

willing to transform the feature while retaining the integrity of a representation; i.e., that a number of conceptual tasks, all of which require people to transform conceptual features, produce similar orderings. Following Medin and Shoben (1988), these tasks have in common that they ask people to consider an object that is missing a feature but is otherwise intact (e.g., a real chair without a seat).

Note that the mutability of a feature is concept-relative. For example, roundness is a mutable feature of oranges. Even if all oranges were round, our notion of orange would be substantially unaltered if we imagined one that was not. But roundness is an immutable feature of wheels. If a wheel is not round, then it has to be completely reconceived to retain its (mental) status as a wheel.

The second objective of this paper is to show that immutability can be modeled as the centrality of a feature in a network of pairwise dependency relations. In particular, we test the hypothesis that features are immutable to the extent that other features depend on them. The idea is that a feature is immutable if changing it would force other aspects of the object concept to change, in the same sense that the bottom book in a stack of books is central because removing it would shift the other books. Applying this idea to Keil's (1989) paradigm, the suggestion is that older children and adults gave internal features more weight in categorization decisions because internal features tend to be more immutable than perceptual ones. Removing the internal features of an animal destroys the integrity of the representation of the animal as an instance of the animal kind more than removing the perceptual features does. Perceptual features depend on internal ones more than internal features depend on perceptual ones, so that substituting the internal parts of a horse (say) with those of a cow plays havoc with the dependency structure that binds the components of our concepts of horse.

Our appeal to dependency structure explains why the mutability of a feature is concept-relative. The mutability of a feature for a concept depends on its relation to other features within that concept. Few features of oranges depend on roundness but many features of wheels do.

Our dependency hypothesis makes three key assumptions: i. Dependency relations are asymmetric; ii. They are generic; i.e., their type is irrelevant to determining centrality; iii. The centrality of a feature is a function of the extent to which other features depend on it. The force of this last assumption is that we view a feature as immutable to the degree that changing it would affect the status of other features. Because we model centrality structurally, in the sense that it is a measure of the location of a feature in a dependency structure that binds a concept, centrality is deemed an immediate product of the forces that determine conceptual coherence. Specifically, our model calls a feature central in a dependency structure if the processing dynamics operating on that structure give the feature more influence over other features than other features have over it.

Our account of centrality in conceptual structure has a resemblance to Quine's (1951) account of centrality of statements in the determination of truth. Statements are central, according to Quine, to the extent they enjoy immunity from revision. A statement is immune from revision if revising it would force a cascade of revisions of other beliefs. Putnam (1975) argues that features that are central in Quine's sense serve as the most natural