

4

The Interaction of Nature and Nurture in Development: A Parallel Distributed Processing Perspective

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Parallel distributed processing (PDP) models provide a rich set of resources for exploring issues of nature, nurture and their interaction in cognition development. I present the essential aspects of the PDP (or connectionist) framework, and I draw parallels between the child as learner and the mechanisms of learning in connectionist systems. The remaining sections discuss some of the implications of this framework for our understanding of the acquisition of knowledge. I point out that many lines of argument that have typically been given in support of nativist approaches need to be reconsidered in the light of the characteristics of PDP models of learning and development. The first of these sections points out that connectionist models offer a dramatic advance over classical associationist approaches to learning. The second illustrates how stage-like progressions can be understood in terms of the typical learning trajectories seen in connectionist models. The third section considers the meaning and possible sources of early competence from a PDP perspective, and the fourth considers how connectionist models may shed light on the fact that some of the structure of human behaviour appears to be imposed by the learner. In all, the chapter amounts to an argument that connectionist models allow us to see ways in which experience might lead to the rich and interesting cognitive structures and developmental progressions that have often been taken as supportive of nativist approaches.

INTRODUCTION

Where do cognitive abilities come from? Are they born in us, innate endowments of nature? Are they products of experience, plain and simple? Or do they arise through the interaction of the characteristics of the organism and the

