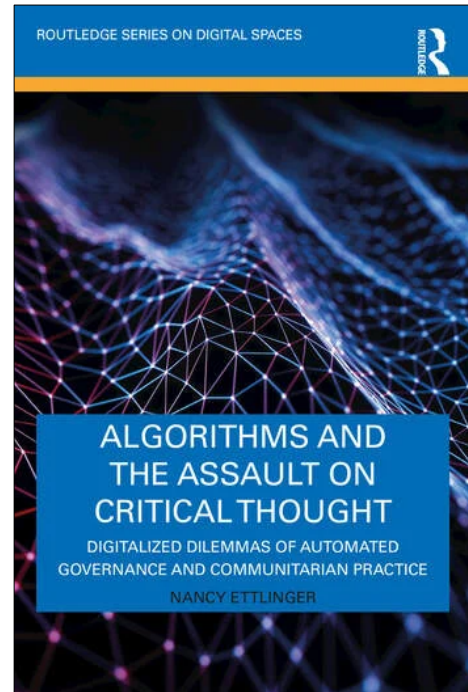Nancy Ettlinger, **Algorithms and the Assault on Critical Thought: Digitalized Dilemmas of Automated Governance and Communitarian Practice**, London, UK: Routledge, 2023, 173 pp., $39.19 (paperback).

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In the last decade, as the increasing digitalization of society and culture made automated decision-making ubiquitous and routine, we witnessed a steady stream of book-length publications on algorithms. Frank Pasquale's (2015) *The Black Box Society* focuses on how algorithms hide their decision-making processes from sight; this was followed by Taina Bucher's (2018) *If . . . Then: Algorithmic Power and Politics*, which conceives of algorithms as ways of representing and ordering the world. Safiya Umoja Noble's (2018) *Algorithms of Oppression: How Search Engines Reinforce Racism* and Ruha Benjamin's (2019) *Race After Technology* explore the myriad ways in which algorithms reproduce racial and gendered biases in the very same operation that purports to get rid of them, bringing questions of social justice into the debate on algorithms, just like Virginia Eubanks' (2018) *Automating Inequality* had done for economic inequality. Claudia Aradau and Tobias Blanke's (2022) recent *Algorithmic Reason: The New Government of Self and Other* looks at the specific governmental logics enabled by algorithms, arguing that in them, and across many disparate fields, we observe how "a relatively new political rationality is ascendant" (p. 3).

In such a crowded field, it is hard to stand out or bring something entirely new to the table. In a way, the book under review here, Nancy Ettlinger's **Algorithms and the Assault on Critical Thought**, covers much of the terrain of the above books. With Pasquale (2015), Bucher (2018), Eubanks (2018), and Aradau and Blanke (2022), she shares an interest in the role algorithms play in governance of particular (sub)populations. With Noble (2018), Benjamin (2019), and Eubank (2018), she shares a concern with how algorithms establish or extend situations of oppression at the detriment of repressed groups in society. This does not mean, however, that Ettlinger's book presents a mere repetition of arguments made elsewhere. *Algorithms and the Assault on Critical Thought* makes a series of original and interconnected arguments that are situated "in different contexts and at different scales" (p. 3), and it is precisely because of the latter that at a first reading these arguments do not immediately pop out. Reading and rereading the book, however, the pertinence and internal consistency of these arguments gradually becomes visible.

The first such argument is that digital technology fits in a broader tendency of modernity, namely that through infrastructural projects people increasingly are divorced from their surroundings. Ettlinger goes to great lengths not to make this into a technological or media determinist argument. In fact, digital technologies emerge only at the end of a long timeline that starts the second quarter of the 20th century, when Fordism offered White, male breadwinners new forms of living in the suburb, trading extended family ties for a life centered around the nuclear family. While undoubtedly an improvement in quality of life in certain aspects, the suburb also brought along new problems: the dissolution of support networks, and female loneliness as documented by Friedan (1963). As people became increasingly divorced from their surroundings, the link with the outside world was reestablished through then-new media like TV, and later on digital media. Media, in Ettlinger's account, are thus at the same time a solution to the problem of isolation, but a solution that prolongs the problem: "Digital subjects become increasingly physically isolated despite the hyperconnectivity of digital life" (p. 30). Ettlinger spends several pages describing the myriad ways in which the digital lifestyle leads to feelings of aloneness and anxiety, tracing a recursive loop in which digital media promise to overcome the problems generated by the digital lifestyle in the first place.

The second argument that repeats throughout the text is the idea that algorithmic-driven technology entails a form of outsourcing of our decision-making capacities: "Especially striking is the implicit promise of smart products to relieve digital subjects of the burden of thought and action" (p. 34). This in turn represents a blunting and diminishment of our critical capacities mentioned in the title. Again it should be stressed that Ettlinger's is not a technological determinist argument inherently linked to digital technology. The third chapter explicitly deals with teaching and learning strategies since the 1950s and situates contemporary data-based Edtech, with its stress on algorithmically-driven, individualized, and personalized learning, in a longer line of competence-based education, which values the training of skills over the contextualization of knowledge. Here "the pedagogy preceded the technology" (p. 59), but the introduction of digital technologies intensified this regime. The pages on the use of enrollment analytics, or the way that testable learning outcomes reduce complex problems into simple ones, are insightful but sobering reading for those of us who care for the type of knowledge we teach our students in higher education.

This also brings us to a third argument found throughout the text, namely that data and algorithms offer decontextualized knowledge, that is, a reduced and reductionist form of knowledge that is lifted out of the context out of which it emerged. Ettlinger does so most sustainedly in a discussion on second-wave artificial intelligence, but the same idea also informs her critique of competence-based education. In her precise and informed analysis, she shows how neural networking—the technique on which many second-wave AI relies—produces knowledge that cannot be accounted for, since it "decontextualize[s] cases and thereby ignore[s] contextual information required for the identification and explanation of variation" (p. 98). The disconnect between context and knowledge is a form of reductionism that the statistical procedure requires in order to function and is thus not accidental but foundational. A common technique called "transfer learning" aggravates this decontextualization problem, as it involves the reuse of "a model trained in the domain of one problem on another, related problem" (p. 98). Ettlinger juxtaposes this to human knowledge, which requires causal thinking and understanding: "Thinking like human beings requires causal logic, which permits understanding, explanation, full contextualization, and learning based on a few observations, as opposed to requiring information drawn

from an entire population" (p.100). Ettlinger is less sanguine about third-wave AI as it involves a move toward the contextual, but even these future technologies share the fundamental problem of AI: its technical solutionism, "the belief that technology provides the best solutions" (p. 103). Technological solutionism is misguided (social problems are thought to be solved technologically, but more often than not the introduction of the very same technology produces new problems); it is also antidemocratic, since it transports social engineering outside of the remit of democratic control.

What makes the argumentation at times difficult to follow is that each chapter has a conceptual focus but also uses particular case studies or fields around which the conceptual development is formed. These case studies operate at different scales, which makes their interconnections rarely immediately visible. Chapter 2 functions as the theoretical framework, setting up technology's "physically isolating and psychologically alienating" (p. 38) effects, as well as the idea that automated decision making entails an assault on our capacities to think critically. The latter is further developed in chapter 3, using as its object the EdTech industry. Chapter 4 has the field data studies as its object of research and asks how the field's construction allows practitioners to ignore the often detrimental effects of their intellectual work. Chapter 5, finally, changes tack and examines initiatives from civil society to counter technology's detrimental effects on critical thinking and democratic governance. The result is a complexly layered argumentation, operating at different scales, with arguments returning at unexpected moments, or attached to new objects. Ettlinger is aware of this complexity, and inserts throughout the text moments of recapitulation that tie the arguments together. As a reader, I appreciated these efforts, but I also wondered if a less convoluted argumentative structure would have made the arguments easier to follow, because the questions this book raises are too important and merit broad engagement from the scholarly community.

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