

And the truth shall set you free

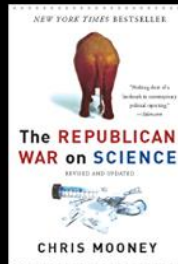
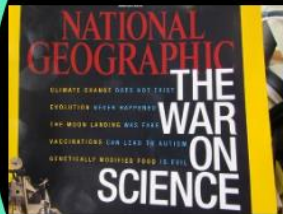
TRUST IN SCIENTIFIC METHODS AND SCIENTIFIC INSTITUTIONS

A WAR ON
SCIENCE?

A SCIENCE
CONFIDENCE GAP

CONCLUSION

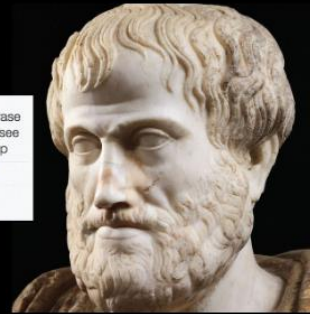
A WAR ON SCIENCE?



FLAT EARTH
SOCIETY?

A LEGITIMACY
CRISIS?

FLAT EARTH SOCIETY?



ALSO APPLIES TO...

Creationists - 'present descriptions of the world which they attempt to invest with factual status through the use of the rhetoric and practice of empiricism with its passive voice formulations, its emphasis on data, and even, at times, its appeal to laboratory tests and experiment.' (Locke, 1999:86)

Conspiracy theorists -

'It is considered a calling to unravel (...) mysteries through rational enquiry, by critically looking into every detail that may lead one to the ultimate truth "out there"' (Aupers, 2012:30; cf. Harambam & Aupers, 2015).

Ufologists - 'It is not the case, however, that most ufologists have been anti-science. On the contrary, their parallel ways of collecting, analyzing, and distributing information were inspired by academic precedents and can be seen as expressions of fondness and respect for science....by and large, their disdain has be reserved for scientists, not science' (Eghigian: 2015:11).

A LEGITIMACY CRISIS?

'after the priest, and the doctor, now the authority of the scientist is no longer pre-given and plausible ...'

'Moreover, scientific results are increasingly criticized by critical members of the public and sometimes even seen as 'merely an opinion'

(Clevers, 2013:4- my translation).



A LEGITIMACY CRISIS?

'The relationship between the scientific community and the general public has never been worse in living memory', Haerlin and Parr, 1999

'The enterprise of science is in tumultuous waters, with sustained salvos lobbed at it from diverse community segments. Public doubt stubbornly surrounds core issues like climate change, evolution, and vaccination, while considerable swathes of the population willingly embrace the merits of such follies as homeopathy, unbridled consumerism, and celebrityism. At best, there is wholesale ambivalence to the basic tenets surrounding the scientific approach; at worst, public trust in organized science has collapsed.' King and Short, 2017

PUBLIC OPINION RESEARCH?

...THERE IS NO UNEQUIVOCAL DOWNWARD TREND IN TRUST IN SCIENCE (EG: KNAW, 2013; GAUCHAT, 2012)

...EMPHASIZES MULTI-DIMENSIONALITY OF SCIENCE ATTITUDES (MILLSTONE & VAN ZWANENBURG, 2000; BAUER ET AL., 1994)

...POINTS TO SOURCE OF PUBLIC UNEASINESS WITH SCIENCE
SOCIAL AND CULTURAL DISCONTENTS (ACHTERBERG ET AL., 2017; GAUCHAT, 2011)

A SCIENCE CONFIDENCE GAP

Theoretical/research paper

P | U | S

A science confidence gap: Education, trust in scientific methods, and trust in scientific institutions in the United States, 2014

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GROWING
ASPIRATIONS?

INSTITUTIONAL
DEFICITS

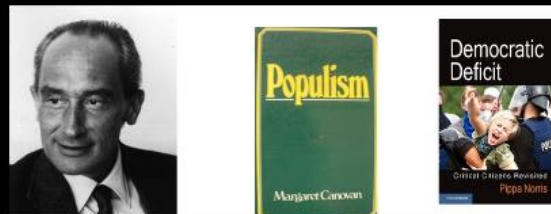
A SCIENCE
CONFIDENCE GAP?

EXPLANATIONS

GROWING ASPIRATIONS?



INSTITUTIONAL DEFICITS



A SCIENCE CONFIDENCE GAP?

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Table 1. Factor analysis on items measuring trust in scientific institutions and trust in scientific methods (principal-component factors, varimax rotation with normalization, pattern matrix, $N=1921$).

| | Factor 1 | Factor 2 |
|---|----------|----------|
| Please indicate your confidence in science | .90 | .15 |
| Please indicate your confidence in scientists | .89 | .15 |
| Ultimately, scientific knowledge is nothing but an opinion* | .76 | -.15 |
| Knowledge can only be obtained through unbiased systematic research | .05 | .98 |
| Eigenvalue | 2.19 | 1.03 |
| R ² | .55 | .26 |
| Cronbach's alpha (of first three items) | .81 | — |

Date: Van der Waal et al. (2014).
*Coding reversed.

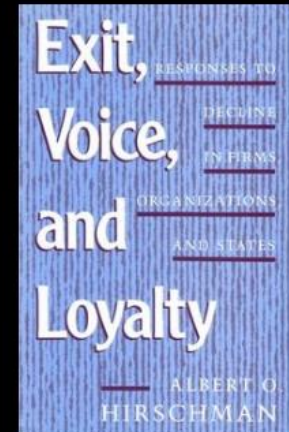
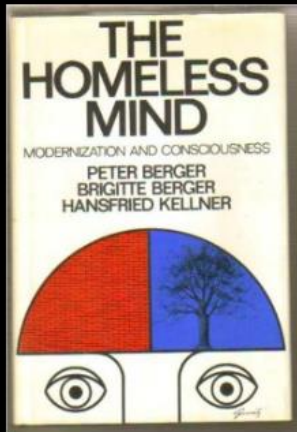
EXPLANATIONS

Modernization and its discontents



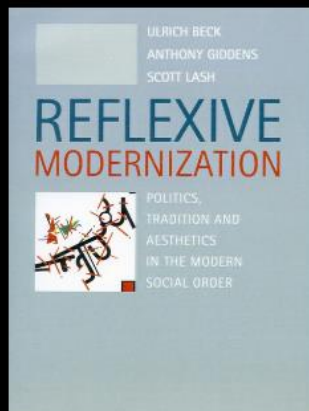
THE ANOMIC CONFIDENCE GAP

Anomia - destructive force



THE REFLEXIVE MODERN CONFIDENCE GAP

Critical attitude, combined with analytical mind



RESULTS

Table 4. Decomposition of the initial effect of education into direct effect and indirect effects via institutional knowledge, reflexive-modern values, and anomie (Karlson–Holm–Breen (KHB) method; unstandardized coefficients shown; robust standard errors in parentheses).^a

| | Trust in scientific methods | Trust in scientific institutions | Science confidence gap |
|--------------------------------|-----------------------------|----------------------------------|------------------------|
| Initial effect education | -.03 (.04) | .21*** (.03) | -.24*** (.05) |
| Final direct effect education | -.08 (.05) | -.01 (.03) | -.07 (.05) |
| Indirect effect education | | | |
| ...via institutional knowledge | .07*** (.02) | .07*** (.01) | -.00 (.02) |
| ...via reflexive-modern values | .03** (.01) | .10*** (.01) | -.07*** (.02) |
| ...via anomie | -.05*** (.01) | .05*** (.01) | -.10*** (.02) |

Data: Van der Waal et al., (2014).

^aControlled for concomitants household income, gender, age, non-Hispanic Black, non-Hispanic multiracial, non-Hispanic other, Hispanic, Protestant, Catholic, other religious denomination, occasional attendance at religious services, and frequent attendance at religious services.

*p < .05; **p < .01; ***p < .001.

IN A FIGURE



CONCLUSION

- **THE WAR ON SCIENCE?**
- **A SCIENCE CONFIDENCE GAP?**
- **DEMOCRATIZATION?**
- **TRANSPARANCY?**