Logical Positivism

The Comtean view of positivism dominated scientific thinking for almost a century. The introduction of the prefix ‘logical’ signalled a break with the classical Comtean model which had been made by the Vienna Circle, a group of philosophers, mathematicians and natural scientists that met regularly in Vienna in the 1920s and 1930s and whose manifesto – *The scientific conception of the world: the Vienna circle* – was published in 1929. The basis of logical positivism was a distinction between:

1. Analytic statements: a priori\* propositions whose truth was guaranteed by their internal definitions and connections. These constituted the domain of the formal sciences\*, logic and mathematics, which strictly speaking has no place in a Comtean model that required all scientific statements to rely on empirical verifications; and
2. Empirical or synthetic statements: statements about things of all kinds whose truth had to be established empirically through hypothesis testing. This ‘principle of verification’ was supposed to be the hallmark of the factual sciences, but it was soon challenged by Popper’s principles of FALSIFICATION\*. Instead of making every effort to prove a hypothesis, Popper believed that the scientist’s task was to try disproving it: if it stood up, then the hypothesis could be accepted, but only for the time being (see CRITICAL RATIONALISM\*).

These revisions provided empirical inquiry with a more secure basis than the classical Comtean model, and the ‘New Geography’ was readily accommodated within their framework.

Criticism of Positivism

The critique has involved an assault on four plans of positivist platform: empiricism, exclusivity, autonomy and universality.

*Empiricism*

The relationship between observation statements or sentences\* and theoretical statements or sentences\* has been shown to be much more problematic than positivism allowed. The belief that the facts could speak for themselves was called into question in several ways. The positivists made assumptions that through empirical experience we had an objective basis for evaluating scientific claims. Such empirical observation was acquired through observations. The basic empiricist view that our theories of nature must be grounded in sensory experience and there is a criterion to differentiate a class of observation sentences from the theoretical networks built upon them. These sentences could provide a neutral basis for testing different theoretical claims. However, the assumption that there is an objective set of observations that are neutral between theories has increasingly come under attack as several authors have argued that observation itself is theory laden. They maintained that what we perceive through senses is influenced by what we know, believe, or are familiar with.

*Exclusivity*

The assumption that the ‘objective’ methods of the natural science could be extended into the domain of the humanities and the social sciences to provide a self-sufficient and unitary system of inquiry has been challenged. On the one side, the application of qualitative methods showed the importance of recovering meanings, intentions and values as an essential moment in human geographical inquiry: ‘data’ could thus not reasonable be limited to the computational and enumerative. It would in any case be a mistake to think in terms of a simple binary opposition between the quantitative and the qualitative. It is possible to work with qualitative materials in thoroughly positivist ways and, equally, the rigorous use of quantitative methods can require a careful and critical understanding of the qualitative matrix in which they were embedded. The privileges accorded to the scientific method were thus comprehensively compromised, and the natural sciences – whose power and importance was not in question – came to be seen in new, ore complex and more interesting ways that nonetheless removed them from the pedestal on which positivism had placed them.

*Autonomy*

It was no longer possible to claim that science was (or should be) insulated from social life, offering ‘neutral’ and ‘value-free’ knowledge, and the embeddedness of scientific inquiry in social life was seen to require an explicit on the ethics and politics of human geography.

*Universality*

Even the natural sciences could be shown to be context-dependent in various ways, so that their findings become a precarious, negotiated achievement and not a given. The same applied *a fortiori\** to the humanities and social sciences and in consequence human geography has been obliged to recognize that explanations and understandings arrived at in one setting cannot be transferred to other settings without critical scrutiny and often substantial reconstruction.

Terminologies –

*a priori –*

* relating to or denoting reasoning or knowledge which proceeds from theoretical deduction rather than from observation or experience.
* in a way based on theoretical deduction rather than empirical observation.

*formal sciences –*

* is a branch of [science](https://en.wikipedia.org/wiki/Science) studying [formal language](https://en.wikipedia.org/wiki/Formal_language) disciplines concerned with [formal systems](https://en.wikipedia.org/wiki/Formal_system), such as [logic](https://en.wikipedia.org/wiki/Logic), [mathematics](https://en.wikipedia.org/wiki/Mathematics), [statistics](https://en.wikipedia.org/wiki/Statistics), [theoretical computer science](https://en.wikipedia.org/wiki/Theoretical_computer_science), [artificial intelligence](https://en.wikipedia.org/wiki/Artificial_intelligence), [information theory](https://en.wikipedia.org/wiki/Information_theory), [game theory](https://en.wikipedia.org/wiki/Game_theory), [systems theory](https://en.wikipedia.org/wiki/Systems_theory), [decision theory](https://en.wikipedia.org/wiki/Decision_theory), and [theoretical linguistics](https://en.wikipedia.org/wiki/Theoretical_linguistics). Whereas the [natural sciences](https://en.wikipedia.org/wiki/Natural_science) and [social sciences](https://en.wikipedia.org/wiki/Social_science) seek to characterize [physical systems](https://en.wikipedia.org/wiki/Physical_systems) and [social systems](https://en.wikipedia.org/wiki/Social_system), respectively, using empirical methods, the formal sciences are language [tools](https://en.wikipedia.org/wiki/Tools) concerned with characterizing abstract structures described by [symbolic systems](https://en.wikipedia.org/wiki/Sign_systems).

FALSIFICATION –

* The Falsification Principle was proposed by scientific philosopher Karl Popper. It proposes that for something to be scientific it must be able to be proven false. If things are falsifiable (able to possibly be proven false) then they can be used in scientific studies and inquiry.

CRITICAL RATIONALISM –

* Critical rationalism is a philosophy that holds that scientific theories and any other claims to knowledge can and should be rationally criticized, and (if they have empirical content) can and should be subjected to tests which may falsify them.

Observation statements or sentences –

* A statement that is not based on the truth of another statement and is, rather, taken from a direct observation is called an observation sentence. In order to understand the observation sentence, no previous knowledge is needed.

Theoretical statements or sentences -

* A statement that is based on the truth of another statement and is, rather, deductive in nature. In order to understand the theoretical statement, previous knowledge is needed.

*a fortiori –*

* used to express a conclusion for which there is stronger evidence than for a previously accepted one.
* denoting or based on a conclusion for which there is stronger evidence than for a previously accepted one.

**(P.S. – this is just a reading material and you can consult other books for the topic above. You may go through Majid Husain’s Evolution of Geographical Thought for easier language.)**