

## GENERATING KIND CONCEPTS

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Lexically expressible concepts provide intricate and abstract perspectives from which to think and talk. For example, the concept DOG provides a perspective from which to think and talk about a particular thing as one of indefinitely many things that are of the same kind. In taking this perspective, we also think of some of the properties of the instance to be true of it by virtue of its being the kind of thing it is, and thus explainable by reference to the kind of thing the instance is (e.g., That has four legs because it is a dog). These properties are also understood to be properties that instances of the kind are supposed to have, and instances that lack them are judged to be defective (e.g., A dog with three legs is not merely atypical, but defective). Furthermore, the concept DOG also provides a perspective from which to think and talk about an abstract entity -- the kind dog, as such (e.g., Dogs evolved from wolves).

How are such abstract and intricate perspectives acquired? The learning problem is further complicated by fact that a wide variety of abstract perspectives are provided by even the simplest concepts. Thus, DOG, NECKLACE, BOOK, PAPERCLIP, POEM, OBITUARY, ANIMAL, ROOK, FURNITURE and WOOD each belong to a distinct class of concepts that provide a distinct set of perspectives. Given the abstractness, intricacy and variety of perspectives provided by even the simplest lexically expressible concepts, how do children acquire these perspectives? Furthermore, insofar as concepts in animals are not perspectival in this way, the perspectival nature of lexically expressible concepts also raise an evolutionary puzzle.

If there were a formal system that could generate the perspectives provided by a wide range of concepts it could constrain the perspectives learners consider when forming a new lexically expressible concept and provide a partial solution to the learning problem. Such a system would also ameliorate the evolution problem by replacing the need to explain how a large variety of perspectives evolved with how the generative system evolved. In this talk, I provide a fragment of a system for generating the perspectives provided by a large range of kind concepts. On the approach taken here, lexical concepts are assumed to have formal structures and the formal structure of the concepts are assumed to be intrinsic to the type of meaning they have as the formal structure is understood to specify the perspectives provided by the concept.

Ontological categories provide the most general perspectives from which to think and talk about things. Furthermore, many of children's first words appear to be names for kinds of things (e.g. bottle) and stuffs (e.g. juice) suggesting the early availability of the kind perspective. What are the formal characteristics of the mechanisms that allow us to think of things as instances of kinds and of kinds, as such?

Recent research suggests that kind concepts are represented via a generative mechanism and that this mechanism has a number of components whose values can be specified in different ways. Distinct specifications of these components result in formally distinct kinds of kinds. As such, the mechanism captures not only what is common across kinds, but ways in which kinds can formally differ from one another and thus provide distinct perspectives.

This research which is based on data from linguistic judgments concerning the interpretation of generic sentences and count and mass nouns as well as nonlinguistic data involving categorization judgments, identity judgments, normative judgments, explanation evaluations and acquisition data, suggests that the formal structure of kind concepts differ according to the types of elements a kind is constituted of; the kinds of elements that distinguish instances of a kind; the types of elements that characterize a kind; whether instances differ only numerically or if they also differ in principled ways; and the number and types of properties they have principled connections to.

Because these differences between different types of kinds are formal, they are stable aspects of the concepts meaning and are linguistically relevant and reflected in the morphosyntactic properties of the lexical items that are mapped onto these lexically expressible concepts. Furthermore, some of the differences between types of kinds appear to be motivated by the interfaces kind representations have with distinct perceptual and cognitive systems.