

Book Review

Algorithmic Regulation. Yeung, Karen and Lodge, Martin, eds. (2019) Oxford: Oxford University Press.

The volume ‘Algorithmic Regulation’, edited by Karen Yeung and Martin Lodge, is a multifaceted collection of state-of-the-art discussions concerning the rise of algorithms in regulatory contexts, and the subsequent consequences hereof. The book provides the reader with insights into the challenges of automated decision-making with a special focus on the public sector, and explores avenues for handling these challenges. In line with the research area’s current orientation, these challenges are analyzed from ethical and legal perspectives rather than from managerial or organizational viewpoints. Taken together, the contributions offer a highly varied account of ‘algorithmic regulation’ as an emerging area of research. The publication mirrors the diversity of research strands and invites the reader to discover their common ground. By taking this approach, and by inviting a number of reputable scholars to make contributions, the volume has the potential to set the agenda for the future position of the research field.

The reader is won over by the book’s truly inter-disciplinary approach which goes beyond being merely an aspiration for change. In fact, it allows all contributors to outline the fundamentals of the phenomenon from their own perspectives, as well as to add thought-provoking ideas and questions. By way of example, the final part of the book seeks solutions to algorithmically induced challenges in three diverse streams of the academic body of literature: regulatory governance, regulatory frameworks and actors, and legal studies.

The book is divided into three parts titled ‘Normative concerns’, ‘Public sector application’, and ‘Governing algorithmic systems’, comprising a total of ten chapters (excluding the first chapter which is co-authored by the two editors). The introductory chapter provides a general introduction to algorithmic regulation and underlines its topicality. By choosing Yeung’s (2018) rather inclusive definition of algorithmic regulation, the volume solidifies this hegemonic position in the field. Setting the tone for the whole volume, the authors succeed in not fueling the hype about technologically determined societal transformations, but they respond to calls for sound research and reflections based on preceding, carefully crafted analyses such as the one by Shoshana Zuboff (2018).

The first section, consisting of four chapters, raises awareness for the potential pitfalls of algorithmic decision-making, and for the accompanying need for regulation. The reader is provided with a comprehensive collection of legal and ethical issues ranging from discrimination and predictive personalization to the lack of transparency and threat to due process. As the discussion is not tied to specific cases, but is focused on how these issues generally emerge from algorithmically driven processes, the conclusions are not necessarily limited to the use of algorithms in the public sector. In chapter 2, Yeung addresses the question: ‘Why worry about decision-making by machine?’. She draws attention to ethical concerns about algorithmic decision-making, and offers an analytical tool helping us to distinguish between process-based, outcome-based, and personalization-related issues. Chapter 3 explains the functioning of machine-learning technology in a more technically nuanced manner than common in (algorithmic) regulation literature. Building on this, Scantamburlo et al. introduce a set of benchmarks derived from normative principles such as accuracy, transparency, and fairness – all principles important for maintaining the trust in algorithmic decision-making systems. In Chapter 4, Criado and Such examine the concept of digital discrimination and its prevalence for the use of machine-learning algorithms. Their arguments

are illustrated by examples of discrimination based on gender, race, as well as income and location. Due to the multifaceted nature of digital discrimination, the authors call for more cross-disciplinary research by including scholars from social, cultural, legal, ethical, and technical fields. In Chapter 5, Danaher concentrates on the effect of machine-learning algorithms on the choice architecture, and raises the question: Do algorithmic tools undermine our autonomy? The author identifies independence as the dimension of autonomy that is potentially under most pressure due to new algorithm-driven 'forms of manipulation and decisional interference' (p. 107). Finally, he briefly outlines potential responses to this threat including revision of laws, and the introduction of new basic human rights.

In the second section of the volume, the contributions shed light on the specific use of algorithmic regulation in the public sector. In contrast to the previous chapters, the authors focus on ways in which algorithmic systems can be integrated into administrative work, and how to assess the impact. Chapter 6 starts with an account of machine-learning algorithms used at the operational level in public administration. Veale and Brass here make a distinction between systems that automate decision-making and those designed to enhance, or *augment*, decision-making. Focusing on the latter, the authors suggest investigating the systems' impact on administrative work on three levels: macro: including new governmental bodies and ethics frameworks, meso: entailing the implementation of guidelines and processes, and finally micro which covers, inter alia, the role of professionalism and standardization. Chapter 7 turns to 'The Practical Challenges of Implementing Algorithmic Regulation for Public Services' and contrasts algorithmic with rule-based and data-informed approaches of risk-assessment. Based on two case studies of unsuccessful attempts in health care and higher education, Griffiths derives some conditions for success. These include data criteria (i.e. quality and timeliness), the nature of to-be-predicted outcomes (i.e. they must be clear and uncontested), and requirements for leadership and personnel. In Chapter 8, Lodge and Mennicken focus on the potentials and challenges posed by the use of machine-learning algorithms in the regulation of public services. They view algorithms as an extension of the capabilities of regulators by potentially enabling new ways of detection and generation of additional knowledge. Moreover, they identify three central administrative challenges impacting regulatory approaches and organizations: knowledge creation, coordination and integration, and ambiguity of objectives. Finally, the authors propose four ways in which oversight of algorithmic regulators can be improved: Creating a centralized regulator, developing procedures such as ethical frameworks, prescribing maximum transparency, and relying on disciplinary standards.

Finally, the third section searches for answers to the issues raised in the previous sections, especially with regard to the lack of explainability and accountability associated with algorithmic decision-making. While the three chapters explore different routes to enhanced regulation, they exhibit nevertheless a strong orientation towards legal approaches. Chapter 9 focuses on algorithmic accountability and asks the question whether governments are able to model the governance of algorithms. To investigate the algorithmic governance readiness, Andrews assesses five administrative capacities. Besides the well-established capacities of delivery, regulatory, coordination, and analytical, he adds discursive as an additional one. The latter 'refers to government's ability to frame problems in terms that are capable of a recognized public or political consensus, requiring discussion, deliberation, and negotiation' (p. 209). After identifying potential capacity constraints, the author calls for more research to assess individual regulatory agency's algorithmic governance readiness. In Chapter 10, Lohr and colleagues show that the challenges of machine-learning algorithms such as a lack of explainability and new market distortions raise considerable issues for future legislation. In response to this, they propose a four-layered model of regulation grounded in improved corporate governance, existing fields of law, as well as sector- and algorithm-specific regulations. The authors conclude with the prognosis that government organizations

will not necessarily be the leaders of international initiatives for regulating machine-learning algorithms. Finally, in Chapter 11, Bygrave provides the reader with a comparative analysis of the provisions of the General Data Protection Regulation (GDPR) and the pre-existing European Data Protection Directive regarding the statutory rights of individuals not to be subjected to fully automated decisions. The author identifies factors that weaken the right laid down in Articles 22 and 25 of the GDPR such as poor wording, lack of clarity, and the complexity of multiple qualifications. Moreover, he warns against overemphasizing the meaningfulness of ex-post explanations, and refers to the importance of other areas of existing legislative sources including administrative, criminal, and competition law for keeping automated decision-making in check.

As illustrated by this brief summary of all contributions, the volume picks up on essential ongoing debates and offers a synopsis of different scholarly perspectives. By doing so, this volume is a most-welcome contribution to the emerging field of algorithmic regulation. It has the potential to further its consolidation, and to become a seminal work cited by scholars signaling their belonging to the field. Undoubtedly, this volume develops many intriguing notions and concepts related to the use of (predominantly machine-learning) algorithms. These include possible restrictions to human autonomy and independence caused by the use of machine-learning algorithms, and potentially resulting in new forms of manipulation, such as micro-domination and hyper-nudging (see also Yeung 2017), but also highlights the discussions around algorithms' impact on administrative work and on governance readiness.

However, and for the convenience of the reader, these discussions would have benefitted from additional attention to the actual consequences resulting from the specificity of algorithmic contexts. Although autonomy could probably not have been conceptualized more rigorously than in Chapter 5, the discussion on pathways towards more human autonomy in algorithm-informed decision-making processes remains slightly underdeveloped. In a similar way, while elaborated frameworks to assess the algorithms' impact on administrative work and governments' readiness to govern them are provided, the subsequent discussion remains predominantly theoretical. Any reader with an interest in their actual assessment would probably ask for additional empirical evidence and some tangible results. Yet here, questions like 'what are the effects of (new) basic human rights on human autonomy in algorithmic decision-making processes' or 'how does the enhancement of a particular administrative capacity influence algorithmic governance readiness' remain unexplored.

In contrast to these shortcomings with regard to the empirical foundations of the volume, the conceptual side of the book stands meticulously executed. Chapter by chapter, the authors probe the nitty-gritty details by conceptualizing AI and machine-learning algorithms and carving out the distinct features of algorithmic decision-making. They conduct the scaffolding groundwork that needs to be conducted in an emerging field such as this one. Collectively they all answer the question: 'What do we mean by algorithmic regulation?' Naturally, an answer to this question could have been provided in a single chapter authored by the editors of the volume, or even by all the contributors. This would have enabled the readers to get an overview of the topic, and could have increased the coherence of the book. By not doing so, but setting out the different schools of thought, the book does justice to its ambition - showing the fields' diversity and promoting cross-disciplinary research. Equally, it leaves the readers with the work of connecting the dots between the chapters, and to identify the overarching conclusion.

In conclusion, this book probably provides the most comprehensive collection of contributions to the embryonic research area of algorithmic regulation. It offers thought-provoking insights into the focal points of ongoing debates and a truly diversified set of perspectives. This makes the volume an essential reading for anyone with a genuine interest in the topic. In addition, the contributors make a number of highly valuable tools available to the audience; including the frameworks for assessing algorithmic

governance readiness, and the impact of algorithms on administrative practices. The presented theoretical work, and the authors' calls for further research, virtually invite the reader to apply the discussed concepts and frameworks in empirical research and to answer questions such as those raised above. Moreover, by pointing out the currently prevailing topics in the field of algorithmic regulation, the book might inspire scholars to pay more attention to still under-researched issues like the influence of algorithms on regulatory organizations and on their everyday operations.

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References

- Yeung, K. (2017) Hypernudge: Big Data as a mode of regulation by design. *Information, Communication & Society*, 20(1), 118-136. doi: 10.1080/1369118X.2016.1186713.
- Yeung, K. (2018) Algorithmic regulation: A critical interrogation. *Regulation & Governance*, 12, 505-523. doi: 10.1111/rego.12158.
- Zuboff, S. (2018) *The age of surveillance capitalism: The fight for the future at the new frontier of power*. London: Profile Books.