Part II

Nature and Structure of Scientific Theories

Chapter 4

The old "received view": Logical Empiricism

4.1 Introduction

History of philosophy of science in the 20th century:
- Logical empiricism – from the 30's to the 60's – motivation, complexity of the movement, failure
- The historical turn in the 60's: next chapter!

4.2 Boyd: Logical Empiricism: the project and the challenge

Boyd's main point : Boyd introduces Logical Empiricism through what Boyd takes to be (1) the main project (the elimination of metaphysics through the rational reconstruction of theories) and (2) the main challenge (to give an account of the theory dependence of most of scientific method).

Basic Notions : Boyd provides us with a few clarifications:

- Inference
  - deductively valid
  - inductive

- Empirical equivalence
- Analytic / Synthetic distinction

The project of Logical Empiricism – The elimination of metaphysics through the rational reconstruction of theories

- Logical Empiricism = Empiricism + Logic – logical analysis of language

- Verificationism

    1. Verifiability theory of meaning: The meaning of a statement
       = the circumstances under which one would be justified to take the statement as true
       = set of verification procedures
    2. Knowledge empiricism: All synthetic knowledge is empirical knowledge. The only acceptable evidence is empirical evidence.

- Consequences:

* A synthetic statement with no empirical consequences is meaningless

* Two empirically equivalent synthetic statements possess the same meaning

- Consequence for metaphysics: any metaphysical content is eliminated as meaningless

Example: Theism vs Atheism

⟶ *Note that this applies to scientific theories as well !!! Example: Atomism. Within Logical empiricism, there is no knowledge of the unobservable!!!*

The Challenge – Theory Dependence vs Linguistic Conventions

- The main problem: scientific statements make sense only within a theoretical framework. It seems that there is no statement which contains only observable terms. All scientific talk is "theory laden". E.g.: measurement procedures

- The main tendency of Logical Empiricist is to try to reduce theoretical considerations to linguistic conventions. E.g.: Carnap and the law-cluster theory of meaning of theoretical terms, Causal relations

Conclusion : So, according to Boyd, logical empiricism can be seen as the project to clean up philosophy from its metaphysical – confused – content thanks to a commitment to radical empiricism and a form of logicism. Observation and logic is all we should need and use if we want to avoid to get lost in endless, meaningless controversies. The main challenge is the distinction between observational and theoretical terms. There might be no term which is "metaphysics-free".

4.3 McGuire: Rational Reconstructions

McGuire's main point : McGuire gives us more details about where the verificationist thesis comes from. Logical empiricism does not confine itself to criticizing metaphysical theories. A more positive is to offer a rational reconstruction of knowledge, which ultimately is supposed to correspond to the fundamental structure of the world. We thus gain in understanding of the structure of the world.

Motivation: same as before: economy of epistemic and ontological commitments and a reduction of the possibility of error and confusion – in particular, elimination of pseudo-problems.

Logical Constructivism – rational reconstruction of knowledge

Logical Constructivism: reductionism + logic: "less fundamental entities can be reduced, by the power of the logical language, to a privileged constructive basis without loss of meaning. " (5)

Examples:

- Russel aimed to show that both ordinary physical objects and unobservable entities can be constructed as complexes of sense data.

- Carnap: "constitutional system" constituted by "constitutional definitions" – logical reductions of concepts to some basic concepts. Basis: phenomenalist first, physicalist later

Logical Atomism, Empiricism, and the unity of science – the metaphysical side of the view

Metaphysical Thesis: the structure of the world corresponds to the structure of the ideal language in which the rational reconstruction of the world is formulated.

Which language? phenomenalist vs physicalist

- Russel: The foundation of knowledge is the knowledge of sense data, which knowledge by acquaintance – by contrast to knowledge by description. The structure of the world / language is a truth functional structure: molecular propositions are truth functions of atomic propositions.

- Carnap: protocol sentences. Neurath convinced him to shift from a phenomenalist language to a physicalist one – intersubjective and universal.

A self-crititcal movement: several modifications of the view

Conclusion – The view faces severe problems (account of generality, failure of the distinction between observational and theoretical terms etc.); many attempts have been made to salvage the core principles; but the view has been finally abandoned by the community of philosophers. It is a tough job to be a thorough empiricist . . .

4.4   Schlick: 'Positivism and Realism'

Schlick's problem – Schlick aims to clarify what positivism is. More precisely, to clarify the status of positivist principles

- Positivism defined negatively: anti-metaphysics

- More positively, it is often taken that one of the core elements of positivism is:

1. the rejection of the existence of some "transcendent reality" beyond the appearances;

2. the acceptance only of the existence of the "given".

The problem is that this seem to be nothing but another metaphysical claim. In particular, the project of positivism appears to be inconsistent if the "given" in the statement above is understood as it is within either solipsistic or interpersonal idealism.

Schlick's thesis : Any criticism of the type above assumes the viability of the distinction between the inner and the outer worlds and the meaningfulness of the question of the existence of the external world. But, Schlick's argument goes, it is a pseudo-problem.

⟶ In making the verificationist theory of meaning the core claim of positivism, Schlick hopes to dispel the objection that logical positivism is committed to a form of anti-realism.

Verificationist theory of meaning – The first step of Schlick's argument is to defend the verificationist theory of meaning

- The view:

    Theory of meaning: the meaning of any proposition consists in this alone that it expresses a particular state-of-affairs which can obtain or not.

    "To state the circumstances under which a propostion is true is the same as stating its meaning, and nothing else." (41)

    Logical, not physical testability

- Schlick's Argument:

    - Schlick claims that the verificationist theory of meaning is compatible with both common sense and common scientific practice. E.g. Einstein on time

    - Answer to the objection that there is more to the meaning of a proposition than the conditions of verifications:

    1. this is where (bad) philosophy starts, and where good physics ends;

    2. the meaning of a proposition is not identified to a single isolated experience but to infinitely many experiences of the same type – this is Schlick's ways around the problem of phenomenalism vs physicalism;

    3. such additional meaning is not "stateable" or communicable in any way – E.g. the difference in color experience between two consciousnesses

The question of the existence of the external world : The second step of Schlick's argument consists in applying his theory of meaning to the question of the existence of the external world

- What does the proposition 'the external world exists' mean?
    - Logical analysis: Existence is not a property

- Existential claims are claims about lawful connections of experiences

Does it mean that only our experiences exist – by contrast to the objective, mind-independent, reality?

- Schlick's answer:

  1. Under the verificationist theory of meaning, the claims that 'a content of consciousness exists', and that 'a physical object exists' possess the same meaning.

  The proposition 'a content of consciousness exists" is empty of meaning unless it contains a describable class of experience by which are specified the circumstances under which the proposition is true or false. E.g. Descartes' cogito is meaningless

  2. This question makes sense only under the assumption that there is the term "external world" can have another meaning than empirical reality. Both common sense and good science restrict themselves to the notion of empirical reality. The philosophical notion of external world as unknowable things in themselves is devoid of meaning.

- Schlick's conclusion on the meaning of the "external world": besides the meaning it has for both common sense and good science, it could mean:

  - either a class of describable psychological experiences;

  - or nothing communicable.

  The view of the opponents of the logical positivists is then either the same as the one of the logical positivist (even if the opponent is not aware of it), or simply unacceptable because devoid of meaning.

Schlick's conclusion : Consistent empiricism does not deny the existence of the external world:

"The empiricist does not say to the metaphysician: 'Your words assert something false', but 'Your words assert nothing at all!' He does not contradict the metaphysician, but says: 'I don't understand you'."(54)

Logical empiricism is thus not committed to any form of anti-realism.

4.5   Conclusion

- Logical Empiricism:

  1. Goal: distinguish pseudo science, eliminate the pseudo problems of metaphysics

  2. Method: logical analysis of language – theory of meaning

  3. Philosophical orientation: empiricism

  Main challenge: meaning of theoretical terms

- Problems:

  1. Internal consistency

  2. Theoretical / observational language distinction

  3. Category mistake

4.6   Discussion Questions

1. Is the project of the logical / rational reconstruction of knowledge on the basis of atomic, observational, propositions: 1. feasible? 2. an appropriate account of scientific practice? (does it have to be?) 3. if not, what purpose can it serve?

2. On which basis could we make such reconstruction: phenomenalism (Russel), physicalism (Carnap), law-like statements (Schlick)?

3. Can logical empiricism be consistent when claiming that it will eliminate metaphysics?