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*The Moral Economy of High Tech Modernism*¹

Algorithms – especially machine learning algorithms - are among the most important technologies shaping our current social order. To paraphrase Mary Douglas (1986, 91), algorithms “do the classifying.” They assemble and they sort—people, events, things. This makes them deeply implicated in the distribution of material opportunities and social prestige. But do they, like all artefacts (Winner 1992), have a particular politics? Technologists defend themselves against the very notion, but a lively literature in philosophy, computer science and law belies this naïve view. Arcane technical debates rage around the translation into code of concepts such as fairness and democracy. For some, it is a matter of legal exposure. For others, it is about designing regulatory rules and verifying compliance. For a third group, it should be about crafting hopeful political futures. (Eubanks, 1999)

The question from the social sciences is often different. They ask: how do algorithms concretely govern? How do they compare to other modes of governance, like bureaucracy or the market? How does their mediation shape moral intuitions, cultural representations and political action? In other words, the social sciences worry about the moral economy of algorithms as it concretely presents itself. The topic is unfamiliar and perhaps mystifying. This isn’t just because, like bureaucracies, algorithms are simultaneously rule-bound and secretive. Nor is it because, like markets, they are simultaneously empowering and manipulative. It is because they are a bit of both. Algorithms extend *both* the logic of hierarchy *and* the logic of competition. They are machines for making categories and applying them, much like traditional bureaucracy. And they are self-adjusting allocative machines, much like canonical markets.

Understanding this helps highlight both similarities and differences between the historical regime that James Scott calls “High Modernism” and what we dub “High Tech Modernism.” We show that bureaucracy –the typical High Modernist institution– and machine learning algorithms

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–the quintessential High Tech Modernist one– share a common root as technologies of hierarchical classification and intervention. But whereas the former (bureaucracy) reinforces human sameness and is backed by large, monopolistic (and often state-based) organizations, the latter (algorithms) encourage human competition, in a process controlled by large, near-monopolistic (and often market-based) organizations. High-Tech Modernism and High Modernism are both born from the same impulse to exert control, but articulated in fundamentally different ways, with quite different consequences for the construction of the social and economic order. The contradictions between these two moral economies, and their supporting institutions, generate many of the key struggles of our times.

What Algorithms Do: The Question of Classification

Both bureaucracy and computation enable an important form of social power – the power to classify (Caplan and boyd 2018: 3). Bureaucracy deploys filing cabinets and memorandums, to organize the world and make it “legible,” in the terminology of Michel Foucault and James Scott. Legibility is, in the first instance, a matter of classification. Scott explains how “High Modernist” bureaucracies crafted categories and standardized processes, turning rich but ambiguous social relationships into thin but tractable information. The bureaucratic capacity to categorize, organize, and exploit revolutionized the state’s ability to get things done. It also led the state to re-order society in ways that reflected its categorizations and acted them out. Social, political and even physical geographies were simplified to make them legible to public officials. Surnames were imposed to tax individuals; the streets of Paris were redesigned to facilitate control.

Yet High Modernism wasn’t just about the state. Markets too were standardized, as concrete goods like grain, lumber and meat were converted into abstract qualities, so that they could be traded at scale (Cronon 1991). The power to categorize made and shaped markets, allowing grain buyers –for example– to create categories that advantaged them at the expense of the farmers they bought from. Businesses created their own bureaucracies to order the world, deciding who could participate in markets, and how goods ought be categorized.

We use the term High Tech Modernism to refer to the body of classifying technologies based on quantitative techniques and digitized information that is partly replacing the analog

processes used by High Modernist organizations. Computational algorithms – especially machine learning algorithms – answer similar needs to the bureaucratic technologies that Scott describes. Both supervised machine learning (which classifies data on the basis of a labeled training set) and unsupervised machine learning (which organizes data into self-discovered clusters) make it easier to categorize unstructured data at scale. But unlike their paper-pushing predecessors in bureaucratic institutions, the humans of High Tech Modernism disappear behind an algorithmic curtain. The workings of algorithms are much less visible, even though they penetrate deeper into the social fabric than the workings of bureaucracies. The development of smart environments and the Internet of Things has made the collection and processing of information about people too comprehensive, minutely-gear, inescapable and fast-growing for meaningful consent and resistance.

In a basic sense, machine learning doesn't strip away nearly as much information as traditional High Modernism. It potentially fits people into categories ('classifiers'), that are narrower – even bespoke. The movie streaming platform Netflix will slot you into one of its 2,000+ “micro-communities” and match you to a subset of its thousands of subgenres. Your movie choices alter your position in this scheme, and might in principle alter even alter the classificatory grid itself, creating a new category of viewer, which reflects your idiosyncratic viewing practices.

The crude, broad categories of nineteenth century bureaucracies are often replaced by new classifications, powered by machine learning, that may be multidimensional and are often hard for human minds to grasp (Fourcade and Healy 2017). People can find themselves or their behaviors grouped around particular experiences, sometimes ephemeral, such as followers of a particular YouTuber, subprime borrowers, or fans of action movies with strong female characters. Unlike clunky high modernist categories, high-tech modernist ones can be *emergent* and technically *dynamic*, adapting to new behaviors and information as it comes in. They can incorporate tacit information in spooky ways - music-producing algorithms that imitate a particular artist's style; language models that mimic social context; or consumer-facing algorithms that grasp one's most intimate preoccupations.

Equally, they may create new politics. Traditional High Modernism didn't just rely on standard issue bureaucrats. It empowered a wide variety of experts to make decisions in the area of their particular specialist knowledge and authority. Now, many of these experts are embattled,

as their authority is nibbled away by algorithms whose advocates claim are more accurate, more reliable, and less partial than their human predecessors.

Politics of Algorithms: The Question of Feedback

One key difference between the moral economies of High Modernism and High Tech Modernism involves feedback. It is tempting to see High Modernism as something that was imposed entirely from above. However, Scott's earlier book, *Weapons of the Weak* suggests that those at the receiving end of this categorical violence are not passive and powerless. They can sometimes throw sand into the gears of the greater machinery.

As Ian Hacking explains, certain kinds of classifications –typically those applying to human or social collectives– are “interactive” in that

when known by people or those around them, and put to work in institutions, [they] change the ways in which individuals experience themselves—and may even lead people to evolve their feelings and behavior in part because they are so classified. (Hacking 1999, 103–104)

People, in short, have agency. They are not passive dupes of the categories that objectify them. They may respond to being put in a box, by conforming to or growing into those descriptions. Or they may contest the definition of the category, or its boundaries, or their assignment to it. (Hacking 1999, Bowker and Star 1999). This creates a feedback loop in which the authors of classifications (state officials, market actors, experts from the professions) may adjust the categories in response. Human society, then, is forever being de-structured and re-structured by the continuous interactions between classifying institutions and the people and groups they sort.

But conscious agency is only possible where people know about the classifications: the politics of systems where classifications are visible to the public, and hence potentially actionable, will differ from the politics of systems where they are not.

So how does the change from High Modernism to High Tech Modernism affect people's relationship to their classification? At its worst, High Modernism stripped out tacit knowledge, ignored public wishes and public complaints and dislocated messy lived communities with sweeping reforms and grand categorizations, making people *more visible*, and hence more

readily acted on. The problem was not that the public did not notice the failures, but that their views were largely ignored. Authoritarian regimes constricted the range of ways in which people could respond to their classification: anything more than passive resistance was liable to meet brutal countermeasures. Democratic regimes were, at least theoretically, more open to feedback, but often ignored it when it was inconvenient, and especially when it came from marginalized groups.

The pathologies of computational algorithms are often more subtle. The shift to High Tech Modernism allows the means of ensuring legibility to fade into the background of the ordinary patterns of our life. Information gathering is woven into the warp and woof of our existence, as entities gather data from our phones, computers, doorbell cameras, purchases and cars. There is no need for a new Haussmann to transform cramped alleyways into open boulevards, exposing citizens to view. Urban architectures of visibility have been rendered nearly redundant by the invisible torrents of data that move through the air, conveying information about our movements, our tastes and our actions to be sieved through racks of servers in anonymous industrial buildings.

The feedback loops of High Tech Modernism are also structurally different. Some kinds of human feedback are much less likely than before. Digital classification systems may group people in ways that are not always socially comprehensible (in contrast to traditional categories such as female, married, Irish or Christian). *Human* feedback, therefore, typically requires the mediation of specialists with significant expertise (e.g. O’Neil 2016) –but even they are often mystified by the operation of systems they have themselves designed (Burrell 2016).

The political and social mechanisms through which people previously responded, actively and knowingly, to their categorization – by affirming, disagreeing with, or subverting it– have been replaced by closed loops in which algorithms assign people unwittingly to categories, assess their responses to cues, and continually update and reclassify them. The classifications produced by machine learning are cybernetic, in Norbert Wiener’s original sense of the word. That is, they are self-correcting: categories are automatically and dynamically adjusted in light of the reactions that they produce.

The changing politics of credit in the United States helps illuminate these differences. Until the 1970s, broad demographic characteristics such as gender or race–or high modernist proxies such as marital status or the “redlining” of poor, primarily Black, neighborhoods–were

routinely used to determine a person's creditworthiness. It is only when categorical discrimination was explicitly forbidden that actuarial techniques, aimed at precisely quantifying the "riskiness" of specific individuals, started to flourish in the domain of credit (Poon 2009).

This didn't just change how lenders "saw" individuals and groups – but also how individuals and groups thought about themselves, and the politics that were open to them (Krippner 2017). Redlining was overt racial prejudice, visible to anyone who bothered looking at a map. But credit scoring turned lending risk evaluation into a quantitative, individualized and abstract process. Contesting the resulting classifications, or acting collectively against them, became harder. Later, the deployment of machine learning, which uses even weaker signals (e.g., one's phone's battery level) to determine a person's likelihood to repay their loan, made the process of measuring creditworthiness even more opaque and difficult to respond to.

Predictive scores that rely on behavioral measures eschew blatant racial *discrimination*. But it would be a mistake to think that they eliminate racial *disparities*—they just make them harder to see and possibly allow them to ramify further (Barocas and Selbst 2016, Benjamin 2019). This is why the political struggle against algorithms has emphasized historical biases embedded in training dataset and the inherent unfairness and poor performance of non-transparent, automated decision-making. The European Commission has proposed to regulate the use of "high risk" algorithms that endanger fundamental rights, subjecting them to frequent human review. This would include the use of algorithms for public benefit eligibility, credit scoring, law enforcement, immigration control, employment and more. (European Commission 2021) Finally, traditional High Modernist professions—including judges, journalists and law enforcement officers—have also pushed back against the use of algorithms in their work, treating them as irrelevant, inefficient or a status threat (Christin 2020, Brayne 2020).

Moral Economies of Algorithms: Market Fairness and the Wisdom of Online Crowds

The moral economy of High Tech Modernism is market-driven, both practically and ideologically. Many algorithm-based start-ups want to expand market share rapidly and aggressively. Once revenues exceed fixed costs, the additional cost of adding a new user is comparatively tiny. Platform companies like Facebook or YouTube can serve billions of customers with tens of thousands of employees. Machine learning algorithms can gather

data about users and dynamically provide and adjust flows of content, while matching and auction algorithms can maintain dynamic markets e.g. for advertisers who want access to customers with specific demographic characteristics.

High Tech Modernism also institutionalizes competition between units (whether people, organizations, or ideas) by way of algorithms. The threat of being automated away looms large for all employees. Algorithmic technologies can also be implemented to hire and fire, to predict performance, influence and riskiness, or to surveil, discipline and arrest. They do so by rank-ordering according to their own particular versions of merit (Fourcade 2021). In that way they deploy, and foster, a market-driven vision of fairness (Kiviat 2019). High Tech Modernism seems to imply that anyone who applies themselves can do well, as though social structure and existing power allocations did not matter. (The irony of course, is that High-Tech Modernist firms turn the market screw on everyone, except for themselves; they strive to establish monopoly (Thiel 2014).)

Just like the behavior of individuals, the distribution of knowledge must be subjected to the market test. High Tech Modernism claims to represent popular judgment against the snobbishness of elites. Remember that Scott saw High Modernism as inherently anti-democratic, because it enforced categories and objectives decided on by elites who “know better.” High Tech Modernism, by contrast, systematically undermines elite judgment, fueling a crisis of expertise (Eyal 2019). Algorithms purport to read X-rays better than radiologists, predict purchases better than market researchers, and understand people’s sexuality better than they themselves do. Meanwhile, the network constructs collective views by aggregating individual sentiments as expressed through likes, clicks, and comments. Viral trends and online crowds provide a kind of pseudo-democratic, if extremely volatile, *vox populi*.

The absence of visible hierarchy substantiates High Tech Modernism’s claim that clouds and crowds best represent people’s wishes. Its new elites draw their legitimacy from early libertarian arguments about cyberspace (Barlow 1996), and quasi-Hayekian (1947, 2002) defenses of the market, facially justifying the notion that search engines and other algorithms are disinterested means of processing the internet’s naturally dispersed stock of knowledge (Morozov 2019). They flatter High Tech Modernism as defending the liberties of the individual, freed from physical and social bonds, against traditional status hierarchies. The abundant data

that people “freely” upload or leave behind as they roam cyberspace becomes “an unqualified good” (Brown 2015, 157), fostering beneficial competition for everyone and everything.

The awkward fact of course is that hierarchy has not disappeared but become less visible. Platform companies’ business priorities determine the algorithms that are employed, as well as their “objective functions” – the weighted goals that they are supposed to maximize on. Social media corporations employ algorithms that maximize on “engagement,” keeping consumers scrolling through feeds or watching video clips, so that they keep seeing paid content, which may itself be misleading. Amazon, in contrast, cares more about getting people to buy things, and, according to legal scholar and FTC Chair Lina Kahn (2016), uses its detailed transaction information and ability to rank search outcomes to fortify market dominance. Platform companies dislike even tweaking their algorithms in ways that might conflict with their business model.

As search engines have been transformed from general-purpose technology to personal digital assistants, they have elevated searching the web and forming an opinion “for oneself” into a normative principle. People think of search engines as oracles, but as Tripodi (2018) and others have shown, they work more like mirrors that tend to confirm their priors. People’s interests and behavior are embedded in the vocabulary they use and the questions they ask and perhaps their whole search history. YouTube, Facebook, and other social media too present content based on what you have wanted to see in the past, and what other people who are like you across some array of dimensions have wanted to see.

In this way, platform companies have become knowledge intermediaries, like newspapers or school curriculum boards, while insulating themselves from traditional accountability. Their algorithms and (perhaps just as important) sharing and search tools then help foster categories that can become self-reinforcing private universes of discourse, producing echo chambers in which other voices are silenced, or epistemic bubbles (Nguyen 2020), which guide users to apparent authorities that look actively to discredit other sources of information. However, the invisibility of hierarchy allows these knowledge intermediaries to justify themselves on *laissez-faire* principles, not telling the public what to trust, even while they quietly sink deeper into the Augean mire of moderating offensive, false or untrue content.

Our universe of accessible knowledge is shaped by categorization processes that are invisible and incomprehensible to ordinary users, according to principles that have little regard

for whether it is well sourced, which shift the way that people “take [their] bearings in the world” (Arendt 2006, 252). Visible feedback loops between the people being categorized, the knowledge they have access to, and the processes through which the categories are generated, are replaced by invisible loops mediated through algorithms that maximize on commercial imperatives, sometimes creating incompatible and self-sustaining islands of shared (“post-truth”) beliefs among micro-publics who have been categorized in particular ways, and who may themselves act to reinforce the categories. A new terrain of political struggle has arisen, involving the exploitation of information systems and algorithmic dynamics for partisan advantage.

This is a different set of moral pathologies than those suggested by Shoshana Zuboff (2019), who emphasizes platform companies’ manipulation of people’s wants and beliefs, which might or might not succeed (Hwang 2020). The more corrosive threat may be that people have been convinced that the High Tech Modernist system of knowledge generation is an open buffet where “anything goes” – and that keeping it that way is essential to their own freedom. Anyone can offer content, anyone can be their own expert, and it is up to the algorithm to sort it out. Furthermore, the new existential condition of transparency has provided everyone with potent tools to expose or doubt others, only moderated by their own vulnerability to be exposed in turn –an inherently agonistic situation.

At the end of the day, the relationship between High Modernism and High Tech Modernism is a struggle between two elites, a new elite of coders, which claims to mediate the the wisdom of crowds, and an older elite that based its claim to legitimacy on specialized professional, scientific or bureaucratic knowledge (Davies 2017, Burrell and Fourcade 2021). Both elites draw on rhetorical resources to justify their positions; neither is disinterested.

Conclusions

The fact that many people feel robust offense and disbelief at recent developments suggests that the old High Modernist moral political economy, faults and all, is not quite dead. The new moral political economy that will replace it hasn’t matured yet, but it is being bred from within. Articulated by technologists and their financial backers, it feeds in a kind of matrophagy on the enfeebled body (and the critique) of its progenitor. Just as High Modernist bureaucracies

did before, High Tech Modernist tools and their designers categorize and order things, people and situations. But they do so in distinctive ways. By embedding surveillance into everything, they have made us stop worrying about it, and perhaps even come to love it. (Chorev 2021) By producing incomprehensible bespoke categorizations, they have made it harder for people to identify their common fate. By relying on opaque and automated feedback loops, they have reshaped the possible pathways to political reaction and resistance. By increasing the efficiency of online coordination, they have made mobilization more emotional, ad-hoc and collectively unstable. And by insisting on market fairness and the wisdom of crowds as organizing social concepts, they have fundamentally transformed our moral intuitions about authority, truth, objectivity and deservingness.

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