

The Simon—Kroes model of technical artifacts and the distinction between science and design

Robert Farrell and Cliff Hooker, School of Humanities and Social Sciences,
University of Newcastle, Callaghan, NSW 2305, Australia

There is a long tradition of arguing that design and science are importantly different. One such argument is that the separation of science and design is an implication that can be drawn from the Simon—Kroes model of the nature of technical artifacts. This paper argues that the Simon—Kroes model does not imply a radical separation between science and design: if we accept the Simon—Kroes model of the nature of technical artifacts and their production, then we must also accept that all the sciences also produce technical artifacts, and in importantly similar ways. Moreover, the placing of both science and design in a naturalist framework reinforces this conclusion and opens up new vistas for synergetic cross-disciplinary discussion of design and methodology.
© 2012 Elsevier Ltd. All rights reserved.

Keywords: artifact, design science, design methodology, design theory, epistemology

An important class of argument intended to distinguish design from science is focussed around the claim that design is concerned with the making of things that do not exist naturally, whereas science is concerned with the study of those things that do exist naturally. For example, Willem contends that “All human-made things, material and immaterial, were designed at one time” (Willem, 1990, p. 44) with the implication being that those things that are not man-made were not designed. In consequence, this division of things into the mutually exclusive metaphysical categories of the artificial and the natural is said to bring with it important implications in relation to the nature and status of design disciplines and science disciplines.

It is argued that scientists do not produce the natural world as the end product of their investigations; however, designers *do* produce artificial things as the end product of their investigations. It is further argued that this production of artificial things requires different skills and a different relation to the things under study than that which prevails in the sciences. The argument can be summed up as follows: if disciplines produce different metaphysical things, then the intellectual study and production of these things will be significantly

Corresponding author:
Cliff Hooker
Cliff.Hooker@newcastle.edu.au



www.elsevier.com/locate/destud
0142-694X/\$ - see front matter *Design Studies* 33 (2012) 480–495
doi:[10.1016/j.destud.2012.05.001](https://doi.org/10.1016/j.destud.2012.05.001)
© 2012 Elsevier Ltd. All rights reserved.

different; design and science produce different metaphysical things; therefore, design and science are distinct types of intellectual study and production.

In this paper we will examine the arguments presented for this thesis in more detail and critically analyse their validity. We will argue that while it is legitimate to make a distinction between the *natural* and the *artificial*, the further implication that we can therefore make a distinction between the *sciences* of the natural and the *sciences* of the artificial is unfounded. Specifically, it will be argued that design and science do not produce metaphysically distinct types of things; therefore, the conclusion of the argument above cannot be supported.

Our starting point for analysis will be what we here dub the Simon–Kroes model of technical artifacts. This model was proposed by Herbert Simon in his touchstone work on the sciences of the artificial (1969) and later defended, in a slightly modified version, by Kroes (2002). We will argue that if we accept this model of the nature of artificial things then we must also accept that all the sciences also produce artificial things; consequently, any distinction that we may want to make between science and design cannot be based upon any general distinction between the natural and the artificial.

The strategic, constructive conception of scientific processes that our response establishes as the basis for this critique has an importance that reaches beyond the immediate context here. We recognise that addressing the metaphysical issues underlying any proposed natural/artificial divide will still leave other differences between design and science outstanding, in particular the descriptive-factual/prescriptive-normative difference.¹ However, while addressing these is beyond the scope of this paper, we contend that the conception of science we establish here forms the proper foundation for also dealing in a systematic way with these further issues — and comes out in favour of our position concerning the sameness of the fundamental process and kinds of products of both science and design.

1 The Simon–Kroes model of technical artifacts

Simon (1969) argues for distinguishing design, or what Simon calls the sciences of the artificial, from the natural sciences. Simon advances a number of propositions in support of this distinction but the core argument is based upon a distinction between the artificial and the natural. Simon lists four features that distinguish the artificial from the natural, the first two of which are that “1. Artificial things are synthesized ... by man [and] 2. Artificial things may imitate appearances in natural things while lacking, in one or more respects, the reality of the latter” (1969, p. 5.)

We have already seen that Willem follows Simon in this and it is a common theme in design methodology literature; for example, Cross quotes Archer,

Download English Version:

<https://daneshyari.com/en/article/261718>

Download Persian Version:

<https://daneshyari.com/article/261718>

[Daneshyari.com](https://daneshyari.com)