## Contents

<table>
<thead>
<tr>
<th>List of figures</th>
<th>page xi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preface</td>
<td>xiii</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>xvii</td>
</tr>
</tbody>
</table>

1 Logic and human languages  1
1.1 Introduction  1
1.2 The disconnect between logic and language  2
1.3 Principles of logic and language  6
1.4 Downward entailment  10
1.5 Negative polarity items  18
1.6 Domain widening  25
1.7 Wh-words  28
1.8 Reversals of entailment  34
  1.8.1 Universals with disjunction in the subject phrase  36
  1.8.2 Negated universals with disjunction in the subject phrase  38
  1.8.3 Negated universals with disjunction in the predicate phrase  40
1.9 Compositionality  42
1.10 Information strength: weakening and strengthening  43
1.11 Logical principles of Weakening  45
1.12 Logical truths  48
1.13 Contingent truths  50
1.14 Problems of scope  53
1.15 Pragmatic influences on logical inferences  55
1.16 The meaning of disjunction is contingent  57
1.17 The meaning of the universal quantifier is contingent  59
1.18 Conclusion  62

2 Competing approaches to language and logic  64
2.1 The experience-based approach  64
  2.1.1 The constructivist theory  66
  2.1.2 Conservative learning  70
  2.1.3 Arguments against Universal Grammar  72
Table of Contents

2.1.4 A hybrid model 74

2.2 The nativist approach 75
  2.2.1 Core versus periphery 77

2.3 Complex syntax 78
  2.3.1 Acquisition of passives 78
  2.3.2 Acquisition of relative clauses 79

2.4 The Continuity Hypothesis 80

2.5 Evidence for continuity in child language 83
  2.5.1 Medial wh-questions in child English 85
  2.5.2 Why-questions in child English 90

2.6 Arguments against the experience-based approach 96

2.7 Linguistic universals 99

2.8 Empirical differences between the approaches 100

3 The case for logical nativism 102

PART I INNATE LINGUISTIC PRINCIPLES 103
  3.1 Principle C 103
    3.1.1 Wh-questions 107
    3.1.2 Quantificational expressions 108
  3.2 Extending core principles 110
  3.3 Connectivity and Principle C 113
  3.4 Connectivity in pseudoclefts 115
  3.5 Connectionism in child language 119
  3.6 A pragmatic alternative to Principle C 121
  3.7 Syntax versus pragmatics 127
    3.7.1 Crain and McKee (1985) 128
    3.7.2 Kiguchi and Thornton (2004) 130
    3.7.3 Crain and Thornton (1998) 131
    3.7.4 Guasti and Chierchia (1999/2000) 133
  3.8 Children’s failures to make pragmatic inferences 137
  3.9 Children’s lack of sensitivity to stress 139
  3.10 A theoretical problem with the pragmatic account 142

PART II INNATE PRINCIPLES AND PARAMETERS 144
  OF LOGIC 144
    3.11 Downward entailment: a core logical principle 144
    3.12 Cross-linguistic findings 146
    3.13 Scope parameters 149
    3.14 The Semantic Subset Principle 152
    3.15 Negative evidence 155
    3.16 Where child and adult languages cannot differ 156
    3.17 Hidden units: focus operators 157
## Table of Contents

### 3.18 Canceling polarity: negated disjunctions 160
### 3.19 Canceling polarity: negated conjunctions 161
### 3.20 Where we are headed 163

### 4 Scope parameters 164

#### 4.1 Negated disjunctions 167
- **4.1.1** A longitudinal study of 2-year-olds 168
- **4.1.2** Children’s knowledge of scope in negated disjunctions 170
- **4.1.3** Children’s knowledge of proximity in negated disjunctions 174
#### 4.2 Negation and disjunction/conjunction 178
#### 4.3 A parametric account of scope 179
- **4.3.1** The Conjunction Parameter 180
- **4.3.2** The Disjunction Parameter 180
#### 4.4 The Semantic Subset Principle 182

#### 4.5 Child language 184
- **4.5.1** Negated disjunctions in child Japanese 184
- **4.5.2** Negated disjunctions in child Mandarin 186

#### 4.6 Negated conjunctions 188

#### 4.7 Disjunction and the preposition before 190
- **4.7.1** Scope ambiguity 191
- **4.7.2** Before and the Semantic Subset Principle 194

#### 4.8 Before and child language 196

### 5 How something can be both positive and negative 199

#### 5.1 Polarity-sensitive items 200
#### 5.2 Existential indefinites as negative polarity items 204
#### 5.3 Children’s comprehension of negative polarity items 207
#### 5.4 Wh-indefinites in Mandarin 209
#### 5.5 Existential indefinites as positive polarity items 215
#### 5.6 Children’s production of existential indefinites 217
#### 5.7 Children’s comprehension of existential indefinites 219

### 6 Two logical operators for the price of one 224

#### 6.1 Focus operators 227
#### 6.2 The two meaning components of focus operators 227
#### 6.3 Covert negation is downward entailing 228
#### 6.4 Polarity-sensitive expressions 231
#### 6.5 How to cancel polarity sensitivity 232
#### 6.6 Focus operators across languages: the case of Mandarin 236
#### 6.7 Conjunction and disjunction are PPIs in some languages 237
#### 6.8 Covert negation cancels polarity sensitivity 239
#### 6.9 Conjunction and focus 240
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.10</td>
<td>Disjunction and focus</td>
<td>242</td>
</tr>
<tr>
<td>6.11</td>
<td>Focus operators in child language</td>
<td>243</td>
</tr>
<tr>
<td>6.12</td>
<td>Disjunction and focus in child language</td>
<td>247</td>
</tr>
<tr>
<td>6.13</td>
<td>Conjunction and focus in child language</td>
<td>252</td>
</tr>
<tr>
<td>6.14</td>
<td>Quantification without qualification</td>
<td>256</td>
</tr>
<tr>
<td>6.15</td>
<td>Asymmetric quantification in child language</td>
<td>258</td>
</tr>
<tr>
<td>6.16</td>
<td>Conclusions</td>
<td>264</td>
</tr>
</tbody>
</table>

Notes 266
References 274
Index 285
## Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>The extra-object context</td>
<td>60</td>
</tr>
<tr>
<td>3.1</td>
<td>C-command</td>
<td>103</td>
</tr>
<tr>
<td>3.2</td>
<td>C-command</td>
<td>104</td>
</tr>
<tr>
<td>3.3</td>
<td>No c-command</td>
<td>105</td>
</tr>
<tr>
<td>3.4</td>
<td>No c-command</td>
<td>105</td>
</tr>
<tr>
<td>3.5</td>
<td>Discourse blocks c-command</td>
<td>111</td>
</tr>
<tr>
<td>3.6</td>
<td>Connecting discourse</td>
<td>112</td>
</tr>
<tr>
<td>3.7</td>
<td>No c-command in pseudoclefts</td>
<td>116</td>
</tr>
<tr>
<td>3.8</td>
<td>Question-in-disguise analysis of pseudoclefts</td>
<td>118</td>
</tr>
<tr>
<td>4.1</td>
<td>A 2-year-old being interviewed</td>
<td>169</td>
</tr>
<tr>
<td>4.2</td>
<td>The tooth fairy story</td>
<td>172</td>
</tr>
<tr>
<td>4.3</td>
<td>Negation c-commands disjunction = the conjunctive entailment</td>
<td>173</td>
</tr>
<tr>
<td>4.4</td>
<td>Negation does not c-command disjunction</td>
<td>173</td>
</tr>
<tr>
<td>4.5</td>
<td>The Conjunction Parameter</td>
<td>181</td>
</tr>
<tr>
<td>4.6</td>
<td>The Disjunction Parameter</td>
<td>182</td>
</tr>
<tr>
<td>4.7</td>
<td>Experimental design</td>
<td>185</td>
</tr>
<tr>
<td>4.8</td>
<td>The blue ribbon test of negated disjunction</td>
<td>187</td>
</tr>
<tr>
<td>4.9</td>
<td>The blue ribbon test was used again for negated conjunction</td>
<td>189</td>
</tr>
<tr>
<td>4.10</td>
<td>Truth conditions: before takes scope over disjunction</td>
<td>194</td>
</tr>
<tr>
<td>4.11</td>
<td>Truth conditions: disjunction takes scope over before</td>
<td>195</td>
</tr>
<tr>
<td>5.1</td>
<td>Context for questions (23) and (24)</td>
<td>208</td>
</tr>
<tr>
<td>5.2</td>
<td>Pandas at breakfast</td>
<td>211</td>
</tr>
<tr>
<td>5.3</td>
<td>The villagers and the unwanted intruder</td>
<td>213</td>
</tr>
<tr>
<td>5.4</td>
<td>Mr. Owl requests help from one of his super friends</td>
<td>214</td>
</tr>
<tr>
<td>6.1</td>
<td>Condition 1</td>
<td>249</td>
</tr>
<tr>
<td>6.2</td>
<td><em>Every dog</em> versus <em>No dogs</em></td>
<td>259</td>
</tr>
<tr>
<td>6.3</td>
<td>Disjunction in the subject phrase</td>
<td>261</td>
</tr>
<tr>
<td>6.4</td>
<td>Disjunction in the predicate phrase</td>
<td>263</td>
</tr>
</tbody>
</table>