

# Science and design revisited



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In a refreshingly provocative paper, Farrell and Hooker (2012) attacked the conventional view that ‘design and science are distinct types of intellectual study and production’ (p. 481), arguing

- (1) that ‘science and design are *not in principle distinct*’ (2012, p. 487, emphasis added),
- (2) that ‘design and science [...] are most accurately represented, cognitively, as design processes’ (2012, p. 494), and
- (3) that ‘both design and science use design processes and reasoning strategies to produce artificial objects, therefore, they are *not different in kind*’ (2012, p. 494, emphasis added).

In addition, they challenged ‘those who still want to distinguish design and science’ to ‘show a plausible conception [of design] that does not include science’ (Farrell & Hooker, 2012, p. 490).

We for our part were, and are, not prepared to give up the conventional distinction between

science and design, which we found, and find, conceptually useful. Therefore, in a recent paper (Galle & Kroes, 2014) we rose to Farrell and Hooker’s challenge by proposing such a conception of design, while arguing for its plausibility. We also defended the conventional distinction by explaining why Farrell and Hooker’s arguments against it did not persuade us, and by putting forward some arguments of our own to support it.

Farrell and Hooker have now taken this debate a step further by publishing a response to us (2015) in which they elaborate on their views on the science–design relationship, using a thorough and critical analysis of our paper as a vehicle. The editors of *Design Studies* have asked us, in turn, to close the exchange by briefly commenting on Farrell and Hooker’s response. We are grateful for this opportunity to revisit the science–design relationship.

The overall subject matter that has been under debate is non-trivial and many-faceted: how to characterize and understand design, as compared to science. It is non-trivial in many respects (e.g., the answer given may have far-reaching consequences for how to set up design and science curricula) and many-faceted because each of the terms ‘design’ and ‘science’ has many different

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meanings of its own. Because of the many-faceted nature of the topic under discussion it is easy to get lost in details and to get confused about the precise claims that are being put forward. In our opinion that is exactly what is the case in our exchange of ideas with Farrell and Hooker. So rather than discussing the details of the issues that Farrell and Hooker raise, we will concentrate on the larger picture, reflecting on *the debate* so far as a whole, seeking thereby to tie up some loose ends that we see in it, and which might otherwise puzzle our readers or cause confusion. By this we hope, if only indirectly, to provide some additional clarification of the subject matter itself.

### *1 What of Farrell and Hooker's two 'complaints'?*

In section 1 of Farrell and Hooker's response paper (2015) they make two 'complaints', each of which seems to concern some glitch in communication or misunderstanding that we would like to set straight.

According to the *first complaint*, we 'persistently read' their discussion in (Farrell & Hooker, 2012) of the so-called Simon-Kroes conception of artefacts as if they themselves endorsed that conception. We are not aware of having implied such endorsement on their part. If anything in our paper (Galle & Kroes, 2014) left that impression, it was certainly unintended. We ourselves remained neutral in regard to the Simon-Kroes conception of artefacts, so as far as our debate is concerned, we regard this as a non-issue.

According to the *second complaint*, we 'misread' Farrell and Hooker's argument by restricting our analysis of it to deductive logic, while in fact it is about 'judging onus of proof'. Furthermore, in doing so, they say, we 'also illustrate the implicit assumption that deductive logic is the appropriate, indeed only, standard of analysis, the very presumption that lay behind the

flawed empiricist non-strategic conception of science' etc.

Whatever Farrell and Hooker may mean by 'illustrate' here, we used principles of deductive logic in our analysis, in order to show that their conclusion did not follow from their premises by a deductively valid argument – hence that it left room for our counter-argumentation. This does not commit us to any particular conception of science (flawed or not, as the case may be).

Like Farrell and Hooker, we are aware that in practical reasoning on complex matters, in science and elsewhere, one can seldom if ever proceed by deduction alone; other forms of reasoning may be called for, such as 'inference to the best explanation' (see e.g. Groarke, 2013). But that does not mean that one must forfeit analysis and critique in terms of validity of the arguments under discussion.

Apart from issues about validity of arguments, there are issues about the nature of the premises on which to base conclusions, when the bone of contention is the characterization of science and design as similar or distinct. Both sides in the debate may appeal to different kinds of evidence or may interpret the same kind of evidence in very different ways. We do not expect that it will be possible to come up with evidence and arguments that settle this matter once and for all.

Farrell and Hooker's second complaint also mentions the 'onus of proof'. With regard to the claim that science and design are *cognitively* different, they want to put it on us ('the onus of proof remains on those affirming deep difference' in their section 3). However, it has never been our aim to take a position in a debate specifically on cognitive differences; neither in (Kroes, 2002) nor in (Galle & Kroes, 2014). Our main aim in the latter paper was to argue against Farrell and Hooker's claim that there is no significant difference between the *products* of design and science. We argued that those

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