

Abstract: When agents entertain distinct perceptions of the world, communication between them will be imprecise. In particular, under differential awareness, an event as described by one agent may find no exact analog in another agent's subjective understanding. Within this context, it is natural to consider a syntactic model where the agent's understanding of the world is embodied by a language (i.e., a set of interconnected descriptions of the world). Communication between agents can therefore be understood as a process of translating statements from one language to another. This paper asks how such a translation might arise and how it might be identified by an observer. We show that even if translation between languages is consistent, i.e., preserves logical implications, it need not imply the existence of a joint state-space that embeds the individual models of the two agents. We expose why this failure occurs and provide an axiom that ensures the existence of a joint state spaces which embeds the individual state-spaces.