
Preface

At the University of Oulu in Finland in 1991 the authors fell into argument over dinner. That interchange developed into a full-blown partnership in a project that resulted in this book. Most of the theory is a joint product of the two authors working things out in front of a blackboard during intense discussions occurring in large part in Bath and Edinburgh. Neither author could have written the main sections of the book on his own.

We are particularly grateful to Gerard de Vries and Wiebe Bijker for allowing us to use in chapter 5 some of the ideas *taken from* H. M. Collins, G. de Vries, and W. Bijker, "Ways of Going On: Skill, Action, and Behavioural Repertoires," *Science, Technology and Human Values*, 22, 3 (1997), 267–284. That chapter also draws on Collins's "The Structure of Knowledge," *Social Research*, 60 (Spring 1993), 95–116, while chapter 7 draws on his "Rat Tale: Sociology's Contribution to the Problem of Human and Machine Cognition in Context," in P. J. Feltoovich, K. M. Ford, and R. R. Hoffman, eds., *Human and Machine Expertise in Context* (Cambridge, Mass.: AAAI/MIT Press, 1997), 293–311. Parts of the conclusion rest on Collins's "Embedded or Embodied: Hubert Dreyfus's *What Computers Still Can't Do*," *Artificial Intelligence*, 80, 1 (1996), 99–117.

It is not unusual for a book to include previously published work, but in this case it is not a matter of our collecting existing papers; rather it is the other way round—the book project gave rise to the papers. Given the project's interdisciplinary nature, and its attempt to treat the topic in a way that is quite out of step with almost every other approach, including those of the authors' parent disciplines, we thought it appropriate

that some of the principal ideas should be tested by the peer review process of leading journals before inclusion in the book. That is why we are particularly pleased to be able to report the above sources and to note that two of the other chapters have passed scrutiny in a form very similar to that in which they appear here. Chapter 3 has been tested in the philosophical marketplace, and the bulk of it has appeared as H. M. Collins and M. Kusch, "Two Kinds of Actions: A Phenomenological Study," *Philosophy and Phenomenological Research*, 55, 4 (1995), 799–819. Chapter 9 has been examined and extensively improved through its exposure to historians of technology and is an almost unaltered version of H. M. Collins and M. Kusch, "Automating Airpumps: An Empirical and Conceptual Analysis," *Technology and Culture*, 36, 4 (1995), 802–829.

We are grateful to the editors of all the above-mentioned sources for permission to reproduce either the ideas or the words that they originally saw fit to allow to be published. In every case we have gained immensely from the advice and criticism of referees and editors.

We must also thank the many colleagues and students who forced us to think through and develop what we were saying. The students at the University of California at San Diego, to whom Collins taught some of these ideas in the spring of 1993, were generous in their understanding and sharp but constructive criticism. We have already thanked our Dutch colleagues, de Vries and Bijker, and should not pass by without mentioning some other friends at the University of Limburg and their students—notably Annemiek Nelis, who forced us to work out various bits of the theory during her brief time as an exchange student at Bath. Colleagues at Bath who were generous with their time include Graham Cox and David Gooding, while the Bath Science Studies Centre students did much to keep the project going; they include Georgina Rooke, Warren Evans, and Robert Evans. Tom Gieryn of the University of Indiana commented on the book at the American Sociological Association meeting in Washington, D.C., in August 1995 in an especially constructive and useful way, helping us to see more clearly our theory's relationship to Max Weber's notion of behavior. Jon Clark, of the University of Southampton, gave generously of his time in reading and commenting on the manuscript. In addition, Kusch in particular wishes to thank Bernie Katz

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All in all, our critics have commented with varying degrees of sympathy, but they have always done it forcefully; it seems that whatever we are doing, we are not just following the trend. We accept this, and we hope that we have done a good enough job explaining our position in this book that the trend will turn.

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