

## PREFACE

One of the most controversial issues in recent philosophy, especially in the philosophy of science since the middle of the twentieth century, has evidently been the problem of whether the meaning of an expression tends to change according to its context of use. The present book is more or less connected with the same problem. It is an outgrowth of my long-term interest in subjects concerning conceptual change, particularly in problems related to the philosophy of science, definability, and translation. This interest derives its origin from my early studies of mathematics and physics, and it has ever since been nourished by my teachers, colleagues, and students in philosophy. Over the years, my philosophical and logical curiosity has been gradually shifting from foundational studies of science and mathematics to other fields, such as aesthetics and cognition. In spite of that, I have constantly returned to my old subjects, but now enriched with applications to those more recent areas of interest.

As the subtitle of the book implies, one starting point in my studies of translation is to critically evaluate Thomas S. Kuhn's well-known proposals concerning the role of translation in attempts to understand conceptual changes and conversions occurring in science, and in culture more generally. Another source is my extensive collaboration in the eighties with David Pearce, in our studies of scientific change – in our efforts to explicate such concepts as correspondence and reduction. These are concepts that historians and philosophers of science have often considered important, and occasionally scientists themselves. David found out, among other things, that the ideas created in that research can be used to approach the notion of commensurability in a new and fertile way, whereas one aim of the present volume is to show that some of the ideas are even relevant within a more general framework, so as to apply to many areas of nonscientific discourse as well.

I am greatly indebted to David for the ideas he brought to our joint enterprise. They made this book possible. In addition to David, there are four other persons whom I owe a special debt of gratitude. From Jaakko Hintikka, my teacher in philosophy, I have learned to appre-

ciate the manner of keeping an eye on both logical and pragmatic aspects when investigating philosophical and methodological problems. Furthermore, many features of the notions of translation and correspondence studied in the present essay can be regarded as generalizing certain elements of his early work on definability. Later on, research done by former students and colleagues Cynthia Grund and Tere Vadén has been an impressive source of inspiration. Cynthia was the first to show me the intellectual allure of the philosophy of art. In addition, she kindly helped me to improve the language of the present volume. Tere, in turn, prompted my interest in the philosophy of cognition, one consequence of which can be seen in this book. I like to believe that the book would be much poorer without the enclosed studies of cognition, part of which derives from our research cooperation in the field. I am most grateful, however, to my wife, Pirkko, for her unselfish encouragement and understanding of this endeavor.

My research for this book was mainly supported by my own University and the Academy of Finland, but to a large extent also by the Academy of Sciences of the Czech Republic. I am very indebted to the colleagues working for the Department of Logic of the Czech Academy, with whom I have been collaborating in a joint research project on conceptual representation.

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Some material of the book is based on my earlier work, part of which was written with David Pearce or with Tere Vadén. It has appeared in various journals, conference proceedings, and anthologies, but now revised for the current purpose. A great deal of the material concerning both foundational studies and applications is new or more recent.

The following articles or passages thereof are incorporated in this volume, with some revisions and corrections. I am indebted to the respective publishers and coauthors for permission to reprint the material:

Pearce, D. and Rantala, V., 'The Logical Study of Symmetries in Scientific Change', in P. Weingartner and H. Czermak (eds.), *Epistemology and Philos-*

- ophy of Science*, Hölder-Pichler-Tempsky, Vienna, 1983, pp. 330-332. Copyright © 1983 by Hölder-Pichler-Tempsky; reproduced here by kind permission of Hölder-Pichler-Tempsky and David Pearce.
- Pearce, D. and Rantala, V., 'A Logical Study of the Correspondence Relation', *Journal of Philosophical Logic* 13 (1984), 47-84. Reproduced here by kind permission of David Pearce.
- Rantala, V., 'The Old and the New Logic of Metascience', *Synthese* 39 (1978), 233-247.
- Rantala, V., 'Scientific Change and Counterfactuals', in I. Hronszky, M. Fehér and B. Dajka (eds.), *Scientific Knowledge Socialized*, Hungarian Academy of Sciences, Budapest, 1988, pp. 399-408. Copyright © 1988 by Akadémiai Kiadó; reproduced here by kind permission of the Hungarian Academy of Sciences.
- Rantala, V., 'Counterfactual Reduction', in K. Gavroglu, Y. Goudaroulis and P. Nicolacopoulos (eds.), *Imre Lakatos and Theories of Scientific Change*, Kluwer Academic Publishers, Dordrecht, 1989, pp. 347-360.
- Rantala, V., 'Definitions and Definability', in J. H. Fetzer, D. Shatz and N. Schlesinger (eds.), *Definitions and Definability: Philosophical Perspectives*, Kluwer Academic Publishers, Dordrecht, Boston, London, 1991, pp. 135-159.
- Rantala, V., 'Reduction and Explanation: Science vs. Mathematics', in J. Echeverria, A. Ibarra and T. Mormann (eds.), *The Space of Mathematics*, De Gruyter, Berlin, New York, 1992, pp. 47-59. Copyright © 1992 by Walter de Gruyter & Co.; reproduced here by kind permission of Walter de Gruyter & Co.
- Rantala, V., 'Translation and Scientific Change', in W. E. Herfel, W. Krajewski, I. Niiniluoto and R. Wójcicki (eds.), *Theories and Models in Scientific Processes* (Poznan Studies in the Philosophy of the Sciences and the Humanities, vol. 44), Rodopi, Amsterdam, Atlanta, GA, 1995, pp. 249-268. Copyright © 1995 by Editions Rodopi B. V.; reproduced here by kind permission of Editions Rodopi B. V.
- Rantala, V., 'Understanding Scientific Change', in P. I. Bystrov and V. N. Sadovsky (eds.), *Philosophical Logic and Logical Philosophy*, Kluwer Academic Publishers, Dordrecht, Boston, London, 1996, pp. 3-15.
- Rantala, V., 'Metaphor and Conceptual Change', *Danish Yearbook of Philosophy*, Vol. 31 (1996), 181-190. Copyright © 1995 by Danish Yearbook of Philosophy; reproduced here by kind permission of the Danish Yearbook of Philosophy.
- Rantala, V., 'Explanatory Translation. Beyond Functionalism and Reductionism', in M. L. Dalla Chiara, K. Doets, D. Mundici and J. van Benthem (eds.), *Logic and Scientific Methods. Volume One of the Tenth International Congress of Logic, Methodology and Philosophy of Science, Florence, August 1995*, Kluwer Academic Publishers, Dordrecht, Boston, London, 1997, pp. 399-41.
- Rantala, V., 'Connectionism and the Emergence of Propositional Knowledge', in G. L. Farre and T. Oksala (eds.), *Emergence, Complexity, Hierarchy, Organization* (Acta Polytechnica Scandinavica, Ma 91), The Finnish Academy of Technology, Espoo, 1988, pp. 254-262. Copyright 1998 by The Finnish Academy

of Technology; reproduced here by kind permission of The Finnish Academy of Technology.

Rantala, V., 'On the Emergence of Conceptual Knowledge', in O. Majer (ed.), *Topics in Conceptual Analysis and Modelling*, Filosofia, Prague, 2000, pp. 83-91.

Rantala, V., 'Translation and Conceptual Change in Art', *ibid.*, pp. 105-115.

Rantala, V., 'Reduction and Emergence', in T. Childers and J. Palomäki (eds.), *Between Words and Worlds. A Festschrift for Pavel Materna*, Filosofia, Prague, 2000, pp. 156-163.

Rantala, V., 'Carnap's General Syntax and Modern Logic', in T. Childers and O. Majer (eds.), *Logica '01*, Filosofia, Praha, 2002, forthcoming.

Rantala, V. and Vadén, T., 'Idealization in Cognitive Science. A Study in Counterfactual Correspondence', in M. Kuokkanen (ed.), *Idealization VII: Structuralism, Idealization and Approximation* (Poznan Studies in the Philosophy of the Sciences and the Humanities, Vol. 42), Rodopi, Amsterdam, Atlanta, GA, 1994, pp. 179-198. Copyright © 1994 by Editions Rodopi B. V.; reproduced here by kind permission of Editions Rodopi B. V. and Tere Vadén.