# Chapter 7

# Principles of Empiricism

## 1. Introduction

One of the tasks of this volume is to provide a compact and serviceable statement of small-e empiricism. In anticipation of it, we should ask if there such a statement already in the existing literature on empiricism? Since empiricism has been a subject of discussion since antiquity, a thorough search of all statements is impractical.[1] We can, however, narrow down the time period in which a serviceable expression is most likely to be found. Prior to the early twentieth century, the psychological and logical senses of empiricism were not clearly distinguished. Since small-e empiricism concerns only the second logical sense, these earlier statements cannot serve without corrections. After 1980, the date of publication of van Fraassen's *Scientific Image*, the position he defended came to be identified as the standard empiricism. It was the position to which both advocates and critics of empiricism deferred. However, as I argued in an earlier chapter, this position is not so much an empiricism as a strict, inductive skepticism.

Synoptic statements of the foundations of empiricism in this intermediate period of the early to mid-twentieth century come in three versions that are summarized here. Although each has its place, we shall see that none matches the needs well enough to serve as a statement of small-e empiricism.

[1] One of the most successful surveys of different senses of empiricism is Bogen (2015). Of the many senses catalogued, the closest to present needs is (2015, §7, Bogen's emphasis): "5. *Two-term confirmation.* A scientific claim is credible only if it is confirmed by perceptual evidence, where confirmation is a special two-term relation between claim and evidence—the same relation in every case."

## 2. Source formulations

The versions that can be characterized as "*source*" formulations reflect most closely the traditional conception of empiricism. They are easy to find. Reichenbach, in his semi-popular *Rise of Scientific Philosophy* gave this formulation (1951, p. 75, Reichenbach's emphasis):

> [Ancient empiricists] insist that sense observation is the primary source and ultimate judge of knowledge, and that it is self-deception to believe the human mind to have direct access to any kind of truth other than that of empty logical relations. This type of philosophy is called *empiricism*.

Hempel (1951, p. 41) expressed the view in this way:

> The fundamental tenet of modern empiricism is the view that all non-analytic knowledge is based on experience. Let us call this thesis the principle of empiricism … .

Benjamin (1943, p. 13) has this version:

> … empiricism is not at all easy to define. A first approximation to a definition is a simple matter. Empiricism is that theory of knowledge which maintains that experience is the sole source and the sole guarantee of knowledge.

David Hamlyn's entry, in the then authoritative 1967 Edwards' *Encyclopedia of Philosophy* (Hamlyn, 1967, p.499), starts the entry on empiricism with:

> Empiricism is the theory that experience rather than reason is the source of all knowledge, and in this sense it is opposed to rationalism.

This "source" version is compatible with small-e empiricism but falls short in asserting too little. It is also compatible with Big-E Empiricism in so far as it does not exclude the possibility that sense experience alone is all we can know. The "source" language is compatible with less skeptical versions of empiricism. It suggests that experience provides something that feeds into wider knowledge. However, it falls short in not specifying the channel through which that something is conveyed.

## 3. Decision Formulation

A second version can be characterized as a "*decision*" formulation. It is most clearly included in Karl Popper's work and appears throughout his writing. The version in his *Logic of Scientific Discovery* is (2005, p. 20):

> … what may be called 'the fundamental thesis of empiricism'—the thesis that experience alone can decide upon the truth or falsity of scientific statements…

A slightly different version in Popper's later *Conjectures and Refutations* (1962, Ch. 1, §IX) replaces "truth" and "falsity" with "acceptance" and "rejection":

> … *the principle of empiricism* which asserts that in science, only observation and experiment may decide upon the acceptance or rejection of scientific statements, including laws and theories.

It is superficially similar to the "*source*" version. The differences, however, are not accidental. Popper has adapted the conception of empiricism to his falsificationism (described in an earlier chapter here). The "*source*" version allows for the possibility that deeper statements of theory in science are supported inductively by propositions expressing experience. It also leaves open the possibility that these deeper statements are found by some sort of stepwise inductive inference from experience. Both these possibilities are precluded by Popper's anti-inductivism. According to it, experience can relate to theory in narrow, specific ways. A prediction of the right sort may match experience, which corroborates the predicting theory; or the prediction may be deductively incompatible with experience, in which case the predicting theory in refuted. This limited relation is summarized in the "*decision*" formulation as "experience alone deciding upon…" Thus this "*decision*" version is too narrowly formulated to serve as an expression of small-e empiricism, since small-e empiricism endorses a rich use of inductive inference.

Similar verbiage to this "*decision*" version appears elsewhere in, for example, Wesley's Salmon's writing. He characterizes the "statement empiricism" of the logical positivists as (1985, p. 6):

> According to this doctrine, the sole basis upon which we are justified in affirming or denying factual statements is observational evidence. (This doctrine is tantamount, I believe, to the denial that there are synthetic *a priori* propositions.)

Subsequent discussion shows that Salmon did not share Popper's anti-inductive motivations. Salmon moderated the "*decision*" formulation with an admission of some form of inductive inference (p. 6):

> … assuming for the sake of argument (as I am doing and as van Fraassen does) that some rudimentary form of induction is available, we can support statements

(including empirical generalizations) about observable properties of observable entities.

## 4. Meaning Formulations

The third synoptic statement of empiricism is a "*meaning*" formulation and is most closely associated with the Vienna Circle and logical positivism. In their manifesto, the Circle characterizes what "essentially distinguishes recent empiricism and positivism from the earlier version that was more biological-psychological in its orientation." (Hahn et al. 1929, p. 306). It is a strict division of statements into the meaningful and the meaningless (pp. 306-307):

> … there is a sharp boundary between two kinds of statements. To one belong statements as they are made by empirical science; their meaning can be determined by logical analysis or, more precisely, through reduction to the simplest statements about the empirically given. The other statements, to which belong those cited above, reveal themselves as empty of meaning if one takes them in the way that metaphysicians intend.

In prefacing this formulation, the Circle offered examples ("cited above") of the sort of statements that they judge as meaningless:

> "there is a God",
>
> "the primary basis of the world is the unconscious",
>
> "there is an entelechy which is the leading principle in the living organism"

Carnap's (1936/37) "Testability and Meaning" provided a greatly elaborated version of this conception of empiricism through his definition of a "principle of empiricism" (1936/37, p. 33):

> It seems to me that it is preferable to formulate the principle of empiricism not in the form of an assertion—"all knowledge is empirical" or "all synthetic sentences that we can know are based on (or connected with) experiences" or the like—but rather in the form of a proposal or requirement. As empiricists, we require the language of science to be restricted in a certain way; we require that descriptive predicates and hence synthetic sentences are not to be admitted unless they have some connection with possible observations, a connection which has to be characterized in a suitable way.

This formulation requires specification of the ways that synthetic sentences are to be connected with experience. Carnap proceeded to elaborate four senses: "Requirement of Complete Testability," "Requirement of Complete Confirmability," "Requirement of Testability" and "Requirement of Confirmability."

Hans Reichenbach introduced his own development of this concept of empiricism, which he called at one time "a probabilistic empiricism." (1938, p. viii) to distinguish it from the earlier "logistic empiricism," as he called it (p. v). Reichenbach's version was distinguished by the prominence afforded to probabilities. Most distinctively, Reichenbach introduced a probabilistic conception of meaning through his two "principles of the probability theory of meaning" (p.54), which were discussed above in Chapter 3, Section 3.

This "*meaning*" principle of empiricism is least amenable to small-e empiricism. The focus on meaning has proven to be an adventurous aberration in the development of empiricism. It momentarily served the logical positivists well in so far as it enabled a trenchant response to any metaphysics that displeased them. The metaphysics could be dismissed abruptly as meaningless nonsense. Its severity proved self-defeating, however, since the verifiability principle itself could be subject to the same charge of meaninglessness.

## References


Benjamin, A. Cornelius (1943) "The Essential Problem of Empiricism," *Philosophy of Science*, **10** , pp. 13-17.

Bogen, James (2015) "Empiricism and After," Ch. 37 in P. Humphreys, ed., *The Oxford Handbook of Philosophy of Science.* New York: Oxford University Press.

Carnap, Rudolf (1936/37) "Testability and Meaning," *Philosophy of Scienc*e, **3**, pp. 419-471; **4**, pp. 1-40.

Hahn, Hans; Neurath, Otto; Carnap, Rudolf (1929) *Wissenschaftliche Weltauffassung* [by?] *der Wiener Kreis.* Wien: Artur Wolf Verlag; translated as *The scientific conception of the world: [by?] The Vienna Circle.* In M. Neurath & R. Cohen (Eds.), *Empiricism and Sociology*. Dordrecht: Reidel, 1973, pp. 298–318.

Hamlyn, David W. (1967) "Empiricism," pp. 499-505 in Paul Edwards, ed., *The Encyclopedia of Philosophy*. Vol. 2. New York: The MacMillan Co. & The Free Press.

Hempel, Carl G. (1951) “Problems and Changes in the Empiricist Criterion of Meaning,” R*evue Internationale de Philosophie*, **4**, pp. 41-63.

Popper, Karl (1962) *Conjectures and Refutations: The Growth of Scientific Knowledge*. New York: Basic Books.

Popper, Karl (2005) *Logic of Scientific Discovery*. 2nd ed. London: Routledge.

Reichenbach, Hans (1938) *Experience and Prediction*. Chicago: University of Chicago Press. First Phoenix edition, 1961.

Reichenbach, Hans (1951) *The Rise of Scientific Philosophy*. Berkeley and Los Angeles: University of California Press.

Salmon, Wesley (1985) “Empiricism: The Key Question,” pp. 1-21 in Nicholas Rescher, ed., *the Heritage of Logical Positivism*. CPS Publications in Philosophy of Science. Lanham, MD: University Press of America, Ltd.