



'A Proof Above All'

How the introduction of statistics
changed the standard of rationality.
Cognitive history of 1864-1931 Poland.



Wojciech Mamak

Dept. of Logic and Cognitive Science

Polish Academy of Sciences

wojciech.mamak@gmail.com

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Roadmap



1. Theoretical framework
2. Quantification as a target for historical epistemology
3. Peculiar case of Poland
4. Three episodes of 'social measurement'
5. Conclusions, consequences + (open) problems

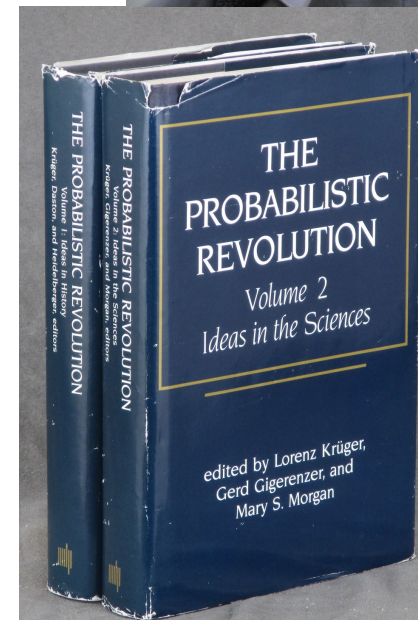
Quantification

- 
- ❑ Proliferation, and improvement of statistical tools, practices, ideas and *arguments*.
 - ❑ Conquering new domains (what's *suitable* for counting);
 - ❑ **Mathematization of social reality**

 - ❑ Scientific aspect (mathematization of disciplinary sciences)
 - ❑ Social aspect (transfer from scientific discourse to the public domain)
 - ❑ **Cognitive aspect**
 - ❑ -> Hacking's statistical style of reasoning?
 - ❑ Dynamics: peaceful co-existence with other styles undermined?

Theoretical background

- 'Bielefeld Group' in history of numbers (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**
- Historical epistemology and cognitive history
 - **Ian Hacking** '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 the metric revolution)
- Theories of **modernization**, which usually omit quantification



About the main project

- Project: 'The Emergence of Statistical Thinking as a Shift in the Standards of Rationality'

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- Case study: (long) 19th Century Poland.
 - Endpoint: explain how 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 (scientifically and socially)?
 - Especially, why are the numbers so seductive in public discourse and public perception. **The allure of 'cold count'** (Marasse 1866)
 - **Focus: social life of 'measures', not philosophical subtleties, not even their validity**, just usage as a purported 'measurement' + arguments
 - Shifts in the '**standard of rationality**' through **quantification**.
 - Today omnipresent and obvious - **quantifying instinctual, stats as an arbiter** : seen here on a small scale to exemplify general points

History of the self-evident



*'I was absolutely hooked! Not only on probability theory, but on the way Hacking did history, which was try to imagine the **conceptual preconditions for what for us is self-evident**. That's what I think 'historical epistemology' is, and although I wouldn't have been able to articulate it as a graduate student, it was a way for me to pursue my philosophical interests while thoroughly historicising them'*
(Daston in [Bycroft 2017])

'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]*

- Longue durée, obviously. But can we pinpoint more critical periods and places?

Specific case of 1864-1931 Poland



- Way different than the canonical examples that dominate the literature (Porter, Tooze, MacKenzie) - lack of 'usual' mechanisms
- Partitioned (Russia, Prussia, Austro-Hungary) since 1795
 - ◆ Vast differences between the partitions. Then need to reconcile them.
- Weak institutions and professional cadres
- Metrological **chaos**
- Public **distrust** towards state numbers (not irrational), if accessible at all
 - ◆ 'mathematical acrobatics' (Zakrzewski 1886)
- **Belated** and later playing intentional catch-up (-> **modernization**)
- Still, something changes during the malaise and then quite suddenly **explodes post-1918**



THE PARTITIONS OF POLAND 1772–1795

0 150 300 Miles
0 150 300 Kilometers

Poland
Boundary of Poland before the partitions
Partition boundary

Territory acquired by Russia
Territory acquired by Austria
Territory acquired by Prussia

AZIMUTHAL EQUAL AREA PROJECTION

(Source: Wiki Commons)

A change in (statistical) landscape:



1860s-1910s

- Lack of statistical milieu, few professionals (Piłat, Załęski - exceptions, not rule)
- Lack of adequate institutions
- Publications scattered and neglected
- Public **mistrust** towards state numbers
- '**Mathematical acrobatics**' (Zakrzewski 1888)
- **Secrecy & uncooperativeness** of state
- Statistical enterprises undertaken by **amateurs** (Marasse, Szczepanowski, Buczyński)
- Three partitions **disconnected** from each other
- **Metrological madness**
- **Belatedness**: slow travel of ideas
- Awareness of that

Post-1912

- Polish Statistical Society (1912)
- Tripartite '**Statistics of Poland**' (Kumaniecki&Krzyżanowski; 1915)
- 'L'Encyclopédie Polonaise' (Piltz 1916)
- First handbooks:
 - statistics - **Grabowski 1917**;
 - anthropology - **Krzywicki 1908**; Czekanowski 1913
 - mathematical economics - Zawadzki 1914
- **Romer's trilingual "Geograficzno-statystyczny atlas Polski"** (*Geo-statistical Atlas of Poland*. 1916) [Górny 2017]
 - national statistics mobilised in WWI peace talks
- 'Professors' War' [Górny 2014]
- **Central Statistical Office (1917)**
- **Socio-Economic Institute (1926)**
- Anthropometry: Rosset [Ogórek 2016, Mogilner 2015])
- Poznań School of Economic Historians: Taylor, Rutkowski, Caro)
- Mathematical statistics: Neyman, Smoluchowski

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 personae** (Romer, Rosset, Czekanowski, Kumaniecki, *Twardowski*, *Steinhaus*) [Daston & Sibum 2003]
- Others - marxist explanations (socio-economic factors), technical progress, political shifts, etc.
- But how to explain that from historical epistemology perspective?
- Three episodes of purported '**social measurement**' as illustrations

'Morality' in numbers

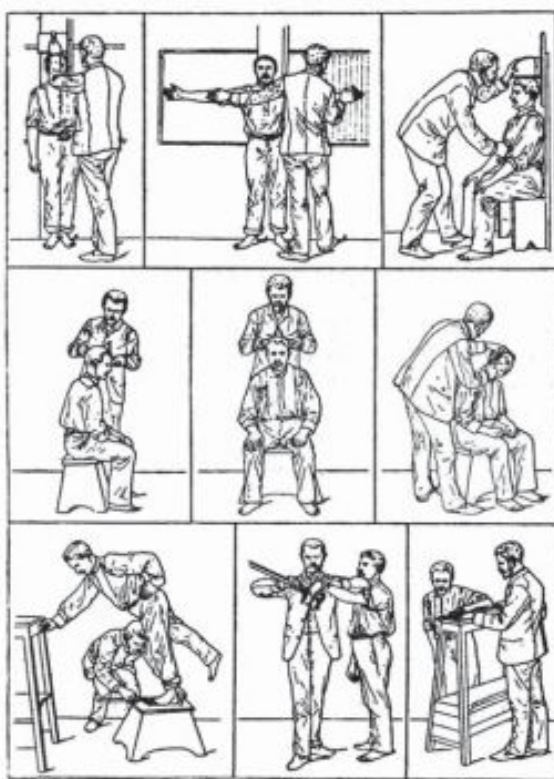


- Fight between the 'old' ('Weekly Review' and 'new' press ('Niwa') within the 'Warsaw positivism'. Top journalists (A. Świętochowski, P. Chmielowski, B. Prus) - **'leaders of opinion' and experts in the void of actual expertise**
- Follows Western discussions (Quetelet, Guerry) but mostly Alexander von Oettingen's 1868 book
 - ◆ 'moral-statistical plank in the modernity thesis' (Lederer 2013)
- The idea that there is a clear relationship between the education and the morality levels - visible in divorce rates but also crime levels and crime distribution, supposedly ready for readout
- A positivist idea, but in new formulation - **we can *scientifically* prove it, i.e. show it in the numbers**
- Statistics mobilized as a new, more sophisticated mode of demonstration

'Degeneration' in numbers

- Continuation of hot debates in Europe about degeneracy of nations ('national characterology') [Lombroso, Galton]
- Interpreted both spiritually (morally) but also physically
- Based on new anthropomorphic measurements (height, skull diameter, 'chest index')
 - Done by anthropologists working for the military, performed on conscripts [Mogilner 2015, Kopczyński 2015]
- Debate between **Jan Ludwik Popławski**, a conservative influential pundit and **Władysław Wścieklica**; polemic brochure '**Do we go astray**' (1888)
- Lamenting degeneration (JLP) vs. malnutrition (WW)**
- Extremely strong, long-lasting conviction that the physical measurements when systematic enough are the way to assess the trajectory of the nation

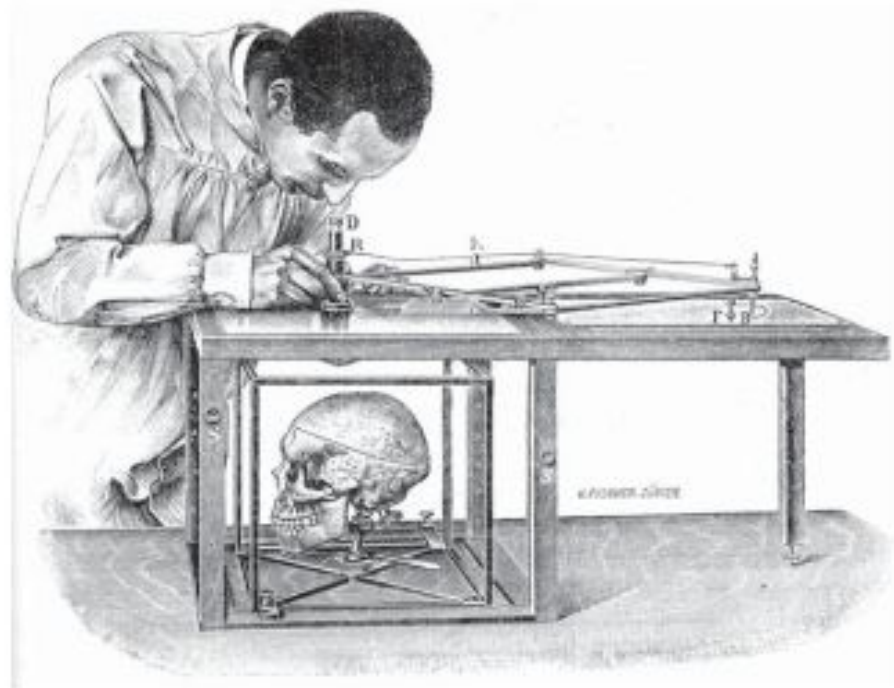




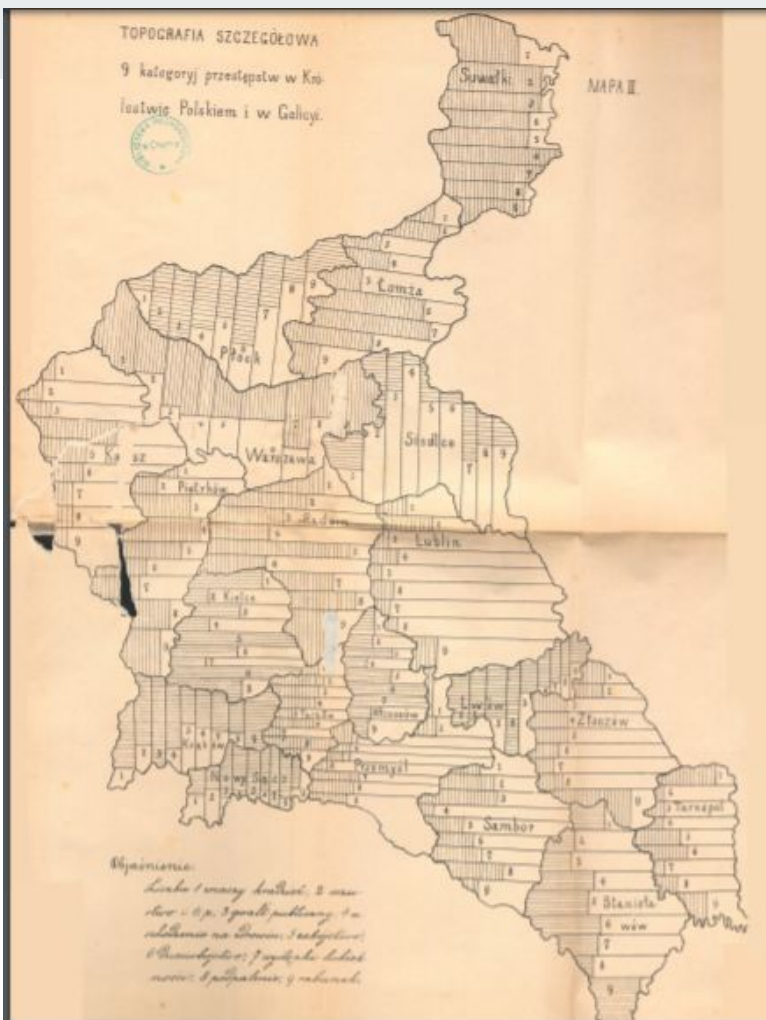
Приёмы наѣренія.

нѣскольکو паспортѡвъ. Въ наше время рѣдкій профессиональный преступникъ живетъ по своему настоящему паспорту, котораго онъ

25. Police anthropometry. From *Spravochnyi ukazatel' dlia chinov politzii*, composed by the chief of Moscow police, V. I. Lebedev (1903). This police



(Mogilner 2015: 46; 330)



Source: Roman Buczyński, *Zarysy stanu moralnego naszego społeczeństwa* (vol. 1), 1885/6)

PAR A. BALSI & A. M. GUEHY, graveurs.
A Son Excellence le Comte DE PORTALIS, Pair de France,
Ministre de la Justice

CHOCOS CONTRA LAS PROPIEDADES

[illegible][illegible]

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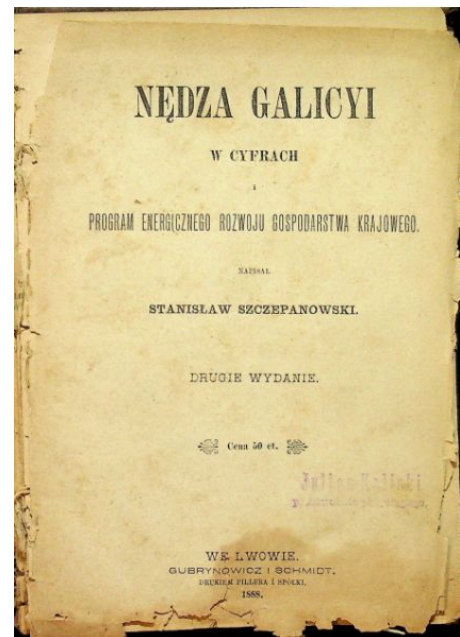
Journal of Interpersonal Violence 26(12)

(Guerry and Balbi, 1929;
repurposed from
Friendly 2007)

Backwardness (of Galicia) in numbers



- Previous work by trained statisticians (Piłat. Marasse) unnoticed. Publishing of **'The Squalor of Galicia' by Stanisław Szczepanowski (1886)**
- Hugely influential MP, oil baron and public figure
- Bogus sources and methodology (Gieysztorowa 1986, Franaszek 2016), yet hugely popular [e.g. 50k dead/y ~fake news?]
- 'Eye-opening' - for the first time backwardness level is seen for what it is with proper scope (according to the sources themselves!)
- A barrage of replies from all political positions, **including catholics and conservatives** (who are declaratively anti-scientific)
- Brings about **actual political change** (1893 debt conversion bill)
- Followed by Bujak's 1908 'Galicia in Numbers' and 'export' economics of underdevelopment -> Lange [Mazurek 2018]



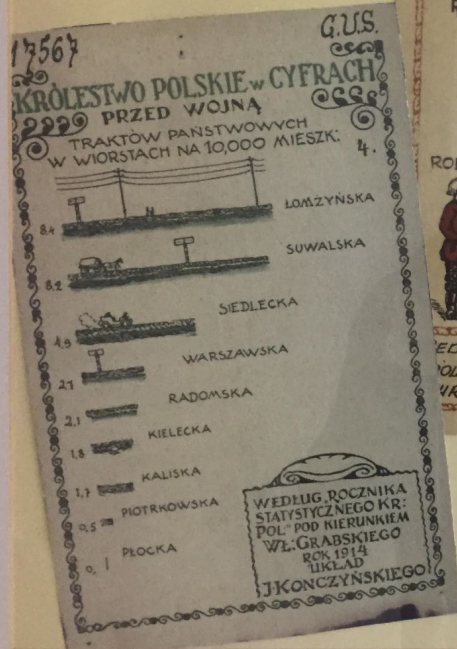
‘Above all, the form of representation appealing to the senses, for it combines words with symbolic signs, and finally the free use of numbers; **this means of proof above all other arguments higher**, which helped it reach the stature of great seriousness. And not only as an abstract science, but even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

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

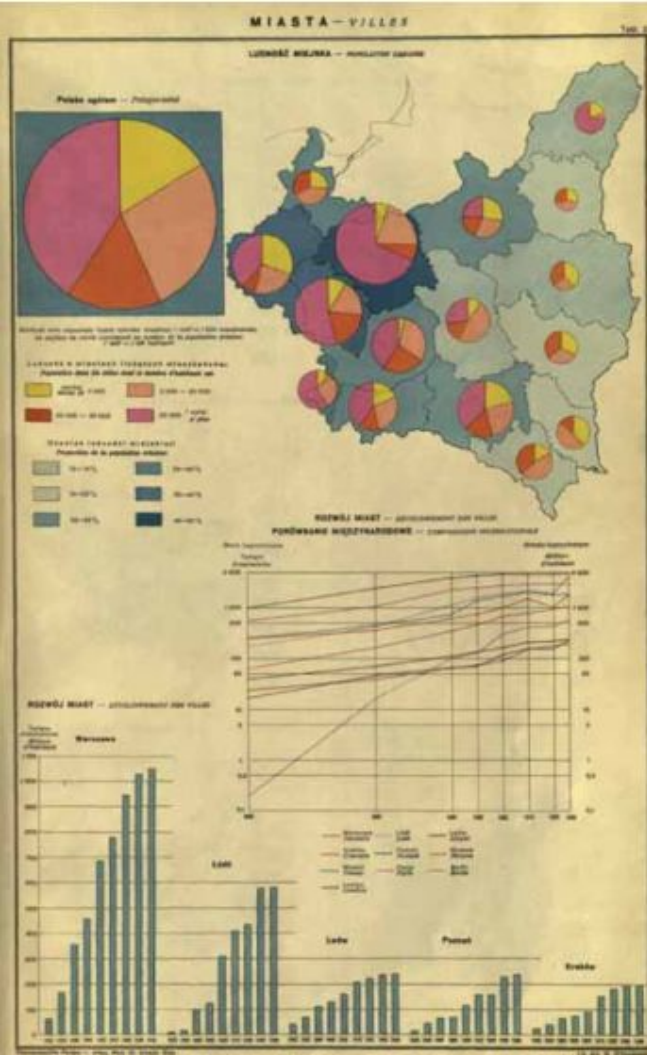
Conclusions

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- ❖ 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
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- ❖ 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)

Postcards with
infographics, published
by the Central Statistical
Intitute, 1930s



Karty korespondencyjne z serii Królestwo Polskie w cyfrach przed wojną wydane na podstawie Rocznika Statystycznego Królestwa Polskiego w 1914 r. pod kierunkiem Władysława Grabskiego ze zbiorów CBS.



Source: Statistical
Atlas of Poland,
1930

Source: *Kurier
Ilustrowany's*
[*Illustrated
Courier*] report
on the National
Census, 1931





Residential construction
expo, Warsaw 1933

Wystawa budownictwa wojskowego w Warszawie

Plakaty przedstawiające dane statystyczne Departamentu
Budownictwa M.S.Wojsk. za lata 1923-1933.

Zamknij X

Open problems / talking points

→ [REPRESENTATIVENESS]

How to assess whether these exemplars are really representative?
Should we strive for more quantification ourselves to establish really valid explanations?

→ [PRESENTISM]

Is it not presentist or whiggish to try to understand this historical process through the lens of current data-centrism? Perhaps today's deep infatuation with numbers triggers projections or false exaggeration of statistics' involvement in genuine historical (and cognitive) processes?

→ [SCOPE]

How's it possible to define a 'standard of rationality' in the first place? The discourse is always too informal, fragmentary and heterodoxical for a 'standard' to be an operational notion. Actors definitely do not adhere to 'ideals of rationality' every (most?) time and frequently violate the norms. Perhaps there is only 'practice' but then it is not too messy for our clear-cut historiography of quantification.

→ [NORMATIVITY]

Also, is mere frequency of and devotion to producing and utilizing numerical data or arguments ('practice of rationality') enough to posit something as rigid as a 'standard'? Maybe the thesis of a cognitive shift in rationality is simply too strong?

Thank you for your
attention!

PAN

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POLISH ACADEMY of SCIENCES