Predictive Processing and the Boundaries of Cognitive Extension

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Abstract

Predictive processing accounts of cognition are sometimes read as offering a principled criterion for extended cognition: whatever minimizes prediction error across an agent-environment coupling counts as part of the cognitive system. We argue this reading conflates two distinct notions of boundary – functional and mechanistic – and that predictive processing, properly understood, is neutral on the extended mind thesis rather than a vindication of it.

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1 Introduction

The predictive processing framework has been enlisted on both sides of the extended cognition debate. Proponents of extended cognition read the framework's emphasis on agent-environment coupling as support for their view; critics read the same framework as committed to a boundary drawn firmly at the skull. We argue both readings overstate what the framework itself entails.

2 Two Notions of Boundary

A *functional* boundary is drawn wherever a process contributes to minimizing prediction error; a *mechanistic* boundary is drawn wherever the physical implementation of that process actually resides. Predictive processing, as a computational-level theory, speaks directly only to the former.

3 Why Extension Does Not Follow

Table 1 summarises the two readings and the boundary criterion each actually licenses.

Table 1: Two readings of predictive processing and their boundary criteria.

Reading	Boundary criterion	Licenses extension?
Extended-mind reading	Functional	Yes, if argued independently
Internalist reading	Mechanistic (assumed)	No, but not from PP alone

Neither reading follows from the predictive processing framework by itself: functional continuity across a boundary is compatible with, but does not entail, that the mechanisms realizing the relevant computations extend beyond the organism.

4 Conclusion

Predictive processing is best read as neutral on the extended mind thesis. Settling the extended cognition debate requires an independent argument about mechanism, not a computational-level theory of prediction error minimization alone.