

## Calculative Practices in the New Age of Machines

Just as the use of numbers in markets and public life intensifies (Mennicken and Salais, 2022; Mau, 2021), human organization is becoming ever more permeated and constituted by data and apparatuses for generating, ordering and commodifying data (Alaimo and Kallinikos, 2019, 2021; Couldry and Mejias, 2019). While datafication and the proliferation of numbers in social and economic life represent distinct trajectories, the calculative and the digital are closely intertwined, with automated algorithms becoming an ever more ubiquitous form of calculation. Calculative practices are becoming more and more reliant on big data, and related analytics, machine learning and automated systems in a variety of social processes and professional domains. Bold claims are being made about the benefits of digital transformation. Accounting is one of the professional domains deemed to be profiting the most, with technology allegedly increasing productivity, reducing costs and leading to higher value forms of work. Yet, what exactly is new and different in comparison to previous waves of informatization and technologization, in which accounting has been implicated? What new roles and forms are accounting and calculative practices more broadly conceived taking in the contexts of big data and machine learning-based knowledge production? What elements of change and continuity can be observed between current calculative practices and calculative practices from previous ages of machines? What are consequences for processes of governing and control?

This workshop seeks to scrutinize these questions and invites contributions that speak in particular the following three themes.

### 1. *Algorithmic calculation and new forms of coding and categorizing*

Algorithmic modes of categorization have been shown to be less able than human categorization to accommodate conflicting rationalities, so that problems of classification and commensuration (Bowker and Star, 1999; Espeland and Stevens, 1998) tend to transcend established professional categories and practices (Flyverbom and Murray, 2018) and generate cycles of further automation instead (Alaimo and Kallinikos, 2021). As Alaimo and Kallinikos note (2021, p. 1398), the objects stemming from processes of algorithmic categorization have the potential to form 'Babel Towers' in which it becomes increasingly difficult to distinguish between the 'real' and the 'fabricated'. On the other hand, seemingly automated classification processes often require human input in critical phases such as data cleaning and interpreting, and it is in such mundane – yet under-investigated – instances of interfacing between the manual and the automated that biases and stereotypes are typically injected in algorithmic work (Bechmann and Bowker, 2019). Algorithmic categorization thus tends to displace, relocate and conceal human inputs; understanding its preconditions and implications requires attending to the work of coders and to the various ways in which the latter may interact (or not) with the professions that are increasingly relying on algorithmic ways of ordering the world.

### 2. *Contested professional visions and new epistemologies (of the eye?)*

Technological advances are accompanied by new "machine dreams" (Mirowski, 2002), quasi-mythical perceptions of big data and related technologies as able to "generate insights that were previously impossible, with the aura of truth, objectivity, and accuracy" (boyd and Crawford, 2012, p. 663). As the chief editor of *Wired* famously stated "[w]ith enough data, the numbers speak for

themselves” (Anderson, 2008). Such visions of a new inductivism that can dispense from theory (Kitchin, 2014), and related aspirations towards forms of mechanical objectivity (Daston and Galison, 2007) that would make expert interpretation redundant, speak of “a computational turn in thought and research” (boyd and Crawford, 2012, p. 665). While such dreams of new modes of knowledge can be powerful and generative, scholars of science and technology and sociologists of calculative practices have known all along that data, too, like numbers, need making. They require complex and typically invisible infrastructures (Bowker et al., 2019) in which what counts as “data” is traced, extracted, filtered, coded, ordered and the like, in order to be recognisable as data and made to “matter”. Rather than speak for themselves, new data analytics and the visual tools that tend to accompany them are likely to conduce to new ways of cultivating a “professional vision” (Goodwin, 1994) – the set of discursive practices and coding schemes through which the professional perceptual standards that make up expert work are developed. Whilst the notion of data or indeed new visuals “speaking for themselves” can be seductive in contexts where professional judgment is distrusted (Porter, 1995), and programmatic aspirations towards such self-evidence can be powerful ways of shaping how new tools are designed and used, one should also be sceptical of such claims about the “end of theory”. This workshop attends to the unfolding tensions between inductive, abductive and deductive strategies of data generation and interpretation, between correlation and causation, pattern identification and explanation (Kitchin, 2014), at play in the professional visions emerging in the deployment of big data analytics and new automated tools. In so doing, it also attends to the speed, scalability and potential short-term value of data generated insights, which may be driving calculative practices towards a consumption, rather than production, model (Knorr Cetina, 2010). That is, data-driven calculative work may increasingly yield information that is quickly consumed and becomes depleted, obsolete or unusable, whose value is in its fast “consumability” rather than its correspondence with “truth”.

### 3. *New forms of governing, social ordering and control*

AI, algorithms and data analytics are causing significant changes to the way in which capitalism operates (Zuboff, 2019). New forms of stratification emerge (Fourcade and Johns, 2021) and managerial control tends to manifest itself in more surreptitious ways (Chapman et al, 2021). Also, major policy decisions tend to be increasingly made on the basis of effectively ‘black box’ processes (Pasquale, 2015). How are practices of algorithmic calculation mobilized in processes of governing and regulation, and with consequences? For many what this new age of machines threatens is disempowerment and the accentuation of inequalities as a consequence of how calculative practices are articulated. This includes how the use of algorithms reinforces racial discrimination (Noble, 2018), how the introduction of AI in the workplace reinforces the precarity of the ‘cybertariat’ (Huws, 2014; Moore and Robinson, 2016), and how AI and algorithm-based practices in accounting are forcing managers to find new forms of evaluation to address ambiguities (Kornberger, Pflueger and Mouritsen 2017).

If the upshot of this work is that more AI and algorithm-based control is ushering in new forms of rationality that supplant reason, then we need to consider if this new age challenges calculative practices in a manner different from previous threats. Historians of science point to how we have long lived with algorithms and the instrumental use of technology within scientific management and calculative practices has not changed much in the post-war period (Jones, 2018). What may have changed is technological capacity and the mass accessibility of devices with which to calculate. At the same time the set of those knowing how the calculations are controlled has narrowed,

with the emergence of a ‘coding elite’ who can operate at a scale and speed previously unseen in standard interactions between professions and the state (Burrell and Fourcade, 2021).

To conclude, there is a common assumption that AI and algorithms are *acting*, but how they change forms of calculation and “governing by numbers” (Miller, 2001) tends to be underspecified. There are many myths around what AI and algorithms do to calculative practice. This workshop is aimed at myth-busting (Daston, 2004) and calls for a critical examination of what constitutes calculation in this New Age of Machines.

The workshop is an initiative from cooperation between the ADD project at the Copenhagen Business School, the QUA=D project at the Centre for Analysis of Risk and Regulation at the London School of Economics, and The FinWork Research Centre at King’s College London.

The workshop will be held at the Copenhagen Business School, Frederiksberg, Denmark, on **November 3<sup>rd</sup> and 4<sup>th</sup> 2022**.

We expect no more than 20 participants. Those interested in attending should send a one-page title and abstract to [add@cbs.dk](mailto:add@cbs.dk) by **September 1<sup>st</sup> 2022**. Notifications of acceptance to the workshop will be sent by September 9<sup>th</sup> 2022. There is a limited budget to assist with flights and hotel accommodation for those attending and in need of additional funding.

## Convenors

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