Socializing natural sciences
towards a third ontology

Giampietro Gobo

University of Milan

Enlightenment, Positivism and neo-positivism: the first ontology

- **Montesquieu** (1748), **Comte** (1830) and John Stuart **Mill** (1843):

1. In his classification of sciences (1830-1842) Comte put at the top the «social physics» (later he called «sociology»), being **the most complex among disciplines**
2. The **«moral sciences»** (social sciences) and their logic should **conform to the natural sciences**
3. Consequently they must be studied with the **same methods** used by natural sciences (correlations, causality)
4. **Explanatory** science: social laws (Comte)
5. **Unic methodology** for all disciplines (the «unified science» or **«methodological monism»)**

Enlightenment, Positivism and neo-positivism: the first ontology

- **Montesquieu**, in the *De l'esprit des lois* (1748), aims to study the human world with the same perspective and methods followed by the 17th rationalism
  in the inquire of the nature.
- The beginning of the **anthropology**, as the heritage of the Age of Enlightenment:

1. Joseph-Maria **Degérando** (1772-1842)
   Degérando (1800) *Considération sur les diverses méthodes à suivre dans l'observation des peuples sauvages*, 1800, engl. *The observation of savage peoples*, translated from the French by F. C. T. Moore, with a preface by E. E. Evans-Pritchard. London, Routledge & K. Paul, 1969.
2. Louis-François **Jauffret** (1770-1840)
3. **19th century**: emerging social sciences should conform to the natural sciences
4. The French August **Comte** (1798-1857) and English John Stuart Mill (1806-1873).
5. In his classification of sciences (1830-1842) Comte put at the top the «social physics» (later called «sociology» by himself), being the most complex among disciplines
6. The «moral sciences» and their logic must be studied with the same methods used in the natural sciences (correlations, causality)
7. It is possible to predict, with a tolerable certainty, the conduct of human beings (Mill, *A System of Logic*, vol. VI: The logics of Moral Sciences, 1843, 3, II)
8. **Explanatory** science: social laws (Comte)
9. **Unic method** for all disciplines (the «unified science» by Otto Neurath, called «methodological monism» by von Wright 1971, tr. 1977: 20-22)
10. Versioni rivisitate e più sofisticate di **Naturalismo**: Willard Van Orman Quine (1908-2000) Donald Davidson (1917-2003).... Steven Weinberg, fisico quantistico, 1969 Nobel Prize in Physics ;

Hermeneutics and phenomenology:
the second ontology

- Since the late 19th century, the second ontology arose from the controversy about the method (**Methodenstreit**) to study societies.
- Afterwards it continued with **phenomenology**, mainly with Alfred Schutz (1953).
- The main features of this second ontology are:

1. **Intentionality**: human actions, unlike natural events, are «internally determined» (G.H. von Wright) **guided by motives, believes, values, which attribute the meaning to the actions themselves** (Dilthey 1883, Winch 1958, Searle 1996)
2. **Method**: to interpret correctly the actions under study, unlike natural sciences, we need a specific methodology: ***Verstehen*** (Dilthey), roughly translates to **"meaningful understanding"** or "putting yourself in the shoes of others to see things from their perspective".
3. **«From within»**. It is not possible to study a social phenomenon from the outside (as natural scientist does, because s/he doesn't care to understand his/her objects from their point of view).
   We need **to catch the «internal experience»** (*Erlebnis*): a stone doesn't have subjective experience; it doesn't have an inner (also **Malinowski 1922**)
4. Consequentially there is a radical (logical and ontological) **difference between natural sciences and social sciences**
5. **Unicity**: unlike natural events (reproducibility, general laws), human events have a unrepeatable unicity of (the storicism of Dilthey)

Hermeneutics and (later) phenomenology: the second ontology

- The age of Romanticism: Johann Gottfried **Herder** (1744-1803) was the first to introduce the concept of '**intelligibility' of history,** the parent of the subsequent criterion of versthen
- The second ontology arose from the controversy about the method (Methodenstreit) since the late 19th century.
- Afterwards it emerged again with Alfred Schutz (1953).
- The main features of this second ontology are:

1. **Intentionality**: human actions, unlike natural events, are «internally determined» (the Finnish G.H. von Wright) guided by motives, believes, values, which attribute the meaning to the actions themselves (Dilthey)
2. **Method**: to interpret correctly the actions under study, Dilthey (1883) said we need (unlike natural sciences) a specific methodology
   - based on empathy (Einfühlung)
   - Later Dilthey substituted empathy (a radical concept) with Verstehen.
   - *Verstehen* roughly translates to "meaningful understanding" or "putting yourself in the shoes of others to see things from their perspective".
1. **«From within»**. It is not possible to study a social phenomenon from the outside (as natural scientists do with their objects).
   - We need to catch the «internal experience» (Erlebnis), the subjective experience: a stone doesn't have subjective experience; it doesn't have an inner.
   - To "meaningful understand" the participant's inner experience the researcher has to relive it, to re-bring it (Nacherleben), putting yourself in the shoes of others (sich hineinversetzen),to reproduce it in his/her inner (nachbilden) (Dilthey, Ernst Troeltsch , Max Scheler).
   - The knowledge of the human world is acquired mainly by other forms, as **intuition, empathy, identification** (immedesimazione) with the participants or the object unders study, rather than by the intellect only (the romanticist part of Wilhelm Dilthey, 1822-1911)
1. Consequently there is a radical (logical and ontological) difference between natural sciences and historical sciences (science of the Spirit, as Dilthey call the latter).
2. The natural sciences aim to explanation (Erklärung) (general laws); historical sciences aim to understanding (Gustav **Droysen 1858,** published ten years later in *Grundrisse der Historik*)
3. **Unicity**: unrepeatable unicity of human events (the storicism of Dilthey) Gli oggetti delle scienze sociali non sono **fungibili,** mentre quelli essenziali delle sc. fisiche possono ragionevolmente essere trattati come tali.

Phenomenology: A. Schutz (1953, p. 6)

1. The social scientist has an additional problem (which is not for a natural scientist), « the social world … has a special meaning … for humans who live, think and act within it».
2. Consequently, while the observations of the natural scientist are **first-level constructs**, those of the «social scientist, therefore, are, so to speak, **second-level constructs**, that is constructs of constructs, made by actors on the social scene, the behavior of which the scientist observes and tries to explain in accordance with the procedural rules of his science».
3. The **natural** scientist interprets a reality (nature) with **no intrinsic meaning.**
   The social scientist interpreting a world that already has meaning.

Schutz, A. (1953), 'Common-sense and scientific interpretation of human action', *Philosophy and Phenomenological Research*, 14: 1-38.

A dissent view: methodological dualism only (Wildelband, Rickert and Weber… also Rorty)

- The **young Dilthey** (1822-1911) owns a **ontological dualism**.
- **Windelband** (1848-1915) **rejects Dilthey's ontological dualism**: «not in a difference of objects must be seized the distinction, but in their methods that scan objects" (*Geschichte und Naturwissenschaften*, Rector speech at Strasburg, 1894)
- Two **different methodological attitudes and cognitive interests** towards the reality (Windelband, *Präludien*, 1914, vol. II):

1. *nomothetic* (neologism) sciences, searching for explanation and laws (nomos): «generalizing knowledge»
2. *ideographic* (neologism) sciences, aiming to describe the individual (ideo), the unrepeatable unicity: «particularizing knowledge».
    - **Dilthey's error: to 'exchange' our methods for studying reality with the reality itself.**
    - **Rorty (1979)**

Schutz (1899-1959): **ontologist or methodologist?**

- **Ontologist:**
  Following **Dilthey**,
  social phenomena (just because they produce meanings) are different from natural phenomena
- **Methodologist:**
  According to **Webe**r's (1922) and **Rickert**'s (1926) theory of values,
  Schutz (1953:6) states that
  the natural scientist and social scientist have a problem in common: their observations depend on the theory (theory-laden), are the result of a selective and interpretive activity » guided by the theory.
  In fact, «the relevance is not intrinsic to nature as such»
- **Weber** (1922, tr. 1974: 96) argues that the human universe is a enigmatic and disorganized reality, a *continuum* of events meaningless.
  The "relation to values" is therefore constitutive of social reality: the facts inquired by social research do not impose intrinsically themselves, but are decided by social science.
  Every observer is a evaluating observer.
- When talking about his dog, Schutz said: «I look at him as my friend and companion Rover [...] without a special motive, not induced to look at Rover as a mammal, an animal, an object of the outer world, although I know that he is all this too» (1953: 8).
- «**strictly speaking, there are no such things as facts, pure and simple** [...] They are, therefore, **always interpreted facts** [...] This does not mean that, in daily life or in science, we are unable to grasp the reality of the world. It just means that we grasp merely certain aspects of it, namely those which are relevant to us either for carrying on our business of living or from the point of view of a body of accepted rules of procedure of thinking called the method of science» (Schutz, 1953: 5).

Three main contemporary trends

Classifications: an arbitrary activity

1. **Naturalizing** (epistemology, human and social sciences)
2. **Alliance** between natural and social sciences
3. **Socializing** epistemology: SSK and STS

1. Naturalizing

- Quine (1969: 69): **naturalizing** epistemology: the science is **ultimately based on natural facts** (realism). There are a priori and immutable logical truths, to which all sciences must comply.
- **naturalizing social sciences: Neuro-sciences** (the affect of the **brain** in decision-making), Neuro-Economics (brain and buyer's decisions), Neuro-Esthetics (brain and artist's activity), Neuro-Marketing (brain and consumer's decisions), etc.
- **Brain…** (not mind)
- main feature: **neuroessentialism** (see Reiner 2011)
- **The colonization of the social by Neuro+:** biology, physiology, philosophers of mind (as Paul and Patricia S. Churchland), etc.
- **Monism: mind and brain (body) are NOT ontologically distinct** kinds of entities (independent substances) (by Parmenides 5th c. BC; rationalist Spinoza in the 17th c.)
- **mental processes are explained in terms of physical theories**
- **Behaviors, emotions and reasoning are highly brain-dependent** (the clinical case of worker Phineas P. Cage, with a brain damage)
- "your joys and your sorrows, your memories and your ambitions, your sense of personal identity and free will, are in fact no more than the behavior of a vast assembly of nerve cells and their associated molecules… **You're nothing but a pack of neurons**" (F. Crick,

2. Alliance

- **Science of complessity** or the **complex systems theory** (chaos theory, AI, cybernetics, meteorology, ecology, thermodynamic phenomena, etc.)
- An **interdisciplinary approach** among physics, chemestry, biology, ecology, social sciences.
- The study of **interactions** among living systems

- Ilya **Prigogine** (1917-2003), 1977 Nobel Prize in Chemestry
- Murray **Gell-Mann** (b.1929), 1969 Nobel Prize in Physics
- Gregory **Bateson** (1904–1980), anthropologist, sociologist and psychologist
- Edgar **Morin** (b. 1921), sociologist and philosopher
- Humberto R. **Maturana** (b. 1928), biologist
- the **young** Francisco **Varela** (1946-2001), biologist
- Niklas **Luhmann** (1927-1998), *sociologist* and philosopher
- Harold J. **Morowitz** (b. 1928), biophysicist: thermodynamics to living systems
- Enzo **Tiezzi** (1938-2010), chemist

- **Ideally**: **simmetry** among natural and humanities/social sciences
- **Practically**: the **naturalism mastership** (chemetry, physics, biology…)

3. Socializing

- Hesse (1987): **socializing epistemology**
- **The foundations** of science are **social**
- Science is a social enterprise (communities of scientists, context, situated interactions): *scientific activity as a set of beliefs, oral traditions and* ***context-bounded discursive practices***.

1. **Edinburgh School** (Barnes and D. Bloor: historical studies)
2. **laboratory (ethnographic) studies** (Latour, Woolgar, Knorr-Cetina, Lynch…)

- **Fact-making** ('fact' from Latin *factum*, past participle of *facere*, i.e. to do, to make): Latour and Woolgar 1979: **the objects** under study **are socially constructed in the laboratory**; they have **no existence outside of the measuring instruments and the specialists who interpret them**.
- Latour (1996): **factish gods** (beliefs and knowledge are always amalgamated)
- **Nature alone (experiment, evidence, rationality)** cannot be used for solving scientific controversies (the role of ideology in science: Latour and Woolgar 1979; Latour 1984)

socializing : consequences

- The collapse of the division **between human and non-human** (Rorty 1979; Latour 1984)
- The lines of demarcation **between natural and social sciences** must be radically rethought (Rorty 1979)
- The collapse of the division **between Nature and Culture** (Latour 1991)
- **Latour's ideas about non-humans**: he hopes that a new Constitution will take into account not only humans but also non-humans.
- Consequently Latour proposes the creation of a **parliament of things** when things are represented by scientists or personalities recognized for their expertise in a particular field, at the same way the traditional MPs now represent citizens.

Who colonizes who?

1. **Dominant** trend:
   neuro+: the colonization of the human/social by natural sciences
2. **Underground** trend:
   the colonization of the natural by humanities and social sciences

humanitizing and socializing natural sciences: evidences

- We assist at three imports:

1. **IMPORT 1**: Natural sciences acquire the humanities and social sciences **conceptual apparatus (language)** to meaningful understanding their objects: **anthropomorphism**
2. **IMPORT 2**: Natural sciences **discover NOW**, what humanities and social sciences know from decades and (sometimes) centuries
3. **IMPORT 3**: Natural sciences begins to acquire also humanities and social sciences
   methodology (empathy; phenomenological observation, reflexivity, contemplation), and
   some research methods (ethnography).

The problem of the audience: recognizing agentivity?

- the social sciences are considered **weak** by many points of views:

1. too many and opposite **methods** (QL versus QT methods),
2. vague **concepts**
3. **theories** not accepted, shared and legitimized by the communities of reference
4. unstable and questioned **findings**.

- However, this is not a weakness, but a **strengths** of social sciences
- because social scientists (following hermeneutics and phenomenology), unlike natural scientists**, assign agency to their 'objects',** give the right to speak to them…
- social scientists' findings are criticized and questioned not only by the their scientific communities, but **even by their objects** under study (e.g. migrants, gays, etc.),
- Would this happen to a physicist, a chemist, a biologist or even an ethologist?
  No. Because **they do not believe that atoms, neutrons, neurons, chimpanzees etc. have the right to speak, to criticize their hypotheses and theories.**
- e.g. until a few centuries ago scientists thought that children and animals did not feel pain; so the surgery were admitted without anesthesia….

IMPORT 1: humanitizing/socializing plants/1

- *Natural sciences acquire the humanities and social sciences conceptual apparatus (language):* ***anthropomorphism***

- **Mancuso, S. and Viola, A.** (2013) *Verde brillante. Sensibilità e intelligenza del mondo vegetale*, Firenze: Giunti.

  English transl. (2015) *Brilliant Green: The Surprising History and Science of Plant Intelligence*, Washington D.C.: Island Press.

  German transl. (2015), *Die Intelligenz der Pflanzen*, Munich: Kunstman.

herbaceous

thale cress

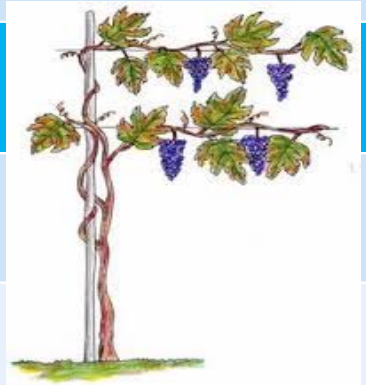
tobacco

corn

tomato

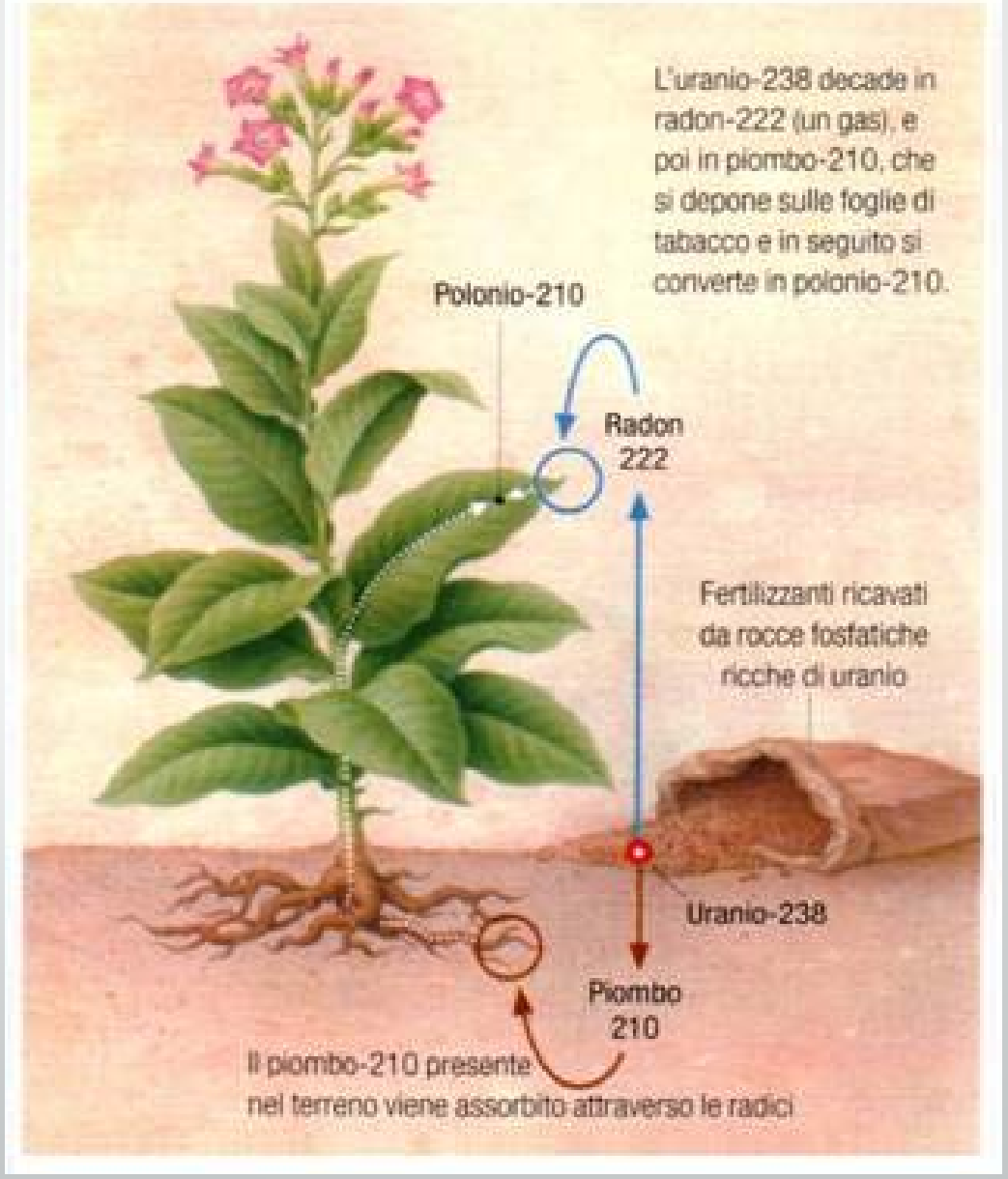
woody plants

olive



vitis

root tips


L'uranio-238 decade in radon-222 (un gas), e poi in piombo-210, che si depone sulle foglie di tabacco e in seguito si converte in polonio-210.
Polonio-210
Radon 222
Fertilizzanti ricavati da rocce fosfatiche ricche di uranio
Uranio-238
Piombo 210
Il piombo-210 presente nel terreno viene assorbito attraverso le radici

humanitizing/socializing plants/2

- Plants may be **sentient,**
  despite their lack of a nervous system and a brain
  however they have some vegetal cells (particularly the cells located in the **transition zone, a particular area** of the root apex , that is the root tip) which perform an activity similar to that of neurons;
- these cells are able to **perceive, process and evaluate** information collected from the environment, to produce electrical signals and **transmit** them to neighboring cells (Jagdish Chandra Bose, Corentin Louis Kervran, George Washington Carver)
- Charles Darwin already believed that the root apexes represent a kind of "network brain" of the plants, able to perceive signals from the environment and "make decisions" about the strategies to pursue.
- The root tips perform activities **"cognitive-like":**
  1. collect environmental information,
  2. integrate them and react accordingly;
  3. communicate intra-species (plants)
  4. communicate with other species (insects and animals)
  5. Learning
  6. Intelligence
  7. memory
  8. cost-benefit analysis
  9. Strategic behavior.
- altruistic behaviors (solidarity)
- plants have emotions (sensitive at the different kind of music)
- an ethics (what is good and evil for them)

feel pain

IMPORT 2: humanitizing/socializing the brain

- Natural sciences discover **NOW**,
  what humanities and social sciences know from decades and (sometimes) centuries…

Damásio, A.R. portuguese neuroscientist

1. **emotions are involved in the decision-making**;
2. he overturns the cultural tradition of the **natural sciences that has always devalued emotions**, considered as disruptors of the serenity of reason.
3. unlike, **emotions are the key to good functioning of the mind**: if human being loses the emotional capacity, s/he is not able to act rationally.
4. Therefore**, the reason could not function properly without the emotions**,
5. **Emotions and feelings** are often able to **influence** tacitly and strongly, and without **our knowledge, our beliefs and our choices.**
6. Emotions are closely linked to the body: **the origin of the feeling is the body**
7. **the body** constantly provides the basic material with which the brain constructs the images from which the **thought originates**.
8. **Mind and body cannot be separated**, "they are cut from the same cloth" (2003, p.251)
9. **the conscience begins as a feeling**, a special kind of feeling,
10. **conscience and emotion cannot be separated**, because the first is inextricably linked to the feeling of the body.
11. **he restores dignity to emotions** that he considers cognitive dimensions.
12. the **philosopher Spinoza** (1632-1677) is a precursor of some contemporary neuroscience ideas, supported by Damasio's research
13. Contemporary neurobiology of emotion and feeling demonstrates **another of Spinoza's insights**, namely that **the joy and positive feelings are preferable to the pain as "more favorable to health and to the creative development of our being"** (*Looking for Spinoza: Joy, Sorrow, and the Feeling Brain*, Harcourt, 2003, p. 320)

- **how much phenomenology (i.e. Merleau-Ponty) there is in these statements?**

IMPORT 3: humanitizing/socializing methodology

- *Natural sciences begins to acquire also humanities and social sciences*

1. ***methodology*** *(phenomenological observation, reflexivity, contemplation), and*

2. ***some research methods*** *(empathy, ethnography).*

Methodology: neurophenomenology

- **Varela, F.J. (1996**). 'Neurophenomenology: a Methodological Remedy for the Hard Problem', *Journal of Consciousness Studies* **3**: 330-50.
- What does not work in all **functionalist analysis** (Ital. translations Jackendoff 1987, Baars 1988, Dennett 1991, Calvin 1990, Edelman 1989), is not their explanatory coherence, but **their distance from human life.**
- Study of c**onscience** (or consciousness)
- an explicit and **central role of the first-person accounts** and the irreducible nature of conscious experience: **the experience is the starting point**
- codetermination between an firsthand analysis and an external analysis of human experience: the fertile **dialogue between phenomenology and cognitive science**.
- **Husserl, William James, Merleau-Ponty**
- **Phenomenology**: a special type of reflection or a way of thinking about our capacity to be aware of, to be conscious: **a science of experience**
- the need of an **embodied cognitive science**, a located or generative (enactive) cognitive science the inherent circularity in cognitive science: because the study of mental phenomena is always about of a person who experiences (Varela, Thompson and Rosch, 1991)

IMPORT 3: humanitizing/socializing research methods

- **Empathy** (Einfühlung):

1. W. Dilthey
2. Edith Stein (1917)
3. A. Schutz

- **Ethnography:**

1. primatologist and ethologist **Jane Goodall** (b. 1934) studied social and family interactions of **wild** chimpanzees in Tanzania;
2. the zoologist **Dian Fossey** (1932-1985), studied the Gorilla **in the wild** (Ruanda);
3. the neurobiologist e primatologist **Robert Sapolsky** (b. 1957) studied the social behaviors of baboons **in the wild** (Kenya). He spent **8 to 10 hours a day** for approximately four months each year recording the behaviors of these primates.

Costructing a third ontology (T.O)…

- Latour and Rorty: **human and non-human on the same level**
- T.O. challenges the **second ontology**:
  historicism/traditional hermeneutic (Dilthey, Winch, Searle) and traditional phenomenology (Schutz);
  without falling back into the positivism (the **first ontology**): the colonization of the social by the natural
- **The paradox**:
  on one side, natural and social sciences are not at all so different (as the second ontology state);
  on the other, they are not even similar (as the first ontology affirm).
- **If even the natural scientists begin to humanitize/socialize their objects** (viewing them as capable of agency)
- **in the future** we could arrive to an **unification of methodology** for all sciences, a sort of **SOCIAL methodological monism** (of course, not the kind of methodological monism proposed by Comte and J.S.Mill)