UCLouvain

FIAL
Un éventail de formations, une multitude d'horizons

Carnap et Popper

LFILO2602 – Philosophie des sciences
séance 1

Présentations

Bienvenue !

Site web du cours

Je *déteste* Moodle. Visitez donc :

https://charlespence.net/fr/courses/lfilo2602/

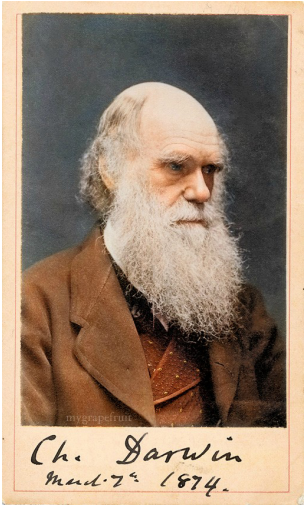
(ou juste https://charlespence.net/, puis cliquer « Cours, » puis notre cours.)

Lectures

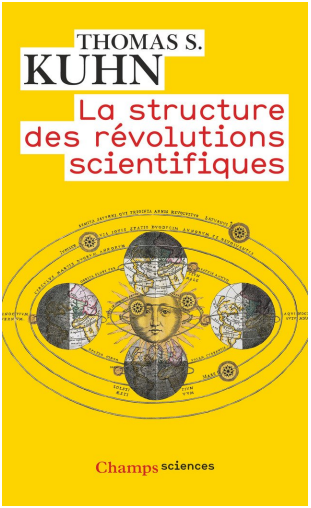
Presque toutes:

https://readings.charlespence.net/

Mot de passe



Sauf


THOMAS S.
KUHN
La structure des révolutions scientifiques
Champs sciences

Détails administratifs

- **Consultez** le syllabus avant de faire les lectures !
- Évaluation :
  - 60 %: travail final écrit
  - 40 %: présentation orale

Langue

Pour ce cours, la version anglophone alterne avec la version francophone chaque année. Évidemment, cette année, vous êtes dans la version française.

Presque toute la lecture est en anglais, car vous lisez les sources primaires.

And the course is “English-friendly,” which means that you are free to write your final work or ask questions in English!

Sujets

Une « vue d'ensemble approfondie. » Quoi ?

- L'histoire de la philosophie des sciences : Carnap, Popper, Feyerabend, Hanson Kuhn
- Questions spécifiques:
  - Explication scientifique
  - Réalisme scientifique
  - La science et l'éthique
  - Philosophie de la science féministe

Rudolf Carnap (1891–1970)

Ernst Mach (1838–1916)

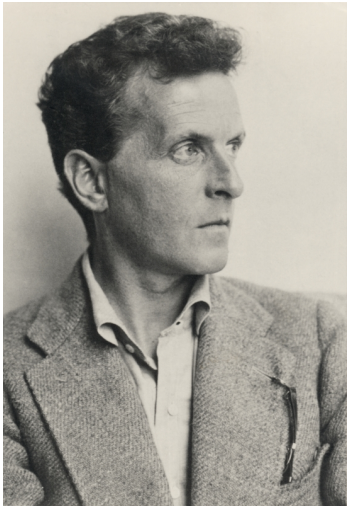
Mach, *L'Analyse des sensations* (1914)

Les couleurs, les sons, les températures, les pressions, les espaces, les temps, etc., forment entre eux des connexions multiples et variées, et ils sont eux-mêmes associés à des états d'âme, des sentiments et des volitions. De ce réseau émerge ce qui est relativement plus solide et plus stable, qui s'imprime dans la mémoire, et s'exprime dans la langue.

Mach, *L'Analyse des sensations* (1914)

> Se manifestent tout d'abord, comme étant relativement plus stables, parce qu'ils sont liés (fonctionnellement) au temps et à l'espace, les complexes de couleurs, de sons, de températures, etc., de sorte qu'on leur attribue des noms particuliers, et qu'on les désigne comme des corps. En aucun cas, toutefois, ceux-ci ne sont absolument stables. (ch. 1)

Ludwig Wittgenstein (1889–1951)



Wittgenstein, *Tractatus* (1921)

La méthode correcte en philosophie consisterait proprement en ceci : ne rien dire que ce qui se laisse dire, à savoir les propositions de la science de la nature – quelque chose qui, par conséquent, n'a rien à faire avec la philosophie –, puis quand quelqu'un d'autre voudrait dire quelque chose de métaphysique, lui démontrer toujours qu'il à omis de donner, dans ses propositions, une signification à certains signes.

[…]

Sur ce dont on ne peut parler, il faut garder le silence.

The Rejection of Metaphysics

> Philosophers have ever declared that their problems lie at a different level from the problems of the empirical sciences. Perhaps one may agree with this assertion; the question is, however, where one should seek this level. The metaphysicians wish to seek their object *behind* the objects of empirical science; they wish to enquire after the essence, the ultimate cause of things. But the logical analysis of the pretended propositions of metaphysics has shown that they are not propositions at all, but empty word arrays, which on account of notional and emotional connections arouse the false appearance of being propositions. (p. 5)

Philosophy *as* philosophy of science

> [W]e must take a *step back and take science itself as the object. Philosophy is the theory of science*.... [Unlike psychology or sociology of science, p]hilosophy deals with science only from the *logical* viewpoint. *Philosophy is the logic of science,* i.e., the logical analysis of the concepts, propositions, proofs, theories of science.... (p. 6)

Philosophical Proposals

[A] philosophic theorem…can be meant in different ways:

A. As *Assertion;* e.g.,

1. In the language of science available today (or a part of it: of physics, biology, …) such and such holds.
2. In every language (or: in every language of such and such a nature) such and such holds.
3. There is a language for which such and such holds.

Philosophical Proposals

B. As *Proposal;* e.g.,

1. I propose to build up the language of science (or of mathematics, of psychology, …) so that it acquires such and such properties.
2. I wish (along with other things) to investigate a language which possesses such and such properties. (pp. 14–15)

Special Sciences

- **Mathematics:** “questions of the syntax of mathematical language…as of a part language of the language of science” (p. 17)
- **Physics:** “the problem of the verification of physical laws… the problem of induction… the problem of the finitude or infinity and other structur[al] properties of time and space… the problem of [causality]” (p. 18)

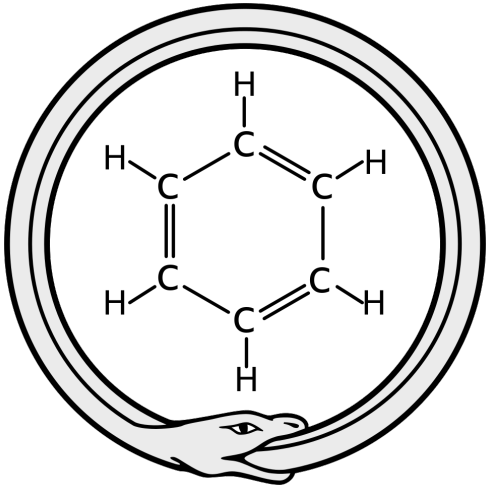
Special Sciences

- **Biology:** “Can the concepts of biology be defined on the basis of those concepts of physics” (reductionism)? “Can the laws of biology be derived from the physics of the inorganic” (vitalism)? (p. 18)
- **Psychology:** “Can the concepts of psychology be defined on the basis of the concepts of physics” (reductionism)? “Can the laws of psychology be derived from those of physics” (the problem of mind)? (p. 18)

Some Consequences

- Separation of the “context of discovery” and the “context of justification”
  - Entirely separated from the history of science
- Emphasis on structure of scientific arguments
  - Later in the course: formal structures of explanation
  - Confirmation, inductive logic
- Complete lack of attention to ethics and values in science
  - “Ethics” as a subset of “metaphysics”

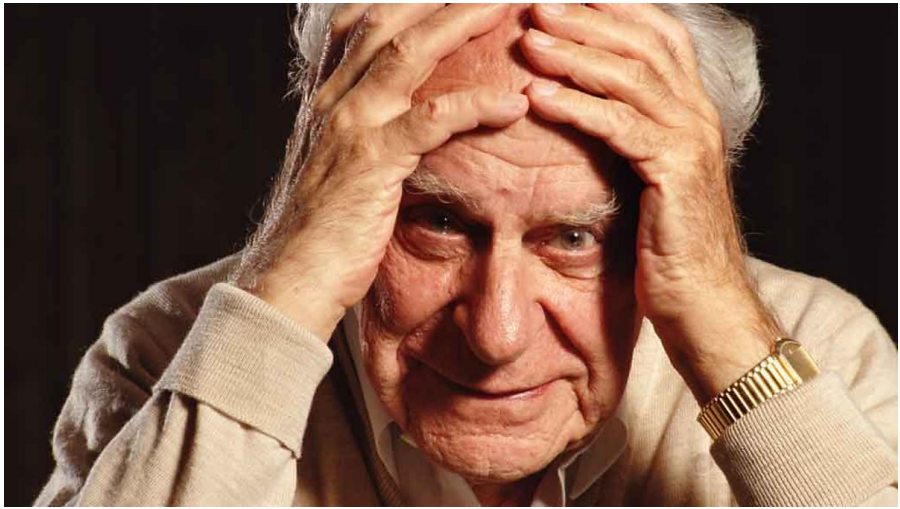
Kekulé's Benzene Ring



Some Consequences

- Separation of the “context of discovery” and the “context of justification”
  - Entirely separated from the history of science
- Emphasis on structure of scientific arguments
  - Later in the course: formal structures of explanation
  - Confirmation, inductive logic
- Complete lack of attention to ethics and values in science
  - “Ethics” as a subset of “metaphysics”

Karl Popper (1902–1994)



Démarcation

> “When should a theory be ranked as scientific?” or “Is there a criterion for the scientific character or status of a theory?” (3)

Démarcation

Des cas difficiles :

- l'astrologie
- l'alchimie
- pour Popper :
  - la lecture marxiste de l'histoire
  - la psychanalyse freudienne
  - la psychologie individuelle d'Adler

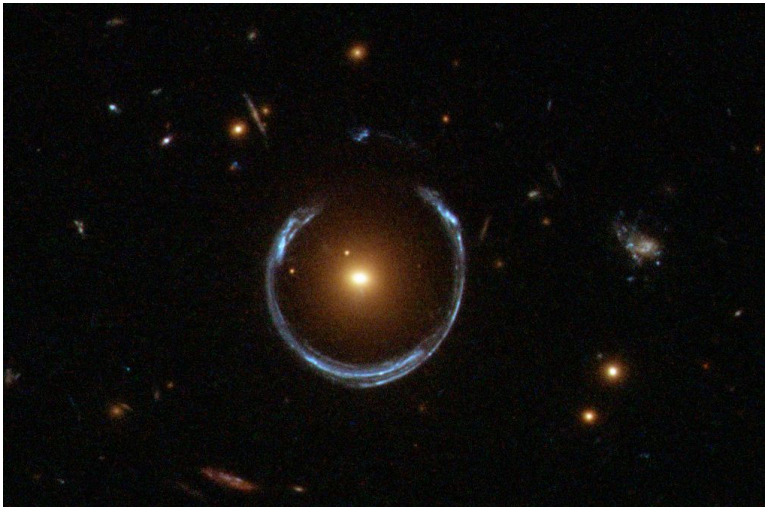
Réponses classiques

- une « méthode inductive »
- une « approche empiriste »

Le problème

These theories appeared to be able to explain practically everything that happened within the fields to which they referred. The study of any of them seemed to have the effect of an intellectual conversion or revelation, opening your eyes to a new truth hidden from those not yet initiated. Once your eyes were thus opened you saw confirming instances everywhere: the world was full of *verifications* of the theory. (5)

Une expérience cruciale



Une expérience cruciale

> Now the impressive thing about this case is the *risk* involved in a prediction of this kind. If observation shows that the predicted effect is definitely absent, then the theory is simply refuted. The theory is *incompatible with certain possible results of observation* – in fact with results which everybody before Einstein would have expected. (6-7)

Conjectures et réfutations

> This, I believe, is the true theory of knowledge (which I wish to submit for your criticism): the true description of a practice which arose in Ionia and which is incorporated in modern science (though there are many scientists who still believe in the Baconian myth of induction): the theory that knowledge proceeds by way of *conjectures and refutations*. (Popper 1963, 205)

Falsificationnisme

1 — It is easy to obtain confirmations, or verifications, for nearly every theory – if we look for confirmations.

Falsificationnisme

4 — A theory which is not refutable by any conceivable event is non-scientific. Irrefutability is not a virtue of a theory (as people often think) but a vice.

5 — Every genuine *test* of a theory is an attempt to falsify it, or to refute it. Testability is falsifiability; but there are degrees of testability: some theories are more testable, more exposed to refutation, than others; they take, as it were, greater risks. (7)

Falsificationnisme

7 — Some genuinely testable theories, when found to be false, are still upheld by their admirers – for example by introducing *ad hoc* some auxiliary assumption, or by re-interpreting the theory *ad hoc* in such a way that it escapes refutation. Such a procedure is always possible, but it rescues the theory from refutation only at the price of destroying, or at least lowering, its scientific status. (7)

Falsificationnisme

One can sum up all this by saying that *the criterion of the scientific status of a theory is its falsifiability, or refutability, or testability.* (7)

Quelques autres points

- les théories non-scientifiques
- le choix entre des théories falsifiables
- les fondements épistémologiques