

Prototype dialogues: re-balancing design thinking through negotiations with fabrics, form and future

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Abstract

In this paper, we discuss and challenge design thinking as a process model. Though initially intended as a process for solving wicked problems, including inequality, environmental issues and poverty, focus in the later years appears to have been mainly on development for growth. Faced with the emergent need for green transition and connectivity in times of disruption and conflict, new ways of thinking and conducting creative processes are needed. Thus, a re-balancing of design thinking seems to be beneficial.

The implementation of design thinking as a process model has contributed to an increased focus on the early research phase, particularly on the interaction between user and products/services with an emphatic approach to understanding users. While we in no way wish to undervalue knowledge of user needs, we contend that this intense user focus partly cannibalizes the emphasis on research through experimentation and prototyping in the fuzzy front-end of a design process. We explore if it is possible to re-balance the design thinking process by re-connecting experiments and prototypes to the very early phases?

At VIA Design & Business we have observed that Fashion BA-students in their graduation project tend to carry out predominantly desktop research and some fieldwork for a considerable amount of the project time. Consequently, they postpone hands-on experiments and prototyping, apparently feeling that prototyping is the physical outcome of the research and process instead of prototyping actually being research and process; sometimes to a degree where the knowledge generated from tangible experiences emerges too late to bring value to the project. The students thereby miss the opportunity to include and benefit from substantial knowledge coming from early hands-on experiments.

We discuss how didactic approaches can initiate prototype dialogues in the early stages of the design process to evaluate the consequences and to re-balance design thinking models. To support the discussion, we introduce examples of early prototyping from two BA courses with different perspectives on prototyping. With these two examples, we demonstrate ways in which early prototyping in the fuzzy front-end of design thinking supports and enhances students' dialogues with the material of a situation and how it is beneficial for the further process.

Author keywords

Design Thinking; prototyping; material dialogues; design process, green transition, scenarios.

Introduction

The fashion industry will undoubtedly experience many changes in the coming years. New policy such as EU strategy and national strategies (N.N., 2022; N.N., N.D.) are expected to place new demands on the way clothing is produced, used and disposed of. It will increase the need for new knowledge about product responsibility and resource consumption as well as disrupt our design methods and the way we act in design practice. There is a need for innovation and alternative approaches to problem solution and to prepare students to act as change agents in societal as well as industrial contexts. Future designers must be able to choose and ask for materials appropriate for the intended use, handle material flows and have skills in design for recycling, disassembly and longevity. They must also have knowledge about circular economy and business models and last but not least be prepared to learn as they go. At the same time, researchers are pointing at the challenges within the fashion industry with a significant focus on circular economy as a relevant way to go. A focus that might lead to a misplaced perception that it is possible to create a 'good Anthropocene' (Brooks et al, 2017).

In this paper, we discuss what we have coined 'prototype dialogues' as an asset in design thinking, advocating that prototyping plays a pivotal role in all steps of the design thinking process.

Background and design thinking theory

The recent years of COVID-19 lockdowns and online teaching have undoubtedly contributed to less focus on hands-on methodologies, e.g., prototype development and material experimentation. However, it is simultaneously relevant to reflect on teaching methods and approaches when the students choose work processes that the teachers consider less appropriate in relation to creating the innovative and/or alternative solutions needed by the industry and society. Based on the observation of our BA Fashion students' approaches and design process, we scrutinized the course program and curricula and realized that the processes we teach predominant-



ly are founded on a design thinking approach that includes high user focus, trend studies and market research in the front-end of the design process.

Design Thinking

The introduction of the concept of ‘wicked problems’ (Rittel & Weber, 1973) and the later interlinkage to design thinking (Buchanan, 1992) has been central to the initial approach in the concept of design thinking. Around the 70’s, an interest emerged in the role and responsibility of the designer (Simon, 1969; Papernek, 1971). During the 80’s, there was an intensified focus on the working methods within the design professions, (Lawson, 2005; Cross, 2006; Schön, 1991) and the concept of design thinking emerged. The concept began to be applied to business problems (Brown, 2009) and spread, specifically through IDEO and their working processes.

Several design thinking models emerged, including Ideo, Stanford dschool and British Design Council. Though they use different terminology, generally all models include similar phases consisting of; 1) Discover, focus on users and research, 2) Define, identify the problem based on user need 3) Ideate, generating ideas, often through brainstorming and post-its. 4) Prototyping, construct a 3D version of the idea. 5) Test, testing ideas on the market and the stakeholders. In the years 2013 – 2015, VIA Design & Business developed and launched their own design thinking process model; The Strategic Design Practice 5F model (McElheron & Harsaae, 2016a, 2016b). The model drew on inspiration from the extensive literature about design thinking, including the above mentioned and was intended to close the gap between our design and business students. ‘Practice’ deriving from the design disciplines, including prototyping and experimenting, ‘strategic’ related to the business disciplines, and ‘design’ as the linkage between the two.

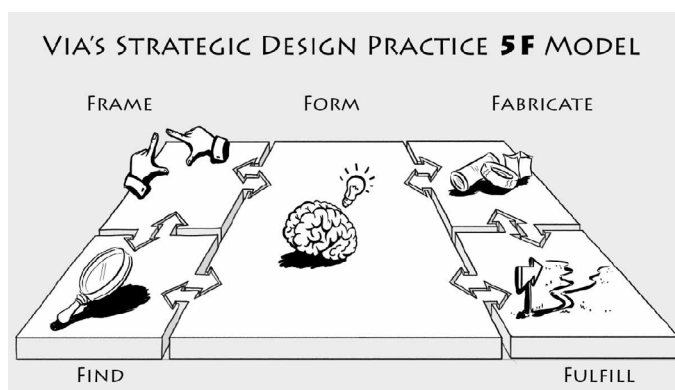


Figure 1. VIA Design 5F Model; McElheron, P. & Harsaae, M. 2013

In light of the current environmental situation and the urgent need for green transition, we are embarrassed to admit that at the time when we developed The Strategic Design Practice 5F model, the green transition was neither at the forefront of process development nor the goal of the model. The point of departure for the development was the focus on creating a process model tool which contributed to a better cooperation between design and business specifically with a focus on our students. The original idea of the model was also not to present it as a linear process, but instead to focus on a more open and unstructured process. However, during the use of the model and its diffusion within the education programs at

our university, we experience that it is articulated and used predominantly linearly.

The predominantly linear approach might be the reason why we at VIA University College, Design & Business, have observed the earlier-mentioned tendency among our BA Fashion students. In combination with the need for green transition, this observation points to a need for re-balancing our approach to design thinking, supporting an urgent need for alternative didactic approaches.

VIA Design & Business students are introduced to The Strategic Design Practice 5F Model at two different common module courses, one course placed on the 1st semester and the other course placed at the 5th semester. All students regardless of disciplinary specialization build a shared knowledge about design thinking as a process tool. In addition to the two introductions common for all study programs, the various programs choose individually the extent to which design thinking should be part of the curriculum. In the following sections, we discuss how didactic approaches can initiate prototype dialogues in the early stages of the design process to evaluate the consequences and to re-balance design thinking models. We do this supported by examples from two very different course modules.

Prototype dialogues – introduction to and discussion of examples

We set out to discuss how didactic approaches can initiate prototype dialogues in the early stages of the design process to evaluate the consequences and to re-balance design thinking models. To support the discussion, we introduce examples of early prototyping from two BA courses with different perspectives on prototyping at the forefront of the design process. The two courses have very different approaches, structures and expectations to outcome in terms of learning goals.

Elective; Changemaking Design

The elective ‘Changemaking Design’ is offered to students in their final semester. We invite the students to experiment with a variety of biomaterials during a three-week elective. The students come from fashion, furniture, and graphic design specialties. We specifically ask the students to individually experiment with biomaterials, including bio leather and alginate composites related to individually chosen concepts within their core design disciplines. The prototypes created by the students were speculative as these materials have not yet been commercialized. This allowed the students to examine the concept, taking an early hands-on experimental approach to explore the materials. The elective focused on the process and the students’ ability to learn from their



Figure 2. Prototype Dialogues: Biomaterials.

experiments and move back and forth between experimentation, knowledge generation, and insights. The output of the course was an individual portfolio documenting the process and displaying the different samples. Samples that the students evaluated as having potential for further development and commercialization were supported by recipes and reflections on further development. All of the students (9) performed really well and generated numerous material samples that pushed them in new and alternative directions that they stated have not been part of their considerations until then.

The course revealed advantages and disadvantages of the didactic approach. It was remarkable that some of the generally 'weaker' students matched or even surpassed the other students when working in this way. Some of the students were so taken up by the experimental approach that they put several extra hours into the project beyond what was expected. Others clearly had more difficulty navigating the very open approach that did not require the students to produce a specific, final result. Some students became so enthusiastic about the experimental approach that they resumed it in their final BA exam project and started with the development of materials and/or experimenting with form and shapes in existing materials. Some of them also transferred this approach to their work with deadstock or second-hand materials.

This example demonstrates how early prototyping in the fuzzy front-end of the design process supports and enhances the students' dialogues with the physical material of a situation beneficial for the further process. It does, however, also reveal that not all students adapt to and benefit that easily from this alternative approach right away. A catalogue of predefined subtasks may have supported these students in their experimental process. However, the explorative approach caused the students to develop materials that it is hard to imagine they would have developed if the point of departure had been user research, and in general the students' final portfolios revealed several material proposals worth investigating further in an industrial context.

Interdisciplinary Module

The second example is an interdisciplinary module for students across nine disciplinary study programs in the 5th semester of the BA. The aim of this module was to develop a concept for a case company that contributed to the company's sustainable development. The module is divided into two parts, a two-week introductory part and an eight-week processing a part. In the introductory part, the first task was to prototype future visions as 3D scenarios. The students worked in groups of four, and based on the identification of two megatrends and their countertrends, they created a scenario cross with four different scenarios and selected one



Figure 3. Prototype Dialogues: 3D future scenarios.

for prototyping. Contrary to the elective described above, the aim of this exercise was clearly defined. The students should visualize a future scenario as a 3D prototype which they should present to the other students and use as point of departure for their concept development.

Working with scenarios gives students tools to discuss possible, plausible, probable and preferred futures (Dunne & Raby, 2013; Voros, 2022). Using megatrends as guidelines for scenario development allows students to anchor their own intuition and move between feelings and qualifications. In this way, they work with data-based descriptive scenarios and/or intuition-based prescriptive scenarios (Margolin, 2007). This early prototyping gave the students the opportunity to have a very concrete dialogue about future utopias and dystopias. The prototype functioned partly as an icebreaker through conversation with the material of a situation (Schön, 1991), a way in which the students could get to know each other across disciplines and partly as a point of departure for the subsequent concretization of their idea and concept development.

This example demonstrates a different approach to early prototyping in the fuzzy front-end of the design process. Contrary to the first mentioned approach, this approach supports and enhances students' dialogues with abstract material of a situation beneficial for imagining and discussing potential futures as a framework for the further process. Moreover, the use of scenarios is an acknowledged approach in business (World Economic Forum, 2018) and political (Fritsche et al., 2021) contexts to identify future challenges and opportunities.

Conclusion – Re-balancing design thinking as a process model

With these two examples, we demonstrate ways in which early prototyping in the fuzzy front-end of design thinking supports and enhances students' dialogues with the material of a situation, in the form of the very concrete example from the elective or the more abstract example from the interdisciplinary module. From different perspectives, both types of dialogues are anticipated to be beneficial for the further process.

Material does and makes us do

In their article "Material driven design (MDD): A method to design for material experiences, Karana et al. (2015) argue for qualifying material "[...] not *what it is*, but also for *what it does*, *what it expresses to us*, *what it elicits from us*, and *what it makes us do*", emphasizing that materials need not only to be characterized by their functionality but also how a material contribute to create user experiences.

Focusing on Karana et al.'s notions about *what material does and what it makes us do* resonates with a focus on using material experiments as the point of departure for a design process intended to create not only long-lasting products but also products that last (Fletcher, 2012). Long-lasting products as well as products that last bear the potential to foster a green transition.

What *material does* is transferable to the properties required to make long-lasting products whereas what *material makes us do* might contribute to creating products that last. We suggest that if our didactic approach focuses on employing material experimentation at the front-end of their design process, we might facilitate a design process with focus on "*material experiences when a particular material is the point of departure in the design process*" (Karana et al., 2015:37).

The two courses we have presented in this article both relate to Karana et al.'s approach. The elective 'Changemaking Design' very concretely employs a similar approach with its focus on material experimentation and how this is applied by the designer to "create and materialize concepts which make the transition from design intention to material/product design" (Karana et al., 2015: 39). The interdisciplinary module, however, relates more abstractly to material and material experimentation as the approach is to focus on the dialogue with the material of a situation (Schön, 1991) through the building of scenarios.

Design Thinking and the Green Transition

Evaluating these approaches against the Strategic Design Practice 5F model's FIND phase implies a need to broaden the understanding of the user studies, encouraging designers to empathize and research on reveal relevant societal challenges, by adding concrete and hands-on material experiments and scenario prototyping as part of the initial research and exploration phase and as such add more perspectives to drive the further process.

Design thinking has a great potential. However, with this paper we argue that if supplemented with an explorative and experimental approach through prototype dialogues, there is an even greater potential for fostering new ideas that will contribute to the green transition.

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