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Book review: *Reinventing Capitalism in the Age of Big Data*

Viktor Mayer-Schönberger and Thomas Ramge
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*Reviewed by Wenlong Li**



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* PhD Researcher, School of Law, University of Edinburgh, UK,
wenlong.li@ed.ac.uk

After a phenomenal bestseller *Big Data: A Revolution That Will Transform How We Live, Work, and Think*,¹ Viktor Mayer-Schönberger, professor at the Oxford Internet Institute, continues his inquiry into contemporary technological issues. In this new book, *Reinventing Capitalism in the Age of Big Data*, his previous thoughts have been extended and reformulated with a focus on the evolution of capitalism. Unlike *Big Data* written half a decade ago, *Reinventing Capitalism* opens up a socio-economic perspective and aligns big data analytics with other technological aspects such as artificial intelligence and machine learning.

As before, Mayer-Schönberger co-authors with an experienced journalist, Thomas Ramge, who writes for *The Economist*. His first-hand observations and skilful narrative have significantly contributed to the book's readability, presenting intriguing debates with a wealth of examples, stories and anecdotes. This will aid the reader in grasping the transition of market and multidimensional implications that the authors aim to reveal in this book.

In addition to the authors' respective expertise, the combination of their strengths makes this book highly valuable for academics from various fields and friendly to readers who have a general interest in the role of information in a data-driven economy.

Both authors are big believers in the market and their argument that rich streams of data will fully grease and transform the market is noticeable throughout the whole book. The initial chapter ("Reinventing Capitalism") serves as a summary of all core arguments scattered in the book.

Chapter 2 ("Communicative Coordination") sets out the foundational basis for evaluating the market (and firm) efficiency, that is, the ability to coordinate human activities. The authors urge readers to perceive market, in

¹ Viktor Mayer-Schönberger and Kenneth Cukier, *Big Data: A Revolution That Will Transform How We Live, Work, and Think* (John Murray 2013).

essence, as a decentralised means of human coordination. In this regard, market has achieved a perceptible but limited success subject to limited flows of information and crippled decision-making. In comparison, the firm is an alternative model that has a centralised structure and has shown a competitive advantage since the beginning of the 19th century. *Reinventing Capitalism* sides firmly with the decentralised model that market represents in the era of big data, artificial intelligence and machine learning, predicting that data-rich markets will become the new dominant vehicle for human coordination, with centralised (albeit highly automated) firms fading away in the long run.

What follows is a detailed account of the competition between these two models for coordinating human activities, with two chapters respectively on each side. Starting from the market, whereas Chapter 3 (“Money and Market”) explains the rationale behind temporary success of conventional markets, Chapter 4 (“Data-rich Markets”) brings to light the ongoing transition from money-based markets into data-rich ones. The authors stress the informational role of money that information about our preferences had been condensed into price, a single-dimension parameter easy for market participants to convey and process. As a conveyor of information, money has brought conventional markets to temporary blossom, but it also restricts the market’s ability to achieve an optimal level of coordination.

In Chapter 3, the authors identify two main problems of the conventional, money-based markets. In the process of information condensation, we lose much information that we were once unable to handle. Further, this process may help address information overload, but does not improve our processing power. As a result, before big data analytics, artificial intelligence and machine learning come into existence, we were still unable to tame the complexities or to accelerate information processing.

The authors suggest in Chapter 4 that we escape from this straitjacket of money when embracing rich streams of data flowing through the market. In doing so, the issue of oversimplification can be remedied by ever-evolving technological tools that enable us to master big data. In particular, three aspects of technological advances are manifested, underpinning what the authors call “data capitalism”.

First and foremost, to categorise or systematise a wide variety of data, data ontology is a crucial element of data-rich markets. While the most intelligent minds are still struggling in identifying the right ontology, the authors’ argument that in the long run “data will drive data ontologies” (p.70) may provide some relief for the many. In order to find the optimal transaction partner in a certain market, we are also increasingly relying upon technological assistance such as matching algorithms. While these algorithms cannot eliminate information asymmetry in every market, our cognitive limits are increasingly irrelevant because algorithms can and are good at doing the jobs for us. Additionally, what makes this book different from the previous *Big Data* is the emphasis on the development of adaptive systems fuelled by machine learning. This thread of arguments is recaptured and extended in Chapter 8 where the authors explain how an effective feedback loop would help overcome our cognitive biases and give a competitive edge to market participants.

The rise of market may consequently lead to a decline of the firm as the dominating structure to organise human activity, and the following two chapters make a shift from the market to the firm. In a similar structure, Chapter 5 (“Companies and Control”) sparks an alert among firms regarding the challenges of data-richness whilst chapter 6 (“Firm Futures”) suggests creative solutions for firms of various kinds.

Chapter 5 is full of insights about why the centralised structure that firms represent, once sufficiently effective in a data-scarce society, has been heavily

disrupted by the tide of data richness. Chapter 6 furthers this line of thought and, by citing numerous case studies, sheds light on two distinct evolutionary paths: increasing automation at almost all levels of organisation or developing a market-like organisational structure. It is interesting to note that these two paths respectively respond to two problems of conventional markets identified in Chapter 2. In this chapter, the authors do not expressly favour one over another, only suggesting that corporate futures may lie with the optimal combination of the two.

Apart from a detailed account of data capitalism, *Reinventing Capitalism* also includes quite some normative insights. A full package of solutions starts to emerge from Chapter 7 on, engaging various areas of law and policy.

Structurally, chapter 7 (“Capital Decline”) is where two parallel narratives – from money to data and from market to firm – intersect in this book. Considering the weakened role of money, both informationally and pecuniarily, in many markets, the authors offer a careful observation of the struggle of the financial sector in which firms incorporate technological tools or merge with tech start-ups.

As mentioned earlier, Chapter 8 (“Feedback Effect”) is an extension to the third pillar of capitalism, *i.e.* machine learning, originally portrayed in Chapter 4. Further to the “scale effect” emerging since the age of Industrial Revolution and the “network effect” notably fuelled by social media, the authors identify a third “feedback effect”, characterised by the advanced machine learning systems using feedback data to teach themselves. As the authors point out, “the scale effect lowers cost, the network effect expands utility, and the feedback effect improves the product”. (p.163)

In response to the main problem of feedback effect, that is, the monopoly of feedback data by incumbents leading to systematic biases, the two authors innovatively propose a progressive data-sharing scheme, requiring companies

whose market share reaches a defined level offer a randomly chosen portion of feedback data to competitors (notably start-ups) in the same market.

Deviating from the previous thread of market power, Chapter 9 (“Unbundling Work”) perplexingly takes a topical turn, revitalising the theme of automation and its impact on human labour. Bearing in mind the departure from this thread suggested in Chapter 2, and the intertwining between automation and data richness revealed in Chapter 6, readers may wonder why the authors revisit this issue and how it fits with the previous discourse. Manifestly, the societal anxiety that automation would ultimately replace human labour is so widely discussed that it makes the perceived threat to human participation an inescapable issue for this book. This connection is however not very explicit in the texts and a roadmap making it more explicit would help readers connect the dots.

Despite this structural complexity, *Reinventing Capitalism* has opened up a timely and useful discussion on regulatory responses to a highly automated society. In this chapter, the authors explore both distributive (from the “robot tax” to the “wealth tax” and then to the “tax in data”) and participatory (retraining of workers) schemes, suggesting an alignment between the two through a creative tax credit system. Thinking deeply about the role of humans in an automated society, the authors’ atomic view of “job” and proposal of downplaying money in employment shed some lights on the way we define and rebalance elements of work. This process of “unbundling work” leads us to the Universal Basic Income (UBI), a radical idea complementary to distributive and participatory schemes explored before.

After the diverse, interdisciplinary narratives regarding various aspects of data capitalism, it is inspiring to see that *Reinventing Capitalism* ends with a humanity issue. In the final chapter (“Human Choice”), the authors make enquiries about what really makes us human and how humans live in the future.

Remarkably, they draw a response to a futuristic vision rekindled with the rise of artificial intelligence, a utopia where machine will overcome resource scarcity, essentially leading us to a communist society Karl Marx described nearly a century ago in the wake of the Industrial Revolution. With a reference to scarcity of time that exists forever, the two authors defend their argument that we should place our trust in the renaissance of market instead of the magic of automation. Whereas automation makes it possible to leave boring, preliminary choices to machines, data-rich markets ultimately empower us to make enjoyable, meaningful, and ultimate choices –in other words, “we [should] choose to choose” (p. 219). *Reinventing Capitalism* wraps up with a paradigmatic turn for humanity, echoing its original proposition that “the ultimate goal of data-rich markets is not overall perfection but individual fulfilment, and that means celebrating the individuality, diversity, and occasional craziness that is so quintessentially human” (p. 15).

The wide coverage of almost every controversial issue in relation to data capitalism gives *Reinventing Capitalism* a massive and holistic view of the contemporary capitalist society, increasingly digitised and automated. Nevertheless, the book’s strong advocacy of market has almost inevitably lessened the accounts of market failure and regulatory responses. The proposed data-sharing scheme and the tax in data, for instance, are analogous to the newly created right to data portability in the General Data Protection Regulation. Unfortunately, this book stops short of further substantiating its proposals in reality and aligning with existing schemes. In addition, some technical issues determining the feasibility of those proposals are left unaddressed, such as interoperability.

Despite these potential improvements, it is fair to say that *Reinventing Capitalism* has made a convincing case for the emergence of data capitalism. The book’s interdisciplinary approach will attract readers of various background and

assist, among others, economists, lawyers, HR developers, industry leaders and scholars in looking beyond their defined expertise for a better understanding of money, data, market and firms.