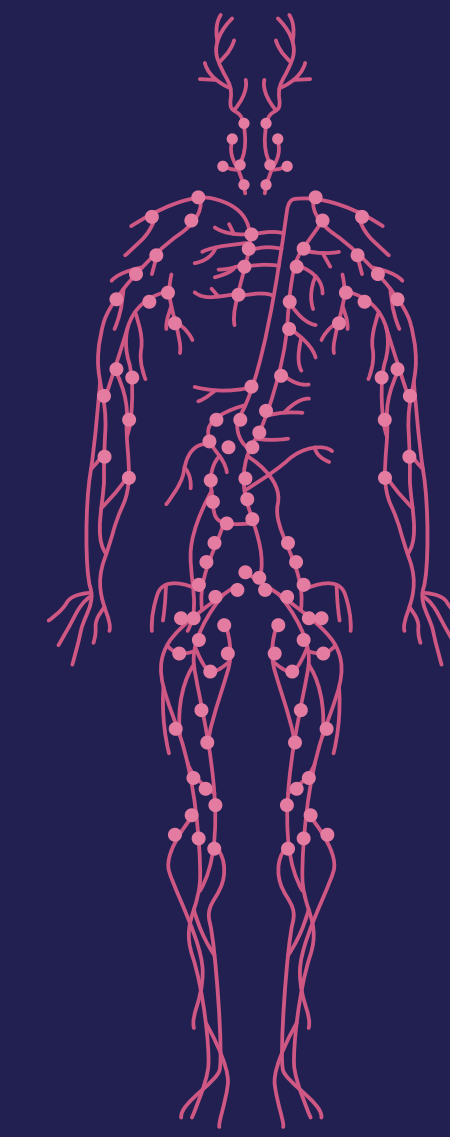


CAN THERE BE A GOOD SCIENTIFIC EXPLANATION THAT NOBODY UNDERSTANDS?



Explanation and Truth

Anti-psychologistic accounts emphasize accuracy as a condition for successful explanation.

“Good mechanistic explanatory models are good in part because they correctly represent objective explanations. Mere how-possibly models describe the wrong cases or wrong mechanisms, whereas how-actually models get it right.”
-Craver (2014)

There **can** be scientific explanations that nobody understands. What’s important is that explanations are **true**.

Surveyed scientists disagree...

“The accuracy hypothesis suggests that high-science participants should be more likely to judge something an explanation when it is accurate than when its accuracy is in question or when it is false. This pattern of results did not obtain.”
-Braverman et al. (2012)



Consider: how seriously should philosophers take this sort of data?

Representational

Sometimes we say that a **model, representation, or theory** explains something.

Hodgkin & Huxley’s model explains the action potential of the neuron.

Darwin’s theory of natural selection explains the diversity of animal life.

Ontic

Sometimes we say that **facts in the world** explain something.

The car’s faulty battery explains why it won’t start.

Global warming explains rising sea levels.

One thing explains the other, even if nobody knows or understands this.

Communicative

Sometimes we say that **people** explain something.

The teacher explains ionic bonds to her student.

The research team’s presentation explains sea star wasting disease.

If understanding isn’t conveyed, then nothing is explained.

Explanation and Understanding

Psychologistic accounts emphasize the tractability of explanations by human scientists as a condition for successful explanation.

“One of the real virtues of the functional perspective is that it provides a framework for judgments regarding the appropriateness of particular explanatory patterns by assessing the fit between patterns and goals.”
-Woody (2015)

There **cannot** be scientific explanations that nobody understands.

Surveyed scientists agree.

“Professional scientists were less likely to remember a model as an explanation in the Potentially Intelligible and Never Intelligible conditions than in the Intelligible condition... this pattern of results is precisely what one would expect if the intelligibility hypothesis were true of scientists.”
-Waskan et al. (2014)

Debate: Concepts or Dimensions?

Craver (2014) claims that the above three modes of talking about explanation describe different concepts of explanation. Thus, it is a mistake to think that the representational, ontic, and communicative explanations share success conditions.

Hochstein (forthcoming) disputes this approach, arguing instead that the three modes display dimensions along which we can evaluate a single explanation. A high score on one axis might sometimes come at the cost of a low score on another.

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