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The core of ‘design thinking’ and its application

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The term ‘Design Thinking’ has been part of the collective consciousness of design researchers since Rowe used it as the title of his 1987 book (Rowe, 1987). The first Design Thinking Research Symposium was an exploration of research into design and design methodology, viewed from a design thinking perspective (Cross, Dorst, & Roozenburg, 1992). Multiple models of design thinking have emerged since then, based on widely different ways of viewing design situations and using theories and models from design methodology, psychology, education, etc. Together, these streams of research create a rich and varied understanding of a very complex human reality. Nowadays, “Design Thinking” is identified as an exciting new paradigm for dealing with problems in many professions, most notably Information Technology (IT) (e.g Brooks, 2010) and Business (e.g. Martin, 2009). The eagerness to adopt and apply

these design practices in other fields has created a sudden demand for clear and definite knowledge about design thinking (including a definition and a toolbox). That is quite problematic for a design research community that has been shy of oversimplifying its object of study, and cherishes multiple perspectives and rich pictures.

There are many good reasons to be interested in design, and consequently different people have picked up on ‘Design Thinking’ in different ways. This paper addresses one particular strand of enquiry; the interest in ‘Design Thinking’ expressed by the business and management communities, who feel an urgent need to broaden their repertoire of strategies for addressing the complex and open-ended challenges faced by contemporary organisations (Stacey, Griffin, & Shaw, 2000). Studying the way designers

work and adopting some designerly practices could be interesting to these organisations because designers have been dealing with open, complex problems for many years, and the designing disciplines have developed elaborate professional practices to do this. The challenge of dealing with these open, complex problems leads to a particular interest in the ways designers create 'frames', and the way design organisations deal with frames in their field of practice.

This paper starts out by using a model from formal logic to describe the key reasoning patterns in design. This provides a basis for understanding how design deals with open, complex problems. We will then explore which, out of a very broad and complex repertoire of design practices, could be most interesting for adoption in organisations that operate in other professional fields. The creation of frames is singled out, and the complex relationship between framing practices and organisational problem solving is investigated in more detail.

1 The challenge: abduction

To understand the complex and

sometimes puzzling field of design practices we have to realize that they have been developed in response to a particular need. It would be impossible to really understand design or even to find commonality in the incredibly diverse array of design practices without first referring back to the core challenge of design.

To build up a conceptual framework that is fundamental enough to anchor the variety of approaches that designers take, and connect the many descriptions of design thinking that have arisen in design research, it may be strategic to temporarily suspend the generation of 'rich' descriptions of design and instead take a 'sparse' account as our starting point. Logic provides us with a group of core concepts that describes reasoning in design and other professions. A 'sparse' description derived from logic will help us to explore whether design is actually very different from other fields and should provide us with some insight on the potential value of introducing elements of design practice into other fields.

To get to the heart of design thinking we build on the way fundamentally different kinds of reasoning are described in formal logic, in particular the way Roozenburg has

described the work of Peirce in the context of design (Roozenburg & Eekels, 1995). We will describe the basic reasoning patterns that humans use in problem solving by comparing different 'settings' of the knowns and unknowns.

[...]

Often, in popular literature, many disparate, vaguely creative activities are combined under the label of 'Design Thinking'. We hope to have shown in this analysis that the design professions stand for quite specific and deliberate ways of reasoning, and that design practices can interface with organisations on different levels, requiring the application of different kinds, levels and layers of design practice each requiring specific designerly abilities. Confusion about these application levels seems to be partly to blame for the general

confusion about both the nature and the merit of 'Design Thinking'. This confusion has now reached a crisis point, with eminent design researchers rallying against using the term 'Design Thinking' at all, vocally pronouncing its 'death'. In this paper we have tried to demonstrate that specific elements of design practice, like the way professional designers create frames out of the investigation of themes in the broader problem situation, could really benefit organisations and practitioners in other fields. In order to realise the true value that 'Design Thinking' can have for these practitioners and organisations, we need to articulate these practices with subtlety, clarity and in much more detail than has been achieved in this brief paper. **They** are the key contribution that design practitioners and design researchers could bring to a professional world that really needs them.

1. Which of the following is correct regarding the popularisation of the term “design thinking” among researchers of the area?

- a) It became more widely known due to a conference known as the first Design Thinking Research Symposium.
- b) It remains absent from the collective consciousness of design researchers, as it has not been widely studied.
- c) Researchers became more aware of it in the late 1980s with the release of a book about it.**
- d) There have been no discussions on design and design methodology since Rowe’s book, released in 1987.

2. It is INCORRECT to say that:

- a) Different models of design thinking have been developed, taking into consideration perspectives from areas other than design itself.
- b) In order to create a variety of models of design thinking, it is important that researchers work with situations and models from other sciences.
- c) When researchers understand how complex human reality is, it is more likely that different design thinking methodologies emerge.
- d) The use of theories from areas such as psychology and education has helped researchers understand that multiple models of design are actually useless.**

3. Design thinking has become a tool for problem solving in:

- a) The Design field only.
- b) Several fields, except IT and Business.
- c) Many areas but IT and Business.
- d) Various areas, especially IT and Business.**

4. About the application of design thinking in other areas besides Design, it is correct to say that:

a) **The desire to apply such practices has created the need for a more objective definition of design thinking.**

b) By adopting and applying design thinking practices to solve problems, other areas show that the design research community already has a very clear definition of it, as well as a toolbox.

c) A clear definition of design thinking, as well as a toolbox, are no longer necessary since other areas are already adopting and applying such practices.

d) Alternatives B and C are correct.

5. **True (T) or False (F)**

() Developing definite concepts of design thinking is actually a problem for design researchers, since they are not used to limiting their object of study.

6. **True (T) or False (F)**

() The paper focuses on a single line of enquiry, which aims to investigate the practises of design communities and how they use design thinking to solve problems within their field.

7. **What does the author say about business and management communities?**

a) These communities are far from being interested in adopting design thinking to solve problems. Therefore, they should be left out of the study.

b) **These communities really want to expand their knowledge of ways to overcome the challenges they face.**

c) Contemporary organisations are eager to improve their strategies to solve problems, even though they are free from complex, open-ended challenges.

d) They were the ones who developed the main concepts of design thinking because of their need to deal with complicated problems.

8. **The author says that in order to develop a conceptual framework that is good enough to support the number of approaches designers take, it is ideal to:**

- a) Make use of the rich descriptions of design instead of taking a more simplified look at design concepts.
- b) Avoid rich descriptions, at least in the beginning, and use logic to explain central concepts of design to help visualise its relation to concepts of other areas.**
- c) Put logic aside, since defining such framework with a description derived from logic would unlikely lead to insights on the potential value of design thinking in other areas.
- d) Recognize the fact that the field of design is too different from other areas, so there would be no reason for following a more logical perspective.

9. The author states all of the following, EXCEPT:

- a) The confusing use of the term “design thinking” has made designers and researchers come to the conclusion that design thinking is becoming an obsolete concept and new layers of design practice need to be developed to replace it.**
- b) The term “design thinking” is frequently used inadequately to describe certain activities, generating confusion about what it actually means.
- c) Although the inaccurate use of the term “design thinking” happens frequently, the paper tries to show that there can be effective levels and kinds of design practices for different areas.
- d) Different types of organisations might benefit from the application of design thinking strategies if these are specific designerly skills, so design thinking is not “dead”.

10. The word “They” in the last paragraph refers to:

- a) Practitioners.
- b) Organisations.
- c) Practices.**
- d) Researchers.