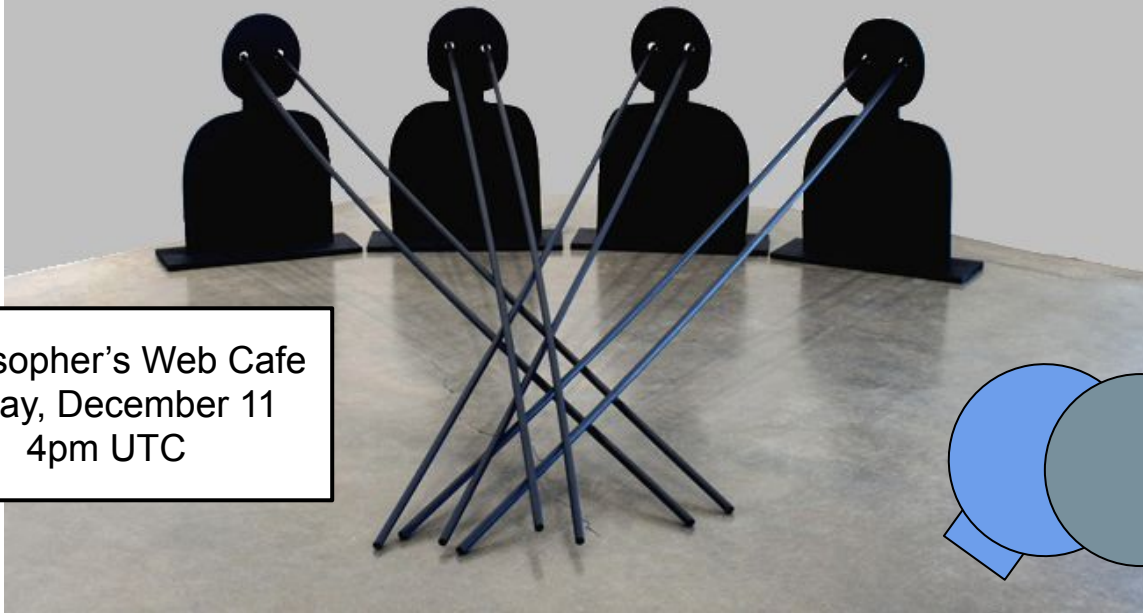


Observer-dependent Models



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In many areas of science and philosophy, observers are seen as an integral part of understanding the natural world. Aside from a pedagogical role, observers are seen as less important in computational forms of inquiry. In this talk, I will reconsider a role for the observer in computational models as fully integrated with the agent. perhaps more fundamentally, causal outcomes and system dynamics are seen to be contingent on observers, while empirical observations themselves are dependent upon the actions of observers. As this is an article of faith in some interpretations of quantum mechanics, we extend this to algorithmic systems with a combinatorial solution space. The role for observers in computational and empirical investigations is established superficially using a number of concepts, including cybernetics, embodiment, and perceptual information processing. Then we will be introduced to more concrete examples of observer-oriented computational agents, such as observer-emitter systems and viewpoint networks. Finally, we will discuss how this approach goes beyond constructivism to consider multiple observers, multiple perspectives (relativism), and how they affect the interpretation of results.

