

Understanding Technological Function
Introduction to the special issue on the Dual Nature
programme
Sven Ove Hansson
Royal Institute of Philosophy

One of the most memorable events during the Aberdeen meeting of the Society for Philosophy and Technology in July 2001 was a seminar on a new research programme, “The Dual Nature of Technical Artifacts” that has recently been launched by professors Peter Kroes and Anthonie Meijers at Delft University. The exchange of ideas that took place between them and three other discussants opened up new perspectives that are sure to have a long-lasting influence on the philosophy of technology. Hopefully, the inspirational nature of the seminar comes out in the following collection of the papers that were presented.

In their introductory paper, Kroes and Meijers clarify what they mean by saying that technical objects have a dual nature: In addition to being physical objects, technical objects are also objects that have certain functions. Whereas the physical properties of a technical object can be described without any reference to human intentions, its functional properties are closely related to the intentionality of design processes. Previous philosophical analyses of function have mostly been devoted to the biological uses of the notion of function. This is unfortunate, since that usage is arguably analogical or derivative in relation to how we refer to the functions of designed artifacts. The philosophical issues of designed function have been surprisingly little investigated. They will be studied in the Dual Nature programme in order to attain the programme’s ultimate aim, namely a coherent conceptualization of technical artifacts that takes into account their dual nature as both physical and functional objects.

As Carl Mitcham makes clear in his comment, this programme puts a new fundamental issue on the table, alongside with other, more well-established issues in the philosophy of technology. As he also points out, the subject of technical function has been touched upon by many previous philosophers of technology. Important insights can be gleaned from previous literature, but a comprehensive treatment of the subject remains to be realized.

Mitcham asks, very succinctly, for clarification on the aims and limitations of the programme, by putting his finger on the three notions that figure in its name: (1) Why *dual*, not multiple? An artifact can be described in terms of its physical, chemical structural, dynamic etc. properties. (2) Why *nature*, why not character? The concept of nature

has an essentialist flavour that does not seem to be intended. (3) Why *technical artifacts*? What about artistic objects, or other artifacts obtained with some technique different from engineering design?

In their response to Mitcham, Kroes and Meijers defend their *dual* – as opposed to multiple – approach by pointing out that there is a great divide between the intentional and non-intentional properties of artifacts. Other properties and characterizations of artifacts can be subsumed under these two fundamental categories. By *nature*, they mean “fundamental character”, a notion that includes ontological characteristics. Since Mitcham means by “character” a second or supplementary nature, his proposal to substitute this term for “nature” would not suit their purposes. In response to Mitcham’s query about artifacts that are not *technical*, they reaffirm their methodological choice to limit their project to this category of artifacts. Whether or not their analysis will in the end be relevant for a wider class of objects, perhaps including artistic artifacts, cannot be determined beforehand.

Davis Baird’s contribution focuses on the relation between function and knowledge. In his view, an artifact can be said to bear knowledge; it does so to the extent that it successfully accomplishes a function. His analysis reveals a surprisingly close parallel between our requirements on scientific truth and on technical function. For one thing, they both serve to connect between the physical and the mental. Truth connects how the world is with how we think it is. Functions connect how an artifact behaves with how we want it to behave. There is some evidence of this parallel in non-philosophical usage of the word “true”. Baird refers to the notion of a “true wheel”; he could also have mentioned doors, compasses, musical notes and other man-made entities that are referred to as “true” when they satisfy our standardized functional criteria.

The relation between functions and human intentions is quite complex. To simplify the analysis, Baird proposes that we begin by focusing on a thin notion of function that refers to a reliable association between input and output (much like a mathematical function), thus postponing some of the deeper issues of intentionality and teleology.

In their response to Baird, Kroes and Meijers agree with him on several points, but disagree on the crucial issue of the usefulness of a thin concept of function. In their view, in order to connect how an artifact behaves with how we want it to behave, a function must refer to the intentions that we have with respect to how we want IT to behave. Therefore, they say, Baird’s thin notion of a function has to be replaced by a thick notion, that includes intentionality, in order to make his analysis viable. They also indicate that a justification of his account of “thing

Techné 6:2 Winter 2002 Hansson, Understanding Technological Function/ 3
knowledge” on the basis of non-propositional knowledge such as technical
know-how may be problematic..

Daniel Rothbart offers a different perspective on functions. His undertaking is not a philosophy *of* engineering but rather a philosophy *from* engineering. In other words, he endeavours to use insights from the philosophy of engineering to clarify issues in other parts of philosophy. (This has been done before, consider for instance Caroline Whitbeck’s, 1998, pp. 55-73, clarifying discussions of the parallels between engineering design and a moral subject’s search for ethically acceptable decision options.) Rothbart’s subject is chemical analysis. He shows how it can be better understood if we specify the function of the chemical specimen that is subject to analysis.

Responding to Rothbart, Kroes and Meijers endeavour to incorporate at least part of his analysis into their own framework, by pointing out that a chemical compound that has been designed or modified to be useful in scientific inquiry belongs to the same class of tools that the Dual Nature project is devoted to. They do not provide an example of such a modified compound; radiolabelled substances are probably among the clearest examples.

Given the ubiquity of function, there is good hope that Rothbart’s study will be only one of many in which an improved analysis of technical function can be used, in a “philosophy from engineering”, to improve our philosophical understanding of a wide range of human activities.

Reference

Whitbeck, Caroline. *Ethics in Engineering Practice and Research*.
Cambridge: Cambridge University Press, 1998.