

Epistemology and logics of social research

Lecture 1.

What can we know? From ontology to epistemology

Validation Memo

- 15,000 characters (or 2,500 words) memo (references not included).
 - Ideally target week 5.
 - 4 Students max.
 - In English or in French
- On epistemological/scientific controversy issues
 - Using courses' concepts
 - cf. Falsification à la Lakatos
- Possible themes.
 - Was Hydroxychloroquine effect falsified?
 - Max Weber falsified?
 - <https://academic.oup.com/qje/article/124/2/531/1905076>
 - Use of epistemology by marginals:
 - P. Richet,
<https://hgss.copernicus.org/articles/12/97/2021/>
 - Dr. Raoult's epistemology:
<https://www.youtube.com/watch?v=2WlJULCXVI0>

2021-2022 examples

- De l'épistémologie à la sociologie des sciences : comprendre la controverse de la p-value
- Conscience et sciences cognitives. Définitions et enjeux épistémologiques
- Construire et reconstruire la science : le cas de la controverse VIH-SIDA
- Crise épistémologique et difficultés diachroniques pour la formation du Pentateuque
- Immigrants' Political Participation: Identity and Family History
- Is Marxism falsified?
- L'Homme peut-il être considéré comme une force géologique ? Controverse épistémologique autour de la notion d'Anthropocène
- La controverse Coulmont – Mignot
- Nord/Suds : une géographie coloniale du savoir
- The Construction of Scientific Truth in Nutritional Research
- The Limits of Expertise and Expert Systems: The Rintala Case and the Paint Expert

Mixed roles/feelings with Epistemology



Thinking / Celebrating / Repressing / Defending
Science

Related questions

What is?

What is the world?

What is reality?

=> **Ontology**

What and how can we know?

What is truth ?

=> **Philosophy of knowledge**

What are the characteristics of scientific knowledge?

What is the difference between science and other forms of knowledge?

What is the difference between science and pseudo-science?

=> **Epistemology**

I. Ontology. A couple of keywords

- Idealism / Materialism
- Monism / Dualism
- Nominalism / Realism
- Deductivism / Empiricism

Idealism/Materialism

- Who's what?
 - Plato, Democritus, Epicurus, Aristotle, Thomas Aquinas, Descartes, Leibniz, Spinoza, Kant, Berkeley, Hobbes, Hegel, Marx, Badiou, Deleuze, Bourdieu, Boltanski ...

Idealism

- Strong form
 - Ideas are the essence of all things
 - Pythagoras: “Everything is number”
 - Badiou: “Being is told in mathematical language”
 - Heaven of ideas with or without God
- Mild form
 - Man access reality through ideas
 - Transcendental idealism
 - ==> Kant / Husserl

Materialism

- Matter is the essence of all things
- Matter substrate of thought
 - “Der Mensch ist, was er isst.” (Feuerbach)
- World of ideas has no primacy. It is a material/human construction

Monism / Dualism

- Definitions
 - Monism. Only one substance
 - The world is composed of two substances. Matter (or sometimes called extension) and mind
 - Cf. Descartes
- Articulation with idealism/materialism
 - Materialists are generally monists (Hobbes, Marx, Spinoza)
 - But dualism is never far (cf. Spinoza. From “God, that is nature”. But ... we access only two attributes – extension and thought)
 - Strong form of idealism lead to some form of monism (Plato, Hegel)
 - Mild form of idealism is generally dualist => Descartes, Kant.
 - But not necessarily. Some form of phenomenology could lead to a solipsistic monism.

Nominalism / Realism

- Nominalism ==> Medieval controversy on the nature of universals (concepts that designate an ensemble)
- Do universals have a reality ?
 - Yes: realism or essentialism
 - No: it's a human convention with no reality

Plato the realist

- “We customarily hypothesize a single form in connection with each of the many things to which we apply the same name. ... For example, there are many beds and tables. ... But there are only two forms of such furniture, one of the bed and one of the table.”
- “What about someone who believes in beautiful things, but doesn't believe in the beautiful itself...?”
- (Plato, Republic)

Nietzsche, the nominalist

- “Every concept originates through our equating what is unequal. No leaf ever wholly equals another, and the concept "leaf" is formed through an arbitrary abstraction from these individual differences, through forgetting the distinctions; and now it gives rise to the idea that in nature there might be something besides the leaves which would be "leaf"—some kind of original form after which all leaves have been woven, marked, copied, colored, curled, and painted, but by unskilled hands, so that no copy turned out to be a correct, reliable, and faithful image of the original form.”
- Nietzsche, “On Truth and Lie in an Extra-Moral Sense” (1873).

What's real in human knowledge?

- Nominalist/realist distinction can be applied to different entities: Universals, Ideas, Matter, Nature, Society
 - Articulation with general ontology differ in each case
- Reality of mathematics/logics
 - Realist versus constructivist debate
- Reality of the world, of nature and of scientific objects
- “Social constructivism” as a form of nominalism

Articulation with other concepts

- Nominalism is sometimes viewed as an idealism
 - Why ? Concepts/knowledge as mind construction rather than an adequate construction of an external reality.
 - Nominalism is critical to external reality
 - But a monist idealism could accept of being characterized as nominalist
- Materialism is generally realist
 - Physicalism of early materialist ==> strong beliefs on reality of the matter
 - But materialism leads also to recognize the constructed origin of knowledge
- Social science have a complex (schizophrenic) to nominalism
 - Combining methodological nominalism (human knowledge as socially constructed) and epistemic realism (phenomenon I study has some external reality)

Rationalist/Empiricist

- Empiricist/inductivism => Source of knowledge comes from experience
- Rationalist /deductivism /innatism => Source of knowledge comes from reason
 - Common to oppose the two doctrines. But sometimes combined
 - True opposition is between innatism (ideas are innate) and empiricism

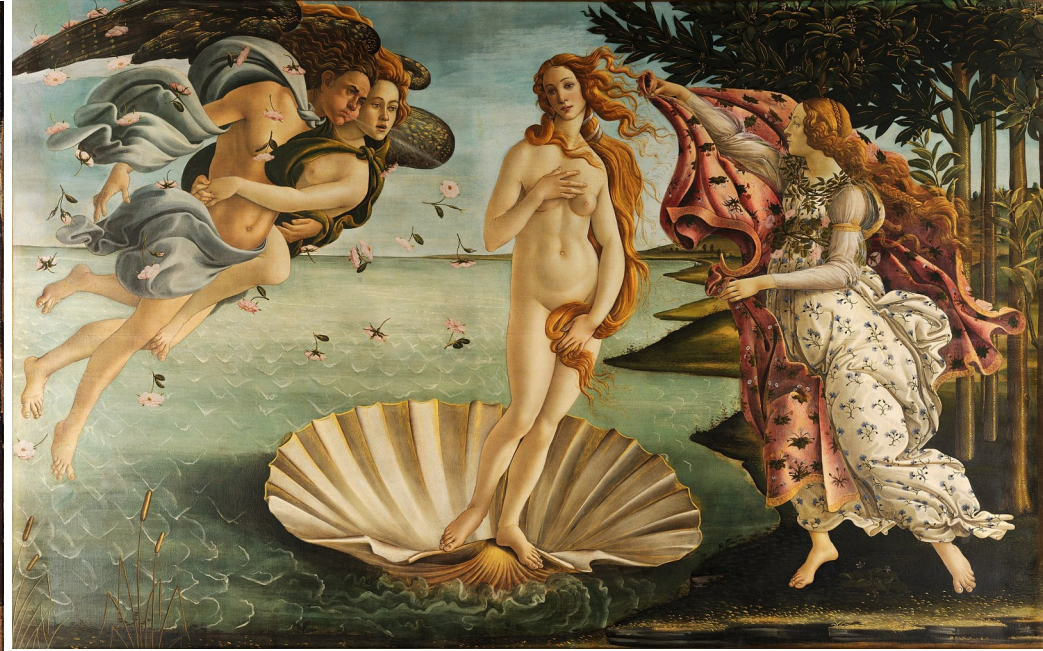
Some combinations

- Happy idealist physicist (Galileo)
 - Idealist-Dualist-Realist-Rationalist
- Happy materialist historian (Marx)
 - Materialist-Monist-Realist-Empiricist
- Uncomfortable social critic
 - Materialist-Monist-Nominalist-Empiricist

II. The Happy Idealist physicist

- The Plato idealistic position
 - An illustration
 - With Botticelli's help

As a metaphor of Plato's metempsychosis



Cf. Lévis-Godechot, Nicole. 1993. "La Primavera et La Naissance de Vénus de Botticelli ou le cheminement de l'âme selon Platon." *Gazette des Beaux-Arts* 121 (1491): 167-180.



Plato Idealism

- With metempsychosis, the soul contemplates pure idea
- During earthly existence, access to impure images of pure ideas
- Access to knowledge through rational anamnesis (reminiscence)
- Philosophers/scientists are capable to go beyond empirical illusion and common wisdom to recover essences
- Towards some forms of dogmatism?

III. Idealism and empiricism in the modern era

- A new era where scriptures' (Bible, Aristotle) authority fades
- New criteria of validation
 - Facts
 - Reason

Doubt and evidence. Descartes



- Systemic doubt=> Tabula rasa
 - Opinions; Authorities
 - Sensual experience
- In search of foundational truth
 - 1. Egos' existence "I think therefore, I am"
 - 2. God (deducted)
- Warrant of truth
 - Evidences: clear and distinct ideas
 - Shared by the common sense
 - Warranted by God

At the school of facts

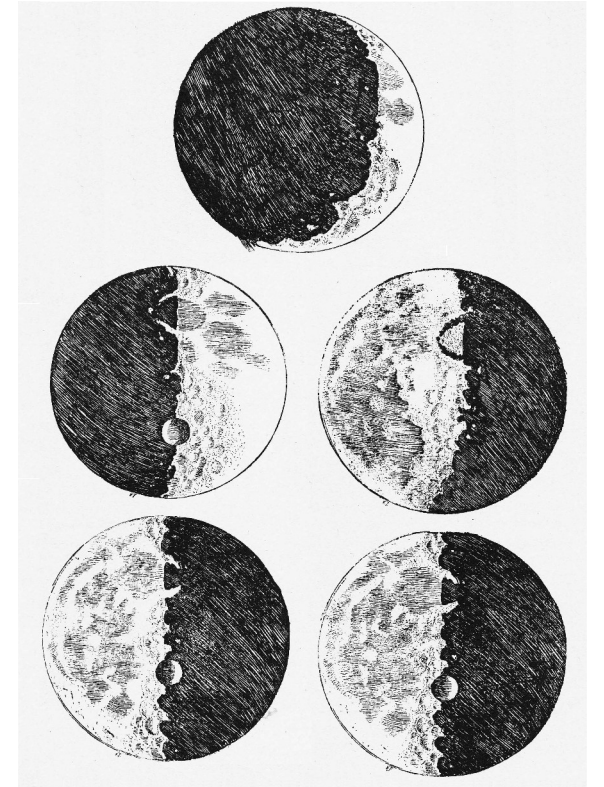
- Scientific revolution
Modern Europe
 - Copernic/Galileo/Newton
- Challenging authority of legitimate texts
 - Aristotle and Bible
- A new type of proof for a new tribunal
 - Facts: Observations and experiments
 - Jury
 - Senses: Sight mainly, Hearing, Smell

Facts for empiricists

- Facts are directly given to careful, unprejudiced observers via the senses.
- Facts are prior to and independent of theory.
- Facts constitute a firm and reliable foundation for scientific knowledge

Facts, not sacred writings

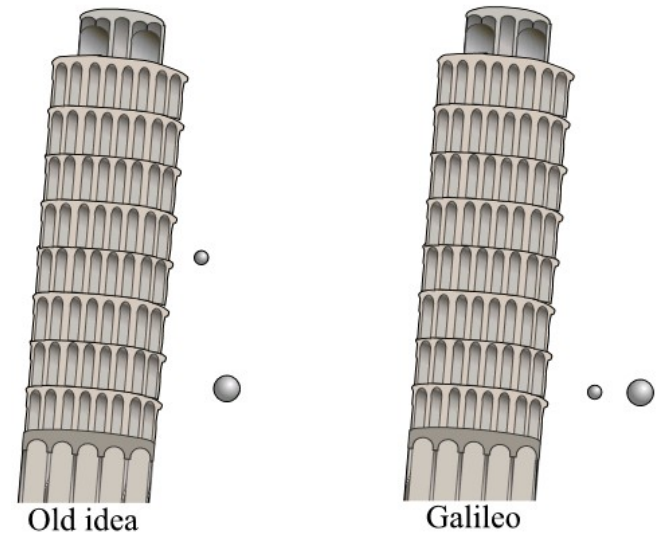
- Aristotle: heavenly bodies, including the moon, are perfect spheres moving around the Earth with circular motions
- Thanks to his telescope:
 - Galileo: Mountains and craters !
 - Opponent: Yes... But there's an invisible substance on the moon filling the craters and covering the mountains in such a way that the moon's shape was perfectly spherical
 - Galileo: I admit that the invisible, undetectable substance exists on the moon, but it is piled up on top of the mountains so that they are many times higher than they appear through the telescope



Law of falling objects

- Aristotle => speed of falling objects proportional to their weight
 - Intuition: hammer versus feather
- Galileo Experiments
 - <https://www.youtube.com/watch?v=4mTsrRZEMwA>
 - Uniform acceleration (proportional to square distance)
<https://www.youtube.com/watch?v=eUbv78PHaro>
- (But modern physicists say Aristotle is a good approximations of motion in fluids)

- Legendary experiment



- Done by Vincenzo Reinieri (1641) not confirming Galileo because air resistance. But Galileo replied in the void only.

Empiricism

- Well represented in the British tradition
 - Bacon
 - Locke
 - Hume
- Experience at the source of knowledge
- Radical empiricism :
 - Not just empirical knowledge
 - But of all knowledge => ideas, categories, logics, etc.

Anti-innatism

Locke 1690. *An Essay Concerning Human Understanding*

- Book 1. Chapter 1. “Neither Principles nor Ideas Are Innate”
- Book 2. Chapter I. Of Ideas in general, and their Original
- “All ideas come from sensation or reflection. Let us then suppose the mind to be, as we say, white paper, void of all characters, without any ideas:—How comes it to be furnished? (...) To this I answer, in one word, from experience. In that all our knowledge is founded; and from that it ultimately derives itself. Our observation employed either, about external sensible objects, or about the internal operations of our minds perceived and reflected on by ourselves, is that which supplies our understandings with all the materials of thinking.”

- Controversy on blind people (recovering eye sensation)
- Condillac → *Treatise on sensations*

Hume, a skeptical empiricist



- Human ideas based on initial impressions / Based on induction.
- A priori reasoning cannot be a source of knowledge

“But to convince us that all the laws of nature, and all the operations of bodies without exception, are known only by experience, the following reflections may, perhaps, suffice. Were any object presented to us, and were we required to pronounce concerning the effect, which will result from it, without consulting past observation, after what manner, I beseech you, must the mind proceed in this operation? It must invent or imagine some event, which it ascribes to the object as its effect, and it is plain that this invention must be entirely arbitrary. The mind can never possibly find the effect in the supposed cause, by the most accurate scrutiny and examination. For the effect is totally different from the cause, and consequently can never be discovered in it. (...) A stone or piece of metal raised into the air, and left without any support. immediately falls: but to consider the matter a priori. is there anything we discover in this situation which can beget the idea of a downward, rather than an upward, or any other motion, in the stone or metal?” (*A Treatise*, Section XIV)

The limit of induction

“In vain do you pretend to have learned the nature of bodies from past experience. Their secret nature, and consequently all their effects and influence may change, without any change in their sensible qualities. This happens sometimes, and with regard to some objects: Why may it not happen always and with regard to all objects? What logic, what process of argument secures you against this supposition? (*An Enquiry...*, Section IV, Part II.)”

- “One would appear ridiculous who would say, that it is only probable the sun will rise tomorrow, or that all men must die; though it is plain we have no further assurance of these facts than what experience affords us. For this reason it would perhaps be more convenient, in order at once to preserve the common signification of words, and mark the several degrees of evidence, to distinguish human reason into three kinds, viz. that from knowledge, from proofs, and from probabilities.” (*A Treatise ...*, Section XI)
- Introduce some doubts in the validity of our beliefs

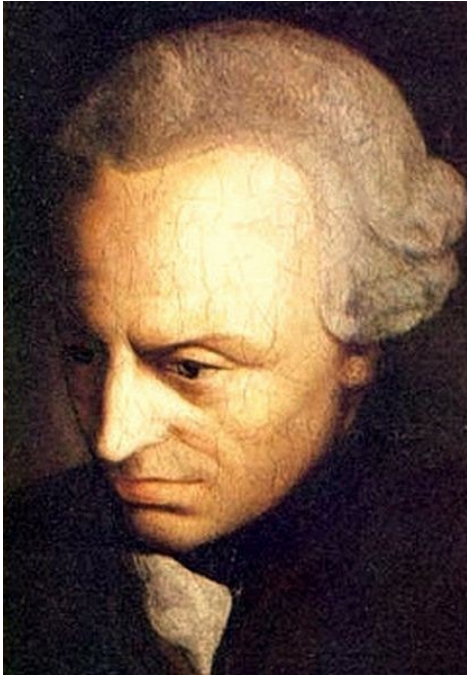
IV. Towards a rational empiricist synthesis

- Science as a combination of rational activity and empirical validation
- Kant
- Positivist epistemology

Text 1.

Kant, Immanuel. 1998 [1783]. “Preface I” and “Introduction”, *Critique of pure reason*, Cambridge University Press.

Kant. Limiting reason to a world of phenomena



- Ego at the heart of knowledge
- Unbounded reason=> metaphysical delirium
 - Ex. Leibniz and Swedenborg
- Forbidden Ideas: World, God, Soul
- Access to phenomena only. No access to noumena.

Kant. Limiting reason to a world of phenomena

- Types of judgments
 - A priori analytical judgment
 - Qualifying, decomposing but not adding new results
 - A posteriori synthetic judgment
 - Based on experience
 - A priori synthetic judgment (many debates in epistemology afterwards)
 - Not based on experience
 - But on pure intuitions: time and space (contradicted by 19th/20th innovation in mathematics and physics)
 - ==> Mathematics
- Pure concepts of understanding (or Categories)
 - Quantity
 - Unity, plurality, totality
 - Quality
 - reality, negation, limitation
 - Relation
 - causality...
 - Modality
 - (im-)possibility, (non-)existence ...

Text 2.

Schlick, Moritz. 1936. “Meaning and verification”. *The philosophical review*, 45(4), 339-369.

Logical Positivism/empiricism

- Collective development
 - Vienna Circle : Schlick, Carnap, Neurath...
 - Wittgenstein *Tractatus*
 - B. Russel
- Total ban of Metaphysics=> meaningless
- Logic + empirical confirmation
 - No *a priori* synthetic judgment
 - Only *a priori* analytic judgment + *a posteriori* synthetic judgment
 - Problem of logical positivism : describing adequately the world.
 - “Whereof one cannot speak, thereof one must be silent” (Wittgenstein)
- Logical empiricism: deduction (with rules of logic/mathematics viewed as a formal language) + empirical confirmation/verification
 - Verifiable statements: “the apple is on the table”
 - Unverifiable statements: the spirit is the principle of the world

References

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- Nietzsche, F. 1873. *On Truth and Lie in an Extra-Moral Sense*.