Science and design: Identical twins?



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Recently, Robert Farrell and Cliff Hooker opposed the conventional view that 'design and science are distinct types of intellectual study and production', claiming that science and design 'are not different in kind', and explicitly challenging proponents of the conventional view to 'provide explicit arguments' in its defence. This calls for an in-depth conceptual clarification of the science—design relationship. The aims of the present paper are to take up the gauntlet thrown by Farrell and Hooker, and in so doing, to provide such a clarification. We first analyse Farrell & Hooker's arguments, explaining why we find them unconvincing. We then propose a plausible conception of design versus science, and offer several arguments for considering design and science distinct, albeit related, concepts.

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In t is a commonplace human experience that much self-insight is to be gained by comparing ourselves to others that we come to know well - in particular if they are older and more experienced (parents, older siblings, inspiring teachers, senior colleagues, helpful neighbours, etc.). Likewise, as denizens of the academic community of design and design research, we may have a good deal to learn by understanding in what ways our own young discipline is similar to related but more established disciplines, or di/ers from them. *Art* is one case in point. *Science* another. Here we focus on the latter.

So, we might wonder, what is the relationship between *design* and *science*, and what can we gain from studying it? Both are forms of intelligent human action of an explorative, problem-solving kind, and as such appear to have much in common. All the same, a successful designer would not necessarily make a good scientist, and vice versa; so it would seem that design and science are different in some respects after all. But for a clear understanding of the relationship between design and science such vaguely conflicting intuitions will not do. Therefore, in this paper we critically examine our conceptions of design and science, and reflect on whether or how we can draw a clear distinction between the two. Arguably, this may facilitate students, practitioners and

Corresponding author: Per Galle pga@kadk.dk per.galle.web@gmail. com



www.elsevier.com/locate/destud 0142-694X \$ - see front matter *Design Studies* **35** (2014) 201–231 http://dx.doi.org/10.1016/j.destud.2013.12.002 © 2013 Elsevier Ltd. All rights reserved. researchers of design in drawing on whatever they deem design-relevant of the considerable body of knowledge and understanding of science that already exists. (For example, there is a well-established philosophy of science, which might inform the philosophy of design, which is only just emerging.) In the long run, as our own discipline and its philosophy gain momentum, a more symmetrical relation of exchange might evolve - much like, over the years, sons and daughters tend to come on an equal footing with their parents.

In the design-theoretical literature it has been taken more or less for granted that design and science are significantly different. In Simon's classic The Sciences of the Artificial, which is frequently cited even today, he contends that '[t]he natural sciences are concerned with how things are. [...] Design, on the other hand, is concerned with how things ought to be, with devising artefacts to attain goals' (1996 [1969], p. 114). Buchanan, a prominent contemporary design theorist, once suggested that 'scientists are concerned with understanding the universal properties of what is, while designers are concerned with conceiving and planning a particular that does not yet exist' (1992, p. 17, n. 42). But even before Simon wrote his landmark book and Buchanan drew his line between what is and what is not, Skolimowski (1966) had made a similar statement, though restricting himself to engineering design ('technology'): '[i]n science we *investigate* the reality that is given; in technology we create a reality according to our designs' (p. 374). He even condensed this into an elegant dictum: 'science concerns itself with what is, technology with what is to be' (p. 375).

Rather than taking this conventional science—design distinction for granted, Heylighen, Cavallin, and Bianchin (2009) develop an elaborate argument for it 'from a conceptual and psychological point of view' (*op. cit.* p. 94), drawing on Searle's notion of 'direction of fit' from his philosophy of language, and particularly his philosophy of mind. As they put it, 'the mental activities of a scientist are characterized by a mind-to-world direction of fit' (their beliefs must be true, i.e. their mind must 'match the world'; p. 97). 'In contrast, a designer's mental activities seem to be dominated by a world-to-mind direction of fit' (such activities not aiming at truth, but rather at 'what should be', i.e. at making the world fit the mind; p. 98).

However, in a recent paper, Farrell and Hooker (2012) oppose the conventional view that 'design and science are distinct types of intellectual study and production' (p. 481). Based on a sustained analysis of what they see as the core ideas of 'the dominant paradigm in design and design methodology' (p. 484), they reach the remarkable conclusion that 'design and science [...] are most accurately represented, cognitively, as design processes', and that therefore, 'they are not different in kind' (p. 494).¹ It is an undeniable merit of Farrell & Hooker to have so boldly challenged received wisdom about the science–design relationship. But not only do they challenge the Download English Version:

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