Contents

Series Foreword xi Preface xiii Chapter 1 **Taking Development Seriously** 1 Is the initial architecture of the infant mind modular? 1 Prespecified modules versus a process of modularization 4 What constitutes a domain? Development from a domain-general perspective 7 Development from a domain-specific perspective 8 Reconciling nativism and Piaget's constructivism 9 The notion of constraints on development 11 New paradigms for studying young infants 12 Beyond domain-specific constraints: The process of representational redescription 15 The RR model 17 The importance of a developmental perspective on cognitive science 26 The importance of a cognitive science perspective on development 27 The plan of the book 28 Chapter 2 The Child as a Linguist 31 Language acquisition as a domain-general process: The Piagetian infant 33 Language acquisition as a domain-specific process: The nativist infant 35 The infant's and the young child's sensitivity to semantic constraints 40 The infant's and the young child's sensitivity to syntactic constraints 43 The need for both semantic and syntactic bootstrapping 45 Beyond infancy and early childhood 47 The RR model and becoming a little linguist 47 From behavioral mastery to metalinguistic knowledge about words 51

From behavioral mastery to metalinguistic knowledge of the article system 54 Beyond the word and the sentence 60 *From the nativist infant to the constructivist linguist* 62 Chapter 3 The Child as a Physicist 65 Understanding the physical world: The Piagetian infant 65 Understanding the physical world: The nativist infant 66 Constraints on object perception in early infancy 67 Understanding object behavior: Innate principles and subsequent learning 72 Rethinking object permanence 74 The representational status of early knowledge: Do infants have theories? 77 Becoming a little theorist 78 From behavioral mastery to metacognitive knowledge about the animate/ inanimate distinction 79 From behavioral mastery to metacognitive knowledge about gravity and the Law of Torque 82 Representational redescription and theory building 87

Chapter 4

The Child as a Mathematician 91 Number acquisition as a domain-general process 91 Challenges to Piaget's view 93 Number acquisition as a domain-specific, innately guided process 96 The role of subitizing: Perceptual or conceptual? 98 Constraints on learning how to count 100 The representational status of early number knowledge 104 Learning the language of counting and mathematics 105 Is mathematical notation essential to number development? 107 Reconciling domain-specific counting principles with the failure to conserve: Cultural universals 107 Becoming a little mathematician 110 Metamathematical knowledge: The child's changing theory of number 110 Number in nonhuman species 112 The RR model and number representation in the human child 114

Chapter 5

The Child as a Psychologist 117 The Piagetian view of the child as a psychologist 118 The domain-specific view: Infancy prerequisites to a theory of mind 118 What conspecifics look like 118 How conspecifics interact 121 Theory of mind in nonhuman species 124 What is special about theory-of-mind computations? 126 The toddler's theory of mind 127 Is language essential for distinguishing propositional attitudes from propositional contents? 129 The child's developing belief/desire psychology 130 The RR model and changes in children's theory of mind 132 Should theory of mind be set in a broader, domain-general context? 134 Is theory of mind just like any other theory-building process? 137

Chapter 6

The Child as a Notator 139 Does precedence imply derivation? 140 Notation from a domain-general perspective 141 A domain-specific approach to notation 142 Preliterate and prenumerate children's notational competence 143 The RR model and early notational skills 145 Biology versus culture: The paradox of notational systems 146 Using the notational domain to probe the RR model and microdevelopmental change 148 The importance of behavioral mastery 155 Constraints on representational redescription 155 Implicit representations and their procedural status 161 RR and the progressive relaxation of sequential constraints 162 Exogenously driven and endogenously driven change 163

Chapter 7

Nativism, Domain Specificity, and Piaget's Constructivism 165 Domain specificity and Piagetian theory 166 Domain specificity and abnormal development 168 What is left of Piagetian theory? 171