

Design practices contributing to meaning-changing innovations – Case study in Finnish boating industry

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Abstract

Innovation of meaning can be either radical or incremental. There is a gap in research concerning design practices contributing to meaning-changing innovations. The purpose of this paper is to identify patterns of design activities contributing to the radical change of meaning. This paper is based on a case study analysis of a research-based concept design project that focused on generating product and service concepts for the boat industry for the forthcoming 10-15 years. These concepts as well as the process were analyzed in order to identify different design activities contributing to the radical change of meaning. The paper suggests a framework for designers for selecting design activities when pursuing radical meaning-changing innovations. The suggested framework explains the importance of framing activities when proposing radically new meanings.

Keywords: *Framing, Meaning, Innovation*

1 Introduction

Finnish companies operating in the boating industry are mainly conventional product-oriented companies. [1] Companies have been unable to perceive boating as a leisure time activity, which has narrowed the scope of identifying sources of innovation. The most significant changes driving the development of new products and services in the boating industry are related to future changes in the boater's daily life. These changes will have an impact on boating habits and consumer behavior. Companies that are able to effectively take advantage of changing customer needs and desires will succeed in the competition. [2]

User-centered design approach does not help designers to understand radical changes in meaning because its methodologies provide information that is in line with the current socio-cultural context [3]. In order to create genuinely new products, designers need to set aside the current meanings of products [3] and find the means to uncover opportunities by exploring people's unmet and unarticulated needs in the present and utilize this insight in future-oriented design activity [4]. Verganti [3] suggests, that radical changes in meanings might only be understood by looking at long-term phenomena from a broader perspective.

When talking about changes in people's daily life, the general sociocultural development is in the spotlight. It is important to understand these dynamics because boating is just one area of

the leisure time activities, connected by the same behaviors, and values that guide the behavior and preferences also in other fields of life [5].

However, there is a lack of research on how these meaning-changing innovations are created in practice. For example, what kind of reasoning patterns should be applied when pursuing meaning-changing innovation. Design thinking theory seems to provide useful concepts for understanding design activities on the level of practice.

2 Theoretical framework

Relatively little past research has focused on design practices of meaning changing innovation. The theoretical framework for this paper is based on two theories: Design driven innovation suggested by Verganti [3] and Design thinking described by Dorst [6]. The aim of applying management oriented (company-level) theory of meaning changing innovations to the Design thinking theory (designer and design practice level) is to create understanding in the design practices contributing to meaning changing innovations. Verganti's framework was used in order to identify appropriate concepts for the analysis. Design thinking theory was used to identify the design activities contributing to the creation of these meaning changing concepts.

2.1 Innovation of meaning

Öberg and Verganti [7] define the innovation of meaning as a change in the reasons why people buy and use products. People do not buy products merely because of their functions but also meaning. Meaning is something beyond features and functions. Instead it evokes a profound emotional, psychological and sociocultural response. [8]

Understanding product meanings is about making sense of an experience of use, and therefore it is connected to products or services and the system surrounding them [7]. In order to innovate a meaning, there is a need to explore how the context in which people live is evolving. As the larger socio-cultural context changes, the meanings are also adjusted to these changes, and therefore the concept of meaning is always in motion.

Verganti [3] suggests that in the same way that the functional innovation may imply an incremental or radical improvement of technical performance, the innovation of meaning can also be either radical or incremental. Innovation of meaning is incremental when a product adopts a design language and delivers a message that is in line with the current evolution of sociocultural models. Innovation of meaning is radical when a product has a language and delivers a message that proposes a significant reinterpretation of meaning. This paper focuses on examining the meaning as a message, not as a language.

Traditional user research methods do not help designers understand radical changes in meaning because they provide information that is in line with the current socio-cultural context [3]. In order to create genuinely new products, designers need to set aside the current meanings of products [3] and find the means to uncover opportunities by exploring people's unmet and unarticulated needs in the present and utilize this insight in future-oriented design activity [4]. Verganti [3] suggests, that radical changes in meanings might only be understood by looking at long-term phenomena from a broader perspective.

2.2 Design thinking

The predictions designers make about the future are an intrinsic part of the design process, and a designer's ability to envision and interpret possible futures is crucial to the success of

the design activity [9]. However, research findings such as user needs and information concerning the context of use are related to current use practices. They do not support designers who try to anticipate what users will consider desirable in the future. It seems that the future perspective makes the design problem more open.

The openness and complexity of design problems is linked to the concept of wicked problems. Rittel & Melvin [10] introduced the concept of wicked problems to describe the vagueness of social system problems in contrast to the clear, ‘tame’ problems in natural sciences and engineering. An essential feature of wicked problems is that an exhaustive formulation of the problem is impossible. This is due to the fact that the formulation of the problem and the solution emerge in parallel, i.e. it is not possible to define the problem until the solution has been found.

The reasoning patterns described by Dorst [6] seem to be useful in helping to understand how to tackle the openness of the design problem. As the aim of design is to create value for others, the basic reasoning pattern is abduction [6]. In fact, Dorst suggests that abduction comes in two forms (Figure 1 and 2). Abduction-1 is a form of conventional, ‘closed’ problem solving. In this form, the ‘value’ to be created and the ‘working principle’ to achieve the aspired value are already known in the beginning of the design process. What is missing, and needs to be created, is a ‘thing’ (an object, a service, a system).



Figure 1. Abduction 1 (Dorst, 2011).

In the second reasoning form, Abduction-2 (Figure 2), the only known thing in the beginning of the process is the ‘value’ to be created. A ‘working principle’ that would certainly work is unknown. Therefore, a ‘working principle’ and a ‘thing’ have to be created in parallel. This struggle with two unknowns leads to a special kind of design practice. Dorst [6] suggests that this type of ‘open’ reasoning is closely associated with conceptual design and solving open, complex problems.



Figure 2. Abduction 2 (Dorst, 2011).

One strategy to create a ‘what’ and a ‘working principle’ in parallel is to develop a ‘frame’ that tackles both unknowns. The concept of framing was presented by Schön [11]. He defines frames as statements that include a specific perception of a problem situation. Framing is about creating a novel standpoint from which the design problem can be tackled. It imposes a view on the design problem that implies the solution. Framing is about looking at the design

technical specialists, other designers in the project organization, representatives of the participating companies and the board members.

The in-depth analysis of concepts included 11 concepts out of the total 18. Concepts were selected based on three criteria: the description of the concept (1) gives enough information, and (2) is coherent enough, to evaluate the principles it is based on, and (3) describes the key features of the concept related to the applied technology, value for the user, functional features and appearance of the solution. Only those concepts were included in the analysis, which matched all of these criteria.

In order to identify the patterns of design activities contributing to the change of meaning, the design process and the qualities of the final concepts were analyzed. The analysis was made in two phases. In the first phase, the question was, how are the concepts located in the innovation framework suggested by Verganti? In the second phase of the analysis, the issue was, what design practices are identified in creating meaning changing concepts?

3.1 Allocation of concepts to the innovation framework

In the first phase, concepts were evaluated and placed in the dimensions of innovation framework suggested by Verganti. Two aspects were considered: (1) Does the concept adapt to the current meaning structures, or does it propose a new meaning? (2) Is the concept based on the incremental or radical change in technology? How much new technology is needed to realize the concept? Concepts were evaluated by authors, who had also been involved in the research phase and creating the concepts. The results of the analysis of concepts are presented in Figure 1.

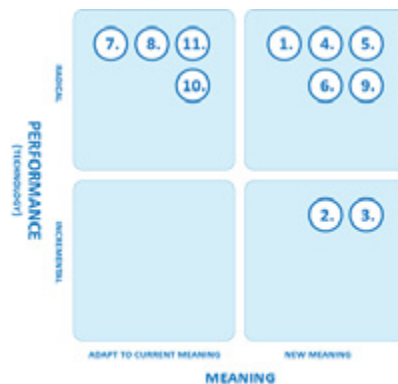


Figure 4. Allocation of concepts into Verganti's (2008) innovation framework.

Concepts in the upper left corner in Figure 1 aimed at optimizing the current product performance pushed by technology [8]. These concepts are based on the findings from the user research, and were enabled by technology that was eminently new to a product/service category. Most of the concepts were singular or accessory product solutions supporting a safe and convenient boating experience. These concepts were adapted to the current meanings of boating.

As an example, concept number 7 in Figure 4, was a device for safe and convenient docking (Figure 5). The concept was based on findings from user research. Traditionally, steering the boat takes place at the control board during the docking procedures. The control board is

usually located in the middle of the boat. This causes problems related to the approximation of distances and avoiding collisions, and it may even cause safety issues, such as falling out of the boat. In addition, it may hinder the docking of larger boats without crew members and cause difficulties when docking in windy weather conditions. Wireless technology would enable the skipper to move around the boat to all necessary positions during the docking. The concept does not propose a new meaning, but optimizes the docking procedures as they are by applying new technology.

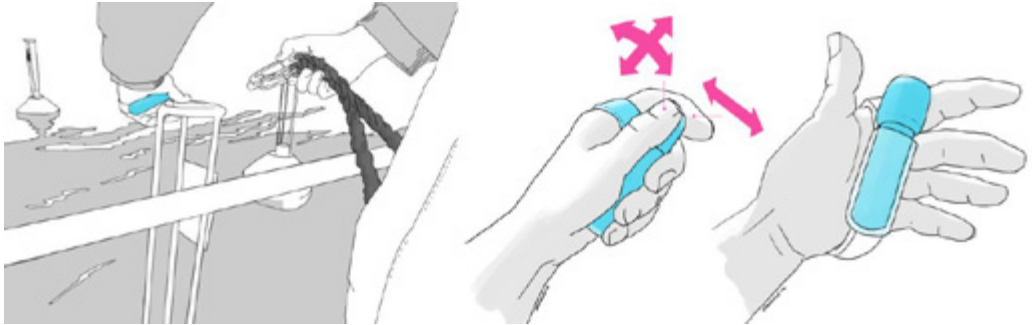


Figure 5. Device for safe and convenient docking.

Concepts placed on the right-hand side of the framework propose a change in the current meaning of boating. These concepts are driven by new experiences that significantly deviate from the current boating experiences. Concepts on the lower right corner propose a new user experience without applying a new technology. The two concepts allocated to this segment extend the current meanings of boating to new related domains, such as harbors.

As an example, concept number 2 in Figure 6, was a private space in the harbor (Figure 6). Instead of being just a docking place for a boat, the berth was seen as a cozy place to spend leisure time. This new meaning introduced radically new product features to pursue: privacy and versatility. In the concept, the berth provides space to relax, cook and socialize near the water and services. The new meaning was achieved without applying new technology to the domain.

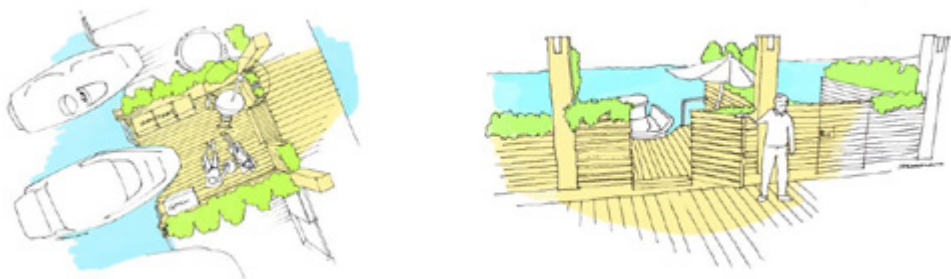


Figure 6. Private space in the harbor.

Concept proposals in the upper right corner in the framework were driven by a new boating experience, which was achieved by applying new technology. Most of these concepts were integrative in their nature – proposed boats and services comprised multiple new solutions that were integrated into coherent unity by underlining a certain user experience.

3.2.1 *Initial framing*

The case design project was expected to explore future product and service opportunities for the boating industry. The aim was to create new solutions that would attract new hobbyists, as the popularity of traditional leisure boating had decreased. Therefore, conventional frames that lead to traditional solutions had to be challenged and a new frame proposed.

With the *initial frame* boating was perceived in the context of consumers' leisure time. This frame emphasized the consumers' points of view, in which boating is regarded in relation to other leisure time activities. The 'leisure time' frame revealed the importance of understanding the boating experience more in detail, what is valued in leisure time and how these values are anticipated to change. In response to these key considerations, user research and trend analysis were conducted. In other words, the initial frame strongly influenced and directed the research [13]. The initial frame defined the scope of designers' engagement within the problem context and led to the emergence of themes in user research.

With the initial frame, the user was taken to the center of all design efforts. According to Hentinen et al. [1] Finnish companies in this field still lack the capacity to see boating from the users' and customers' point of view. Through the initial framing, conventional frames, working principles and aspired values are questioned. This case study implies the essential role of analyzing the existing working principles and values applied in the industry in order to understand what frames are new in the design situation at hand. It seems that current values and working principles can be identified through the analysis of existing boats, services and how these are developed within the industry.

3.2.2 *Evaluating the value changing potential of themes emerging from user research*

In Verganti's [3] terms, innovations can either adapt to current meaning (current 'why' of use) or propose a new meaning (new 'why' of use). In our case study, themes emerging from user research were evaluated in relation to their potential to create a novel user experience, i.e. to propose a new meaning.

Evaluation of the meaning changing potential of themes can also be regarded as a search for a new value of boating. In practice, each theme was examined by analyzing its capability to act as a new reason for boating, a 'novel why to boat'. As a result, themes were classified as those proposing value adapting to the current meaning and those proposing a new meaning of boating.

An example of the theme where the aspired value is based on the current meaning, is the theme 'difficult and dangerous docking procedures in harbors', which obviously cannot be regarded as a reason for boating. However, this theme has a high potential to create value for the user by increasing the performance of safe and convenient boating. In the later design phases, these kind of themes, were treated as simple and well-defined design problems. The aspired value was known, and the working principle to create solutions was widely used in the industry; the safety and convenience of docking could be achieved by applying new technology. In other words, frames to create solutions remained unchanged. Concepts based on current frames (example: Figure 5) do not propose a new meaning. These concepts can be characterized as technology-driven product and service opportunities fulfilling current user needs.

Instead, themes such as 'boating with kids' or 'furnishing a boat' were interpreted to provide potential novel reasons for boating. In these cases, the value was based on a new meaning of

boating. The core of the aspired value was known, but needed to be focused. However, the working principle for how to transfer the novel meaning through a product or service was unclear. In order to tackle the missing link between the aspired value and the working principles, new frames had to be proposed.

3.2.3 Reframing

In the case study, sociocultural trends were used for crystallizing and reformulating the aspired value. In practice, the sensitivity matrix was used for analyzing, how sociocultural trends may affect themes. For example, emergent phenomena such as wellbeing and homing were interpreted to intensify the theme of ‘furnishing a boat’. In this theme, factors such as privacy, customizability and autonomy were selected to describe the change of value.

As the aspired value was defined, a *new frame was proposed* in order to find applicable working methods for creating new solutions. In the case project, ‘design drivers’ [14] were used as a tool to reframe the link between a working method and a value. The theme ‘boating with kids’ led to a design driver paraphrased as ‘children-oriented boating’. Respectively, ‘furnishing a boat’ led to the design driver ‘boat as an extension of home’.

Frames paraphrased by a metaphor captured the missing link between the working principle and the aspired value. For example, the frame ‘spending time in a boat as comfortably and privately as in one’s own home’ simultaneously defined the working principle ‘design a boat as if you are designing a home for someone’. In other words, a new meaning emerged in parallel with a working principle: the frame (‘boat as an extension of home’) defined both the new meaning for boat, (‘boat as a home’), and the working principle to design a boat (‘design a boat as if you are designing a home’).

Reframing redefined the aspired value in terms of new boating experience and led to proposals of new frames to find appropriate working principles to create the aspired value. In the following phases of the design project, new working principles were applied to *create concepts of new solutions*. These concepts proposed a change in the current meaning of boating, with or without the use of new technology.

4 Conclusions

The purpose of this paper was to operationalize the practice of meaning changing innovation. This was achieved by applying design thinking theory to the management-oriented theory of meaning changing innovations.

The framework describing design activities contributing to the radical change of meaning was presented in this paper. This framework contributes to design research by improving the understanding of design practices related to meaning changing innovations. Specifically, it introduces a set of concepts and thinking models for the different phases for of the meaning changing innovation process.

Future research could validate the suggested framework (Figure 8). For example, researchers could measure designers’ perceptions on the suggested design practices in creating radical meaning changing innovations.

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