Infidel Mathematics: Towards a Revolutionary Theory of the Object

Justin Joque
John Cheney-Lippold

Our finances, politics, media, opportunities, information, shopping and knowledge production are all mediated through statistics and related machine-learning techniques. As such these technologies and methodologies increasingly form the organizational backbone of contemporary capitalism. Everywhere massive stores of data are continually transformed into actionable information for either human or computer consumption. Stocks are traded, prisoners' sentences are adjusted, credit is granted or denied, and scientific facts are inferred. This work that statistics does is simultaneously material--it calculates with magnetic bits and moves capital and goods around the world--and deeply metaphysical turning data about the world into concepts, predictions and inferences. Just like the commodity, for Marx, statistics think and work for us.

Just as Taylorism revolutionized industrial production, the 'inference revolution' has revolutionized the abstraction of information from data.[1] But, at the same time statistics was busy revolutionizing capitalism, statistics was undergoing its own revolution. Over the last few decades frequentist approaches presenting an objective measure of likelihood as a proportion of occurrences in a long run system (e.g. rolling dice) began giving way to Bayesian approaches founded on a subjective likelihood that updates as new evidence is gathered.[2] We argue that this revolution in statistical epistemology is in fact a revolution in production that creates new possibilities, contradictions and grounds for resistance.[3]

The German Marxist, Alfred Sohn-Rethel, hoped that human society would undergo "the transition from the uncontrolled to the fully conscious development of mankind." While we are developing the technologies that would allow such a conscious development, we are simultaneously witnessing the destitution of the political possibility of this development. The scale, complexity and abstract natures of the systems we have created are outpacing our ability to comprehend or direct them. The clearest example of this is the logic of austerity politics of the last decade. The rationale of a market largely run by algorithms trading stocks between themselves has placed a set of unrefusable demands on the state to slash budget outlays.

To understand the nature of this paradox and of contemporary capitalism it is essential to critically understand how statistics and machine learning function, but not exclusively on a mathematical level. Rather it is critical to understand how they act as a form of epistemology

---

[1] Gigerenzer, Gerd, and David J. Murray. *Cognition as intuitive statistics*. Psychology Press, 2015.

[2] While machine learning techniques are not exclusively or even often wholly Bayesian in their approach, the Bayesian revolution both opened the door for advances in machine learning and continually informs its developments. Thus, we ultimately see Bayesianism as a spark that has led to a much broader revolution in how meaning is extracted from data and updated as new evidence is discovered. See: Williamson, Jon. "The philosophy of science and its relation to machine learning." In Scientific Data Mining and Knowledge Discovery, pp. 77-89. Springer Berlin Heidelberg, 2009.

[3] There are a multitude of interpretations of Bayesian statistics our focus in this book is largely on the subjective interpretation developed by De Finetti and Savage.

and ideology, making the world decipherable. Indeed, it is amazing the extent to which important statistical treatise throughout the 20th century are awash in deep metaphysical claims. Thus, it is necessary to explicate the complex relations between statistical inference, the production of value and the way both shape the possibilities of a radical politics.

To this end we argue that statistics, like all knowledge, are founded on an objectified set of beliefs about what is equivalent and hence computable. Theories and politics that do not interrogate this fundamental structure of computation produce, in the end, a form of "post-festum analysis," as Marx wrote, in which one's analysis inevitably leaves one bounded within the existing coordinates of the state and market. We find over and over again the resurgence of this frustrating paradox: our resistances to neoliberal algorithmic culture, from calls for individual autonomy to the end-to-end politics of encryption, inevitably end up repeating and reinforcing the very structures they set out against. Thus, our aim is not to reveal the truth behind statistics or argue against it. Rather we seek to show how the contradictions inherent to statistical inference under conditions of late capitalism--contradictions that span the philosophical difficulties of providing a solid ground for inference to the economic contradictions that arise from knowledge production in the neoliberal university--point not towards the end of statistics but rather the necessary and 'objective' need for rethinking the very nature of capitalist production.

In this light, we seek to critically examine the statistical production of knowledge; outline its inherent contradictions; and offer a road map for resistance on the level of epistemology and metaphysics. Any radical theory that hopes to break the cycle of capitalist exploitation must intervene directly at the metaphysical and ideological stakes of automation and production rather than merely on the material—last mile—means of production. To seize the means of production requires seizing the metaphysical means of objectification.