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Beyond and Before Metrics

Before and Beyond Metrics begins with the origins of publication metrics, tracing the contingencies of their genealogy to both question the present and to envisage possible future postmetrics scenarios. Rather than analyzing the manipulation of a specific metric, this section considers the gaming that is necessarily involved in the introduction of any metrics—not the gaming of an established game, but the gaming that goes into defining the game itself. Metrics are not set once and for all, but are rather introduced and modified through a never-ending process propelled by gaming itself. Any metric will create the possibility of its gaming (and gaming-related misconduct), which will eventually crowd that market, thus creating an incentive to modify the metrics, which in turn will usher in the next generation of innovative gaming and manipulations. Metrics appear to set specific targets, but those targets are inexorably bound to be moving ones. Several contributions to this section show how Goodhart’s law, despite its obvious value, does not capture the fact that—from faculty performance to university rankings—academic metrics is not one thing, but many different factors, rankings, and indicators jockeying for attention in an increasingly tight market, marginalizing some competitors while forcing others to focus on different indicators and niches. (The remarkable variety—if not outright incommensurability—of international university rankings exemplifies this trend).

Alex Csiszar shows that the problem of gaming metrics, far from being an exogenous pathology, is part and parcel of the history of scientometrics. Well before scientific indicators came into common use, Robert Merton wrote a letter to Eugene Garfield, the owner of the Institute for Scientific Information and the inventor of the Science Citation Index, predicting that a “goal displacement” would inevitably emerge if scientometrics were to be used not to map the dynamics of the scientific community (as Garfield had initially proposed), but to evaluate and reward

the publication performance of specific scientists. In a striking foretelling of Goodhart's law, Merton stated the following: "Whenever an indicator comes to be used in the reward system of an organization or institutional domain, there develop tendencies to manipulate the indicator so that it no longer indicates what it once did." The future of scientometrics unfolded precisely as Merton had predicted, creating a field that became extraordinarily influential precisely because it was "hacked" and turned from a descriptive into an evaluative discipline, thus spawning a potentially endless range of indicators, and their gaming.

Yves Gingras puts the local history of scientometrics into the context of large-scale global economic changes that have affected scholarly publication to argue that "the internet revolution, the economic transformation of journal publishing and the evaluation turn" created the "perfect storm," which transformed scientific publishing and contributed to the rise in academic misconduct. Gingras's conclusion resonates well with Merton's prediction: the scientific paper has been transformed "from a *knowledge unit* to an *accounting unit* used to evaluate researchers."

Michael Power and Paul Wouters move from a focus on scientific papers to one on institutions. Power argues that the university's demand that its faculty demonstrate the impact of their research "has become a *game*, understood as an infrastructure for the production of a certain kind of truth (Foucault)." In this meta-game, the order of scholarly production has been flipped upside down: researchers must make sure that they will have impact "*before* they do the related research. Rather than impact being an outcome of research, it is research, or a certain style of research, which is becoming the product of the impact apparatus." The need to be found to have had impact determines the kind of research one will do and the questions one will ask.

Paul Wouters expands on the strange alchemy of "impact" by reflecting on how academic research has become "a strategic business in which it is increasingly vital for researchers to be visible at both the national and international level." This need for high visibility has curtailed academic autonomy, subjecting researchers to continuous evaluations and assessments of the scientific excellence and societal impact of their work. Given how research has become a strategic business, Wouters concludes that it has become difficult to distinguish "gaming the system" from "properly functioning in the system."

Sharing many of the concerns of the previous contributors, James Griesemer offers a radical proposal to move us toward a postmetrics future. Griesemer moves beyond the mantric reiteration of Goodhart's law and

the a priori critique of metrics it entails, proposing we study metrics as just any other dimension of scientific practice (including instruments, funding, and training) and to do so “experimentally.” That is, we should not just look at the effects that metrics has on those who respectfully follow it, but also at the unexpected consequences that happen when one actively “hacks” metrics. Such experimental hackings should be practiced and understood as a form of productive misbehaving (to be clearly distinguished from “behaving badly”): “just as video game hackers improve game play by intentionally violating the designs of the game designers to make the game play differently, science studies research might involve experimental manipulation of metrics as a means of understanding contemporary science in the age of metric tides.” And because metrics is about publications and their reception, a journal or series of journals explicitly dedicated to the experimental study of metrics would be the “laboratory” for this kind of research that hacks metrics for knowledge, not for profit.

