Developing the Horizons of the Mind is the first book on Relational and Contextual Reasoning (RCR), a new theory of the human mind which powerfully addresses key areas of human conflict such as the ideological conflict between nations, the conflict in close relationships, and the conflict between science and religion. K. Helmut Reich provides a clear and accessible introduction to the new RCR way of thinking that encourages people to adopt an inclusive rather than an oppositional approach to conflict and problem-solving. Part one outlines the key aspects of RCR theory and supporting empirical data, and Part two offers examples of its application in the modern world. RCR provides a stimulating and challenging tool to several disciplines, including philosophy, psychology, religious studies and education, and this book will be a valuable resource for cognitive scientists, psychotherapists, theologians, educators and all those involved in conflict resolution.

K. HELMUT REICH has had successful careers as a physicist and as a psychologist, winning the William James Award of the APA for contributions to the psychology of religion in 1997.
Developing the Horizons of the Mind

Relational and Contextual Reasoning and the Resolution of Cognitive Conflict

K. Helmut Reich
To my grandchildren

Michael, Nicole,
Nicolas, Natacha

May they grow up in a society in which relationships and contexts become more and more recognised and valued
Contents

List of figures x
List of tables xi
Acknowledgements xiii

Introduction 1

Part I The Theory of Relational and Contextual Reasoning (RCR) and its Empirical Study

1. Introduction 11
   Caveats 11
   The nature of relational and contextual reasoning 12
   Previous work on relational thinking 22
   Summary of the introduction 23

2. Development of RCR 25
   Anthropology adopted 25
   Theories of cognitive development 26
   Cognitive development and RCR 27
   Unreflected, object-reflecting, and means-reflecting thought 29
   Intra-inter-trans – the ‘logic’ of RCR development 32
   Input to the present study from earlier work 33
   Summary of RCR development 34

3. Metaphysical Assumptions and Theory of RCR 35
   Assumptions adopted from the philosophy of knowledge 35
   Theory of RCR 41
   Summary of the metaphysical and theoretical grounding of RCR 46

4. Empirical Studies of RCR 47
   Overview 47
   Methodological commonalities 49
   Pilot study 1: RCR level descriptions and RCR effectiveness as pragmatic reasoning schema 50
   Pilot study 2: Additional RCR interview problem 55
   Pilot study 3: RCR and Piagetian operations 59
Contents

Pilot study 4: RCR, Piagetian operations, cognitively complex thinking, and evolved logics 63
Discussion of pilot studies 3 and 4 72
Summary of empirical studies and outlook 74

5. Other Thought Forms and Matching Them to the Problem at Hand 75
   Other thought forms relevant to RCR 75
   Matching the form of thought to the structure of the problem 91
   Summary of other thought forms and matching them to the problem at hand 97

Part II Applications of RCR

6. Methodology 103
   Method for applying RCR 103
   Demonstration of a particular search 104

7. Religion 116
   Religion and the nature of human beings 116
   Understanding religious doctrines 120
   Co-ordination of religious and scientific world views 126
   RCR and religious development 129
   Conclusions 132

8. The Archaeology of RCR 133
   Fathers of the Council of Chalcedon 133
   Vincent van Gogh 134
   William James 136
   Rainer Maria Rilke 137
   Robert Musil 139
   Niels Bohr 140
   Conclusions 143

9. Psychology 145
   Psychology as a discipline 145
   The case of individual development 149
   Psychophysiological phenomena 151
   Which music for which purpose? 152
   Conclusions 156

10. Education 157
    Who controls the educational system? 157
    Teaching the investiture contest 158
    Stimulating RCR in the classroom 159
    Concluding remarks 163
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Social Issues</td>
<td></td>
</tr>
<tr>
<td>Overcoming illegal use of drugs</td>
<td>165</td>
</tr>
<tr>
<td>Nuclear power</td>
<td>165</td>
</tr>
<tr>
<td>Ways to solve old problems and create new work</td>
<td>174</td>
</tr>
<tr>
<td>Concluding remarks</td>
<td>181</td>
</tr>
<tr>
<td>12. Conclusions</td>
<td></td>
</tr>
<tr>
<td>This volume</td>
<td>185</td>
</tr>
<tr>
<td>Postscript</td>
<td>187</td>
</tr>
<tr>
<td>Appendix 1: Interviewing techniques</td>
<td>191</td>
</tr>
<tr>
<td>Appendix 2: Scoring manual for RCR</td>
<td>194</td>
</tr>
</tbody>
</table>

References 199

Index 219
Figures

2.1 Evolution of cognition

3.1 ‘Figure–ground’ shift of the number of cubes

3.2 Noncompatibility according to Bedau and Oppenheim
   (reproduced by kind permission of Kluwer Academic
   Publishers, Dordrecht, The Netherlands)

4.1 Schematic sketch of the snail task

5.1 Venn diagrams of class sets

5.2 INCR group

5.3 Through becoming, being and nonbeing transform into
   new being and new nonbeing

7.1 Changes when moving from one to two (reproduced
   by kind permission of the British Journal of Religious
   Education)

7.2 Correlation between religious judgement stages
   and levels of RCR
Tables

1.1 The four structural levels of the model of thought processes ...

4.1 Description of RCR levels (reproduced by kind permission of S. Karger A.G., Medical and Scientific Publishers, Basel, Switzerland) 52

4.2 Mean scores of RCR scores of pilot study 1 (reproduced by kind permission of S. Karger A.G., Medical and Scientific Publishers, Basel, Switzerland) 53

4.3 Developmental logic of RCR 54

4.4 Mean scores of RCR scores of pilot studies 3 and 4 58

4.5 Mean scores of RCR scores of pilot study 3 62

4.6 Frequencies of individual scores concerning Piagetian operations and RCR levels (reproduced by kind permission of John Wiley & Sons, Inc., New York [owner of Jossey-Bass, Publishers, San Francisco, the original publisher]; Hogrefe, Verlag für Psychologie, Göttingen, etc.; Ernst-Reinhardt-Verlag, Munich) 63

4.7 Frequencies of individual scores of levels of cognitively complex thought and RCR levels 66

4.8 Frequencies of individual scores concerning levels of (meta-) logical thinking and RCR levels 70

4.9 Minimum stages/levels of other competencies for a given RCR level (reproduced by kind permission of the Ernst-Reinhardt-Verlag, Munich) 72

5.1 Various operations based on formal binary logic 78

5.2 The sixteen binary operations 80

5.3 Level of cognitive complexity from an analysis of diplomatic notes (reproduced by kind permission of Sage Publications, Inc., Thousand Oaks, CA) 85

5.4 Main differences of various forms of thought 89
List of tables

7.1 Frequencies of individual scores of RCR levels and intelligibility judgement of the Chalcedonian Definition (reproduced by kind permission of the *British Journal of Religious Education*) 123

7.2 Frequencies of individual scores of RCR levels and intelligibility judgement of the Doctrine of the Holy Trinity (reproduced by kind permission of the *British Journal of Religious Education*) 125

7.3 Frequencies of individual RCR levels and levels of co-ordinating biblical and scientific views (reproduced by kind permission of Pabst Scientific Publishers, Lengerich, Germany) 127

9.1 Classification of guidelines for functional music 156
Acknowledgements

No book is complete without giving thanks to all those who contributed in one way or another to the work described and the writing of the book. (However, the responsibility for the actual content remains entirely mine.) Thanks are particularly in order in this case, as I embarked upon a new field of inquiry, and thus needed more help and interaction with colleagues than usual. Fritz Oser made available the facilities of the School of Education of Fribourg University, introduced me to actual empirical work in developmental psychology, and was a helpful discussion partner all along. Wolfgang Edelstein, Hans Fischer, August Flammer, Dedre Gentner, Jean-Blaise Grize, Rolf Hagedorn, Siegfried Hoppe-Graff, Karen S. Kitchener, Deirdre Kramer, Rolf Oerter, Philibert Secretan, Thomas Bernhard Seiler, Victor F. Weisskopf, and Phillip K. Wood were each invaluable in the early stages for critical comments and suggestions for the next steps. Carol Rausch Albright, Henry Babel, Michael A. Basseches, Paul-Richard Berger, Mark H. Bickhard, Ronnie Blakeney, Thomas Bornhauser, Anton A. Bucher, Thomas J. Burke, Michael Chandler, Philip Clayton, Veit-Jakobus Dieterich, Lutz Eckensberger, Helmut J. Efinger, Reto Luzius Fetz, Ernst Peter Fischer, Anne Foerst, James W. Fowler, Peter C. Hägele, Philip Hefner, Heinz S. Herzka, Stefan Huber, John Hull, Bruce Hunsberger, Michael E. Hyland, Christopher B. Kaiser, Gisela Labouvie-Vief, Thierry Magnin, David Moshman, Ehrhard Mühlich, W. Jim Neidhardt, Erwin Nickel, Karl Ernst Nipkow, Willis F. Overton, Arthur Peacocke, Martin Rothgangel, Robert J. Russell, George Scarlett, Gerhard Schurz, Friedrich Schweitzer, Kevin Sharpe, Jan D. Sinnott, Bernard Spilka, Maria Spychiger, Peter Suedfeld, Kalevi Tamminen, Eberhard Todt, Peter Valentin, Hendrika Vande Kemp, Harald Walach, Christoph Wassermann, Michael Welker, and David M. Wulff over the years stimulated progress by way of their remarks and suggestions. I learned much from more advanced (anonymous) colleagues through discussions especially after my presentations at various conferences in Europe and North America, and I benefited significantly from relevant Internet discussions. Whenever I quote here
(a large part of) a pertinent posting (in agreement with the author), I indicate the author’s name. However, in some cases, I simply follow up hints, summarise the gist of a discussion, or use some expressions without individual acknowledgements. I am indebted to all participants of those discussions, especially to Ric Barr, David R. Burwasser, Michael Cavanaugh, Thomas L. Gilbert, Ursula Goodenough, Paul Harrison, William Irons, Rex Kerr, Edwin C. Laurenson, Steve Petermann, and V. V. Raman. My colleagues at the School of Education, in particular Wolfgang Althof, Franz Baeriswyl, Traugott Elsässer, Aloys Niggli, and Roland Reichenbach, helped in numerous ways to make me a social scientist and educator. Anton Bucher (pilot study 1), Birgitta Michel (now Mrs Thenen – pilot studies 2 and 3) interviewed grade-school children in the local Swiss-German dialect (which I do not speak), an essential ingredient of an interview bringing out the authentic views of these children; both of them and Ornella Di Loreto (now Mrs Miller – pilot study 4) also participated in the scoring. Philip K. Wood, Richard Klaghofer, and Bernd Kersten in succession were instrumental for getting the statistics done. Without Anke Schröder the classroom work would not have been the opportunity for such a fruitful experience as it has been. And clearly, without all those interview respondents and participating pupils as well as students and older adults, there simply would be no book. My wife Ursula discussed many issues with me, put up gracefully with plenty of unavailability of her husband, and – given our differing biographies, outlooks and temperaments – provided a good number of opportunities to apply RCR and thereby refine it. Without Emily Wilkinson it would have been more difficult to get the book off the ground and flying. Peter F. Bucher-Roth, Michael Cavanaugh, Kristen E. Kann, Bernd Kersten, Hans Köppel, Ueli Simmel, Geoffrey Scobie, Bernard Spilka, Joy Stephens and the anonymous reviewers gave valuable feedback on earlier versions of the present text. Sarah Caro, Sophie Read and Gillian Dadd dealt gracefully and effectively with my typescript at Cambridge University Press. A number of figures and tables could be included due to the kindness of the permission-granters (pp. x–xii) and the respective authors. Finally, the Hochschulrat of the University of Fribourg provided financial support for this research. I express my special thanks to all of the above.