

Cognitive History As Metascience

Short Guide to the History of Rationality Standards

General idea + proof of concept

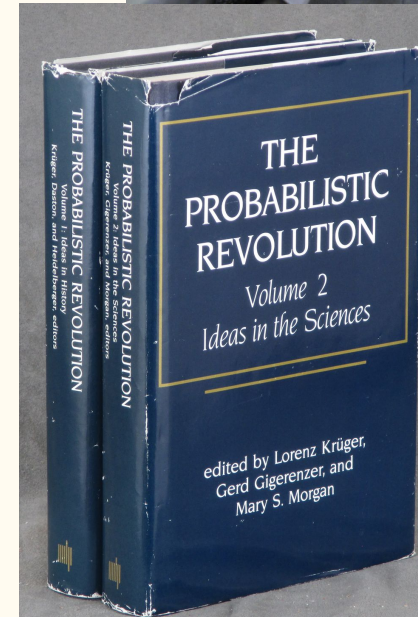
- ❑ **Cognitive Metascience** (Miłkowski 2024) should have a diachronic dimension
- ❑ New field of **Cognitive History** (Duner & Ahlberger 2019) is tailored for that
- ❑ Distributed cognition assumption (division of scientific labour; Giere & Moffatt 2003)
- ❑ We non-traditionally conceive of history of science to be the history of **conceptual systems** that are separable and sequential
- ❑ Outcome: **history of science is actually useful for metascience and cognitive science**
- ❑ My case: **quantification and the standards of rationality**

What is Cognitive History (Planer & Ahlberger 2019:1)

Cognitive history is the symbiosis of the methods and tools of historical research and theories of **cognitive science** for the explanation and understanding of human behaviour, communication, and thinking history. Humans in history, as well as present-day humans, **have certain cognitive abilities or resources through which they understand and interact with the surrounding world.** These mental processes are **not just isolated in the head**, but in an incessant interplay with things and objects in the physical environment and the thinking of other human beings in the socio-cultural environment.

Some other people that thought alike before

- **‘Bielefeld Group’** in history of science (Krueger et al, 1987)
- **Ted Porter’s** work on the rise of statistical thinking and **trust in numbers** (Porter 1988, 1995)
- Sociology of quantification (**Desrosieres, Espeland, Diaz-Bone**)
- Daston’s work on **ideas and practices of rationality**
- **History of objectivity (Daston + Galison)**
- **Historical epistemology and cognitive history**
 - Ian Hacking’s ‘The Taming of Chance’ (**discovery** of intellectual new worlds seen through quantitative lens)
 - French HPS on epistemological ruptures (**Bachelard**)
- Witold Kula’s **‘Measures and Men’** (on metric revolution)
- Lund Center for History of Knowledge
- **Integrated HPS** - history as a repository of cases and sandbox for theories
- Theories of **modernization**, which usually omit quantification



Project: 'A Proof Above All'. Growth of Statistical Thinking as a Shift in the Standards of Rationality in the (long) 19th Century Poland.

- Endpoint: explain where did the metric society (Mau 2018; Beer 2016) emerge and do archeology of this knowledge (Foucault)
- How, when and why quantitative ideas and techniques emerged, gained traction and established themselves?
- Especially, why are the numbers so seductive in public discourse and public perception. **'The cold numbers' problem.** (Marasse 1866)
- **Focus: social life of 'measures', not philosophical subtleties, not even their validity,** just usage as a purported 'measurement'
- Shifts in the **'standard of rationality'** through **quantification.**
- Today - weaponization of **statistics as argument of a new type**, seen here on a very small scale to exemplify more general points. .

Quantification

- **When, how and why numbers became harbingers of objectivity?**
 - Proliferation, and improvement of statistical tools, practices, ideas and arguments.
 - Increase of applications (what's *suitable* for counting)
 - **Mathematization of social reality**
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- Scientific aspect (mathematization of disciplinary sciences)
 - Social aspect (transfer from scientific discourse to the public domain)
 - **Cognitive aspect**

'I bravely ventured to suggest that statistical science was the peculiar aspect of human progress which gave to the twentieth century its special character [...] it is to the statistician that the present age turns for what is most essential in all its more important activities.'

They are the "backroom boys" of every significant enterprise.'

Ronald Aylmer Fisher, The Expansion of Statistics (1954)

Quantification as Rationalization

*‘roughly put, taking place in all areas of human life from religion and law to music and architecture, rationalization means a historical drive towards a world in which one can, in principle, master all things **by calculation** [emphasis mine]’ [Kim 2012; Weber 1919/1946: 139]*

→ *When, where? Longue durée, obviously. But can we pinpoint more critical periods, places and mechanisms?*

Rationalization => **shift in the standard of rationality**

- ❑ How is knowledge produced? What changes?
- ❑ How do facts travel? (Howlett & Morgan 2012)
Dissemination + mapping
- ❑ Actors (Latour or not)
- ❑ Virtues/vices? (Daston & Galison 2007; Paternotte & Ivanova 2017; Daston & Sibel 2003; Lochmatov 2024)
- ❑ How to study that? Frequentist vs normative approaches

An explanatory gap?

- How did this acceleration in quality, quantity and breadth of statistical work happen and why?
- Two possible hypotheses:
 - **State-building/Nation-building [Labbé 2018]**
 - **Impact of leading scientific personas (Romer, Rosset, Czekanowski, Kumaniecki, Twardowski, Steinhaus) [Daston & Sibum 2003]**
- Others - marxist explanations (socio-economic factors), technical progress, political shifts, etc.
- Firstly, this is all too late. Secondly, I am interested in **intellectual history**
- Three episodes of purported ‘measurement’ as illustrations

‘Above all, the form of representation appealing to the senses, for it combines words with symbolic signs, and finally the free use of numbers; **this means of proof above all other arguments higher**, which helped it reach the stature of great seriousness. And not only as an abstract science, but even in practical life statistics found numerous supporters.’

Mieczysław Marasse (1866) - ‘On the notion and tasks of statistics’
[translation - WM]

Case Conclusions

- ❖ **Statistical argument are introduced by a narrow group of influential intellectuals, vouched by their authority, becomes commonplace, then required.**
- ❖ **Different mechanism than in Western countries in lieu of usual actors, still successful**
- **Shifts the dialectic landscape (standard of rationality)** - even the skeptics have to adapt, knife in a gunfight is untenable even when fighting a statistician
- **‘Convincing without convincing’** - dressing-up the argumentations as mathematical reasoning (‘proofs’ ‘formulas’, ‘theorems’)
- Authority of ‘mathematics’ lends credit even evidently well outside its scope (‘proofiness’ Seife 2017), regardless of source
 - Exemplifies the more general tendency of statistical arguments to obfuscate its **context** and inner machinery (how the sausage is made)

But what next? Quantify quantification?

On methodology of metascience

- ❑ Traditional historiography is fine, but can be bolstered
- ❑ A very self-aware methodological discipline, but also guarded and defensive.
How do we explain historical processes? How do we explain science-making through time?
- ❑ Special case of history of science (whiggishness, normativity)
- ❑ Traditionally, there is a dust-eating scholar = blackboxed devourer of sources who is vouchsafing for the representativeness of source choice, representation and synthesis
- ❑ What if we supplement it with some quantitative tools (cliometrics, digital history, NLP/text mining, network mapping)
- ❑ We look for tractability, representativeness. But also it imbues the process with potential pros: more processing power, hypothesis testing, visualizations, etc.
- ❑ Let's make it more towards science of science

Thank you for your attention!



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