

Cognitive coherence and resource rationality: rethinking resistance to belief change

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Abstract

Human resistance to conceptual change is not a cognitive anomaly but a rational process rooted in the complexity of belief systems. This review argues that such resistance reflects an optimization process balancing coherence, accuracy, and computational cost. Beliefs exist within interconnected networks, making revision challenging, as changes to one belief necessitate broader adjustments. The Duhem-Quine thesis highlights how auxiliary hypotheses shield theories from refutation, a mechanism underexplored in cognitive science. Recent evidence suggests that individuals employ ad hoc explanations to preserve beliefs when faced with contradictory evidence, mirroring Neurath's ship analogy of gradual belief revision. Bayesian models suggest that belief updates occur incrementally, with adjustments to peripheral beliefs before structural changes occur. This review also reassesses findings on cognitive dissonance and confirmation bias, arguing for a more nuanced, adaptive perspective on belief revision. By framing resistance as a rational strategy, this work contributes to ongoing debates on the dynamics of conceptual change.