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(2024)

Digital Distortions arising when Encoding Regulation.
Research Features, 151, 4 March 2024.
[Featured article]

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<https://doi.org/10.26904/RF-151-6106305305>

Digital distortions arising when encoding regulation

- The conversion of law and regulation into computer code, also referred to as digital regulation, has become increasingly widespread.
- Professor Anna Huggins, Dr Alice Witt, Professor Mark Burdon, and their team at the School of Law at Queensland University of Technology, Australia are exploring opportunities and challenges associated with digitising regulation.
- In their most recent paper, they identify and analyse misalignments between regulation and how it is encoded arising from subjective interpretations, using legal cartography concepts.



The advent of digital technology revolutionised practices in a wide range of sectors, including the legal field. In recent years, some legal experts have been exploring the possibility of converting laws and regulations into computer code. These efforts aimed at encoding law and regulation are broadly referred to as digital regulation initiatives.

Digital regulation could pave the way for the development of regulatory technology (RegTech), artificial intelligence (AI) systems, and other digital tools that can inform citizens, make legal predictions, and guide legal decision-making. However, accurately converting complex regulation into computer code is far from an easy endeavour and some legal experts have expressed their concerns, suggesting that digital regulation initiatives could lead to coded misinterpretations of the law.

Professor Anna Huggins, Dr Alice Witt, Professor Mark Burdon, and their team at the School of Law at Queensland University of Technology, Australia have dedicated the past few years to exploring

the opportunities and challenges associated with the digitisation of law and other types of regulation. Their most recent paper (Huggins, A, et al, 2024) explores how regulation might be distorted by coder interpretative choices when it is converted into computer code.

Strategies to reliably encode legislation

In a paper published in 2022, Huggins, Witt, and Burdon set out to analyse some of the challenges associated with encoding law and regulation, informed by an analytical approach introduced by Professor Roger Brownsword. Their study emphasised the need to

Recent digital regulation studies have primarily investigated the extent to which legislative rules translated into computer code are aligned with constitutional values, including the 'rule of law'.

adopt a holistic regulatory mindset when digitising regulation, keeping fundamental constitutional values in mind.

In the same year, the researchers also introduced a methodology incorporating statutory interpretation principles that could guide digital regulation efforts, which can be applied across a wide range of contexts and jurisdictions. As part of their study, the team asked three legally trained participants to interpret parts of the Australian Copyright Act 1968 (Cth). Interestingly, they found that the coders interpreted some provisions of the legislation differently and therefore produced different encoded versions of the same statutory text. These difficulties, resulting from ambiguities in how sentences are phrased and the complex links between different parts of regulatory texts, highlight how interpretive ambiguities can influence digital regulation efforts.

Digital distortions in the encoding of regulation

Recent digital regulation efforts have primarily investigated the extent to which legislative rules translated into computer code align with constitutional values, including the 'rule of law'. The 'rule of law' is a

contested legal ideal that, in Western democratic societies, requires every citizen to be subject to the same laws.

Digital regulation initiatives, however, often reach beyond legislation, setting out to convert other rules and norms that are open to interpretation, such as regulatory guidelines, directives, policies, professional standards, or codes of conduct. In their most recent paper, the research team aimed to fill this gap in literature by exploring the challenges that can arise when digitising non-legislative regulation.

The team utilised legal cartography concepts to identify and analyse some of the 'distortions' that can occur when trying to digitalise regulation. Their analysis was grounded in theories introduced by sociologist and economics professor Boaventura de Sousa Santos, who outlined the similarities between laws and maps, both of which reflect only one representation of social reality.

Framing the distortions using cartography

The researchers argue that the digitisation of regulation influenced



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by coders' interpretative choices can be better identified using concepts rooted in cartography (ie, the science of map drawing). The cartographic concepts that the team considered in the context of digitising regulation include scale, projection, symbolisation, and orientation. These are all elements of de Sousa Santos' 'symbolic

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The researchers argue that the digitisation of regulation influenced by coders' interpretative choices can be better identified using concepts rooted in cartography.



cartography of law', a theory that uses mapping concepts to outline how the law can be misread and misinterpreted.

In this context, scale consists of the regulatory instruments, bodies, and infrastructures considered when encoding regulation and general rules. Projection, on the other hand, entails the unavoidable conflict between the logic rules that underpin computational processes and the interpretive logic associated with regulatory practices.

The concept of symbolisation highlights the ways in which specific coding languages could emphasise or prioritise some features of regulation over others. Finally, orientation underscores that the final encoded version of regulation is likely to reflect the purpose for which it is designed, the needs of a computational tool's end users, and the normative stances of those who coded it.

A simple demonstration and new insight to guide digital regulation efforts

To demonstrate how the distortions outlined in their paper can arise, the team tried to convert the ePayments Code, an Australian voluntary code of conduct that applies to consumer electronic payment transactions (eg, ATM or EFTPOS) into computer code. They found that their efforts to digitalise the ePayments Code were greatly influenced by various interpretative choices.

For instance, the team found that the encoded version of the ePayments Code they created was primarily effective for the purpose they originally intended – to inform consumers. To be deployed in other settings or for alternative purposes, it would need to be adapted to emphasise different features of the ePayments code of conduct.

Overall, their study stresses the importance of raising awareness about the interpretations and subjective choices that can influence digital regulation endeavours. The researchers showed that various subtle interpretative choices could ultimately produce different versions of code, which could be more or less effective in tackling legal problems using technology. This recent work by Huggins, Witt, and Burdon could inform future digital law initiatives, offering new insights about the distortions that can occur when converting regulation into computer code.

Personal response

Could you provide a few tangible examples of how interpretative choices can influence the digitising of regulation?

A helpful example of how interpretive choices can influence the digitising of regulation arose from the Australian Copyright Act 1968 (Cth) encoding exercise. Section 40 of the Copyright Act establishes the fair dealing exception to copyright infringement for the purpose of research or study. We found that two independent coders digitising this regulatory requirement each adopted different approaches. For example, one participant adopted a high-level approach that combined research or study into one atom (indivisible element) for encoding, while another participant used multiple, fine-grained atoms to separate out 'research' or 'study'. Significantly, only one of these choices aligns with guidance from the courts about the correct construction of section 40. In the case of *De Garis v Neville Jeffress Pidler Pty Ltd*, the court separately considered whether the activities at issue could be characterised as 'research' or 'study' for the purposes of section 40 of the Copyright Act. This suggests that the first participant's choice to code the phrase 'purpose of research or study' as one atom departs from the court's interpretation of the meaning of the statutory provision. In contrast, the other participant's choice to code the phrase using multiple, fine-grained atoms better aligns with the court's interpretation.

The significance of digital distortions is heightened when regulatory technology or automated decision-making systems incorporate flawed interpretations of legislation or regulation. A high profile example is Services Australia's online compliance intervention (OCI), commonly known as the 'robodebt' system. At the time of its initial deployment, this system used an automated data-matching and assessment process to raise welfare debts against people flagged by the system as having been overpaid. Importantly, the original design of the OCI system was based on a flawed interpretation of sections 1222A(a) and 1223 of the Social Security Act 1991 (Cth). These provisions specify preconditions for raising a debt, which must be established by the Australian Government before raising a debt. Sections 1222A(a) and 1223 need to be interpreted in the light of relevant case law indicating that the strength of material required to establish a welfare debt must have high probative value.

However, the automated OCI system relied on averaged tax income data, which was known to be a poor proxy for the variable income of many welfare recipients, and thus fell well short of the required evidentiary standard. This was reinforced by the Amato court order in late 2019, in which Davies J in the Federal Court noted that a presumed debt arising from averaged tax income data was not based on 'probative material'.

What could be the consequences of digital distortions that can arise in the encoding of regulation?

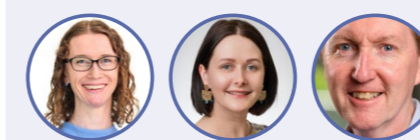
The OCI system highlights the significant consequences that can arise from digital distortions underpinning automated decision-making systems. Legal errors encoded into the system led to the Australian Government raising hundreds of thousands of incorrect welfare debts and a class action settlement worth more than AUD 1.8 billion. The unprecedented scale, cost, and human impacts of these errors underline the importance of awareness of digital distortions and attempts to appropriately mitigate them during the digitisation process.

What would you say are the primary takeaways from your recent paper and what are its practical implications?

The paper highlights the limits of one-size-fits-all approaches to converting natural language regulation into machine-executable code. It underscores that coders need to become more aware of the interpretive choices they are making and the potential legal implications that arise from digital distortions. Capturing and documenting legal coding choices is essential to ensure the internal coherence of coding practices and to enable external review of coding choices, thereby contributing to broader rule of law goals, including transparency and accountability.

In terms of practical implications, better understanding the nature of the distortions in digital regulation provides an important foundation for strategies to address the potential disconnects between law and regulation and encoded rules. This will in turn improve the accuracy and efficacy of RegTech or automated decision-making systems that incorporate these encoded rules.

Details



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Bio

Anna Huggins is professor in the School of Law at the Queensland University of Technology (QUT Law). She researches digital regulation and compliance and is the lead Chief Investigator of an Australian Research Council Linkage Project addressing the need for more sophisticated and effective approaches to digitising compliance processes.

Alice Witt is a Research Fellow in the School of Global, Urban and Social Studies at RMIT University. She researches the intersections of regulation, technology, and gender. From 2020–2021, she was the Postdoctoral Research Fellow and Project Manager for a research project between QUT and CSIRO's Data61 on digitising legislation.

Mark Burdon is a professor at QUT Law. His primary research interests involve privacy, information privacy law, and the regulation of information security. He also researches the complex issues involving the conversion of natural language legislation into machine executable code and how code is implemented in automated business systems.

Funding

The research leading to this article received funding from CSIRO's Data61 for a project entitled 'Classifying the Legal and Coding Challenges of Digitising Commonwealth Legislation' (approval number C024166). It is also informed by research supported by the Australian

Research Council Linkage project entitled 'Optimising Digital Compliance Processes in the Financial Services Sector' (project LP210301088).

Further reading

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