

# Social and Cultural History of Science

DEp00W

10 March 2022

# What is good science?

- Karl Popper: falsification, questioning the result
- Bruno Latour: possibility to repeat experiment
- Positivism as a measure for the quality of science
- Rational thinking gained importance over other kinds of thinking
- Mathematics as an example of correct thinking (the?!? example?)
- The process of mathematization: also done in school mathematics (word problems)
- Physics and mathematics intimately connected, not other natural sciences, let alone social sciences and the humanities



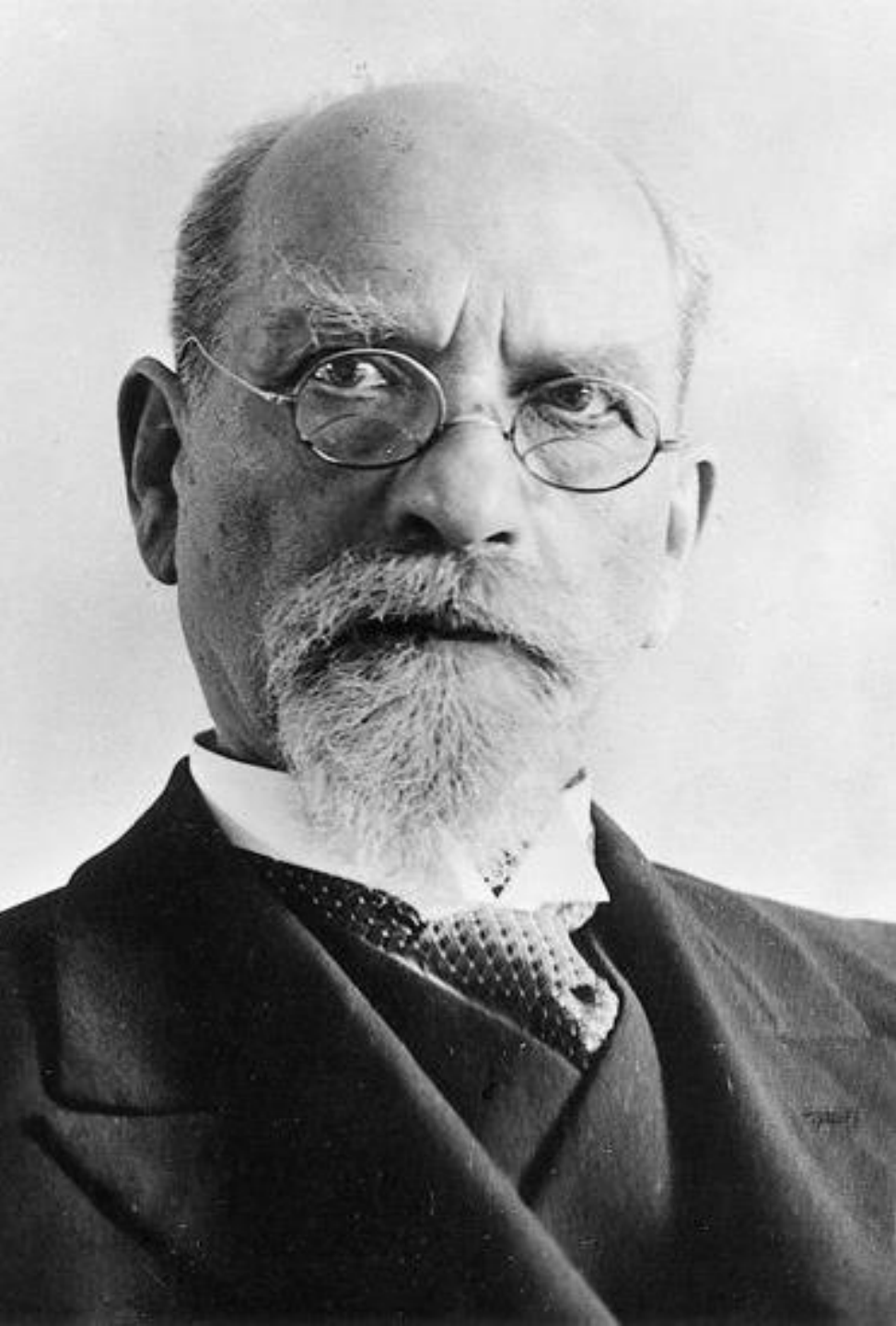
# Tomáš Garrigue Masaryk (1850-1937)

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- First president of Czechoslovakia (68 years old)
- Studied philosophy
- Met Edmund Husserl – and influenced Husserl as an older friend and a co-patriot (both from Moravia)
- Wife: Charlotte Garrigue, American pianist
- 1882: professorship in Prague
- Inaugural lecture:

Theory of probability and sceptical thinking of Hume

-- promoted new logic: based on probability calculus



# Edmund Husserl (1859-1938)

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- General Introduction to Pure Phenomenology (1913)



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# Francis Bacon (1561-1626)

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- Classification of sciences
- New Organon (ref. to Organon – Aristotle)
- Instaurato Magna (1620) – a comprehensive plan to reorganise science
- Politician, lawyer, philosopher, statesman





# René Descartes (1596-1650)

- Discourse on Method (1637)
  - Three essays:
    - Dioptrics
    - Geometry
    - Meteorology
- NEW: not written in Latin, but in French
- „Everyone could tell true or false by the natural light of REASON.“
- Cogito, ergo sum. / I think, therefore I am.







# Immanuel Kant (1724-1804)

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- Influenced by René Descartes and Francis Bacon (rationalism and empiricism)
- Critique of Pure Reason (1781) – revised with further works

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# Georg Wilhelm Friedrich Hegel

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- 1770-1831
- German philosopher







Alexandre Koyré

## Alexandre Koyré (1892-1964)

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- Russian-born French philosopher and historian of science
- 1909 – went to Göttingen to study with Husserl
- Later – Paris – Léon Brunschvig
- Opposed the October 1917 revolution
- 1919 left Russia permanently
- Taught religion and philosophy in Paris
- Worked on Hegel



## Robert K. Merton (1910-2003)

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- American sociologist
- 1936 Ph.D. Harvard
- 1938 Science, Technology and Society in 17th C. England
- 1941 Columbia University – professor of sociology
- 1942-1971 Bureau of Applied Social Research
- 1949 Social Theory and Social Structure
  - Revised 1968
- 1946 Mass Persuasion
- 1965 On the Shoulders of Giants
- 1973 The Sociology of Science



# Boris Hessen (1893-1936)

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- 1931 – The Social and Economic Roots of Newton's Principia
- A. N. Whitehead (mathematician) on Newton:  
„Newton was born in the year when Galileo died.“  
(*Science and Civilisation*)

Boris Hessen: technology, industry, communication,  
etc., including class struggle



Boris Hessen



## Social History of Nineteenth Century Mathematics

Herbert Mehrtens,  
Henk Bos,  
Ivo Schneider, editors



Springer Science+  
Business Media, LLC

# Social History of Mathematics

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Henk J. M. Bos (\*1940) and Herbert Mehrtens (1946-2021)

-historians of mathematics

Role of history of mathematics (and also of science) – raise awareness, call for reflection

Debates within history of science: internal vs. external – mathematics untouched

New issues: The interactions of mathematics and society in history (1977)

Social history of 19th Century Mathematics (1990)