Though coordination games are a powerful framework, they cannot account for many important phenomena in coordination and communication. Moreover, most models of communication do not bear on coordination as a general process, but presuppose coordination between agents that sets up the signaling systems, which then do the communicative work. Among many problems, this requires a divide between language acquisition and use, limits the flexibility of communicative processes, and fails to capture how we can infer things about others’ mental states.

In a coordination model, we want to account for how people’s inferences about each others’ mental states and the reasons behind their production of signals and actions relates to communication. We also wish to determine a minimum interaction required for coordination between individuals and to model the maximum amount of misalignment between thoughts and intentions that is tolerable when coordinating.

We treat both the Wittgenstinian view that coordination is a function on actions, as well as a more cognitively inspired view that coordination, though expressed and viewed in the language of actions, is fundamentally a cognitive phenomenon that operates on “mental states”. In order to accommodate this later perspective, we use tools from generalization theory in the artificial intelligence realm and counterfactual analysis from the philosophical realm to articulate both what it means to successfully coordinate in a given instance and what it means to be in coordination in general.

Just as in coordination game models, we do not put constraints on the form of speech acts, nor do we provide a theory of linguistic meaning. Instead, we treat speech acts simply as signals. However, in contrast to coordination games, our model does not claim that signals have an explicit meaning that has been previously coordinated on (wither directly or through coordinating on abstract structures such as grammars), but that signals guide inferences about the mental states of others and therefore the likelihoods of future actions that they might produce. We argue that this view can accommodate the highly regular communicative functions of languages well-established in a community and the ad-hoc coordination and communication we observe all the time. Additionally, we capture mental states without representational claims, but in what we will prove to be a fully general Bayesian framework. In order to argue for this nonrepresentationality and generality, we make use of some proofs from generalization theory as well as demonstrate a few cases of how this form of representation maps cleanly onto others.

We also provide examples of coordination scenarios and use them to illustrate the principles of the theory/model at work.