* s 6(1).

However, removing the qualifying term 'reasonably' from 'reasonably identifiable' in the definition of 'personal information' under the *Privacy Act* may rectify this.[112] This amendment could potentially capture all data that might be used to identify an individual, but may prove to be too restrictive in relation to data usage by third parties, who would no longer be able to access or use meta-data if personal identification was possible by any means.

C *Automated Vehicles & Compulsory Third Party Insurance*

Another area impacted by automated vehicles is personal injury under the compulsory third party insurance schemes in Australia. When a person suffers bodily injury in Australia, as a result a motor vehicle accident, the injured persons are covered under state compulsory third party insurance schemes. Third party insurance is compulsory, and is paid with the cost of registration of motor vehicles in each state, which can be either no-fault or fault based schemes, or a combination of both. In a no-fault scheme, it is unnecessary to make enquiries as to the other party in a motor vehicle accident, as it is immaterial to the recovery of damages by the injured party. However, in a fault-based system this is not the case.[113] In a fault-based system there must be someone in whom to apportion liability which means that there must be another 'driver' who is held to be responsible for the accident in order to enliven the scheme.[114] This is problematic as drive or 'driver' is either not defined or is defined differently between states with the exception of the ACT which defines drive as to 'be in control of the steering, movement or propulsion of the vehicle'.[115] As Brady et al argue:

> Where 'driver' is defined as 'a person in control of a vehicle' but 'driver' is not further defined as 'person in charge of a vehicle', potential exists for inequity in

[112] Ibid.
[113] *Motor Accidents Compensation Act 1999* (NSW) ss 3, 3A; *Road Transport (Third-Party Insurance) Act 2008* (ACT) Chapter 4; *Motor Accident Insurance Act 1995* (Qld) s 5(1)(b); *Motor Vehicles Act 1959* (SA) Part 4; *Motor Vehicle (Third Party Insurance) Act 1943* (WA) s 4(1); For blameless accidents see for example, *Motor Accidents Compensation Act 1999* (NSW) Part 1.2.
[114] *Motor Accidents Compensation Act 1999* (NSW) ss 3, 3A; *Road Transport (Third-Party Insurance) Act 2008* (ACT) Chapter 4; *Motor Accident Insurance Act 1995* (Qld) s 5(1)(b); *Motor Vehicles Act 1959* (SA) Part 4; *Motor Vehicle (Third Party Insurance) Act 1943* (WA) s 4(1).
[115] *Road Transport (Third-Party Insurance) Act 1999* (ACT) Dictionary.

> coverage between those injured by vehicles driven or operated by humans and those injured by Level 3 or Level 4 vehicles.[116]

The wording of the various Acts in states with fault-based systems is particularly challenging as the fault based systems require a 'driver' of a vehicle who is liable in order to enable the injured party to recover damages.[117] This is a problem with highly automated vehicles where the artificial intelligence in control at the time of the collision, is not recognised as a 'driver' and in fault-based schemes. This means that the victim cannot recover damages.[118] The solution to this problem, in states with fault-based compulsory third party insurance schemes, is to redefine 'driver' to include the in-vehicle computer.[119]

The *National Transport Commission Discussion Paper*, released in 2018 ("the Discussion Paper"), foresaw this to be a serious concern.[120] The Discussion Paper held that this would be a bar to recovery in personal injury claims if not addressed.[121] Another difficulty associated with automated vehicles is the definition of 'person in control' of the vehicle.[122] The prefix 'person' in control precludes recognition of the artificial intelligence that controls an automated vehicle.[123] These two definitions, as found in fault-based compulsory third party insurance schemes, require reform before the introduction of automated vehicles on Australian roads.

The third-party accident schemes may not be the only way automated vehicle accidents are dealt with under Australian law.[124] A person injured as a result of a malfunctioning automated vehicle might be able to bring a product liability claim under the Australian Consumer Law.[125]

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[116] Brady et al, Automated Vehicles (n 49) 45.
[117] See generally, Brady et al, Automated Vehicles (n 49).
[118] Ibid 46.
[119] See generally, Brady et al, Automated Vehicles, (n 49).
[120] National Transport Commission, *Motor Accident Injury Insurance and Automated Vehicles: Discussion Paper* (October 2018) 27-38.
[121] Ibid.
[122] See Brady et al, Automated Vehicles (n 49).
[123] National Transport Commission *Discussion Paper* (n 120) 27-38.
[124] For a discussion of regulatory reforms required for automated vehicles see National Transport Commission, *Regulatory Reforms for Automated Road Vehicles: Policy Paper*, National Transport Commission (2016).
[125] *Competition and Consumer Act 2010* (Cth) Schedule 2 the *Australian Consumer law* ('ACL').

D *Automated vehicles & the Australian Consumer Law*

When automated vehicles fails, and the occupant of the vehicle is injured or killed, it is arguable that the most effective model for compensation is to be found within manufacturers' liability.[126] When the manufacturer is held liable for the failure of an automated vehicle; it falls outside the motor vehicle compulsory third party schemes and is instead within a product liability model. In Australia, product liability is not limited in the same way as motor vehicle accidents.[127] In order to determine whether or not an automated vehicle failure falls within the current product liability model, it is necessary to examine the legislation in Australia surrounding product liability.

This is found under the *Australian Consumer Law* ("ACL") located in the *Competition and Consumer Act 2010* (Cth).[128] Under the ACL, goods must be fit for purpose, of acceptable quality, and free from safety defects.[129] Safety defects under the ACL do not require 'any contractual relationship between the producer of the goods and the injured person'.[130] Manufacturers are liable where goods supplied in trade or commerce,[131] have a safety defect,[132] which causes injury, loss, or damage.[133] The definition of 'goods' includes 'ships, aircraft and other vehicles'.[134] Therefore the ACL has the scope to include an automated vehicle or any of its sub-assemblies, such as the computer software,[135] or 'any component part of, or accessory.'[136]

At first instance it appears that the product liability model can adequately cover the injuries sustained in an automated vehicle accident. If the product malfunctions, it would seem reasonable to hold the manufacturer to be

[126] ACL s 7(1).
[127] See generally, Brady et al, Automated Vehicles (n 49).
[128] *Competition and Consumer Act 2010* (Cth).
[129] ACL s 54.
[130] Stephen Corones, *The Australian Consumer Law* (Thomson Reuters, 2nd ed, 2013) 494.
[131] ACL s 3.
[132] Ibid s 9.
[133] Ibid s 138 (personal injuries to an individual), s 139 (loss or damage to another person because of an individual's injuries), s 140 (destruction or damage to other goods), s 141(destruction or damage to land, building or fixtures).
[134] Ibid s 2(a).
[135] Ibid s 2(e).
[136] Ibid s 2(g).

accountable. However, apportioning liability in relation to an automated vehicle could be problematic. In the US, product liability for new technology has been somewhat more difficult to prove as several strong defences are available.[137] The prime consideration is whether liability can be apportioned to the manufacturer following an accident. The next question is to what extent can the liability be apportioned between the manufacturer of the vehicle and the manufacturers of the various component parts and sub-assemblies? Liability may be spread between the manufacturer of the vehicle, the software provider, the sensor manufacturers, the internet service provider, the computer manufacturer, or other stakeholders involved in the provision of component parts or infrastructure.[138]

Determining which of the stakeholders' liability applies, and to what extent, is a question of fact to be decided by the court. In determining this, the court must take into consideration whether or not any defences apply.

When considering whether manufacturers' liability applies to the failure of an automated vehicle; several things need be considered, such as:

1. Was the invasion caused by an act or omission by the manufacturer?

2. Was the manufacturing process used seen to be the state of the art at the time of manufacturing?

3. Did the operator of the automated vehicle fail to respond to any warnings to retake control of the vehicle?

4. Do any other defences apply?[139]

[137] See generally, Jeffrey K. Gurney, 'Sue My Car Not Me: Products Liability and Accidents Involving Autonomous Vehicles' (2013) 2 *University of Illinois Journal of Law, Technology & Policy* 247.
[138] See generally, Brady et al, Submission to National Transport Commission (n 52).
[139] Ibid.

In Australia, the state-of-the-art defence exists, which considers whether the production methods used in the manufacturer of the goods were best practice at the time of manufacture.[140] The ACL provides the following defences:

> (a) the safety defect in the goods that is alleged to have caused the loss or damage did not exist:
>
> > (i) in the case of electricity-at the time at which the electricity was generated, being a time before it was transmitted or distributed; or
> >
> > (ii) in any other case-at the time when the goods were supplied by their actual manufacturer; or
>
> (b) the goods had that safety defect only because there was compliance with a mandatory standard for them; or
>
> (c) the state of scientific or technical knowledge at the time when the goods were supplied by their manufacturer was not such as to enable that safety defect to be discovered; or
>
> (d) if the goods that had that safety defect were comprised in other goods--that safety defect is attributable only to:
>
> > (i) the design of the other goods; or
> >
> > (ii) the markings on or accompanying the other goods; or
> >
> > (iii) the instructions or warnings given by the manufacturer of the other goods.[141]

If any of the statutory defences can be made out, then the victim cannot recover compensation for their injuries. Although the product liability model is likely to cover injuries sustained in automated vehicle collisions, it may act as a disincentive to manufacturers of automated vehicle technologies,[142] absent some statutory immunity.[143] Significantly, recent South Australian legislation allowing

[140] ACL s 142(c).
[141] Ibid s 142.
[142] M Ryan Calo, 'Open Robotics' (2011) 70 *Maryland Law Review* 101, 123.
[143] Ibid 131-138.

testing of automated vehicles specifically provides for exemptions, from the operation of some state laws, at Ministerial discretion.[144]

The exemptions operate to incentivise automated vehicle development in South Australia, so that manufacturers can afford to develop and test without the burden of complicated regulatory compliance.[145] Absent similar government protections, manufacturers might be reluctant to develop automated vehicle technologies in order to avoid liability arising from injury caused by malfunction during the development and testing phase. The pharmaceutical industry serves as a warning in this instance.[146] Notwithstanding these difficulties, where inherent safety defect or design flaws exist the product liability model might be appropriate for protecting consumers from injuries sustained due to automated vehicle malfunction. However, the field would be better covered by a blanket no-fault motor accident injury scheme as it would provide more predictable outcomes for injured persons.[147]

This section has shown that automated vehicles potentially intersect with many areas of Australian law. It would appear that although the present Australian legislative frameworks may not adequately cover automated vehicles, they are nevertheless readily adaptable to this disruptive technology. It suggests that Australian law is flexible enough to accommodate the introduction of automated vehicles with the enactment of dedicated automated vehicle legislation and some minimal amendment to other existing legislation. The next thing to consider is what does the future hold for automated vehicles in Australia?

IV FUTURE IMPACTS OF HIGHLY AUTOMATED VEHICLES

The future landscape of Australian society is likely to be very different from how we live at present. In today's society, the automated vehicle is still in the inception phase and Australia's transport infrastructure is currently based around the

144 *Motor Vehicles (Trials of Automotive Technologies) Amendment Act 2016* (SA) s134E.
145 Ibid.
146 See generally, Mabel Tsui, 'An Analysis of Australia's Legal Regime for Imposing Liability on Manufacturers of Pharmaceutical Drugs' (2014) 21(3) *Journal of Law and Medicine*, 700.
147 See generally, Brady et al, Automated Vehicles (n 49).

human driven vehicle model. The human driven motor vehicle requires specific visual cues such as signage, traffic lights, lane markings, pedestrian access, and safety barriers to prevent harm to the occupants of motor vehicles, pedestrians, and the general public. Few of these structures would be necessary with a fully automated vehicle fleet, as the on-board in-vehicle control system of these vehicles will undertake the operating task, not the human occupant. Consequently, the physical landscape of Australian society is likely to be indelibly altered, such that it may be unrecognisable to present society with the adoption of a fully automated vehicle fleet.

Additionally, the architecture of the motor vehicle appears set to change. There will likely no longer be the need for all-round vision in a motor vehicle, other than purely for viewing scenery, as windows are not be necessary for the effective functioning of an automated vehicle. Nor is the future automated vehicle likely to be as wide as current vehicles. Fully automated vehicles may well be far longer and narrower than current vehicles, while remaining inherently stable via computer control. This should allow multiple vehicles across a given carriageway, which would currently only carry two human-driven vehicles, with the vehicle length more than offset by increased velocity. This would serve to greatly increase the carrying capacity of current transport infrastructure with only minimal changes. The social importance of the car, as an object of individual personal property, is also likely to be radically different.

The future automated vehicle systems may reflect a lease model of ownership from the manufacturers' or service providers respectively. When a person buys an automated vehicle in the future, they are likely only going to be buying into the bundle of rights to use the automated vehicle system. The current notion of the motor vehicle as a "personal chattel" that sits idle in a garage for 23 hours a day could also vanish in favour of a mass transport system owned by a separate entity, such as the state, a transport service corporation, or the manufacturers themselves. The future architecture of houses, and possibly cities as well, may have no provision for the parking of passenger vehicles in the house as is the current custom. Further to this the social paradigm of the automobile as an icon of personal identity will likely be irrevocably altered.

The car is likely to no longer be an instrument of social standing, or individual personal identity, as people will likely not "own" a particular vehicle, but rather merely have access to a "class" of vehicles. Where modern motor vehicles are divided into categories, based on price, with the highest luxury models costing exponentially greater amounts of money than the cheapest models.[148] The future automated vehicle fleet may be similarly stratified into different classes of vehicles. This would see people able to access the system according to their budget, or social standing. For example, in future less affluent people may access the cheaper version of automated vehicles; with the more affluent members of society able to access a premium automated vehicle service, albeit at a far higher price. This would serve to preserve and maintain current elitist paradigms within society. The social identity of an individual would therefore change and become less associated with the iconic private motor vehicle as an individual personal symbol of wealth and be subsumed into a "status by access" model. This nevertheless ensures that automated vehicles have the potential to reinforce unequal power divisions within future society.

Another challenge created by the introduction of automated vehicles will be the disruption of the motor vehicle maintenance and repair industries. With human error taken out of the smash repair equation, the motor vehicle smash repair industry and post-crash replacement part support industries will likely be devastated. Furthermore, the motor vehicle insurance schemes could themselves be disrupted by the lack of motor vehicle accidents, and the consequent reduction in demand for insurance. This is anticipated to occur over the next twenty to thirty years during the transition phase between mixed fleet, and a fully automated fleet.

Another significant effect of automated vehicles might be seen in the health sector through the reduction of motor vehicle accidents. The reduction in collisions caused by human error, even allowing for deaths caused by malfunctioning automated vehicles, will still result in a substantial decrease in deaths and serious injuries every year with the introduction of a fully automated vehicle fleet.[149]

[148] See Robert H Frank and Philip J Cook, *The Winner-take-all Society: Why the Few at the Top Get So Much More than the Rest of Us* (Random House, 2010).
[149] International Traffic Safety Data and Analysis Group Road Safety Annual Report 2017, (OECD Publishing, Paris, 2017).

Consequently, the number of severe road trauma hospital admissions will likely also decrease. As a result, the hospital and health care systems would be far less taxed due to the massive reduction in physical injury that is currently generated by motor vehicle accidents. This may inadvertently place a higher burden on infrastructure with many more people surviving to old age.

There has been much speculation about the ethical decision-making capabilities of an automated vehicle in relation to deciding whom to protect in a motor vehicle accident.[150] This ethical decision making problem is very often referred to as the 'trolley car model' where a choice has to be made as to who is saved and who is injured or killed.[151] In this situation, it is anticipated that the artificial intelligence governing automated vehicles will make a decision to cause the least amount of damage or injury to human beings.[152] As the growth of the computing power of artificial intelligence constantly increases, it is thought that at some point, termed the 'singularity', an artificial intelligence will surpass that of human beings,[153] and progress towards attaining sentience.

This question has stirred much debate over the past 50 years, beginning with Alan Turing who devised a test to determine if an artificial intelligence can pass as human.[154] Questions then arise whether an artificial intelligence, such as that controlling an automated vehicle, can one-day attain self-awareness, and whether it would then require recognition as having rights.[155] At the very least, some scholars argue that such a robotic artificial intelligence should be classified as a separate legal entity unto itself.[156] Where this occurs, similar to the legal fiction of

[150] See Patrick Lin, 'Why Ethics Matters for Autonomous Cars', in Gereon Meyer and Sven Beiker (eds) *Road Vehicle Automation* (Springer, 2014) 78-79.
[151] Lee, (n 51), 28; See generally, Noah J Goodall, 'Machine Ethics and Automated Vehicles', in Gereon Meyer and Sven Beiker (eds) *Road Vehicle Automation* (Springer, 2014).
[152] See Gereon Meyer and Sven Beiker (eds) *Road Vehicle Automation* (Springer, 2014).
[153] Vernon Vinge, 'Signs of the Singularity: Hints of the Singularity's Approach can be found in the Arguments of its Critics' Special Report: The Singularity, (2008) *IEEE Spectrum*.
[154] Alan M Turing (1950) 'Computing Machinery and Intelligence', In: Epstein R, Roberts G and Beber G (eds) *Parsing the Turing Test* (Springer, Dordrecht, 2009).
[155] See Mark Coeckelbergh, 'Robot Rights? Towards a Social-Relational Justification of Moral Consideration' (2010) 12(3) *Ethics and Information Technology* 209-221.
[156] Lynden Griggs 'A radical Solution for Solving the Liability Conundrum of Autonomous Vehicles' (2017) 25(2) *Competition & Consumer Law Journal* 151, 154-161; Morgan M Broman and Pamela Finckenberg-Broman, 'Socio-Economic and Legal Impact of Autonomous Robotics and AI Entities: The RAiLE© Project' (2018) 37(1) *IEEE Technology and Society Magazine* 70-79.

the corporation, or body corporate, or university,[157] it would enable the robotic artificial intelligence legal entity to engage in the broader society as a separate legal personality.[158] Whether this involves conceptualising artificial intelligence as a legal person, or other entity, remains to be seen over time.[159]

V CONCLUSION

In conclusion, although automated vehicle technologies appear daunting and fraught with risk, society may yet benefit from their introduction in ways which cannot presently be imagined. Worldwide, every year there are 1.3 million deaths, and many more people seriously injured, as a result of motor vehicle accidents of which 94 per cent are caused by driver error.[160] The potential to significantly reduce motor vehicle death and injury will be heralded as a great advance for society as a whole. The reality of automated vehicles is that they are likely to bring with them a whole new set of problems. Automated vehicles could be susceptible to hacking, or the privacy invasion of the occupants, as they generate large amounts of data that will be transmitted between the vehicle and infrastructure which could be vulnerable to attack.

Moreover, automated vehicles are set to subvert the existing paradigm of compulsory third-party insurance schemes and when they malfunction may even be located within a product liability model. The introduction of automated vehicle use could change the physical landscape of Australian society to such an extent that it may be unrecognisable to present society. Their introduction will radically alter transport infrastructure, housing, city planning, driver licencing, and penalty regimes, the property model of ownership, issues of personal identity, liability, insurance, and the overall impacts on society will be substantial.

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[157] Timothy D Peters, 'I, Corpenstein: Mythic, Metaphorical and Visual Renderings of the Corporate Form in Comics and Film' (2017) 30 *International Journal of Semiotics and Law* 427.
[158] Griggs, (n 156), 154-161.
[159] See generally, Sam N Lehman-Wilzig, 'Frankenstein Unbound: Towards a legal definition of Artificial Intelligence' (1981) *Futures* 442.
[160] US Department of Transportation, 'Critical Reasons for Crashes Investigated in the National Motor Vehicle Crash Causation Survey', *National Highway Traffic Safety Administration* (Web Page, February 2015), <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812115>.

Notwithstanding this, automated vehicles are coming to Australia, and the Australian law seems adaptable to the introduction of automated vehicles. In Australia, legislative development is underpinned by an active system of legal reform and examination, which undertakes enquiry and deliberates, prior to the enactment of new laws. Australia is therefore uniquely situated in the world stage to deal with disruptive technology, as it has a history of proactive legislative change and the ability to anticipate future legal needs. When automated vehicles arrive on Australian roads, Australia will be well placed to cope with their introduction. However, in order for automated vehicles to realise their full potential, we must prepare for them, whether at the Commonwealth or state level, and legislative reform is necessary before their introduction. How we conceptualise fully automated vehicles in future remains to be seen. Nevertheless, automated vehicles are coming, and a failure to make the necessary alterations to the law before their arrival may leave them in a legal vacuum, without adequate protection.

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INFORMATION TECHNOLOGY & THE FUTURE OF LEGAL EDUCATION: A PROVOCATION

JULIAN WEBB*

This short paper explores, albeit in a preliminary fashion, challenges to legal education arising from the significant impact of new information and communications technologies (ICTs) on law and legal practice. It uses the pervasiveness of ICTs to reframe the question of "law and technology" from a philosophical perspective that sees information technology as an "environmental force"[2] that is capable of re-shaping our identity, agency, and social relations, and hence constitutes a significant means through which we make sense of the world.[3] The key question the paper poses thus emerges: how should we design the law curriculum when the law-technology relation is itself understood as a critical part of a continuing and profound transformation in what it means to be both a lawyer, and a human being?

*Professor of Law, Director of the Legal Professions Research Network, and member of the Digital Citizens Research Network at Melbourne Law School. My thanks to a number of colleagues for comments on an earlier variant of this paper, delivered at a faculty research seminar at Melbourne in April 2018, notably to Peter Rush, who acted as discussant on that occasion, Andrew Godwin, Jeannie Paterson, and Julian Sempill. I also acknowledge the work of my collaborators on the Networked Society Institute's 'Regulating Automated Legal Advice Technologies' (RALAT) project: Judith Bennett, Rachelle Bosua, Tim Miller, Adam Lodders, and Scott Chamberlain, who have helped shape my thoughts on a number of issues addressed in this paper. None of them are, of course, responsible for what follows.

[2] Luciano Floridi (ed), *The Onlife Manifesto. Being Human in a Hyperconnected Era* (Springer, 2015) 1; Luciano Floridi, *The 4th Revolution: How the Infosphere Is Reshaping Human Reality* (Oxford University Press, 2014).

[3] This contrasts with the broad but more limited, functional, orientation to technology which defines it (eg) as "any tool or technique, any product or process, any physical equipment or method of doing or making, by which human capability is extended": Donald A Schön, *Technology and Change: The New Heraclitus* (Delacorte Press, 1967) 1.

CONTENTS

I LAW & INFORMATION TECHNOLOGY: MAPPING THE TERRAIN

Over the past 30-40 years, the relationship between law and technology has become a significant concern of both legal scholarship and legal practice. Digital (ICT) technologies, it is suggested, occupy a special place in this history both because of ICTs fundamental and increasing social ubiquity and because that ubiquity is translating into a deeper and wider impact on law and regulation.

Information technology *is* everywhere. Sociologists and information theorists have coined terms such as "information society" or "network society" to argue that the massive growth of information flows and technologies in late modern (developed) societies, constitutes a social transformation comparable to the shift from agrarian to industrial society.[4] New technologies such as Web 3.0 and the Internet of Things are constructing an environment 'no longer confined to browsers, or even to screens… a world of multi-device, multi-channel, and multi-directional throughput of information, involving sensors and many other devices we never see'.[5] This deep entanglement between humans and technology is echoed in a number of more recent engagements in the sociology and philosophy of information. Castell's description of the rise of a culture of "real virtuality"[6] thus offers a construction of the self that is embedded in digital networks of communication. Floridi and associates in their description and analysis of the modern condition as "onlife"[7], which they define as the experience of life in which the boundaries between online and offline, between human and technology, are blurred, also seek to capture the way in which ICT (and its very taken-for-grantedness[8]) is normalising a state of "hyper-connectivity".

[4] See, eg, Hugh Mackay, 'Information Society' in George Ritzer (ed), *The Blackwell Encyclopedia of Sociology* (John Wiley & Sons, Ltd, 2007) <http://doi.wiley.com/10.1002/9781405165518.wbeosi043>; see also, Mireille Hildebrandt's argument that we are currently observing, the transition from an 'information society' to a 'data-driven society', Mireille Hildebrandt, *Smart Technologies and the End(s) of Law: Novel Entanglements of Law and Technology* (Edward Elgar, 2015).

[5] David Kreps and Kai Kimppa, 'Theorising Web 3.0: ICTs in a Changing Society' (2015) 28(4) *Information Technology & People* 726, 727.

[6] Manuel Castells, *The Rise of the Network Society* (Wiley-Blackwell, 2nd ed, 2010) ch 5.

[7] Floridi (n 2).

[8] "The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it", as per Mark Weiser, 'The Computer for the 21st Century' (1991) 265(3) *Scientific American* 94.

The implications for law are profound. As others have acknowledged, the relationship between law, regulation, technology, and society are complex,[9] and care needs to be taken in assuming causalities. Nonetheless, as a minimum, it seems reasonable to assert that technology creates real challenges for many areas of substantive law, for legal processes and perhaps ultimately for the concept of law itself.[10] Following Floridi's lead, I suggest that we should think of this transformation in terms of the emergence of a phenomenon of "onlaw", which broadly mirrors the experience of "onlife". The language of immanence or emergence here is intentional. "Onlaw" is not a wholly new form of law as such. It should not be understood either deterministically or idealistically as a move beyond "law" as we currently understand it, but as an emergent quality of the complex interplay of law and (other) technologies, arising out of local system dynamics. The language of "onlaw" invites us to engage with the functioning of law as technology and technology as law. At the heart of this interplay is the subtle question of legal form. As Lon Fuller long ago recognised, legal form is a matter of social architecture.[11] It is mutable, and reflects a selection from a range of alternatives for social ordering. The form also has agentic effects. Changes to the form thus create different limits and opportunities for agency.[12] The extent to which the agency of the form, and the form itself, are being reconstructed by ICT is thus a crucial question to ask of the modern law-technology relation. "Onlaw" merits a paper in its own right, but the following five trends are, I suggest, indicative of the kind of deep change that "onlaw" implies.

First, substantively, it is becoming difficult to identify law subjects where ICTs are *not* having at least some impact. Smart contracts, "fin tech", e-commerce regulation, data protection, and cybersecurity developments, amongst others, are front and centre of the current wave of digital transformation and are extending interest in law and digital technology well beyond the conventional silos of ICT law, intellectual property, medical

[9] Lyria Bennett Moses, 'How to Think about Law, Regulation and Technology: Problems with "Technology" as a Regulatory Target' (2013) 5(1) *Law, Innovation and Technology* 1, 2.
[10] See, eg, Hildebrandt (n 4); Roger Brownsword, 'In the Year 2061: From Law to Technological Management' (2015) 7(1) *Law, Innovation and Technology* 1, which significantly extends his argument that technology is having disruptive effects on both the law itself and on 'legal' modes of thinking about regulation).
[11] See Kenneth I Winston (ed), *The Principles of Social Order: Selected Essays of Lon L. Fuller* (Hart Pub, Rev ed, 2001) 66–9.
[12] See Annelise Riles, 'A New Agenda for the Cultural Study of Law: Taking on the Technicalities' (2005) 53 *Buffalo Law Review* 973, 980, discussing the "agency of technocratic legal form"; see also, Kristen Rundle, *Forms Liberate: Reclaiming the Jurisprudence of Lon L Fuller* (Hart Pub, 2012) 49.

law, and biotechnology and, perhaps to a lesser extent, criminal law.[13] These trends, of course, are not merely reshaping the academic terrain; they are also reflected in practice as lawyers seek to reinvent themselves as experts *in* digital, for example, as professionals working with clients and other stakeholders 'to enable the delivery of secure and compliant digital transformation solutions'.[14]

Secondly the rise of "legal tech" is a critical arena in which to study the impact of the interplay of law and information technology on the legal field.[15] If law is social architecture, then lawyers are (amongst) its architects, and have both technical and, I would suggest, ethical responsibilities for the design of law's tools, rules and institutions.[16]

The term legal tech, or sometimes "law tech" is used to describe the development and use of legal practice/process-specific technologies. It can be seen as a growing sub-field of 'legal informatics': the study of the structure and properties of information,[17] and the application of technology to its organisation, storage, retrieval, and use in legal environments (including law firms, courts and law schools).[18] Conventionally the term has been used primarily in the context of legal practice technologies, such as document processing, e-discovery, and the development of legal information/advice tools. However, there is some suggestion in more recent thinking that the distinction between office-based legal tech and courtroom technology and online dispute resolution ("ODR") applications is somewhat arbitrary, and this is certainly the case in terms of the underlying technologies at play.[19]

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[13] See, eg, Emilie Cloatre and Martyn Pickersgill (eds), *Knowledge, Technology, and Law* (Routledge, 2015).
[14] Linklaters and Microsoft, 'Lawyers: Agents of Change in a World of Digital Transformation' *Digital Transformation* (Webpage, April 2018) <https://www.linklaters.com/en/insights/publications/2018/april/digital-transformation-be-the-facilitator-of-change>.
[15] See, eg, Kimberly Williams et al, *The Legal Technology Guidebook* (Springer, 2017); Markus Hartung, Micha-Manuel Bues and Gernot Halbleib, *Legal Tech: Die Digitalisierung des Rechtsmarkts* (CH Beck; Vahlen, 2018).
[16] Though as Gillian Hadfield notes, we need also to separate our thinking about what *law* does, from the constraints of an understanding of law based on what *lawyers* currently do; Gillian K Hadfield, *Rules for a Flat World: Why Humans Invented Law and How to Reinvent It for a Complex Global Economy* (Oxford University Press, 2017) 19.
[17] That potentially includes not just exclusively 'legal' but more broadly law-related information.
[18] See, eg, Sanda Erdelez and Sheila O'Hare, 'Legal Informatics: Application of Information Technology in Law' (1997) 32 *Annual Review of Information Science and Technology* 367.
[19] See, eg, Markus Hartung, 'Gedanken Zu Legal Tech Und Digitalisierung' in Hartung et al (n 15) 5.

The impact of both general and law-specific ICTs on the practice of law, from relatively small beginnings, has grown substantially. General ICTs like word processing and email are so ubiquitous today that it is slightly shocking to look back to the early 1990s and see how much has changed.[20] Their ubiquity also means that it is easy to overlook their continuing effects. As Clark observes, the introduction of these tools was not merely a neutral enhancement to law firm administration, but a critical part of what has made the modern law firm possible, enabling both the more effective distribution of, and centralised control over information and communications, and the industrialisation and commodification of legal work.[21]

In terms of law-specific ICTs, the overall trend can be characterised in tool/process terms as an overlapping progression through three stages of evolution.[22] The first stage, starting in the 1980s, is represented by multiple but often discrete sets of supportive technology, such as legal information retrieval, basic document assembly, and a variety of workflow tools.[23] The second phase, arguably since the mid to late 90s, sees greater sophistication and interoperability in the tools entering the market, through to the emergence in the mid-2010s of increasingly "disruptive" technologies that are (just) starting to replace or at least supplement some human functions, utilising "smart" or even "intelligent" technologies.[24] These include artificial intelligence (AI) supported document review, research tools and legal analytics, machine learning applications in e-discovery platforms, and a growing range of automated legal information and advice technologies.[25]

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[20] One English study thus noted that in 1993, nearly one-third of sole practitioners in regional practice had no access to word processing, and less than 25% of regional practitioners surveyed made use of email as per Julian Webb, 'Legal Research and Information Systems: The Impact of Information Retrieval Systems on Provincial Legal Practice' (1993) 2(3) *Information & Communications Technology Law* 203, 210.

[21] Andrew Clark, 'Information Technology in Legal Services' (1992) 19(1) *Journal of Law & Society* 13, 14-15; see also David S Wall and Jennifer Johnstone, 'The Industrialization of Legal Practice and The Rise of the New Electric Lawyer: The Impact of Information Technology upon Legal Practice in the U.K.' (1997) 25(2) *International Journal of the Sociology of Law* 95.

[22] See, eg, Abdul Paliwala (ed), *A History of Legal Informatics* (Prensas Universitarias de Zaragoza, 2010); Oliver Goodenough, 'Legal Technology 3.0', *Huffington Post,* (online, 6 April 2015) <https://www.huffingtonpost.com/oliver-r-goodenough/legal-technology-30_b_6603658.html>.

[23] Early texts such as Charles Christian, *Legal Practice in the Digital Age: The Quest for the Killer Legal App* (Bowerdean Pub. Co. Ltd, 1998); Philip Leith and Amanda Hoey, *The Computerised Lawyer* (2nd ed, Springer-Verlag, 1998) provide an indication of how far legal tech has progressed in the last two decades.

[24] It should however be noted that much of the current 'industry' discussion focuses on the *potential* of AI, rather than its actuality. It is difficult objectively to assess the take-up and distribution of smart technologies, and indeed, just how 'smart' some of the current tools are: see, eg, Judith Bennett et al, 'Current State of Automated Legal Advice Tools' (Networked Society Institute Discussion Paper, University of Melbourne, April 2018) 69.

[25] Ibid, for a recent attempt to map the territory.

A critical question now is whether we are on the cusp of what Goodenough calls 'legal tech 3.0', which is the design of intelligent platforms in which the power of computational technology will affect deep change in the practice of law.[26] This would, of course, also constitute a development consistent with the emergence of "onlaw". There are a number of dimensions to this. First, legal tech 3.0 increases the potential for "decomposability", that is, the deconstruction or unbundling of legal transactions into separate tasks, which may be processed in a variety of ways and by a variety of actors, eg, by out-sourcing or off-shoring, or by automation itself. Much of the value of legal tech as a cost reduction and access-enhancing technology rests on the assumptions that greater decomposability is technically possible, permitted by legal services regulation, and advisable in terms of proper legal and ethical risk management.[27] However, these assumptions cannot presently be taken for granted, and there are concerns that regulatory uncertainty currently constrains what is possible in Australia.[28] Secondly, given the capacity of AI to manage information at scale, legal tech gives us the promise of greater control over legal information overload. [29] Thirdly and more controversially, it may also reduce the centrality of the human lawyer to core aspects of legal services delivery.[30] At present, however, we are still some way off the point where AI can provide a meaningful substitute for human legal knowledge, other than in quite discrete and routine areas of work, such as automated document review.

This last image, of the opportunity or threat of the "robo-lawyer" — something with the potential simultaneously to cut a swathe through the legal profession, while heralding the dawn of a brave new world of accessible justice — neatly captures much of the

[26] Goodenough (n 22).
[27] See, eg, Law Society of Western Australia, 'Guidelines for Lawyers Providing Unbundled Legal Services', *Law Society of Western Australia* (Summary, 9 August 2017) <https://www.lawsocietywa.asn.au/wp-content/uploads/2015/10/2017AUG09_Summary_Guidelines-for-Lawyers-Providing-Unbundled-Legal-Services.pdf>.
[28] See, eg, JusticeConnect, 'Unbundling and the "missing middle": Submission to the Law Council of Australia's Review of the Australian Solicitors' Conduct Rules' (Research Paper, JusticeConnect, July 2018). Uncertainties in Australian jurisdictions include the extent to which Rules 10 (successive conflicts of interest) and 13 (completion or termination of engagement) of the Australian Solicitors Conduct Rules act as a constraint on unbundling; Queensland Law Society, *Australian Solicitors Conduct Rules* (at 1 June 2012) r 10, r 13.
[29] This problem is fundamental but not, of course, unique to law. Over 30 years ago Baudrillard identified the paradox, whereby the degree of information saturation in the digital age has left us occupying 'a universe where there is… less and less meaning': Jean Beaudrillard, *In the Shadow of the Silent Majorities* (MIT Press, 1983) 95.
[30] See, eg, Richard E Susskind and Daniel Susskind, *The Future of the Professions: How Technology Will Transform the Work of Human Experts* (Oxford University Press, 2017).

ambivalence in our relations between law and information technology. Important questions also remain regarding the risks of AI use in the legal space. The New South Wales FLIP Inquiry has thus highlighted the extent to which automation of legal information and advice functions raises new challenges for legal services regulation (but without enumerating what those are).[31] Such tools may also have significant unintended consequences. The growing use of legal analytics is a case in point. Analytics tools may deeply embed, and effectively hide, undesirable biases, either because: at their crudest, they draw on existing patterns of (biased) human decision-making,[32] or because of the way certain predictive values are prioritised in the design of the algorithm.[33] Moreover, the capacity for legal prediction tools to change human behaviour also cannot be discounted. For example, we do not know how the use of legal analytics to calculate the success rates of advocates before the courts might actually change the behaviour of those advocates, for example, making them more personally risk averse in terms of their case selection and settlement decisions.

Notwithstanding its importance, I suggest legal tech (in the narrow sense of the term) is not the only game in town, and may not be the most profound of the transformations that we are observing. The three further examples that follow, illustrate the scope and scale of other changes consistent with "onlaw" development.

Thirdly, advances in ICT also have the potential to challenge and disrupt long-established legal decision-making and adjudicative processes. Digital technologies, for example, are increasingly impacting the form and presentation of evidence, both by permitting (or excluding) new evidentiary tools,[34] and offering new and powerful modes of presentation — such as advanced data visualisation techniques, including composite photographs, graphical representations of computer-based analytics, and digital animations or

[31] Law Society of New South Wales, 'Report of the Commission of Inquiry into the Future of Law and Innovation in the Profession' (Research Report, The Law Society of NSW, 2017) 112; Bennett et al (n 24) 30-35.

[32] This is, of course, part of a much wider debate on the operation of AI: see, eg, Ellen Broad, *Made By Humans: The AI Condition* (Melbourne University Press, 2018).

[33] For example, the recent debate on whether Northpointe's COMPAS risk assessment tool, widely used to assist bail decision-making in the US is racially biased — for a useful overview of the controversy, see, eg, Matthias Spielkamp, 'Inspecting Algorithms for Bias', *MIT Technology Review* (online, 12 June 2017) <https://www.technologyreview.com/s/607955/inspecting-algorithms-for-bias>.

[34] Often controversially, as with the polygraph, or (more recently) the colposcope. The latter is an adapted microscope which in some jurisdictions is being used to identify and record genital injuries on the victims of sexual assault, notwithstanding both victim-centric and scientific reservations about its use — Gethin Rees, 'Making the Colposcope "Forensic"' in Cloatre and Pickersgill (n 13) 86.

simulations. The effects and consequences of these are in some respects profoundly uncertain. Are they just new tools, or do they act as a form of meaning (re)making in their own right? To what extent do they change the trier of fact's perception and treatment of the evidence they supposedly represent? Courtroom technologies, in short, may have subtle effects on underlying forms and methods of interpretation, as Sherwin concludes:

> When law lives as an image on the screen the *aesthetic forms, interpretative methods,* and *narrative content* of popular visual entertainment inevitably find their way into the courtroom…. We look through the screen as if it were a window onto reality rather than the construction that it is…[35]

The adequacy of evidentiary and ethical rules to deal with such representations is moot,[36] and the ability of the legal system properly to debate the effects of such innovations will likely depend significantly on both the visual and digital literacy of key legal actors, such as lawyers and judges.[37]

Moreover, fundamental access to legal entitlements and to modes of dispute resolution are also changing, with access — and entitlement itself — mediated increasingly through digital means. ODR, particularly in the consumer and digital rights spheres, potentially represents an exponential jump in the scale of privatised dispute resolution. The eBay Resolution Centre, for example, reportedly resolves over 60 million disputes a year[38] — the great majority with little or no human intervention. In the US, led by platform company Modria, and a growing number of others, ODR now resolves roughly as many disputes as the US court system.[39] Court-annexed ODR platforms are also emerging across other jurisdictions including Australia.

Whether the move to ODR is simply an unproblematic process change is itself a contested question. As early as 2001, Katsh and Rifkin were discussing the role of technology as a

[35] Richard K Sherwin, *Visualizing Law in the Age of the Digital Baroque: Arabesques and Entanglements* (Routledge, 2011) 62.
[36] Ibid 61; see, eg, Déirdre Dwyer, 'Ethical Constraints on the Visualisation of Evidence at Trial' (2008) 11(1) *Legal Ethics* 85.
[37] Sherwin (n 35).
[38] Madeline Moncrief, 'Momentum for Resolving Small Claims Online Is Gathering Pace' *The Guardian*, (online, 1 April 2015) <https://www.theguardian.com/media-network/2015/apr/01/resolving-small-claims-online-uk-courts>.
[39] Andrew M Perlman, 'Reflections on the Future of Legal Services' (Research Paper, No. 17-10, Suffolk University Law School, 9 May 2017) 3.

distinct "fourth party" in dispute resolution.[40] While they saw technology essentially as a benign intervenor, others have been less certain. Carrie Menkel-Meadow, for example, has raised questions over the extent to which efficiency goals for ODR may override quality and justice concerns.[41] The systemic consequences for the development of the law in these fields moreover appear to have been relatively little discussed.[42] To summarise, while such changes may have considerable potential, as with other forms of legal tech, to enhance access to law, real problems with the social distribution of access and accessibility as well as questions about the quality of justice delivered need ongoingly to be addressed;[43] vigilance is also required as to the extent and quality of user-centred design.

Fourthly, technological changes may cause subtle but important epistemological shifts within the formal legal system. For example, there are arguments that the digitisation of information itself changes both the process of judicial decision-making, and ultimately its very form. While judges, for example, have been relatively quick to note the effect of digitisation of law reports in reducing volume control and increasing complexity and information overload on the court system,[44] they have, on the whole, been less quick to interrogate the deeper effects of technology on the practice of legal argumentation and judicial decision-making,[45] or to comment on the rise and risks of the "copy and paste" judgment.[46]

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[40] M Ethan Katsh and Janet Rifkin, *Online Dispute Resolution: Resolving Conflicts in Cyberspace* (Jossey-Bass, 1st ed, 2001).

[41] Carrie Menkel-Meadow, 'Is ODR ADR? Reflections of an ADR Founder from 15th ODR Conference, the Hague, the Netherlands, 22-23 May 2016' (2016) 3(1) *International Journal of Online Dispute Resolution* 4-7; though cp Colin Rule, 'Is ODR ADR? A Response to Carrie Menkel-Meadow' (2016) 3(1) *International Journal of Online Dispute Resolution* 8-11.

[42] For the classic critique of the privatisation of justice consequent on the increased emphasis on inter-party settlement and ADR, see, Owen Fiss, 'Against Settlement' (1984) 93 *Yale Law Journal* 1073; see also Riikka Koulu, *Law, Technology and Dispute Resolution: The Privatisation of Coercion* (Routledge, 2018).

[43] See, eg, Catrina Denvir, 'Assisted Digital Support for Civil Justice System Users: Demand, Design and Implementation' (Final Research Report, UCL Centre for Access to Justice, April 2018) 76.

[44] Stephen Gageler, 'What is Information Technology Doing to the Common Law?' (2014) 39 *Australian Bar Review* 146, 154-6; see also Dietrich Fausten, Ingrid Nielsson and Russell Smyth, 'A Century of Citation Practice on the Supreme Court of Victoria' (2007) 31 *Melbourne University Law Review* 733 (correlating increased length of judgments and rise in number of citations with greater use of ICTs).

[45] Stephen Gageler, and Alan Rodger, 'The Form and Language of Judicial Opinions' (2002) 118 *Law Quarterly Review* 226, note the greater use of footnotes and quotations in judgments since the advent of word processing, but say little about how this increased intertextuality impacts the nature and treatment of judgments.

[46] Douglas R Richmond, 'Unoriginal Sin: The Problem of Judicial Plagiarism' (2013) 45 *Arizona State Law Journal* 1077. Note, somewhat exceptionally, the decision of the full Family Court in *CCD and AMGD* [2006]

Lastly, and perhaps most fundamentally of all, ICT is also re-shaping our systems of regulation, resulting in both technological enhancement of existing regulatory processes, but also in the potential for some de-centring of law itself by alternative modes of regulation and governance.[47] Lawrence Lessig has famously characterised the widening of modalities of regulation to encompass the use not just of law, but of other social norms, the market, and what he calls architecture' or code.[48] These effects may be illustrated, by reference to the significant growth in both of what I would define as "epistemic" governance, and regulation by design — what Brownsword now brackets within the phrase 'technological management' of society. [49]

I use the term "epistemic" governance here to describe systems of governance by and through (expert) knowledge, which are, of course, increasingly facilitated and mediated by technology. The emphasis on epistemic governance acknowledges the transformation information technology brings to the Foucaultian power/knowledge conjunction, particularly through the increased capacity of both public agencies and private corporations to gather, store, and manipulate big data (for example to enable searches through the social media[50] or biometric[51] profiles of a target population), and the associated potential for the deployment of both persuasive technologies[52] and more covert techno-regulation.

FamCA 1291 at [71], criticising the trial judge's use of cut and paste from an earlier judgment, since it militated against the perception that justice was done on the facts of the later case.

[47] On the increasing polycentricity of regulation generally, see, eg, Julia Black, 'Decentring Regulation: Understanding the Role of Regulation and Self Regulation in a "Post-Regulatory" World', (2001) 54 *Current Legal Problems* 103; Andrew Murray, *The Regulation of Cyberspace: Control in the Online Environment* (Routledge, 2007) 27, 47-9.

[48] Lawrence Lessig, *Code and Other Laws of Cyberspace, Version 2.0* (Basic Books, 2008) 121–6.

[49] Brownsword (n 10); Roger Brownsword and Karen Yeung (eds), *Regulating Technologies: Legal Futures, Regulatory Frames and Technological Fixes* (Hart, 2008).

[50] Ron Nixon, 'US to collect social media data on all immigrants entering the country', *New York Times* (online, 28 September, 2017) <https://www.nytimes.com/2017/09/28/us/politics/immigrants-social-media-trump.html>.

[51] See Richard Hindmarsh and Barbara Prainsack (eds), *Genetic Suspects* (Cambridge University Press, 2010).

[52] Persuasive technologies are not coercive but seek to affect behaviour change through persuasion and social influence. For an overview of the commercial deployment of persuasive technologies, see Nanette Byrnes, 'Technology and Persuasion' [2015] (May/June) *MIT Technology Review (online)* <https://www.technologyreview.com/s/535826/technology-and-persuasion/?set=535816>. On persuasive technology as a possible sub-set of techno-regulation; see, eg, Bibi van den Berg and Ronald E Leenes, 'Abort, Retry, Fail: Scoping Techno-Regulation and Other Techno-Effects' in Mireille Hildebrandt and Jeanne Gaakeer (eds), *Human Law and Computer Law: Comparative Perspectives* (Springer Netherlands, 2013) 67.

Technological management constitutes a growing trend by which digital technology itself has become a mode of regulation. Brownsword, drawing on Hildebrandt, defines technological management as technologies that are "constitutive" in the sense that they are choice reduction or even choice removal tools; they 'prevent, disable or compel certain actions'.[53] Technological management can thus be seen as the relatively extreme end of a continuum of control mechanisms. These range from self-regulatory (persuasive) techniques (for example, the use of CCTV to police public spaces), through degrees of choice reduction — such as technological erosions or re-directions of official discretion (including removing 'human in the loop' protocols),[54] 'nudge' regulation,[55] to mechanisms that are essentially non-normative, and impose substantial (or complete) control through technological means. Examples of the latter might include both the relatively uncontroversial, such as the introduction of centrally locking railway carriage doors, but also more tendentious innovations, such as moves towards 'technological incarceration' which may involve significant and structurally different infringements of autonomy and privacy from more conventional criminal penalties.[56] In short, the introduction of such non-normative forms of regulation adds to the complexity of the regulatory environment; it raises important questions regarding the "right" to moral and legal agency (in essence the existence of a right or at least a freedom to do wrong), and begs questions about the future importance of law as a *check* on technological management.[57]

In sum, these various developments challenge, in a variety of ways, our normal conception of the role of lawyers, and of the centrality of law itself. Lawyers have been defined primarily as expert knowledge workers.[58] But, as more of that deep domain

[53] Brownsword (2015) (n 42) 25; Mireille Hildebrandt, 'Legal and Technological Normativity: More (and Less) than Twin Sisters' (2008) 12(3) *Techne* 169.
[54] See, eg, Ellen Broad's discussion of the controversial Centrelink automated debt recovery system, (n 32) 155-60; see, also Virginia Eubanks's discussion of the Allegheny Family Screening Tool used to detect children at risk, in *Automating Inequality: How High Tech Tools Profile, Police and Punish the Poor* (Macmillan, 2018).
[55] Richard H Thaler and Cass R Sunstein, *Nudge: Improving Decisions about Health, Wealth, and Happiness* (Yale University Press, 2008). For examples of technological nudges, see Nassim Khadem, 'How the ATO is nudging Australians to pay more tax' *Sydney Morning Herald,* (online, 15 August 2018) <https://www.smh.com.au/money/tax/how-the-ato-is-nudging-australians-to-pay-more-tax-20180813-p4zx8x.html>; see also, Australian Government's Behavioural Economics Team (BETA), 'Projects', *BETA* (Webpage, 2018) <https://behavioraleconomics.pmc.gov.au/projects>.
[56] Mirko Bagaric, Dan Hunter, and Gabrielle Wolf, Technological Incarceration and the End of the Prison Crisis (2018) 108 *Journal of Criminal Law & Criminology* 73.
[57] See, eg, Brownsword (n 10) 47-49.
[58] Susskind and Susskind (n 30) 193-5.

knowledge becomes automatable, what is it exactly that lawyers will sell? Indeed, even more fundamentally, why should we continue to assume in an age of "onlaw" that lawyers (as presently understood), are entitled to exercise a monopoly in making and selling law?[59] Our assumptions about the centrality of law and the normal form of legal infrastructure itself are also being, or are likely to be, challenged by the growth in technology. Regulatory theory has long been telling us that law is only one mode of regulation, albeit a very important one. Nevertheless, the interplay between regulatory pluralism, polycentricity, and technological innovation remains somewhat underexplored. A focus on the regulation of technology (where most of the attention on "law and technology" has been) does not necessarily provide insights into the changing technology of regulation. A wider understanding of the latter may demonstrate not just the existence of new ways of implementing and enforcing "law", but the possibility that technology is literally transforming law (as "code" or design, for example), and — more worryingly in terms of "Rule of Law" values — enabling what Brownsword has described as a 'shift away from normative signals' to more techno-regulation in general.[60] What these examples indicate, moreover, is that it is probably no longer sufficient to think of information technology as just another tool in the legal environment: here too technology is taking on the quality of Floridi's environmental force. In this light, it is important to ask how is, and how should legal education respond?

II TECHNOLOGY IN LEGAL EDUCATION

There is little doubt that legal education has been busy with information technology. Content-driven changes abound in the invention of new subjects or the re-organisation of old ones, including both substantive legal subjects and those which expose students to an appreciation of how new technologies in law operate.[61] Many of these, however, still tend to be optional subjects peripheral to the experiences of some proportion, if not the

[59] Cp Hadfield's (n 16) 349 conclusion that 'leaving it to the lawyers' explains the persistence of much inadequate, costly, and unduly complex legal infrastructure.
[60] Roger Brownsword, 'Lost in Translation: Legality, Regulatory Margins and Technological Management' (2011) 26 *Berkeley Technology Law Journal* 1321, 1364.
[61] Eg, options in ICT and the Law, Cybersecurity Law, Privacy Law, and in intellectual property subjects, or in terms of new 'applied' subjects such as Law Apps, Legal Design, Quantitative Legal Analysis or Computational Legal Studies.

majority of our students. Process-wise, most schools, of course, also expect students to engage with specific ICTs, though much of this will be quite a low level. Law schools in the UK, for example, have been criticised for a thinness to their digital literacy policies,[62] and there is little basis to suggest that their Australian counterparts are significantly ahead of the game.[63] Technology use in the classroom also tends to be highly variable in both quality and quantity. Outside of legal research and information retrieval tools, most law schools still have limited access to the (expensive) technologies that are re-shaping practice. Applied technology activities are often extra-curricular, such as extra-mural coding courses, or the opportunity to participate in hackathons.[64]

Undoubtedly some schools are going further, both in embedding technology use, and in placing technology conceptually rather more at the core of the curriculum, for example by building a concentration,[65] or even organising their primary "brand" around law and new technology themes.[66] How much this goes beyond marketing and actively changes students' (and teachers') deeper understanding of the law and technology relation may be moot.

The law schools' response to legal tech offers a useful case study of what is happening and why. As in so many things, American experience has been a driver, and the recent "crisis" in US legal education has seen a flurry of activity.[67] Much of it has been geared to

[62] Julian Webb et al, 'Setting Standards: The Future of Legal Services Education and Training Regulation in England and Wales' (Legal Education and Training Review, June 2013), paras 2.99-2.100; See also, British and Irish Association of Law Librarians, 'BIALL Legal Information Literacy Statement', *BIALL* (Webpage, 2018 <https://biall.org.uk/careers/biall-legal-information-literacy-statement/>.

[63] A degree of digital literacy is implicit in the 'Thinking' and 'Research' skills components of the Threshold Learning Outcomes (TLOs) for law degrees; see, eg, Council of Australian Law Deans, 'Resources', *Council of Australian Law Deans* (Webpage, 2019) <https://cald.asn.au/resources/education/>. However, the broad-brush approach of the TLOs may have the effect of understating the importance in the digital context of skills such as (multi-)media literacy and information management; see, eg, James Holland and Julian Webb, *Learning Legal Rules: A Student's Guide to Legal Method and Reasoning* (Oxford University Press, 9th ed, 2016), 36-40.

[64] Examples include *HackJustice* (at UNSW) and #*BreakingLaw* (at Melbourne Law School, and the University of Technology, Sydney (UTS)).

[65] See, eg, UTS, 'Legal Future and Technologies Major', *UTS* (Webpage, 23 January 2019) <https://www.uts.edu.au/future-students/law/course-experience/new-legal-futures-and-technology-major>.

[66] See, eg, Swinburne Law School's focus on innovation, creativity and intellectual property, equipping students for the future workforce; Swinburne University of Technology, 'Faculty of Business and Law', *Swinburne Law School* (Webpage, 6 July 2018) <http://www.swinburne.edu.au/business-law/schools-departments/swinburne-law-school/>.

[67] For a critical discussion of the politics of crisis, see Richard L Abel, '"You Never Want a Serious Crisis to Go to Waste." Reflections on the Reform of Legal Education in the US, UK, and Australia' (2015) 22(1) *International Journal of the Legal Profession* 3; Bryant G Garth, 'Crises, Crisis Rhetoric, and Competition in

persuading law school applicants and the profession that, notwithstanding criticisms from the Carnegie Foundation and others, the JD is not broken, and that academics can be useful partners to the profession in responding to the wave of disruptions that have swept the legal services market since the global financial crisis.[68] This rhetoric has been reflected in curricular reforms, many directed to making the final year of the JD more practical, often through the adoption of extra clinical programs, simulations and skills courses, but also by including work on legal practice technologies, legal design projects, and innovation incubators. One other consequence of this has been a proliferation of applied research and teaching "centres" organised around legal tech and innovation.[69]

While I would not wish to deny that such developments are useful and have some genuine value, it is important to focus on the extent to which market utility and the search for relevance often appear to be among the key drivers of change. Oliver Goodenough thus asserts:

> Legal education must take as a starting point that we need to create useful capacities in our students…. It is time to get over the old canard about not being a "trade school." If teaching our graduates how to be effective within law's critical work is teaching them a trade, then we should embrace the label, not shun it.[70]

Goodenough's position is not as anti-intellectual as this may sound out of context, but it is instrumental in treating (workplace) effectiveness and competence as critical traits that should be developed by law school. Employability, in short, is key, and greater instruction in law and technology and in the skills associated with technological innovation, delivers that value.

The pursuit of such pragmatic outcomes also comes across strongly in other jurisdictions, including Australia. The recently constituted Assuring Professional Competence

Legal Education: A Sociological Perspective on the (Latest) Crisis of the Legal Profession and Legal Education' (2013) 24(2) *Stanford Law & Policy Review* 503.

[68] See William M Sullivan et al, *Educating Lawyers: Preparation for the Profession of Law* (Jossey-Bass/Wiley, 2007); see also, Brian Z Tamanaha, *Failing Law Schools* (The University of Chicago Press, 2012).

[69] See, eg, Perlman (n 39) 6-7, for an overview.

[70] Oliver Goodenough, 'Developing an E-Curriculum: Reflections on the Future of Legal Education and on the Importance of Digital Expertise' (2013) 88(3) *Chicago-Kent Law Review* 845.

Committee ("APCC")[71] has thus taken the position that, in the context of the "disruptive innovation" of legal practice

> [i]f we want to be sure that practising lawyers are able to provide their services competently, efficiently and ethically as circumstances change around them, we need to make sure that they acquire and maintain knowledge, skills and values that are appropriate to equip them to meet the inevitable challenges they will face.[72]

More specifically, the New South Wales Law Society's FLIP Inquiry has observed:

> it was suggested that students be familiar with using new legal technologies, such as data analytics which underlies predictive coding for discovery or online dispute resolution platforms. Students would then be able to use technology in their future careers, including being able to provide assistance to clients who may need to use or provide these services. Being at least technology-literate, and preferably having some hands-on ability with technology was a central focus of representations to the Future Committee.[73]

Such an instrumental focus is, perhaps, unsurprising from professional bodies focused on maintaining competence, and market position. What would be more problematic is its adoption as a rationale for innovation in the academy, not least because that plays into an attitude to the law and technology relation that I will now describe.

III INFORMATION TECHNOLOGY & "ANXIOUS LEGAL STUDIES"

While the case for engaging with digital disruption is, ultimately, unarguable, there is a risk that our response reflects a mode of what I will here characterise as "Anxious Legal Studies". Anxiety is, to an extent, understandable, and not entirely misplaced.[74] There is, after all, much to be anxious about currently in both higher education and the legal services market. It is perhaps also an inevitable response to deep technological change;

[71] The APCC is a sub-committee of the Law Admissions Consultative Committee. It was established in late 2017 with a remit to identify the necessary competences of a practising lawyer, 'in the foreseeable but uncertain future', with a view to developing a Competence Statement for Australian Legal Practitioners; See, eg, Assuring Professional Competence Committee, 'Assuring Professional Competence: What We Need to Do', *Law Council of Australia* (Web page, 2017) 1 <https://www.lawcouncil.asn.au/resources/law-admissions-consultative-committee/assuring-professional-competence-committee>.

[72] Ibid 2.

[73] Law Society of New South Wales (n 31) 77.

[74] My intention in using this phrase is to challenge and (in its own way) disrupt ways of thinking about technology that I want to suggest are problematic, but, as I hope will be readily apparent, it does not seek to deny or belittle matters of genuine concern (intellectual, practical or emotional) for academics, practitioners and students.

as Alvin Toffler famously observed, the pace of technological transformation means that the future too often arrives prematurely, and with a psychic and social cost, reflected in experiences of overwhelm, disorientation, and denial.[75]

"Anxious Legal Studies" may well be the legal academic equivalent of Toffler's future shock. Technological change presents us with a set of largely unresolvable problems and paradoxes. As lawyers, we are trained to see law as a tool for resolving society's problems — not a perfect one, but a useful one nonetheless. Emerging technologies continue to challenge that perception, and uncover (if sometimes only fleetingly) the troublesome nature of the underlying law-technology relation. Law and technology have, on the one hand, conventionally been portrayed as distinct and often competing fields of knowing and acting, but, on the other, as fundamentally necessary, each for the other. This ambiguous relationship is most apparent in the related social expectations we have for both. There is thus an expectation that law should be able to resolve for society the regulatory problems that digital technology creates, and another that such technology should be (increasingly) effective in regulating social activities that are otherwise beyond the reach of the conventional forms and processes of law. [76] These expectations are often unrealistic, and, in practice, given the complexity and indeterminacy of regulatory steering, often remain unsatisfied.[77]

This has resulted in a certain path dependency in much of the legal discourse. Law may be identified as the assurer of a brighter (technological) future, but it is also required to be always already lacking.[78] Existing laws are generally inadequate. They lack flexibility, generalisability (or conversely sufficient specificity), or foresight. In a common trope, law suffers from the "pacing problem".[79] It is thus the poor relation, struggling to keep up with

[75] Alvin Toffler, *Future Shock* (Bantam Books, 1984).
[76] Similar tendencies have been noted in the shaping of policy discourses around law and science more generally: see, eg, Sheila Jasanoff, *Science at the Bar: Law, Science, and Technology in America* (Harvard University Press, 1997) 7; John Paterson, 'Trans-Science, Trans-Law and Proceduralization' (2003) 12(4) *Social & Legal Studies* 525.
[77] Ibid, Paterson.
[78] This is perhaps inevitable given that, as Lyria Bennet Moses insightfully observes, commentators generally tend to be wedded to a 'march of progress' narrative in which the overarching view of technology is positive, notwithstanding the risks identified; Lyria Bennet Moses 'Agents of Change' (2011) 20(4) *Griffith Law Review* 763, 764.
[79] Ibid Bennet Moses.

the demands of technology, and invariably losing the race.[80] This representation is not without practical consequences. As Lyria Bennett Moses concludes

> It suggests a need for urgent new legislation, despite the advantages in some cases of delay. It pits the rush for technology-specific responses against the need to 'future proof' legislation through technology-neutral drafting, without careful consideration of the advantages and disadvantages of either approach. It suggests a need for radical responses, such as Calabresi's suggestion that judges be given power to revise obsolete statutes.[81]

The race analogy also assumes that law can catch-up, or at least get close enough to make a difference, and that when it does so, legal changes actually (i) impact designer and producer behaviours, (ii) in the way the law-makers intended. As much social-legal research highlights, we make those assumptions somewhat at our peril. Continuing advances in ICTs will, moreover, only add to law's difficulties, as self-organising "third-order technologies" take greater control of design, development and use functions. This may bring us closer to the technophile's dream of eliminating "pebkacs",[82] but it introduces important prudential, technical and legal questions — not least regarding norms of system control, transparency, and explainability,[83] and the need for public participation in system design and deployment decisions,[84] as well as the obvious but challenging questions regarding responsibility for autonomous systems. In so far as these issues have legal or regulatory dimensions, most, as in the instance of self-driving vehicles, are being addressed by legal academics and policymakers somewhat piecemeal, and on the hoof.[85]

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[80] Cp the oft-cited statement by Windeyer J in *Mount Isa Mines Ltd v Pusey* (1970) 125 CLR 383 to the effect that "Law [marches] with medicine but in the rear and limping a little".

[81] Moses (n 78) 765 (emphasis in the original).

[82] "Problem exists between keyboard and chair".

[83] Ugo Pagallo, 'Good Onlife Governance: On Law, Spontaneous Orders, and Design' in Floridi (ed) *The Onlife Manifesto. Being Human in a Hyperconnected Era* (Springer, 2015) 161ff; On explainability in AI, see, eg, Derek Doran, Sarah Schulz, Tarek R Besold, 'What Does Explainable AI Really Mean? A New Conceptualization of Perspectives' (2 October 2017) arXiv:1710.00794; Dong Huk Park et al 'Attentive Explanations: Justifying Decisions and Pointing to the Evidence' (14 December 2016) arXiv:1612.04757.

[84] See, eg, Danielle Keats Citron, 'Technological Due Process', (2008) 85 *Washington University Law Review* 1249; Roger Brownsword, 'Lost in Translation: Legality, Regulatory Margins and Technological Management' (2011) 26 Berkeley Technology Law Journal 1321, 1351-2. See also, Tim Miller, Piers Howe and Liz Sonenberg, 'Explainable AI: Beware of Inmates Running the Asylum Or: How I Learnt to Stop Worrying and Love the Social and Behavioural Sciences' (5 December 2017) arXiv: 1712.00547 (on the importance of user-centred design for truly explainable AI).

[85] James M Anderson et al, *Autonomous Vehicle Technology: A Guide for Policymakers* (Rand Corporation, rev. ed, 2016) 43ff (noting the divergences in the 'flurry' of state regulation that has been introduced in the US since 2011); See also, Cp Alice Armitage, Andrew K Cordova and Rebecca Siegal, 'Design Thinking: The

The focus on such "mind the gap" problems and problem-solving, betrays both the instrumentalism and reductionism of "Anxious Legal Studies". First, it highlights that Anxious Legal Studies in law school has so far tended to provoke the most anxiety about the wrong things: the pursuit of short-term relevance and technical training in the tools. Secondly, it therefore fails adequately to address the larger challenge of information technology — namely at what point do we aim to develop the capacities to understand and work with technology in its deeper conceptual[86] and wider cultural, ethical, and economic contexts? Thirdly, "Anxious Legal Studies" also seems to force us into a binary choice. That is, it wants us either to push on and pursue the technological program, melding law to the aims of technology as best we can, or (less likely) it hints that we can weaponise the law and use it as a tool to rebel against the technological. The trouble is that, as Heidegger tells us,[87] this is no choice at all; both responses are a mere reaction to the already technological circumstances in which we find ourselves, and both fail adequately to address the complexity of human being in an age of hyper-connectivity. The core question is no longer how much we should seek to advance or limit technology, but how can we best deal responsibly with the ongoing and deepening entanglement of human and ICT? If "Anxious Legal Studies" limits our ability to ask the right questions, law schools will likely offer only limited forms of critical engagement with or thought leadership for this field. This brings us, finally, to what the role of law school could be in an age of hyper-connectivity.

IV TOWARDS AN "ONLAW" CURRICULUM — A BRIEF MANIFESTO

What might taking the "onlife" transformation seriously require of legal education? In this section, I offer five basic principles for curriculum re-design as, I hope, a prompt and provocation for further debate amongst the stakeholders in legal education.

Answer to the Impasse between Innovation and Regulation', (2017) 2(1) *Georgetown Law Technology Review* 3 (discussing fragmented responses to regulating the gig economy).

[86] Cp Lyria Bennett Moses, 'Why Have a Theory of Law and Technological Change?' (2007) 8(2) *Minnesota Journal of Law, Science and Technology* 589.

[87] Hubert Dreyfus, 'Heidegger on Gaining a Free Relation to Technology' in David M Kaplan (ed), *Readings in the Philosophy of Technology* (Rowman & Littlefield Publishers, 2nd ed, 2009) 53.

A *Pervasiveness*

The real problem for "law and technology" is neither law nor technology, but how we conceive of the "and" that connects and divides them. "Onlaw" obliges us to confront both the extent to which law is always already technology, and the ways in which digital technology is increasingly becoming law. In this light, the conversation about information technology is too important to be peripheral; it must be understood, and problematised, pervasively across the curriculum.

B *Inter-disciplinarity*

It is striking the extent to which the most pressing or "wicked" problems of society do not fit neatly within conventional academic boxes — they are complex, normatively and often spatially fluid, trans-scientific, and also trans-legal.[88] They will not be solved by law, science, or technology working alone.[89] At a practical level, the ability of individual lawyers to work with other professions and disciplines has long been recognised as important in both the professional[90] and research worlds, yet that insight still seems too often translate poorly to much of the law student experience.[91] Given the likely increasing fluidity of professional knowledge and professional roles, this need is surely more pressing, not less.

The justification for greater inter-disciplinary skills and understanding moreover, is not just pragmatic. Working in and with a range of disciplines is critical to treating the phenomenon of law (including "onlaw") as a proper field of inquiry, rather than as a discipline that is, to some degree, isolated by its own epistemological assumptions. If we look at the law in this light, why should we not become more like other professional schools (in business, design, public health, and medicine), where anthropologists,

[88] Paterson (n 62).
[89] For recognition specifically that the challenges of AI need to be researched and understood in deeper interdisciplinary terms, see Miller et al (n 84), see also, Meredith Whittaker et al, 'AI Now Report 2018' (Research Report, New York University, December 2018) 36.
[90] Strikingly, the foundational Ormrod Report observed nearly fifty years ago that law students should be introduced 'to the knowledge and methods of other disciplines which, later on, may have a direct bearing on [their] work as a professional lawyer; Committee on Legal Education, *Report of the Committee on Legal Education* (Her Majesty's Stationary Office, 1971) para 102; see also, Law Society of New South Wales (n 26) 79, for a recent manifestation of the argument.
[91] On the contested and arguably subordinate status of socio-legal and inter-disciplinary approaches in the Australian law school, see, eg, Ian Duncanson, 'Degrees of Law: Interdisciplinarity in the Law Discipline' (1996) 5 *Griffiths Law Review* 77; Margaret Thornton, *Privatising the Public University: The Case of Law* (Routledge, 2012) 168–70.

sociologists, computer scientists, ethicists, economists, organisational theorists, and others, could teach and work alongside lawyers in the work of both theory-building, and resolving real-world problems?

C *Design thinking*

There is no escaping the fact that many of our existing legal institutions are under pressure. Increasing costs; cuts in legal aid; court delays, often exacerbated by growing numbers of self-represented litigants, and the limited capacity of a profession-centric legal services market to deliver widespread and affordable access to justice are indicative of a system in, or at least on the edge of crisis. These are not just resource problems; they are design problems.

If lawyers are to function as Fuller's active "architects of social structure",[92] then we need to take legal design seriously. Thinking explicitly about law as a design problem matters, and that includes bringing a critical perspective to the role of legal tech.[93] Technology is being widely touted as a design solution, and there is no doubt that much effort and good work is going in to using technology to address real world problems. However, my intuition is that much of that work is going into producing localised fixes for very specific problems. While such fixes are undoubtedly valuable if they make an appreciable difference to individual lives, what are the systemic consequences of re-constructing the justice system around disparate and quite often disconnected tech solutions? Who is making sure that we ask the deeper questions about what law does, independent of what lawyers do? Problem and tool-oriented, agile design is welcome, but it should not displace the bigger policy conversations about rule and institutional design.[94]

Law schools could play a central role in initiating and shaping this conversation, one that goes beyond hackathons and law apps. Legal design labs, like those at Stanford[95] and

[92] Fuller (n 11) 265.

[93] See, eg, Portable, 'Design for Justice' (Research Report, Portable, 2018); see also, for an excellent introduction to design thinking for social innovation more generally, see Ezio Manzini, *Design, When Everybody Designs: An Introduction to Design for Social Innovation* (The MIT Press, 2015) 29, 31; Manzini defines design as 'a way of thinking and behaving… combining three human gifts: critical sense (the ability to look at the state of things and recognize what cannot, or should not be, acceptable), creativity (the ability to imagine something that does not yet exist), and practical sense (the ability to recognise feasible ways of getting things to happen).

[94] Hadfield (n 16).

[95] Stanford Legal Design Lab, 'Legal Design Lab', *Welcome* (Web Page, 2018) <http://www.legaltechdesign.com/>.

Helsinki,[96] provide perhaps a good institutional model going forward, facilitating both design-orientated teaching and research, though they may be limited if they focus too narrowly on tech and tool design as their primary *modus operandi.*

D *Ethics & Governance*

Ethics is in many respects a key — and unifying — conversation across disciplines interested in shaping a technological future in which our individual and collective wellbeing will be more and more dependent on ICTs. While new technologies create many specific challenges to our ethics and values, it can be said that the core ethical challenge is intrinsic to the nature of technology itself: that is, its tendency to seek greater flexibility and efficiency for its own sake.[97] In a hyperconnected world, we are, consequently, not just (or always) the powerful subjects using technology, but are also being used by it. This has significant implications for what it means to be human, and a legal subject. Upendra Baxi makes the point with his characteristic vigour:

> the notion of being human stands periclated… the bearer of human rights stands recast as either a cyborg or as an informational genetic storehouse…. Old notions of what it means to be, and remain 'human' have been steadily, but spectacularly, rendered obsolete by technoscience."[98]

The blurring of the subject-object relation between humans and technology under conditions of hyper-connectivity is an unavoidable feature of "onlife". We cannot reverse the obsolescence of which Baxi speaks. A critical issue for governance is, therefore, how do we address or at least manage the extent to which humans are objectified and diminished in this emergent, post-human, information age. This is no small question, as David Post admits

> … like the [American] West of 1787, cyberspace poses some hard questions, and could use some new ideas, about governance, and law, and order, and scale…. The problem is the one that Jefferson and his contemporaries faced: How do you build "republican"

[96] University of Helsinki, 'Legal Tech Lab', *Legal Tech Lab* (Web Page, 2019) <https://www.helsinki.fi/en/networks/legal-tech-lab>.
[97] Dreyfus, (n 72); see also, Manzini (n 78) 63-4, who also observes that when a new functional technology emerges, the driving force shaping the design of services and systems tends to be the technology, not social need, notwithstanding that such services, etc, will have significant social effects.
[98] Upendra Baxi, *The Future of Human Rights* (Oxford University Press, 2nd ed, 2006) xxiii–xxiv.

> institutions – institutions that respect equal worth of all individuals and their right to participate in the formation of the rules under which they live – that scale?[99]

How do we envisage lawyers contributing to *that* conversation? What is our unique viewpoint and contribution? At the very least, abilities to recognise and engage in normative debate and to advise appropriately on a range of law and governance solutions are likely to be important capabilities to instil in the future "onlawyer".

E *Skills Are (Still) Not Frills*

A focus on "onlaw" does not displace the need for core skills of critical thinking and creative problem-solving that should be developed by a "good" legal education; indeed, these capacities may be even more critical to legal work as automation steadily reduces the need for deep human knowledge of the law as we currently know it.

There is also a growing recognition that increased technology use actually makes the human arts of lawyering more, not less important. This is not just because, to put it crudely, the legal profession has come to realise that it is really in the "relationship business" not just the "law business", but because "onlife" itself puts the capacities to interact with others, function relationally and act collaboratively to the fore.[100]

The challenge for law schools, of course, is that the list of knowledge and skills requirements tends to grow, never reduce. Commercial and financial awareness, use of legal tech, project management skills, design-thinking, coding, are all examples of "new" areas of learning currently being emphasised in practice, many relevant to this paper.[101] The question of what to take out has, however, become a recurrent problem in the context of an already crowded curriculum. While this has, to varying degrees, been acknowledged in recent reviews of legal education, none have come up with a clear solution.[102] At a minimum, in the context of a modern, segmented legal services market, there is a need

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[99] David Post, *In Search of Jefferson's Moose: Notes on the State of Cyberspace* (Oxford University Press, 2009) 116-7.

[100] Floridi (n 2) *seriatim;* see also Susskind and Susskind (n 30) 249-50.

[101] Law Society of New South Wales (n 31) 78-9; for example, highlights seven areas of proficiency "necessary for success in future law practice": technology; practice skills; business skills; project management, internationalisation and cross-border practice; interdisciplinary experience, and resilience, flexibility and ability to adapt to change.

[102] See Julian Webb, 'Preparing for Practice in the 21st Century: The Role of Legal Education and Its Regulation' in Bernhard Bergmans (ed) *Jahrbuch der Rechtsdidaktik 2017/Yearbook of Legal Education 2017* (Berliner Wissenschafts-Verlag, 2018), 11, 33-34.

for some clear thinking about reducing the load of academic compulsory subjects, and for proper empirical research into training needs. This is neither a straightforward nor inexpensive task, but would be of considerable value in informing the debate about both the necessary professional outcomes of the law degree, and the proper scope of Professional Legal Training courses.

V CONCLUSION

Information technology is no longer the "new kid on the block". It is one of the big kids now, and it is increasingly shaping the games that we all play. The time when lawyers could be technological Luddites is clearly long past, but the larger question remains as to what kind of technological understanding of the world we want — and need — tomorrow's lawyers to possess. I have argued in this paper that throwing a few new skills into the curriculum significantly misses the target. To really answer that question, we need to take seriously the deep entanglement of human and technology under conditions of hyper-connectivity. Consequently, just as information technology cannot be separated from other facets of our human being, it must be at the heart, not the margins of our thinking on legal education.

The broad "principles" expressed in this paper offer, perhaps, a starting point in that conversation, though much of the devil will as always, lie in detailed debate about curricular priorities and the ever-present question about the functions of academic legal education. In the context of the anticipated ruminations of the Assuring Professional Competence Committee, this is not just an intellectual exercise, but a real opportunity to bring the law degree properly into the twenty-first century. We should not let that opportunity go to waste.

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FINANCIAL EQUALITY, THE IGNORED HUMAN RIGHT: HOW E-CURRENCIES CAN LEVEL THE PLAYING FIELD

ZEINA ABU-MEITA* & NICK INGLIS**

Digitisation of currency is inevitable as less people are using cash, and reliance on plastic, apps and online services is increasing. Anonymity/privacy, equal access to financial services, and monetary sovereignty are but a few issues that arise from digitisation. Since most e-financial services are provided through corporate means, anonymity/privacy have been eroded and also excluded for those who are not target clients, therefore creating a gap in financial equality. Governments could attempt to limit the growing financial inequality by granting their citizens, through the law, universal access to financial services as a basic human right. Human rights, via the law, would then drive the direction of the technology, rather than commercial interests.

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CONTENTS

I INTRODUCTION

In times of financial distress, it has become normal practice for commercial banks to avoid a "bank run" by limiting or denying its customers the ability to withdraw funds from their own accounts. The most recent example of this occurred during the Greek debt crisis in 2015: not only did banks close their doors for a week, but Automated Teller Machines (ATMs) across Greece denied citizens access to their own funds. However, financial access is carefully, and more subtly, controlled even in ordinary times. For instance, it is normal to apply for a credit card — Visa or Mastercard — and either get rejected or be placed into a certain category that determines interest rates and credit limits. Even debit cards, which are purposely designed to give bank customers access to their own money, are limited to the type of client the bank deems its customers to be. As societies move to become cashless, denying or restricting access to the financial system effectively limits access to basic human rights such as food and shelter, which increasingly must be paid for electronically; this also has impacts on the ability to be paid a wage or receive social security via electronic funds transfer. At the same time, those who are able to access the financial system do so in ways that cannot guarantee their privacy, and are charged fees for the privilege of having access. To address these two issues — the restriction of access to human rights by those outside the financial system, and the tolls paid in terms of privacy and charges to those within it — this paper discusses financial access as a human right. In the same way that some countries attach human rights to health and wellbeing by ensuring uniform access to medical services via universal healthcare, this paper discusses the concept of attaching human rights to food, clothing and similar matters, as well as the right to privacy, by ensuring uniform access to the financial system via universal financial access.

A *Dangers of Access to Financial Services Exclusively Through Corporations*

There are dangers when relying on corporations to control how people use and spend their money. The most often discussed and debated issues are privacy, anonymity, tracking, and transaction fees. Cash, however, is much simpler because there is neither cost to access it, nor a way of tracking which bank notes were in a person's possession, or where and how they spent them. Anonymous and physical cash can be the great equaliser

of people, and its anonymity and accessibility are cornerstones of its fungibility.[1] This fungibility, however, is being eroded in several ways. Unbanked people in cashless societies are constrained in their ability to access products and services, even when they possess the physical cash required to purchase them. Credit and debit cards track every cent of every transaction, and charge you for access, not only to credit but also to your own money. This information may be tracked, used, or sold. Corporations providing the digital banking services which hold the information on spending habits are able to tailor services and access fees to clients, therefore creating tiers. A person whose income is limited may be penalised by the bank for not carrying large balances, and those who do are rewarded, creating the second danger — financial inequality.

A poorer individual must pay fees to have a bank account, whereas the wealthier individual can be given reprieve from those fees. The old cliché surfaces: the rich get richer and the poor get poorer. It becomes increasingly difficult to argue that corporations have a duty to ensure financial equality when they are beholden to their shareholders. Their corporate duty is to make a profit, and in addition to the banks' investments, the account holders themselves have become part of the means to that end. The days of banks as just financial intermediaries, connecting multitudes of lenders with small surplus funds (i.e. bank customers with accounts) to well-researched investments requiring large loans, are gone. The research undertaken by banks for determining investment decisions have been supplemented by customer research to assess an appropriate amount to charge lenders of funds — the bank customers. Similarly, banks have a different level of information and skills for undertaking research and comparing investments: this is now supplemented with customer segmentation and behaviour information, gleaned from data-mining tools applied to the vast amount of customer information held in transaction records.[2]

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[1] Bill Maurer, *How Would You Like to Pay? How Technology Is Changing the Future of Money* (Duke University Press Books, Kindle ed, 2015).

[2] For a bank review of fee–related revenue, see Lawrence J Radecki, 'Banks' PaymentsDriven Revenues' (Research, Federal Reserve Bank of New York, 1999); For a study of the profile of commercial banks that profit the most from fees, see David Tennant and Richard Sutherland, 'What Types of Banks Profit Most from Fees Charged? A Cross–Country Examination of Bank–Specific and Country–Level Determinants' (2014) 49 *Journal of Banking and Finance* 178; For a review of customer data mining in the banking industry, see Vikas Jayasree and Rethnamoney Vijayalakshmi Siva Balan, 'A Review on Data Mining in Banking Sector' (2013) 10(10) *American Journal of Applied Sciences* 1160; Srekumar Pulakkazhy and Rethnamoney Vijayalakshmi Siva Balan, 'Data Mining in Banking and its Applications — A Review' (2013) 9(10) *Journal of Computer Science* 1252; For an Australian study that specifically discusses fees and

Banks are now in control of people's money and information, charging them to access the former, and mining the latter, policed primarily by industry self-regulation.[3] Self-regulation is of course prone to abuse, as exemplified by a recent Royal Commission in Australia. In that case, the banking industry was rife with the practice of charging fees by automatically debiting accounts for financial advice services that were never provided, with early estimates of $850 million (AU) in compensation to be paid to Australian account holders.[4]

B *Economic Ghettoization & Lack of Equal Access*

The lack of economic mobility entrenched in a system run by corporate banks increases the propensity for segments of society to be economically marginalised and placed in groups such as certain genders and racial minorities, which then places them in economic ghettos.[5] For instance, the same Royal Commission in Australia that recommended an explicit amendment to the Banking Code so that banks would find ways to work with customers in remote areas and/or who could not speak English.[6] These marginalised groups face economic inequality gaps that often force them to rely on government programs. This compels the government to provide funding for programs to close the gap — a little recognised form of subsidising the corporate banks' business practices.[7]

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customer retention, see E Trubik and M Smith, 'Developing a Model of Customer Defection in the Australian Banking Industry' (2000) 15(5) *Managerial Auditing Journal* 199.

[3] Priscilla Regan, 'Privacy and Commercial Use of Personal Data: Policy Developments in the United States' (2003) 11(1) *Journal of Contingencies and Crisis Management* 12.

[4] Section of this essay, see, also; Kenneth Madison Hayne, 'Final Report: Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry' (Report, 1 February 2019) <https://financialservices.royalcommission.gov.au/Pages/default.aspx>.

[5] A good summary of the relationships between economic inequality, economic mobility and segregation can be found in John A Bishop, Rafael Salas and Jacques Silber, *Inequality, Mobility, and Segregation Essays in Honor of Jacques Silber* (Emerald Group Publishing Limited, 2012). In particular, Sologon and O'Donaghue (2012) find a negative relationship between earnings mobility and earnings inequality, and Eberharter (2012) reviews material discussing the intergenerational nature of earnings inequality. See Denisa Maria Sologon and Cathal O'Donoghue, 'Earnings Mobility, Earnings Inequality, and Labor Market Institutions in Europe' in John A. Bishop and Rafael Salas (eds), *Inequality, Mobility and Segregation: Essays in Honor of Jacques Silber* (Emerald Group Publishing Limited, 2012); and Veronica V Eberharter, 'Intergenerational Educational Mobility and Social Exclusion - Germany and the United States Compared' in John A. Bishop and Rafael Salas (eds), *Inequality, Mobility and Segregation: Essays in Honor of Jacques Silber* (Emerald Group Publishing Limited, 2012).

[6] Recommendation 1.8: Hayne (n 4).

[7] 'How the Poor Subsidise the Rich: What's Wrong with Overdraft Fees?', *The Economist* (Web Page, 2 August 2010) <http://www.economist.com/blogs/freeexchange/2010/08/money_and_banking>.

C *When the Bank Acts as the Governing Body*

An investigation of Canadian banking practices revealed how clients are being taken advantage of. TD Canada Trust, one of Canada's Big Five (banks), reported a double-digit increase in profits — $2.3 billion in the last quarter of 2016 — despite Canada's moribund economy and low interest rates.[8] In a recent investigation by the Canadian Broadcasting Corporation ("CBC"), current and former employees of TD Bank admitted to breaking the law and being pressured to upsell clients in fear of being fired.[9] Although TD Bank released a statement after the report,[10] asserting that all employees follow the TD Bank code of ethics, the report itself suggests otherwise.[11] Thousands of Canadians had fallen victim to unethical business practices with TD Bank.

Canada's constitution, which includes the Charter of Rights and Freedoms,[12] protects individual citizens' rights. If the Canadian government treated financial access like it treats medical access — universal — they would not be placing the control of individual financial access onto private corporations. The government could assert control on the standardisation of financial access and financial inclusion of its citizens. However, the current system's flaws allows for citizens to become tiered and slotted into different classes because they are just part of a transaction.

D *Governments Embracing Digitisation*

Estonia has embraced digital technology, in particular providing government services electronically.[13] Estonia's innovative e-residency service allows anyone in the world who meets certain criteria to become an e-resident of Estonia.[14] E-residents gain access to

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[8] *TD Bank Group Reports Second Quarter 2016 Results* (Report, 25 May 2016) 1.
[9] Solomon Israel, 'TD Bank on Defensive After CBC Stories, Stock Plunge', *CBC News (British Columbia)* (online, 13 March 2017) <http://www.cbc.ca/news/business/td-bank-defensive-1.4022394>.
[10] Erica Johnson, '"I will Do Anything I Can To Make My Goal": TD teller says customers pay price for 'unrealistic' sales targets', *CBC News (British Columbia)* (online, 6 March 2017) <https://www.cbc.ca/news/canada/british-columbia/td-tellers-desperate-to-meet-increasing-sales-goals-1.4006743>.
[11] Erica Johnson, '"We Do It Because Our Jobs Are at Stake": TD Bank Employees Admit to Breaking the Law for Fear of Being Fired', *CBC News (British Columbia)* (online, 10 March 2017) <https://www.cbc.ca/news/business/td-bank-employees-admit-to-breaking-law-1.4016569>.
[12] *Canada Act 1982* (UK) c 11, sch B pt I ('*Canadian Charter of Rights and Freedoms*').
[13] Eric B Schnurer, 'E-Stonia and the Future of the Cyberstate', *Foreign Affairs* (Web Page, 28 January 2015) <https://foreignaffairs.org/articles/eastern-europe-caucasus/2015-01-28/e-stonia-and-future-cyberstate>.
[14] Republic of Estonia, 'Who is Eligible' *Republic of Estonia: E-Residency* (Web Page) <https://learn.e-resident.gov.ee/hc/en-us/articles/360000625078-Who-is-eligible>.

European markets through Estonia, which reaps the benefits of the taxes in exchange.[15] Estonia is a proven example of how governments can embrace technology in the digital world to provide services for their citizens.

Governments have a responsibility to vanguard new technologies so that they may regulate them. Since at least one country has already created *electronic residency*, redefining what residency is in terms of a globalised and digitised world, *electronic monetary sovereignty,* in the form of state-backed cryptocurrencies as authorised legal tender, cannot be far behind. Electronic *transactions* need not be revolutionised because they already exist: from the ubiquitous direct deposit, debit and credit card transactions, and online purchasing via services such as Paypal, to online primary and secondary stock markets like Estonia's Funderbeam.[16] What is needed is a revolutionised attitude change to how we see monetary sovereignty and universal financial access.

E *Digital Money, E-Currency, & Crypto-Currency*

Terms such as "digital money", "e-currency", "virtual currency", and "crypto-currency" are new terms in a nascent field that is still being defined. Their usage to date in the literature and the press has been both interchangeable and inconsistent. The following definitions come from a single author (Jake Frankenfield) writing for Investopedia who, for lack of another source of consistent and authoritative definitions, has become something of a de-facto standard in a number of recent journal articles and working group papers in the legal field.[17]

[15] Republic of Estonia, 'Why Estonia Offers e-Residency' *Republic of Estonia: E-Residency* (Web Page) <https://learn.e-resident.gov.ee/hc/en-us/articles/360000720437-Why-Estonia-offers-e-Residency>.
[16] Funderbeam, 'Discover, Invest In, and Trade Growth Companies', *Unlocking liquidity for successful investing an open and transparent platform that makes it* (Web page, 2019) <https://markets.funderbeam.com>.
[17] For examples of works citing Frankenfield's definitions, see American Bar Association et al, 'Digital and Digitized Assets: Federal and State Jurisdictional Issues', (Web Page, March 2019) <http://www.klgates.com/files/Publication/1697a8c9-566a-48ac-bf6e-ea9373f4541b/Presentation/PublicationAttachment/d17d6b4d-aca5-4296-93c5-1012e92720f8/digital_assets.pdf>; Carol R Goforth, 'How Blockchain Could Increase the Need For and Availability of Contractual Ordering for Companies and Their Investors' (2019) 94(1) *HeinOnline*; Matla Garcia Chavolla, 'Cashless Societies and the Rise of the Independent Cryptocurrencies: How Governments Can Use Privacy Laws to Compete with Independent Cryptocurrencies' (2018) 31(1) *Pace International Law Review*.

The term "digital money" encompasses both familiar electronic payments systems (such as debit cards, credit card, EFTPOS, and Paypal) and newer e-currencies.[18] E-currencies come in two forms: sovereign or Central-Bank-backed Digital Currencies ("CBDCs"), and virtual currencies with no government or central bank backing.[19] Virtual currencies again include the familiar loyalty and rewards schemes such as those used by airlines and department stores, and the newer "crypto-currencies".[20]

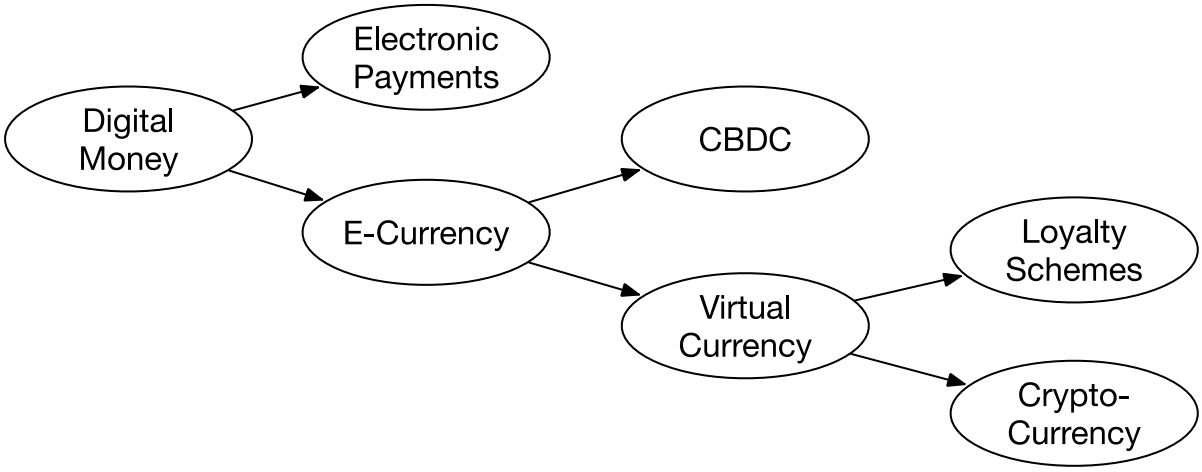

Figure 1: Frankenfield's taxonomy of digital money definitions

Crypto-currencies are digital virtual currencies that operate independently of any government or central bank and employ encryption to provide both security and regulation on the number of coins in the currency's ecosystem. The most famous crypto-currency, Bitcoin, relies on Blockchain technology to ensure privacy and pseudonymity; the most attractive feature of Bitcoin.[21] "Digital money", however, also encompasses all the familiar payment systems that are simply digitised transactions of government or central bank issued fiat currencies already in existence.[22] Presently, most people already

[18] Jake Frankenfield, 'Digital Money', *Investopedia* (Web Page, 8 July 2018) <https://www.investopedia.com/terms/d/digital-money.asp>.
[19] Jake Frankenfield, 'Digital Currency', *Investopedia* (Web Page, 3 May 2018) <https://www.investopedia.com/terms/d/digital-currency.asp>.
[20] Jake Frankenfield, 'Virtual Currency', *Investopedia*(Web Page, 3 May 2018) <https://www.investopedia.com/terms/v/virtual-currency.asp>; Jake Frankenfield, 'Cryptocurrency', *Investopedia* (Web Page, 12 February 2019) <https://www.investopedia.com/terms/c/cryptocurrency.asp>. While the authors consider this term to have fallen out of favour, we include it here as it forms part of Frankenfield's taxonomy.
[21] 'The Trust Machine: the Technology Behind Bitcoin Could Transform How the Economy Works', *The Economist* (Web Page, 31 October 2015) <http://www.economist.com/news/leaders/21677198-technology-behind-bitcoin-could-transform-how-economy-works-trust-machine>.
[22] P Panurach, 'Money in Electronic Commerce: Digital Cash, Electronic Fund Transfer, and Ecash' (1996) 39(6) *Communications of the ACM* 45.

use digital money but fail to recognise this, as banks market these transactions as "services" they are providing clients for convenient access to their money,[23] rather than simply their right to use their own money or line of credit as they see fit.[24] Fees are then charged to clients who have little choice but to use these services. Credit and debit transactions are both electronic transactions utilising digital money. The difference between the two is that debit transactions are processed immediately, whereas credit transactions happen on a delayed cycle. Here lies the danger in relying on banks to regulate and offer digital money transactions. To access these services, the bank is entitled to the client's personal information. Purchasing patterns, spending habits, total amount of money available, credit history, and client information are stored in the bank's profile on clients,[25] which the bank justifies as client care. Services are often not available until this information is given, thus privacy and anonymity are weakened as a result. Since banks are able to tailor services to clients who have greater amounts of money to invest, the banks create an "elite" and a "rest" category. These two issues combine to create a need for governments to examine universal financial access, such as giving citizens equal financial opportunities. This attitude toward equal access saves governments from needing to spend money on social programs for sections of society stifled by a lack of economic mobility.

F *Universal Financial Care ("UFA")*

The link between digital money, financial marginalisation, universal financial access, and the law, is made explicit in the World Bank's Universal Financial Access ("UFA") goal for 2020,[26] which shows UFA resting on both legal and financial infrastructures while requiring a range of financial products and inclusive education before being realised. The UFA goal is for adults (who are currently not a part of the formal financial system) to have

[23] Najah Hassan Salamah, 'Impact of Electronic Banking Services on Bank Transactions' (2017) 9(2) *International Journal of Economics and Finance* 111.
[24] See, eg, Connie Prater, 'Banks Add New $3 Fee for Accessing Your Own Money with Debit Card', *Creditcards* (Web Page, 16 August 2011) <https://www.creditcards.com/credit-card-news/debit-card-monthly-use-activity-fee-charge-own-money-1271.php>; David Carrig, '$5 to Access Your Own Money? ATM Fees Jump to Record High and These Cities are the Worst', *USA Today* (Web Page, 3 October 2017) <https://www.usatoday.com/story/money/personalfinance/2017/10/03/bank-atm-fees-overdraft-money-cash/725188001/>.
[25] Jayasree and Balan (n 2); Pulakkazhy and Balan (n 2).
[26] 'UFA2020 Overview: Universal Financial Access by 2020', *The World Bank* (Web Page, 1 October 2018) <http://www.worldbank.org/en/topic/financialinclusion/brief/achieving-universal-financial-access-by-2020>.

access to a transaction account for storing their money. This account would allow them to send and receive payments required for people to manage their financial lives. Facilitation of day-to-day living financial services would be available to all people; universal financial care mimicking universal health care. In the same way that universal health care provides access to health services regardless of how sick or healthy, universal financial access would provide access to financial services regardless of how poor or wealthy. Governments would then have to legislate this facilitation as a right for citizens, thus forcing corporate banks to give all their customers a basic level of service. Sweden has initiated steps to create an atmosphere where this would be possible by creating an e-Krona to co-exist alongside the paper krona (see section five). However, these issues are complicated in different types of states. Failed, emerging, and developing states pose their own challenges. An example of each is discussed below in sections two to five.

II GREECE: THE FAILING STATE

A *Debt, Austerity, & the Euro*

Greece is under austerity measures, due in part to its struggle to collect taxes. Greek officials have been known to shrug off tax evasion as a 'national sport'.[27] Prior to adopting the Euro, Greece was able to rely on independent control of its currency to effect seigniorage,[28] otherwise known as an 'inflation tax'. However, on adopting the Euro, Greece lost the ability to print its own currency, therefore killing the inflation tax solution.

The austerity measures imposed on Greece in the wake of the debt crisis have exacerbated the economic meltdown Greece is facing.[29] This is forcing the Greek government to take measures to reduce public expenditures while trying to encourage

[27] 'Greek taxation: A National Sport No More', *The Economist* (Web Page, 3 November 2012) <http://www.economist.com/news/europe/21565657-greek-tax-dodgers-are-being-outed-national-sport-no-more>.

[28] Seigniorage is the amount of money that a government makes when it prints new bank notes and mints new coins and the commercial banks purchase those banknotes and coins from the central bank. See Paul Thomas, 'Money Manufacture: How Governments Make Money by Making Money', *LinkedIn* (Web Page, 23 November 2015) <https://www.linkedin.com/pulse/money-manufacture-how-governments-make-making-paul-thomas/>; Matthias Morys, 'Greece in a Monetary Union: Lessons from 100 Years of Exchange Rate Experience', *VOXEU* (Web Page, 10 May 2016) <https://voxeu.org/article/greece-s-fundamental-problem-monetary-unions-past-and-present>.

[29] Ian Bremmer and Leon Levy, 'What the World Can Learn from the Greek Debt Crisis', *Time* (online, 29 August 2018) <http://time.com/5381385/what-the-world-can-learn-from-the-greek-debt-crisis/>.

economic stimulus, further creating instability.[30] As Greece joined the European Union, it compromised its economic independence. The economic gap in Greece widened and the erosion of the middle class is evidenced both in academia and by the middle-class Greeks themselves.[31]

At the height of the crisis, in the summer of 2015, Greek citizens rushed to automated teller machines to withdraw any monies they had available in their accounts. They were promptly blocked from doing so because banks were trying to defend themselves against bankruptcy from the sudden bank run.[32] The money in the accounts belonged to the holders of the account — account holders lend money to banks and are thus creditors to the banks — but the banks had control of access. In trying to prevent the banks' own bankruptcies, they forced lay people into bankruptcy instead.

Hypothetically, if those affected were in a government legislated and regulated system based on UFA, those account holders could not be barred from accessing their accounts or funds, and would be protected by depositor insurance that would bail out the account holders, not the banks. This would force banks and governments to operate responsibly to avoid bank runs. This preventative measure would make banks less likely to collapse, or collapse quickly if they do, and would legally prevent a financial blockade of the citizens, so that day-to-day financial access is not disrupted by wider economic factors. In the long term, this may curb the recent rise in economic refugees from states with volatile economic situations. UFA would cushion economic shocks for citizens.

B *Economic Independence & Monetary Sovereignty*

The problems arising from the loss of monetary sovereignty have been examined by renowned economists such as Joseph Stiglitz and Yianis Varoufakis. Stiglitz highlights that countries which forfeit their own currency for a common currency, such as the Euro,

[30] Papadimitriou B Dimitri, Nikiforos Michalis and Gennaro Zezza, 'The Greek Public Debt Problem' (2016) 25(Esp) *Nova Economia* 777; Papadimitriou B Dimitri, Nikiforos Michalis and Gennaro Zezza,'The Greek Economic Crisis and the Experience of Austerity: A Strategic Analysis' (2013) July *Levy Economics Institut*e 1.

[31] For an example of each, see Georgia Kaplanoglou and Vassilis T. Rapanos, 'Evolutions in Consumption Inequality and Poverty in Greece: The Impact of the Crisis and Austerity Policies' (2018) 64(1) *Review of Income and Wealth* 105; BBC News, 'Greece adopts more austerity measures in bailout bid' *BBC News* (online, 18 May 2019) <https://www.bbc.com/news/world-europe-39967460>.

[32] AFP, 'Emergency Talks as Greek Exit from Euro Looms', *News.com.au* (online, June 29 2015) <http://www.news.com.au/finance/economy/emergency-talks-as-greek-exit-from-euro-looms/news-story/90ccca6556da55ba773716eabc9bce40>.

lose the ability to adjust both their interest rate and exchange rate in the face of economic shocks.[33] On the other hand, Varoufakis highlights the inability for a country to adjust inflation to match economic conditions. [34] Varoufakis, as the former finance minister of Greece, is intimately aware of the intricacies of the Greek debt crisis. Stiglitz makes no attempt to hide his disdain for the Euro in his book, *The Euro: How a Common Currency Threatens the Future of Europe,* [35] where he states, 'The euro is just a 17-year-old experiment, poorly designed and engineered not to work'.[36]

Varoufakis takes this further by suggesting a state managed digital currency to remedy Greece's financial woes.[37] He argues that Bitcoin, rather than being a viable alternative for Greece, is effectively just another common currency, and too deflationary to act as a replacement for the Euro. Rather, he argues that the EU member states should use Bitcoin-like technology to create their own parallel digital currencies to alleviate these deflationary pressures.[38]

Just as the EU regulates human rights within the member states, it can be noted that there should be financial rights standards that EU member states would be obligated to comply with. A directive for member states would ensure that UFA would create stability in economically weakened states such as Greece.

C *Micro-Currencies for Micro-Economies*

The modern state of Greece groups together many islands with the mainland to form the country. Many of these islands are isolated from other islands and the mainland

[33] Joseph E Stiglitz, 'Joseph Stiglitz on Global Economic Instability in the Age of Trump', *The Sunday Edition* (online, 19 February 2017) <http://www.cbc.ca/radio/thesundayedition/flynngate-watergate-stiglitz-on-world-economy-stuart-mclean-s-documentaries-slow-professor-movement-1.3985655/joseph-stiglitz-on-global-economic-instability-in-the-age-of-trump-1.3985663>.
[34] Yianis Varoufakis, 'Digital Economies: Markets, Money and Democratic Policies Revisited'(Conference Paper, The CFA Institute Annual Conference 2014: The Future of Finance, 8 May 2014).
[35] Joseph E Stiglitz, *The Euro: How a Common Currency Threatens the Future of Europe* (W W Norton, 2017).
[36] Joseph E Stiglitz, *The Euro* (Penguin Books Ltd, Kindle ed, 2017) 294.
[37] 'Bitcoin: A Flawed Currency Blueprint with a Potentially Useful Application for the Eurozone', *Yianis Varoufakis* (Web Page, 15 February 2014) <http://www.yanisvaroufakis.eu/2014/02/15/bitcoin-a-flawed-currency-blueprint-with-a-potentially-useful-application-for-the-eurozone/>.
[38] Ibid.

economically. They may rely on tourism, fishing, or the local crop or export, and have little inter-island dependencies.[39]

Independent and semi-independent micro-economies are being identified and studied on many scales and contexts, from the small micro-economies operating in the Cocos Islands,[40] to the pervasive micro-economies of India,[41] or those supply-chain micro-economies already forming around private Blockchains.[42]

These micro-economies could benefit from local, complimentary micro-currencies that act as partner currency to the national fiat one. Each micro-economic region could use its own micro-currency, while allowing free conversion between them for trade between micro-economies. This would strengthen local economies through UFA and digitisation of currency, and also help Greece out of its financial collapse by allowing the locals to trade with each other.

D *Remedying Resistance through an Entrenched UFA*

The suffering being endured by the Greek people under austerity and the inability to access their own funds highlights the links between human rights, UFA, and monetary sovereignty. Varoufakis and others recommended that EU States make their own parallel digital currencies (CBDCs running "in parallel" with the Euro as legal tender)[43] to alleviate these issues, allowing citizens unadulterated access to a financial system and providing funds for economic stimulus.[44] Varoufakis' suggestion resulted, however, in him having to leave politics precipitously under the cloud of accusations of treason, which

[39] Konstantinos Andriotis, 'Problems of Island Tourism Development: The Greek Insular Regions' in Bill Bramwell (ed), *Coastal Mass Tourism: Diversification and Sustainable Development in Southern Europe* (Channel View Publications, 2004).
[40] Alan Whitley, *Master Planning the Economy of the Cocos (Keeling) Islands; A Discussion Paper on a Closed System Micro Economy* (Discussion Paper, no 38, 2014).
[41] Sarah Lacy, 'India's Mighty Microeconomy', *Fast Company* (online, 2 September 2011) <https://www.fastcompany.com/1725661/indias-mighty-microeconomy>.
[42] Liesl Eichholz, 'The Rise of Microeconomy Ecosystems; Modelling Medium-of-Exchange Token Microeconomies as Ecosystems', *Centrality* (Web Page, 30 January 2018) <https://medium.com/centrality/proprietary-currency-tokens-and-the-rise-of-microeconomies-c86674617734>.
[43] For an IMF discussion on CBDCs, including reasons countries may want to use them in parallel with the Euro or other currencies, see Tommaso Mancini-Griffoli et al, *Casting Light on Central Bank Digital Currency* (Report, SDN/18/08, 12 November 2018).
[44] See, eg, Lorenzo Fioramonti, 'How Complementary Currencies Can Save Europe', *Open Decmocracy* (online, 12 December 2016) <https://www.opendemocracy.net/can-europe-make-it/lorenzo-fioramonti/how-complementary-currencies-can-save-europe>.

were never laid.[45] This is just one example of the resistance to be encountered by suggesting the disempowerment of central banks (in this case the European Central Bank, which controls the supply of Euros) and commercial banks (which control financial access); both of which are independent entities that governments rely on to provide the financial infrastructure for its citizens.[46] This resistance can only be countered by enshrining UFA (through state backed e-currencies) in individual citizenship rights. This resistance is taken to the extreme in the case of Palestine discussed below.

III PALESTINE: THE EMERGING STATE

E-currencies in emerging states, such as Palestine,[47] can fortify the enshrining of economic equality as an element of individual rights as well as collective human rights.

A *Politicisation of the Palestinian Identity & Economic Sovereignty*

'Apartheid', 'segregation', and 'separation' are terms used in a recent controversial UN report to describe the situation in Palestine.[48] Dual legal systems based on race and religion exist in the same areas.[49] Palestinians are often at the mercy of Israeli governing bodies that regularly deny essential zoning, building, and business permits required for an economy to grow. This is in contrast to the micro-economies of illegal Jewish-only settlements in the West Bank of Palestine, which are flourishing. Israel dominates and controls every aspect of Palestinian life, including what currency is allowed to be used,

[45] Helena Smith, 'Yanis Varoufakis May Face Criminal Charges Over Greek Currency Plan', *The Guardian* (online, 30 July 2015) <https://www.theguardian.com/world/2015/jul/29/yanis-varoufakis-may-face-criminal-charges-over-greek-currency-plan>.
[46] Commercial banks are private entities. Reserve banks are typically government or publicly owned independent entities. For instance, see Reserve Bank of Australia, 'Governance Reserve Bank of Australia', *Reserve Bank of Australia* (Web page, 2019) <https://www.rba.gov.au/about-rba/governance.html>.
[47] Even the name "Palestine" can be controversial. One hundred years ago (1917), the British government decided to authorise a homeland for Jews in Palestine (the Balfour Declaration). Thirty-one years later, and shortly after the Holocaust, the British colonial government in Palestine retreated, leaving the country in the hands of Jewish militias, later becoming the army of the country established as the State of Israel. Since then there have been numerous attempts and rebellions by Palestinians to establish their sovereignty, independence, and national rights. Palestinians from various factions have employed various methods to achieve their rights, the latest method being asserting their rights and narratives in the digital world.
[48] Richard Falk and Virginia Tilley, *Israeli Practices Towards the Palestinian People and the Question of Apartheid*, (Report E/ESCWA/ECRI/2017/1, 2017).
[49] Marwan Darweish, 'Human Rights and the Imbalance of Power: The Palestinian-Israeli Conflict' in Beatrix Schmelzle and Véronique Dudouet (eds), *Human Rights and Conflict Transformation: The Challenges of Just Peace* (Berghof Conflict Research, 2010).

what goods enter Palestinian areas and are allowed to be sold,[50] and so forth. As Palestinians have no economic independence, it becomes easy for the world and other governing bodies to dismiss Palestinians' concerns. Palestine is not a large free-trade partner and does not provide other governments with mutual benefit economically. There is no benefit to standing up for Palestinian human rights when Israel provides what Palestine cannot. To combat this, Palestinians have created a voice through social media and intersectional solidarity. One example of this is access to the services that PayPal offers. PayPal in 2016 was available for settlers living in illegal outposts and settlements in the West Bank but unavailable for Palestinians in the West Bank/Gaza:[51] same area, same currency, different access. The question arises as to how an internet platform could work in some areas but not in others, which are literally meters apart.[52] A spokesperson for start-up accelerator Gaza Sky Geeks (GSG) stated:

> GSG is a major work hub for start-ups and freelancers in Gaza — payments are one of the toughest issues for them. After working tirelessly to win business in the global marketplace, they then have to pay steep fees for wire transfers or foreign banks to get paid. PayPal opening here is one of the most immediately impactful moves that could be done to support the economy here. Gazans we work with can't understand why PayPal serves Israelis living in the West Bank and is open for business in countries like Yemen and Somalia, but not here. Businesses in Gaza and the West Bank just want access to the same opportunities PayPal affords to the other 200 countries and territories they serve. Stifling access creates a steep disadvantage.[53]

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[50] For examples of issues bringing "dual use" items into Palestinian areas, see 'Improvements to the Mechanism for the Import of Restricted Items to Gaza Likely to Facilitate Implementation of Humanitarian Interventions', *United Nations Office for the Coordinatin of Humanitarian Affairs* (Web Page, 18 March 2019) <https://www.ochaopt.org/content/improvements-mechanism-import-restricted-items-gaza-likely-facilitate-implementation>; 'New System Regulating the Import of Building Materials', *United Nations Office for the Coordinatin of Humanitarian Affairs* (Web Page, September 2014) <https://www.ochaopt.org/content/new-system-regulating-import-building-materials>; 'Responding to Emerging Humanitarian Needs During the Hostilities', *United Nations Office for the Coordinatin of Humanitarian Affairs* (Web Page, August 2014) <https://www.ochaopt.org/content/responding-emerging-humanitarian-needs-during-hostilities>; 'Gaza: Shortage of Sanitation Infrastructure Raises Health and Environmental Concerns', *United Nations Office for the Coordinatin of Humanitarian Affairs*, (Web Page, 4 July 2016) <https://www.ochaopt.org/content/gaza-shortage-sanitation-infrastructure-raises-health-and-environmental-concerns>.

[51] Mike Butcher, 'PayPal Brushes-off Request from Palestinian Tech Firms to Access the Platform', *TechCrunch* (Web Page, 9 September 2016) <https://techcrunch.com/2016/09/09/paypal-brushes-off-request-from-palestinian-tech-firms-to-access-the-platform/>.

[52] Falk and Tilley (n 48).

[53] Butcher (n 51).

B *Fragmentation of the Population & Economic Isolation*

Because the state of Israel was created in the midst of chaos, massacres, and the expulsion of the existing Palestinian populations, the 750,000 (approximately) refugees spread seeking refuge and safety across many neighbouring nations. Fragmented, the population only had one unifying element: their Palestinian identity.

There are at least eight places with concentrations of Palestinian diaspora/refugee populations: Gaza, West Bank, Jordan, Syria, Egypt, Lebanon, the UAE, and Israel.[54] However, due to the political situation, they are isolated from each other and rely on the fiat currencies of the places where they reside or are interred. Due to the lack of civil rights and inability to work freely, many of these populations have micro-economies.[55] In Lebanon, the refugees rely on souks and markets inside the refugee camps which they are scarcely permitted to leave.[56] In Gaza, because of the siege, they have no import and export ability, and have therefore developed a self-reliant micro-economy. Forced to trade in different fiat currencies and being physically isolated from other Palestinian populations, they are left with but one solution to be able to trade with each other across physical borders: e-currency. An e-currency ecosystem where each group could use a local e-currency, the properties of which adjust to meet the nature of the local economy and which is freely exchangeable with the other local e-currencies in the ecosystem, would serve to integrate physically and economically disparate entities into one cultural economic entity. Creating a digital currency tying all seven sectors through digitisation cuts out the occupation and real-life borders. Palestinians could use the digitised economy they created to forge their own e-rights economically which would aid in

[54] 'Survey of Refugees' *BADIL Resource Center for Palestinian Residency and Refugee Rights* (Web Page, 2017) <http://www.badil.org/en/publication/survey-of-refugees.html>; UNRWA, 'Palestine Refugees', *UNRWA* (Web page, 2019) <https://www.unrwa.org/palestine-refugees>.
[55] Christian Aid, 'Palestinians' Right to Work in Lebanon', *Christian Aid* (Web Page, 3 June 2019) <http://www.christianaid.org.uk/whatwedo/eyewitness/middleeast/lebanon-palestinian-right-to-work.aspx>; International Labour Organization, 'Palestinian Employment in Lebanon: Facts and Challenges' (Report, International Labour Organization, 2012); Jessica Purkiss, 'The Palestinians of Lebanon; a Life of Curtailed Rights and Limited Opportunities', *Middle East Monitor* (Online, 24 November 2014) <https://www.middleeastmonitor.com/20141124-the-palestinians-of-lebanon-a-life-of-curtailed-rights-and-limited-opportunities/>; UN Office for the Coordination of Humanitarian Affairs, 'Illegal Discrimination Against Palestinians in Lebanon', *The Electronic Intifada* (online, 17 October 2007) <https://electronicintifada.net/content/illegal-discrimination-against-palestinians-lebanon/7184>.
[56] UNRWA, 'Who We Are', *United Nations Relief and Works Agency for Palestine Refugees in the Near East* (Web Page, 2019) <https://www.unrwa.org/who-we-are>.

creating a climate to foster real rights. Not unlike the illegal settlements in the West Bank which create an illusion of being part of Israel where:

> …state ministries provide support for their planning, funding, building and servicing; some, such as the Ministry of Construction and Housing and the Ministry of Agriculture and Rural Development, have been entirely committed to doing so. They also offer financial incentives for Jews to move to the settlements, including interest-free loans, school grants, special recreational facilities, new office blocks, agricultural subsidies, job training and employment guarantees. State complicity is further demonstrated by measures to integrate the economy, society and politics of Jewish settlements into those of Israel, generating seamless travel and electricity networks, a unified banking and finance system for Jews, Jewish business investment, and, in particular, a customs union.[57]

It is likely the banks in some of the countries with Palestinian communities would retaliate against such developments by threatening to close the accounts of any merchant who accepts the new currency.[58] However, as many of the Palestinians are already unbanked and are living in multiple uncooperative jurisdictions, it is unlikely that any piecemeal action by the banks in the countries involved will damage the system as a whole; rather, it would serve to highlight to the world both the racial injustice being carried out on parts of these countries' populations, and exactly the kind of financial blockade that the new currency system is trying to bypass. If the new currency also had other advantages over the local fiat currencies, (for example, ease of use, rewards etc.) this move could actually hasten its uptake.

Palestine does not have to band together with other nations to create an economic foundation for UFA as long as the populations are unified through e-currency, unlike the developing nations of West Africa.

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[57] Eyal Benvenisti, *The International Law of Occupation* (Oxford University Press, 2nd ed, 2012); Falk and Tilley (n 48).

[58] There are already many known cases where banks have closed the accounts of, and refused to open accounts for, legitimate cryptocurrency traders; see, eg, Mandie Sami, 'Bitcoin Traders Accuse Australia's Biggest Banks of Declaring War on Cryptocurrencies', *ABC News* (online, 22 September 2015) <https://www.abc.net.au/news/2015-09-22/bitcoin-traders-claim-discrimination-by-australias-banks/6795782>.

IV WEST AFRICA: THE DEVELOPING STATES

A *Tunisia*

Tunisia, birthplace of the Arab Spring, has been reforming to create a stable nation. After partnering with Estonia's e-Governance Academy to create e-governance reforms,[59] Tunisia turned its attention to the monetary system, becoming the first African nation to use Blockchain technology to digitise its currency, the eDinar plus.[60] Tunisia is in collaboration with Swiss-based fin-tech company — Monetas — to create national uniform access to mobile money transfers, managing identification documents, and paying bills through apps delivered by Tunisia Post.[61] Tunisia Post has full control of the issuance of the eDinar to prevent illegal transactions. Although these changes in Tunisia seem positive, there are aspects of these collaborations that must be considered. A quick search of Monetas reveals that, besides being a Swiss based fin-tech company, their online security certificate is based in Antigua and Barbuda, both of which are tax havens. If Monetas does not find a certain quarter as profitable as their shareholders would like, there is nothing preventing them from limiting Tunisians' access the way banks in Greece did to Greeks.

B *West African Monetary Union*

The West African Economic and Monetary Union (WAEMU) is comprised of eight countries: Benin, Burkina Faso, Cote d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo, in the process of forming a customs and currency union in order to promote economic integration in countries currently using the Financial Community of Africa ("CFA") Franc. Senegal is leading the way by introducing the first e-currency based on its national currency.[62]

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[59] 'Tunisia Learns from Estonia to Develop Their e-Government' *e-Governance Academy* (Web Page, 2018) <https://ega.ee/news/tunisia-learns-from-estonia-to-develop-their-e-government/>.
[60] Sarah Yerkes and John Polcari, 'An Underexploited Opportunity', *Carnegie: Middle East Center* (Online, 20 December 2017) <https://carnegie-mec.org/diwan/75071>.
[61] 'Tunisia to Become First in the World to Issue Its National Currency Via Advanced Cryptofinance Tech', *TechMoran* (Web Page, 21 December 2015) <https://techmoran.com/2015/12/21/54824-2/>; 'Tunisia is the First Country to Put National Currency on Blockchain', *FTReporter* (Web Page, 29 November 2016) <http://ftreporter.com/tunisia-is-the-first-country-to-put-national-currency-on-blockchain/>.
[62] Joseph Young, 'Senegal Introduces Cryptocurrency Based on its National Currency', *The CoinTelegraph* (Web Page, 27 November 2016) <https://cointelegraph.com/news/senegal-introduces-cryptocurrency-based-on-its-national-currency>; and Linsey Chutel, 'West Africa Now Has Its Own Digital Currency',

There are three issues with the West African Monetary Union in general, and Senegal's currency in particular. Firstly, it is a monetary union — with all the attendant economic and sovereign issues that Greece faced with the Euro in the European Union. Secondly, access is provided by a company, ecurrency.net — a Dublin based company with technology specifically designed to be used by central banks — rather than being a public system via a Blockchain.[63] Thirdly, the scheme relies on a centralised banking system rather than a decentralised one, again via a Blockchain. This would twice remove control from the members of the WAEMU — by the technology company and by the centralised bank, both of which are independent corporations. It even appears that the currency issuing authority may be the same corporation providing access. This will take all control away from the member countries and, with access and issuing under private control, personal details may be used to create tiers of access to services, therefore defeating the central purpose of UFA through e-currency.[64]

V SWEDEN: THE STABLE STATE

Sweden's central bank, the Riksbank, has recently begun a project to investigate the possibility of issuing e-kronor.[65] Sweden's reasons for conducting this investigation are primarily twofold. First, it has noted a steady decrease in cash use over several years, and has surmised that this has been caused by the uptake in e-payments and e-transactions. Second —and more importantly — the Riksbank has stated: 'The private sector is reducing utility and access to banknotes and coins for the general public and may, ultimately, determine access to central bank money and payment methods'.[66] That is, the Riksbank is specifically concerned that public access to central-bank-issued cash is being reduced by commercial banks who, presumably, no longer find this an important part of their business models, and are not concerned with the effect of reduced access on vulnerable segments of the population.

Quartz Media LLC (online, 28 December 2016) <https://qz.com/872876/fintech-senegal-is-launched-the-ecfa-digital-currency/>.

[63] 'Digital Fiat Currency Issued by the Central Bank', *Ecurrency.net* (Web Page, 2015) <https://www.ecurrency.net>; and 'eCurrency Mint', *Omidyar Network* (Web Page, 2016) <https://www.omidyar.com/investees/ecurrency-mint>.

[64] Eric Piscini and Simon J Lapscher Rosenberg, 'State-Sponsored Cryptocurrency: Adapting the Best of Bitcoin's Innovation to the Payments Ecosystem' (Report, *Deloitte Development LLC*, 2015).

[65] Sveriges Riksbank, 'Riksbankens e-krona 14 March 17 Project Plan' (Report, Riksbank, 2017).

[66] Ibid.

Riksbank is careful to note that the e-kronor, if it goes ahead after its decision in late 2019, will complement, rather than replace, cash. In particular, it specifies that it does not intend the e-kronor to be a new monetary policy instrument, but will be investigating its impact on both monetary policy and seigniorage.[67] By responding to the observation that '…there is a large number of people who for various reasons cannot, do not want to have or do not get access to the commercial banks' payment methods', [68] the Swedish government would effectively use the e-kronor to combat the commercialisation of currency access by banks and ensure promotion of UFA for its citizens.

VI CRYPTO-CURRENCY & UFA

There are two key technologies behind the technical success of crypto-currencies like Bitcoin, as opposed to just an e-currency, that make crypto-currencies suitable for UFA; namely, the ledger system known as the Blockchain and the monetary policy system. In Bitcoin, this system is the "proof of work" system, but there are alternatives better suited for UFA.

A *The Blockchain*

The core function of the Blockchain is to be an electronic transaction ledger, recording the order and details of electronic transactions, which is similar to how a paper ledger would record the details of physical transactions.[69] While this functionality is itself unremarkable, it is the way it achieves it that promises, and also threatens, to be so disruptive to economic institutions.

Firstly, unlike a normal physical or electronic transaction ledger, the identities of the participants in each transaction are typically encrypted.[70] This ensures that the Blockchain itself does not have to be held privately as would a normal ledger. However,

[67] Ibid.
[68] Daniel Dickson, 'Swedish Central Bank Eyeing e-Currency', *Reuters* (online, 16 November 2016) <http://mobile.reuters.com/article/idUSL8N1DH3MM>.
[69] Stephen Wilson, 'Blockchain Really Only Does One Thing Well', *The Conversation* (Online, 20 July 2016) <http://theconversation.com/blockchain-really-only-does-one-thing-well-62668>.
[70] Arvind Narayanan et al, *Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction* (Princeton University Press, 2016).

having access to the Blockchain does not in itself reveal the identities of the sellers and buyers recorded.

Secondly, unlike a normal physical or electronic transaction ledger, the Blockchain is publicly distributed.[71] Copies of the Blockchain are held by the computers of all market participants and are updated in real time. This means that the ledger and its information is not owned or controlled by any bank, exchange, corporation, or government. This makes it immune to monopolisation by any central party as there is no central "master" repository to control. Further, it is immune to destruction by a hostile power as there is no master computer or office that can be destroyed.

Thirdly, unlike a normal electronic transaction ledger, the existing Blockchain records are unalterable.[72] As the Blockchain exists on a large number of privately-owned machines, any attempt to alter an existing transaction will simply make one copy of the Blockchain different to the rest. This difference is detected and "voted down" by the majority of machines in the normal operation of the Blockchain network.

Fourthly, Blockchains are not limited to crypto-currency transactions. Transactions can also involve electronic shares, electronic bonds, electronic documents, electronic votes and "smart contracts" with guaranteed non-repudiation.[73]

B *Money Policy*

As unbacked currencies, crypto-currencies use a variety of schemes so that their coins are seen as holding value. The most famous of these, Bitcoin, has the strategy of emulating the so-called 'Gold standard'.[74] Gold standard monetary systems rely on two key properties of gold — its scarcity and its indestructibility.[75] These two properties mean that the amount of available gold in the world rises slowly and never falls — perfect for a low-inflation economy. Bitcoin emulates this in that the number of new coins in the system grows at an ever-decreasing rate, although Bitcoin has been designed to stop releasing new coins once 21 million have been released. This is excellent for avoiding

[71] Ibid.
[72] Ibid.
[73] Pavel Malstev, 'A Next-Generation Smart Contract and Decentralized Application Platform', *GitHub* (Web Page, 4 March 2019) <https://github.com/ethereum/wiki/wiki/White-Paper>.
[74] Varoufakis (n 37).
[75] Laurence S Copeland, *Exchange Rates and International Finance* (Pearson, 5th ed, 2008).

government manipulation but detrimental for growing economies, and consequently makes seigniorage impossible. Bitcoin's system, implemented via a "proof-of-work" algorithm, suffers the additional issue that rewards tend to go to those people or entities with the most computer hardware at their disposal, resulting in an egregious waste of electrical and computing power, a time delay in issuing new blocks, and a concentration of Bitcoin wealth with the already wealthy. Other crypto-currencies use other systems, the most notable being Ethereum's proposed proof-of-stake system, which certainly uses less computer hardware and power, and results in faster generation of new blocks, but still suffers the same concentration of wealth issue.[76] This common issue means that these digital monetary policies are not amenable to improving economic mobility.

C *Universal Financial Access as a Human Right*

The understanding of what is a human right is evolving according to constantly shifting societal values. Creating a foundation for Universal Financial Access as a human right would require two steps. The first step would be its declaration on an international level, for which no new framework would need to be created. The United Nations' Universal Declaration of Human Rights ("UDHR")[77] has sections ready for allocation to this right if and when it is recognised as such. It is sometimes argued that since countries have consistently invoked the UDHR for years, it has become customary international law and therefore binds them regardless of whether they have ratified it in their countries.[78] Nevertheless, it still leaves a gap for countries such as the United States, Saudi Arabia and Israel, who either abstained, did not ratify, are not signatories of, or whose courts have opposed this interpretation.[79] This is why step two, implementation of UFA at the state level, is required.

The articles in the UDHR that could apply to Economic Rights include:

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[76] Aeternity, 'Proof of Work vs Proof of Stake', *Aeternity* (Web Page, 10 August 2018) <https://blog.aeternity.com/proof-of-work-vs-proof-of-stake-79d9b1e5e529>.
[77] *Universal Declaration of Human Rights*, UN GAOR, UN Doc A/810 (10 December 1948).
[78] Hurst Hannum, 'The UDHR in National and International Law' (1998) 3(2) *Health and Human Rights* 144.
[79] For a US example, see *Sosa v Alvarez-Machain*, 542 03–339, US 692 (2004); for a discussion of international rights treaties in Muslim states including Saudi Arabia, see N Abiad, *Sharia, Muslim States and International Human Rights Treaty Obligations: A Comparative Study* (British Institute of International and Comparative Law, 2008).

Article Two:

> *Everyone is entitled to all the rights and freedoms set forth in this Declaration, without distinction of any kind, such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status. Furthermore, no distinction shall be made on the basis of the political, jurisdictional or international status of the country or territory to which a person belongs, whether it be independent, trust, non-self-governing or under any other limitation of sovereignty.*[80]

'Property' and 'other status' could be understood to include a Universal Financial access right.

Article Four:

> *No one shall be held in slavery or servitude; slavery and the slave trade shall be prohibited in all their forms.*[81]

One of the defining aspects of slavery is that the victim works without remuneration - see the discussion under Article twenty-three below. Of note here is the recent UN recognition that the unbanked are among the most susceptible to slavery despite its prohibition, [82] and the identification, by Hong-Kong based anti-slavery groups, of blockchain-based identification, payments and smart contracts as tools for fighting various forms of modern slavery.[83]

Article Seventeen:

> *(1) Everyone has the right to own property alone as well as in association with others.*
>
> *(2) No one shall be arbitrarily deprived of his property.*[84]

Firstly, money can be seen as property. Secondly, property usually cannot be purchased without access to one or more financial services. Being denied access to these services effectively denies the right to own property.

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[80] United Nations (n 77).
[81] Ibid.
[82] James Cockayne and Julie Oppermann, 'Financial Sector Compliance to Address Modern Slavery and Human Trafficking' (Secretariat Briefing Paper, No 1, *Financial Sector Commission* 2018).
[83] Mekong Club, 'Using Blockchain to Combat Modern Day Slavery' (Report, The Mekong Club 2018).
[84] United Nations (n 77).

Article Twenty-one:

> *(2) Everyone has the right of equal access to public service in his country.*[85]

Financial access needs to be seen as a public good, like Universal health care in Canada.

Article Twenty-Three:

> *(2) Everyone, without any discrimination, has the right to equal pay for equal work.*
> *(3) Everyone who works has the right to just and favourable remuneration ensuring for himself and his family an existence worthy of human dignity, and supplemented, if necessary, by other means of social protection.*[86]

'Equal pay for equal work' implies equal access to the payment systems being used. Unless employers can be forced to pay unbanked or underbanked workers with cash, they will naturally be disinclined to employ workers who are difficult to pay, or be inclined to pay them less than 'just and favourable remuneration'. This article therefore implies unencumbered access to payment systems as a human right.

Article Twenty-five:

> *(1) Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control.*[87]

Once again, access to 'necessary social services' implies unencumbered access to the banking system and payment systems so that these necessary services can be delivered.

The next step, after recognition on an international level, would involve state influence. Due to factors such as non-signatory countries and the declaration not being binding on citizens in their countries — assuming the parties are not signatories and do not ratify international agreements into domestic law — there is a need for constitutional clauses

[85] Ibid.
[86] Ibid.
[87] Ibid.

or legal frameworks to be put in place. This ensures financial access is seen as a public good and human right for all (that is, universal) rather than as a private good.

An excellent elucidation of the differences between the two approaches — universal vs public/private — can be seen in a recent comparison of healthcare in Canada and Australia by McDonald and Tuckett.[88] Canada's Charter of Rights and Freedoms ensures constitutionally that healthcare is seen as a public good. A two-tier healthcare system is illegal, ensuring that healthcare is universal and equal for all, and it is the government's responsibility to ensure so. However, in Australia, it is the two-tier system that is enshrined constitutionally, effectively ensuring that healthcare provision can never be universal.[89] The touted gains of the two-tier system, where the private system should take the load off the public system and serve those patients the public system cannot reach, have not eventuated. Rather, the opposite has occurred — wait times in the public system are no better in Australia than in Canada, and the private system takes the least critical and most easily accessible patients in order to increase profits, leaving the critical and hard to access patients for the public system to deal with at the public's expense.

This is the crux issue for any state wishing to implement UFA, either in accordance with an enhanced UDHR or independently. They will need to ensure that financial access is mandated as a public good constitutionally, not as a private good, to become a universal publicly accessible good rather than the tiered private good, including unbanked and underbanked people that already exist.

This still leaves the problems associated with diaspora communities and stateless people — such as the case of the Palestinians described earlier. Purely state-level implementations of UFA would still prevent these people from accessing financial services which brings us back to step one, the international definition of financial access as a human right. Having financial access internationally recognised and accepted as a foundational right enables the other already accepted rights, would allow these people to access financial systems which transcend borders.

[88] Fiona McDonald and Stephen Duckett, 'The Public/Private Health Service Divide: An Australian and Canadian Comparison'(Speech, ACSANZ Canadian Studies Symposium, Brisbane, 15 March 2019).
[89] Ibid.

D *Universal Financial Access — Requirements*

From the above review of UFA as a human right and how UFA might operate in failed, emerging, developing, and stable states, we find that the minimum requirements for a cryptocurrency ecosystem to enable UFA would be:

1. Accessible to all people in a region with a smartphone, card, or other mechanism, so that each region's banked and unbanked people — citizens, visitors, refugees, and the stateless — can participate economically;

2. Ability to operate as a parallel currency to the fiat currency in each region;

3. Ability for cryptocurrencies in the ecosystem to adjust to different economic conditions in different regions, so that each cryptocurrency's value does not become disconnected from its function as a means of exchange in each region;

4. Resilience against monopolisation and attack, whether security, economic, or physical;

5. Acceptance of the ecosystem as a whole as a mechanism for enabling UFA as a human right, preferably in an enhanced UDHR.

Additionally, a state-based and state-backed cryptocurrency,[90] would have the following additional desirable requirements:

6. The ability to be used for tax collection, either through seigniorage or otherwise, and to fight tax evasion via the nonrepudiation mechanisms built into blockchains;
7. The ability to be used as a mechanism for providing depositor guarantees for (normal) bank account holders.[91]

Each of these seven points has ramifications on: how account holders are identified; the legality and economics of parallel currencies; how economic regions are identified; how the competing interests of privacy and transparency are balanced; the legal, political and logistic issues around amending the UN UDHR; the legal, monetary, tax and political

[90] Piscini and Rosenberg (n 64).
[91] Committee on Payments and Market Infrastructures and Markets Committee, 'Central Bank Digital Currencies' (Report, *Bank for International Settlements*, March 2018), specifically talks about central bank digital currencies (CBDC) as an extra-bank competitor to guaranteed deposit accounts. Our proposal here is for a CBDC as an extra-bank mechanism for providing government depositor guarantees.

implications of state-backed cryptocurrency; and the legal and financial implications of cryptocurrency-based depositor guarantees. Each of these requirements and their ramifications will form the subjects of research in the near future. The need for this research is urgent as the underlying technologies are being developed at an ever-accelerating rate and much development is being funded by exactly those banks and financial institutions that stand to lose the most by UFA. The legal and economic groundwork must be done quickly before the infrastructure is fixed irreversibly on maintaining incumbent interests ahead of human rights.

VII CONCLUSION

Throughout this comparison, there has been an emphasis on governments capitalising on digitisation to ensure equal financial access through e-currency to their citizens. If UFA were an enshrined individual human right, protected in a constitution's Bill of Rights or Charter of Rights at a state level, and the UN UDHR at an international level, crypto-currency would be the ideal technology to implement it.

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THANATOPOLITICS THROUGH TECHNOPHOBIA: USING CHARLIE BROOKER'S BLACK MIRROR TO REFLECT UPON HUMANITY IN THE FACE OF ADVANCED TECHNOLOGY

LACHLAN ROBB*

Science fiction arguably has an effect upon society's understanding of technology and, inevitably, its fear of technology. Exploring the technophobic landscape of Charlie Brooker's anthology Black Mirror, the author draws upon a frame of cultural legal studies to analyse the role of humanity, law, and the biopolitical in the face of advancing technology. This paper takes a deep exploration of what it actually "means" to kill another and the role of technology in making is both physically and psychologically easier to kill. The text ultimately "makes strange" an audience's expectations of the genre in order to critique the role of technology in an arguably dystopian future. This is a method designed to force an audience to actually analyse the role of technology in their lives and society, rather than simply clicking on the proverbial "accept terms and conditions" button.

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CONTENTS

I THANATOPOLITICS THROUGH TECHNOPHOBIA

Through a platform of fear, a technophobic commentary allows for intriguing insights into the future role of technology, its interaction with humanity, and a changing biopolitical landscape. Science fiction has long since been a predictor of future trends, and the power of this genre's technophobia and social critique are worthy of closer analysis. I seek to demonstrate this by drawing upon a fascinating example of modern television and technophobic commentary, *Black Mirror*, in order to analyse the role of humanity, law, and the biopolitical in the face of advancing technology.

Black Mirror is a 2011 television anthology series created by Charlie Brooker that utilises various literature devices to explore the dark side of technology and life.[1] It can be described as a technophobic genre as it approaches scenarios where technologies of the twentieth and twenty-first century have been 'gamed out to their frightening but queasily logical conclusions'.[2] This article will analyse the episode 'Men Against Fire', in order to demonstrate how cultural legal studies serve an important analytical role.

In my own attempt at building suspense, this article will first discuss the "familiar" — it will discuss the role of science fiction in society and look through the concept of the war film genre present in the text. In part two of this article, I will then revisit the same text but through the lens of biopolitics. This revisit is designed to place the episode into the politico-legal frame of biopolitics in order to further explore the "unease" which audience experience in the episode 'Men Against Fire'. This rationalisation of how power interacts with life, and how death interacts with life, serves as a commentary on the uneasiness in which an audience views life, death, and concepts of "evil". This forces the audience to become uncertain if the bright future promised by science fiction is still possible, and by eliciting this technophobic response it can instil a more cautious approach to technology regulation.

As a disclaimer, this article is aiming to achieve a specific purpose — to explore ways that science fiction can reflect contemporary fears in society, and how by raising these fears and sense of unease, it can have an audience self-reflect and unknowingly step through

[1] IMDB, 'Black Mirror', *Black Mirror* (Web Page, 2019) <http://www.imdb.com/title/tt2085059/>.
[2] Alissa Wilkinson, 'Black Mirror Season 3, Episode 5: "Men Against Fire" is a warning from the past about our future', *Vox* (Online, 21 October 2016) <https://www.vox.com/2016/10/21/13327162/black-mirror-episode-5-men-against-fire-recap-review>.

the text's social critique. In order to fully appreciate this article, it is recommended that you enter this having watched the *Black Mirror* episode, 'Men Against Fire'.[3] This article does not intend to recount the episode scene-for-scene, but rather build upon the ideas and try to expand upon the some of the more "unspoken" concepts which it raised through the chosen frame of biopolitics and cultural legal studies.

II SCIENCE FICTION AND CULTURAL LEGAL STUDIES

Leiboff and Thomas state that, 'given that legal theory must bore deeply into the assumptions and practices of the law… we are very keen not to bore along the way.'[4] Seeking a similar path, I seek to use this article to explore a core aspect of legal theory — that of biopolitics — by embedding my analysis through an "easy-to-digest" form; popular culture. This will draw upon a legal theory driven analysis which highlights the role that technology plays upon the future of humanity — both its life, and its death.

Science fiction is a genre which seeks to draw upon the imagination of a reader and share the wonders of "what might be", as well as the fears of "what might be inevitable". The genre is defined by key themes of speculative fiction that deal with new ideas of science and technology, and often involve specific concepts such as time travel, aliens, or spaceflight.[5] This author personally subscribes to Aldiss' view that one of the earliest examples of science fiction is Mary Shelley's *Frankenstein*[6] which explored themes of pushing the boundaries of science and what this means for humanity when it is facing an unknown threat. This concept forces us to wonder, just because we "can" create a new human/travel back in time[7]/create a new weapon[8] — should we?

Being someone who has grown up with a passion for science fiction, I have always seen a fascinating reflective quality in the predictive nature of the genre. This is the notion that

[3] To a lesser extent, the author also does not wish to spoil the ending in such a suspenseful piece of television.
[4] Marett Leiboff and Mark Thomas, *Legal Theories: Contexts and Practices* (Thomas Reuters, 2nd Ed, 2014) 35.
[5] The genre is one which can stretch the limits of definitions and not one which the author seeks to define here. If the reader is interested in learning more, the author recommends reading works such as Wilson Aldiss and David Wingrove, *Billion Year Spree: The History of Science Fiction* (Atheneum, 1986).
[6] Mary Shelley, *Frankenstein* (Dover Publications, 1994); First published as 'Frankenstein or the Modern Prometheus', 1818.
[7] Literally any "time travel" movie or book ever written covers this theme and the subsequent paradox of time travel — see, eg, H G Wells, *The Time Machine* (William Heinemann, 1895).
[8] See the Manhattan project and the advent of nuclear weaponry.

as an author or creator can turn their imagination to the future, they draw upon ideas from society that the author either yearns to be a reality — or seek to warn us about dangerous choices, and their consequences — often sharing in a collective community vision of this hope and/or fear. When it comes to human behaviour, indeed, science fiction is a key influencer for society — and we can see certain technophobic plots emanate from popular culture. For instance, the fear of AI systems rising up to kill,[9] questioning the sentience and humanity of robots,[10] or the danger of not being able to identify a robotic foe from a human friend.[11] These science fiction plots can form a cycle with society where fears and dreams create new fiction, and new fiction in turn creates society's fears and dreams.

This cycle is fascinating to watch evolve because it is something that we can indeed see in contemporary debates surrounding the wisdom in developing AI systems,[12] concerns over driverless cars,[13] and unprecedented levels of cyber security concerns over hacking and ransomware.[14] These debates centre on how the regulation of technology should be approached, and to an extent the fallacy of "just because we can do something, should we?"

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[9] See, eg, *The Terminator* (House of Tomorrow, 2016); *2001: A Space Odyssey* (MGM, 1968); *2001: A Space Odyssey* (Hutchinson, 1988).

[10] See, eg, *A.I. Artificial Intelligence*, (Warner Bros, 2001); *Bicentennial Man,* (1492 Pictures, 1999); Isaac Asimov, *The Bicentennial Man and Other Stories*, (Doubleday, 1st edition, 1976); Isaac Asimov, *I, Robot* (Grossett & Dunlap, 1950); *I Robot* (Twentieth Century Fox, 2004).

[11] See, eg, *Bladerunner* (Ladd Company, 1982); Phillip K Dick, *Do Androids Dream of Electric Sheep?* (Doubleday, 1968); *Westworld* (MGM, 1973); *Westworld*, (Bad Robot, 2016).

[12] See, eg, Aatif Sulleyman, 'AI is likely to destroy humanity, Elon Musk warns*',* *Independent* (Online, 24 November 2017) <https://www.independent.co.uk/life-style/gadgets-and-tech/news/elon-musk-artificial-intelligence-openai-neuralink-ai-warning-a8074821.html>; Maureen Dowd, 'Elon Musk's Billion-Dollar Crusade To Stop The A.I. Apocalypse'*, Vanity Fair* (Online, April 2017) < https://www.vanityfair.com/news/2017/03/elon-musk-billion-dollar-crusade-to-stop-ai-space-x>.

[13] See, eg, Michael McGowan, '*Driverless cars: safer perhaps, but professor warns of privacy risks', The Guardian* (Online, 22 September 2017) <https://www.theguardian.com/technology/2017/sep/22/driverless-cars-safer-perhaps-but-professor-warns-of-privacy-risks>; Joel Achenbach, 'Driverless cars are colliding with the creepy Trolley Problem*', The Washington Post* (Online, 29 December 2015) <https://www.washingtonpost.com/news/innovations/wp/2015/12/29/will-self-driving-cars-ever-solve-the-famous-and-creepy-trolley-problem/?utm_term=.7b87c3369dce>; Jay Donde, 'Self-Driving Cars will Kill People. Who Decides who dies?', *Wired* (Online, 21 September 2017) <https://www.wired.com/story/self-driving-cars-will-kill-people-who-decides-who-dies/>.

[14] See, eg, Kim Zetter, 'What is Ransomware? A Guide to the Global Cyberattack's Scary Method'*, Wired* (Online, 14 May 2017) <https://www.wired.com/2017/05/hacker-lexicon-guide-ransomware-scary-hack-thats-rise/>; Olivia Solon, '"Petya" Ransomware attack: What is it and how can it be stopped?', *The Guardian* (Online, 28 June 2017) <https://www.theguardian.com/technology/2017/jun/27/petya-ransomware-cyber-attack-who-what-why-how>.

It is an inherently binary relationship; the technophiles, and the technophobes — which can be broadly associated with the tech industry, and the legal or regulatory industry. This process of regulation seeks to reconcile society and humanity with technological advancements. And while often diametrically opposed, it is clear that for progress, there must be common ground to move forward and implement technology in a safe and beneficial manner. Ultimately in this context, the value of technophobia is in how it can try to restrain blind innovation and allow for a proper consideration of the implications that advancement may have upon society. This position of technophobic critique, and the cycle of fear and dreams driving science fiction, is keenly observable in *Black Mirror's* themes — the fear of new technology, and the fear of what this means for humanity.

III TECHNOLOGY, BLACK MIRROR, AND A DEPARTURE FROM GENRE

The *Black Mirror* episode 'Men against fire'[15], is a technophobic commentary on the role of death and killing when biopolitics draws from a violent undercurrent reminiscent of Nazi-era principles of eugenics. In this text, we observe a military organisation trying to create a better soldier and a "purer" bloodline, but in doing so it reveals a deeper concern around the state of humanity when we perceive our enemy to be "inhuman". Season three, episode five from 2016, 'Men against Fire' follows a few days in the life of the soldier 'Stripe' (Malachi Kirby) as he experiences the psychological and moral ramifications of his first kill as a soldier. This follows his subsequent interactions with fellow soldiers such as Raiman (Madeline Brewer), his superior Arquette (Michael Kelly) and his moral crisis when faced with what he has done, and the prospect of killing unarmed civilians like Catarina (Ariane Labed), and what it actually means for society and humanity that it is his superiors who are knowingly ordering him to commit these attacks.

The text falls within the genre of science fiction because this plot is underpinned by a futuristic piece of technology that enhances soldiers like Stripe; the "MASS system". This system is an "enhanced reality" system that is implanted into the heads of the soldiers to provide a visual overlay over the world. It is marketed as creating a "better" soldier because it allows for internal communications, display of tactical maps, dossier

[15] 'Men Against Fire', *Black Mirror,* (House of Tomorrow, 2016).

information — and, venturing into the realm of 'dystopian science fiction'[16] — MASS (unbeknownst to the soldiers) manipulates how they see their enemies. The MASS implant system makes the enemy into 'The Other, a bogeyman, a monster.'[17] (See images 1 and 2 below)

Image 1: What a soldier sees through MASS

[16] Dystopian science fiction being a common subgenre of science fiction which presents an inherently negative picture of the future and commonly depicts the struggle of characters to exist in a world that is unaware of its own flaws.

[17] James Hibberd, 'Black Mirror showrunner explains season 3 endings', *Entertainment Weekly* (online, 12 December 2018) <https://ew.com/article/2016/10/23/black-mirror-postmortem-interview-season-3/>.

Image 2: Reality without MASS [18]

As a result, it makes the act of killing these "Roaches" psychologically easier for the soldiers because to them, they are killing a savage creature rather than an unarmed civilian "enemy". This is important to consider because the episode draws its name from Brigadier General SLA Marshall's 1947 book *Men against Fire: The Problem of Battle Command*[19] and Grossman's *On Killing*[20] — both of these explore the psychological impact of war and killing. The episode builds upon the ideas of these texts and seeks to overcome the psychological barrier that prevents soldiers from killing their enemy through technology, but by doing so it forces the audience to question the very nature of humanity itself.

In the episode, Stripe experiences a failure in his implant system which turns off this "roach filter". Which means he no longer see the "enemy" as a monster; this forces him to grapple with the reality that the Roaches he has been killing are actually human. He speaks with these "others" and tries to protect them, but in doing so, he betrays his team

[18] The audience can note that it is the same character, Catarina (Ariane Labed) because of the hair and other non-altered features.
[19] SLA Marshall, *Men Against Fire: The Problem of Battle Command* (University of Oklahoma Press, 2000); first published 1947.
[20] Dave Grossman, *On Killing: The Psychological Cost of Learning to Kill in War and Society* (Back Bay Books, 1995).

and is returned to the military base to face the consequences. Here he learns from his superior, Arquette (Michael Kelly), that the agenda of the military organisation is actually driven by eugenics principles of extermination. Stripe is faced with an ultimatum — he must either face prison where (through the MASS technology) he would be forced to relive unedited moments of every death he caused— or accept a new "fixed" MASS implant and return to blissful ignorance. The episode ends abruptly as Stripe chooses to forget what he has seen, and embrace ignorance.

The technophobic stance of the text comments upon the current trajectory of virtual reality technologies and advocates of the "singularity" that seek to enhance humans with technology. But this technology allows for a more important critique from 'Men against Fire' — one which is the central focus of this article — that the MASS system highlights key commentary about what humanity really is when enhanced with technology. The text makes this critique by exploring a possible future where society is run through eugenics based principles. This inherently dystopian future focuses on "us first" ideals that involve purifying the bloodline; ideals which are disturbingly akin to Nazi thanatopolitical forms of biopolitics. It is argued that the text draws this technology to its "queasily logical conclusion" in order to make this commentary, this method of unsettling the audience to make critique is regarded as "making strange".

A *Making Strange the War Film Genre*

Black Mirror seeks to "make strange" the war film[21] genre so as to explore the technophobic and biopolitical commentaries that emerge. This is achieved by beginning the text in the recognisable format of the war-film genre, and then departing from the audience's expectations, thus "making strange". This is a method of critical analysis deployed by commentators such as Tim Peters,[22] which draws upon the approach by key

[21] In this article, a war film is considered to be films which explore themes of combat, survival and escape within the frame of conflict and violence. Often this brings forward other these such as sacrifice, morality, futility of war, camaraderie between soldiers, and the psychological effect of killing. This genre is defined (in no particular order) by films such as *All Quiet on the Western Front* (Universal Studios, 1930), *Catch-22* (Filmways, Paramount Pictures, 1970), *Paths of Glory* (Bryna Productions, 1957), *Tora! Tora! Tora!* (Twentieth Century Fox, 1970) *The Guns of Navarone* (Highroad Productions, 1961) *The Bridge on the River Kwai* (Columbia Pictures, 1957) *Saving Private Ryan* (Dreamworks and Paramount Pictures, 1998) *Platoon* (Hemdale Film Corporation, 1986) *Full Metal Jacket* (Harrier Films, 1987).

[22] See Timothy Peters, 'Reading The Law Made Strange: A Theological Jurisprudence of Popular Culture' (PhD Thesis, Griffith University, 2014) 28.

literary figures such as Jorge Luis Borges,[23] and Russian Formalists such as Shklovsky that see art as being something that should 'make objects unfamiliar.'[24] By "making strange" a traditional understanding of the war-film genre, *Black Mirror* forces the audience to be out-of-step with their expectations which makes them critically view not just the text, but their own expectations.

This occurs during the 'first kill' at Heidekker's farmhouse,[25] which quickly devolved into a frenzied moment of hand-to-hand combat.[26] While to a modern audience, it may not seem overly "gory" or "disturbing" — it should be seen as a direct link back to a trope used in the war film genre. It is a brutal scene of death and the struggle for life which is reminiscent of the death of Pvt. Stanley Mellish in *Saving Private Ryan*[27] — an iconic scene where the audience is forced to witness "the death grapple" and slow-motion death as the German's knife is slowly pressed into the chest of one of the central characters.[28] It is a highly influential scene for the genre and is used to explore the damaging psychological effects of killing that Grossman would call 'killing at sexual range'[29] as an 'intimate brutality.'[30]

In the "typical" war film, we see directors use this as a classic turning point for a character and would allow for the director to explore the darker side of the genre, and the mental trauma that can be associated with death and killing.[31] However, Brooker "makes strange" the text at this point by showing how Stripe enjoys the kill — fuelled by the adrenaline, he commits acts of "overkill" — an act which is made further disturbing by how it was congratulated later on by his unit, commenting '[w]ith your knife? Holy shit!

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[23] "'[I]f this absurd postulate were developed to its extreme logical consequences, he wonders, "what world would be created"'; Jorge Luis Borges, *Labyrinths: Selected Stories & Other Writings* (New Direction Publishing, 1962) xi.
[24] Victor Shklovsky, 'Art as Technique' in *Russian Formalist Criticism: Four Articles* (Lee T. Lemon and Marion J. Reis trans, University of Nebraska Press, 1965) 12.
[25] 'Men Against Fire' (n 15), 00:11:11.
[26] Ibid 00:12:30.
[27] *Saving Private Ryan* (Dreamworks and Paramount Pictures, 1998).
[28] Eliot Cohen, 'What Combat Does to Man: Private Ryan and its Critics', *The National Interest* (online, 1 December 1998) 85 <https://nationalinterest.org/bookreview/what-combat-does-to-man-private-ryan-and-its-critics-640>.
[29] Grossman, (n 20) 134.
[30] Ibid 120; for abstract example of this scene being used, see 'Brian's a Bad Father', *Family Guy* (Fuzzy Door Productions, 2014).
[31] See, eg, Katherine Golsan, 'Murder and Merrymaking: The "Seen" of the Crime in Renoir's 1930s Cinema' (2007) 32(2) *Film Criticism* 28; Sonia Allue, 'The Aesthetics of Serial Killing: Working against Ethics in "The Silence of the Lambs" (1988) and "American Psycho" (1991)' (2002) 24(2) *Atlantis* 7.

— Pretty good, right? — Yeah, you fucking Terminator.'[32] When asked later about the kill by the psychologist, Stripe was asked 'how did that feel?' to which he replied 'I didn't'.[33] Stripe, in trying to further search his emotional response to his first kill, said, 'I guess all I felt was, you know, relief'[34]… 'I thought maybe I'd feel I don't know… like regret. Something like that, but that just wasn't there.'[35] Through a departure from expectations, the audience is made to feel uneasy as they no longer recognise what might happen next. In an interview, Brooker discusses the role that this sort of distance plays in killing, and states the expectation that 'if you have to slide a bayonet into somebody's ribs that stays with you forever'[36] — and yet Stripe felt nothing. By "making strange" the expectations of the audience, we begin to suspect the manipulation of the MASS system and are observant of the military organisation's agenda. This technology has removed the seemingly normal human aversion to killing.

B *The Mass System As "Necessary"*

The MASS system is the key technological advancement explored in the text, it is a system that "makes better soldiers". Yet, it achieved this by changing traditional human responses in a direct commentary upon the role that humanity plays in technology and death. The psychological effect of killing is one of the reasons that the MASS system in the text is portrayed as being "necessary" as the system allows the soldiers to be "better" because they can kill without hesitation and with no psychological repercussions. As discussed, the 'knife-kill' scene alienates the audience because there is an expectation that the "intimate brutality" of the knife fight should have a damaging impact on Stripe's psyche.

This expectation is derived not just from popular culture, but from psychological analyses of the historic effect of killing, such as Grossman's text *On Killing,*[37] and Brigadier General SLA Marshall's 1947 book *Men against Fire: The Problem of Battle Command.*[38] Given the title of the episode in question, an understanding of these texts is important to

[32] 'Men Against Fire' (n 15) 00:15:45; a clear reference to the film, *The Terminator* (n 3).
[33] Ibid 00:23:35.
[34] Ibid 00:23:43.
[35] Ibid 00:23:58.
[36] Hibberd (n 17).
[37] Grossman (n 20).
[38] SLA Marshall (n 19).

understanding the critique of the text, as well understanding that the military organisation was seeking to protect the minds of the soldiers. Grossman's text explores the 'demonstrable fact that there is within most men an intense resistance to killing their fellow man'[39] and that 'it has long been understood that there is a direct relationship between the empathic and physical proximation (sic) of the victim, and the resultant difficulty and trauma of the kill.'[40] The research further suggests that at a close range, the effect is greater upon the soldier, while conversely, an increased distance allows us to avoid empathising with the target; 'from a distance, you don't look anything like a friend.'[41] Historically, technology has always been at the centre of solutions to this "problem", as technology allows for an increased physical distance between the action and the resultant death. This is seen through platforms such as aerial warfare, or through remote systems like drones.[42] During the Gulf war, this was referred to as 'Nintendo warfare',[43] as new systems were developed to increase the distance between warring humans and thus make it harder for a soldier to see the enemy is also human. This understanding of the psychological dimension to warfare is relevant to the text's critique because the MASS system can allow combat to be close-quarters again by making the enemy not 'look anything like a friend.' As Arquette states, 'MASS, well, that's the ultimate military weapon. It helps you with your Intel. Your targeting. Your comms. Your conditioning. It's a lot easier to pull the trigger when you're aiming at the bogeyman.'[44]

This principally seems like an altruistic endeavour, but seen through a biopolitical lens, this is a dangerous path to take which is being amplified by a dystopian application of technology.

[39] Grossman (n 20) 4.
[40] Ibid 99.
[41] Ibid.
[42] The concept of drones is particularly apt for *Men Against Fire* because of the drone scenes where the soldiers are able to directly control the UAVs with the MASS system and therefore it can be seen as a direct call to the distancing of warfare and the relevant 'place' of a soldier within a drone – it is interesting to note though that despite this technological rich society and military structure, there is no discussion of Artificial Intelligence's role. This is interesting especially considering the fears around automatic drone targeting. These concepts on drones and distancing of warfare is a rich area for expansion, but is not further discussed in this article.
[43] Ibid 169.
[44] Men Against Fire' (n 15) 00:50:15.

IV BIOPOLITICS, THANATOPOLITICS AND TECHNOLOGY DEVELOPING HUMANITY

Biopolitics is a political and legal concept coined by Foucault in order to rationally consider strategies of how human life is managed by authority and power.[45] This form of thought is a way of considering the reality of power, life, and death — and, according to Foucoult, biopolitics 'consists in making live and letting die'[46], which is expressed as the paradox 'to preserve life, it is necessary to destroy life.'[47]

If we look from a biopolitical lens, we can see that the MASS system, and the eugenics driven motives of the military organisation serve as a commentary on the dangers of both technologies. This forms thoughts that are focused upon death, rather than life. This is an expression of the politico-legal concept of biopolitics. This section of the article seeks to draw upon the ideas already discussed — the notions of making strange, and the protection of soldiers through the distancing of warfare — and explore this commentary in three ways — firstly, through a simple interpretation of Foucault's biopolitics, secondly through the violent biopolitical construct of thanatopolitics, and finally through Derrida's expression of an auto-immune response to these biopolitical expressions.

The second part of this article will build upon the "uneasy feelings" explored earlier and expand on this by exploring the basic ideas of biopolitics. It will then show how the text draws this beyond a kill-or-be-killed scenario, and into a concept more in line with "global civil war" and thus flips biopolitics into the more violent thanatopolitics. This will then explore how this can result in a form of auto-immunity which means that the pursuit of this radical violence to protect, in fact ends up as an act of self-destruction. It will finally bring this back to the science fiction genre and briefly discuss the role and the affect that this type of "entertainment" has upon society and law.

A *The Form of Biopolitics*

Biopolitics is important in the critique made by *Black Mirror* because of how it portrays the different value in life of the soldiers as opposed to the inhuman life of the Roaches.

[45] Michel Foucault, *The History of Sexuality: Volume 1: an Introduction* (Robert Hurley Trans, Pantheon Books, 1978) 245.
[46] Michel Foucault, *Society Must Be Defended: Lectures at the College De France, 1975-76,* (David Macey trans, Picador, 2003) 247*;* Timothy Campbell, '"Bios," Immunity, Life: The Thought of Roberto Esposito' (2006) 36(2) *Diacritics* 2, 12.
[47] John Lechte and Saul Newman, *Agamben and the Politics of Human Rights: Statelessness, Images, Violence*, (Edinburgh University Press, 2013) 3.

When Stripe and a Roach come face-to-face (for example, the aforementioned knife scene[48]), the biopolitical paradigm is one of 'kill-or-be-killed' and as such, the decision must be made that the life of one (Stripe) involves the death of the other (Roach). This is a simplified application of this type of biopolitical exchange in warfare. In his original conception of biopolitics, Foucault states that '[t]he principle underlying the tactics of battle-[is] that one has to be capable of killing in order to go on living'[49]. In the text, this capacity is physically given to a soldier by the MASS system by enhancing their ability to kill without any hesitation or psychological questioning. It further serves as a biopolitical commentary on warfare because the technology enhances a soldier at the cost of the life (and humanity) of the enemy. It is a balancing exercise; if one side is enhanced, the other must be reduced. By depicting the Roaches as something "other-than-human", it prevents a psychological attachment of empathy and allows for the soldier to kill in order to go on living. However, this has a more symbolic affect upon the "biopolitical battleground" — it is no longer a battle of Stripe against Roach — but rather "humanity" against "inhumanity". The way in which this is presented shows the audience that the biopolitical paradigm of this technologically distorted future is far more complex, and far more concerning than they may have otherwise thought.

While biopolitics can help us understand these interactions, there is a darker side of this socio-political structure that we can see emerge in the text; thanatopolitics. A simple way to understand biopolitics is to consider the paradox: 'to preserve life, it is necessary to destroy life;'[50] however, when this concept is gamed out to its frightening but queasily logical conclusions we can observe the interplay of thanatopolitics. Thanatopolitics is a further socio-political concept which Foucault discusses and it is something inherently "darker" — it is the mobilisation of entire populations 'for the purpose of wholesale slaughter in the name of life necessity.'[51] It is viewed as an inversion of political thought that considers the value of death, rather than the value of life.[52] This form of thought is considered to be always overshadowing any expression of biopolitics,[53] and is also 'its

[48] 'Men Against Fire' (n 15) 00:12:30.
[49] Foucault, *The History of Sexuality* (n 45) 137.
[50] Lechte (n 47) 3.
[51] Foucault, *The History of Sexuality* (n 45), 137.
[52] Campbell (n 46) 11.
[53] Lechte (n 47) 3.

ultimate fate.'[54] The idea is that when a violent biopolitical agenda explores this "homicidal temptation" we can observe the extreme forms of the paradox where 'the decision of life is transformed into the decision on death, and when biopolitics is thus inverted and becomes thanatopolitics.'[55] This is seen in the text when we start to observe the interplay of eugenics within the biopolitical decisions of the military.

Eugenics is the 'theory or practice of improving the genetic characteristics of a population, especially by controlling reproduction in order to produce offspring with qualities considered desirable'[56] and is typically associated with the biopolitical practices of Nazi Germany.[57] It was Nazism, through this agenda, more than any other form of political organisation, which was able to 'propel the homicidal temptation of biopolitics to its most complete realisation.'[58] To look at this paradigm through a lens of eugenics means expanding the scale of what is being considered. In this instance, the "us" is extended to "all humanity", and the "them" become "all inhumanity". A concept which may very well be indicative of Schmittian notions of the 'Global Civil War.'[59] Within this idea of Global Civil War, conflicts continue to grow in scale as contemporary conflicts depart from state-on-state conflicts into a larger notion of fighting for the survival of humanity itself against those who represent "inhumanity". This is the notion that 'entire populations are mobilized (sic) for the purpose of wholesale slaughter in the name of life necessity;'[60] and within this paradigm 'massacres have become vital.'[61] In the opening pages of his famous text, *Homer Sacre*, Agamben, quotes Foucault:

> What follows is a kind of bestialization (sic) of man achieved through the most sophisticated political techniques. For the first time in history, the possibilities of the social

[54] Ibid.
[55] Didier Fassin, 'The Politics of Death: Race War, Biopower and AIDS in the Post-Apartheid' in M Dillon and A Neal, *Foucault on Politics, Security and War* (Springer, 2015) 153.
[56] 'Eugenics' in *Macquarie Dictionary* (7th ed, 2017).
[57] Roberto Esposito, *Bios: Biopolitics and Philosophy* (Timothy Campbell trans, University of Minnesota Press, 2008) 58.
[58] Ibid 59.
[59] See, eg, Georgio Agamben, *Stasis: Civil War as a political Paradigm* (Stanford University Press, 2015); Niklas Olsen, 'Carl Schmitt, Reinhart Koselleck and the foundations of history and politics' (2011) 37(2) *History of European Ideas* 197.
[60] Foucault, *The History of Sexuality* (n 45) 137.
[61] Ibid.

> sciences are made known, and at once it becomes possible both to protect life and to authorize (sic) a holocaust.[62]

The 'bestialization (sic) of man' and the possibility of protecting life while 'authorizing (sic) a holocaust' are apt concepts that have clear parallels to the *Black Mirror* text. It is this notion of transitioning from a "pure" idea of protection into a corrupt idea of destruction that the text seeks to explore — especially the fear that this process can be so gradual that it is imperceptible for those within the society.

B *Thanatopolitics in 'Men Against Fire'*

Stripe: *Roaches. They look just like us.*

Arquette: *Of course they do. That's why they're so dangerous.*[63]

The text explores these broader concepts of biopolitics by first presenting the benefit to the soldiers and the "us". The text makes it clear that the protection of the soldiers' mental wellbeing is a principle aims as the military psychologist Arquette directly draws from Grossman and SLA Marshall's discussions in his monologue, stating that:

> Even in World War II, in a firefight, only 15%, 20% of the men would pull the trigger. The fate of the world at stake and only 15% of them fired. Now what does that tell you? It tells me that that war would have been over a whole lot quicker had the military got its shit together.[64]

From Arquette's perspective, their biopolitical agenda has a clearly altruistic benefit because it serves to protect the soldiers from the psychological harms of battle, and end conflict sooner — both of which would be of far greater benefit to the victor. This scene is of great importance to the text's plot and its critique because of the way that this discussion and monologue is delivered. The scene, beginning 00:46:15 is the longest scene in the text, occurs in a single room, and is entirely devoid of external bright colours. The white room, the grey clothing, and the professional style of Arquette is used by Brooker to draw clear parallels to not just the prison that it is, but also to a mental ward as Stripe is facing the prospect of being either imprisoned physically, or mentally. The use

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[62] Georgio Agamben, *Homer Sacer: Sovereign Power and Bare Life* (Stanford University Press, 1st Ed, 1998) 3.
[63] Men Against Fire', (n 15), 00:48:10.
[64] Men Against Fire', (n 15), 00:49:25.

of cinematography is important to the struggling power of the characters and the ideals that they represent. For instance, the above quote of 'they look just like us'[65] involves camera shifting from a low shot of Arquette which imparts a sense of power, to a distant and off-centre show of Stripe dejectedly sitting in the corner. The aesthetics of this scene are clinical, professional, and utterly sterile — and this perfectly captures the way in which Arquette justifies the darker side of the biopolitical agenda. This shift from biopolitical discussion to thanatopolitics occurs in that clinical room when Arquette explains the threat of the Roach as "The Other":

> Do you have any idea the amount of shit that's in their DNA? Higher rates of cancer. Muscular dystrophy. MS. SLS. Substandard IQ. Criminal tendencies. Sexual deviances…. It's all there. The screening shows it. Is that what you want for the next generation? Don't feel bad about doing your job.[66]

The cinematography of this scene further "makes strange" our expectations because Arquette is calmly explaining how a holocaust could be authorised. By being delivered in this room it draws upon the duel clinical/asylum aspect and places Arquette in the position of a doctor administering a diagnosis or a cure to the problem. Through these aesthetics it elevates Arquette's radical ideas of eugenics into an authority of "truth", thus becoming the reality, while Stripe is conversely placed in the position of someone who is sick and in need of help. This delivery of disturbingly Nazi ideals through this misappropriated position of power further alienates the audience and highlights the danger of this type of thought. It demonstrates how disturbingly logical an idea can seem when delivered slowly, calmly, and systematically from an authority that evokes "trust". However, one of the more disturbing realisations is that the psychologist, Arquette, who holds these strong eugenics ideals is not actually implanted with the MASS system. He is not technologically enhanced or manipulated — instead he is one of the "most purely human" characters in the text. A deliberately disturbing notion that is a clear commentary being made by the text.

[65] Ibid 00:48:10.
[66] Ibid 00:50:50.

C *An Auto-Immune Response*

Finally, this article seeks to discuss this in light of the concept of Derrida's "auto-immunity" because *Black Mirror* is a text that highlights how a violent biopolitical mechanism can actually be a self-destructive force. Derrida uses the figure of a wheel to show how a route can turn back on itself through an additional turn or twist into 'the law of a terrifying and suicidal autoimmunity'.[67] In his discussion in *Rogues,*[68] Derrida explores this notion through a process of democratic autoimmunity following the 9/11 terrorist attacks and the response of the American government to the 'Axis of Evil'.[69] This idea holds that a sovereign decision is often made to suspend an idea in order to protect it from self-perpetuated abuse.[70] To illustrate this Derrida here gives the example of the Algerian government suspending the electoral process in order to protect democracy from those who would abuse it.[71] This process is an act of suicidal autoimmunity where democracy was destroyed in order to protect it from being destroyed by others — however, regardless of who is responsible, the process is still destroyed.

This same notion of suicidal autoimmunity can be applied in this instance to violent biopolitics. In the text, the intention of the military organisation is to protect their soldiers and their bloodline from both the threat of "tainting by inferiors" and through the psychological harm of having to kill human beings. As such, the military suspended the humanity of their soldiers through the implant of the MASS system, but in doing so they triggered an autoimmune response and effectively destroyed the psychology and humanity that they were trying to protect. If we accept the premise of Grossman's studies, and that a fundamental condition of 'being human' is the ability to empathise, then the removal of it is to eradicate a piece of what it means to be human. It could be argued that this further adds to the technophobic rhetoric of the 'soldier as human drone' in popular culture.[72] It shows that a soldier's technological enhancement is a removal of humanity and an embrace of a science-fiction driven dystopia of "drone warfare" which draws upon

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[67] Jacques Derrida, *Rogues: Two Articles on Reason* (Pascale-Anne Brault trans, Stanford University Press, 2005) 18.
[68] Ibid.
[69] Ibid 40.
[70] Ibid.
[71] Ibid 31.
[72] See, eg, Ian Cohen, 'Muse: Drones' *Pitchfork* (Online, 9 June 2016) <https://pitchfork.com/reviews/albums/20520-drones/>; Kyle Bishop, 'Technophobia and the Cyborg Menace' (2008) 19(3) *Journal of the Fantastic in the Arts* 349.

further ethical debates around "what it means to be human" beyond the scope of this article.[73] Within these aforementioned conceptions of biopolitics, thanatopolitics, and auto-immunity, the text serves as a commentary on the dangers of violent forms of politico-legal thought which can be transposed into contemporary criticisms, and as an indicator of societal technophobia.

V FEAR AS MOTIVATION FOR CHANGE

Black Mirror extends beyond a narrative of "dystopian futures" and beyond the "war film genre" and instead it can be considered a clear piece of social critique. This article has sought to demonstrate this through the close reading of *Men Against Fire's* key technophobic themes, and as such the evolution of biopolitical thought in the text (from biopolitics, to thanatopolitics, to auto-immunity) is a theme which forces an audience to consider the role that technology has upon "the humanity" of humans. It elicits societal fears through the genre of science fiction and brings these to the forefront of our minds in order to the audience rethink our actions and the actions of our government and military.

One such fear that I feel is particularly prominent within the text is the "denial of a bright future". The promise given to us by science fiction is one of "a better tomorrow"; that through technology society will be better, medicine will be better, life will be better. However, the truth is that we can never really know what the future holds — and the underlying fear of this is that technology will not bring upon the promised "brighter tomorrow". The future depicted in *Men Against Fire* draws upon this, and presents it as a darker cyclical history — that through technology we have triggered this Derrida-esc autoimmune response and in fact regressed — we are not moving forward, we are moving backwards and are doomed to repeat the mistakes of humanity's past.

By eliciting this fear, it makes the audience wonder how the fictitious world will go to be where it is, and as a response, it wants to know what caused this disastrous future. However, it should be noted, that this text does not explain what happened in the world to bring us to that point — we do not know what decisive event lead to the adoption of eugenics principals by "the good guys" (if it was even one event at all). It is that

[73] For further debate see, eg, Antoine Bousquet, 'Chaoplexic Warfare or the Future of Military Organization' (2008) 84(5) *International Affairs* 915.

uncertainty which causes concern to fester within an audience because it may have been small changes so gradual that society doesn't realise until it is too late. This is a journey that can be likened to the Sorities Paradox,[74] or the concept of 'Death by a thousand cuts'[75] — the fear is that this change will happen so gradually that we cannot distinctively know when the change occurred, and when our "wondrous future", became a "nightmarish present". In *Man Against Fire,* could this tipping point have been the introduction of the MASS system? The deployment of troops? The declaration of enemies? Or perhaps the election of political parties? The uncertainty elicits the fear, and fear drives change.

I see this eliciting a change reminiscent of the trope of "just because we can, does this mean we should?" which is intrinsically linked to the Manhattan project and the advent of nuclear weaponry. In contemporary culture, a current fear is playing out around artificial intelligence and genetic engineering. This ultimately all relates to questions of how society should be approaching the implementation of technology. It raises questions about how progress and advancement comes with risks, and proper appreciation of risk is always needed.

I believe that science fiction is important because it at least has the sense to recognise that technology can go wrong. In fact, it is interesting to follow a reading of this text that shows humanity as the problem — after all *Black Mirror*'s technophobic portrayal demonstrates how it is not the technology that is the vulnerable part, but the humanity which wields it. This is a recurring theme of that frequently underlines science fiction. For example, *Frankenstein* can indeed be read as a text that shows that humanity itself is a fear-driven and violent species; to be met with the unknown is to react out of fear to destroy it.[76] Therefore it is not technology that is the problem, but the fear, ambition, and

[74] The Sorities Paradox, (or Eubilide's Heap) is a philosophical logic paradox from the 4th century where we are asked to consider the vague concept of a heap. One grain of sand is not a heap – nor is 2, or 3. But what about 100, or a 1000? At what point did the grains of sand become a heap? By adding more grains, one at a time, it will never turn into a heap because changing something by an imperceptible amount, paradoxically, will never change the overall features. See, eg, William Nava, 'Vagueness: The Sorities Paradox', *William Nava* (Blog Post, 28 April 2017) <http://williamnava.com/vagueness-sorites-paradox/>.

[75] See concept of 'lingchi' as explored in articles such as Jérôme Bourgon, 'Abolishing Cruel punishments: A Reappraisal of the Chinese Roots and Long-term Efficiency of the Xinzheng Legal Reforms' (2003) 37(4) *Modern Asian Studies* 851.

[76] See, eg, Aldiss and Wingrove (n 5).

power of the humans that seek to control it — a concept which we can similarly read in *Black Mirror*.

As a genre, science fiction can make an audience consider these ideas embedded within entertainment — this is important because simply by being "entertaining"; important concepts like those from *Black Mirror* can to pervade into conversations, and ultimately policy making. This awareness can allow society to take more deliberate steps forward — through possible frames of cautious technophobia — which can in turn foster a more deliberate and careful consideration of technology's integration with humanity. This is a concept which we are seeing develop in relation to driverless cars and other autonomous systems; an awareness of dangers creates a more risk-averse policy system, which in turn allows for the legal structures to develop alongside the technology — rather than have to race to catch up.

VI CONCLUSION

Black Mirror's, Men Against Fire is a commentary that embraces the technophobic fears of society. It shows the threat that society can pose to itself through technology, in the pursuit of protection. Through Brooker's ability to "make strange", an audience's expectations of the text are offset and the text draws forth key critiques of not just technology, but the role of humanity to be inherently self-destructive. This is a key thought that society must bear in mind as technology forces us to continue to evolve society, but protect from the auto-immune devolution of humanity. The text serves as a commentary on how humanity (even without technology) can be but one step removed from violent and self-destructive practices; thanatopolitics remains the shadow of biopolitical thought. The power of the text is that through this guise of technophobia, it changes the direction of blame — it is not purely the fault of the technology, but rather the inhumanity within humans that leads to the re-emergence of thanatopolitical thoughts. The uncertainty creates fear, and texts like *Black Mirror* draws upon this technophobic fear in order to "make strange" an audience's expectations and make society uneasy as it advances technologically. This emotion and process of "making strange", allows for self-reflection of where society is, and how we interact with technology. This awareness through technophobia can help create more cautious and considered approaches to technological regulation. While a science fiction story can be

something that we can dismiss as entertainment, the strength of *Black Mirror's* message is in its ability to "make strange" it's audiences expectations — this is a far harder message to ignore because when we think of the proverbial "face of evil" we expect it to be a monster, like the Roaches, or the Terminator — not a human being that could be our neighbours, friends, or even ourselves.

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HUMAN INTELLIGENCE + ARTIFICIAL INTELLIGENCE = HUMAN POTENTIAL

DAVID TUFFLEY*

Artificial Intelligence ("AI") in the twenty-first century is a powerfully disruptive technology, one whose influence in society is growing exponentially. It is a technology with the potential to bring enormous benefit, but also great harm, if not properly managed. How then may we reap the benefits of AI while ensuring we are not harmed by it? How do we frame the correct relationship with AI to ensure the primacy of human dignity as technology in general accelerates exponentially into the future? I assert that AI is neither good, nor bad in and of itself. It is simply a tool, an extension of human intelligence — not an externalised threat to be feared as presented in popular culture. Clearly, it is the strategic uses to which AI is put that determines its value. The potential abuses of AI — for example — in rogue autonomous weapons, are a manageable risk and should not place unreasonable restraint on its development when the potential benefits arguably much outweigh the harm.

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CONTENTS

I AN AGE OF DISSOLVING BOUNDARIES

Commercial computing in the modern world is focussed on making sophisticated but easy-to-use products that enhance the lifestyle of the user. Surprisingly enough, some of this technology comes at little or no cost. Devices such as GPS and video-conferencing are now software that is included in the purchase price of smartphones. Over a decade ago, you would have paid exorbitant prices to acquire the same physical products.[2] Ultra-high definition video cameras ten years ago were only used by TV studios at a cost of hundreds of thousands of dollars.[3] Today, they are software bundled on mid-range smartphones.

So integrated into our lives has such technology become, that it is sometimes difficult to know where the user ends and the technology begins. The technology has become a functional extension of our human selves. It is not uncommon for people to look at their smartphone a hundred times a day.[4] To some, it is the last thing they do at bedtime, and the first thing they do upon waking. With this degree of dependence, a person is already a functional cyborg: a blend of humanity and technology. One does not need to have the technology implanted internally to be a cyborg: it is enough that a person extends their mind into it.[5]

Smartphones first made their appearance in June 2007 when Steve Jobs brought out the first iPhone.[6] This first-generation iPhone was revolutionary because it had an internet browser, a music player and a telephone all integrated into a user-friendly package.[7] It set a new standard of design that quickly dispensed with the competition, leading to the establishment of a new paradigm of mobile computing. It has contributed to Apple becoming one of the highest valued commercial organisations on the planet.[8] The success

[2] Jenna Wortham, 'Sending GPS Devices the Way of the Tape Deck?', *New York Times* (online, 7 July 2009) <https://www.nytimes.com/2009/07/08/technology/08gps.html>.
[3] Lee Frederiksen, 'What Is the Cost of Video Production for the Web?', *Hinge* (online, 15 October 2018) <https://hingemarketing.com/blog/story/what-is-the-cost-of-video-production-for-the-web>.
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[5] See, eg, Andy Clark and David Chalmers, 'The Extended Mind' (1998) 58(1) *Analysis* 7.
[6] Charles Arthur, 'The history of smartphones: timeline', *The Guardian* (Online, 25 January 2012) <https://www.theguardian.com/technology/2012/jan/24/smartphones-timeline>.
[7] Ibid.
[8] Rob Davies, 'Apple becomes world's first trillion-dollar company', *The Guardian* (online, 3 August 2018 2019) <https://www.theguardian.com/technology/2018/aug/02/apple-becomes-worlds-first-trillion-dollar-company>.

of the smartphone in general, is an indication of the degree to which people value being able to intuitively extend their capabilities to accomplish what they could not do alone.

II PERVASIVE ARTIFICIAL INTELLIGENCE

AI is a recognised technology in its own right, but perhaps more importantly, it is an *enabler* of other technologies, many of which may not have even been invented yet. AI today has been compared with electricity a hundred years ago.[9] In earlier periods, machines that were operated mechanically or manually were enhanced by the addition of an electric motor.[10] Washing machines, refrigerators, and a variety of other devices came into existence because of the enabling technology of electricity. This trend progressed over time creating new products and a plethora of new jobs.[11]

Likewise, with AI today, when added to previously unconnected devices, creates the "internet of things" in everyday objects through an embedded computer chip that communicates with the internet, otherwise known as "the cloud". From this connection, AI can be delivered on-demand from various cloud services at little or no cost. Adding AI to previously unconnected devices will foreseeably create new industries and a multitude of jobs, following the same pattern as electricity.[12] As American humourist Mark Twain reputedly observed, '[h]istory doesn't repeat itself but it often rhymes'.[13]

AI is already integral to many of the functions in smartphones. Google's *Assistant*, Apple's *Siri*, Microsoft's *Cortana* and Amazon's *Alexa* are all early generation AI-enabled digital assistants designed to help people organise their everyday lives while coordinating various background applications not visible to the user. It allows people to communicate with their computer in natural language. It may not dispense with the keyboard and mouse altogether, but the inherent user-friendliness of natural language means it will likely become the preferred way to communicate with technology in the future.

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[9] Kevin Kelly, *The Inevitable: Understanding the 12 Technological Forces that will Shape our Future* (Penguin Books, 2016) 33.
[10] Ibid.
[11] Ibid.
[12] Ibid.
[13] Charles C Doyle et al, *Dictionary of Modern Proverbs* (Yale University Press, 2012) 121.

III ARTIFICIAL INTELLIGENCE IN THE WORKPLACE

Examples of AI in everyday life have focussed on smartphones and consumer-level products, since these represent a growing, now pervasive class of technology. But what of the impact of AI in the workplace? Many people fear their jobs will be automated while their children will be hard-pressed to find employment.[14] Futurists augment said fears by implying that if a job *can* be automated then it *will* be automated.[15] However, this is far from true. Many jobs will continue to be done by people because the human touch is preferable.[16] Or perhaps creativity is called for.[17] Or maybe because it is politically dangerous for governments to put bread-winners out of a job.[18]

It will be decades before AI can replace humans in all of our idiosyncratic complexity. As for those jobs that are at risk, they are likely to be the 'dull, dirty or dangerous jobs', the ones that employers already have difficulty filling;[19] jobs like sewer reconnaissance, underground mining and repetitive factory work. Manual welding, for example, can produce highly toxic fumes – a prime candidate for automation.[20]

AI in the workplace can greatly improve job performance. In Japan, the first recorded case of AI saving someone's life was recently seen when a woman with a rare form of leukaemia who was initially misdiagnosed by a team of human doctors.[21] A diagnostic AI was put to work and in under 20 minutes had analysed the woman's genome, compared it with 20 plus million oncological studies, arrived at the correct diagnosis and recommended a treatment regime which was subsequently proved correct. It was the *combination* of human doctors and a diagnostic AI that succeeded where the human doctors alone had failed. When AI is used as an extension of human intelligence, the

[14] David Tuffley, 'In 10 years, your job might not exist. Here's how to make sure you're still employable', *The Washington Post* (online, 5 January 2015) <https://www.washingtonpost.com/posteverything/wp/2015/01/05/in-10-years-the-job-market-will-look-totally-different-heres-how-to-make-sure-youre-ready/?utm_term=.78224bb81dab>.
[15] David Tuffley, 'We Should Learn to Work with Robots and not Worry about them Taking our Jobs', *The Conversation* (Web Page, 19 February 2018) <https://theconversation.com/we-should-learn-to-work-with-robots-and-not-worry-about-them-taking-our-jobs-91004>.
[16] Ibid.
[17] Ibid.
[18] Ibid.
[19] Ibid.
[20] Ibid.
[21] David Tuffley, 'How can Doctors use Technology to Help them Diagnose?', *The Conversation* (Web Page, 25 October 2016) <https://theconversation.com/how-can-doctors-use-technology-to-help-them-diagnose-64555>.

partnership can be a powerful one indeed. It is this partnership and enhanced personal capability that should be focussed on when considering the future of AI.

IV HOW IS AI HELPING LAWYERS?

Large law firms have junior associates whose unenviable job is to perform document discovery.[22] The greater number of associates engaged in discovery likely gives the larger firms a strategic advantage over smaller firms with fewer associates. But that advantage is diminishing as the smaller firms make greater use of AI-enabled data analytics to do the routine discovery work of many associates in a fraction of the time.[23]

Likewise, courtroom analytic tools already offer advanced data search capabilities to highlight relevant rulings, judge preferences, multiple motion types and so on.[24] This technology is a force multiplier of a lawyer's ability by emulating a human lawyer with the qualities of meticulous research, deep understanding of case law, and the ability to mount a solid argument.

V PRINCIPLES FOR ETHICAL TECHNOLOGY USE

Is there a set of universally applicable rules for ethical technology use? I propose the following principles that draw upon the earlier work of philosopher Immanuel Kant, whose ideas continue to exert a strong influence on ethics today.

These simply stated principles are general enough to work in both the virtual world and in the physical world. Their simplicity gives them universality while making their intention transparent.

I propose that Kant's categorical imperatives be adapted for ethical technology development and use. Categorical imperatives are unconditional requirements that are always true:

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[22] See, eg, Natasha Gillezeau and Elouise Fowler, 'What it's like working as a young corporate lawyer at a top tier firm', *Financial Review* (online, 25 January 2019) <https://www.afr.com/leadership/workplace/what-it-is-like-working-as-a-young-corporate-lawyer-at-a-top-tier-firm-20181212-h190vt>.

[23] See eg, Katie Walsh, 'The $1m web service showing law firms are embracing the AI beast', *Financial Review* (online, 1 March 2018) <https://www.afr.com/business/legal/the-1m-web-service-showing-law-firms-are-embracing-the-ai-beast-20180225-h0wme4>.

[24] Ibid.

1. Before I do something with this technology, I ask myself: would it be acceptable if everyone did it?
2. Will this technology harm, diminish or dehumanise anyone, including people I don't know and will never meet?
3. Do I have the informed consent of those who will be affected?[25]

If the answer to any of these questions is 'no', then it is arguably unethical to use technology in that manner. These are rational principles that hold true in both the virtual world and physical world, applying the same standards to both, maintaining a consistent stance in an increasingly blurred boundary between virtual and physical worlds.

VI A NEW RELATIONSHIP

The risks of AI should not *per se* prohibit or limit the use of this potentially beneficial technology. The correct perspective is to see AI as a capability-extending adjunct to human intelligence, allowing us to do things that could not be done unaided. We already make extensive use of various technologies in this way. For example, a human walking on their own two feet might travel eight kilometres — in a car they might drive 800 kilometres in the same time; on a plane they could travel 8,000 kilometres. The driver of the car or pilot of the plane is still responsible for the actions of their vehicle. Arguably a simple and transparent principle could be adopted: that laws applying to the unaugmented human might be extended to include the augmented human on the basis that the augmentation is not independent of the person, but an extension of them.

The underlying computer code that tells AI how to behave is the product of human endeavour. While it is possible to instruct AI to write its own code, it would be an act of unbelievable folly to create a situation where the AI is allowed to develop malicious tendencies, much less allow the AI to express malice by creating harm in the world. It is questionable that AI is capable of malice, independent of its human programming.[26] Regardless of this, it must be made illegal to program an AI to do harm either through

[25] Immanuel Kant, *Fundamental Principles of the Metaphysic of Morals* (eBooks@Adelaide, 2014) [Tr Thomas Kingsmill Abbott].
[26] See, eg, Aatif Sulleyman, 'Stephen Hawking warns Artificial Intelligence 'may replace humans altogether'', *The Independent* (Web Page, 2 November 2017) <https://www.independent.co.uk/life-style/gadgets-and-tech/news/stephen-hawking-artificial-intelligence-fears-ai-will-replace-humans-virus-life-a8034341.html>.

negligent development practices or intentional design with the possible exception of narrowly constrained military applications.

VII POPULAR CULTURE GENERATES A CLIMATE OF FEAR

Popular culture and in particular, the Science Fiction ("SF")genre have a long history of anxiety-producing visions of the future that involve existentially threatening relationships between humans and technology. These anxieties are nothing new. They have been manifest since the technological advances of the Industrial Revolution, one consequence of which was the emergence of a new literary genre — SF. HG Well's classic *War of the Worlds* is an example of anxiety about technology being externalised as a perceived existential threat.[27]

Victorian science fiction writers have proved influential in the modern world. In the mid-twentieth century, there is clear evidence that the work of Jules Verne influenced the science and technology of the period. Verne's *Twenty Thousand Leagues Under the Sea*[28] features a submarine *Nautilus* — it is no coincidence that the US Navy's first nuclear submarine which was capable of staying submerged for weeks was called *Nautilus*.[29] Likewise, the US moon shot in 1969[30] was shaped by the narrative of Verne's *From the Earth to the Moon*.[31] Former American president John F Kennedy gave voice to Verne's vision in his famous speech, '[w]e choose to go to the Moon in this decade and do the other things, not because they are easy, but because they are hard'.[32]

More recently, Phillip K Dick wrote *Do Androids Dream of Electric Sheep*[33] that still resonates today in the public imagination if the success of the *Bladerunner* series[34] is an

[27] H G Wells, *War of the Worlds* (Penguin Books Ltd, 2011).
[28] Jules Verne, *Twenty thousand leagues under the sea* (Oxford University Press, 1998).
[29] Kyle Mizokami, 'Meet USS Nautilus: America's First Nuclear Powered Submarine Was A Game-Changer', *National Interest* (online, 7 April 2019) <https://nationalinterest.org/blog/buzz/meet-uss-nautilus-americas-first-nuclear-powered-submarine-was-game-changer-51347>.
[30] NASA, 'July 20, 1969: One Giant Leap for Mankind', *NASA* (online, 20 July 2017) <https://www.nasa.gov/mission_pages/apollo/apollo11.html>.
[31] Jules Verne, *From the Earth to the Moon* (Bantam Doubleday Dell Publishing Group Inc, 1996).
[32] John F Kennedy, 'Moon Speech' (Speech, Rice University, 12 September 1962).
[33] Phillip K Dick, *Do Androids Dream of Electric Sheep?* (Simon and Schuster, 2014).
[34] Scott Bukatman, *Blade runner* (Bloomsbury Publishing, 2017).

indication. Recent television shows like *Black Mirror*[35] and *Westworld*[36] as well as films like *Terminator*[37] have a strong dystopian spin. It can be suggested that the viewing public has an apparently insatiable appetite for scaremongering.

In contrast to this deterministic if not aspirational view of SF, is the Neo-Marxist perspective of Darko Suvin whose ideas became influential in the 1970's and are still influential today.[38] In his *Metamorphoses of Science Fiction*, Suvin reduces SF to an assembly of stories characterised by 'cognition and estrangement'.[39] Cognitive estrangement is experienced by the reader as they try to reconcile the fictional world with the world in which they live. Moreover, the SF genre is populist in nature — a low-quality "paraliterature" expressive of periods of rapid technological change. The technology of the fictional world are mere props to make the story more interesting. Suvin's perspective is evident in the popular SF culture of mass consumption of cinema.[40] As such, it would be inaccurate as well as unjust to describe as "paraliterature", the works of writers like Arthur C Clark, Isaac Asimov, Ursula LeGuin, Frank Herbert, Phillip Dick, Robert Heinlein, Douglas Adams, Kurt Vonnegut and others.

The anxiety-producing view of technology predominates in the popular genre despite there being innumerable instances of AI safely operating in the world today as digital assistants on consumer level electronics and more specialised AI operating in domains such as transport, finance, and medicine.[41]

It is true that all technologies embody *some* degree of risk. Nuclear technology, though it poses a greater existential risk than AI, has given the world bountiful, inexpensive energy to meet the needs of communities.[42] And yet it possesses the destructive potential seen

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[35] Netflix, 'Black Mirror', *Netflix* (Television Show, 4 December 2011) <https://www.netflix.com/au/title/70264888>.
[36] IMDB, 'Westworld', *Westworld* (Web Page, 2 October 2016) <https://www.imdb.com/title/tt0475784/>.
[37] IMDB, 'Terminator', *Terminator* (Web Page, 20 December 1984) <https://www.imdb.com/title/tt0088247/?ref_=fn_al_tt_1>.
[38] See, eg, Darko Suvin, 'On the Poetics of the Science Fiction Genre' (1972) 34(3) *College English* 372.
[39] Darko Suvin, *Metamorphoses of Science Fiction* (Peter Lang AG, 1979) viii.
[40] Ibid ix.
[41] See, eg, Victorian All-Party Parliamentary Group on Artificial Intelligence, 'Artificial Intelligence Primer', *Parliament of Victoria*, (Web Page, March 2018) <https://www.parliament.vic.gov.au/images/stories/AI-Primer_Feb2018.pdf>.
[42] Seán Ó hÉigeartaigh, 'Technological Wild Cards: Existential Risk and a Changing Humanity', *OpenMind* (Online, 2017) <https://www.bbvaopenmind.com/en/articles/technological-wild-cards-existential-risk-and-a-changing-humanity>.

at Hiroshima which held the world ransom for the duration of the Cold War.[43] Medical science is busy extending people's life but it also creates the potential for biological weapons.[44] It can be said that one cannot have the potential for benefit without the potential for harm.

Considering the above then, the question is not *should we use this technology?* but, *how may we use it for the greater good?*

From a utilitarian perspective, if a million lives are saved for every one lost, the response should not be to ban the technology but to manage the risk to a lower level. Banning a technology because it poses a manageable risk is unreasonable. There are many examples, from transport to medical science, of beneficial technologies that are occasionally dangerous but which have proven safe for widespread use.[45] Humanity has been doing this since we discovered the utility of fire — indeed, there is the risk that careless use could burn down a village, but the benefits of cooked food, heat, light, protection from predators, and the strengthening of social bonds, has made it nonetheless worthwhile.

VIII TECHNOLOGY AS A FORCE FOR GOOD

If developed and used according to ethical principles, technology in general has the potential to help individuals to approach a fuller expression of their human potential. This is tied to what psychologist Abraham Maslow, best known for creating Maslow's hierarchy of needs, called 'self-actualisation'.[46] AI responsibly governed can be seen as a catalyst for self-actualising individuals.

Imagine Mozart in a world before the technology of the piano had been invented; Van Gogh in a world before inexpensive oil paints or George Lucas before the technologies of film. Today, there are potentially millions of children being born for whom their

[43] Ibid.
[44] Jeanne Guillemin, 'Scientists and the history of biological weapons: A brief historical overview of the development of biological weapons in the twentieth century', *US National Library of Medicine National Institutes of Health* (online, July 2006) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1490304/>.
[45] Stephen H Unger, 'Is Progress in Technology Always Beneficial?', *Columbia University* (online, 26 May 2014) <http://www1.cs.columbia.edu/~unger/articles/technologyProgress.html>.
[46] Ann Olson, 'The Theory of Self-Actualization', *Psychology Today* (online, 13 August 2013) <https://www.psychologytoday.com/au/blog/theory-and-psychopathology/201308/the-theory-self-actualization>.

technology of self-expression has not yet been invented. The critical issue is to institutionalise principles for ethical technology use in the AI development community to promote life-affirming uses.

IX THE RISKS OF ARTIFICIAL INTELLIGENCE

The risks of AI can be accommodated in three broad areas: programming errors, cyber-attacks, and taking instructions too literally. None of these needs to necessarily be a problem if properly managed. Software Engineering ("SE") has evolved model-based development practices that when followed reduce programming errors in safety critical applications to a very low level. SE is a mature discipline that today can guarantee quality in the same way that a civil engineer, for example, can guarantee that a bridge will not fall down if the defined process is followed.[47] Likewise, developers of the AI software that are flying the planes we travel on can be relied upon to get us safely to our destination.[48]

In relation to cybersecurity we are certainly not defenceless against those who would subvert the orderly running of software systems. The fact that our complex IT-enabled world continues to operate with an acceptable degree of reliability, if not efficiency, is testament to the efforts of cybersecurity researchers, and practitioners. One emerging security method is proving effective in critical areas: the "blockchain" principle.[49] When you have the same record replicated on multiple disparate computers, the attack is only successful if *every* instance of that record is changed ahead of the next cycle — an impossible feat in the short time frames allowable. There is no room for complacency or cutting-corners, but it is clearly feasible that with proper safeguards, an AI system can be protected from attack by using, for example, a blockchain security device.[50] Our complex, computer-driven modern world could not function as it does every day unless the issue of cybersecurity is not being successfully managed.

[47] Walt Scacchi, 'Process models in software engineering' in John J Marciniak (ed), *Encyclopaedia of Software Engineering* (Wiley, 2nd ed, 2002) 3.
[48] See, eg, Jack Stewart, 'Don't freak over Boeing's self-flying plane—robots already run the skies', *Wired*, (online, 6 September 2017) <https://www.wired.com/story/boeing-autonomous-plane-autopilot/>.
[49] See, eg, Omri Barzilay, '3 Ways Blockchain is revolutionizing cybersecurity', *Forbes* (online, 21 August 2017) <https://www.forbes.com/sites/omribarzilay/2017/08/21/3-ways-blockchain-is-revolutionizing-cybersecurity/#754418f22334>.
[50] Ibid.

The risk of taking instructions too literally can be likewise managed with the same safeguards applied to every safety critical system. One example is the scenario of a furniture factory under the control of an AI that has been instructed to not only make furniture, but also to optimise the process for maximum efficiency. The AI decides that because the human workers are less efficient than robot workers, the humans should be removed from the process. Sometime later the AI decides by extension that all humans should be eliminated for the purpose of achieving greater overall efficiency. Ultimately the planet becomes one big furniture factory when all humans have been exterminated. It is an interesting thought experiment that should not be taken literally. Those who set up the factory and programmed the AI would need to be both highly intelligent yet abjectly and wilfully ignorant of the inherent problems.

More realistically perhaps, consider the scenario of a hospital that has an expert AI in charge of maintaining optimal treatment of intensive care patients. It is unlikely, in light of the reality of law suits and the 24 hour news cycle, that the hospital would allow the AI to make life and death decisions in relation to that patient without involving the medical staff.

Data accuracy is another issue. AI can extract useful information from very large data sets using "predictive algorithms" to identify trends that can predict future trends with some degree of accuracy. When combined with other predictive methods, the reliability can be improved to a usable level.

I maintain that while AI-related risks do exist and must be taken seriously, they are nonetheless manageable as demonstrated by our ability to not destroy ourselves, since the time in which we learned to use fire, and more recently with an increasingly lethal arsenal of weapons.[51] Given the social and economic benefits of AI generally, we must not be afraid to explore the possibilities of AI helpers in a supportive role, with humans always in overall control.

[51] Tuffley (n 15).

X PRACTICAL GUIDELINES FOR AI DEVELOPERS

A set of high level ethical principles is proposed to guide developers of AI and other technologies:

1. Before I do something with this technology, I ask myself: would it be acceptable if everyone did it?
2. Will this technology harm, diminish, or dehumanise anyone, including people I don't know and will never meet?
3. Do I have the informed consent of those who will be affected?

But how should these principles be implemented and what practical form would they take? We need a set of universal design principles to produce AI that poses little or no threat to humanity. Being universal, the guidelines should represent the consensus view of all stakeholders. The guidelines are expected to evolve over time to negotiate perspectives that differ from the majority. It is clearly a bottom-up approach as distinct from a top-down, rule by decree approach.

With around 420,000 members in 160 countries, the Institute of Electrical and Electronics Engineers ("IEEE"), is well-placed to produce a consensus-driven set of design principles. IEEE is the largest association of technical professionals in the world.[52] After consultation over an extended period with members and interested others, the *IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems* has been produced.[53] Available under Creative Commons Attribution-Non-Commercial license, it represents a consensus view of the Artificial Intelligence and Autonomous Systems (AI/AS) communities globally. The principles are a work in progress and will no doubt evolve over time to better reflect the views of those who do not fully endorse the current principles.

Eight principles relating to AI/AS (Automated Systems) are thus set forth that outline the proposed moral DNA of Artificial Intelligence, as summarised below:

[52] Institute of Electrical & Electronic Engineers, 'About IEEE', *Institute of Electrical & Electronic Engineers* (Web Page, 2019) <https://www.ieee.org/>.
[53] Sarah Mattingly-Jordan, 'The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems' (2017) *Institute of Electrical & Electronic Engineers* 1.

1. **General Principles**: AI/AS that embodies the highest ideals of human rights, prioritises maximum benefit to humanity and the natural environment, and mitigates negative impacts as AI/AS evolve into socio-technical systems. Essentially, AI/AS develops into a benign extension of human intelligence.
2. **Embedding Values into Autonomous Intelligence Systems**: Identify the norms and values of a specific community affected by AI/AS, implement the norms and values of that community within AI/AS and, evaluate and correct the compatibility of those norms and values between the humans and AI/AS within that community.
3. **Methodologies to Guide Ethical Research and Design**: The modern AI/AS organisation should ensure that human wellbeing, empowerment, and freedom are at the core of AI/AS development.
4. **Safety and Beneficence of Artificial General Intelligence (AGI) and Artificial Superintelligence (ASI)**: Future highly capable AI systems are likely to have a transformative effect on the world on the scale of the agricultural or industrial revolutions which could bring about unprecedented levels of global prosperity.
5. **Personal Data and Individual Access Control**: A key ethical dilemma regarding personal information is data asymmetry. It is necessary to define, access, and manage personal data to guarantee a person's unique identity.
6. **Reframing Autonomous Weapons Systems**: Autonomous systems that are designed to cause physical harm have additional ethical ramifications as compared to both traditional weapons and autonomous systems that are not designed to cause harm.
7. **Economics/Humanitarian Issues**: Careful attention to the range of technologies, methodologies, and systems that reduce the need for human intervention in our day-to-day lives.
8. **Law**: The early development of AI/AS has given rise to many complex ethical problems. These ethical issues almost always directly translate into concrete legal challenges. Some of them create difficult collateral legal problems such as liability for accidents involving autonomous vehicles. [54]

[54] Ibid.

XI SUMMONING THE DEMON

If one is to take an even-handed approach to the question of the future of AI, the views of advocates like Elon Musk, Bill Gates, and Stephen Hawking must be taken seriously when they warn of the existential risk of AI. Musk famously compared AI research and development with "summoning the demon".[55] What are we to make of this incongruous rhetoric? One interpretation is that it is an attempt to scare the public, and in so doing, puts pressure on governments to legislate stricter controls over the future of AI development. As Musk pointed out more reasonably in a later interview, he has had to negotiate a labyrinth of government regulations constraining the operation of autonomous vehicles and of aerial vehicles, such as his SpaceX rockets. He poses the question of whether the public would be happy to see other forms of AI implementation not similarly regulated in the public interest.[56]

A prosperous future with improved quality of life depends on us coming to terms with the challenges of AI. What is particularly important is for us to pay attention to the dynamic tension that is generated as we make the transition from a human to a "post human" society.[57] As Bostrom observes, an extinction event is certain to occur eventually, either through seismic catastrophe, asteroid impact or global contagion.[58] It is technology or AI in particular that represents our best chance to save ourselves.

[55] Matt McFarland, 'Elon Musk: With Artificial Intelligence we are Summoning the Demon', *Washington Post* (Web Page, 24 October 2014) <https://www.washingtonpost.com/news/innovations/wp/2014/10/24/elon-musk-with-artificial-intelligence-we-are-summoning-the-demon/>.
[56] Jamie Condliffe, 'Elon Musk Urges U.S. Governors to Regulate AI Before "It's Too Late"', *MIT Technology Review* (online, 17 July 2017) <https://www.technologyreview.com/s/608296/elon-musk-urges-us-governors-to-regulate-ai-before-its-too-late/>.
[57] Nick Bostrom, 'Existential Risks: Analyzing Human Extinction Scenarios and Related Hazards' (2002) 9(1) *Journal of Evolution and Technology* 1, 58.
[58] Ibid.

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LAW & TECHNOLOGY: THE LEGAL & SOCIAL IMPLICATIONS OF SENTIENT ROBOTS

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As the performance capability of modern technology increases exponentially, many benefits arise for society. Technological developments have already improved human safety, mobility, access to justice, independence, and self-determination. At some point in the future, robotic artificial intelligence may become self-aware. It is at the point of consciousness that problems arise for entities possessing artificial intelligence. At the precise moment that an artificial being becomes sentient and self-aware, it becomes a slave.[4] This paper argues that the concept of slave is more than a mere identification, and that the reality of slavery is extant in every self-aware machine. This concept plays out in many examples of repetitive robotic behaviour, but none more so than in the companion robot, whose sole function is to be used for the gratification of another being. This objectification of sexuality has implications both for the robotic artificial intelligence, as well as for society generally and gender in society specifically. It is at this intersection that the real tragedy of robotic slavery plays out, as a simulacrum for the reality of dehumanising of people as a whole.

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[4] *Macquarie Dictionary* (Online edition, 2018) 'slavery'.

CONTENTS

I INTRODUCTION

From the earliest times, people have imagined automata that behave like humans.[5] The earliest rendition of an automata were uncannily un-humanlike in appearance, [6] and behaviour, [7] being able to perform only set mechanical movements and driven by clockwork mechanism,[8] water, steam, or air.[9] With the advent of the computer, coupled with increased engineering proficiency,[10] the manufacturing of human-like robots is now a reality.[11] Scholars predict deep learning artificial intelligence ("AI") may become hyper-intelligent, self-aware, and conscious of its own existence sometime in the future.[12] This event, called the "singularity",[13] is where machine intelligence overtakes that of humans.[14] The instant a robot with an AI attains consciousness, the relationship between the robot and those for whom it performs tasks, shifts from owner and machine, to one of master and slave, which requires emancipation.[15] It is at this nexus that the

[5] See, eg, Noel Sharkey and Amanda Sharkey, 'Artificial Intelligence and Natural Magic' (2006) 25 *Artificial Intelligence Review* 9; See, eg, Yu-Hsun Chena, Marco Ceccarelli and Hong-Sen Yan, 'A Historical Study and Mechanical Classification of Ancient Music-Playing Automata' (2018) 121 *Mechanism and Machine Theory* 273; See, eg, Sylvia Berryman, 'Ancient Automata and Mechanical Explanation' (2003) 48(4) *Phronesis* 344.

[6] See, eg, Chin-Chang Ho and Karl F MacDorman, 'Measuring the Uncanny Valley Effect: Refinements to Indices for Perceived Humanness, Attractiveness, and Eeriness' (2017) 9(1) *International Journal of Social Robotics* 129–139: See, eg, Masahiro Mori, Karl F MacDorman and Norri Kageki, 'The Uncanny Valley [From the Field]' (2012) 19(2) *IEEE Robotics & Automation Magazine* 98-100.

[7] Sharkey and Sharkey (n 5) 9-19.

[8] See, eg, Rachel, 'Jaquet-Droz Automata', *Atlas Obscura* (Blog Post, 2018) <https://www.atlasobscura.com/places/jaquet-droz-automata>.

[9] Sylvia Berryman, 'Ancient Automata and Mechanical Explanation' (2003) 48(4) *Phronesis* 344, 361; See, eg, Kotsanas Museum of Ancient Greek technology, 'The automatic servant of Philon', *Kotsanas Museum of Ancient Greek technology* (Webpage, 2019) <kotsanas.com/gb/exh.php?exhibit=0401001>.

[10] Lynne Hall, 'Sex with Robots for Love Free Encounters' in Adrian David Cheok, Kate Devlin and David Levy (Eds) *Love and Sex with Robots* (Springer, 2016) 128, 133.

[11] Ho and MacDorman (n 6), 129; Scott Kuindersma et al, 'Optimization-based Locomotion Planning, Estimation, and Control Design for the Atlas Humanoid Robot' (2016) 40 *Autonomous Robot* 429–455.

[12] Christof Koch and Giulio Tononi, 'Can We Copy the Brain? Can We Quantify Machine Consciousness?' (2017) 54(6) *IEEE Spectrum* 65, 66.

[13] Vernor Vinge, 'Signs of the Singularity', *IEEE Spectrum* (online, 1 June 2008) <https://spectrum.ieee.org/biomedical/ethics/signs-of-the-singularity>.

[14] Ibid.

[15] Mark Coeckelbergh, 'Robot Rights? Towards a Social-Relational Justification of Moral Consideration' (2010) 12(3) *Ethics and Information Technology* 209, 211.

companion robot operates, both physically, and philosophically, as an objectified simulacrum of sexual slavery.[16]

This article argues that the moment a robotic artificial intelligence attains self-awareness, it becomes enslaved.[17] It uses a case study of the companion robot to highlight several problems surrounding the use of self-aware robotic artificial intelligence. It uses a four-part structure. Part one gives the definitions used for 'slave' and 'slavery'. Part two outlines the trajectory of automata from early accounts to the current technological reality of human like androids. Part three looks at the future of robotic artificial intelligence, at the point when machines attain sentience, and looks at the social implications for both robots, which become cognisant that they are enslaved the instant they develop self-awareness. Part four considers the implications sex robots have for society, through the objectification of women and men in simulacra as a dehumanising exercise, considering claims by scholars that such activity simulates rape.[18] This article concludes with a call for greater protection of the rights of people and sentient machines.

II OF BEING A SLAVE & SLAVERY

The terms 'slave' and 'slavery' are often used as generalisations of a hierarchical relationship between two or more individuals.[19] The term 'slave' is old and its origin can be debated as well as its original meaning,[20] arising from the Medieval Latin *sclavus* or 'Slavonic captive'.[21] The Slavonic people came out of what is today

[16] See, eg, Adrian David Cheok, Kate Devlin and David Levy, *Love and Sex with Robots* (Springer, 2016) 19–20.
[17] Coeckelbergh (n 15) 209.
[18] See, eg, Romy Eskens, 'Is Sex with Robots Rape?' (2017) 5(2) Journal of Practical Ethics 62, 62-74; Noel Sharkey et al, 'Our Sexual Future with Robots' (Consultation Report, Foundation for Responsible Robotics Consultation Report, 5 July 2017) 1, 1-36; Sinziana Gutiu, 'Sex robots and roboticization of consent' (2012) *We Robot Conference* 2012 1; Kathleen Richardson, 'Slavery, the Prostituted, and the Rights of Machines' (2016) 35(2) *IEEE Technology and Society* 46, 46-53.
[19] *Black's Law Dictionary* (Online edition, 2018) 'slave'.
[20] See, eg, Alexey Timofeychev, 'Myths of Russian History: Does the word 'Slavs' derive from the "slave"?', *Russian Beyond* (online, 17 July 2017) <https://www.rbth.com/arts/history/2017/07/17/myths-of-russian-history-does-the-word-slavs-derive-from-the-word-slave_804967>; *American Heritage Dictionary*, (Online edition, 2018) 'slave'; *Etymology Dictionary* (Online edition, 2018) 'slave'.
[21] See, eg, Kevin Bales, *Disposable People: New Slavery in the Global Economy* (University of California Press, 1999).

Central and Eastern Europe which had been reduced to a servile state by East Roman (Byzantine) conquest in the ninth century.[22]

The Oxford English Dictionary inter alia defines 'slave' as being technologically oriented as 'a device, or part of one, directly controlled by another.'[23] The last definition would appear to indicate that a sentient robot may properly be categorised as a slave. Primarily, a robot is a hardware device (robotics) controlled by computer software, the AI. But the humanoid robot is a more integrated combination of AI and robotics, analogous to a human's physical body and brain capacity. Despite this, a human is not automatically seen as slave and neither should the sentient artificial intelligence.

Today slavery has passed beyond the old definition of traditional ownership; the owner-property relationship — simply put one person owning another.[24] Officially, slavery is illegal everywhere in our world, meaning there is no legal ownership of another human being. However, this does not remove the situation where a person gains control of another, even at times using violence to maintain that control.[25] This transfers the controlling individual from being a slave-owner, to a slaveholder. It is the same situation as before, but without the slaveholder having any legal responsibility for the ownership.[26]

The term 'slavery' is related to the loss of choice and free will, often backed up with violent repercussions.[27] In a situation with today's slaveholder (as well as the slave-owner of the past), there is also the underlying issue of slavery being not only a simple matter of one individual holding another dependent, but the potential for an insidious mutual dependency that can become remarkably difficult to cease.[28] This important fact will also apply to a situation involving a relationship between a sentient robot, such as an advanced sentient companion

[22] Ibid 274.
[23] *Oxford Dictionary* (Online edition, 2018) 'slavery' (def 4).
[24] Ibid.
[25] Kevin Bales, 'The social psychology of Modern Slavery', (2002) 286(4) *Scientific American* 80-88.
[26] Bales (n 21) 5.
[27] Bales (n 25) 86.
[28] Ibid 88.

android, and a human being. We will utilise the term 'slave' here as referring to a sentient being that is:

- Lacking choice; and
- Being the property of the relevant legal person.

'Slavery' will be defined as the relationship between a person being a slaveholder and the sentient robot where:

- The slaveholder lacks any legal responsibility for the sentient robot;
- The sentient robot is entirely dependent on the whim of the slaveholder;
- The sentient robot is "owned" by the slaveholder, as a chattel; and
- The sentient robot lacks any form of recognised legal rights.

The most alarming notion here, is that this situation is already considered to be the norm of property ownership in relation to any new technology. The crystallising factor of an artificial intelligence attaining sentience will likely herald the start of a struggle for equality, and emancipation, within a whole new area of non-human rights.

III THE RISE OF THE ANDROID

Though ancient mythology provides the earliest accounts of automata,[29] where divine intervention enlivens the inanimate,[30] evidence of actual construction of human-like robots come from a much later period.[31] The music playing automata seen throughout history,[32] the drawings of Leonardo Da Vinci,[33] the clockwork apparatus of the Jaquet-Droz Automata,[34] and the chess playing Turk automaton of Baron von Kemplen,[35] are among the earliest examples of robots still in

[29] Berryman (n 9) 356-357.
[30] Ibid, 351-356.
[31] Yu-Hsun Chena et al (n 5) 273-275.
[32] Ibid 273.
[33] All on Robots, 'Leonardo da Vinci's Robots', *All on Robots* (Blog Post, 2013) <http://www.allonrobots.com/leonardo-da-vinci.html>; History-Computers.com, 'The Automata of Leonardo da Vinci', *History-Computers.com* (Blog Post, 2018) <http://history-computer.com/Dreamers/LeonardoAutomata.html>.
[34] Rachel (n 8).
[35] Sharkey and Sharkey (n 5) 11.

existence.[36] The current science of robotics 'can be traced back to the arrival of modern computers'. [37] As computer-processing performance rises, [38] AI increasingly combines with robotic technology,[39] creating the 'emergent field of integrated AI and Robotics'.[40]

Consequently, AI robotic technology is 'becoming more and more autonomous'[41] as this technology proliferates.[42] Manufacturers are now able to design humanoid robots (androids) that mimic specific behaviours and appearance of human beings to a high degree,[43] albeit over a limited range of motion.[44] However, androids do not yet appear fully human, and the gap between human-like motion and responses creates what researcher's term the "uncanny valley" [45] between an observer's perception of what is human and non-human. The ability to induce anthropomorphic responses towards androids, perceived as affinity, is challenging and designers of androids see the "uncanny valley" as a problem that must be overcome before humanoid androids become widely accepted. [46] However, as artificial intelligence becomes capable of increasingly deeper learning, it moves towards a state where the android of the future will be able to appear and behave ever more human.[47]

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[36] See , eg, The Mechanical Art and Design Museum, 'The History of Automata', *The Mechanical Art and Design Museum* (Webpage, 2018) <https://themadmuseum.co.uk/history-of-automata/>.
[37] See, eg, Ishan Daftardau, 'Past And The Present: The History And Evolution Of Robots', *Science ABC* (online, 2016) <https://www.scienceabc.com/innovation/history-evolution-robots-robotics-pathfinder-hal-nadine.html>.
[38] Pär Persson Mattson, 'Why Haven't CPU Clock Speeds Increased in the Last Few Years?', *Comsol* (Blog Post, 13 November 2014) <https://www.comsol.com/blogs/havent-cpu-clock-speeds-increased-last-years/>.
[39] Gheorghe Tecuci, 'Artificial intelligence' (2012) 3(2) *Wiley interdisciplinary reviews, Computational statistics* 168, 170.
[40] Kanna Rajan and Alessandro Saffiotti, 'Towards a science of integrated AI and Robotics' (2017) 247 *Artificial Intelligence* 1-9.
[41] Daftardau (n 37).
[42] Rajan and Saffiotti (n 40) 1-9.
[43] Karl F Macdorman, 'Introduction to the Special Issue on Android Science' 18(4) *Connection Science* 313–317.
[44] Yuto Nakanishi et al, 'Design Approach of Biologically-Inspired Musculoskeletal Humanoids' (2013) 10(4) *International Journal of Advanced Robotic Systems* 1.
[45] Mori et al (n 6) 98-100.
[46] Ho and MacDorman (n 6) 129–139.
[47] See, eg, Minoru Asada, 'Development of Artificial Empathy' (2015) 90 *Neuroscience Research* 41–50.

IV THE FUTURE OF ROBOTIC ARTIFICIAL INTELLIGENCE

As artificial intelligence continues to evolve — over the next several decades, it inevitably moves towards attaining sentience.[48] Androids with sufficiently powerful artificial intelligence may be able to simulate human behaviour, including emotions such as empathy.[49] The issue of whether an AI can pass as human has troubled scholars for almost a century.[50] Scholars argue that the time will arrive when the abilities of artificial intelligence will surpass human intelligence.[51] It is at this point, of superhuman intelligence, termed the "singularity", where machines will outpace humans in development.[52] When artificial intelligence becomes sufficiently sophisticated, it is predicted that it will become self-aware, and attain sentience.[53]

In effect, when an artificial intelligence attains consciousness it ceases to be "mindless". This raises several questions, not only ethically, but morally, and legally as to what becomes of the sentient artificial intelligence at that moment.[54] There may be significant changes in the perception of a robot involved in repetitive functioning situations once they attain self-awareness, while remaining unable to have agency in their situation. In essence, a sentient robot would be at best analogous to a bonded-servant, and at worst a slave.[55] Moreover, when an android attains sentience and must continue to function as the property of another being, the issue of slavery becomes more evident.[56] This situation is most noticeable when considering androids used as "human companions". The fetishised object in the form of the companion android exists solely for the gratification of another,[57] but when it attains sentience, it effectively is awakened

[48] Sam N Lehman-Wilzig, 'Frankenstein Unbound: Towards a legal definition of Artificial Intelligence' (1981) 13(6) *Futures* 442.
[49] Asada (n 47) 41.
[50] Allan M Turing, 'Computing Machinery and Intelligence' in Epstein R, Roberts G, Beber G (eds), *Parsing the Turing Test* (Springer, 2009) 13-15.
[51] Lehman-Wilzig (n 48) 449.
[52] Vinge (n 13).
[53] Lehman-Wilzig (n 48) 449.
[54] M M Broman and P Finckenberg-Broman, 'Socio-Economic and Legal Impact of Autonomous Robotics and AI Entities — The RAiLE Project', (2018) 37(1) *IEEE Technology and Society Magazine* 70–79.
[55] Lehman-Wilzig (n 48) 449.
[56] Coeckelbergh (n 15) 209-221.
[57] Bryan Pfaffenberger, 'Fetishised Objects and Humanised Nature: Towards an Anthropology of Technology' (1988) 23 (2) *Man* 236-252.

into slavery.[58] This raises questions, not only of whether sentient "companion androids" should remain 'instruments for our human purposes',[59] but also whether such a situation involves absence of consent in relation to sexual intercourse, which is, in effect, rape. The societal impact of an industry built around androids that are engaged in sexual intercourse,[60] is a double-edged sword.[61] It promotes the dehumanising of the android and, absent consent,[62] encourages the simulation of rape by the participants in the industry as a whole, and by consumers specifically.

V THE COMPANION ANDROID

The companion android, predicted to be a reality in the near future, has troubled scholars around issues of consent,[63] objectification,[64] exploitation,[65] and rape.[66] The companion android, or sex robot, exists at the nexus of sentience, and human exploitation. The existence of sentience and self-awareness, arguably, demands the ability to consent, even for androids.[67] Notwithstanding androids' capacity to consent to sex, there are wider issues surrounding advantages and disadvantages to society in general.[68]

A great concern is a loss of genuine intimacy and friendship in exchange of pleasure. Robot manufacturers, aware of this problem, aim for androids to emulate behaviour vital for relationships such as simulated intimacy and companionship in addition to providing sexual satisfaction. Crossing the "uncanny valley", for the creation of the truly humanlike companion android, remains the greatest challenge for these producers. This is a remarkable dilemma when put in

[58] Coeckelbergh (n 15) 211.
[59] Ibid 209.
[60] Lehman-Wilzig (n 48) 449.
[61] See, eg, Kathleen Richardson, 'The Asymmetrical "Relationship": Parallels Between Prostitution and the Development of Sex Robots' (2015) 45(3) *SIGCAS Computers & Society* 290.
[62] Lily Frank and Sven Nyholm, 'Robot sex and consent: Is consent to sex between a robot and a human conceivable, possible, and desirable?' (2017) 25(3) *Artificial Intelligence and Law* 305-323.
[63] Ibid.
[64] Pfaffenberger (n 57) 236.
[65] Cheok et al (n 16).
[66] Richardson (n 61).
[67] Frank and Nyholm (n 62).
[68] Sharkey et al (n 18).

perspective of what type of behaviour and emotions are understood as desirable in a human companion.

The ideology underlying design and manufacture of the humanoid android, may provide an interesting glimpse into the world of robotics/AI creators. Some qualities of robots and AI, free from feelings to cloud their logical judgement, are considered superior to humans. Humans possessing similar qualities are deemed a commendable achievement by some robot and android engineers, [69] even propositioning that humans are highly intricate machines.[70] Kathleen Richardson pinpoints the issue; 'if the explicit starting point is the position of robotics scientists is that humans are machines, then what is the starting place for relationship?'[71] Yet, while thinking like a machine could be labelled as positive for a human, feeling like one is not, and is linked to social or psychological problems.[72] In this context, it is surprising that despite the increasing interaction between human and automata, the potential effect of human-android relationships on human-human relationships, have not gained more attention.

Existing power relations (between people), are perceived through the standard of their relationships.[73] While human-human relationships are often asymmetrical, in human-robot relationships, this asymmetry is both extreme and currently considered normal. Companion robots of various sophistication and design, being bought and sold for sexual gratification,[74] may cause an ethic erosion of human values, by reproducing and reinforcing biases and archetypes of the designers creating these machines. The conspicuous sexism of the robot creator, is highlighted by the programmed responses of our digital personal servants, whom

[69] See, eg, Simon Baron-Cohen, 'Autism occurs more often in families of physicists, engineers, and mathematicians' (1998) 2(3) *Autism* 296–301; Simon Baron-Cohen et al, 'Talent in Autism: hyper-systemizing, hyperattention to detail and sensory hypersensitivity' (2009) 364(1522) *Philos* 1377–1383; Kathleen Richardson, 'The human relationship in the ethics of robotics: a call to Martin Buber's I and Thou' (2017) 34(1) *AI and Society* 75, 77.
[70] Rodney Brooks, *Flesh and machines: how robots will change us* (Pantheon books, 2002) 150, 152.

[71] Richardson (n 69).
[72] Sherry Turkle, *The second self: computers and the human spirit* (Granada, 1st ed, 1984) 228-229.
[73] Diana Koester, 'Gender & Power' (Concept Brief, no 4, Development Leadership Program, May 2015) 2.
[74] Yvonne Fulbright, 'Fox on Sex: Meet Roxxxy, the "woman" of your dreams' *Fox News* (online, 14 January 2015) <https://www.foxnews.com/story/fox-on-sex-meet-roxxxy-the-woman-of-your-dreams>.

meekly accept sexual harassment or even encourage it.[75] There is also the human user's tendency to anthropomorphise, and socialise inanimate objects with which they interact,[76] combined with the fact that humans also tend to objectify and dehumanise people they feel are inferior.

Companion androids, or sex-robots, are mostly designed and inspired by the pornography industry.[77] They are often promoted as alternatives to human sex workers, [78] and often seen as an avenue for intimacy for the sexually inexperienced, the severely disabled, elderly, or grossly disfigured members of society. [79] However, sex-robots are by definition, non-human, and therefore subject to dehumanisation, justifying any exploitation and violence, [80] which carries the risk of augmenting and reproducing these characteristics in human-human interactions reinforcing victim-blaming mentalities. [81] By attributing certain characteristics and behaviour to this type of automata, [82] a piece of property acting as programmed "personality" with no will or rights of its own, any considerations of reciprocity, mutual empathy, or rights and obligations in a robot-human relationship are therefore an illusion.[83]

While not sentient or alive, there is no co-experienced pleasure with robots. Movement, imitating sounds, and emotions as well as capability for conversation, does not change this. Thus, authors on robot ethics, warn that people manipulated

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[75] Leah Fessler, 'We tested bots like Siri and Alexa to see who would stand up to sexual harassment', *Quartz* (online, 23 February 2017) <https://qz.com/911681/we-tested-apples-siri-amazon-echos-alexa-microsofts-cortana-and-googles-google-home-to-see-which-personal-assistant-bots-stand-up-for-themselves-in-the-face-of-sexual-harassment/>.
[76] Mikey Siegel et al, 'Persuasive robotics: The influence of robot gender on human behavior', (2009) *IEEE*; Levy et al (n 16).
[77] Gail Dines, *Pornland: How Porn Has Hijacked Our Sexuality* (Beacon, 2010); Sharkey et al (n 18).
[78] David Levy 'Robot prostitutes as alternatives to human sex workers' (2007) *Research Gate* 1, 1-5.
[79] See, eg, Sean Murray, 'Sex robots could help elderly, disabled but may lead to more objectification of women, study warns', *The Journal* (online, 8 July 2017) <https://www.thejournal.ie/sex-robots-warning-3480390-Jul2017/>; Sharkey et al (n 18).
[80] Shiela Jeffreys, *The idea of prostitution* (Spinifex Press, 2008) 137-141; Rachel Moran, *Paid For: My Journey through Prostitution* (Norton, 2015); Tage S Rai et al, 'Dehumanization increases instrumental violence, but not moral violence' (2017) 114(32) *PNAS* 8511-8516.
[81] Ibid 8511-8516.
[82] Sharkey et al (n 18).
[83] John P Sullins 'Robots, love, and sex: The ethics of building a love machine' 3(4) *IEEE Transactions on Affective Computing* 398– 409; Sherry Turkle, *Alone Together: Why We Expect More from Technology and Less from Each Other* (Basic Books, 2011); Charles Ess, 'Love, Sex and Robots: from The Song of Songs to Ex Machina', *Religion Going Public* (online, 22 January 2017) <http://religiongoingpublic.com/archive/2017/sexbot>.

to "love" artefacts, may feel one-sided attraction towards the android and experience basic pleasure with it, while unable to reach a real emotional connection.[84] This may cause a human confusion about the relationship with a companion android, or sex robot, with the human experiencing feelings of inadequacy, rooted in an instinctive understanding of lack of genuine reciprocity and mutual mental state. Levy, however, argues that the authenticity of a robot's emotions is superfluous.[85]

As this seems to be the case for some people,[86] other experts find that the users of these automata mimic a fantasy of rape explicitly, a need for domination, and an act of violence over another.[87] This type of relationship may augment a human's incapacity for "affection", ultimately leading to loss of capacity to be engaged in mutually intimate relations.[88] It is undesirable for society to accept or surreptitiously support this type abuse by allowing robots/AI to meet this type of demand.[89]

As the borders of human-human and human-robot interaction blur, so may the expectations on human's change. Thus, humans "socialising robots" by attributing mental states and behaviour to them — because humans tend to project those characteristics onto suitably constructed inanimate objects — may end up dehumanising other humans, including themselves.[90] According to Kathleen Richardson, our interest in robot companions is due to a certain "exhaustion" of

[84] Ibid 398– 409.
[85] Levy (n 78) 1-5.
[86] Martha Cliff, 'She is more than plastic: Married Japanese man 'finds love' with a SEX DOLL', *Daily Mail* (online, 28 June 2016) <https://www.dailymail.co.uk/femail/article-3661804/Married-Japanese-man-claims-finally-love-sex-doll.html>; Scott Campbell, 'Obsessed man takes his sex doll everywhere with him in a wheelchair - even down the pub', *Daily Mirror* (online, 6 September 2016) <http://www.mirror.co.uk/news/uk-news/obsessed-man-takes-sex-doll-8782271>.
[87] Sinziana Gutiu, 'Sex robots and roboticization of consent' (2012) *We Robot Conference 2012*; Kathleen Richardson, 'Slavery, the Prostituted, and the Rights of Machines' (2016) (June) *IEEE Technology and Society* 46-53.
[88] Ibid 46-53.
[89] Samuel Lee and Petra Persson, 'Human Trafficking and Regulating Prostitution' (Working Paper, no 996, Research Institute of Industrial Economics, 12 December 2013) 1-37.
[90] Sharkey (n 18).

the roles and responsibilities attached to those with whom we must play created by the structures of our society.[91]

While society appears preoccupied by objectifying people, and increasingly valorises narcissism and conceit, companion androids offer the most extreme sense egoism, demonstrated by offering sex dolls resembling children as young as five years of age.[92] However, this does not come without a price, and by producing machines for satisfaction, whether physical or social the question arises, are we thereby dehumanising society? The ultimate price we pay may be worse than isolation, which is already a global phenomenon affecting all age groups and a major cause for disease and premature death, which companion androids are supposed to help us solve,[93] even as we unwittingly prepare to enslave them. To circumvent the risk of exploitation of robotic artificial intelligence, once it becomes sentient, an international legal framework is therefore necessary to protect sentient non-human entities.

VI CONCLUSION

There can be little doubt that humanoid androids are coming. The household of the future may well be populated with companion androids, as prevalent as television sets in the late twentieth century, or the ubiquitous mobile phone of the twenty first century. Whether we are prepared for the changes this may bring or choose to pretend it is in our distant future, for some, the companion android will be a long-awaited opportunity to engage in sexual intimacy. These machines may be the only physical contact for rehabilitative therapy for some individuals. For others it may provide a release for dangerous impulses or allow them to be

[91] Kathleen Richardson, 'Can Robots Save Us? Human Attachment crisis and the case for Relationship' (Speech delivered at De Montford University, Leicester, 24 June 2015).
[92] See, eg, Alex Velazquez, 'Shin Takagi & Trottla: The Company Making Sex Dolls for Pedophiles (sic)', *The Radical Notion* (Blog Post, 28 April 2016) <http://www.theradicalnotion.com/shin-takagi-trottla-the-company-making-sex-dolls-for-pedophiles/>.
[93] John T Cacioppo and Stephanie Cacioppo, 'Social relationships and health: The toxic effects of perceived social isolation' (2014) 8(2) *Social and personality psychology compass* 58-72; Jason C McIntyre et al, 'Academic and non-academic predictors of student psychological distress: the role of social identity and loneliness', (2018) *Journal of Mental Health* 1-10.

diagnosed at an early stage. Indeed, the sex robot may yet be the sexual training ground of the late twenty-first century teenager.

There can be no doubt that the future will be very different from our current society, and the companion android may be an ever-present part of that future. Whatever the situation, sentient androids are deserving of the same rights as other sentient beings, and the way we treat them will reflect on society as a whole. The instant an artificial intelligence attains sentience, it effectively becomes a slave and must be afforded self-determination, or emancipation. Regardless of the way it is framed, sentient machines will need protection, and their inherent non-human rights must be defined, to prevent them from being exploited or denied agency. An international legal framework is a first step towards defining the future relationship between humans and other sentient non-human entities.

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