Dissolving the 'problem of the absent artifact': Design representations as means for counterfactual understanding and knowledge generalisation

Dingmar van Eck, Ghent University, Centre for Logic and Philosophy of Science, Blandijnberg 2, B-9000 Ghent, Belgium

It has been argued by Per Galle that a viable account of designing should address the 'problem of the absent artifact'. The problem concerns the nature of design representations. Specifically, the question how one can utter true statements, in terms of design representations, about artifacts when these artifacts are, in the design phase, still non-existent. This paper exposes the problem as a pseudo-problem. It is argued that design representations are not means for the production of truth-apt assertions. This dissolves the 'absent artifact problem'. An alternative view is elaborated according to which design representations are means for counterfactual understanding, knowledge generalisation, and knowledge unification. Examples from the functional modelling literature are used to illustrate these roles.

Keywords: epistemology, philosophy of design, conceptual design, design representation

Key tasks in understanding the nature of designing concern understanding what design representations are and which roles they fulfil in the design process (Galle, 1999; Herbert, 1993). Galle (1999, p. 58, 62) defended the view that designing is "the production of a design representation" and identified two essential roles of design representations: means for 'communication' and for 'exploration'. By his lights, in order to understand the nature of design representations, any account of designing should address what he calls the 'problem of the absent artifact':

> "How can we (apparently) utter and communicate truths about things which are not there to make our propositions true? These questions, when asked of design representations, state what I shall call *the problem of the absent artefact*" (Galle, 1999, p. 66, italics in original; cf. Herbert, 1993)

For instance, how to make sense of cases like this:

> "the architect may truthfully tell his client that 'the house' he is designing complies with the fire safety regulations, even though there is not yet any house at hand to comply with anything" (Galle, 1999, p. 66)

Corresponding author:
Dingmar van Eck.
Dingmar.vanEck@Ugent.be

www.elsevier.com/locate/destud
0142-694X *Design Studies* **39** (2015) 1–18
http://dx.doi.org/10.1016/j.destud.2015.04.001

More generally, how can design representations enable us, in the design phase, to produce true assertions about artifacts, *when these artifacts have not yet been produced/build?*

Galle attempted to address the problem by arguing that design representations do not refer to to-be-built artifacts, but are related to cognitive entities/ideas and that, rather than spatial-temporally located items in the world, ideas are the truth-makers of statements about designs. I argue that this move is deeply problematic for this notion of ideas as truth-makers cannot be justified.

In this paper I furthermore argue that the 'problem' of the absent artifact, in fact, is not a pressing problem. Accounts of designing that do take the problem seriously hence focus, at least partly, on solving the wrong kinds of challenges, and are well-advised to re-focus their research agendas.

On the position elaborated here, pace Galle, design representations are *not* means for 'exploring' and 'communicating' truths about designs. Design representations, and utterances based on them, can be subjected to evaluation in terms of a variety of norms such as 'generality', 'precision', and 'completeness' (Van Eck, 2014; cf. De Vries, 2010), yet 'truth' is not among them. This dissolves the 'absent artifact problem'.

The paper argues that design models or representations are first and foremost 'vehicles' to procure (counterfactual) understanding of to-be-build artifacts in terms of offering answers to *what-if-things-had-been-different questions*, and means for knowledge generalisation and unification. Two ways in which design models or representations support knowledge generalisation are elaborated: the generalisation of design knowledge by invoking *idealizations* or intentional distortions, and by using *abstraction*, understood here as the omission of design features from design representations or models (cf. De Vries, 2010). Empirical examples from the functional modelling literature are used to illustrate these roles of design representations.

The paper is structured as follows. The absent artifact problem is introduced in the next section. The problem is dissolved in section two. The roles of design representations with respect to counterfactual understanding and knowledge generalisation and unification are discussed in section three. Section four concludes the paper.

1 The problem of the absent artifact

Galle's (1999, p. 58) account of designing is aimed at offering a "simplifying paradigm" of designing. Endorsing Cross' (1992) assessment that previously such proposals for design thinking, like 'problem solving', 'information processing', 'decision making', and 'pattern recognition', failed to capture all intricacies of design thinking, Galle proposes a different tack.