

Table of contents

| | |
|---|----------------|
| Preface | <i>page</i> ix |
| Introduction | 1 |
| 0.1 Spatial cognition and language | 1 |
| 0.2 Linguistic issues | 3 |
| 0.3 Computer models of language | 5 |
| Part I The descriptive framework | |
| 1 Meaning and use of locative expressions | 7 |
| 1.1 Locative expressions | 7 |
| 1.2 The philosophical basis of the computational metaphor | 9 |
| 1.3 Decoding and encoding | 11 |
| 1.4 Simple geometric relations | 12 |
| 1.5 A comprehensive descriptive framework | 17 |
| 2 Normal situation types | 20 |
| 2.1 Defining normality | 20 |
| 2.2 Normal situation types and semantics | 21 |
| 2.3 Structure of normal situation types | 24 |
| 2.4 A fundamental description of the physical world | 27 |
| 3 Purpose | 30 |
| 3.1 Prototypical purpose | 30 |
| 3.2 Non-prototypical purposes | 31 |
| 3.3 Further specifications of purpose | 32 |
| 3.4 The notion of place | 33 |
| 3.5 The Figure/Ground relationship | 35 |
| 4 Ideal meanings | 39 |
| 4.1 An example: the preposition "in" | 41 |
| 4.2 Other prepositions | 48 |
| 4.3 Elementary spatial concepts and ideal meanings | 54 |

| | |
|--|-----|
| 5 Geometric descriptions | 57 |
| 5.1 Place | 59 |
| 5.2 Other elementary geometric description functions | 64 |
| 5.2.1 Functions that map a region of space onto a part of it | 65 |
| 5.2.2 Functions that map a region onto some idealization of it | 67 |
| 5.2.3 Functions that map a region onto some associated “good form” | 68 |
| 5.2.4 Functions that map a region onto an adjacent volume | 69 |
| 5.2.5 Functions that map a region onto axes | 70 |
| 5.2.6 Functions that map a region onto a projection | 71 |
| 5.3 Geometric descriptions and mental imagery | 72 |
| | |
| 6 Pragmatic factors | 73 |
| 6.1 Saliency | 73 |
| 6.2 Relevance | 76 |
| 6.3 Tolerance and idealizations | 78 |
| 6.4 Typicality | 84 |
| | |
| 7 Use types | 86 |
| 7.1 Distinguishing use types | 87 |
| 7.2 Idiomaticity | 88 |
| 7.3 Representation of use types | 89 |
| 7.4 Knowledge in use types | 91 |
| 7.4.1 Constraints on the scene | 91 |
| 7.4.2 Constraints on the context | 93 |
| 7.5 Sense shifts | 93 |
| 7.6 Conclusion | 94 |
| | |
| Part II An excursion into computer models | |
| | |
| 8 Decoding and encoding | 96 |
| 8.1 Decoding and encoding: a first look | 97 |
| 8.2 Representation of scenes | 100 |
| 8.2.1 Visual scenes | 100 |
| 8.2.2 Mental images | 102 |
| 8.2.3 Spatial representations for action and reasoning | 102 |
| 8.2.4 Large scale environments | 103 |
| 8.3 Locational knowledge and language | 104 |
| 8.4 Decoding | 105 |
| 8.4.1 Generating the normal interpretation(s) of the expression | 106 |
| 8.4.2 Obtaining a context-specific interpretation | 112 |
| 8.4.3 “Extra-ordinary” interpretations of locative expressions | 114 |
| 8.5 Encoding | 117 |
| 8.5.1 Finding matching use types | 120 |

| | |
|--|-----|
| <i>Contents</i> | vii |
| 8.5.2 Communicative plan and preposition selection | 120 |
| 8.6 Object knowledge | 123 |
| 8.7 Conclusion | 126 |
| Part III Case studies | |
| 9 The three basic topological prepositions | 127 |
| 9.1 The preposition “at” | 128 |
| 9.2 The preposition “on” | 140 |
| 9.3 The preposition “in” | 148 |
| 9.4 Conclusion | 155 |
| 10 The projective prepositions | 156 |
| 10.1 Frame of reference | 157 |
| 10.1.1 The two prototype situations | 157 |
| 10.1.2 Prepositional uses derived from the prototype situations | 160 |
| 10.1.3 Inferring base axes | 163 |
| 10.1.4 Origin of the base axes | 164 |
| 10.1.5 Order of the horizontal base axes | 165 |
| 10.1.6 Direction of the base axes | 166 |
| 10.1.7 Choosing between conflicting frames of reference | 172 |
| 10.2 Distinctions between the projective prepositions | 173 |
| 10.2.1 Object parts | 175 |
| 10.2.2 Contiguity with the reference object | 178 |
| 10.2.3 Location inside the reference object | 178 |
| 10.2.4 Location outside the reference object: basic subset of prepositions | 181 |
| 10.2.5 Location outside: the other prepositions | 188 |
| 10.3 Ideal meanings | 190 |
| 10.4 Conclusion | 191 |
| Conclusion | 193 |
| <i>Notes</i> | 195 |
| <i>References</i> | 201 |
| <i>Index</i> | 206 |