Chapter 17

Modeling the Intellect from a Coordination Perspective

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ABSTRACT

Usually, models of the intellect take the individual mind and body as the point of departure and proceed outward towards the social and natural environment in which the individual is immersed. As a consequence, important social dimensions contributing to the epigenetic development of the individual are less articulated. This chapter suggests modeling the intellect from a more balanced perspective that recognizes both social and individual aspects—the coordination of actions. The author argues that coordination is made possible by certain innate dispositions called activity modalities: contextualization, spatialization, temporalization, stabilization, and transition. Consequently, a central task for modeling the intellect is to understand how perceptions received through sensory modalities are related to the activity modalities. To this end, the author proposes a research program for modeling the intellect, based on the concept of “activity” in the Russian Activity Theory and the activity modalities. Provisional arguments for the relevance of these modalities are discussed in three different realms associated with the intellect: the social, conceptual, and neural ones. The chapter is concluded with some preliminary research questions, pertinent for the research program.

INTRODUCTION

As stated in the introduction of this book, today the modeling and simulation of cognitive processes are a reality in areas such as pattern recognition, speech analysis and synthesis, robotics, information processing, etc. Usually, models of the intellect take—for good reasons—the individual as the point of departure and proceed outward towards her social and natural environment, which is typically concep-
tualized (if at all) in terms like objects, actions, situation, relationships, culture, and the like. In short, the environment is seen as a more or less unproblematic background for modeling efforts. A typical example is given in Figure 1.

The subordinate role played by the environment is at first thought quite surprising. In daily life, it is immediately clear that our natural and social environment has a decisive influence on how we think and act. A human is definitely a social animal that could not survive in isolation: “No man is an island, entire of itself” (John Donne).

However, in a growing number of research programs, the environment is given more attention when inquiring into the intellect. Examples of such programs are “distributed cognition” (Hutchins, 1995; Hazlehurst, Gorman & McMullena, 2008), “situated cognition” (Brown, Collins, & Duguid, 1989; Clancey, 1993), and “extracortical organization of brain functions” (Kotik-Friedgut, 2006); a concept that originally was coined by Vygotsky (1997) and further developed by his apprentice Luria (1973). Moreover, the theory of cognition proposed by Maturana and Varela (e.g. Maturana & Varela, 1992; Prolux, 2008) has many features in common with the approach presented here. An example of neurological research approaching the same position is Changeux (1997; 2004), who strongly emphasizes the spontaneous, extrovert activity of the brain, and its epigenetic structuring from environmental influences.

The underlying figure of thought in these approaches is that the organization of the brain is inherently related to the environment:

*If mind is socially constituted, then the field or locus of any individual mind must extend as far as the social activity or apparatus of social relations which constitutes it extends; and hence that field cannot be bounded by the skin of the individual organism to which it belongs.* (Mead, 1974, p. 223)
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