



International  
Statistical  
Institute

Statistical Science for a Better World



# Professional Ethics for Statistical Practices

ISBIS WEBINAR 21. JAN 2025

WALTER J. RADERMACHER

# What can you expect from this webinar?

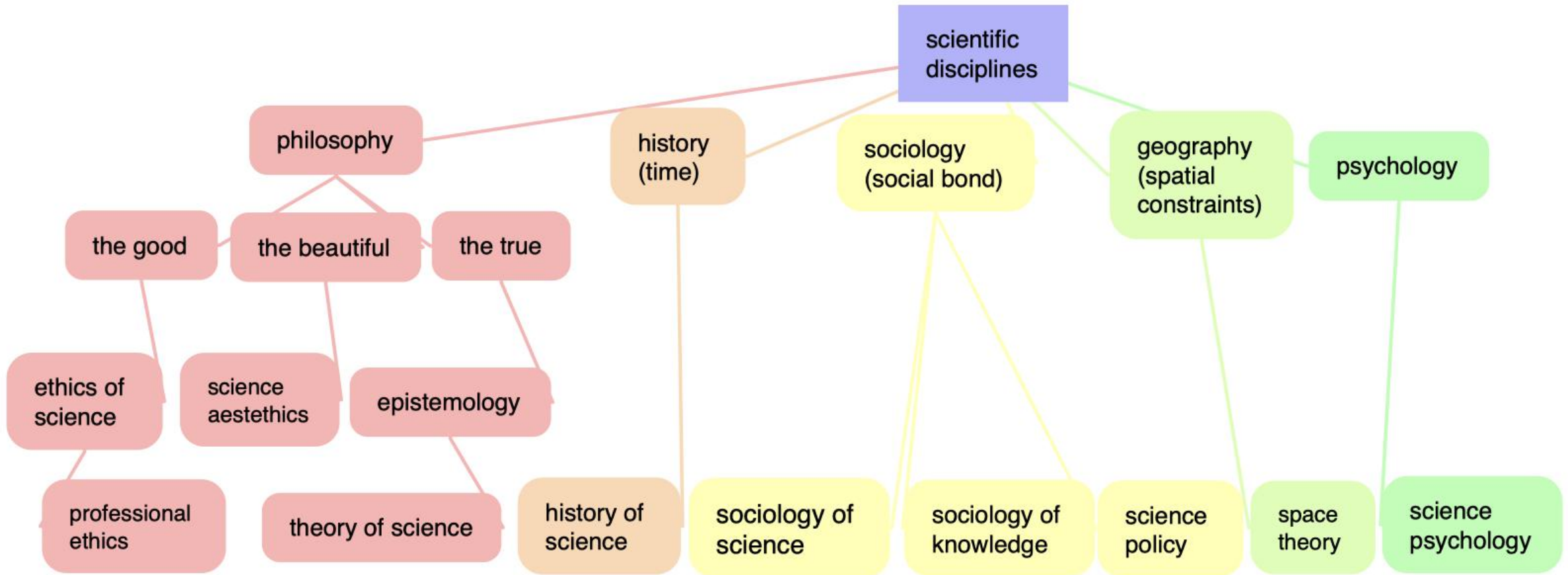
Not a cookbook of recipes

- Ethics is not about black and white, do this, don't do that
- Reality often presents a tricky situation, requiring us to deal with conflicts, compromises and conventions.

We look at application in practice, so after we have been expelled from the paradise of (neutral) method development.

Ethics is based on science, in this case philosophy or sociology.

# Philosophy of Sciences et al.



Adapted from: Kühne, O. / Berr, K. 2022. 'Philosophy of Science—Philosophical Foundations and Positions.' in Kühne / Berr (eds.), *Science, Space, Society: An Overview of the Social Production of Knowledge* (Springer Fachmedien: Wiesbaden). [https://doi.org/10.1007/978-3-658-39140-9\\_3](https://doi.org/10.1007/978-3-658-39140-9_3)

# Mapping Ethics

## Epistemological position

### Critical realism

- Reality is an objective phenomenon
- the measurement of which can never be known in isolation from social and cultural processes

### Naïve realism

- Reality is an objective phenomenon that exists and can be measured independently of social and cultural processes
- Perceptions of reality may be distorted or biased through social and cultural frameworks of interpretation

### Relativism

- Nothing is a reality in itself
- what we understand to be a 'reality' is the product of historically, socially and culturally contingent 'ways of seeing'

## Challenges - Axes of Research

- Ethics of Data
- Ethics of Algorithms
- Ethics of Practices

## Verification

- Accreditation
- Certification, Review
- Compliance, Reporting, Auditing

## Ethical schools and approaches

- Consequentialism
- Deontological Ethics
- Virtue Ethics
- Social Contract Theory
- Relativism, ...

## Professional Ethics for Statistical Practices

### Professional Ethics

- Values & Principles for Statistical Practitioners
- Education, Capacity Building

### Codes of Conduct

- Guidelines, Principles of Good Practice for Statistical Institutions / Organisations
- Reporting, Verification, Certification

### Integrity / Good Governance

- Conditions for Good Statistical Practice in the Professional / Political Environment
- Data Culture, Protection of Independence, Mandate / License, Stakeholder Participation

## Tools of Implementation / Promotion

### Enforcement

- Rules Based, Checking Lists, Surveillance, Audit-Like
- Institutional Power

### Empowerment

- (Online) Training Courses, Vignettes, Virtue Oriented Practices, Capacity Building
- Teaching / Convincing Power

### Evidence

- Case Related, Global Monitoring, Public Statements and Reporting
- Civil Society Political Power

## Ethical Dimensions of Scientific Research

### Procedural Ethics, the process of conducting scientific research

- Falsification, fabrication, plagiarism, ...
- Care for subjects (human and non-human animal)
- Responsible authorship, care for data and conflicts of interests

### Extrinsic Ethics, external to the production of scientific research

- Impact of scientific research on society
- Impact of society upon science, e.g. the impact of funding
- Lnks between the domains of extrinsic and intrinsic ethics

### Intrinsic Ethics, internal to the production of scientific research and analysis

- The choice of certain equations, constants, and variables
- Analysis of data, handling of error, degree of confidence in projections, ...

## Auxiliary Concepts / Theories

- Quality Management Approaches
- Data Literacy, Statistical Training
- Sociology of Quantification / Convention Theorie

**Statistics**, the science of collecting, analyzing, presenting, and interpreting [data](#). Governmental needs for [census](#) data as well as information about a variety of economic activities provided much of the early [impetus](#) for the field of statistics. Currently the need to turn the large amounts of data available in many applied fields into useful information has stimulated both theoretical and practical developments in statistics.

Williams, Thomas A. , Anderson, David R. and Sweeney, Dennis J.. "statistics". Encyclopedia Britannica, 15 Feb. 2024, <https://www.britannica.com/science/statistics>. Accessed 30 March 2024.

# Epistemology

WHAT DO WE KNOW? WHAT CAN WE KNOW?

# Epistemological approaches

Position	ontological	epistemological	statistical
Naïve realism / Positivism	Reality is an objective phenomenon that exists and	can be measured independently of social and cultural processes	Measurement, sampling frame, management of errors, response bias, etc.
Critical realism	Reality is an objective phenomenon	the measurement of which is inevitably mediated through social and cultural processes and can never be known in isolation from these processes	+ relationship of reality and the measurement of reality, management of design / communication, co-design
Relativism	Nothing is a reality in itself	what we understand to be a 'reality' is the product of historically, socially and culturally contingent 'ways of seeing'	discourses and practices around measurement and how they operate as part of governmental strategies / rationalities

Lupton, D. 2023. Risk (Routledge: New York). <https://www.taylorfrancis.com/books/mono/10.4324/9781003316299/risk-deborah-lupton>

# Sociology of Quantification

STANDARDS, CLASSIFICATIONS IN STATISTICS AND THEIR MEANING

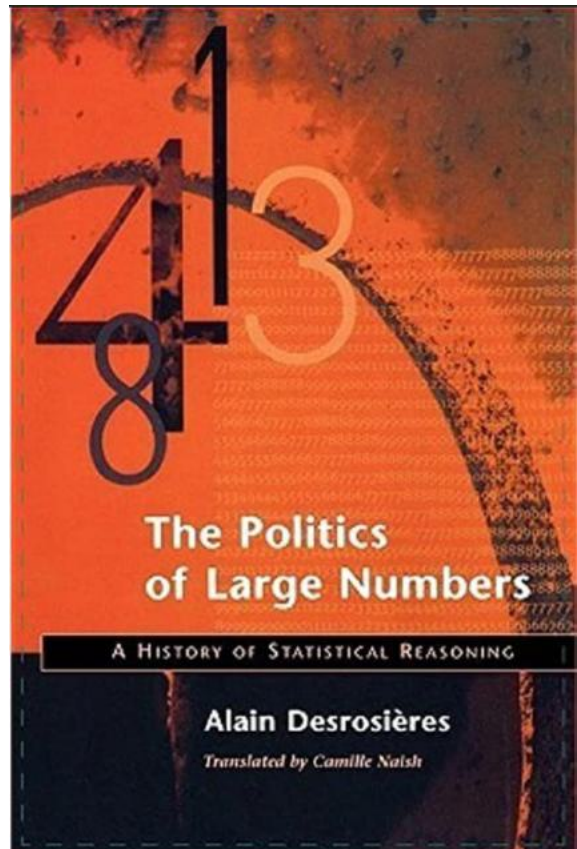


2. How is this person related to the person in column 1? <i>Fill one circle.</i> If "Other relative" of person in column 1, give exact relationship, such as mother-in-law, niece, grandson, etc.	<i>START in this column with the household member (or one of the members) in whose name the home is owned or rented. If there is no such person, start in this column with any adult household member.</i>	If relative of person in column 1: Husband/wife Son/daughter Brother/sister If not related to person in column 1: Roomer/boarder Partner, roommate Paid employee
3. Sex <i>Fill one circle.</i>	Male <input type="radio"/> Female <input type="radio"/>	Male <input type="checkbox"/> Female <input type="checkbox"/>
4. Is this person — <i>Fill one circle.</i>	White Black or Negro Hispanic Japanese Filipino Korean Vietnamese Indian (Amer.) Other — Specify	Black or Negro Japanese Korean Vietnamese Indian (Amer.)
5. Age, and month and year of birth <i>a. Print age at last birthday.</i> <i>b. Print month and fill one circle.</i> <i>c. Print year in the spaces, and fill one circle below each number.</i>	<i>a. Age at last birthday</i> 1 2 3 4 5 6 7 8 9 <i>b. Month of birth</i> Jan — Mar Apr — June July — Sept Oct — Dec	<i>a. Age at last birthday</i> 1 2 3 4 5 6 7 8 9 <i>b. Month of birth</i> Jan — Mar Apr — June July — Sept Oct — Dec
6. Marital status <i>Fill one circle.</i>	Now married Widowed Divorced	Now married Widowed Divorced
7. Is this person of Spanish/Hispanic origin or descent? <i>Fill one circle.</i>	No (not Spanish/Hispanic) Yes, Mexican, Mexican-Amer., Chicano Yes, Puerto Rican Yes, Cuban Yes, other Spanish/Hispanic	No (not Spanish/Hispanic) Yes, Mexican, Mexican-Amer. Yes, Puerto Rican Yes, Cuban Yes, other Spanish/Hispanic
8. Since February 1, 1980, has this person attended regular school or college at any time? <i>Fill one circle. Count nursery school, kindergarten, elementary school, and schooling which leads to a high school diploma or college degree.</i>	No, has not attended since February 1 Yes, public school, public college Yes, private, church-related Yes, private, not church-related	No, has not attended since February 1 Yes, public school, public college Yes, private, church-related Yes, private, not church-related
9. What is the highest grade (or year) of regular school this person has ever attended? <i>Fill one circle.</i> If now attending school, mark grade person is in. If high school was finished by equivalency test (GED), mark "12."	Highest grade attended: Nursery school Elementary through high school (grade or year) 1 2 3 4 5 6 7 8 9 10 11 12 College (academic year) 1 2 3 4 5 6 7 8 or more Never attended school — Skip question #9	Highest grade attended: Nursery school Elementary through high school 1 2 3 4 5 6 7 8 College (academic year) 1 2 3 4 5 6 7 8 or more Never attended school
10. Did this person finish the highest grade (or year) attended?	Now attending this grade (or year) Finished this grade (or year)	Now attending this grade (or year) Finished this grade (or year)

**The Politics of Numbers**  
William Alonso  
Paul Starr  
editors

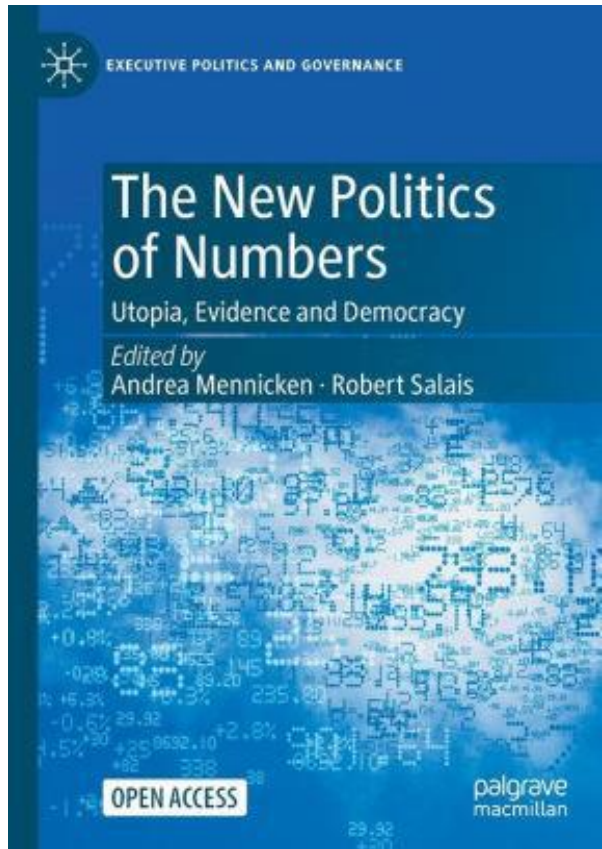
1987

Alonso, W., and P. Starr. 1987. *The Politics of Numbers* (Russell Sage Foundation).



1998

Desrosières, Alain. 1998. *The Politics of Large Numbers - A History of Statistical Reasoning* (Harvard University Press: Cambridge Massachusetts).



2022

Mennicken, Andrea, and Robert Salais. 2022. *The New Politics of Numbers: Utopia, Evidence and Democracy* (Palgrave Macmillan: Cham).

# Theodore Porter



*“To measure for public purposes is rarely so simple as to apply a meter stick casually to an object.”*

Porter, Theodore M. 1995. Trust in numbers : the pursuit of objectivity in science and public life (Princeton University Press: Princeton, N.J. ; Chichester) <https://press.princeton.edu/books/ebook/9780691210544/trust-in-numbers-0>

## *Numbers are*

- *a technology whose authority derives from their value in helping resolve the fundamental problem of people wishing to communicate across sometimes vast distances that may be social, geographical and political.*
- *Quantification offers a shared language and discipline that transcends other forms of differences that threaten collective or competing social projects.*
- *Especially in collaborations characterized by conflict, divided expert opinion, dispersed parties, distrust, or when parties' actions are politicized or subject to close scrutiny from powerful others, numbers offer a valuable form of authority which Porter characterizes as 'mechanical objectivity.'”*

# Sheila Jasanoff



## Technologies of hubris vs. Technologies of humility



*“Science fixes our attention on the knowable, leading to an over-dependence on fact-finding. Even when scientists recognize the limits of their own inquiries, as they often do, the policy world, implicitly encouraged by scientists, asks for more research. For most complex problems, the pursuit of perfect knowledge is asymptotic. Uncertainty, ignorance and indeterminacy are always present.”*

Jasanoff, S. 2007. 'Technologies of humility', nature, 450. <https://www.nature.com/articles/450033a#citeas>

# Charles Goodhart

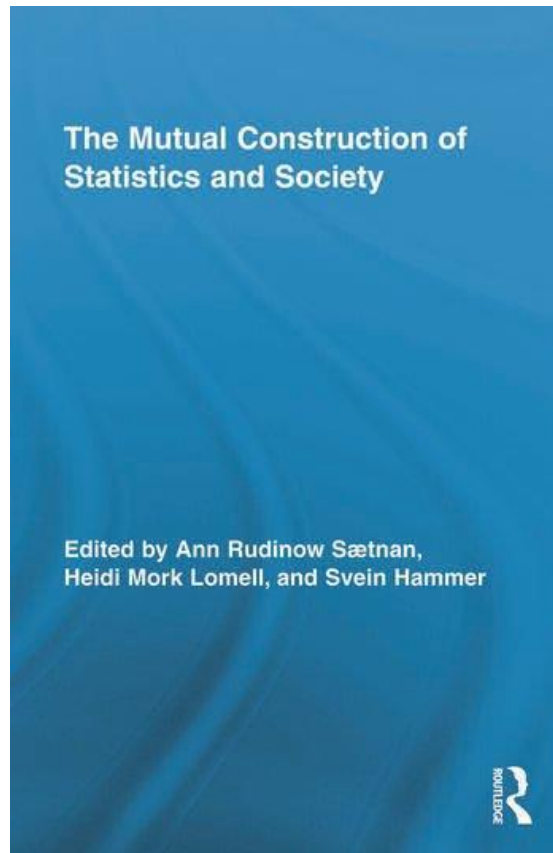


## Goodhart's Law

“When a measure becomes a target, it ceases to be a good measure.”

[https://en.wikipedia.org/wiki/Goodhart's\\_law](https://en.wikipedia.org/wiki/Goodhart's_law)

# Statistics and Society



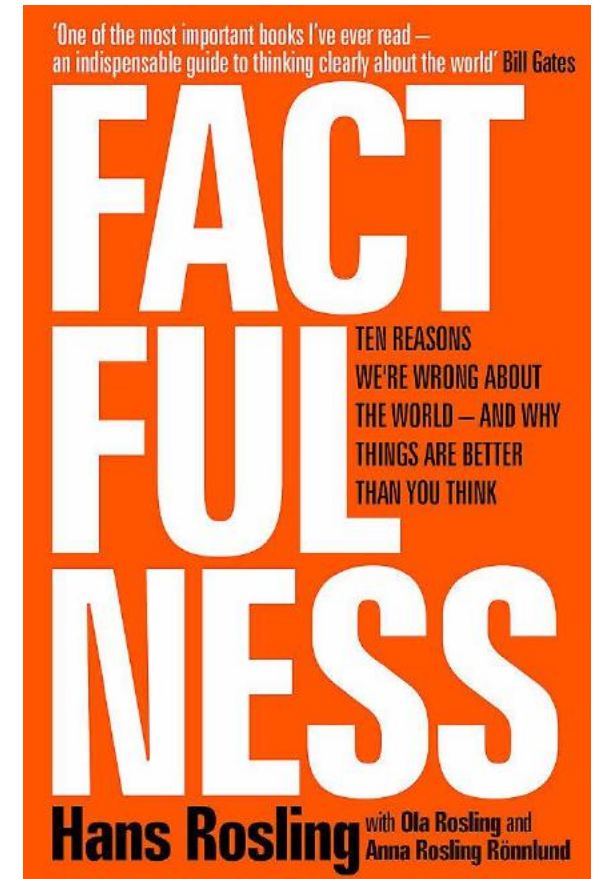
*“Statistics are often seen as simple, straightforward, and objective descriptions of society. However, what we choose to count, what we choose not to count, who does the counting, and the categories and values we choose to apply when counting, matter”*

Sætnan, Ann Rudinow, Heidi Mork Lomell, and Svein Hammer. 2010. *The mutual construction of statistics and society* (Routledge: New York, NY). <https://www.taylorfrancis.com/books/edit/10.4324/9780203846612/mutual-construction-statistics-society-ann-rudinow-saetnan-svein-hammer-heidi-mork-lomell>

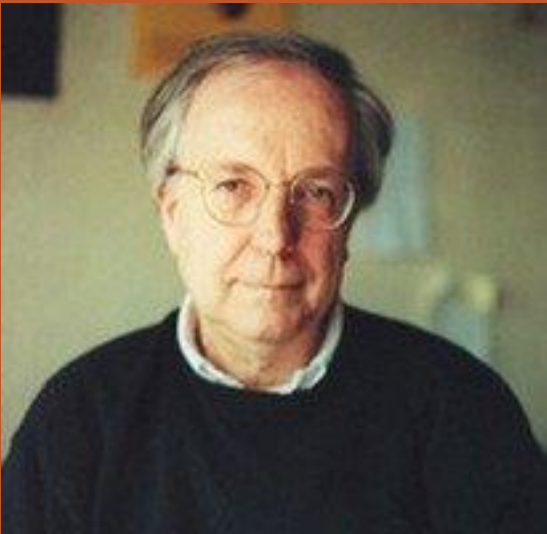
# Artefacts

DESIGN OF STATISTICAL PRODUCTS - CONVENTIONS

Walter J. Radermacher



# Alain Desrosières



“to quantify’ ≠ ‘to measure’“

“quantify implies a translation, i.e. a transformative action, resulting from a series of inscriptions, codifications and calculations, leading to the making of numbers”

Aspects of statistics

- “that of quantification properly speaking, the making of numbers,
- that of the uses of numbers as variables, and finally,
- the prospective inscription of variables in more complex constructions, models”

Desrosières, Alain. 2010. A Politics of Knowledge-Tools—The Case of Statistics. In *Between Enlightenment and Disaster*, ed. Linda Sangolt. Brussels: P.I.E. Peter Lang. <https://www.peterlang.com/document/1044019>

# Andrea Saltelli



## Give me a number!

“The pandemic has also shown that the act of quantifying, either by a model or by an algorithm, increasingly nourishes the science–policy interface with the opportunity to outsource decision-making authority to number-based decision-making , when momentous political decisions are delegated to the purported neutrality of model generated numbers.”

### Ethics of Quantification needed

- symbiotic relationship between quantification and trust
- defence against statistical abuses
- helps to apportion responsibilities
- can assist in realising that “The technique is never neutral”
- ....

Saltelli, Andrea, and Monica Di Fiore. 2020. 'From sociology of quantification to ethics of quantification', Humanities and Social Sciences Communications, 7: 1-8. <https://www.nature.com/articles/s41599-020-00557-0>



# Ethics of Quantification

STANDARDS, CLASSIFICATIONS IN STATISTICS AND THEIR MEANING

# Ethical codes for data collection, manipulation, and use (David Hand)

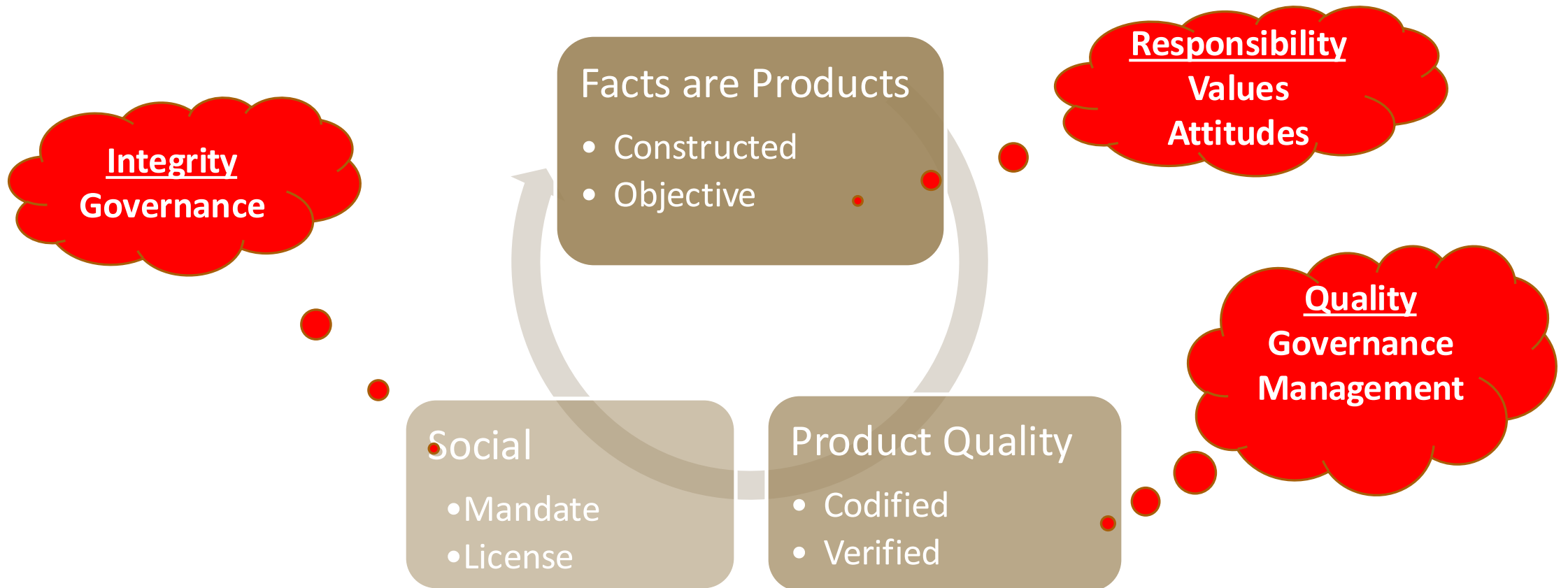
“have various functions, including things such as the following:

- providing guidance on how to behave in difficult circumstances;
- preserving privacy in a way that users and the public will find acceptable;
- ensuring that data are used in such a way as to benefit the public;
- reassuring customers, the public, and others about an organization’s integrity; and
- reassuring employees that they work for a trust-worthy organization.”

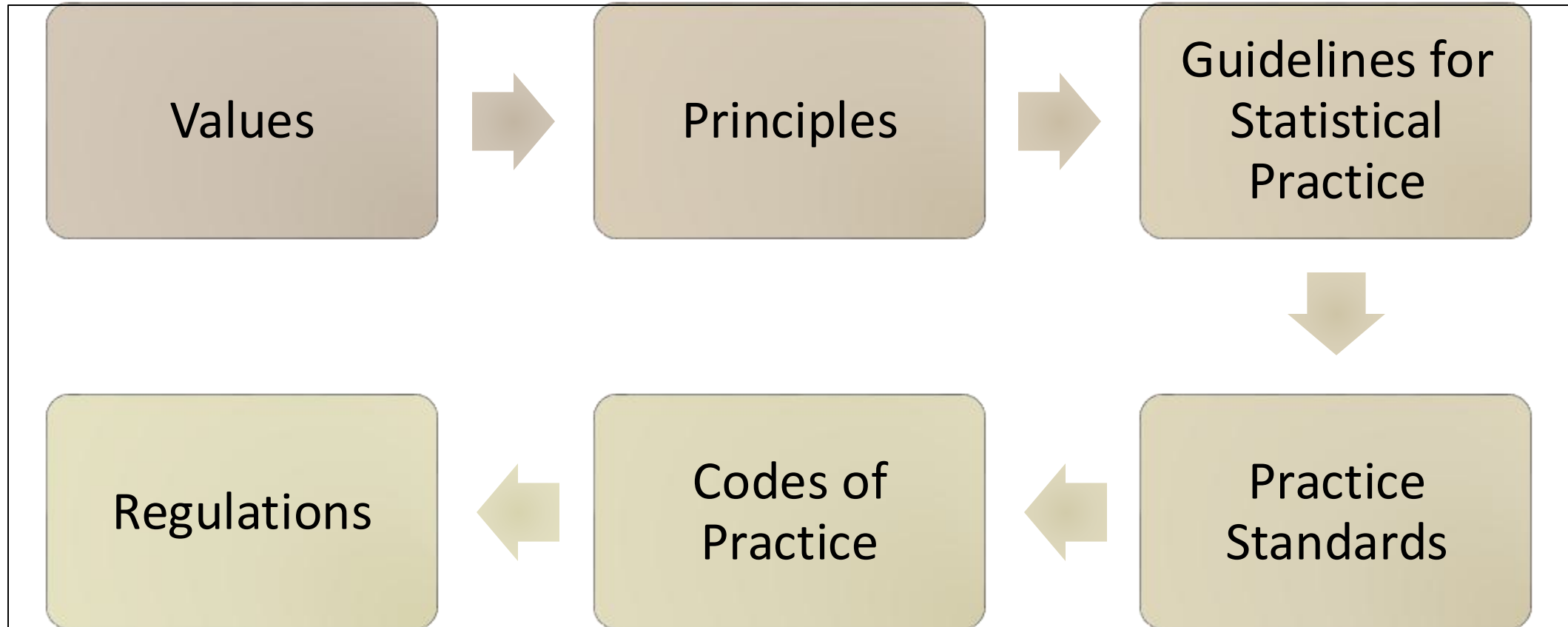
"However, the context of data science is so vast and diverse, and is changing so rapidly over time, that we cannot hope to put in place precise regulations. There cannot be a single and simple universal set of rules, and unexpected and unforeseen circumstances are certain to arise. The best we can hope for are some ethical principles that have to be interpreted or instantiated in particular applications. That is, the principles must be mapped to low-level guidance, and this is likely to be application specific.”

Hand, D. J. 2018. 'Aspects of Data Ethics in a Changing World: Where Are We Now?', Big Data, 6. <https://www.liebertpub.com/doi/pdfplus/10.1089/big.2018.0083>


# Ethics in Statistics: Aspects, Addressees



# A kind of hierarchy



# Ethics



**International  
Statistical  
Institute**

**DECLARATION ON PROFESSIONAL ETHICS**


ADOPTED BY THE ISI COUNCIL  
22 & 23 JULY 2010  
REYKJAVIK, ICELAND

UPDATED VERSION  
ENDORSED BY ISI EXECUTIVE COMMITTEE  
17 JULY 2023  
OTTAWA, CANADA

**Ethical Guidelines  
for Statistical Practice**


Prepared by the Committee  
on Professional Ethics of the  
American Statistical Association

Approved by the ASA Board in February 2022



**ASA** AMERICAN STATISTICAL ASSOCIATION  
Promoting the Practice and Profession of Statistics

# Codes of Conduct



**Economic and Social Council**

Distr.: General  
28 October 2013

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Substantive session of 2013  
Agenda item 13 (c)

**Resolution adopted by the Economic and Social Council on 24 July 2013**

*[on the recommendation of the Statistical Commission (E/2013/24)]*

**2013/21. Fundamental Principles of Official Statistics**

**EUROPEAN STATISTICS  
CODE OF PRACTICE**

*For the National Statistical Authorities  
and Eurostat (EU statistical authority)*



**Recommendation of the OECD Council on Good Statistical  
Practice**

As approved by the Council on 23 November 2015  
[C(2015)128 - C(2015)128/CORR1 - C/M(2015)21]

# ISI Advisory Board on Ethics

Last Name	First Name	Association	Country
Radermacher	Walter	<a href="#">ISI</a> , <a href="#">IAOS</a> , <a href="#">IASE</a> , <a href="#">TIES</a>	Germany
Arrow	Jairo	<a href="#">ISI</a> , <a href="#">IASS</a>	South Africa
Belkindas	Misha	<a href="#">ISI</a> , <a href="#">IAOS</a>	USA/Lithuania
Bilgin	Ayse	<a href="#">ISI</a> , <a href="#">IASE</a>	Australia
Borovcnik	Maciej	<a href="#">ISI</a> , <a href="#">IASE</a>	Austria
Brzezinski	Manfred	<a href="#">IFC</a>	Poland
Chuwa	Albina	<a href="#">ISI</a> , <a href="#">IAOS</a>	Tanzania
Das	Sonali	<a href="#">ISBIS</a>	South Africa
Habibullah	Saleha	<a href="#">ISI</a> , <a href="#">IASE</a> , <a href="#">IASS</a>	Pakistan
Olhede	Sofia	<a href="#">Bernoulli Society</a>	Switzerland/Sweden
Rancourt	Eric	<a href="#">ISI</a> , <a href="#">IASS</a> , <a href="#">IAOS</a>	Canada
Suesser	Jan Robert	<a href="#">ISI</a> , <a href="#">IAOS</a>	France
Terán	Teresita Evelina	<a href="#">IASE</a>	Argentina
Tractenberg	Rochelle E.	<a href="#">ISI</a>	USA
Trewin	Dennis	<a href="#">ISI</a> , <a href="#">IASS</a> , <a href="#">IAOS</a>	Australia
Tzavidis	Nikos	<a href="#">ISI</a> , <a href="#">IASS</a>	United Kingdom
Vukovich	Gabriella	<a href="#">ISI</a> , <a href="#">IAOS</a>	Hungary
Yu	Philip Leung-ho	<a href="#">ISI</a> , <a href="#">IASC</a>	Hong Kong, China

<https://isi-web.org/committee/advisory-board-ethics>

# Activities Advisory Board on Ethics

Advise on ethical or integrity issues

Programme of work

- Co-design of statistics and society; Indigenous Data Sovereignty
- Education, online training courses, promotion of the principles,
- Big data, data sciences, artificial intelligence
- Reflexive components in statistics education, research, conferences etc.
- Improving evidence, global monitoring of integrity

Liaison with other associations ([ASA](#), [RSS](#), [IRC](#), [FENStatS](#), ...) and ISI branches (Capacity Building Committee, ...)

Activities for the ISI World Statistics Congresses, webinars, ...

# ISI Declaration on Professional Ethics



<https://isi-web.org/declaration-professional-ethics>



# Responsibility

<https://isi-web.org/dedaration-professional-ethics>

Ethical principles inherently reflect the obligations and responsibilities of – as well as the resulting conflicts faced by – statisticians to forces and pressures outside of their own performance, namely to and from:

- Society
- Employers, Clients, and Funders
- Colleagues
- Subjects

In carrying out his/her responsibilities, each statistician must be sensitive to the need to ensure that his/her actions are, first, consistent with the best interests of each group and, second, do not favor any group at the expense of any other, or conflict with any of the Principles.

# Values

<https://isi-web.org/dedaration-professional-ethics>

## 1. Respect

- We respect the privacy of others and the promises of confidentiality given to them.
- ...

## 2. Professionalism

- The value Professionalism implies Responsibility, Competence and Expert Knowledge, and Informed Judgement.
- We work to understand our users' needs and develop relevant solutions.
- We use our statistical knowledge, data, and analyses for the Common Good to serve the society.
- ...

## 3. Truthfulness and Integrity

- The values of Truthfulness and Integrity are reflected in our work processes, that rely on Independence, Objectivity and Transparency.
- We produce statistical results using our science and are not influenced by pressure from politicians or funders
- ...

# Principles

<https://isi-web.org/declaration-professional-ethics>

Pursuing  
Objectivity

Clarifying  
Obligations and  
Roles

Assessing  
Alternatives  
Impartially

Conflicting  
Interests

Avoiding  
Preempted  
Outcomes

Guarding Privileged  
Information

Exhibiting  
Professional  
Competence

Maintaining  
Confidence in  
Statistics

Exposing and  
Reviewing Methods  
and Findings

Communicating  
Ethical Principles

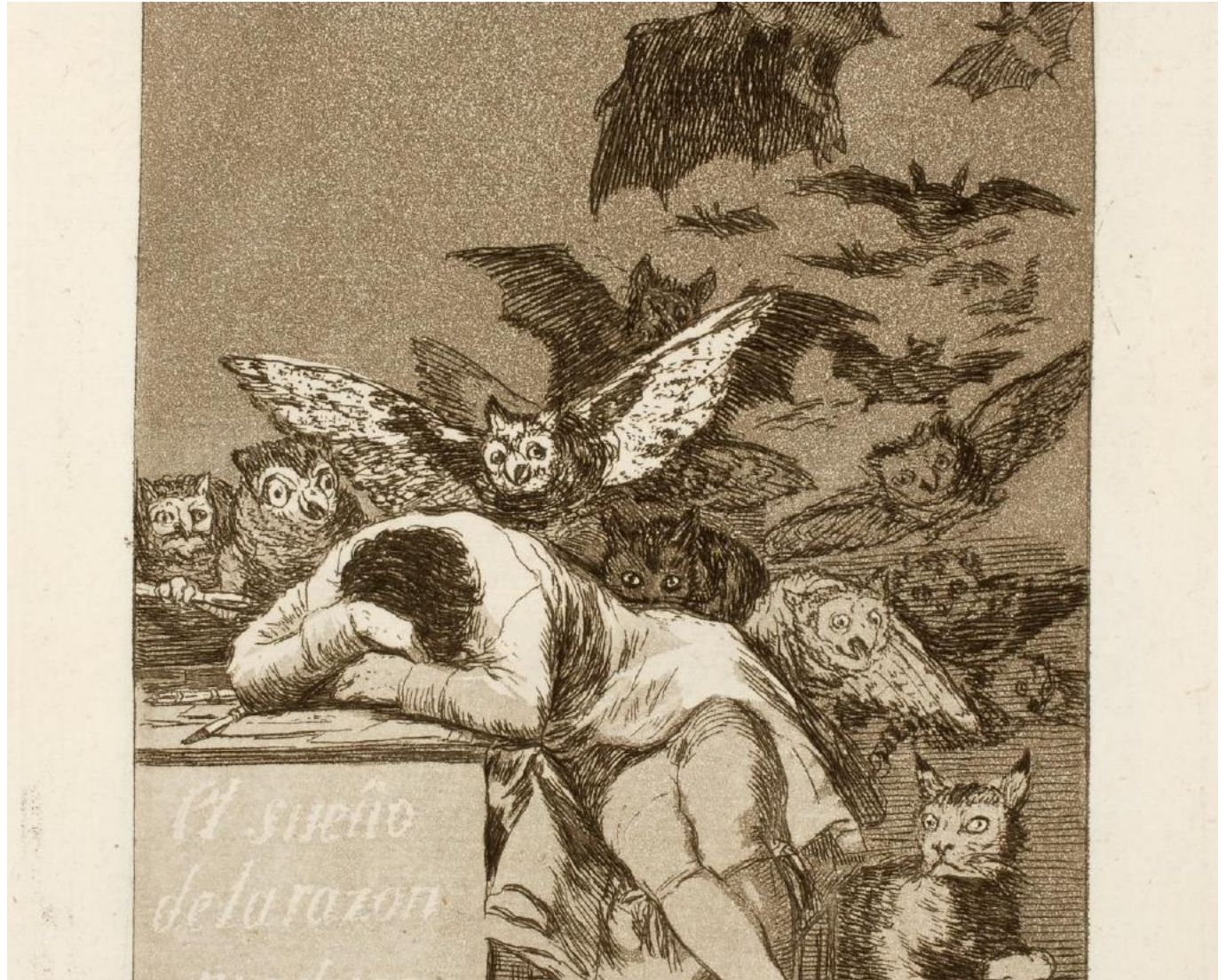
Bearing  
Responsibility for  
the Integrity of the  
Discipline

Protecting the  
Interests of  
Subjects

# Promotion of Ethics, e.g. in Education

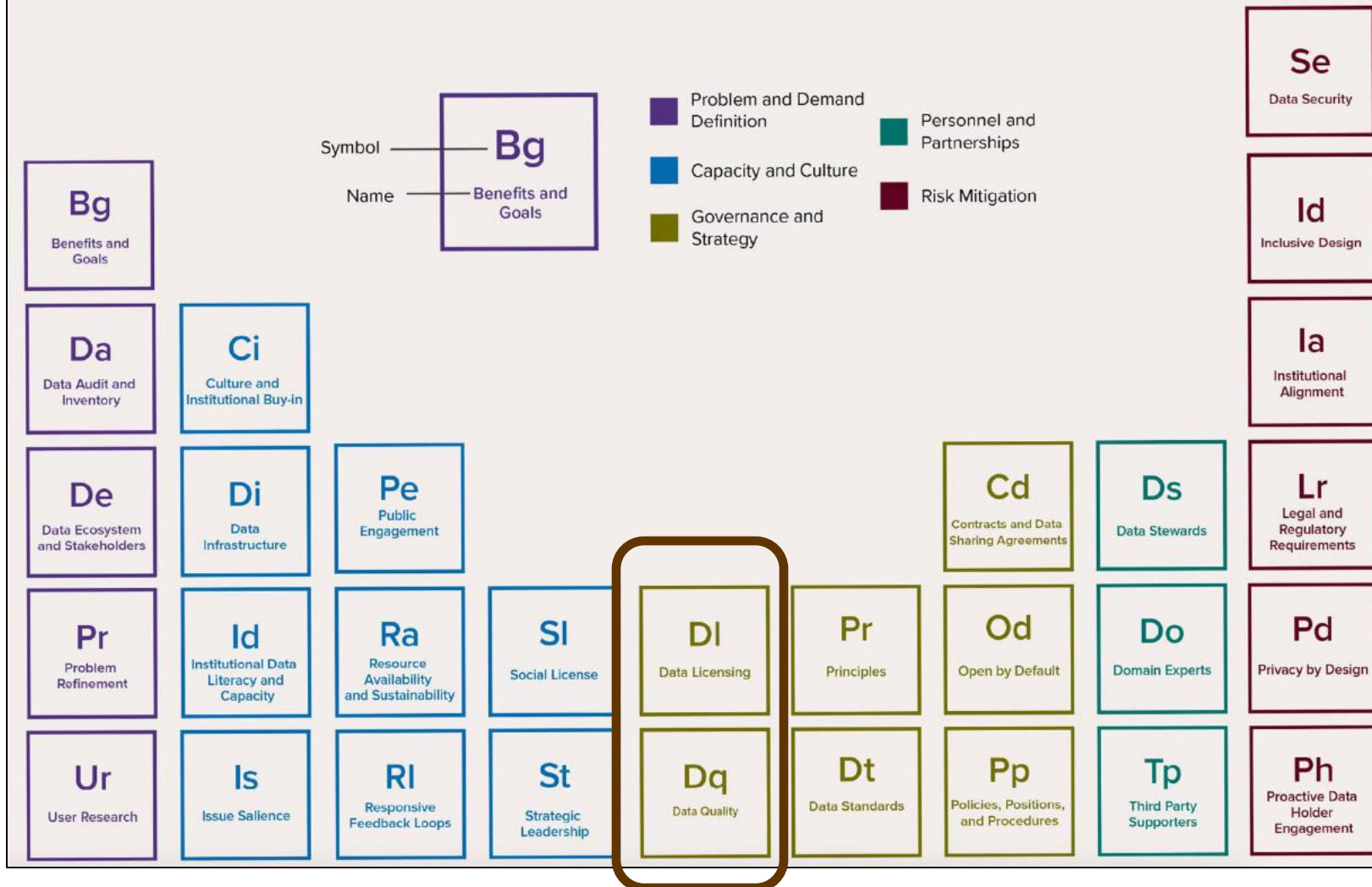
*The Sleep of Reason Produces Monsters*

GOYA Y LUCIENTES, FRANCISCO DE Museo Prado



<https://emuseum.mfah.org/internal/media/dispatcher/400488/full>

# Periodic Table of Open Data Elements



[https://periodictable.opendatapolicylab.org/files/periodic-table\\_userguide.pdf](https://periodictable.opendatapolicylab.org/files/periodic-table_userguide.pdf)

## Governance and Standards

Governance and standards are about how an organization makes decisions about the open data projects it manages and oversees. These elements relate to larger systems, structures, and organizing principles.

### Data Licensing

\*\*\*

Is there a robust data licensing regime that can protect and promote the re-use of data by outlining the conditions under which practitioners can use and re-use data?

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*Importance*

1 Not Important                      2 Somewhat Unimportant                      3 Somewhat Important                      4 Very Important

### Data Quality

Has the data been assessed for quality to allow individuals to derive meaningful insights from it?

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*Importance*

1 Not Important                      2 Somewhat Unimportant                      3 Somewhat Important                      4 Very Important

## AIRIES:

# An educational tool for enhancing ethical and statistical literacy in project planning

The **AIRIES (AI Risk & Impact Evaluation System)** tool helps students learn ethical and statistical principles by guiding them through real-world scenarios that simulate complex decision-making. While AIRIES is first and foremost an educational resource, its features also make it a valuable tool for professionals—such as statisticians, developers, and decision-makers—looking to plan ethical and data-driven projects.

<https://iase-web.org/islp/documents/Newsletters/ISLP%20Newsletter%20Vol%2016.2%20December%202024.pdf>

# Verification

Accreditation

Certification, Review

Compliance, Reporting, Auditing





## Accreditation

Active Accreditation  
programmes

[Royal Statistical Society](#)

[Statistical Society of Australia](#)

[Statistical Society of Canada](#)

[American Statistical Association](#)

[FENStatS](#)

## European Statistical Accreditation

FENStatS executive committee has finalized the system for accreditation of statisticians, according to the proposal of the accreditation committee. The next step is for the national associations to adopt the system, name at least three auditors, and start receiving the applications.

Once your national statistical association has adopted the system, you can start submitting your applications using the [Application portal](#).  
The list of European Accredited Statisticians is [here](#).

# Codes of Conduct

QUALITY

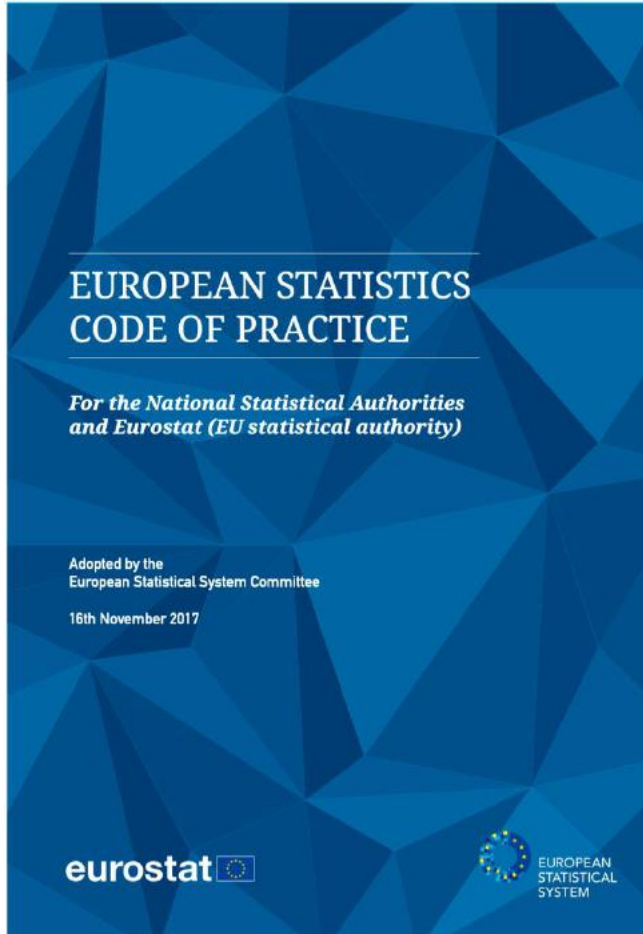
Walter J. Radermacher

# UN Fundamental Principles of Official Statistics

<https://unstats.un.org/unsd/dhss/gp/FP-New-E.pdf>

1. Official statistics provide an indispensable element in the information system of a democratic society .....
2. To retain trust ..., the statistical agencies need to decide according to strictly professional considerations ...
3. ... the statistical agencies are to present information according to scientific standards ...
4. The statistical agencies are entitled to comment on erroneous interpretation and misuse of statistics.
5. Data for statistical purposes may be drawn from all types of sources ...
6. Individual data collected ... are to be strictly confidential and used exclusively for statistical purposes.
7. The laws, regulations and measures under which the statistical systems operate are to be made public.
8. Coordination among statistical agencies within countries ...
9. The use by statistical agencies in each country of international concepts, classifications and methods ...
10. Bilateral and multilateral cooperation ...

# Codification: EU Statistics



<https://ec.europa.eu/eurostat/web/products-catalogues/-/KS-02-18-142>

Institutional environment	Statistical processes	Statistical output
<ul style="list-style-type: none"> <li>1. Professional independence</li> <li>1bis. Coordination and cooperation</li> <li>1. Mandate for data collection</li> <li>2. Adequacy of resources</li> <li>3. Commitment to quality</li> <li>4. Statistical confidentiality</li> <li>5. Impartiality and objectivity</li> </ul>	<ul style="list-style-type: none"> <li>7. Sound methodology</li> <li>8. Appropriate statistical procedures</li> <li>9. Non-excessive burden on respondents</li> <li>10. Cost-effectiveness</li> </ul>	<ul style="list-style-type: none"> <li>11. Relevance</li> <li>12. Accuracy and reliability</li> <li>13. Timeliness and punctuality</li> <li>14. Coherence and comparability</li> <li>15. Accessibility and clarity</li> </ul>

# Integrity

GOOD GOVERNANCE

Walter J. Radermacher

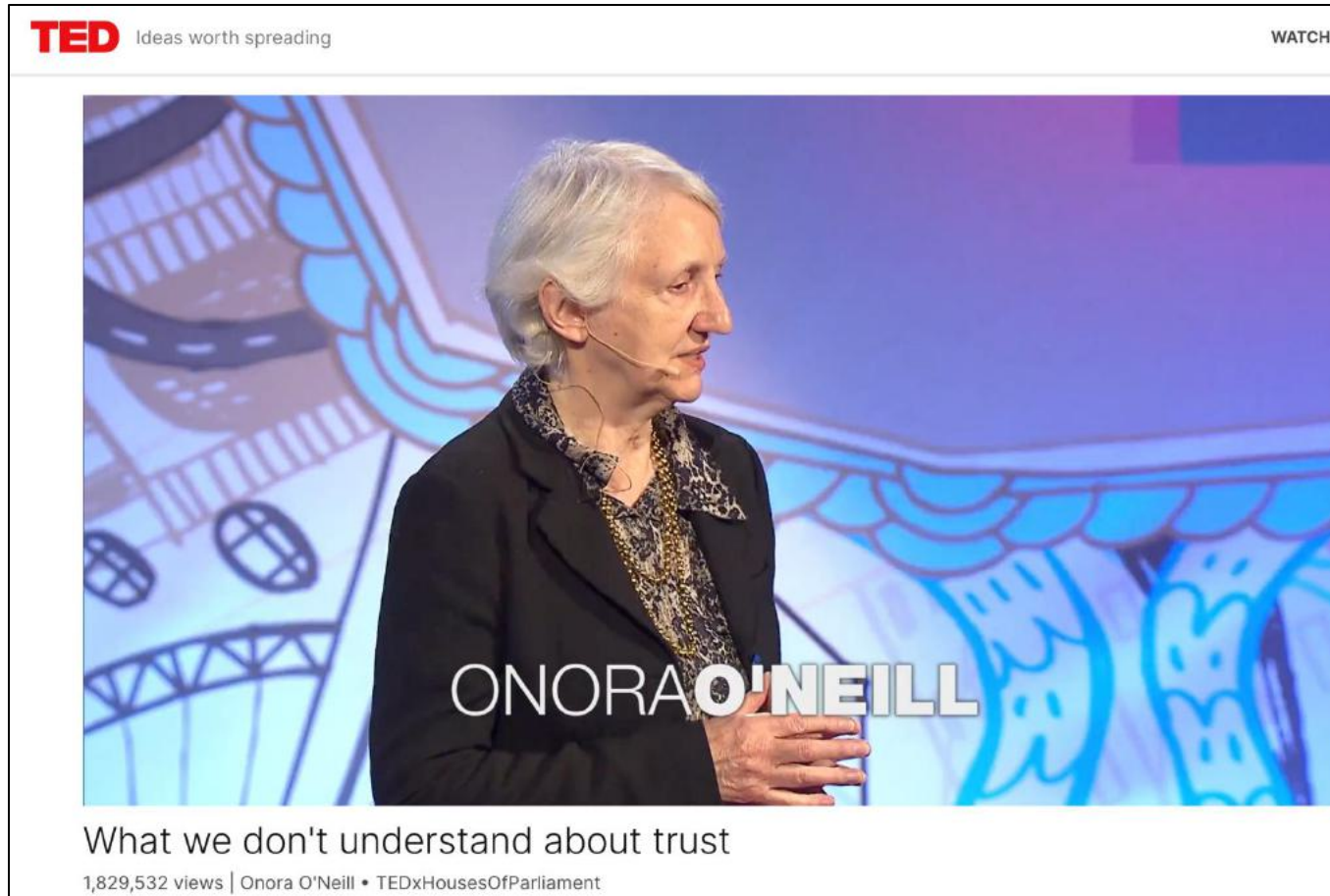
## OTHER NEWS

# Global Statistical Organisations Express Concerns Over Leadership Changes in Poland

07 January 2025

<https://isi-web.org/article/global-statistical-organisations-express-concerns-over-leadership-changes-poland>

# Trustworthiness

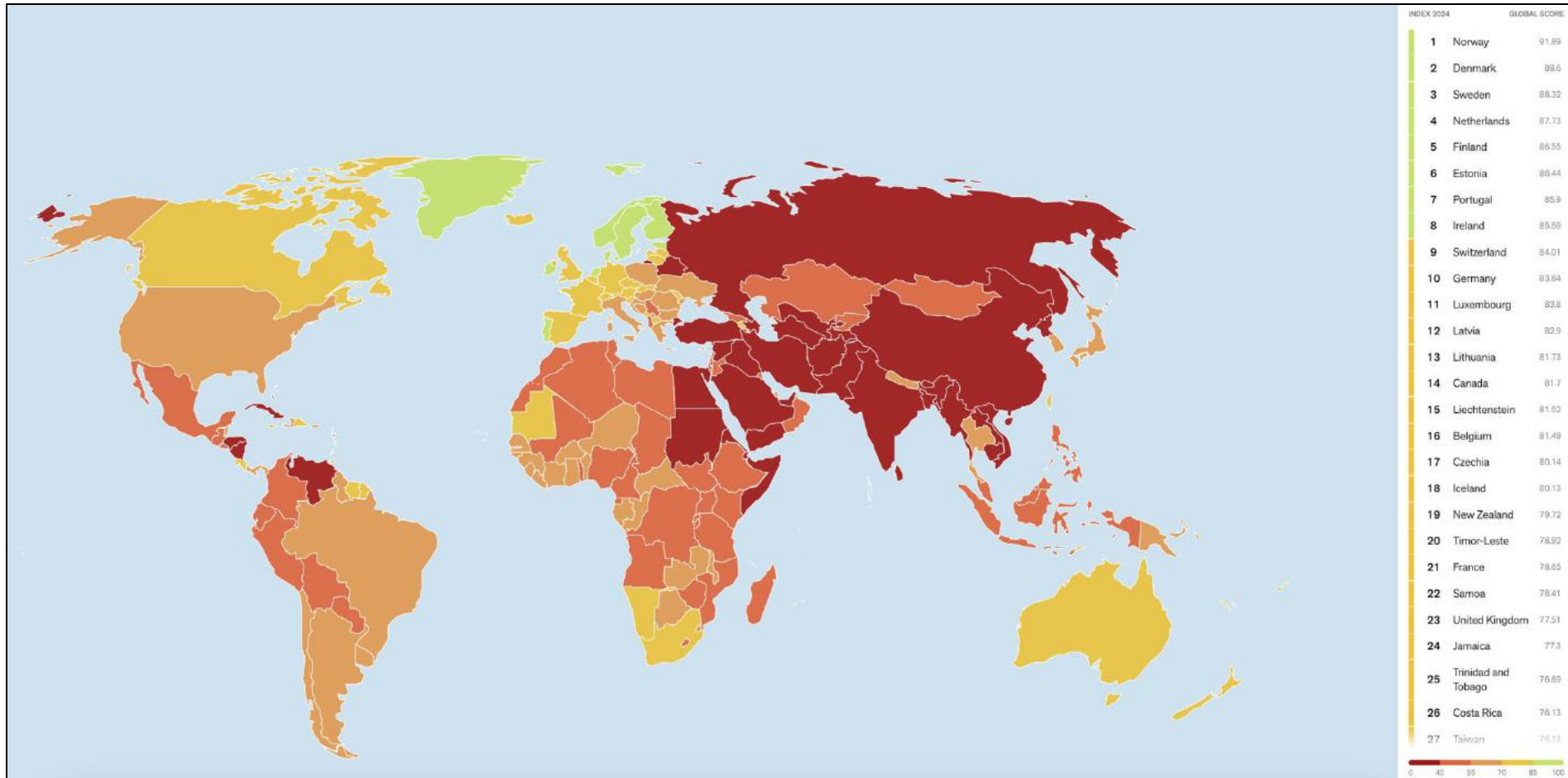


Competence

Reliability

Honesty

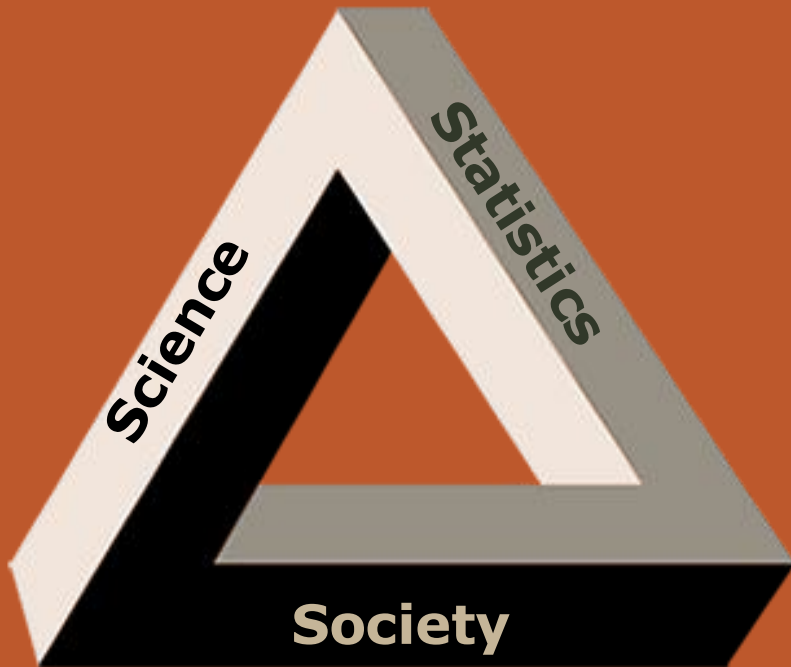
# World Press Freedom Index 2024



<https://rsf.org/en/index>



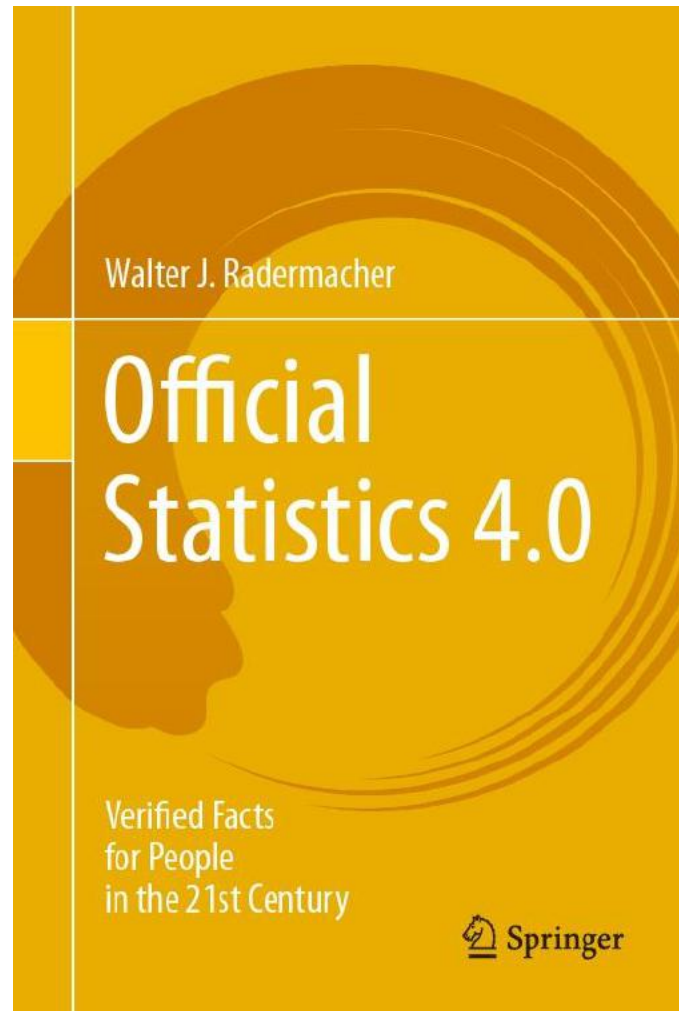
3  $\Sigma$




## What should be done?

- Sociology and ethics of quantification should have a well-established place in the academic world of statistics and data science, in research and teaching
- AI/ML: new challenges for ethics and good governance AND new opportunities for education of ethics in statistics and data sciences
- Improve advocacy for integrity, professionalism, scientific independence, transparency, do no harm
- Interdisciplinary, interinstitutional co-operation
- Branding good statistics and good statisticians helps to distinguish

MUCHAS GRACIAS  
MUITO OBRIGADO  
VIELEN DANK  
THANK YOU  
MERCI BIEN



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<https://www.springer.com/gp/book/9783030314910>