Most Advanced Yet Acceptable, but don't forget

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Abstract

Radical product and/or service innovation can ideally benefit all people and firms, and society as a whole, but pose risks in regards to technology-, industry chain-, market-, and project-uncertainty. In this paper we focus on addressing market uncertainty and argue that this uncertainty is affected by the meaningfulness of radical product and/or service innovations due to meaning gaps created during the innovation process. We investigate and suggest ways to bridge such gaps through theory inspired research using a design case study. Results show that in addition to introducing new meanings next to existing meanings, one should also select what meanings to dispose and which (lost) meanings to potentially re-introduce. With this work we hope to inspire design and innovation thinking on how to improve radical innovation adoption by addressing meaning gaps caused during the radical innovation process.

Keywords: Radical product and/or service innovation, innovation adoption, sociocultural regime transformation, meaning.

1. Introduction

1.1 Background

Radical product and/or service innovation can ideally benefit all people and firms, and society as a whole [1]. Advantages include: expansion of the consumer base and sociocultural regimes for a specific functionality; ultra-sustainable competitive advantages for firms [2]; and the ability to address major societal challenges (for example aging) [3]. However, radical innovation remains risky in relation to technology-, industry chain-, market-, and project-uncertainty [2, 4]. In this paper we focus on addressing market uncertainty.

Consumers buy meanings, not products, which leads to the conclusion that meaningfulness is an important factor for innovation adoption [2, 5]. The etymology of 'design' defines the word as 'making sense of things'—in other words design is about creating meaning [6, 7]. Meaning comes first from the designer's intended affordance(s) for a product and/or service's functions, and secondly from the user's interpretation of those affordances from that product and/or service in a specific context (like Verganti, we call the context a sociocultural regime) [2]. According to Wittgenstein the meaning of concepts are inextricably linked to their use and cultural context [8]. Moreover, Heskett identifies two basic contexts where wider reaches
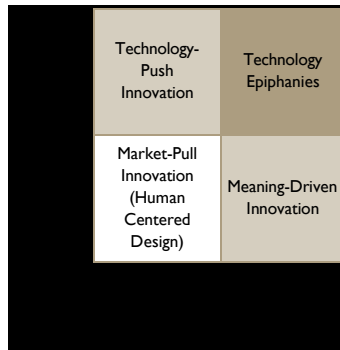
Figure 1   The two innovation dimensions and related innovation types [4]

of meaning should be sought: (1) the contexts of production, and (2) the contests of use and consumption [9].

Radical innovation may be associated with a significant change in either technology or meaning [4]. See "Figure 1. The two innovation dimensions and related innovation types". In both cases the consumer is confronted with a significant transformation from an existing to a new sociocultural regime. This transformation often alienates the consumer due to a significant meaning gap between the two sociocultural regimes. Incremental innovation involves lower risk because there is no consumer alienation as there are no significant transformations.

Currently industrial and design companies use post-design managerial and marketing oriented strategies in dealing with the aforementioned market uncertainty. These strategies include: market segmentation [10]; focus groups for concept testing [10, 11, 12]; and pre-market penetration efforts such as advertising [13]. However, these strategies are only partially successful because at this stage innovation designs are complete and there is little room for change.

1.2 Objective
Like many authors, we are interested in a more proactive approach at the earlier stages of the innovation cycle [14]. We specifically focus on actions designers can take during the *design process* to increase the adoption of radical innovation.

In product and/or service innovation, there are two ways to introduce new meanings: (1) building upon existing meanings (meanings present in current products and/or services); and (2) combining existing meanings. We believe that the meaningfulness of a product and/or service innovation, and therefore its adoption, requires the right balance between existing and new meanings. We believe that in incremental product and service innovation, new and existing meanings are balanced in such a way that existing meanings are dominant over new meanings. This dominance results in a balance where the meaning gap is either non-existent or insignificant and can be overlooked by the consumer. As a result there is no consumer alienation. In radical product and/or service innovation however, the balance is often such that new meanings are dominant over existing meanings, therefore resulting in a significant meaning gap that the consumer cannot overlook.

The meaning gaps caused by radical product and/or service innovation can be bridged by establishing a balance between the introduction of new meanings and the preservation of existing meanings (meanings coming from current and/or past sociocultural regimes). This

solution is similar in principle to Raymond Loewy's MAYA (Most Advanced Yet Acceptable) principle [15]. Moreover, this solution combines surprise with recognition—in other words balancing novelty with typicality [16]. In this paper we explore and analyze how to increase adoption of radical product and/or service innovation based on the principle of introducing new meanings while preserving existing meanings in a well-balanced manner. We investigate this principle using a design case study on the designing of a radical home audio system innovation.

1.3 Structure of this paper
We start by describing our research context and methodology. We continue by introducing the case study results followed by an analysis. Lastly we derive conclusions and define our future work.

2. Context and design approach

A 12-week case study in the form of a 'research through design' project was set up between the Industrial Design Department of Eindhoven University of Technology and the Department of Design R&D&I of Philips and executed by the first author in 2006. The goal of this 'research through design' project was to see how history could be used to understand current sociocultural product and service regimes and how to proceed from there for the creation and development of future product and service innovation proposals. However, for the purpose of this paper we focus on two things: (1) which meanings from a current sociocultural regime can be used to design a new sociocultural regime; and (2) how such meanings, along with new meanings, can be used to design a new sociocultural regime.

The design brief for the practical case above was to design a radical home audio system. By *radical* we mean a product and/or service created from a radical meaning and technology interplay innovation. In particular, we were interested in a differentiation from existing home audio systems by means of what Verganti calls a *technology epiphany* [2]. See "Figure 1. The two innovation dimensions and related innovation types".

This case study was based upon a 'research through design' approach and reflective practice. In this approach design action and reflection on action are considered creators of knowledge, and the design outcome is considered the physical proof of the knowledge generated [17, 18].

3. Design case study

Building upon previously mentioned principles of balancing new and existing meanings to support the adoption of radical product and/or service innovation, a radical home audio system was designed. We briefly describe the design outcomes in "Sections: 3.1 the NAVA social music table and 3.2 Designing new meanings (radical innovation)" followed by an analysis in "Section 4. Exploring meanings". For the analysis we use Norman & Verganti's theoretical framework. See "Figure 1. The two innovation dimensions and related innovation types" in relation to our principles [4].

3.1 The NAVA social music table
NAVA (in Farsi 'nava' means tone/tune; it is also a principal mode of Iranian traditional music) is a home audio system in the form of a coffee table. Digital (music) content can be uploaded wirelessly and displayed on the NAVA, which provides an inviting interaction that affords a social music experience. See "Figure 2. The NAVA social music table (left)".

Figure 2   The NAVA social music table (left), QR code for a video of the NAVA (right)

3.2 Designing new meanings (radical innovation)

This then newly designed home audio system was quite radical for its time, and to some extent, can still be considered radical. See "Figure 1. The two innovation dimensions and related innovation types". Below we describe two new meanings that we introduced in the NAVA social music table.

(1) Intuitive multi-user digital music browsing and playing

The NAVA is designed in such a way that more than one user can operate it. Moreover, it allows for multi user-, and therefore social-, interaction. The NAVA allows for a rich visual and almost tangible interaction with digital (music) content. People can sit around the NAVA and experience music on different levels by interacting with the digital (music) content on its touch screen display. See "Figure 3. The NAVA's multi-user interface (right)". Furthermore, people can share their digital (music) content with others by uploading it to the NAVA where it can be browsed and played intuitively, and experienced socially.

(2) Interactive album covers for music context experience

Next to digital music content (digital audio), music context (information that one used to find in CD booklets and can now find on the internet) is represented by means of dynamic and interactive album covers. This enables fans to stay in touch and up to date with the artists, and artists to regularly express themselves and interact with their audience. Since the album or track content with regards to both music content and music context is dynamic and changing, the experience is always unique. See "Figure 3. Example of a dynamic and interactive album cover: 50 Cent interactive album cover (left)".
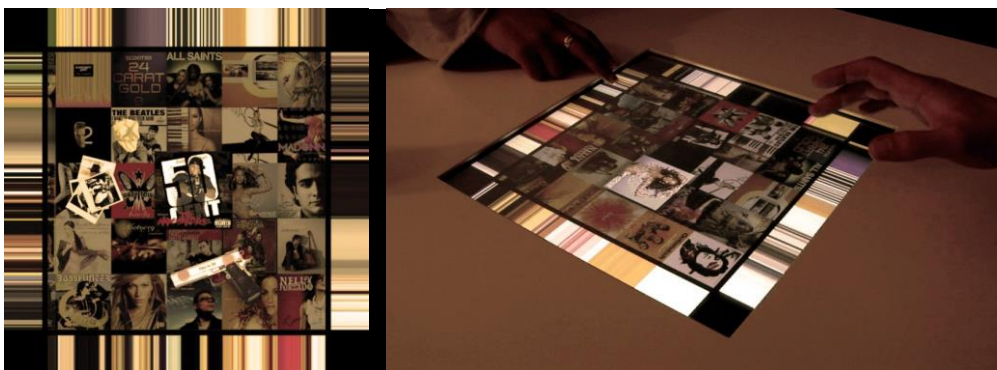

Figure 3   Example of a dynamic and interactive album cover: 50 Cent interactive album cover (left); The NAVA's multi-user interface (right)

4. Exploring meanings

Our analysis can be divided into two sections: (1) how sociocultural transformation gaps can be caused through *introducing* new meanings as well as *disposing* existing meanings; or (2) how these gaps can be bridged by *preserving* meanings as well as *re-introducing* lost meanings. Below we explain this using some supportive examples.

4.1 Sociocultural transformation gaps

Introducing new meanings
New meanings can be introduced in two ways: (1) through incremental innovation; or (2) through radical innovation. In incremental innovation new meanings are introduced in the same (or almost the same) sociocultural regime and in logical sequence with existing meanings. This enables the consumer to easily recognize, understand, and adopt the new meanings. In radical innovation, new meanings are introduced with the goal of creating a new sociocultural regime. This causes a significant transformation from the existing to the new sociocultural regime, which results in a significant meaning gap for consumers. For these new meanings to be recognized, understood, and adopted, the meaning gap must be bridged. This gap can be bridged by integrating meanings from a current sociocultural regime and incorporating them into the new sociocultural regime in one of three ways: (1) by introducing a new meaning together with one or more preserved existing meanings from the target sociocultural regime or one or more existing meanings that come from another sociocultural regime, or (2) by introducing a new meaning together with one or more lost meanings (disposed meanings, often missed by people, since they are only to be found in *past* products and/or services), or (3) by using a combination of the two.

In the NAVA we introduced two new radical meanings as outlined in "Section 3.2". To date (2006-2012), both are considered radical new meanings (in the home audio system context) because most, if not all, home audio systems are neither designed for intuitive multi-user digital music browsing and playing, nor work with interactive album covers that are based on dynamic content in time. In fact, in 2006 most home audio systems were based upon single-user interaction and used a text and menu inspired interface for music browsing. See "Figure 4. The 2006 Philips Streamium IFA home audio system" as an example. Due to their radical novelty, both new meanings introduced in the NAVA can cause a sociocultural transformation gap. In "Section 4.2" we explain how we have bridged this gap.

Disposing existing meanings
Existing meanings can be disposed of by selecting and deliberately not preserving them in
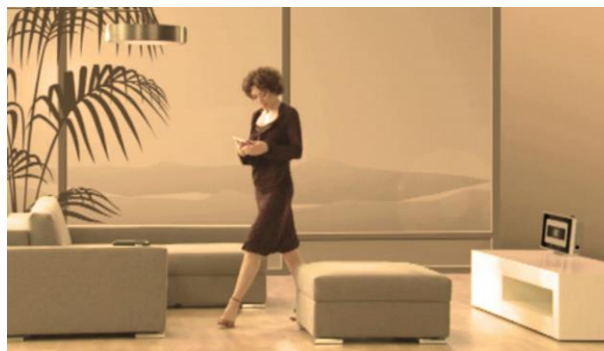

Figure 4   The 2006 Philips Streamium IFA home audio system

incremental or radical product and/or service innovations. These meanings will usually not be missed (by the consumer) if selected appropriately for their respective context.

We have re-introduced album covers in the NAVA, but we have deliberately modified the existing meaning of album covers to digital album covers. One of our goals in selecting digital album covers was to dispose album cover deterioration in order to eliminate the wear and tear exhibited with physical album covers.

4.2 Bridging sociocultural transformation gaps

Preserving existing meanings
Existing meanings can be preserved in two ways: (1) via incremental product and service innovation either by slightly improving and/or building upon existing meanings, or improving the technology behind them; or (2) via radical product and/or service innovation by selecting and re-introducing existing meanings, as well as cross-pollination of the target sociocultural regime meanings with existing meanings from other contexts.

In addition to preserving some basic music controls from our departing sociocultural regime, we have also preserved some meanings (for example portability, accessibility, etc.) that are afforded only when the music content that the NAVA supports is digital. Additionally, we have cross-pollinated meanings from other contexts and physical thematic objects in existing sociocultural regimes within, for example, the interactive album covers of the NAVA (for example Polaroids, hip-hop lyrics note, and a pistol to emphasize gangsta rap as the theme of the album). See "Figure 3. Example of a dynamic and interactive album cover: 50 Cent interactive album cover (left)".

Re-introducing lost meanings
Lost meanings can be re-introduced by identifying and selecting them to support new meanings in incremental as well as radical product and/or service innovation. Lost meanings deemed worthy of re-introduction are those that are missed and were at some point proven desirable by people.

Before Thomas Alva Edison introduced the phonograph, music was a social activity. After this radical product innovation one could individually listen to and experience music using the phonograph. Moreover, music lost its social experience meanings in home audio systems that followed. For example, in recent decades home audio systems have been designed: a) to fade into the home interior, and b) for single-user interaction and therefore not necessarily social in use. In designing the NAVA we have reintroduced the lost social meanings of music experience by deliberately building the audio system into a coffee table. The coffee table design is significant because it acts as a decorative centerpiece that often acts as a center for social interaction in a home and is therefore 'social' in its foundations. The NAVA is designed square to afford well-balanced participation (no person around the NAVA has priority over others due to a product affordance). Furthermore, the NAVA allows its owner(s) to express himself/herself/themselves to other people (for example visitors). McCracken describes this expression as identification towards oneself and others through material culture artifacts [13]. That is, sharing owned and collected digital as well as visual music content that invites for browsing and play, and has interactive thematic objects that are meaningful when on a table surface, in interactive album covers that allow for music context experience based on the artist-audience interaction that was possible before the introduction of phonographic cylinders.

5. Conclusion and discussion

In conclusion, we have explored and analyzed how existing meanings can be selected from a current sociocultural regime and designed into a new sociocultural regime in order to increase the adoption of radical product and/or service innovations. We discovered that disposing existing meanings and introducing new radical meanings usually creates sociocultural transformation gaps that can be bridged by balancing new meanings with existing meanings, and re-introducing lost meanings.

Our case study analysis uncovers the importance and value of considering and researching long-term thinking and history when designing radical product and/or service innovations. Long-term thinking and history are important for capturing and understanding existing meanings, what meanings to preserve, dispose, and re-introduce, as well as how to create new meanings by capturing, understanding, and extrapolating existing meanings. This design perspective can perhaps direct us towards design of radical product and/or service innovations that are not only transforming society, but also develop society.

However, some unanswered questions still remain. First, where exactly is the pivotal moment where the balance between new and existing meanings is optimal for a radical product and/or service innovation to be adopted? Secondly, to what extend can existing meanings (from contexts outside the target sociocultural regime) contribute to radical product/or and/or service innovation and its adoption? Last but not least, how does history specifically contribute to the principles discussed in this paper?

6. Future Work

I addition to answering the questions outlined above, we plan to continue our research by exploring how designers can work in co-operation with interpreters (stakeholders who can contribute to the meaning creation and realization of design outcomes) during early developmental stages of projects to benefit from objectivity and their resources for operationalizing innovation concepts. We would also like to explore the possibilities of the conclusions presented in this paper within the domain of product service system (PSS) design and innovations in which significant sociocultural transformations for both consumers and firms form barriers for PSS adoption [19, 20].

7. Acknowledgements

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