

Functions in Biological and Artificial Worlds
Comparative Philosophical Perspectives

edited by
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Preface

The notion of function is an integral part of the way of thinking in biology as well as in technology. Traits and organs of organisms as well as technical artifacts and their components have or are attributed functions. The concept of function, however, is notoriously obscure. The same holds for the relationship between biological organisms and technical artifacts. This relationship is obscure because there are, on the one hand, many parallels that never hold completely—evolvability, wholeness, hierarchical and modular organization—and, on the other hand, many important differences that may nevertheless have analogies in the other class—natural selection versus intentionality, propagation versus (series) production, fitness versus usefulness. The concept of “function” is obscure because it seems to imply reference to goals or norms even in cases where intentionality is absent (such as with biology), to effects where the effect is absent (in the case of dysfunction) or it is even missing for principle reasons (in the case of a misinformed design of, e.g., a perpetual motion machine), and because it even may be regarded as unclear whether it is not merely used metaphorically in its biological sense.

Throwing more light on the sketched topics is a highly challenging task for philosophers of biology and technology. Scholars have tried for decades to save the notion of function from obscurantism. This has yielded some highly elaborate explications but not as yet a consensus about which one is acceptable in which case. Scholars have less often tried to clarify the relations between artifacts and organisms, though it is quite common to use one as a model for the other—in both directions—again without coming up with results that go beyond stating common principles like those already mentioned. We decided to combine both issues and to investigate the relationship between organisms and artifacts exactly with respect to the obscure matter of functionality. The reason is that we believe that this very issue is the root of many of the difficulties linked to a proper understanding of biological organisms, technical artifacts, and the relations between the two. Consequently the problems should be treated in an integrative way rather than separated when one aims at a new perspective that sheds light on each of the problems.

The 15th Altenberg Workshop in Theoretical Biology, “Comparative Philosophy of Technical Artifacts and Biological Organisms,” held in the Konrad Lorenz Institute for Evolution and Cognition Research (KLI) in Altenberg, Austria, in September 2006, fostered an integrative view on the two topics. The participants traveled to the Danube from all over the world. Discussions in the library at Altenberg were extraordinarily lively and fruitful. Ultimately the positions of the participants did not converge, but that was not our intention. The workshop was held to juxtapose opposing positions and thus broaden the scope for future work and highlight relevant observations and results from the different perspectives requiring consideration. However, all participants significantly rewrote their papers for submission to the present volume. So the reader has in hand the results of the workshop discussions rather than the workshop contributions. On this subject, we want to acknowledge the efforts of those who have supplied the content of this volume. We wish to thank all contributors for their engaged participation in the workshop and for the effort put into writing their chapters after the workshop. Thank you all for your contributions and for your patience and collaboration during the editing process.

The editors also wish to thank the board of the KLI for its generous support of the workshop. This official support was financial and even included permanent Lucullan pleasures—this at least is our recollection. But we also enjoyed immaterial support of various kinds. There was much encouragement and help in the preparation phase for which one of the editors (Ulrich Krohs), then fellow of the KLI, wishes to thank Gerd Müller and Werner Callebaut. During the workshop we took advantage of the perfect logistics, courtesy of the KLI staff. The workshop ran so smoothly that the organizers were able to fully concentrate on scientific content, discussions, and participants. We wish to thank Eva Karner, the secretary, and Astrid Jütte, the executive manager, for their great support. We owe thanks to Maarten Ottens for help with the index. One of the editors, Peter Kroes, would like to thank the Netherlands Institute for Advanced Study (NIAS) for providing him with the opportunity, as a Fellow-in-Residence, to work on the preparation of this volume.

The workshop on functionality had a forerunner in the form of the conference “Artifacts in Philosophy,” held at Delft University of Technology, the Netherlands, in 2004. At this conference, the fruitfulness of a comparative approach became visible in many contributions and the basis for the 2006 workshop was laid. We hope that these two meetings will mark the beginning of a fruitful discourse on the philosophy of biology and technology in an integrative and comparative perspective.