Institute of Philosophy and Sociology, Polish Academy of Sciences

Building Multi-Source Databases for Comparative Analyses

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WORKSHOP

Complexity in Society: from Indicators Construction to their Synthesis

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Social Indicators Research Series 70

Filomena Maggino *Editor*

Complexity in Society: From Indicators Construction to their Synthesis

Springer
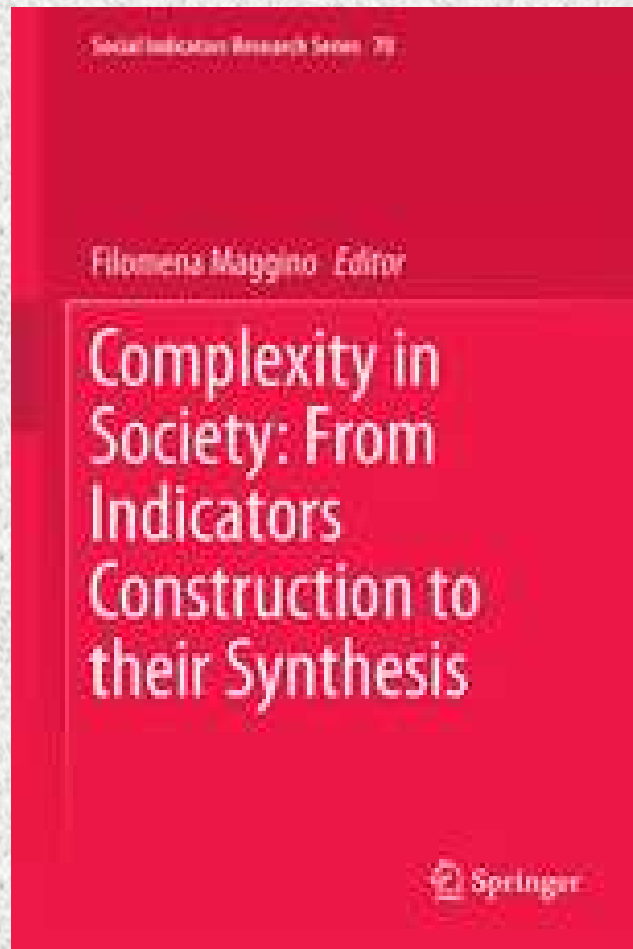
Academic (but not only) community

SEMPLIFICARE È PIÙ DIFFICILE
(Bruno Munari)

making things complicated is easy, simplifying things is difficult

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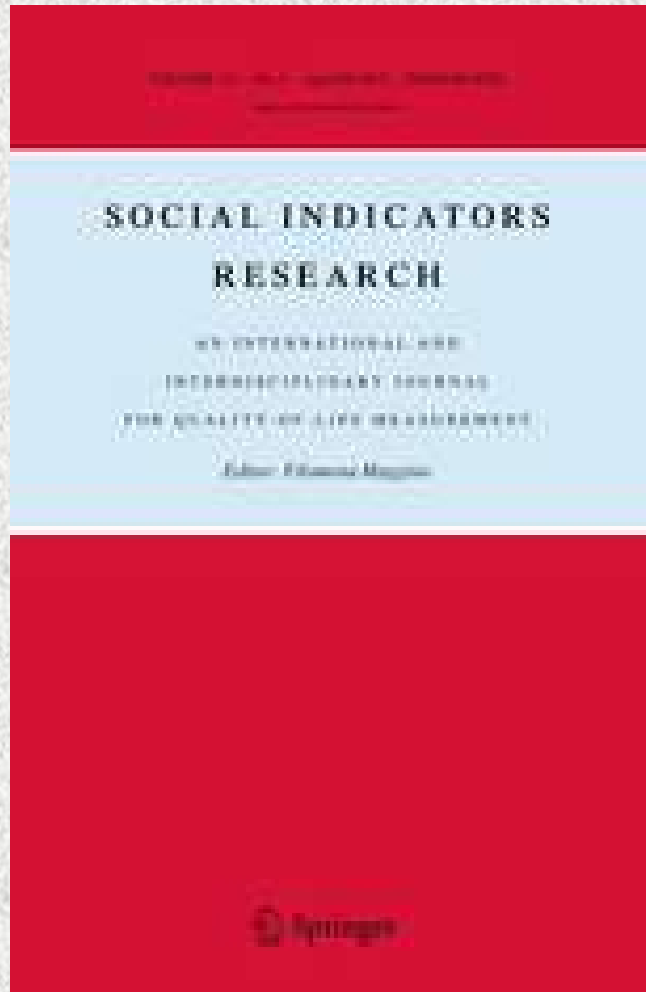

what cannot be said in few words cannot be said in many

There are no good or bad things ...
there are things done in a good way and
things done in a bad way

TOPIC

- considered a "niche field" from a scientific point of view

- never missed in any conference, workshop, seminar on measuring socio-economic dimensions during the last decades

Premise

TOPIC

1974

Outline

1. Construction
2. Use
3. Communication

1. Construction
2. Use
3. Communication

Construction

(1) a normative exercise

(1) a normative exercise

Indicators construction

between

data-driven   **concept-driven**

approach

(1) a normative exercise

Indicators construction

data-driven $\rightarrow$ **more objectivity**

(1) a normative exercise

Indicators construction

data-driven $\rightarrow$ **more objectivity**

Does respect for data imply intellectual passivity?
*Is that **objectivity**?*

(1) a normative exercise

Indicators construction

measuring through definition ← **concept-driven**

In order to start any measurement process, a crucial guiding principle should be identified ...

(1) a normative exercise

In social sciences, where the concept of "indicator" was born, the measuring process requires:

- a robust *conceptual definition*
- a consistent *collection of observations*
- a consequent *analysis of the relationship* between observations and defined concepts.

(1) a normative exercise

Indicator

↓

what relates
concepts to reality
through observation

(1) a normative exercise

Indicator

↓

not

a simply crude statistical information

but

a measure organically connected to a conceptual model

(1) a normative exercise

Indicators should be developed and managed so that they ...

... represent different aspects of the reality,

... picture the reality in an interpretable way, and

... allow meaningful stories to be told

Developing indicators

(1) a normative exercise

RISK

lack of any logical cohesion and consistency

deforming reality through distorted results

(hidden – sometime - by using and applying sophisticated procedures and methods)

Developing indicators

(1) a normative exercise

normative nature of the selection of indicators cannot be denied

the process contains a "subjective" component

Developing indicators

(1) a normative exercise

normative nature of the selection of indicators
cannot be denied

the process contains a "subjective" component

GDP is the most important example of failing in using a
statistics as an indicator

(2) Dealing with complexity

Construction

(2) Dealing with complexity

The reality is complex with reference to

(A) STRUCTURE OF VALUES

Functioning and capability to select goods and services that one desires ➜ Income considered as a mean to achieve an acceptable standard of living

Normative ideals ➜ set of characteristics inspired by normative aims, grounded in moral values or policy goals

Subjective experiences ➜ Individual's cognitive and affective reactions to his/her whole life (or specific domains) and societies

Construction

(2) Dealing with complexity

The reality is complex with reference to

(A) STRUCTURE OF VALUES

(B) OBSERVATIONAL PERSPECTIVES

PROCESSES
- growth
- progress
- development
- ....

CONDITIONS
- ✓ availability of resources
- ✓ distribution of resources
- ✓ impact of policies
- ✓ ...

GOALS
- ➤ sustainability
- ➤ quality of life
- ➤ well-being
- ➤ ...

Construction

(2) Dealing with complexity

The reality is complex with reference to

(A) STRUCTURE OF VALUES

(B) OBSERVATIONAL PERSPECTIVES

(C) POINTS OF OBSERVATION

individuals

⇩

Quality
of life

- resources approach
- capabilities approach
- subjective well-being approach
- basic needs approach
- objective living conditions and subjective well-being approach

societies

⇩

Quality of
societies

- liveability and quality of nations
- societal integration, solidarity and stability
  - o   social cohesion
  - o   social exclusion
  - o   social capital
- sustainability
- human development
- social quality

(2) Dealing with complexity

Complexity in constructing indicators

❖ Perspective of observation

(2) Dealing with complexity

Complexity in constructing indicators

conglomerative ←→ deprivational

input ←→ outcome

positive ←→ negative

benefits ←→ costs

status ←→ trends

(2) Dealing with complexity

Complexity in constructing indicators

- ❖ Perspective of observation
- ❖ Level of observation

(2) Dealing with complexity

Complexity in constructing indicators

micro $\longleftrightarrow$ macro

internal $\longleftrightarrow$ external

(2) Dealing with complexity

Complexity in constructing indicators

- ❖ Perspective of observation
- ❖ Level of observation
- ❖ Nature of the observed characteristics

(2) Dealing with complexity

Complexity in constructing indicators

objective ⟷ subjective

quantitative ⟷ qualitative

(2) Dealing with complexity

Complexity in constructing indicators

- Time frame

- Area sizes

(2) Dealing with complexity

Complexity in constructing indicators

- ❖ Perspective of observation
- ❖ Level of observation
- ❖ Nature of the observed characteristics
- ❖ Level of dis/aggregation
- ❖ Criteria

(2) Dealing with complexity

Complexity in constructing indicators

- goals

- identifying benchmarks

- reference standards

- ...

(2) Dealing with complexity

Complexity in constructing indicators

- ❖ Perspective of observation
- ❖ Level of observation
- ❖ Nature of the observed characteristics
- ❖ Level of dis/aggregation
- ❖ Criteria
- ❖ Levels of complication

(2) Dealing with complexity

Complexity in constructing indicators

- cold indicators

- hot indicators

- warm indicators

(2) Dealing with complexity

Complexity in constructing indicators

- ❖ Perspective of observation
- ❖ Level of observation
- ❖ Nature of the observed characteristics
- ❖ Level of dis/aggregation
- ❖ Criteria
- ❖ Levels of complication
- ❖ Purposes

(2) Dealing with complexity

Complexity in constructing indicators

- descriptive

- explicative

- predictive

- normative

- problem-oriented

- evaluating

(2) Dealing with complexity

Complexity in constructing indicators

- ❖ Perspective of observation
- ❖ Level of observation
- ❖ Nature of the observed characteristics
- ❖ Level of dis/aggregation
- ❖ Criteria
- ❖ Levels of complication
- ❖ Purposes
- ❖ Governance context

(2) Dealing with complexity

Complexity in constructing indicators

- public debate

- policy governance

- administrative guidance

(2) Dealing with complexity

Complexity in constructing indicators

- ❖ Perspective of observation
- ❖ Level of observation
- ❖ Nature of the observed characteristics
- ❖ Level of dis/aggregation
- ❖ Criteria
- ❖ Levels of complication
- ❖ Purposes
- ❖ Governance context
- ❖ ……………

(2) Dealing with complexity

Consequences of complexity in constructing indicators

(2) Dealing with complexity

Consequences of complexity in constructing indicators

Indicators → numbers

????

(2) Dealing with complexity

Consequences of complexity in constructing indicators

An indicator is **not** necessarily a **number**

(2) Dealing with complexity

Consequences of complexity in constructing indicators

An indicator can be an **object**

able to preserve the complexity by stylizing it

(2) Dealing with complexity

Consequences of complexity in constructing indicators

a map
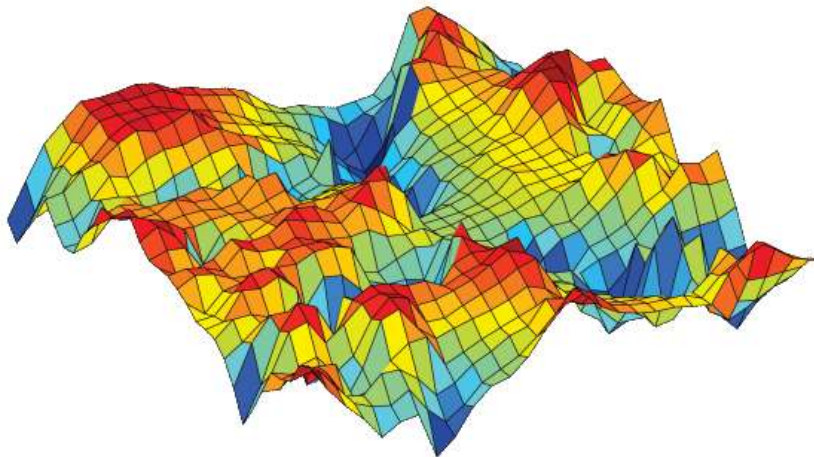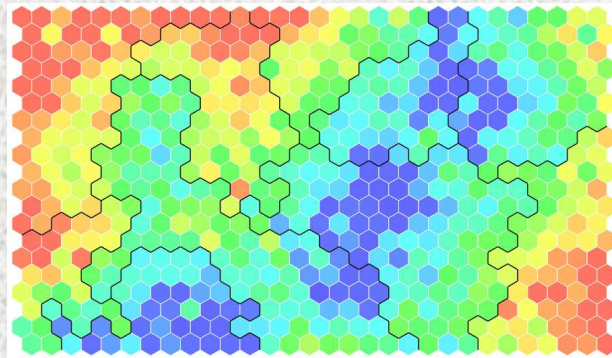
(2) Dealing with complexity

Consequences of complexity in constructing indicators

This has methodological consequences

↓

what we are going to construct should be an **authentic representation** of the reality

(2) Dealing with complexity

Consequences of complexity in constructing indicators

This has methodological consequences

↓

not a compress / pointfold / pointform representation

but

(2) Dealing with complexity

Consequences of complexity in constructing indicators

This has methodological consequences

↓

not a compress / pointfold / pointform representation

but

a representation preserving the systemic characteristic of the phenomena

*defined by **elements and** their **relationships***

(2) Dealing with complexity

Consequences of complexity in constructing indicators

This has methodological consequences

↓

from

points (numbers)

to

pattern (simplified shape and structure)

© Oleg Shuplyak

(2) Dealing with complexity

Consequences of complexity in constructing indicators

This has methodological consequences

↓

multidimensionality

should not be considered a noise to be removed

but

should be an intrinsic characteristic of the synthesis

(2) Dealing with complexity

Consequences of complexity in constructing indicators

This has methodological consequences

↓

This could introduce some incomparabilities

Construction

(2) Dealing with complexity

Consequences of complexity in constructing indicators

ARTS

↓

beautiful examples of constructing synthetic representation do the reality

Construction

(2) Dealing with complexity

Consequences of complexity in constructing indicators
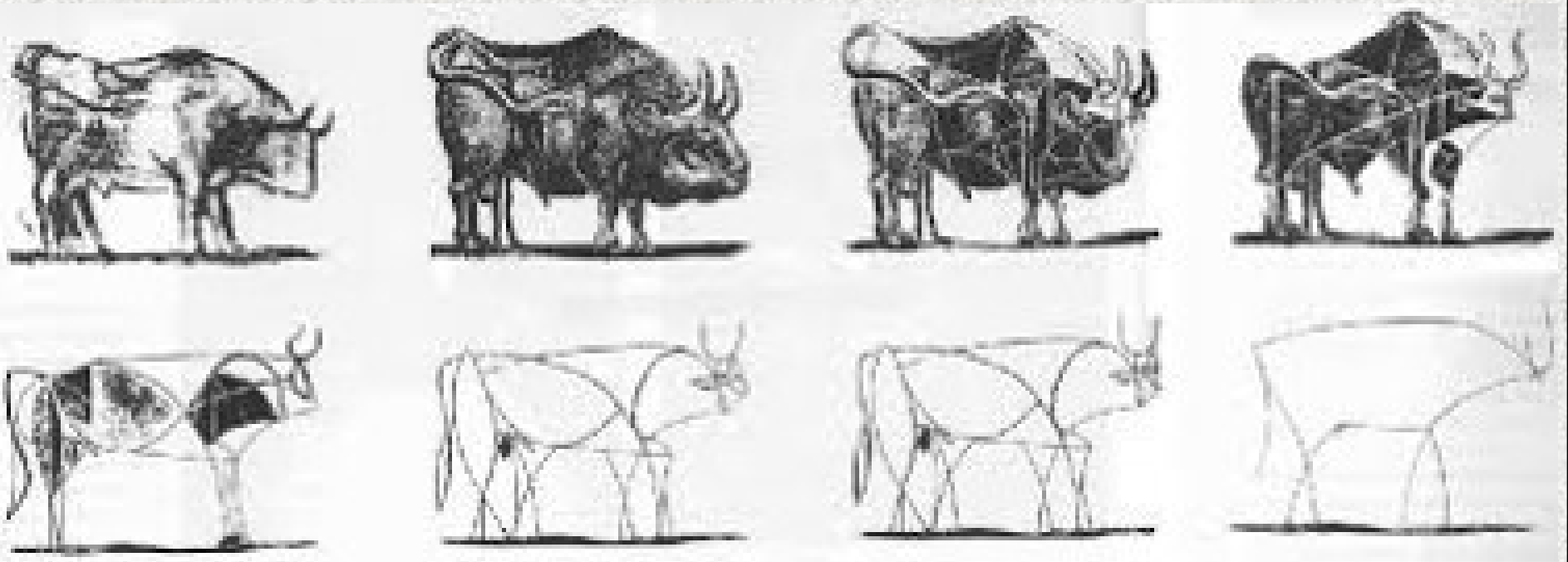
ARTS

Pablo Picasso

Construction

(2) Dealing with complexity

Consequences of complexity in constructing indicators

ARTS

Soldati
(Giuseppe Ungaretti)

Si sta come d'autunno sugli alberi le foglie
(staying like in fall the leaves on trees)

Powerful representation of soldiers' life during the First World War (n.b. the use of metaphors)

(2) Dealing with complexity

Consequences of complexity in constructing indicators

Visual complexity

⇨ crossroad of different competences

images   *words*   *numbers* *arts*

(2) Dealing with complexity

Consequences of complexity in constructing indicators

Visual complexity: metaphors

- *three of life*, able to represent hierarchies and classify elements (particularly useful in hierarchical systems)

- *networks*, able to represent diversity, decentralization, non-linearity

(2) Dealing with complexity

Consequences of complexity in constructing indicators

Visual complexity: metaphors

For example, network visualization may emphasize different aspects (density, organic growth, instability, dynamism) and/or different structure (symmetry, top-down, stable dimensions).

Construction

(2) Dealing with complexity

Consequences of complexity in constructing indicators

Visual complexity: perspectives

- representing complex and dynamic data

  - interactive data collection and communication (social data collection)
  - management of continuous data flows (extracting interesting points from the flow)
  - making data more accessible and meaningful

- visualizing priorities

- ambient visualization

- collective intelligence (cybernetics)

(Lima, 2011)

1. Construction
2. **Use**
3. Communication

(1) Systemic approach

Avoiding the point representation produces many indicators

Using them requires a systemic approach

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Avoiding the point representation produces many indicators

Using them requires a systemic approach

Indicators → bricks of knowledge

SET →

(1) Systemic approach

Avoiding the point representation produces many indicators

Using them requires a systemic approach

Indicators → bricks of knowledge

SYSTEM→

(1) Systemic approach

In other words, indicators should be used
not
as separeted and schizofrenic elements
but
as sensors connected to each other

(1) Systemic approach

This is

important in the monitoring and reporting exercise

but is

essential in defining sustainability policies

(1) Systemic approach

Losing the systemic view

is risky

(1) Systemic approach

Losing the systemic view

is risky

Sparrow paradox

(1) Systemic approach

Losing the systemic view

is risky

Sparrow paradox

Indicators: sparrows and wheat → highly negatively correlated

⬇

Hypothesis: possible hunger for humans

⬇

Policy action: Suppression of sparrows

⬇

Indicators: sparrow and wheat → highly positively correlated (no sparrow and no crop)

(2) Indicators and goals
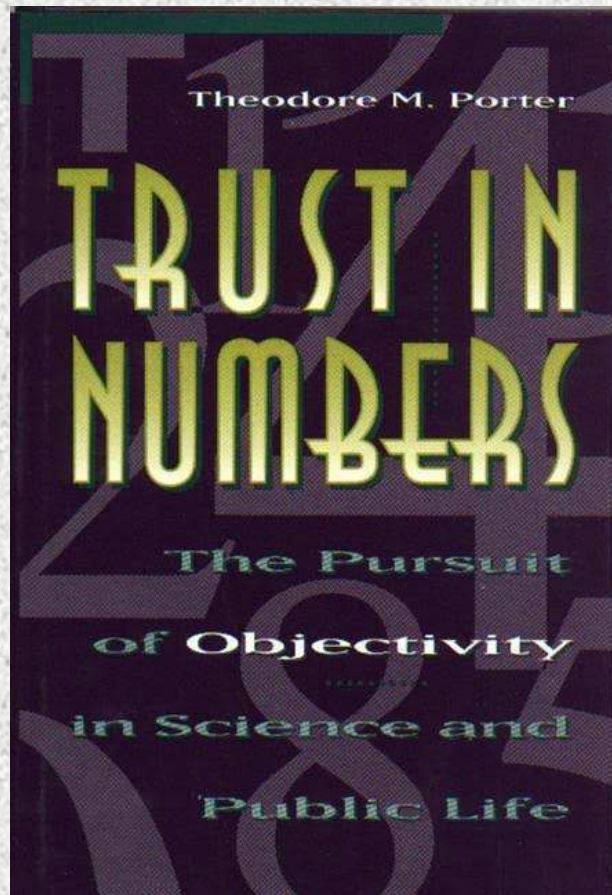
(Donald) Campbell's Law:

> The more any indicator is used for social decision-making, the more subject it will be to corruption pressures and the more apt it will be to distort and corrupt the social processes it is intended to monitor.
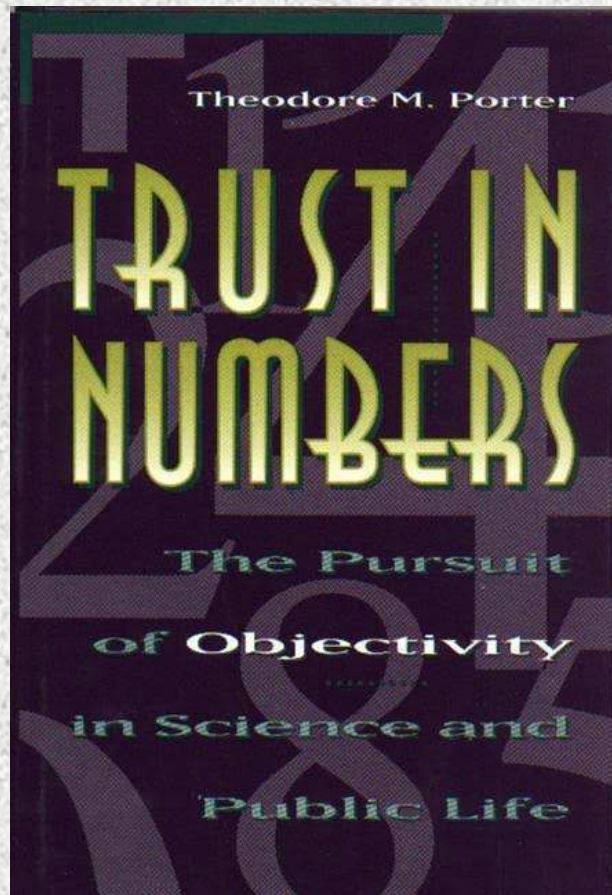
Also Charles Goodhart:

> When a measure becomes a target it ceases to be a good measure.

(2) Indicators and goals

Theodore M. Porter

TRUST IN NUMBERS

The Pursuit of Objectivity in Science and Public Life

(2) Indicators and goals

The soft power of numbers and indicators is characteristic of our time.

e.g. PISA process (Program for International Student Assessment)

We should admit that it created a problematic and disputable regime of testing.

These tests are not merely measures. They define new structures of incentives whose consensus should be discussed.

(2) Indicators and goals

Theodore M. Porter

TRUST IN NUMBERS

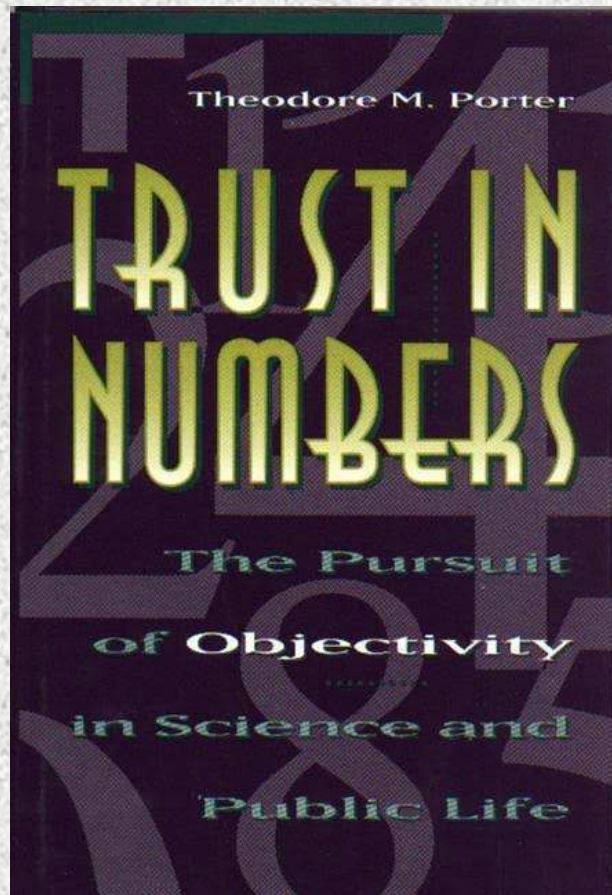The Pursuit of Objectivity in Science and Public Life
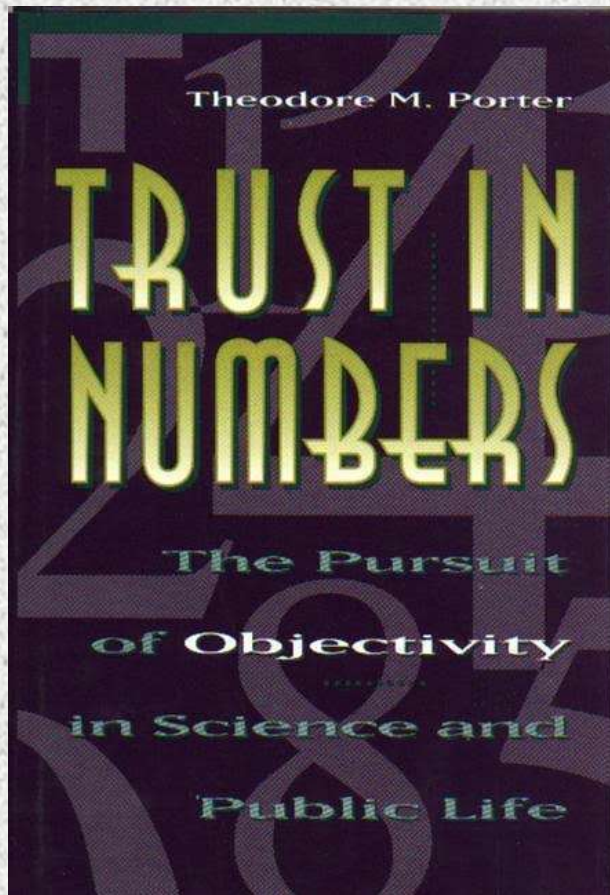
Numerical comparison can be valuable.

However...

1. Better numbers do not always correspond with genuine improvement.
2. Different political, cultural, and economic systems may have good reasons to pursue different goals in differently organized systems

(2) Indicators and goals

Power from Numbers

Yes, but data don't interpret themselves

We should beware of treating statistics as a **technical** field, in which statisticians and subject specialists (guided, perhaps, by political leaders), seek the best measures even when they do not correspond to the best outcomes.

(3) Being normative or not

The previous considerations urge the following questions
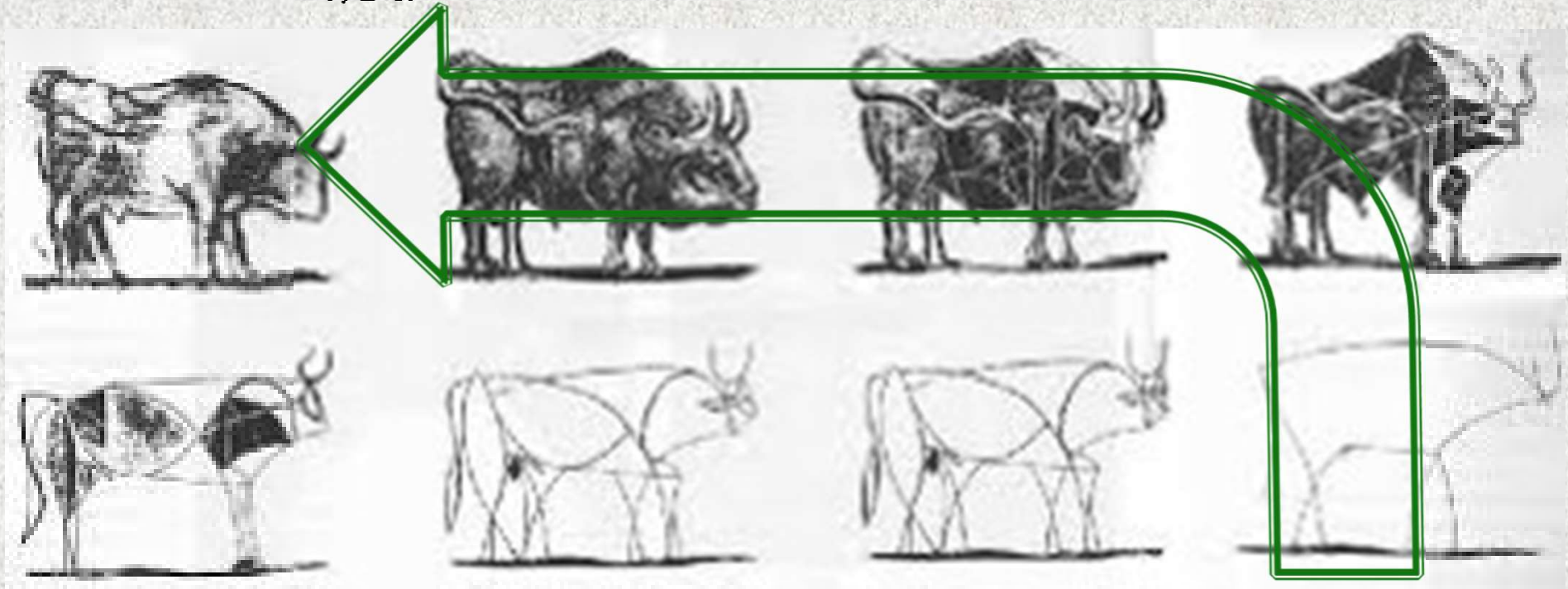
(3) Being normative or not

The previous considerations urge the following questions

Complexity: In front of complexity, should we be normative or not?

(3) Being normative or not

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(3) Being normative or not

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Complexity: In front of complexity, should we be normative or not?

Dashboard: is it simply a matter of managing a *flight desk* or should it be a factor of growing in the knowledge but also in the awareness (in other words, lever of change for all the actors involved)?

(3) Being normative or not

The previous considerations urge the following questions

Complexity: In front of complexity, should we be normative or not?

Dashboard: is it simply a matter of managing a *flight desk* or should it be a factor of growing in the knowledge but also in the awareness (in other words, lever of change for all the actors involved)?

Ranking: can we sacrifice the complexity in the name of comparability (which almost always aims at ranking cases, as if we live in a permanent soccer championship)?

Outline

1. Construction
2. Use
3. **Communication**

Communication

Are indicators enough?

The previous reflections and observations have many implications:

Are indicators enough?

The previous reflections and observations have many implications:

- transparent *information system*, aware of complexity

- *education* of the citizens, educated to complexity

- an important apparatus of *data production*

Communication

Are indicators enough?

This means that some institutions play a strategic and important role :

- *Media system*

- *Education and university system*

- *Official statistics*

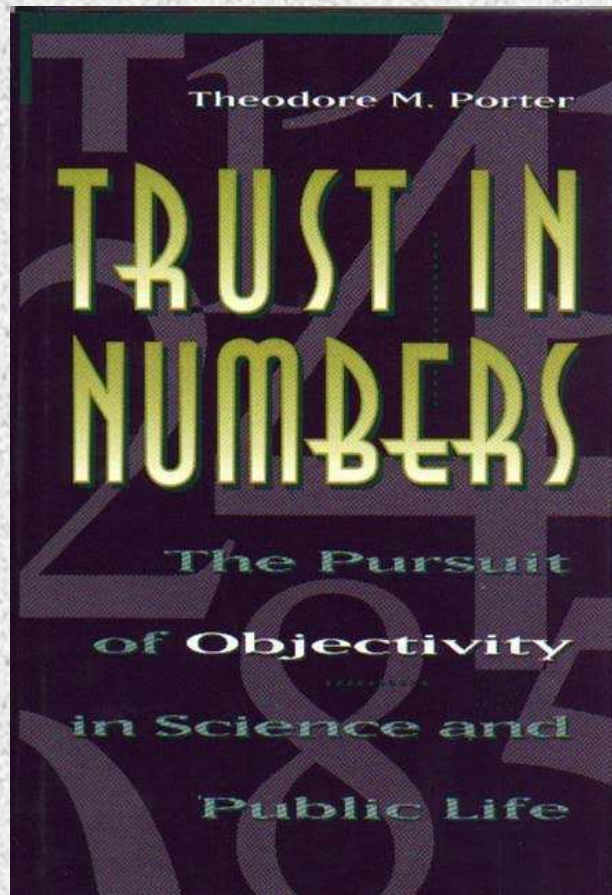# Communication

Are indicators enough?

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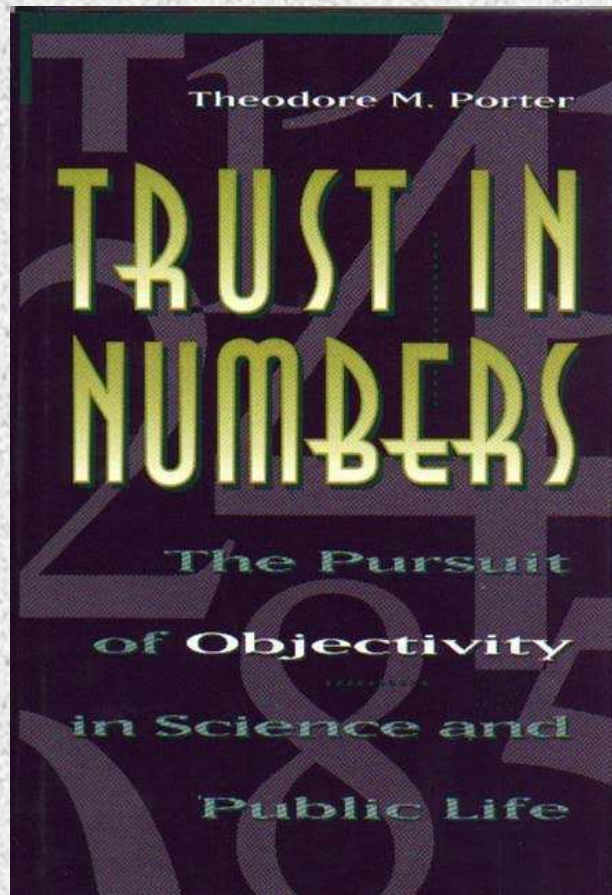- *Official statistics*

... all should meet social consensus

Final remark

Final remark

If you hope to use indicators and other measures to make the world navigable in simpler terms ...

Final remark

Theodore M. Porter

TRUST IN NUMBERS

The Pursuit
of Objectivity
in Science and
Public Life

If you hope to use indicators and other measures to make the world navigable in simpler terms ...

... be careful what you wish for.

Many thanks for your attention

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