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Luke Stark

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REVIEW ESSAY

Desanctifying the charisma of numbers

Calculated Values: Finance, Politics, and the Quantitative Age, by William Deringer, Cambridge, Harvard University Press, 2018, 440 pp., $45.00 (hardback), ISBN 978-0674971875

The Tyranny of Metrics, by Jerry Z. Muller, Princeton, Princeton University Press, 2018, 240 pp., $24.95 (hardback), ISBN 978-0691174952

In 1890, the British psychologist and statistician Sir Francis Galton was asked to contribute to an article in the journal *Mind*. That article, written by American psychologist James McKeen Cattell, was titled 'Mental Tests and Measurements,' and espoused the importance of quantifiable metrics for the emerging discipline of psychology – a field which, Cattell's piece argued, 'cannot attain the certainty and exactness of the physical sciences, unless it rests on a foundation of experiment and measurement' (Cattell 1890, p. 373) Cattell claimed indebtedness to Galton's statistical methods as applied across a number of domains: Galton, after all, was the quintessential Victorian polymath, with research interests in psychology, statistics, genetics, meteorology, and perhaps most widely known today, as the founder and popularizer of eugenics.

As many scholars have documented, psychology is just one realm in which quantitative measurement has been central to the experience of modernity – central in that it is both integral to the functioning of modern technoscience and epistemologically constitutive of the assumptions grounding that same science. Due to the increasing ubiquity of digital tools used to monitor, track, account, surveill, and calculate the world, measurement is an increasingly fraught matter of public concern. Artificial intelligence technologies are, for now at least, largely sophisticated statistical engines; big data, the material upon which AI works, is by implication the 'measure of all things.' And as the opening anecdote suggests, measurement has the capacity to shape our understanding of the human condition in both professional and popular registers: today, psychology's validated rating scales and neuroscience's fMRI machines are matched in vernacular use by online versions of the Myers-Briggs Personality test, and a plethora of self-tracking technologies measuring our sleep, steps, caloric intake and daily mood.

Two recently published books – William Deringer's *Calculated Values* and Jerry Z. Muller's *The Tyranny of Metrics* – engage with the measurement, metrics, and calculation vexing our computationally mediated present. The two tackle their topic from different conceptual positions and disparate purposes: Muller's work is a polemic aimed at a general audience, while Deringer's project is intended as a substantial scholarly addition to British political history and the history of quantification. However, reading the two works together is instructive. Though each book makes a contribution (Derringer's more original than Muller's), both skirt what to me is the fundamental political challenge of our age: how to harness calculation in the service of a truly global progressive politics.

William Deringer's *Calculated Values: Finance, Politics, and the Quantitative Age* adds to the rich body of scholarship in both history and in science and technology studies (STS) exploring the genesis of quantification as a cornerstone of contemporary sociotechnical life. In clear prose cogently deployed, Deringer, an Assistant Professor at the Massachusetts Institute of Technology, details the ways mathematical calculations became what he terms felicitously 'instruments of dispute' (p. 12) in the political culture of eighteenth century Great Britain. Marshaling a series of cases

stretching from the 'Glorious Revolution' of 1688 – when the Roman Catholic and crypto-autocratic monarch James II was deposed in favor of the Dutch-born Protestant William of Orange – to the ascent of the Whig politician Robert Walpole's government in the 1720s, Deringer claims calculations themselves found new relevance as a medium through which political arguments could be waged and won.

Deringer highlights the infamous 'South Sea Bubble' of 1720 as an inflection point for the status of calculation in British political life. The classic lampoon of British history *1066 and All That* described the incident as follows:

> About this time nearly everybody in London stupidly got involved in an enormous bubble that appeared at Southsea. Some were persuaded that it would be a Good Thing if all the money in the country, including the National Debt, were sunk in it; others got into it merely with the object of speculating how soon it would be before it burst. Among these was a very clever man called Walpole who got out of the bubble in time, thus bursting it and becoming the first Prime Minister. (Sellar and Yeatman 1930, p. 81)

The South Sea Company was chartered in 1711 by a Tory government as a financial counterweight to the Bank of England (the latter having been founded by a Whig administration only fifteen years previously). As Deringer observes, the post-1688 British political environment was partisan in the extreme: the South Sea Company, like the Bank, was an institutional mechanism through which financial, and thus political power could be effected along party lines. Among the chief rationales for the creation of the Company was the consolidation of Britain's onerous national debt through its conversion into Company stock – stock which would in theory provide both a long-term return to investors and a mechanism for the government to manage its debts.

The 'South Sea' Company had nothing to do with Portsmouth (or the Pacific, for that matter) – its chief business was the trade of enslaved people from the West African coast to Spanish colonies in the Caribbean and South America. In 1713, the British government had gained what was known as the *Assiento* or contract to sell enslaved workers as part of the peace of Utrecht ending the War of the Spanish Succession. As Deringer observes, 'Company promoters touted involuntary African labor as a source of potentially limitless profits and a new foundation for Britain's financial system' (p. 191). Britain's broader colonial ambitious in search of commercial profit were not new: the East India Company, formed to exploit trade to India and south-east Asia, had been founded more than a hundred years prior.

At the height of the Bubble in the summer of 1720, South Sea Company shares were valued at nearly £1000 each, almost eight times their price six months prior. Yet by December, the price had plummeted to below £200, causing losses to thousands of investors. One figure unsurprised by the Bubble's deflation was Archibald Hutcheson, a politician and public 'calculator' whom Deringer identifies as a key figure in the development of numerical calculation as a tool of potent political argument.

Hutcheson countered the rosy long-term projections of the South Sea Company's profitability with his own calculations seeking to determine the 'intrinsic value' of the stock – and in the process, develop a method for deciding on what material grounds such a calculation could even be made. Hutcheson's methodological innovation was to use the price of the South Stock as an input, not an output: as Deringer notes, Hutcheson 'calculated the level of future trading profits the company would have to deliver in order to justify selling its Stock at various different prices' (p. 202). By Hutcheson's calculations, the South Sea Company's future profits would need to be unsustainably enormous to justify its value at the height of the bubble; when the stock price collapsed, Hutcheson's argument via numbers was vindicated.

Deringer identifies the bursting of the South Sea Bubble as, 'perhaps the single most important moment of the ascent of calculative thinking in British civic epistemology' (p. 188). Despite the financial calamity, Deringer argues, Hutcheson's calculations helped persuade the British political class numbers could be superior tool in policy disputes because they had the potential to come closer to the 'true' state of things than other forms of argument – indeed, that 'numbers were more

trustworthy than people' (p. 226). Born in Northern Ireland, Hutcheson was identified with an outsider 'Country' ideology of reform- or even republican-minded politicians interested in sound fiscal governance and ' purging the government of corruption' (p. 58). Yet Hutcheson was not so far from power: before his rise to prominence for 'calculation' he had served as Attorney General of the Leeward Islands (now St. Kitts and Nevis).

Deringer notes in passing Hutcheson's opposition to the South Sea Company had more to do with his status as a (relative) outsider to established power: he observes Hutcheson was both anti-Semitic and entirely supportive of the trade in enslaved peoples from Africa. As Hutcheson's biography suggests, the domestic political culture of early eighteenth century Great Britain was entirely intertwined with its colonial ambitions near and far, and how those ambitions squared with governance at home. Many of Deringer's other cases studies (such as his account of the determination of the exact monetary lump sum, or 'Equivalent' to be paid to Scotland on its union with England in 1707; Robert Walpole's 1721 scheme to manage the nation's debts sunk into the South Sea Company; and anxieties around over- or under population in the later 1720s) obliquely highlight these colonial themes. The formation of Great Britain and the conquest of overseas territories were an interconnected enterprise, undertaken to amass the vast financial resources further global expansion entailed.

Deringer's scholarly focus in *Calculated Values* is not on British colonialism *per se*, and it is always churlish for a reviewer to critique an author for not writing an entirely different book. Yet the brutality and dehumanization of the enslaved people whose trade was the backstop of the South Sea Company should not be viewed separately from the British government's broader colonial adventurism in the early- to mid-eighteenth century in India, North America, and at home (including in Ireland and Highland Scotland). Nor should it be a separate story from the development of a domestic British political culture whose participants (overwhelmingly white, male members of the nobility and gentry) understood one of the ends of 'good government' as the more efficient prosecution of their colonial project. Inasmuch as Deringer addresses these themes, he treats them briefly.

In the final substantive chapter of *Calculated Values*, Deringer notes mid-eighteenth century Britain saw a flourishing of political calculation in vernacular contexts unmatched by an expansion of the British state's statistical capacities (the latter signified most notably by the failure, in 1753, to establish a national census). Deringer counterpoises two figures of the era, the philosopher David Hume and the minister and statistician Richard Price, as representing two distinct strains in the intellectual attitude towards calculation at the end of his period of study.

For the skeptical Hume, calculation as used in politics simply confounded and misled the public; according to Hume, numbers, in Deringer's words, 'fueled Britons' tendency to make dangerous generalizations' (p. 284). Hume argued instead for a more holistically rational, but less calculative, style of public discourse. In contrast, the Protestant minister Richard Price placed mathematical reason at the center of political rationality: drawing on the work of his late friend and colleague Thomas Bayes, Price sought to quantify degrees of uncertainty through statistical inference. Price argued calculative accuracy in numbers was a sure engenderer of unbiased reason in political actors; for instance, he suggested in the mid-1770s the restive American colonies could be placated by a rationalization of their financial relationship with the Crown (p. 294). Deringer positions Hume and Price as archetypical opposites who nonetheless jointly diagnosed the problem dogging eighteenth century Britain, as it does our own day: 'we can't live with numbers, but we can't live without them' (p. 296).

Deringer suggests his account of calculation as an overtly partisan political strategy will have been 'an unexpected story for many readers,' given the putative reputation of numerical knowledge today as 'impersonal, nonpartisan, and apolitical' (p. 301). Citing Daston and Galison's (1992) work on the concept of objectivity, Deringer argues numerical calculation as a feature of British political life predated the early nineteenth century development of the ideas of 'objective' and 'subjective' by nearly one hundred years. Yet Deringer perhaps overstates the difference: calculation, despite its partisanship, suggested at least the potential to conceptually generate 'ground truth.' The public was more than ready to take the increasingly sophisticated technical deployment of numbers by Victorian

science (and its colonial and imperial applications) as both instruments and proofs of civilizational progress.

In his conclusion, Deringer draws parallels between the political use of calculations as instruments of argument to the use of quantitative data in social and political life today. Chief among the lessons he draws from his eighteenth century sources is that 'calculation might be both political and virtuous' (p. 316). In other words, Deringer advocates for a frankness regarding the 'messiness of political calculation,' and the potential for different sets of numbers to add to public understanding, not detract from it. In this regard, Deringer cites the collection of personal data by social media platforms like Facebook and marketing firms like Cambridge Analytica, and their subsequent deployment in the data-driven, personalized depredations of what Zeynep Tufekci (2017) terms in her recent book *Twitter and Tear Gas* 'computational politics,' as exemplary of the anti-democratic effects an apolitical trust in calculative expertise can and has already begun to wreak. Deringer of course also rejects one popular alternative to the apolitical technocratic calculative discourse of 'elites': a right-wing authoritarian politics of 'post-truth' and demagoguery.

I share Deringer's hope for a politics able to engage calculation as a tool for radically inclusive social progress and environmental sustainability. However, I take a slightly different lesson from his engaging and well-researched book: that the political combatants wielding calculations as instruments of dispute are invariably made – and kept – unequal by their historical circumstances. Discrimination across a number of intersecting vectors of identity means calculations act as a force multiplier: unduly powerful in the hands of hegemonically dominant groups, potentially incidental though not inefficacious in the hands of the oppressed.

In my view, Deringer's account actually underscores how close to power the calculative outsiders of the eighteenth century like Hutcheson and Price actually were: their ability to wield numbers in political disputes was contingent on their racial, gendered, and class status within the broader colonial milieu of early modern Britain. This point may seem pedantic, but illuminates the needs of a progressive calculative politics today: vastly expanding the circles in which calculation has real political power. We can do so both by celebrating the quantitative and empirical brilliance of people from diverse backgrounds, and by applying calculation judiciously to progressive, radically inclusive projects for social justice, decolonization, reparations for settler colonialism, and environmental sustainability for all.

The truth of political calculation is that the powerful, if allowed, have always been willing to ignore numbers when doing so suits their ends. Sir Francis Galton was no exception. In his written remarks appended to Cattell's 1890 article in *Mind*, Galton suggested the psychometric measures Cattell had championed in his name actually required non-numeric correlation: 'an independent estimate of the man's powers' in the opinion of the specialist. 'The sort of estimate I have in view,' Galton wrote, ' is something of this kind – "mobile, eager, energetic; well shaped; successful at games requiring good eye and hand; sensitive; good at music and drawing"' (Cattell 1890, p. 381). In other words, Galton disavowed the utility of quantitative analysis on its own, advocating for observation and surveillance of a subject that was necessarily both subjective and longitudinal. Such a subjective assessment could then, in Galton's view, help the expert 'obtain a general knowledge of the capacities of a man by sinking [psychometric] shafts, as it were, at a few critical points.'

Galton's suggestion seems both staggering and paradoxical, since it directly contradicts his own body of research and Cattell's article. Yet Galton gives away the game in advocating for a comparison between a subjective assessment and a particular set of figures. In extrapolating from that relationship to assume the resulting statistical inferences were valid across a wide variety of individuals, Galton showed highly subjective and personal forms of knowledge conditioned his numerical understanding of the human psyche. The common denominator underpinning the Galton's confidence in his psychometric, statistical and eugenic research was his own power, wealth, and status: that position, as much as the calculations he deployed, gave his worldview objective weight and expert status in the eyes of the Victorian establishment.

Jerry Z. Muller's *The Tyranny of Metrics* argues perhaps quixotically for the primacy of that subjective expertise as being, in fact, a good thing. According to its introduction, the project was prompted by the author's frustration with the increasing bureaucracy of the academy and its demand for accountability in the form of quantitative measures. Muller, an Ordinary (equivalent to Full) Professor of History at the Catholic University of America, notes his project is a synthetic one intended for a general audience and drawing on scholarship from many different disciplines. 'What no one has really done,' Muller suggests, ' is put it [critiques of metrification] all together and make it accessible to all of us' (p. 13).

The latter half of Muller's contention is debatable (popular works touching on quantification such as O'Neil's (2017) *Weapons of Math Destruction* predate Muller's book); the former half is, unfortunately, even more open to contestation. One of the chief omissions of *The Tyranny of Metrics* is its lack of reference to the voluminous literature in the history and philosophy of mathematics and statistics, philosophy of technology, and science and technology studies (STS) examining quantification and metrification as social phenomena. A book aimed at general audiences covering these fields would be equally of service to academics, and it is unfortunate Muller, other than glancing references to Porter's (1996) *Trust in Numbers* and the work of Campbell (1991), almost completely neglects this corpus.

Muller's argument takes aim at what he terms 'metric fixation,' a condition consisting of the beliefs that,

> it is possible and desirable to replace judgment, acquired by personal experience and talent, with numerical indicators [and] standardized data … [that] making such metrics public (transparent) assures that institutions are actually carrying out their purposes (accountability) … [and] the belief the best way to motivate … is through rewards and penalties to measured performance (p. 18).

Muller's chief project is to debunk what he identifies as the hold these three tendencies have on administration, and with them the predominance of metrics more broadly. 'Metric fixation,' he claims, 'has elements of a cult.' The book's further purpose, as Muller describes it, is also to 'specify when performance metrics are genuinely useful' (p. 20) in institutions ranging from the military to higher education.

Muller's book is at its best in cataloguing the potential flaws and pitfalls in an overreliance on quantitative data, including a bias towards measuring only what is most amenable to quantification, substituting simple metrics for complex phenomena, measuring inputs rather than outcomes, and flattening data in the interests of standardization (p. 23). Muller also observes the numerous ways metrics can be gamed: through 'creaming,' or excluding cases which might subvert a desired average result; lowering standards; or improving numerical outcomes through omission and distortion of data – or by plain old cheating (p. 24).

Muller's initial description of the pitfalls of metrics is accurate enough. In his historical overview, Muller grounds the mania for metrics in Liberal Victorian educational policy, the industrial efficiency movement of Frederick Winslow Taylor at the turn of the twentieth century, the failed Vietnam-era Pentagon managerialism of accountant-turned Defense Secretary Robert McNamara, and the rise of 'principal-agent' management theory in both public and private sectors. As a description of flawed systems for standardizing and quantifying the world, Muller is on target – but the book fails to connect the through line running through these phenomena, namely the increasingly tight relationship between capitalist logics, large-scale logistics, and financial equivalences. Though Muller avers that *The Tyranny of Metrics* 'draws not only from a variety of disciplines but from a variety of political orientations' (p. 13), the overall thrust of the book's argument is suffused with Red Tory conservatism. The book's narrative thus torques oddly, anchored in a cogent diagnosis of the symptoms of over-quantification but seemingly unable to grapple with the systemic socioeconomic causes driving the problem.

One testament to this tension is Muller's lack of engagement with left-wing critiques of quantification. Despite the history of metrics as a cornerstone of industrial capitalism, Muller devotes just

two sentences to de-skilling and Marxian alienation, drawing instead on conservative thinkers like Oakeshott, Hayek, and Kedourie for philosophical critiques of metrics to make the claim 'the calculative is the enemy of the imaginative' (p. 61). If nothing else, the historical evidence marshaled in Deringer's *Calculated Values* directly contradicts this assertion: a progressive critique need not oppose calculation and imagination, but instead the assumptions regarding equality and justice that mobilize both in the service of exploitation and domination.

Muller evinces his politics regarding the roles of metrics and subjective expertise in social life in both the substance and omissions of his case studies. Some of the dysfunctions Muller identifies, such as an overreliance on metrics at the expense of patient care in medicine, are real social concerns; in most cases, however, his critiques tend to sit on the surface of the phenomena they target. And some of Muller's diagnoses display an alarming naivety in their framing and focus. In his chapter on policing, for instance, Muller avoids any conversation of racial bias in quantitative police profiling: he notes the frequency with which police offers seek to skew their arrest records by bringing in low-level offenders without noting that that, in the United States, black and Hispanic people are disproportionately affected by such conduct; and claims the real problem with crime statistics is that they in fact undercount incidents of violent crime.

In the realm of K-12 education, Muller critiques the testing provisions of the No Child Left Behind Act (NCLB) as having had little impact on the so-called 'achievement gap' between white students, black students, and Hispanic students – but takes this lack of progress as evidence that 'the achievement gap cannot be closed by education,' not that standardized testing itself (which Muller elsewhere praises) and entrenched socioeconomic disparities in American society might together deter durable progress. Yet in his assessment of higher education, Muller paradoxically disdains standardized performance metrics as mechanisms for measuring a university's return on investment for its students. College, for Muller, is 'above all to equip [students] for a life of intellectual richness' (p. 87) – and so the authority of the college experience (and by implication the authority of college professors) should not be sullied by the grubbiness of metrification.

Muller's proposed solution to the tyranny of metrics is a re-emphasis on 'expert judgment' in organizations. 'Measurement is not an alternative to judgment,' he writes; 'measurement demands judgment' (p. 175). For Muller, such judgment is 'partly a matter of experience and partly a matter of unquantifiable skill' (p. 182). Here Muller might have referenced the concept of *phronesis*, or practical virtue, familiar to debates in ethics from Aristotle onwards. And it is hard to argue with judiciousness as a political virtue in the abstract.

Yet the example of Sir Francis Galton, among many others, urges caution. The definitions of justice and good judgment are not simple or obvious: Muller's book would have been more rewarding had it more fully interrogated what such good judgment looks like in a society purporting to be at once democratic, meritocratic, and capitalist. What examples there are in *The Tyranny of Metrics* fail to encourage. In an odd excursus, Muller complains about the transparency in public institutions he believes quantitative metrics entail, referencing Edward Snowden's disclosures as evidence of the need for opacity in some government affairs. 'A thriving polity, like a healthy marriage, relegates some matters to the shadows,' Muller suggests in the book's most ill-judged analogy.

These examples do not inspire confidence the subjective judgment *The Tyranny of Metrics* champions will be just, democratic, or even fair. Quantitative metrics are used as often by institutions to conceal and obfuscate, as they are to reveal; and institutions, in late capitalism more than ever, are not spouses. At one point, Muller declares, 'a capitalist society depends for its flourishing on a variety of institutions that provide a counterweight to the market' (p. 87). Yet throughout, he seems oblivious to the fact that it has been the market, more than any other social force, which has promoted metrification and quantification in the first place.

Neither calculations nor judgments are sure instruments in the political struggle over the progress of human flourishing. Both are required; as a technique, each is fallible and susceptible in its own way to capture by the logics of global capitalism. Read together, these two new works by Deringer and Muller outline the history and contemporary stakes of our increasingly quantified reality. Perhaps

inadvertently, each also reveals how balancing calculation and judgment together will not improve our lives without grounding in progressive values, and in the communal struggle for political, social and economic justice.

Disclosure statement

No potential conflict of interest was reported by the author.

Notes on contributor

Luke Stark is a Postdoctoral Researcher in the Fairness, Accountability, Transparency and Ethics (FATE) Group at Microsoft Research Montréal, and an Affiliate of the Berkman Klein Center for Internet & Society at Harvard University. He was previously a Postdoctoral Fellow in the Department of Sociology at Dartmouth College. His scholarship examines the history and present of digital media used for social and emotional quantification, expression, and interaction; his work has been published in venues including *Social Studies of Science, Media Culture and Society, History of the Human Sciences,* and *The International Journal of Communication*. Luke holds a PhD from the Department of Media, Culture, and Communication at New York University, and an Honors BA and MA in History from the University of Toronto.

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Luke Stark
Microsoft Research Montréal, Quebec, Canada
luke.stark@nyu.edu http://orcid.org/0000-0002-2537-846X

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