

PHIL 4233: Philosophy of Language

Prof. Funkhouser

Hempel, “Empiricist Criteria of Cognitive Significance: Problems and Changes”

1.

• According to “contemporary empiricism” a sentence is cognitively significant (meaningful) iff either:

(1) it is analytic or contradictory — in which case it is said to have purely logical meaning or significance — or else (2) it is capable, at least potentially, of test by experiential evidence — in which case it is said to have empirical meaning or significance.

◦ The testability criterion (clause (2) above) is in the spirit of operationalism and pragmatism. It has been used to call into doubt the meaningfulness of various metaphysical (and even scientific) hypotheses.

◦ Hempel accepts this account of meaningfulness, but admits that he has little optimism that rigorous distinctions between the conceptual and empirical, as well as between the meaningful and the meaningless, can be made. Our next reading, Quine’s “Two Dogmas”, provides support for this pessimism.

2.

• A “*condition of adequacy* for criteria for cognitive significance”: If a criterion yields the verdict that a given sentence is not cognitively significant, then it must also yield the verdict that any compound sentence (e.g., conjunction, disjunction, and negation) in which that sentence is a part (e.g., conjunct) also fails to be cognitively significant.

• Initial criteria for the cognitive significance of empirical sentences required that there be potential observations, and observation sentences, that either confirm or disconfirm the sentence.

observation sentence: “...a sentence — no matter whether true or false — which asserts or denies that a specified object, or group of objects, of macroscopic size has a particular *observable characteristic*, i.e., a characteristic whose presence or absence can, under favorable circumstances, be

ascertained by direct observation.”

verifiability requirement: “. . . a sentence is empirically significant if and only if it is not analytic and is capable, at least in principle, of complete verification by observational evidence; i.e., if observational evidence can be described which, if actually obtained, would conclusively establish the truth of the sentence.”

The sentence is necessarily true or false *given* the complete set of observation sentences.

◦ Hempel does *not* think that we need to be able to make the relevant observations in order for an empirical assertion to be empirically significant. Empirically significant assertions are testable *in principle*.

• 3 objections to the verifiability requirement:

1. Universal regularities and general laws fail this standard.
2. But the negation of a universal regularity can be so verified. So, the verifiability requirement does not meet the condition of adequacy.
3. Plus, disjunctions of cognitively insignificant sentences with cognitively significant sentences come out as cognitively significant by this criterion. But, again, this violates the condition of adequacy.

• An alternative criterion: *falsifiability*

falsifiability criterion: “A sentence has empirical meaning if and only if its negation is not analytic and follows logically from some finite logically consistent class of observation sentences.”

◦ This criterion falls prey to 3 objections that mirror those against the verifiability criterion.

3.

• New possibility: Cognitively significant sentences are those composed wholly of logically terms and/or terms whose “meanings must be capable of explanation by reference to observables exclusively.”

cognitively significant term: “Any term that may occur in a cognitively significant sentence.”

observation term: a term that is an observation predicate or names a macro-object.

- This proposal avoids the problems about the condition of adequacy that were raised against verifiability and falsifiability accounts (because cognitive significance is rooted in the vocabulary).

- What is the relevant logical connection between an empirical (cognitively significant) term and its observation terms, though?

1. Definability: A cognitively significant empirical term must be definable in terms of its observations terms.

- But there are lots of counter-examples to this requirement. One class of examples concerns disposition terms — e.g., ‘fragile’. We would need a theory of counterfactuals in order to have any hope of handling this worry about disposition terms. (Perhaps we have such a theory now — e.g., David Lewis’s).

- The Carnap method of reduction sentences leaves it undetermined whether a disposition term applies to an object that is not in the test conditions.

2. Reducibility: “Every term with empirical significance must be capable of introduction, on the basis of observation terms, through chains of reduction sentences.”

- But this does not account for terms that are theoretical constructs — e.g., ‘having length (square root of 2)’.

- See Hempel’s summary of theory formulation.

- Such a theory becomes a *scientific* theory only after certain terms in it are given an empirical interpretation. The empirical interpretations of terms should take into account holistic theoretical considerations.

- 4.

- Moral from the objections given in section 3: “Theory formation and concept formation go hand in hand, neither can be carried on successfully in isolation from the other.”

- This shows that it is only whole theoretical systems that can be attributed with cognitive significance.

isolated sentences: sentences of a system that “are neither purely formal truths or falsehoods, demonstrable or refutable by means of the logical rules of the given language system; nor do they have any experiential bearing.”

Q: Can a cognitively significant system contain any isolated sentences?

- First-run hypothesis: “A theoretical system is cognitively significant if and only if it is partially interpreted to at least such an extent that none of its primitive sentences is isolated.”

- Objection: But this rules out acceptable sentences, such as S1. Also, logically equivalent formulations of a system may differ in regards to having cognitive significance.

- Second-run hypothesis: “A theoretical system is cognitively significant if and only if it is partially interpreted to such an extent that in no system equivalent to it at least one primitive sentence is isolated.”

- Hempel ends on this pessimistic note: No sharp criteria can be admitted, and cognitive significance admits of degree. Note the 4 characteristics that Hempel provides (a–d).