David Beer, **The Tensions of Algorithmic Thinking: Automation, Intelligence and the Politics of Knowing,** Bristol, UK: Bristol University Press, 2023, 152 pp., $45.95 (paperback).

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Amid the burgeoning applications of algorithms and the rising allure of automation systems, which have captivated scholarly attention across an array of disciplines, this subject matter remains, to a significant extent, notably undertheorized. Beer's timely book, *The Tensions of Algorithmic Thinking: Automation, Intelligence and the Politics of Knowing*, which aims to develop a conceptual repertoire, holds significant promise, as it addresses this gap by providing theoretical insights into algorithmic thinking and automation. His primary curiosity predominantly revolves around "how" questions: He examines the processes that enable what he terms "the new life of the machines" and facilitates the automated mode of decision-making, reasoning, and learning. By drawing on specific applications of these technologies in various fields such as art markets, home security, recommendation systems on online platforms (e.g., video streaming, social media, and online shopping), as well as workplaces, Beer's book illustrates the intricate dynamics of these processes. In undertaking this endeavor, the book unequivocally calls for the urgent development of a comprehensive theoretical framework that can significantly elevate our understanding of algorithmic thinking. By the same token, it meticulously adopts or curates an array of invaluable conceptual resources.
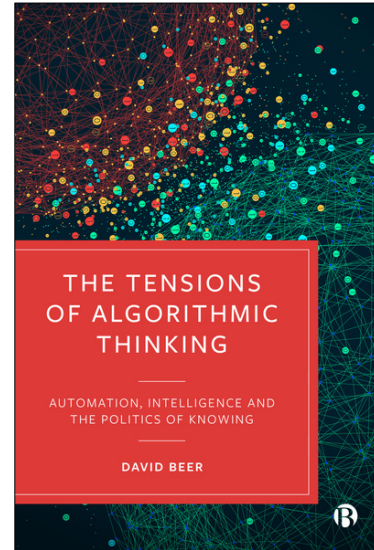
The concept of "tension" occupies a pivotal role at the very core of the conceptual framework developed within this book. In the inaugural chapter, Beer postulates that algorithmic thinking is underpinned by "two sets of defining and competing forces that engender tensions" (p. 7). To illuminate these tensions, he employs a visual metaphor, delineating a two-dimensional space in which human agency and knowledge production stand as paramount constituents. Thus, according to Beer's exposition, automation systems transcend mere human exclusion from the mechanisms of machine learning and decision-making. Instead, he discerns dynamic shifts akin to tidal movements in the realm of algorithmic thinking, where the dichotomies of human/lessness and un/known resurface in a perpetual ebb and flow.

Successive chapters delve deeper into these intricate dynamics. Each chapter focuses on the specific shift along the axes of the human and the humanlessness, and the known and the unknown. Drawing on the art markets and smart home technologies, chapter 2 meticulously scrutinizes blockchain technology, which guarantees predictability, authenticity, knowability, and security. Functioning as a mechanism for immutable and dependable data storage, blockchain fosters the potential for trust among parties. Beer posits that blockchain's aptitude for instilling confidence emanates from its self-reliance, effectively safeguarding against human intervention. Chapter 3 examines the limits of algorithmic thinking intertwined with the concerns that arise in relation to algorithms. In reaction to the portrayal of

algorithmic thinking as an open-ended technology with the potential for unrestricted automation of decision-making, there arises the opportunity to reintroduce human agency into these intricate mechanisms. In this context, the human's role assumes the mantle of conducting quality control; consequently, the reintegration of human involvement signifies precision and meticulousness in decision-making processes.

Chapter 4 delves into the realm of how algorithms push the boundaries of knowability, questioning not only their impact but also the extent of their influence on decision-making processes. Expanding on the intricate dynamics of social media feeds and the vigilant surveillance of labor processes, this chapter vividly illustrates the phenomenon of algorithms transcending the very limits of what we consider knowable. Moving forward, chapter 5 looks into the unexplored and darker facets of algorithmic thinking and automation systems. Leveraging Bataille's (2001) insightful concept of "nonknowledge," Beer meticulously dissects the intricate mechanisms of machine learning. This chapter stands out as a beacon of conceptual abstraction, proposing that the deep learning capabilities of machines, skillfully designed to minimize human intervention, ultimately translate decision-making into mysterious processes. In simpler terms, the fusion of chapters 4 and 5 underscores that the expansion of knowability requires the observation, categorization, and prediction of the unknown.

Such a reading of automation systems effectively distances itself from the dystopian or celebratory portrayal of the "algorithmic new life" (p. 3), as Beer puts it. Instead, he queries how algorithmic thinking functions and what it does. According to him, we find ourselves in an era where we are conspicuously "hailed by algorithmic systems" (p. 124). He frames these intricate dynamics as "the will to automate" (p. 129), a conceptual outgrowth stemming from the Foucauldian essence of "the will to know" (p. 129). Within the pages of this book, he advocates for a thorough exploration of its nuanced essence, essential for achieving a profound comprehension of the burgeoning new life.

This book thus offers an all-encompassing and far-reaching panorama that brings forth a comprehensive perspective on the realm of algorithmic thinking. In this masterful exploration, the author meticulously dismantles the notion that algorithmic thinking can be confined within the rigid boundaries of static definitions or relegated to the realm of reified entities. Rather, the book invites us to think that algorithmic systems are not mere artifacts frozen in time but rather vibrant. This profound paradigm strikes at the core of our preconceived notions, compelling us to recognize that these systems are in a constant state of flux, perpetually changing and mutating. The strength of this book resides in its profound understanding of the dynamic essence inherent to algorithmic thinking.

To comprehend its ever-evolving essence, this study adeptly avoids the dual dichotomies of the exclusion/(re-)inclusion of the human and the known/unknown. Instead, it vividly illustrates an image of algorithmic systems, portraying the oscillations that unfold between these very elements. In this endeavor, Beer ingeniously introduces a conceptual repertoire encompassing terms like "posthuman security," "overstepping," "super cognizers," "algorithmic empathy," and "nonknowledge." Such a conceptual innovation serves as an exceptionally potent and indispensable guide for shaping the trajectory of future research in this domain. Consequently, this book offers a theoretical lens that significantly aids in the exploration of the expansive nature of algorithmic thinking.

Beer's book constitutes a theoretical construct that engages in a profound dialogue with luminaries of social and cultural theory, including Lefebvre, Simmel, Foucault, and Bataille. Through this discourse, Beer not only unveils intricate theoretical insights into the realm of algorithmic thinking but also illuminates the enduring relevance of the concepts put forth by these intellectual giants. In essence, he extends the boundaries of contemporary sociological imagination to fathom "the new life of the machines" (p. 4). Within this thought-provoking context, Beer's contemplations on "the will to automate" (p. 129), artfully extrapolated from Foucault's intellectual legacy, and his adept embrace of Bataille's (2001) notion of "nonknowledge" (p. 104) emerge as intellectual cornerstones worthy of meticulous consideration and reflection.

This theoretical brilliance offers a captivating journey, bound to resonate with a readership passionately intrigued by the ever-expansive domain of algorithmic thinking and automation systems. By the same token, the task of precisely delineating the book's intended audience might prove elusive. Nevertheless, it is abundantly clear that Beer's work transcends the confines of a specific readership, positioning itself as an unequivocal cornerstone for all those who aspire to unravel the intricacies of algorithmic systems spanning a myriad of domains. Therefore, aside from media and communications scholars, researchers spanning diverse fields such as the sociology of arts, science and technology studies, sociology of emotions, work and organization, and beyond, stand to gain immensely from the profound insights this book presents.

Reference

Bataille, G. (2001). *The unfinished systems of nonknowledge* (M. Kendall & S. Kendall, Trans.). Minneapolis: University of Minnesota Press.