COG250H1: Introduction to Cognitive Science	Fall 2018

Lecture 3: Categorization II (Classical Theory, and Prototype Theory)

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3.1 Classical Theory

3.1.1 Motivation

Smith: Categorization is running on some feature of the world. Categorization is in some sense a bottom up process.

Response: Categorization is a top down process. It is more plausible that we use concepts to categorize objects. We are imposing a concept into cateogries.

Aristotle championed the classical theory of concepts.

Somehow we are using concepts to do categorization.

3.1.2 Theory

The classical theory is organized around the idea that all instances of a category share a common of properties. A list of features that are individual necessary and collectively sufficient to represent the concept.

Evidence:

Criticisms: 1. Wittgenstein on the game

Related Ideas: Problem of Universals, Substance Theory, Object Oriented Programming, Aristotle on Essence

3.2 Prototype Theory

3.2.1 What is salience?

Underlies prototype theory. Saliency differs among cultures and individuals by universals/prototypes in prototype theory require generalizablity. Cannot formalize Tversky's formula because of salience function.

3.2.2   Theory

Developed as an alternative to the Classical Theory Of Concepts

Proponents: Elanor Rosch

Evidence:

Criticsms: Falls prey to homuncular fallacy (what is salience)

3.2.3   Geometric Notion - Tversky's Formula

$$Sim(I, J) = af(I, J) + bf(I, J) + cf(I, J)$$

where: f is a function that measures the salience of each set of features. a, b, and c are parameters that determine the relative contribution of the three feature sets.

https://rationalwiki.org/wiki/Prototype_theory