

Caloric: Centre or Offstage?

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The pessimistic induction argument, most often associated with Larry Laudan, is now widely considered to be one of the main obstacles for realism. Put simply, the argument holds that since past predictively successful scientific theories have eventually been discarded, we have inductive evidence that our current theories will also be discarded one day. More precisely, Laudan undermines the inference from the explanatory and predictive success of a theory to its approximate truth and referential success. This paper criticises a particular kind of realist reply to Laudan.

Stathis Psillos, an avowed realist, argues against Laudan that we must examine whether the abandoned theoretical terms were really central to the theories they are customarily associated with. If they were not central, then their eventual abandonment is inconsequential to the preservation commitments of the scientific realist, for their referential failure does not undermine the success, and presumably the truth content, their theories enjoyed. What makes a term central? A term is central, says Psillos, if it satisfies the following three conditions:

- (A) It appeared in a genuinely successful theory.
- (B) Its descriptions *were* indispensable in the derivation of predictions and explanations of phenomena.
- (C) It was thought of by the supporters of the theory as denoting a natural kind.

Caloric, argues Psillos, is not a central term, for it fails on account of B and C.

Taking as my starting point objections from two of Psillos' critics, i.e. Kyle Stanford and Hasok Chang, I indicate that his arguments by and large fail. On the basis of Psillos' own definition of what counts as central, the caloric posit was neither doubted by leading figures of the theory as central, nor was it entirely dispensable in deriving explanations. Indeed, what Psillos hoped to achieve by this strategy is unrealistic, for his account – in particular, conditions B and C – is flawed. First, scientists' epistemic attitudes towards a given theoretical term cannot always be trusted. A glaring example from the given historical context is the trust scientists placed – or, should I say misplaced – in the hypothesis of the materiality of heat. A more reliable factor seems to be whether the term is really indispensable in producing predictions and explanations. Second, by being relative to a given epoch, Psillos' criterion of indispensability is vulnerable to Chang's objection that the caloric posit and its properties were indispensable-*at-the-time*. I argue that indispensability must be something fixed by the relationship between the theory, the relevant auxiliaries, and the evidence, not something dependent on the whims of scientists of a particular era, as Psillos maintains.