8

Rebooting Code as Law: Conclusions and Next Steps

> When technologies are always influencing human actions, we had better try to give this influence a desirable form.[1]

Code is not law, but as this book has shown, that fact must not deter lawyers from taking an active interest in how it shapes and constitutes the behaviour and actions of citizens in a democracy. We critique the form taken by the legal rules that govern our lives, and we should do the same with code rules – especially since they are used increasingly as instruments to sidestep the supposed 'inefficiency' of text-based law that at its best respects, protects, and even makes possible our autonomy as citizens. This should be of concern to anyone interested in preserving the rule of law.

This cross-disciplinary study has brought together the practical question of how code regulates with a legal-theoretical view of what constitutes legitimate regulation. Part I of the book sets out a descriptive analysis of code as a normative concern, from the perspectives of both design and legal theory, framing the problems so identified using the concept of *computational legalism*. In Part II, I discuss in greater depth the existing literature on what constitutes legitimate regulation, again from a legal-theoretical perspective (how legal rules are made, or designed), and in terms of the existing discussions of code by legal scholars. What becomes clear from the discussion in Chapter 5 is the lack of sustained attention on the ex ante nature of code, and thus the need to engage seriously with the practices of its production. Part III of the book – a synthesis of the first two parts – proposes a way forward from computational legalism, the central position being that the methods of ameliorating legalism in the legal realm ought to be applied in other normative domains, including – with appropriate modification – 'code as law'. The result is the framework of *digisprudential affordances* set out in Chapter 6,

[1] P-P Verbeek, 'Materializing morality: Design ethics and technological mediation' (2006) 31 *Science, Technology, & Human Values* 361, 370.

which are grounded in practical reality first through their application to real technologies, and second through an analysis, in Chapter 7, of some of the processes and tools of real-world code production.

Ultimately, digisprudence is about taking code seriously as a regulator on its own terms, but without giving ground to what we ought to expect of a legitimate exercise of regulative power in a democracy. Unlike most existing treatment of code in the legal literature, built as much of it is on the Lessigian framework, I have treated code not as an abstract medium or 'regulatory modality', but as a mechanism that is embodied in very real, very particular artefacts whose design affects individuals and communities in concrete ways at identifiable moments in time. The specific configuration of (dis)affordance experienced by a particular individual in her use of an artefact is where regulative force is actually 'applied', and so our analysis of code must in the end include the relations that these artefacts have with those whose behaviour and actions they enable, constrain, and indeed constitute.

Given this focus on relationality, the goal in this book has been to suggest a set of affordances – relational as they by definition are – that when present legitimise the code at a 'constitutional' level, prior to considerations of its commercial purposes or whether or not it complies with the specific requirements of substantive law. The digisprudential affordances therefore serve as a guide for the production of legitimate code; where it fails to provide those affordances to the relevant parties – the user, and the court – then it ought to be deemed illegitimate. Saying so is not something we should be coy about doing, given what is at stake.

I will conclude in this final chapter by reiterating the relevance of digisprudence to contemporary technologically mediated life, before highlighting some of the exciting avenues for future research that have emerged in the course of this work.

8.1 The Contemporary Relevance of Digisprudence

I highlighted in Chapter 1 the tension between law as the paradigmatic normative order on the one hand, and code as an alternative order on the other. This speaks to fundamental questions of law and of normativity – what it is for an a-legal order to arise in parallel with (or even to supplant) democratically legitimated law, particularly when that alternative order is commercially motivated and benefits from the 'legalistic' characteristics of ruleishness, opacity, immediacy, immutability, and pervasiveness. When we fail to enquire as to the processes through which private code-based normativity is created and imposed, the result is a situation that is deeply problematic on two fronts, each of which compounds the other: we have technical rules which are by their very nature opaque and instrumental, created through commercial

processes that lack democratic incentives, ratification, and oversight. The implications are profound, particularly given the ever-increasing role of code in ordering our social, political, and economic lives.

It is clear from the literature that this is a fundamental but under-studied problem. While the regulation of code by law is a topic that has generated a significant literature across many contexts, it has mostly failed to account adequately for the myriad ways in which designers impose normativity *in practice*, often outside of any awareness or cognisance of the substantive law which they should be applying to and through their practices. Related to this is the common assumption that more law will result in better code. I have argued that the translation of legal text into code – assuming the designer is aware of the text in the first place – is problematic, and so there are inevitable gaps between what the law expects and what the code actually does.[2] Appealing for more law will undoubtedly help close some of these gaps, but it is unlikely to solve the problem at a foundational level, not least because ever-more complex and precise sets of textual rules undermine rather than encourage compliance.[3] In the absence of a more computationally friendly form of legislation (I discuss this below), designers need to be guided in their creation of code that is not necessarily 'legal' *per se* but whose design embodies constitutional protections that can minimise the possibility of substantive illegality and can facilitate judicial action should such illegality be found.

As we saw in Chapter 5, the legal literature focused specifically on normative criteria for code is very small indeed, and while a few legal scholars have argued for greater engagement with the disciplines this book discusses, there is sometimes, ironically, an element of legalism in the unwillingness to look outside the boundaries and the conceptual lenses of the legal discipline in order to engage with what lies beyond.[4] This is unfortunate, because it is not possible fully to understand the alternative normative order of code by observing it through only a legal lens, far less is it possible to think pragmatically about how to tackle the real problems, discussed in this book, that it raises. By stepping outside of one's discipline, temporarily adopting the horizons of the domains against which it rubs or upon which it relies, we can gain new insights into how successfully and unsuccessfully it interfaces with

[2] L Diver, 'Law as a user: Design, affordance, and the technological mediation of norms' (2018) 15 *SCRIPTed* 4.

[3] C Reed, 'How to make bad law: Lessons from cyberspace' (2010) 73 *The Modern Law Review* 903, 904 *et seq*.; JN Shklar, *Legalism* (Harvard University Press 1964) 2.

[4] Cf. S Gutwirth, P De Hert and L De Sutter, 'The trouble with technology regulation: Why Lessig's "optimal mix" will not work' in R Brownsword and K Yeung (eds), *Regulating Technologies: Legal Futures, Regulatory Frames and Technological Fixes* (Hart 2008).

its environment. Such insights can be transformative when eventually we step 'back inside'.

8.2 Next Steps?

Various avenues for future research came to light while researching the thesis on which this book is based. Here is a brief survey of the most pressing concerns, particularly given the increasing appetite for outsourcing to code what has until recently been the domain of institutional law.

(a) The Future of Compliance by Design

Digisprudence is consciously focused on code as a normative order parallel to law, but within this focus lies the seed of an obvious question: how might the parallel orders be brought more closely together in the future? As code is increasingly the medium upon which other parts of social, political, and commercial life are built, it seems reasonable to assume that it will become the target of more and more positive law. However, laws that fail properly to be embodied in the code that they target tacitly undermine law-making as an expression of the democratic will. This is the problem I referred to early in Chapter 6, where the belief in the validity of the rule that animates the use of code transfers into a belief that the resulting code is itself also valid. The limits that this belief places on our knowledge of what is actually happening might come to have significant negative effects as code continues to proliferate deeper into the fabric of society.

Continuing in the legisprudential spirit, then, we might consider how legislators could better couch the terms of legal norms such that they are more susceptible to application in the design environment, and particularly in terms of affordances. The field of legal informatics is concerned with the question of translation from law to computational representations, but much of the work there does not engage the practices of norm creation themselves, continuing instead to view legislation as a passive source of textual rules to be grappled with by various external computational processes.[5] Although approaches to legal formalism have existed for decades, these seem to have had little impact on legislative practice. This may be changing with the emergence of 'Rules as Code', an umbrella term for a variety of emerging initiatives

[5] See for example P Lippe, DM Katz and D Jackson, 'Legal by design: A new paradigm for handling complexity in banking regulation and elsewhere in law' (2014) 93 *Oregon Law Review* 833; D Oberle et al., 'Engineering compliant software: Advising developers by automating legal reasoning' (2012) 9 *SCRIPTed* 280; DM Katz, 'Quantitative legal prediction – or – how I learned to stop worrying and start preparing for the data driven future of the legal services industry' (2012) 62 *Emory Law Journal* 909.

whose goal is for legislation to be drafted from the outset in machine-readable formats. Those working in this area have differing views on the ultimate purpose and value of this.[6] At the conservative end of the scale, some seek merely to add underlying 'semantic' structure to the text of legislative documents in order to improve various ancillary computational processes such as classification, searching, and archiving. Such an approach does not alter the instrument's textual nature, but merely its representation to the machine,[7] which in turn benefits drafting through the ability to, for example, keep track of provisions across versions of the document. More sophisticated are suggestions involving drafting the text of a legislative instrument alongside an equivalent computational representation that can be 'executed' to check for logical anomalies or lacunae, the goal being to assist parliamentary drafters in producing more logically coherent legislation.[8] Lastly, some seek to have legislative norms expressed directly in executable code that can be integrated directly into artefacts that implement policy on behalf of the state (as in tax calculators or benefit entitlement decisions) or whose commercial designers seek to make compliant with legislative requirements.[9] This is of course the mirror image of digisprudence: the creation of code-friendly institutional law, as opposed to the creation of 'legality-friendly' code. This is an emerging area, and while some of its goals are clearly valuable (there is no obvious downside to the semantic structuring of a legislative document or the elimination of logically impossible conditions between rules), others may have unforeseen reflexive effects on the nature of law built around accessible, natural language text. This is true even of rules as code approaches that are not concerned with creating the mythical 'robot judge'.

In any event, such a focus on positive law elides the relational stance I have been advocating. In that respect, I am not aware of any analysis of

[6] For a sober overview, see M Waddington, 'Machine-consumable legislation: A legislative drafter's perspective – human v artificial intelligence' (2019) *The Loophole – Journal of Commonwealth Association of Legislative Counsel* 21.

[7] Using, for example, the Akoma Ntoso XML standard.

[8] This is the goal of 'better rules' initiatives. See for example New Zealand Government, 'Better rules for government – discovery report' (New Zealand Government 2018) <https://www.digital.govt.nz/dmsdocument/95-better-rules-for-government-discovery-report> last accessed 4 March 2021. Interestingly, this goal is echoed in Meldman's use of a Petri net to model US federal civil procedure, where a lacuna that was hidden in the natural language came 'right to the surface' in the model. See JA Meldman, 'A Petri-net representation of civil procedure' (1977) 19 *Idea* 123, 145.

[9] Waddington (n 6) 24 *et seq*. For a real-world application currently under active development, see D Merigoux and L Huttner, 'Catala: Moving towards the future of legal expert systems' (INRIA 2020) <https://hal.inria.fr/hal-02936606> last accessed 4 March 2021.

how the substantive content of laws might be couched in the language of affordance, rendering them more capable of direct implementation by producers of code. Hildebrandt, for example, mentions 'detecting, configuring or designing affordances that are compatible with specific legal norms',[10] but does not discuss the opposite notion of couching laws in terms compatible with affordance theory. From a digisprudential perspective, the norm that is in fact embodied in the artefactual design is the norm that ultimately matters, and so the articulation of textual norms ought as far as possible to facilitate the most isomorphic code possible.[11]

We have seen how the concepts of (dis)affordance and inscription are simultaneously both concrete and technology-agnostic, because of their relational focus; the digisprudential affordances are specific enough to identify the presence or absence of defined capabilities, but abstract enough to apply across a wide spectrum of technologies. This might suggest affordance theory as a good candidate for expressing a range of substantive legal requirements in terms that lie closer to the actual practices of those expected to comply with them. The expressive texture of such an approach might be enhanced by recent work couching affordances in deontological terms appropriate for legal articulation,[12] the classification of affordances according to their cognitive, physical, sensory, and functional characteristics,[13] or even the various relationships of technological mediation that, as we saw in Chapter 2, structure our realities.[14]

(b) Design and Private Law

Another avenue for research is the relationship between design and private contracting (recall the discussion in Chapter 1 of the normative relationships in code and law). The observation that online contracting is a form of non-state legal ordering is not new,[15] but some of the observations about design

[10] M Hildebrandt, *Smart Technologies and the End(s) of Law: Novel Entanglements of Law and Technology* (Edward Elgar Publishing 2015) 218.

[11] I raised the problem of code's mediation of textual norms in Diver (n 2) 39–40.

[12] JL Davis and JB Chouinard, 'Theorizing affordances: From request to refuse' (2017) *Bulletin of Science, Technology & Society* 241. See also JL Davis, *How Artifacts Afford: The Power and Politics of Everyday Things* (MIT Press 2020).

[13] R Hartson, 'Cognitive, physical, sensory, and functional affordances in interaction design' (2003) 22 *Behaviour & Information Technology* 315.

[14] D Ihde, *Technology and the Lifeworld: From Garden to Earth* (Indiana University Press 1990) chapter 5.

[15] See for example L Belli and J Venturini, 'Private ordering and the rise of terms of service as cyber-regulation' (2016) *Internet Policy Review* 5; W Schulz and K Dankert, '"Governance by things" as a challenge to regulation by law' (2016) 5 *Internet Policy Review* <https://doi.

have implications that require further exploration. Building on the discourse around 'clickwrap' licensing in the 2000s, Hartzog moots the idea of design elements being considered as contractual terms *per se*.[16] This explicitly intertwines design practice with legal practice, and is something that design theory might helpfully inform. Although Hartzog does not employ those theories, their role is implicit in his analysis when he argues that specific features of design (such as Facebook's privacy settings, structured by the affordances of its interface) ought to be deemed part of the contract between the end-user and a website's operator.[17]

As with unfair contract terms, we can imagine (dis)affordances that are illegitimate terms of such a design-based contract. More recently Hartzog discusses 'promissory design', or 'the implicit (and sometimes even explicit) promises embedded in and expressed through design'.[18] He questions the disparity between liability arising from textual contract terms and the lack of accountability for promises expressed via design. Given the interface of the website is frequently the only medium by which end-users communicate with online providers, their expression of preferences through the configuration of website settings (that is, by configuring its affordances) ought to constitute a form of agreement. From the perspective of code's production, the provision of a setting in an interface perhaps ought to imply a legal duty on the provider to ensure the background code operates in accordance with (a reasonable interpretation of) the technical state the setting purports to create. The role that design plays in end-users' understanding of the products they use suggests the potential to explore further the role that design plays in foundational legal concepts of negotiation, consensus, and performance. This in turn will require jurisdiction-specific analyses, and the application of design theory to the perennial question of code versus jurisdiction.

(c) 'Legitimacy Impact Assessment'

A growing area of research activity, particularly in the fields of privacy and data protection,[19] is impact assessment. Impact assessments aim to provide

org/10.14763/2016.2.409> last accessed 19 April 2021; MJ Radin, 'Regulation by contract, regulation by machine' (2004) 160 *Journal of Institutional and Theoretical Economics (JITE)* 142.

[16] W Hartzog, 'Website design as contract' (2010) 60 *American University Law Review* 1635.

[17] Ibid. 1650 *et seq*.

[18] W Hartzog, *Privacy's Blueprint: The Battle to Control the Design of New Technologies* (Harvard University Press 2018) 169 *et seq*.

[19] The latter is required by Art. 35 of the GDPR under certain circumstances, including for new technologies.

'a systematic process for evaluating the potential effects of privacy of a project, initiative, or proposed system or scheme' and to assist in 'finding ways to mitigate or avoid any adverse effects'.[20] The European Commission has published guidance on their use for the Internet of Things,[21] and they are a common feature of government procurement processes.[22] As Clarke observes, one interpretation of why impact assessments have emerged in recent years is as a reaction to the 'increasingly privacy-invasive actions of governments and corporations' in the late twentieth century.[23] Because of these actions, 'people want to know about organisations' activities, and want to exercise control over their excesses', with the privacy impact assessment demonstrating a 'ceding by large organisations of some of the substantial power that they exercise over citizens'.[24] There is of course an appreciable overlap here with the ethos of digisprudence. Key to privacy impact assessment processes is their focus on a single project or initiative, their anticipatory (ex ante) nature, their wide scope in considering forms of privacy and the actors whose interests might be affected, their desire to identify both problems and solutions, and their focus on organisational engagement.

The notion of impact assessment is not limited to privacy. In previous co-authored work I have considered the notion of a 'social impact assessment',[25] taking into account not just data protection, but factors such as security, transparency, sustainability, resilience, and interoperability.[26] There might be scope here for a kind of 'legitimacy impact assessment', developed by adapting existing impact assessment methodologies towards a focus on legitimacy. This research might also consider the inter-relationship between digisprudence

[20] D Wright, 'Should privacy impact assessments be mandatory?' (2011) 54 *Communications of the ACM* 121, 123. See also D Kloza et al., 'Data protection impact assessments in the European Union. Complementing the new legal framework towards a more robust protection of individuals' (DPIA Lab 2017).

[21] European Commission, 'Privacy and Data Protection Impact Assessment Framework for RFID Applications' (European Commission 2011) <https://ec.europa.eu/digital-single-market/en/news/privacy-and-data-protection-impact-assessment-framework-rfid-applications> last accessed 4 March 2021.

[22] L Edwards, D McAuley and L Diver, 'From privacy impact assessment to social impact assessment' in *2016 IEEE Security and Privacy Workshops (SPW)* (IEEE 2016) 54.

[23] R Clarke, 'Privacy impact assessment: Its origins and development' (2009) 25 *Computer Law & Security Review* 123, 124.

[24] Ibid.

[25] Edwards et al. (n 22).

[26] Ibid. 56–7.

and substantive initiatives that guide the production of code already mentioned, for example data protection by design, mandated by the GDPR, value-sensitive design,[27] and participatory design.[28] The appropriate interplay between the baseline constitutional requirements of digisprudence and the higher-level substantive outputs of such approaches is a potentially fruitful direction for future research.

8.3 Concluding Thoughts

The theory I have presented in this book builds on existing work in legal and design theory, seeking to build a bridge between the two worlds whilst maintaining focus on what ought to be an issue of fundamental importance in any democracy: commercial enterprises regulating and constituting the behaviour of citizens. Power is undoubtedly shifting away from the public legislator onto private actors who have pervasive control over the digital products and infrastructures that permeate contemporary life, whose exercise of that power need not be valid for it nevertheless to be exercised. Code can supplant law as the dominant normative enterprise, its processes of creation both hidden by veils of legal and technical inscrutability and guided by neoliberal ideas of unfettered 'innovation'.

As I suggested in the opening chapter, the legal academy has been somewhat reticent to move beyond or to evolve Lessig's seminal work on 'code as law'. Perhaps in line with the nature of the profession, lawyers often retain a kind of external perspective, talking simply of 'regulating', often without much appreciation for what this actually means in practical terms or reflection on whether the promulgation of more textual rules is the best way to address the elephant in the room, namely the question of whether and under what conditions the constituting, by code, of citizens' behaviour and action can in a democratic state be said to be legitimate.

Rather than each discipline sniping at the other from the outside, I have tried in each case to adopt an internal perspective that is necessary both to acknowledge the commitments of each domain, and for achieving a pragmatic synthesis of these into a starting point for practical application. There

[27] M Flanagan, DC Howe and H Nissenbaum, 'Embodying values in technology: Theory and practice' in J van den Hoven and J Weckert (eds), *Information Technology and Moral Philosophy* (Cambridge University Press 2008); B Friedman, 'Value-sensitive design' (1996) 3 *interactions* 16.

[28] Verbeek (n 1); J Schot and A Rip, 'The past and future of constructive technology assessment' (1997) 54 *Technological Forecasting and Social Change* 251.

is still much to be done of course, but the essential point is this: code must always afford citizens ways of resisting its heteronomy, both individually at point of execution, and ex post via the courts who, as the arbiter of last resort in a democracy, must themselves be able to exercise their function as guardians of the rule of law.