

FOREWORD

Over the past years we could witness a remarkable development in the field of cognition. Hitherto seemingly uncorrelated disciplines, such as psychology, biology, philosophy, physics, medicine, and sports/movement science, have found a common ground to provide science with a fresh approach to the intricate problems of cognition. The basic idea is quickly told: cognition is conceived as a dynamic process. Concomitantly, but perhaps less obviously, the brain is considered a dynamic system. This is surely in line with the modern development in science: instead of dealing with static properties, e.g. the structure of organs, more and more functions at all levels are studied—in other words, the changes of states in the course of time. But why should the study of the dynamics, say in physics, help to understand cognition? The answer can be given in two steps. First, at least in principle, all processes can be cast in a mathematical form from which some general conclusions can be drawn and which may provide some general guidelines on how to model specific processes. An occasionally heard objection is that the processes are still too diverse as to permit a deeper insight into one system through the study of another one. Second, a key to the resolution of this ‘diversity’ problem is supplied by synergetics: when we focus our studies on macroscopic qualitative changes of complex systems, remarkable and highly useful analogies between the behavior of otherwise different systems appear.

In this way, one system may become a paradigm for another, still less accessible one. This is beautifully exemplified in this book: the study of coordination dynamics paves a new way to understand processes of cognition. But there is still more to the approach advocated in this book: the interplay between mind and body as witnessed by the development of the paradigm of the embodied

mind, pointing at the fundamental importance of embodiment (a problem well known also in robotics!).

Finally, several articles cast new light on the problem of intentionality by discussing how the first person ('intentional') and the third person ('behavioral' or 'physical') perspectives can be integrated. This may lead to new applications to practical fields such as psychiatry and pedagogy.

The editors of the book, Wolfgang Tschacher and Jean-Pierre Dauwalder, pioneers of the interdisciplinary approach to cognition, must be congratulated on editing this book that surely opens new vistas.

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Hermann Haken