Law, Innovation and Technology: Fast Forward to 2021

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ABSTRACT

This article, introducing a new extended form of the journal, offers some reflections on the changing context in which we now research law, innovation, and technology. Three major changes are highlighted: the evolving landscape of Law 3.0, potentially de-centring both rules and humans from the legal enterprise; the new 'normal' of life with pandemics, underlining the vulnerability of humans; and, threading through all of this, the Anthropocene, destabilising a host of baseline distinctions, and a constant warning about the fragility of the global commons and the human condition. In this changing context, the question is whether technology can provide the solutions to our global challenges without involving an irreversible erosion of human agency. With this, we open the floor to our contributors.

KEYWORDS Law 3.0, pandemics, the new normal, the Anthropocene, technological solutions, disruption

1. Introduction

In the inaugural issue of *Law, Innovation and Technology*, we wrote a long editorial article setting out our vision for the journal and its relevance in what we anticipated being a rapidly changing context of technological innovation, legal challenge and legal opportunity.[1] In that context, we anticipated that things in the LIT field would be moving forward pretty quickly, with new technologies coming on stream, new applications, new challenges for law and governance, new books about law, regulation and technology, new reports, new consultations, a rising curve of submissions to the journal, and so on.

About these things, we were not wrong. In fact, although we did not know it, Bitcoin and blockchain was being announced as we were writing in 2009[2], additive manufacturing technologies were also about to come into the regulatory spotlight[3], and of course the developments in AI and machine learning have meant that we all now talk about 'algorithmic'

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1 Roger Brownsword and Han Somsen, 'Law, Innovation and Technology: Before We Fast Forward—A Forum for Debate' (2009) 1 *Law Innovation and Technology* 1.

2 The seminal paper is Satoshi Nakamoto, 'Bitcoin: A Peer-to-Peer Electronic Cash System', available at https://bitcoin.org/bitcoin.pdf (last accessed September 4, 2020); for an overview, see Aaron Wright and Primavera De Filippi, *Blockchain and the Law: The Rule of Code* (Harvard University Press, 2018).

3 See, e.g., Dinusha Mendis, Mark Lemley, and Matthew Rimmer (eds), *3D Printing and Beyond: Intellectual Property and Regulation* (Elgar, 2019); Phoebe Li, Alex Faulkner, and Nicholas Medcalf, '3D bioprinting in a 2D regulatory landscape: gaps, uncertainties, and problems' (2020) 12 *Law, Innovation and Technology* 1.

law or the possibility of law being 'computable'.[4] As for the literature, the submissions, and the interest in our field, they have all simply burgeoned. Law, innovation and technology has come of age.[5]

Nevertheless, we think that in 2021, we are in a really different place and the question is what kind of place might this be? Law, innovation and technology is already a large and varied field of scholarly interest but is there a bigger picture of this field, or going beyond this field, that gives us the context for our research today? With a significant increase in our page allowance for the journal, we hope to be able to publish 8 or 9 articles per issue, and we would welcome submissions that are not afraid to ask questions about the bigger picture or reflecting the direction of travel in the field.

In this editorial, we will speak briefly to three narratives that are indicative of a bigger picture for our reflections in LIT, that signal that the times are changing, and that we are in a different place from the time when the journal was launched. First, we will suggest that the technological disruption of our legal imagination (of what we take to be 'thinking like a lawyer') is generating a new conversation about the regulation and governance of, but also crucially by, technologies. This is the conversation of 'Law 3.0'. In this conversation, we find that both rules and humans are being de-centred; and we can also detect a radical shift in traditional debates about respect for the law. Secondly, there is the ubiquitous question of what we make of Covid-19 and the 'new normal'. One view is that we are living in exceptional circumstances but, once we have a vaccine, normal service will be resumed. However, a different view is that the pandemic is just one instance of an acute threat to the global commons (the essential infrastructure for human social existence), that we sail too close to this wind, and that our globalised and technology-reliant lifestyles present a chronic threat that urgently needs to be addressed. Thirdly, picking up on the threat to the global commons, the omnipresence and profundity of the human footprint on our planet betrays the collapse of a human/nature dichotomy informing much of our ethics, laws, and institutional governance. 'The Anthropocene' has become the household term associated with the technology-driven convergence of human and natural spheres. In the Anthropocene, technologies drive the collapse of not only nature/human, but also local/global and private/public divides. Having exposed law's most fundamental and trusted anthropocentric conceptual, spatial and temporal presuppositions as false or misguided, technologies therefore also eat away at the justifications for privileging humans over nature, locals over aliens, private rights over public interests, and present over future generations.[6]

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4 See, e.g, Karen Yeung and Martin Lodge (eds), *Algorithmic Regulation* (Oxford University Press, 2019); Martin Ebers and Susana Navas (eds), *Algorithms and Law* (Cambridge University Press, 2020); Michael Guihot and Lyria Bennett Moses, *Artificial Intelligence, Robots and the Law* (Lexis Nexis, 2020); and Simon Deakin and Christopher Markou (eds), *Is Law Computable? Critical Perspectives on Law and Artificial Intelligence* (Hart, 2020).

5 We could say the same about law, regulation, and technology as a field of legal scholarship. See, Roger Brownsword, Eloise Scotford, and Karen Yeung (eds), *The Oxford Handbook of Law, Regulation and Technology* (Oxford University Press, 2017). See, too, Michael Guihot, 'Coherence in Technology Law' (2019) 11 *Law, Innovation and Technology* 311.

6 Han Somsen, 'From Improvement Towards Enhancement: a regenesis of environmental law at the dawn of the Anthropocene' in Roger Brownsword, Eloise Scotford, and Karen Yeung (eds), *The Oxford Handbook of Law, Regulation and Technology* (Oxford University Press, 2017) 379.

Paradoxically in this age of humans, technologies' combined effect thus has been to undermine the idea of human unicity (premised on the species we are, the jurisdiction we inhabit, the intimacy of private ambitions we entertain, etc.), legally formalized in law 1.0 and law 2.0, as untenable and ultimately self-destructive.

The Anthropocene also marks the end of the stable interglacial epoch that allowed earthly (human) life to flourish in relative peace, and regulators must therefore explore new ways to respond to rapid successions of unpredictable, sudden and destabilizing incidents, such as floods, pandemics, forest fires, crop failures and the like. In respect of these incidental regulatory responses, it no longer suffices to insist that, even in times of existential global environmental threats we must ensure that regulatory responses enjoy legitimacy, because the continued pertinence of our holocenic ideas about what amounts to legitimate action is open to discussion.

If technologies are overpowering rule-based normative systems, cancelling out some of the most fundamental building blocks of our normative and empirical worlds, should we turn to technologies in a final attempt to take back control?

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2. Law 3.0

The first version of the bigger picture is what we will call 'Law 3.0'.[7] By this, we refer to a landscape of law, regulation, governance and technology comprising three overlapping conversations (or mind-sets). These are the conversations of law 1.0, law 2.0, and law 3.0, the three co-existing conversations comprising Law 3.0 (with a capital L). In this Part, we will say a bit more about these conversations and the legal landscape; we will note how an evolving law 3.0 conversation, contemplating governance by machines, de-centres both humans and rules; and we will indicate how the prospect of governance by machines also disrupts traditional thinking about both recognising the authority of law and why law should be respected.

2.1 The legal landscape

Once upon a time, there was just one conversation in law, law 1.0. That conversation was largely about the application of general principles and rules to particular factual situations and disputes. For those who participated in law 1.0, a high priority was to maintain doctrinal coherence. However, as soon as societies entered upon a period of technological development and industrialisation, a new conversation began to form. This new conversation, law 2.0, was focused on creating and applying rules that were fit for the government's regulatory policies—which, at the time, were concerned with supporting the development of beneficial new technologies while also managing the most serious risks to human health and safety. If the law 1.0 conversation was typically for litigants, their lawyers, and the judges, law 2.0 was a more political conversation, conducted in legislative assemblies and their environs. To these familiar conversations, we now have the signs of a third conversation, law 3.0.[8]

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7 Generally, see Roger Brownsword, *Law 3.0: Rules, Regulation and Technology* (Routledge, 2020).

8 See Roger Brownsword (n 7) and *Law, Technology and Society: Re-imagining the Regulatory Environment* (Routledge, 2019).

If the seeds of law 2.0 are sown as soon as we start thinking that legal rules and principles might not be 'fit for (regulatory) purpose', the seminal, and radical, thought in law 3.0 is that 'technology might be the solution to our regulatory problems'. Instead of conceiving of Law in Fullerian terms as an enterprise of subjecting human conduct to the governance of *rules*,[9] made, administered and enforced by *humans*, law 3.0 invites us to contemplate an enterprise of subjecting human conduct to the governance of *technology*[10], operationalised to some extent by smart *machines*. While 'smart' regulation in both law 2.0 and law 3.0 is essentially about employing the optimal mix of regulatory instruments[11], the range of instruments in law 3.0 is far more extensive.

The regulatory problems to which technology might be seen as a solution can span the entire range of regulatory functions. It might be that the rules simply do not work (non-compliance is the problem), or that non-compliance is under-detected, or that the administration of the rules is inaccurate or inconsistent, and so on. As a response to these problems, the technological solution might be to preclude the practical option of non-compliance (e.g. as where products are designed to preclude infringement of IPRs), to nudge regulatees towards compliance, to re-inforce the signals given by the rules (particularly, e.g., by employing surveillance and identification technologies), and to support and guide human decision-makers in their application of the rules (e.g., as in cricket and soccer where decisions made by umpires and referees are subject to review by off-field humans aided by various technologies).

As will be apparent from the foregoing, in a law 3.0 conversation, the idea of what is a 'technical' or 'technological' solution is very broad. The solutions might be 'architectural' so that buildings and spaces are designed to reduce the opportunities for crime, or accident and injury, or the unnecessary use of energy, and the like; and they might be old-fashioned and visible (like locks on doors and border walls) or high tech and futuristic (like biometric entry systems or smart invisible borders). Technological solutions might be incorporated in the design of products or processes (simply by automating a process, humans might be removed from potentially dangerous situations); and, in principle, the technical measures might be incorporated in wearables or even in humans themselves. Accordingly, in a law 3.0 conversation where the purpose is, let us suppose, to improve the safety of both patients and healthcare workers in hospitals, the questions might include whether the environment would be improved by locking more doors, by introducing surveillance technologies, by replacing humans with robots, or by making more use of AI, and so on.[12]

If we can say that, ideal-typically, it is in the Courts that we have the forum for law 1.0 conversations, and in the Executive branch and the Legislature that we have the forum for law 2.0 conversations, what should we say about the forum for law 3.0 conversations? Arguably,

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9 Lon Fuller, *The Morality of Law* (Yale University Press, 1969).

10 Compare the critical commentary in Alain Supiot, *Governance By Numbers* (trans by Saskia Brown) (Hart, 2017).

11 Seminally (in a law 2.0 paradigm), see Neil Gunningham and Peter Grabosky, *Smart Regulation* (Clarendon Press, 1998).

12 Compare, eg, Roger Brownsword, 'Regulating Patient Safety: Is it Time for a Technological Response?' (2014) 6 *Law, Innovation and Technology* 1.

law 3.0 conversations should start in the Executive and the Legislature, where the groundrules for the use of technological solutions would be established, and where particular delegations of responsibility for the development of such solutions could be agreed.[13] However, the actuality is that, in practice, technological measures are employed for regulatory purposes by both public and private actors (e.g. by the police, the revenue, and financial regulators as much as by BigTech corporations, banks and insurance companies) without there being any prior public authorisation or debate.[14] In this sense, law 3.0 is a conversation that is everywhere and yet, publicly, transparently, and officially, nowhere.

Such, then, is the state of the legal landscape—three co-existing conversations that engage with technology in very different ways: law 1.0 largely ignoring technology while being disrupted by it; law 2.0 struggling to regulate it; and law 3.0 co-opting it as a regulatory tool. At this stage, the conversation, except in the Courts, will typically conjoin elements of law 2.0 and law 3.0. On the one hand, rules are still seen as a possible solution; but they need to be fit for purpose. On the other hand, if there might be technical or technological solutions, they should also be considered. In due course, the conversation might be dominated by the technical and technological side and the prospect of governance by smart machines will loom large.

2.2 The de-centring of rules and humans

Law 3.0, as we have seen, sets the stage for the potential de-centring of both rules and humans. To be sure, there might still be visible and explicit rules that lay out the terms and conditions for the use of governance by machines, and there might be implicit and less visible rules that guide the operation of the machines. However, humans will find themselves in regulatory environments where they do not directly interact with the rules. The rules are no longer their guides and signposts. The environments are what they are; they allow for certain actions but not others; in these places and spaces, with these products and processes, the red lines are embedded in the technology, in architecture and design. Instead of rules prescribing what ought or ought not to be done, what may or may not be done, the technology manages in a way that effectively only certain things can be done. With rules so de-centred, there is a sea change in the complexion of the regulatory environment, a change that threatens to compromise the context for both individual autonomy and human dignity.[15]

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13 Compare Laurence Diver, 'Digisprudence: the design of legitimate code' (2020) 13 *Law, Innovation and Technology* (forthcoming).

14 On the use of new technologies in the criminal system, see, e.g., Benjamin Bowling, Amber Marks, and Cian Murphy, 'Crime Control Technologies: Towards an Analytical Framework and Research Agenda' in Roger Brownsword and Karen Yeung (eds), *Regulating Technologies* (Hart, 2008) 51; Amber Marks, Benjamin Bowling, and Colman Keenan, 'Automatic Justice? Technology, Crime, and Social Control' in Roger Brownsword, Eloise Scotford, and Karen Yeung (eds), *The Oxford Handbook of Law, Regulation and Technology* (Oxford University Press, 2017) 705; and Roger Brownsword and Alon Harel, 'Law, Liberty and Technology—Criminal Justice in the Context of Smart Machines' (2019) 15 *International Journal of Law in Context* 107. On BigTech companies, see, in particular, Shoshana Zuboff, *The Age of Surveillance Capitalism* (Profile Books, 2019).

15 See Roger Brownsword, 'Lost in Translation: Legality, Regulatory Margins, and Technological Management' (2011) 26 *Berkeley Technology Law Journal* 1321, and 'Law, Liberty and Technology" in Roger Brownsword, Eloise Scotford, and Karen Yeung (eds), *The Oxford Handbook of Law, Regulation and Technology* (Oxford University Press, 2017) 41.

The de-centring of rules is not the end of it. Governance by technology also threatens to de-centre humans. Quite simply, the automation of regulatory functions also reduces human involvement. Humans might continue to set the policies, or at the very least should remain at the centre of those policies, but the implementation is translated into schemes of technological management which are designed to run themselves.

As is well-known, the EU independent high-level expert group on artificial intelligence has highlighted the importance of AI being 'trustworthy' and, crucially, that the development and use of AI should be 'human-centric'.[16] However, to the extent that trustworthiness signifies only that the AI will be compatible with European values and compliant with whatever regulatory (and certification) requirements are put in place, and to the extent that human-centricity signifies only that AI should be applied in the service of humanity or that the human rights that are recognised in Europe will be applicable, all the hard work remains to be done. Key regulatory provisions (such as the much-debated Article 22 of the GDPR, protecting data subjects against solely automated decisions where those decisions have legal or similarly significant effects) pose more questions than they answer[17]; the principles that the expert group identifies as key to the governance of AI—namely, respect for human autonomy, prevention of harm, fairness, and explicability—are open to interpretation; and, any tensions between the principles will need to be resolved (as the expert group proposes by 'methods of accountable deliberation' involving 'reasoned, evidence-based reflection rather than intuition or random discretion'[18]).

Building on the expert group's report, the Commission has proposed a risk-based approach such that 'the new regulatory framework for AI should be effective to achieve its objectives while not being excessively prescriptive [and disproportionately burdensome].'[19] It follows that regulators should focus on high-risk uses of AI. Paradigmatically, such uses will involve some high-risk activity in a high-risk sector. Thus, for example, while health care is a high-risk sector, some uses of AI are less risky than others. As the Commission notes, 'a flaw in the appointment scheduling system in a hospital will not normally pose risks of such significance as to justify legislative intervention.'[20] Presumably, this would contrast with, say, the use of AI in surgical procedures where a patient's life might be at stake if 'something goes wrong'. In these paradigmatically high-risk cases, human oversight is required. In the Commission's own

16 European Commission, *Ethics Guidelines for Trustworthy AI*, Brussels, April 8, 2019. For example, at p 4, we read that 'AI systems need to be human-centric, resting on a commitment to their use in the service of humanity and the common good, with the goal of improving human welfare and freedom.'

17 For discussion, see, e.g., Roger Brownsword and Alon Harel (n 14); and Orla Lynskey, 'Criminal Justice Profiling and EU Data Protection Law: Precarious Protection from Predictive Policing' (2019) 15 *International Journal of Law in Context* 162; and, for the vexed question of whether there is 'a right to an explanation', see Sandra Wachter, Brent Mittelstadt, and Luciano Floridi, 'Why a Right to Explanation of Automated Decision-Making Does Not Exist in the General Data Protection Regulation' (2017) 7 *International Data Privacy Law* 76.

18 (n 16) p. 13.

19 European Commission, *White Paper: On Artificial Intelligence—A European Approach to Excellence and Trust*, COM(2020) 65 final, Brussels, 19.2.2020, at 17.

20 Ibid.

words, 'The objective of trustworthy, ethical and human-centric AI can only be achieved by ensuring an appropriate involvement by human beings in relation to high-risk applications.'[21] But, again, we do not know what this means until we have a jurisprudence that specifies precisely what level and kind of involvement by humans is 'appropriate'.

So long as the humans are having a conversation about the groundrules for AI applications that is one thing; humans might well have different views about the appropriateness of such applications; but at least humans are still central. It might still be one thing where those applications are about AI taking on the functions of regulation and governance; again there might be different views and some might be troubled by the reversal of roles, with technologies now treating their human regulatees as 'objects'; but, arguably, humans are still in control. However, if regulatory conversations become conversations between smart machines, humans are no longer central and nor in control. At each stage beyond law 3.0, the framing and understanding of appropriateness changes.

Whereas from a human rights perspective the prospect of a technology-induced process of de-centring of humans undoubtedly is daunting, the Anthropocene in effect is an acknowledgement that the process of de-centring nature is complete, irreversible, and catastrophic for human life on the planet.

For environmentalists, who for decades have fruitlessly decried law's blind anthropocentrism, the promise of recalibration that law 3.0 brings therefore may have its attractions. For them, the appeal of law 3.0 resides in its potential to give voice to legally excluded or marginalized non-humans. Technologies, including AI, undeniably harbour that largely unexplored potential, for example by representing nature in legal proceedings at which 'rights of nature' that are rapidly emerging across the globe are at stake, or by enforcing such rights as a matter of inevitable technological course.[22]

Policies aimed at policing 'planetary boundaries' illustrate that even a regulatory policy that is human-centred *in extremis* may encounter near universal resistance. The planetary boundary hypothesis, which enjoys wide scientific and political support, posits that (a) there are nine critical global biophysical thresholds for human development, (b) humankind is crossing these boundaries, and (c) that the ensuing unpredictable patterns of change are incompatible with human welfare and life on the planet. As long ago as 2009, when the theory was first articulated, the authors warned that transgressions of these boundaries mean that 'humanity has already entered deep into a danger zone.'[23] At present, two out of nine thresholds have been exceeded, and others are about to tip over, fuelling concerns of catastrophic domino effects.

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21 Ibid. at 21.

22 See Han Somsen and Arie Trouwborst, 'The Planetary Boundary of Biosphere Integrity: Present and Future Legal Significance' in L. Kotzé and D. French (eds.) *Planetary Boundaries Handbook* (Hart 2021) forthcoming.

23 Johan Rockström and others, 'Planetary Boundaries: Exploring the Safe Operating Space for Humanity' (2009) 14(2) *Ecology and Society* 32. See also Will Steffen and others, 'Planetary Boundaries: Guiding Human Development on a Changing Planet' (2015) 347(6223) *Science*, 1259855.

Planetary boundaries articulate the 'safe operating space for humankind', and one would therefore be hard-pressed to find *any* policy with stronger anthropocentric credentials.[24] These thresholds are expressed numerically, and in addition to the complex interactions between each of the planetary boundaries making them impossible targets for conventional 2.0 regulators, this marks a regulatory policy to respect planetary boundaries as a priority candidate for a law 3.0 approach, involving AI for standard-setting and other technologies for enforcing those standards.

Opponents of such a future will obviously emphasize the profound incursions into human autonomy, which indeed appear inevitable. However, few would go so far as to argue that human autonomy implies a right to engage in sui-genocide by a thousand cuts, not even if that ultimate price is paid by a future generation. For similar reasons, objections against a law 3.0 approach to securing respect for planetary boundaries based on 'fairness' lose much of their persuasive power.[25]

In the vocabulary of rights, much of the resistance to the technologically facilitated inclusion of nature and future generations in 'our' community of rights-holders obviously reflects the fact that the award of such (law 3.0) rights is a zero sum game. If, for example, in an effort to respect the planetary boundary for biosphere integrity nature acquires legal personhood, technologically assisted articulation and enforcement of nature rights inevitably will push back against the human right to property. Environmentalists may argue that, in the Anthropocene, this is precisely what the world needs

In short, the core of what we associate with Anthropocene discourse *prima facie* aligns with law 3.0, especially if this regulatory modality is conceived, admittedly counter-intuitively, as the 'Law of Inclusion'.

With the progressive de-centring of humans and rules, with governance by rules giving way to governance by machines, a number of old questions—questions about the authority of law and about the demand that we should respect the law—are disrupted and invite radical reconsideration.

2.3 Respect for the law

There are age-old jurisprudential questions about why humans should defer to the judgments, decisions and decrees of other humans simply because they come with the imprimatur of 'the Law'. What is so special about the Law? We can approach this question by starting with the authority of law;[26] or, we can approach it by starting with respect for the law. Either way, though, it is essentially the same question. With law 3.0 in prospect, we need to reconsider our

[24] Johan Rockström et al, 'A safe operating space for humanity' (2009) 461 *Nature* 472–75; Frank Biermann and Rakhyun Kim, 'The boundaries of the planetary boundary framework: A critical appraisal of approaches to define a "safe operating space" for humanity', *Annual Review of Environment and Resources* 45 (2020), 497.

[25] Frank Biermann and Agni Kalfagianni, 'Planetary justice: A research framework' (2020) 6 *Earth System Governance*, 1-11.

[26] Compare Joseph Raz, *The Authority of Law* (Oxford: Oxford University Press, 1979).

attitude towards the law. If we can use technology to 'do governance' better, why should we defer to humans and their rules?

In this section, we will outline the traditional debate, take stock of the disruption of that debate, and then present some short reflections on how this relates to the Anthropocene's destabilising impact on traditional distinctions from which we take our bearings.

2.3.1 The traditional debate

In traditional jurisprudential debates, legal positivist conceptions of law are opposed by legal idealist conceptions. Where mainstream positivist conceptions are assumed, the reasons for respecting the Law will be largely prudential (Law being favourably compared with some 'lawless' alternative). By contrast, where legal idealist conceptions are assumed, the reasons for respecting the Law will be moral (Law being viewed as an essentially moral enterprise). This yields two competing pictures of Law and respect; and, concomitantly, it yields two different conversations, one based on moral and the other on prudential considerations.

The legal idealist/moralists' picture

The context for our first picture is an aspirant moral community, its members committed both collectively and individually to doing the right thing, and with a shared view as to the guiding principles for the community. Such principles might be founded on a religious code or credo, as in the Thomist tradition.[27] Equally, though, the picture might be entirely secular.[28] In such a context, the Law, as a direct translation of the Moral Law, would necessarily command respect.

Where the life and times of a community are fairly static, where little changes from one generation to the next, where there is little communication or interaction with other communities, the moralists' picture might be sustainable. However, in the world as we know it in the present century, one of the many disruptive effects of emerging technologies is to the conditions that sustain the moralists' picture. When the context for community life changes rapidly, when the application of the guiding principles is moot, it is the task of the Law to take a position, a position with which some members might (as the community would see it) reasonably disagree. For example, developments in modern biotechnology have provoked huge challenges for the Law—not least in provoking new debates about the interpretation of human dignity[29]—as it is compelled to arbitrate between religious and secular views and between the ethics of prohibition and the ethics of permission.[30] Nevertheless, in this context, respect for

27 The leading example in modern jurisprudence is John Finnis, *Natural Law and Natural Rights* (Oxford University Press, 1980).

28 For such a picture, see Deryck Beyleveld and Roger Brownsword, *Law as a Moral Judgment* (Sweet and Maxwell, 1986; reprinted Sheffield Academic Press, 1994).

29 See, e.g., Deryck Beyleveld and Roger Brownsword, *Human Dignity in Bioethics and Biolaw* (Oxford University Press, 2001).

30 See, e.g., Roger Brownsword, *Rights, Regulation and the Technological Revolution* (Oxford University Press, 2008); 'Human Dignity, Human Rights, and Simply Trying to Do the Right Thing' in Christopher McCrudden (ed), *Understanding Human Dignity* (Proceedings of the British Academy 192) (The British Academy and Oxford University Press, 2013) 345; and 'Regulatory Coherence—A European Challenge' in Kai Purnhagen and Peter Rott (eds), *Varieties of European Economic Law and Regulation: Essays in Honour of Hans Micklitz* (Springer, 2014) 235; and 'Developing a Modern Understanding of Human

the Law signifies that, such disagreement notwithstanding, a positive attitude towards the Law and its prescriptions should be maintained.

Moreover, modern moral communities might be even more pluralistic than this. There might be disagreement not only about the application of guiding principles to particular hard cases but also about which principles should be treated as guiding. Where the reference standards or values for doing the right thing are themselves contested, the Law faces a greater challenge because the best attempt at accommodating moral disagreement might mean that very few or even no-one in the community actually supports the (compromise) position that is adopted. Once again, though, to demand respect for the Law is to demand that all members of the community continue to view the Law and its prescriptions in a positive light.

Crucially, in this picture, the members of a moral community respect the Law not only when, by their lights, the Law's prescriptions guide correctly towards doing the right thing but even when it is either unclear or controversial whether they are guiding in the right direction. Looking back, the fact that those who are responsible for making the Law are attempting in good faith to maintain the community's moral commitments is sufficient reason to treat the mere fact that this is the Law as a good reason for respecting the institution, respecting its officials, and respecting its prescriptions; and, looking forward, members will be mindful that the consequences of not respecting the Law might be to undermine the moral aspiration of the community. For the legal enterprise to command our respect, to appreciate why Law really matters, it must be conceived of as an integral part of the practice of an aspirant moral community.[31] So viewed, the legal enterprise does not need to align perfectly with the Moral Law, but it must represent a good faith and serious attempt to do the right thing.[32] The reason why Law should be respected is not because it is the perfect articulation of the Moral Law but because it is a very human enterprise guided by moral aspirations. Communities that fully commit to Law are making a moral, not a prudential, declaration.

Accordingly, as this sketch would have it, respect for the Law is largely a matter of respect for moral aspiration and integrity. Respect for the authority of legal officials is respect for persons who are trying to do the right thing, and respect for their rules and decisions is respect for an enterprise that is predicated on translating moral pluralism into provisional regulatory positions and determinations.

The legal positivist/prudentialists' picture

The setting for our second picture is that of a community that views Law and Morals as independent spheres. Like planets that occupy the same Universe but orbit independently of one another, Law and Morals are always separate and distinct although there will be cases where they come quite close to one another. If Law is to be respected in such a community,

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Dignity' in Dieter Grimm, Alexandra Kemmerer, and Christoph Möllers (eds), *Human Dignity in Context* (Nomos and Hart, 2018) 299.

31 Here, readers might detect some echoes from Alon Harel, *Why Law Matters* (Oxford University Press, 2014).

32 This is the thrust of the legal idealist position argued for in Deryck Beyleveld and Roger Brownsword (n 28).

this is not to be understood to be an appeal to good morals (although, no doubt, the moral high ground will be taken by those who demand respect if the opportunity presents itself).

This is not to say that Law is not valued in this community of legal positivist prudentialists; and, indeed, by and large, they might happily comply with legal rules. Nevertheless, to use HLA Hart's terminology[33], the internal aspect of those who comply for prudential reasons is not the same as the internal aspect of those who comply for moral reasons. The question is: what is it about Law so conceived, the positive requirements of which will quite possibly conflict with an individual's sense of their (at any rate, short-term) self-interest, that reasonably commands a degree of respect (or, in stronger versions, unquestioning deference)?[34]

In the 1970s, E.P. Thompson shocked some fellow left-leaning readers when he declared that the Rule of Law, the rule of rules, was an unqualified good.[35] What Thompson meant was that the rule of rules was a better option than the alternative, where that alternative was the arbitrary rule of the powerful. At least, with the rule of rules, the powerful would be constrained by their own rules; and, given a reasonable warning of what the sanctions would be for breach of the rules, the less powerful would have a chance of avoiding unanticipated penalties and punishments. In this way, Thompson echoed not only Lon Fuller—who argued that the procedural constraints of his idea of legality would tend to discourage the exercise of arbitrary power[36]—but also Judith Shklar who had already highlighted the virtues of legalism in preference to the lawlessness of both fascist and Stalinist regimes.[37]

Similarly, we might hear echoes of this line of thinking in Alain Supiot's commentary on the replacement of law with governance, the flattening of relevant considerations for governance, and the decline of respect for Law.[38] Once the 'law' ceases to offer any resistance and is used merely as a tool, those who are subjected to its instrumentalism no longer have any reason to pledge their allegiance to it.

While a persuasive case for preferring the rule of rules to the arbitrary rule of the powerful can be made, the reasons for taking a favourable view of Law are essentially prudential (appealing to the self-interest of those who would otherwise be subjected to the arbitrary governance of the powerful). Contingently, in particular contexts or particular circumstances, Law might have some appeal to those who are disposed to look for moral reasons to respect the Law. Nevertheless, this is all somewhat different to valuing the Law intrinsically as is the case in our

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33 HLA Hart, *The Concept of Law* (Clarendon Press, 1961).

34 Last year, referring to the Covid-19 restrictions on freedom of movement and association, the recently retired Supreme Court Justice, Jonathan Sumption, was reported as saying that 'people should make their own decisions in the light of their own health and that the law should be a secondary consideration for them.' See, C.J. McKinney, 'Coronavirus laws a "secondary consideration", says Sumption', *Legal Cheek* (September 14, 2020): available at https://www.legalcheek.com/2020/09/coronavirus-laws-a-secondary-consideration-says-sumption/ (last accessed September 16, 2020).

35 EP Thompson, *Whigs and Hunters: The Origin of the Black Act* (Pantheon Books, 1975) at 266.

36 Fuller (n 9).

37 Judith N. Shklar, *Legalism* (Harvard University Press, 1964).

38 Alain Supiot (n 10).

first picture. In our second picture, insofar as we have a reason to respect the Law, it is because the alternative (a kind of rule-less Wild West) is judged to be less attractive relative to both our individual and collective self-interest.

2.3.2 The traditional debate disrupted

In a world of rapid technological development and increasing automation, we find another picture forming, one that seeks to preserve the human dimension of law. Relative to Lon Fuller's idea of the legal enterprise as that of subjecting human conduct to the governance of rules,[39] the emphasis in this picture is not so much on rules as on *humans*; and the reasons for respecting law all relate to the virtues of governance by humans rather than governance by machines.[40]

This human-centric picture is one of a community that now not only has at its disposal a range of technologies that can be deployed for regulatory purposes but also an appreciation that such tools might be more effective than rules. This is a community that has come to realise that, far from being a regulatory challenge, technologies can be a regulatory opportunity. In other words, this is a community in which law 3.0 is already part of the conversation. However, where the functions of law are automated, we are being asked to respect an enterprise that takes humans out of the loop.

From a prudential perspective, the automation of legal functions, the replacement of human officials with machines, might seem risky relative to one's interests. Teething problems are to be expected and over-reliance on the technology might leave both individuals and communities ill-prepared for situations in which there are technological malfunctions or breakdowns. Without reassurance about the reliability and resilience of the technology, it is unclear whether one should prefer, so to speak, a West coast regulatory approach with its aspiration of total technological management that will guarantee perfect control and compliance or the traditional East coast approach where compliance is far from perfect, and where detection and enforcement is also far from perfect.[41] In this light, we might recall Samuel Butler's *Erewhon*[42] where the Erewhonians—concerned that their machines might develop some kind of 'consciousness', or capacity to reproduce, or agency, and fearful that machines might one day enslave humans—decided that the machines must be destroyed.

Similarly, from a moral perspective, it is unclear whether submitting to governance by smart machines is doing the right thing. If we value human discretion in the application of rules, we might worry that, with automation, this is a flexibility that we will lose.[43] Moreover, to the

39 Lon Fuller (n 9).

40 See, e.g., Mireille Hildebrandt, *Smart Technologies and the End(s) of Law* (Elgar, 2015). On which, see Roger Brownsword, Disruptive Agents and Our Onlife World: Should We Be Concerned?' (2017) 4 *Critical Analysis of Law* 61.

41 Seminally, see Lawrence Lessig, *Code and Other Laws of Cyberspace* (Basic Books, 2009). Compare, Roger Brownsword, 'Code, Control, and Choice: Why East is East and West is West' (2005) 25 *Legal Studies* 1

42 Samuel Butler, *Erewhon* (Penguin, 1970; first published, 1872).

43 For some pertinent examples, see Robert Veal and Michael Tsimplis, 'The integration of unmanned ships into the lex maritima' [2017] LMCLQ 303.

extent that the morality inscribed in machines tends to be utilitarian, this will be unattractive to those moral constituencies that oppose such reasoning.[44] As with the prudential rejection of governance by machines, conserving governance by rules, made by humans and administered by humans, might seem to be the morally indicated option.

In the influential writing of Mireille Hildebrandt, we find this kind of picture of law, with on the one side 'legality' (due process and justice) being valued against mere 'legalism (mechanical application of the rules) and, on the other, governance by rules being valued against rule by technologies. Accordingly, although Hildebrandt shares the common convention that, when we speak about the law, we refer to 'an institutional normative order',[45] in her distinctive conception of law we find: that legal standards are co-produced (reflecting a commitment to participatory and inclusive democratic practices); that the 'mode of existence' of modern law, with printing technology providing its infrastructure, is in the form of texts (statutes, codes, precedents, and so on); that legal texts are open to interpretation and contestation (in courts) before their application in individual cases; and that these features, in combination, enable law to serve more than the demand for certainty by responding to the demand for individual justice and for legitimate purposes.[46] By contrast, where order is controlled by technological regulation, we find a very different story. First, technological regulation is not 'controlled by the democratic legislator and there is no legal "enactment"'; secondly, the design of technological devices might be such as to 'rule out violating the rule they embody, even if this embodiment is a side-effect not deliberately inscribed'; and, thirdly, 'contestation of the technological defaults that regulate our lives may be impossible because they are often invisible and because most of the time there is no jurisdiction and no court'.[47] Stated shortly, Hildebrandt's concern is that smart machines will enhance the power of, and expand the possibilities for, technological regulation in a way that crowds out the features that we value in law. To which we might add that, once we lose what we value in this picture of law, we lose the basis for our respect.

Taking stock, we can see that the disruption brought about by governance by technology impacts on both sides of the traditional debate. On the one side, the prudential case for Law is challenged by technologies that promise to outperform humans and rules in achieving order. It is no longer enough to argue that Law, albeit less than perfect, is preferable to a lawless and disordered Wild West. Governance by technology claims that it can put in place a near perfect form of order. On the other side of the traditional debate, governance by technology also promises to outperform the aspirant moral order of Law. Whether we are thinking just about order, or about *just* order, the argument for the machines is that they can outperform the human enterprise of Law; what we should be deferring to is the judgment of the machines.

To be sure, there will be a debate about whether governance by technology can live up to its promise.[48] If we assume that it can, then the traditional debate—which sets one version of

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44 Compare Hubert Etienne's critique of the 'moral machine' in the present issue of LIT.

45 Hildebrandt (n 40), at 143.

46 Ibid., at e.g., 154-155.

47 Ibid., all at 12; and, see too the summary at 183-185.

48 Again, compare Hubert Etienne's critique of the 'moral machine' in this issue of LIT.

human governance against another—is displaced by a quite new debate about authority and respect where the choice is between either governance by humans and rules or governance by technologies.

If the choice is to be made on prudential grounds, the choice seems to be between imperfect order and perfect (or near perfect) order; and, if we are to push back against the latter it has to be on the apparently unpromising basis that we believe our self-interest (whether as an individual or as a member of the collective) is better served by imperfect order. If the choice is to be made on moral grounds, and if we are to push back against governance by technology it seems to be on the unpromising basis that we think that we do the right thing by backing our own moral judgments against the more perfectly realised moral order of the machines.

That said, in both cases, and particularly the moral case, we might protest that the technological performance simply cannot be compared with the human performance. There might be some functional similarities but the performances are fundamentally different.[49] In that light, we come to see that a key feature of the traditional debate about the authority of, and respect for, the Law is that it is predicated on a context in which the enterprise of subjecting human conduct to the governance of rules is an essentially human enterprise that uses rules as its regulatory tools. Once we take humans and rules out of the picture, this is a very different context and, concomitantly, a very different debate. In this context, while we can still ask whether we should defer to the machines, arguably, it no longer makes sense to conceive of Law in terms of authority (this being characteristic of human relations) and respect (this being characteristic of situations in which the option of non-compliance is available).

2.3.3 The Anthropocene again

Playing Devil's Advocate, suppose that we radically revise our conceptual thinking so that we come to view law as an expert system, not so much an assembly of philosopher kings as an assemblage of smart machines that can out-calculate, out-compute, and out-perform even the most intelligent and wisest of humans. If this is the relevant picture of governance, then would it not be crazy for humans to back their own judgments, both prudential (for order) and moral (for just order), against the machines? Yet, this is exactly what is proposed by the picture of law seemingly being celebrated as an expression of (probably) inferior human judgment; and, of course, this is precisely the source of the discontent that is immanent in that picture. Like a see-saw, the dialectic between those who argue for respect for the law and those who are discontent will move up and down but, as the weight of discontent increases, we might think that the human-centric picture needs to be turned on its head: the law to be respected by humans is after all the law of the machines; even humans will come to realise that, relative to governance by humans, it is governance by machines that is better than the alternative.

As technologies force us to reconsider our place in the universe, much in the same way as Galileo's telescope challenged the earth-centred philosophy of his time, they also challenge the sense and authority of the most fundamental presuppositions that lie at the heart of law 1.0 and 2.0. In the Anthropocene, hard legal divides between human and nature, between the global and territorially sovereign or privately empowered local, and between the present and the future have been unmasked as spurious. Continued reliance on them to justify the primacy of humans

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[49] Compare Lyria Bennett Moses, 'Not a Single Singularity' in Simon Deakin and Christopher Markou (eds) (n 4) 205.

over nature, of tribal sovereignty and private privilege over global community, and of present exercises of individual human autonomy over future collective and individual needs thwarts our collective future, and increasingly the grave injustices it causes are exposed for all to see. Clearly, as a corollary the authority of and respect for such laws also suffer.

Whereas law 1.0 and 2.0 conceptually exclude (non-humans, aliens, future generations), the operating system of Law 3.0 is technological rather than conceptual, and its extra-territorial application is the rule rather than the exception, From that perspective, the appeal of Law 3.0 is obvious; and humans, above all humans, surely must recognise this.

3. Covid-19, the exceptional and the new normal

In times, both ordinary and extraordinary, law 3.0 is the emerging conversation. We continue to rely on rules but we also consider in a much more sustained way the possibility of technological solutions to our regulatory problems. In the case of Covid-19, for example, we look to apps that can aid the enforcement of restrictions and test and tracing strategies. By contrast, there are some respects in which, in extraordinary times, we find a very different conversation, one that might employ familiar ideas but that now appeals to justifications that are far from ordinary.[50]

If recent experience with Covid-19 is representative of the way in which communities (local, regional, and international) reason during the time of a pandemic, then it is pretty clear that the case for public health measures does not rest on the consent of individuals. It is pretty clear, in other words, that if parents were to try to stand on their rights and resist, say, the vaccination of their children or some other harm-reducing measure advised by public health professionals, there would be a major push-back.[51] Similarly, we would expect there to be a push-back if parents were to resist or refuse to consent to the participation of their babies or children in non-invasive studies that epidemiologists believe would illuminate our understanding of the nature of the pandemic-causing virus. In this part of the article we sketch the changing rhetoric; we relate this to two possible narratives that speak to the nature of the extraordinary; we suggest that one of these accounts, engaging the idea of a stewardship responsibility for the global commons,[52] offers the best account of what makes any particular time or issue 'extraordinary'

50 In this part of the article, we are drawing on some of the ideas in Roger Brownsword's keynote to the International Network of Biolaw's Second Global Seminar on 'Biolaw and Global Risks: Challenges to Autonomy and Dignity in Pandemic Times', Washington, August 27, 2020, and Roger Brownsword and Jeff Wale 'In Ordinary Times, In Extraordinary Times: Consent, Newborn Screening, Genetics and Pandemics' (2020) *BioDiritto* 1-33, available online at https://www.biodiritto.org/Online-First-BLJ/Online-First-BLJ-1S-21-In-ordinary-times-in-extraordinary-times-consent-newborn-screening-genetics-and-pandemics.

51 That said, to a certain extent, this is context-sensitive. For example, a recent poll in the USA, suggests that about a third of US adults would decline a vaccine for Covid-19 and, presumably, these adults would also push-back against mandatory vaccination of their children: see Shannon Mullen O'Keefe, 'One in Three Americans Would Not Get COVID-19 Vaccine' (August 7, 2020), available at https://news.gallup.com/poll/317018/one-three-americans-not-covid-vaccine.aspx (last accessed August 28, 2020).

52 Compare, Nuffield Council on Bioethics, *Public health: ethical issues* (November 2007). The Council's reliance on the concept of stewardship attracted some criticism as being (from a utilitarian perspective) unnecessary. However, provided that stewardship is understood as operating in a different (extraordinary times) domain from ordinary time utilitarian reasoning, it is an evocative and defensible idea. For defence, see Tom Baldwin, Roger Brownsword, and Harald Schmidt, 'Stewardship, Paternalism and

and, with that, offers the best understanding of the extent to which rights and consent are justifiably displaced; and, finally, we indicate some questions for further consideration.

3.1 Rights and consent superseded

In extraordinary times, even in a community of rights—the natural ethical home for consent[53]— consent is not everything. Alongside ordinary times conversations and contestation, there are new priorities and a sense that we are now operating beyond both biolaw and bioethics as we ordinarily know them.

If this meant that, in extraordinary times, there are no longer legal or ethical constraints or that we should submit to a Leviathan, this would be deeply worrying. However, this is not the case: there remains a conspicuous concern to do the right thing. For example, the European Group on Ethics in Science and New Technologies (EGE) concludes its 'Statement on European Solidarity and the Protection of Fundamental Rights in the COVID-19 Pandemic' with the following ringing declaration:

> We must live through this pandemic, and after it. We must face this situation with strength, care and solidarity—a social vaccine that accompanies our search for a COVID-19 vaccine, which has an enduring character. One that provides resilience, lasting social and economic solidarity and *lasting immunity against indifference*.[54]

Nor is it the case that rights-based thinking is displaced from conversations that bring ordinary times values to bear on governance in extraordinary times. Indeed, the EGE, echoing the concerns of civil libertarians, insists that the unprecedented quarantine measures that were adopted to confine the spread of the virus, the extended use of surveillance technologies, and the like, should respect human rights by being no more than necessary and proportionate. As the EGE says, 'The public health emergency must not be abused to usurp power, or to permanently suspend the protection of rights and liberties.'[55] This is also not to say that concerns about consent are altogether set aside—for example, if children or their parents were to be conscripted into research trials, or if post-mortem samples were to be taken by researchers without consultation with families, it would be no surprise at all if consent were to re-surface as a basic requirement.[56] Nevertheless, the dominant thoughts provoked by a pandemic are about taking measures that, all things considered, will be for the benefit of human health and well-being, about keeping people safe, about reducing avoidable pressure on the healthcare infrastructure, and about maintaining social solidarity.

Public Health: Further Thoughts' (2009) *Public Health Ethics* 1, and Roger Brownsword, Responsible 'Regulation: Prudence, Precaution and Stewardship' (2011) 62 *Northern Ireland Legal Quarterly* 573.

53 See Deryck Beyleveld and Roger Brownsword, *Consent in the Law* (Hart, 2007).

54 Statement issued April 2, 2020, p 4, emphasis supplied. Available at https://ec.europa.eu/info/sites/info/files/research_and_innovation/ege/ec_rtd_ege-statement-covid-19.pdf (last accessed July 7, 2020).

55 Recommendation 4. Compare Michelle M. Mello and C. Jason Wang, 'Ethics and governance for digital disease surveillance' (2020) 368 *Science* 6494, 951.

56 Compare K. Moodley, B.W. Allwood, and T.M. Rossouw, 'Consent for critical care research after death from COVID-19: Arguments for a waiver' (2020) *S Afr Med J* 629.

This shift in thinking prompted by pandemics implies that, in some circumstances, where communities are faced by emergencies or catastrophes, neither the consent of individuals nor their particular rights are central to our justificatory thinking. Instead, there is a renewed emphasis on collective well-being and responsibility. Reflecting this shift, in its 'Statement on COVID-19: Ethical Considerations from a Global Perspective', the UNESCO International Bioethics Committee says that the responsibilities include those of

> governments to ensure public safety and protect health, and raise awareness of the public and other actors on the methods required for this purpose; responsibilities of the public to abide by the rules that protect everyone not only as individuals but also, and above all, as a community; [and] responsibilities of healthcare workers to treat and care for patients.[57]

The question then is this: in which circumstances are there compelling reasons for refocusing our justificatory reason in this way? How should we account for the displacement of rights and consent?

3.2 Extraordinary times: two accounts

There is more than one way of characterising the 'extraordinary'. Here we can outline two candidate accounts. Both accounts would reject any suggestion that pandemics give governments a licence to do whatever it takes. However, while the first account is, so to speak, from within bioethics (and biolaw), the second is a view from outside bioethics (and biolaw).

The first account treats a pandemic as a radical change to the context in which bioethics is ordinarily conducted but it resists the idea that bioethics is now suspended and superseded by a state of exception. To the contrary, bioethics as practised in ordinary times now extends into extraordinary times, but the pattern of advantage and disadvantage alters because of the radical change in context.[58] Whereas, in ordinary times and ordinary contexts, the ethic of rights and consent is an important voice in bioethical debate, in extraordinary times and extraordinary contexts, this voice loses its power and influence. In other words, our attraction and commitment to an ethic of rights and consent is context-dependent; and, in some exceptional circumstances, that attraction and commitment weakens.

The second account steps beyond bioethics, even bioethics in exceptional circumstances.[59] Resisting the idea that the pandemic simply changes the context in which ordinary times

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57 SHS/IBC-COMEST/COVID-19, Paris, 26 March 2020.

58 Compare Michael Cook, 'Will Covid-19 dethrone "autonomy" as the dominant principle of bioethics?' BioEdge, November 29, 2020, available at https://www.bioedge.org/bioethics/will-covid-19-dethrone-autonomy-as-the-dominant-principle-of-bioethics/13633? (last accessed, December 1, 2020).

59 For echoes of this account, see Bruce Jennings, 'Beyond the Covid Crisis—A New Social Contract with Public Health' (The Hastings Center, May 19, 2020) (available at: https://www.thehastingscenter.org/beyond-the-covid-crisis-a-new-social-contract-with-public-health/ (last accessed December 1, 2020), where we read:

> To weather pandemics and restore the social contact that economic life demands, we need to sign a new social contract with public health.
>
> One part of that involves disaster preparedness planning as an ongoing—not merely a periodic—activity. How we plan affects how we respond, and how tragic the ethical dilemmas of the response measures

bioethical contestation takes place, this second account identifies the pandemic as a particular threat to the conditions which make it possible to adopt bioethical positions and to engage in bioethical arguments in the first place. In this account, we are reminded not only of the vulnerability of humans and the fragility of the global commons on which all forms of human social existence depend, but also that, while some threats to the commons are *acute* (as is the case with a pandemic), others are *chronic* and *incremental* (as is the case, for example, with climate change and with big data and surveillance). By contrast with the first account, in which there is a period of ordinary times, then a period of extraordinary times before a return to ordinary times, the second account holds that, even in what are ostensibly ordinary times with their standard debates, there needs to be the kind of monitoring, vigilance, and precautionary preparedness that is appropriate in extraordinary times.

Following this second account, ordinary time conversations and ordinary case justifications co-exist with what we are calling extraordinary time conversations and stewardship justifications. In this bigger picture, where stewardship justifications are brought into play (whether by acute or by chronic threats) it is not a case of the triumph of one kind of ordinary case justification, it is not the values of one community (where neither rights nor consent are taken seriously) displacing the values of another community (where rights and consent are taken seriously), but a case of stewardship responsibilities for the global commons supervening on the values of all communities.

3.3 Stewardship and the Global Commons

Elaborating on the second narrative, the global commons should be viewed as having two dimensions: one relates to human existence; and the other relates to the human capacity for agency. In the case of a pandemic such as Covid-19, there is an urgent need not only protect the conditions for human life but also to minimise the compromising of the context for agency.

First, the *human* species is defined by its biology; and the prospects for human life depend on whether the conditions are compatible with the biological characteristics and needs of the *human* species. Most planets will not support *human* life. The conditions on planet Earth, neither too hot nor too cold, are special for *humans*. However, the conditions are not specially tailored to the needs of any particular human; these are the generic conditions for the existence of any member of the human species.

Secondly, it is characteristic of humans that they see themselves as 'agents', as beings having the capacity to choose and to pursue various projects and plans whether as individuals, in partnerships, in groups, or in whole communities. Sometimes, the various projects and plans

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may be. I suggest that we rethink disaster planning so that it becomes a civic practice. If we do so, then a disaster preparedness planning process will come to be seen as an expression of the entire community about the value of the lives and health of its members. It is less like a commercial contract between seller (the experts) and buyer (the tax payers and those subject to the plan's provisions) and more like a social contract, an agreement to be entered into by all that establishes commitments of responsibility for each.

A new social contract with public health requires a new form of civic thinking, a new ethic of public health citizenship. To bring about the institutional and behavioral change that emergency preparedness and response require, it is essential to see health as genuinely "public," as something that involves us all, as a common good, not as a commodity we pay for and consume.

that they pursue will be harmonious; but, often, human agents will find themselves in conflict or competition with one another. However, before we get to conflict or competition, there needs to be a context in which the exercise of agency is possible. This context is not one that privileges a particular articulation of agency; it is prior to, and entirely neutral between, the particular plans and projects that agents individually favour; the conditions that make up this context are generic to agency itself.

Any human agent, reflecting on the antecedent and essential nature of the commons must regard the critical infrastructural conditions as special. From any practical viewpoint, prudential or moral, that of regulator or regulatee, the protection of the commons must be the highest priority.[60] If the conditions for humanity are to be fit for purpose—fit for human existence and fit for human purposivity—regulatory stewardship will be guided by three imperatives.

In the first instance, it is imperative that steps are taken to protect, preserve and promote the ecosystem for human life.[61] At minimum, this entails that the physical well-being of humans must be secured; humans need oxygen, they need food and water, they need shelter, they need protection against contagious diseases, if they are sick they need whatever medical treatment is available, and they need to be protected against assaults by other humans or non-human beings.

The second imperative is to construct and maintain the conditions for meaningful self-development and agency, or the 'conditions of personal self-determination' as Massimo Renzo[62] terms them. There needs to be a sufficient sense of self and of self-esteem, as well as sufficient trust and confidence in one's fellow agents, together with sufficient predictability to plan, so as to operate in a way that is interactive and purposeful rather than merely defensive. The context should support agents in being able to freely choose their own ends, goals, purposes and so on ('to do their own thing') as well as to form a sense of their own interests and identity ('being their own person').[63] With existence secured, and under the right conditions, human life becomes an opportunity for agents to be who they want to be, to have

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60 An understanding of what it is to have the capacity for agency presupposes respect for the conditions for both self-interested agency and other-regarding agency. To cash out this argument, see Alan Gewirth, *Reason and Morality* (University of Chicago Press, 1978); Deryck Beyleveld, *The Dialectical Necessity of Morality* (University of Chicago Press, 1991); and Deryck Beyleveld, 'What Is Gewirth and What Is Beyleveld: A Retrospect with Comments on the Contributions' in Patrick Capps and Shaun D Pattinson (eds), *Ethical Rationalism and the Law.* (Hart, 2017) 233.

61 Compare, J. Rockström et al (n 24); and, Kate Raworth, *Doughnut Economics* (Random House Business Books, 2017) 43-53.

62 Massimo Renzo, 'Revolution and Intervention' (2020) 54 *Nous* 233, 243. Drawing on Joseph Raz, *The Morality of Freedom* (Oxford University Press, 1986) 370-373, Renzo identifies these conditions with having the capacity to form and execute sufficiently complex intentions, having an adequate range of options from which to choose the sort of life that we want for ourselves, and being free from coercion and manipulation as we make such choices.

63 Compare the insightful analysis of the importance of such conditions in Maria Brincker, 'Privacy in Public and the Contextual Conditions of Agency' in Tjerk Timan, Bryce Clayton Newell, and Bert-Jaap Koops (eds), *Privacy in Public Space* (Edward Elgar, 2017) 64; and, similarly, see Margaret Hu, 'Orwell's *1984* and a Fourth Amendment Cybersurveillance Nonintrusion Test' (2017) 92 *Washington Law Review* 1819, at 1903-1904.

the projects that they want to have, to form the relationships that they want, to pursue the interests that they choose to have and so on.

Thirdly, the commons must secure the conditions for an aspirant moral community, whether the particular community is guided by teleological or deontological standards, by rights or by duties, by communitarian or liberal or libertarian values, by virtue ethics, and so on. The generic context for moral community is impartial between competing moral visions, values, and ideals; but it must be conducive to 'moral' development and 'moral' agency in a formal sense. In particular, moral community of any kind presupposes a context in which agents are free to form and then to act on their own judgments of what it is to do the right thing.[64]

While respect for the commons' conditions is binding on all human agents, it should be emphasised that this does not rule out the possibility of prudential or moral pluralism. Rather, the commons represents the pre-conditions for both individual self-development and community debate, giving agents and communities the opportunity to develop their own view of what is prudent as well as what should be morally prohibited, permitted, or required. Whatever the issue, it is the commons that provides the platform for individual and community reflection, development, and debate.

3.4 Agenda for further discussion

The juxtaposition of ordinary time justifications with extraordinary time justifications opens an agenda for further inquiry. In particular, further reflection is invited on when the extraordinary is engaged and when it is not; on the character of extraordinary time reason, and any 'reach-through' from one class of justifications to the other; and, on how to operationalise stewardship in extraordinary times.

With regard to the first question, we want to have the right justificatory conversation at the right time. To do this, we need to be clear about whether a particular question is appropriately treated as an ordinary times matter or whether it engages extraordinary considerations. Without such clarity, we might continue to rely on ordinary time justifications when the commons is already being compromised (as, for example, many will argue is the case with climate change); and, conversely, we might continue to rely on extraordinary time justifications when ordinary time considerations should be applied (as is the fear of civil libertarians about the persistence of restrictions imposed at the height of, and in the wake of, Covid-19). In this light, we should be careful with narratives that imply that we live through a linear sequence of periods (ordinary, then extraordinary, then back to ordinary); rather, as the second narrative implies, we now live through a period in which the questions that we debate and the challenges that we face sometimes engage, as it were, ordinary time considerations but sometimes (as with climate change and pandemics) extraordinary time considerations. Quite literally, in Australia and California, we are engaged in fire-fighting, and it is the commons that is on fire.

Secondly, there are questions about the character of supervening reason and whether there is any reach-through of ordinary time values and justifications to extraordinary times. In ordinary times, we differentiate between prudential reason and moral reason. However, commons'

[64] See, e.g., Roger Brownsword, 'So What Does the World Need Now? Reflections on Regulating Technologies' in Roger Brownsword and Karen Yeung (eds), *Regulating Technologies* (Hart, 2008) 23; and, 'Lost in Translation: Legality, Regulatory Margins, and Technological Management' (2011) 26 *Berkeley Technology Law Journal* 1321.

protecting reason seems to be both prudential and moral; it is in the interest of everyone and it is categorical, exclusionary, and overriding. Beyond this particular question of character, as we have said, even in extraordinary times, some familiar ordinary times values will resurface in some debates (debates that actually belong to ordinary times). However, the question is whether values of this kind reach through to the stewardship of the commons. For example, some might argue that values such as autonomy, privacy, and human dignity are fundamental not only to the constitution of a community of rights but also to the context for agency that is one of the dimensions of the commons' conditions.

A third question, vividly highlighted by the recent experience with Covid-19, is about the coordination of our stewardship responsibilities. In principle, we are all stewards for the global commons and, as such, we can 'do our bit'—for example, we can comply with the necessary restrictions on our movement or association that are put in place to prevent the spread of the virus. However, in practice, the restoration and maintenance of the global commons needs international leadership.[65] In the case of a pandemic, it is the WHO that is the obvious candidate. However, if the WHO is to be hobbled and undermined by great powers that conduct international relations in an entirely self-serving nationalistic way, there has to be some other approach.[66]

Finally, we might also reflect on the more general jurisprudential implications of the co-existence of ordinary time and extraordinary time justifications. While we might be more familiar with the former, it is in the latter that we have real terra firma for our justificatory arguments in biolaw and bioethics. If, as Sarah Franklin has argued, biolaw and bioethics have lost their bearings, then it is with our responsibilities in relation to the global commons that we should begin the work of restoration.[67] After all, unlike ordinary time debates where people find it hard to agree, no one should find it hard to agree that we should take special care of conditions that are neutral between humans, neutral between articulations of self-interest, and neutral between articulations of a moral viewpoint but without which humans cannot exist, cannot form a sense of their self-interest, and cannot exercise moral agency.

3.5 Extraordinary times: the new ordinary?

The start of the Anthropocene marks the end of the Holocene. In the particular context of this part of our discussion, above all, this means that we have left the inter-glacial period marked by 10.000 years of Earth system stability, allowing humans to prosper and biodiversity to flourish. The natural upheavals experienced recently, spilling over in economic and social hardship, are entirely consistent with the long period of unsettling change the Anthropocene represents. Once a single planetary boundary has been overstepped, for instance CO_2, a cascading effect takes hold of Earth systems, and one disaster seamlessly transforms into a

65 See Roger Brownsword (n 7) Ch 24.

66 See Andrew Joseph and Helen Branswell, 'Trump: US will terminate relationship with the World Health Organization in wake of Covid-19 pandemic' STAT, May 29, 2020: available at https://www.statnews.com/2020/05/29/trump-us-terminate-who-relationship/ (last accessed, July 5, 2020).

67 Sarah Franklin, 'Ethical research—the long and bumpy road from shirked to shared' *Nature* 574, 627-630 (2019), *doi: 10.1038/d41586-019-03270-4.*

next. For example, (human induced) runaway climate change is causing massive changes in the hydrological cycle, flooding, droughts, mass extinction of species, forest fires, pandemics, water shortages, starvation, civil strife, etc.[68]

Many scientists therefore believe there is compelling evidence that humans are pushing or, worse, have pushed Earth systems out of their stable envelope, and that therefore the past no longer offers guidance in predicting the future. The only thing we can say for sure is that the new normal is one of unpredictable change, and that a host of extraordinary events will occur with frightening speed and frequency, especially if appreciated in a proper context of geological time.[69]

If the extraordinary has become the new normal, what future is there for legal baselines, enshrined in rights and consent requirements? The extreme positions, i.e. that rights and consent are no longer of any value or, conversely, continue to have the same importance are clearly untenable. However, the certainty that crises in the Anthropocene are a permanent and dominant part of human existence, much like war was a permanent state occasionally interrupted by brief periods of peace until less than a century ago, means that regulators can be held to account for their preparedness to deal with the unexpected. 'Peace', for warring nations and continents, is not a time just to rebuild lives and shattered societies, but also a crucial window allowing engagement with citizens, obtaining their consent, through conventional deliberative means, for budgets for the military, civil defence infrastructures, conscription schemes, etc.

We should likewise expect our regulators in advance to carve out situations when rights are to be suspended or compromised, the extent to which this is the case, procedural guarantees, judicial review, and the like. Some constitutions, including Germany's Basic Law, indeed contain such specific provisions for various types of crises. The 1968 amendment of the Basic Law to that end stirred intense controversy for two decades, with the writer Heinrich Böll warning that the amendments paved the way for virtually unfettered mobilization of state powers in times of crises.[70] Despite these warnings from one of Germany's most important writers who had lived through two devastating wars, the German electorate had its say, and a two third parliamentary majority passed the amendments.

4. Conclusion

Technology driven regulation ('Law 3.0') is here to stay, and its significance and prevalence set to increase. That prediction we base on the growing breadth and sophistication of the technological toolbox regulators can rely on, and a survivalist agenda in which regulatory effectiveness comes at a premium. The associated escalation in levels of regulatory invasiveness is cause for serious concern, at two levels.

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68 Timothy Lenton et al. 'Climate tipping points — too risky to bet against', *Nature* 575: 592–95 (2020).

69 Jan Zalasiewicz et al, 'The Anthropocene: a new epoch of geological time?' (2011) 1938 *Philosophical Transactions: Mathematical, Physical and Engineering Sciences* 835.

70 As cited in *Deutschlandfunk*, 11 May 2008, https://www.deutschlandfunk.de/sternmarsch-nach-bonn.871.de.html?dram:article_id=126237 (last accessed February 25, 2021).

First, we should guard against irreversible erosions of human autonomy and agency, and unwarranted or disproportionate encroachments on rights and liberties. Yet, living in unprecedented times of continuous all-encompassing change, we can no longer take for granted the authority of legal baselines derived from a stable past. Blind continued reliance on them therefore may be neither viable nor desirable, and the academic community must play its role in a critical (re)evaluation. To be sure, what courts deem 'necessary' or 'proportional' ultimately hinges on the relative weight law assigns to the facts and interests at stake. One of the deeper implications of the Anthropocene is that technologies have changed the weight distribution, between the interests of humans and nature first and foremost, but also between public and private, local and global, and present and future interests.

Second and more reflexively, we should be concerned about what the rise of Law 3.0 tells us about the state of the world we live in. The trilogy around which we have structured this editorial is law 1.0 (court driven litigation), law 2.0 (policy driven regulation), and law 3.0 (technology driven dictates). That trilogy quite naturally superimposes on another trilogy, familiar to environmental scholars; (1.0) laws couched in the form of self-executing prohibitions, designed to *preserve* environments, (2.0) laws containing regulatory instructions proactively to *protect* environments, and (3.0) laws mandating authorities to use best available technologies to *restore* environments.[71] Yet another trilogy consists of the UN's conceptual 'respect, protect, fulfil' framework, which reflects a similar gradual escalation of invasive public action to secure compliance with human rights. The third leg of each of these trilogies invariably involves the deployment of a host of technologies

Our general point is that each escalation signifies past regulatory failure and, more importantly of course, failure to prevent (irreversible) harm to humans or their environment. Environmental policy has failed to prevent, failed to protect, failed to restore, and is now coming to terms with the reality that its final trump card is technological, and consists of *re-engineering* (life, the atmosphere, etc.). In that sense, the rise of law 3.0 is the canary in the coalmine.

At the same time, it would be entirely wrong to equate technologies with the demise of law 1.0 and 2.0. Courts and litigants are emboldened by easy access to scientific data, including those generated by cheap technologies that allow citizens to generate data themselves ('citizens science'). Such technologies have reinvigorated public interest litigation in courts across the globe. In the past year alone, constitutional and international courts increasingly frequently have done the unthinkable. Courts have afforded legal personality to nature, granted injunctions against states exercising 'sovereignty over natural resources', and imposed obligations on such sovereign nations to take a bigger share of their responsibility to protect the global commons. It is in fact safe (albeit somewhat surprising) to say that the kind of constructive and structural change that the world needs has been coming from courts, more than from regulators, and that technologies have been a key factor in that success.

There is every reason to believe that technologies can similarly revitalize law 2.0. They help citizens contribute to the scientific base of regulations, and allow regulators to deal with systemic complexities, monitor performance, and improve compliance rates.

In conclusion, whatever future vision we hold, the study and practice of law can no longer be divorced from technologies—and, here, we might recall the final question that we suggested in

[71] See Han Somsen (n 6).

our indicative research agenda back in 2009. That agenda item asked 'In relation to the major global challenges (climate, health, food, security and so on), to what extent is regulation and technology part of the problem? And, to what extent might it be part of the solution?' As we have suggested in this present article, the disruption of law that generates a law 3.0 mind-set, breaks down a clear distinction between regulation and technology because the latter is now viewed as a potential solution to regulatory problems. This means that technology intrudes on the domain of law and regulation potentially to exacerbate problems but also to offer solutions. Given that this agenda item focuses on the major global challenges, the stakes could not be higher. With the Anthropocene and global pandemics at the top of our list of challenges, we need to be clear about their nature and we need to be asking how law, innovation, and technology can be employed to respond constructively to these challenges.[72] In the coming years, this should be a priority for all of us.

[72] Compare Hope Johnson's contribution to the present issue of LIT.