



Chapter VIII

On Concepts and Emergence of Language

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Abstract

The existing theories of concept formation involve categorization based upon the physical features that differentiate the concept. Physical features do not provide the understanding of objects, entities, events, or words, and so cannot be used to form a concept. We have come to believe that the affect the object, entity, event, or word has on the environment is what needs to be evaluated for true concept formation. Following our argument for a change in the direction of research, our views on some of the other aspects of concept formation are presented.

Introduction

In 1938, Einstein and Infeld (1938/1967), in the context of metaphors, stated:

Physical concepts are free creations of the human mind, and are not, however it may seem, uniquely determined by the external world. In our endeavor to understand reality we are somewhat like a man trying to

understand the mechanism of a closed watch. He sees the face and the moving hands, even hears its ticking, but he has no way of opening the case. If he is ingenious he may form some picture of a mechanism which could be responsible for all the things he observes, but he may never be quite sure his picture is the only one which could explain his observations. He will never be able to compare his picture with the real mechanism and he cannot even imagine the possibility or the meaning of such a comparison. (p. 31)

In our theories, the agent builds its own operative representation of the environment. It *conceptualizes* the environment within its contingency table. This brings us to the next question in our discussion — what is really a concept, and how are concepts formed.

How about considering concepts to be the associations of subschemes and percepts, the infamous (B, S) pairs in the contingency tables? Let us see why this makes sense. Let us observe ontology similar to the one in Figure 2 (Chapter V) in shape (shape as the designer's category), with an agent that suffers from perceptual aliasing (all percepts are the same), and has a FFFF...FR (a sequence of forward moves finished by a turn to the right). What will happen in the contingency table? There will not be many rows. There will be (B, S) pairs of two types — corridors and corners, depending whether there is a right turn in the subscheme or not. If the scheme is shorter, say FR only, it might happen that in the contingency table, in the subscheme columns, we have F, R, and FR, parts of a corridor, and parts of a corner (including the two T-crosses in the ontology). Things get more complicated as the percepts and more complicated schemes come into play. However, it still makes sense to consider the (B, S) pairs as basic, *protoconcepts* of the agent in the Vygotskian sense, as discussed later on. Or, alternatively, structures in the contingency table can be observed as agent's concepts. Loops in the contingency table might indicate a corridor that needs several executions of the scheme to get to the end of.

In order to understand what concepts are, we give here a brief overview of the research on this topic. The cognitive sciences are trying to understand how the concept formation works, for as Fodor (1995) writes, “concepts [are] the pivotal theoretical issue in cognitive science; it is the one that all the others turn on.” However, researchers seemingly must often work in such a narrow aspect that they at first appear not to be involved in the process of solving the same puzzle. We believe what is preventing the field from creating an agent that can form concepts and continue on to developing language is a proper model of conceptualization.

A well accepted definition of a concept includes “a mental representation of a category” (Medin, Lynch, & Solomon, 2000), along with the statement that “concepts are the least complex mental entities that exhibit both representational

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