Authentic Evaluation of Radical Innovations: A Conceptual Framework

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ABSTRACT

The concept of authenticity is discussed in the literature regarding product design through the perspectives of users and designers (Liao & Ma, 2009; Kristav, 2016) along with others that evaluate the phenomena through discussions on user experiences (Reisinger & Steiner, 2006). Several studies describe authenticity as a concept that mostly appears in initial examples of product contexts (Kristav, 2016). These products, which represent a starting point, are named as radically innovative products in design literature (Verganti, 2009).

Design-driven innovations result in changes in the meanings of the products; radical changes in product meanings can occur through merger of existing product contexts (Norman & Verganti, 2014-b). Therefore, users can have expectancies related to their experiences on the merged product contexts. Analysis of these expectancies can be important at the initiation of design-driven radical innovations, their fulfilments can have role in product adoption (Desmet & Hekkert, 2007; Hassenzahl, 2005).

In this study, the effects of authentic expectations on radical innovations and their evaluations will be discussed in theoretical basis through the studies in the literature, to provide a conceptual framework on the subject.

Keywords: Product design, radical innovation, design-driven innovation, authenticity

INTRODUCTION

Estimation of consumer expectancies is considered crucial for adoption of products and user satisfaction, in both initial and repeated usages of the products (Anderson, 1973; Tsiros et. al, 2004). Some of the issues about user expectancies can be discussed through authenticity concept, which also evaluates the satisfaction of users regarding authentic evaluation of products (Kristav, 2016). This study focuses on authentic

evaluation of radical innovation in products, in an effort to identify possible origins of authentic expectations.

Discussions about radical innovations are recently focused on two aspects; technology and meaning (Verganti, 2009). The new meanings in products are created mainly through product design, and it is claimed that radical innovation of meanings can be conducted through combination of previous product concepts (Langrish et. al, 2014). Adoption and diffusion of radical meanings are studied and discussed in the literature (Dell'Era et. al, 2008), since radical innovations are considered risky as their success rate is considered low (Norman & Verganti, 2014-a). Therefore, estimation of user expectation can be significant for these products in order to facilitate their adoption.

This study aims to provide a conceptual framework for evaluation of authenticity in radical innovations. The focus is put on radical innovation of meanings, as they may result from mergers of existing product contexts. The theoretical background for the framework is built through former studies in the literature, to be followed by the introduction and discussion of the framework.

RADICAL INNOVATION OF PRODUCTS

Radical innovations are basically defined as major changes and initiation of new contexts in products (Cooper & Press, 1995; Trott, 1998, Verganti, 2009). They are differentiated from incremental innovations, which are defined as continuous and evolutionary (Yu & Hang, 2010). Another concept in the literature that is close to radical innovation is disruptive innovation, which is also referred in studies that discuss design-driven innovations as a possible outcome of radical changes in product meanings (Verganti, 2008). However, one of the most stressed outcomes of disruptive innovations is major changes in mainstream markets (Yu & Hang, 2010; Christensen, 1997). Since this study concentrates on changes in product concepts through alteration of technology and meaning, the term radical innovation is preferred rather than disruptive innovation to emphasize the focus on product architecture, rather than market effect.

As mentioned before, in recent literature innovation is discussed in technology and meaning dimensions (Verganti, 2011). Technology dimension mostly considers technical improvements in a product (Varganti, 2009), in line with the prior orientation of innovation literature, which mostly stresses importance of technological improvements in formation of innovations (Cooper & Press, 1995; Trott, 1998). Radical innovations in technology may or may not enhance the initiation of new meanings, however they mostly set new standards in industry (Norman & Verganti, 2014-a).

The meaning axis of product innovation is driven by product design. A change in the meaning reflects an alteration in the way a product is perceived by users; this alteration may also change the way the product is used (Verganti, 2009, Norman & Verganti, 2014-a). As stated before a radical design-driven innovation, which enables initiation of a new product meaning, can be derived from combination of prior product contexts (Norman & Verganti, 2014-a). It is also stressed in the literature that radical innovation of meanings cannot be derived through human-centred design methods (Verganti, 2009); this idea is in-line with others which support that only lead-user involvement can help creation of radical innovations (Urban & Von Hippel, 1988; Lilien et. al, 2002). These views stress that ordinary users have a tendency to focus on current product contexts, therefore they cannot provide inputs about radical innovations during human-centred design research. To sum up, it can be said that ordinary users cannot provide eligible inputs to create a radical innovation, however they might have experiences with prior product contexts that form a new product meaning that can be considered as a design-driven radical innovation.

PRODUCT AUTHENTICITY

Authenticity is discussed in various fields such as marketing, tourism, architecture and design, along with many others (ICOMOS, 1994; Kristav, 2016; Reisinger & Steiner, 2006; Pine II & Gilmore, 2007, Van den Bosch, 2005). Regarding industrial design, the user experience factor is one of the primary focuses of authenticity discussions (Lioa and Ma, 2015). Novelty, originality and genuineness are also referred in some of the studies to describe authenticity (Feilden and Jokiletho, 1993).

Originality and historic value is referred in product design literature, as well as architecture, as factors that enhance authenticity (Kristav, 2016). Since mass production and market forces are effective in product design (Cobb, 2014), it is harder to discuss authenticity on novelty basis. Buildings can be referred as unique items that are not replicated and spread globally; they reflect characteristics of a certain geography and demography. Unlike buildings, it is common for products to be mass produced and distributed globally. Therefore a product that represents a cultural experience can be replaced by others in terms of functionality; in this case even though the product may fulfil its commitments of functional base, it may not be considered authentic as it fails to reflect the cultural experiences.

The relation of product authenticity and culture are discussed through the backgrounds of products, users and societies (Vann, 2006). Users' prior exposures to product contexts may alter their perception of authenticity, this phenomena is frequently discussed to explain attitudes of tourists (Beverland, 2005; Pine II & Gilmore, 2007; Reisinger &

Steiner, 2006). Also, designers' views on culture, reality and world have a direct effect on design process, along with designers' education and background (Dunne & Raby, 2001; Dell'Era & Verganti, 2007).

Even though the replication of products obstructs discussion of authenticity at some levels, many other aspects such as material selection, environmental concerns, identity and quality of design input are still considered in evaluation of authenticity (Kristav & Diegel, 2017). As mentioned before, initiation of a product context is also referred as authentic, as the very first example of a product defines its authentic features (Kristav, 2016). Therefore it can be concluded that there are many dimensions of authenticity in product design, and many definitions depending on the context (Kristav & Diegel, 2017; Morin, 2010). The polyphony and ambiguity in definitions is expressed in the suggestions that sometimes it is easier to detect products and phenomena that are not authentic, than the ones that are (Cobb, 2014).

AUTHENTICITY OF RADICAL INNOVATIONS

In this paper, authenticity is evaluated at the new product context initiation stage. As stated before, the very first example of a product can be considered as a radical innovation. A radical change that only appears in the product meaning is referred as meaning-driven innovation (Norman & Verganti, 2014-a), while a radical change in technology is named a technology-push innovation; a radical change in these two dimensions is called a technology epiphany (Verganti, 2009). Since this paper is focused on product design, the primary consideration is not the changes that only occur through technology. The aim is to explore innovations that bring out new product contexts and usages. Primary examples of product contexts provide their own original architecture and experiences, they are comprehended as genuine and real, therefore they are claimed to be authentic by their nature (Kristav, 2016; Pine II & Gilmore, 2007).

Regarding their nature and lack of human-centred design methods in their creation process, it may be questioned if any authenticity-related user expectations can be detected for radical innovations.

As stressed before, it is stated that radical innovations can be based on existing product contexts and may be an outcome of their merger. This is supported by Norman and Verganti (2014-b) with the quote "We stated that all radical innovations do come from pre-existing ideas and innovations. So how do they combine if not by local incremental optimization? By novel combinations, that's how.". The possibility of having traces of meanings that are related to existing product concepts in a radical innovation hints at the

probability of defining expectations of users', related to their prior experiences with the merged product concepts. When the literature on product experiences is searched, it can be seen that there are some studies supporting this view. In their research on user satisfaction and technology acceptance, Wixom and Todd (2005) emphasize the role of behavioural beliefs of people in adoption of a system. It is also stressed that the consistency between product experience and users' behavioural goals is important in users' interaction with product (Hassenzahl & Tractinsky, 2006). Users have a tendency to evaluate authenticity according to their expectations as they can evaluate authenticity based on their assumptions about how a product should perform; this propensity is referred to as subjectivity in authenticity (Beverland, 2006).

Based on the studies in the literature, it can be hypothesized that users may have authenticity expectancies from radical innovations related to their assumptions. These assumptions may arise from the merged meanings that users are accustomed to, which also form the radical meaning in the product. Therefore it can be supposed that initial example of a product context may include authenticity based on users' experiences with former product types. However, after initialization, a radical innovation can make a statement about its own context and meaning. This new meaning would include its own authentic structure (Kristav, 2016), and would create a new structure which would be considered as an archetype that will set the standards for further authentic evaluations.

EVALUATION OF AUTHENTICITY IN RADICAL INNOVATIONS

At this section, a conceptual framework on how to evaluate authenticity on radical innovation of meanings is provided, along with examples.

As stated before, a radical improvement in a product can appear in both meaning and technology. A radical change in meaning can appear by merger of previous product contexts. Some of the examples for such changes can be Nintendo Wii game, Alessi's Family Follows Fiction series and e-book readers (Verganti, 2006; Norman & Verganti, 2014-a; Wilson, 2014).

Nintendo's Wii gaming console was developed in 2006 in an effort to create an alternative for video consoles market that was dominated by Sony and Microsoft; the market at that point aimed to provide superior realism through graphics and resolution, and the target users were mostly young males (Yu & Hang, 2011). In contrary to current gaming experience, in which users mostly used their thumbs to control the games, Nintendo employed MEMS (Micro Electro Mechanical Systems) accelerometers and infrared sensors to enable a more active playing experience with lower resolution; this

dramatic change brought up the possibility of using video games for exercising as the new product aimed users from all ages and genders (Norman & Verganti, 2014-a, Yu & Hang, 2011). As these games made users mimic the movements in real-life activities such as playing tennis and such, alternative scenarios were built regarding the use of these products, including education of disabled children and physical rehabilitation (Pearson & Bailey, 2007; Hurkmans et. Al., 2011). Since Nintendo Wii brings both inclusion of a new technology and a new meaning to the market, it can be considered as a technology epiphany.

Figure 1: Visuals on a Wii Sportsracket Kit Box

Alessi's Family Follows Fiction kitchenware is presented as an example for radical change in meaning; therefore meaning driven innovation (Norman & Verganti, 2014-a). The meaning change appears as this family of products aim to address users' memories related to their "childhood pleasures and sensations" (Verganti, 2006). The product line was developed by getting inspired by a psychology study that focused on objects which were related to psychological development of children; as a result, it included items that were not only functional, but also figurative objects that evoked affections of users (Verganti, 2008).

Figure 2: A Member of Family Follows Fiction Series: Fruit Mama (https://www.alessi.com/it_it/fruit-mama.html)

The concepts for e-book readers were developed as early as 1930's, and initial models were seen in 1998, however the product that set the market standard appeared at 2007 (Wilson, 2014; Wilkinson, 2000). The early ideas for reading a book from an electronic device aimed to build a portable gadget that would hold hundreds of books (Wilson, 2014). Some of the early examples had direct reference to books in their form and usage (Wilkinson, 2000). More common expectations of users from the product were note taking, in-built dictionary and memory capacity (Selthofer, 2014). E-book readers are named as disruptive innovations, mostly regarding the publication market (Selthofer, 2014). They are claimed to provide a reading performance that is identical to printed books with their e-ink technology, and they stand out from other devices such as computers, tablets and smart phones that enable reading books in an electronic environment (Siegenthaler et.al., 2010). With their inclusion of a new technology and an alternative reading experience for books, these devices can also be named as technology epiphanies.

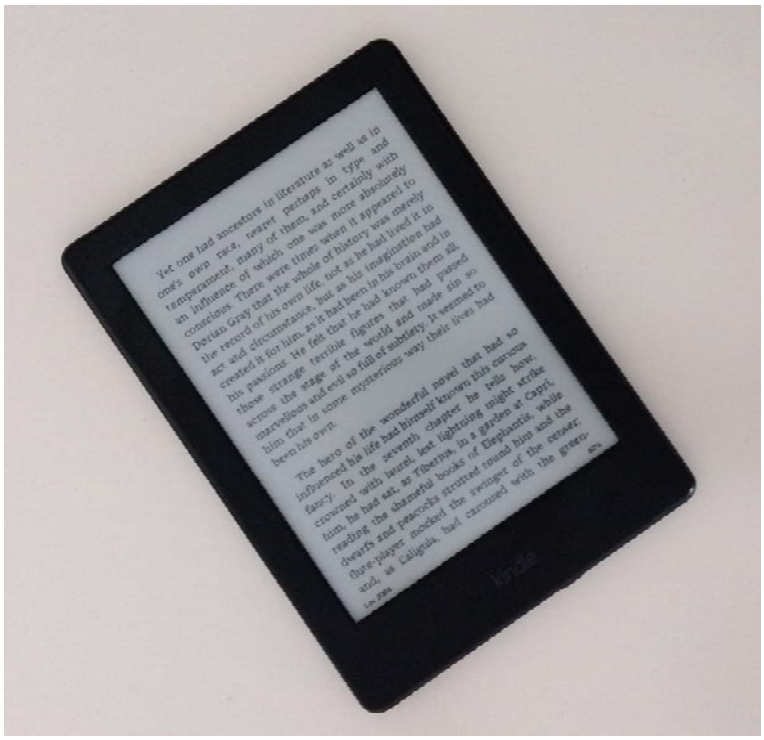

Figure 2: An E-Book Reader with an Ink-Screen

When these three examples are explored, it can be said that they combine experiences and meanings that are related to existing products and experiences. Nintendo Wii combines game consoles with real-life activities, Alessi's Family Follows Fiction combines kitchenware with the products that evoke childhood memories (such as toys) and e-book readers address the paper book reading experience through electronic devices. Such an analysis of related experiences and meanings is in line with the statement about radical innovations that combination of existing product contexts can lead to genuine artefacts. However, to build a successful merger of contexts, these radical innovations need to concentrate on authenticity of the experiences. For example, as mentioned before, e-book readers introduced e-ink technology to create a reading experience close to paper books; in order to eliminate fatigue and eye-strain that are said to exist in other screens (Dillon, 1992). Again, battery lives of e-book readers are expected to be longer from other mobile electronics devices, as reading experience may take longer time when compared to other multimedia tasks. For Family Follows Fiction, the kitchen appliances have to include visual cues in the right way to address users' emotions; therefore it is understandable for design researchers to follow related psychological studies to include elements that are genuine to childhood memories. Finally, Nintendo Wii should enable its users to conduct a physical activity to support its original meaning.

Since the adoption of radical innovations are supported by the fulfilment of users' assumptions (Hassenzahl & Tractinsky, 2006; Wixom & Todd, 2005; Beverland, 2006), focusing on the authenticity of merged contexts may be crucial for radical innovation of meanings.

Based on the discussions through literature, the following model can be proposed for authentic evaluation of radical innovations.

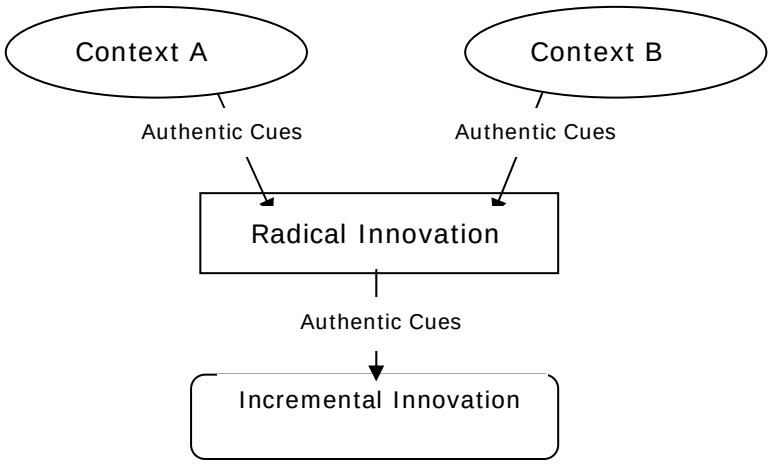

Figure 3: A Model for Tracing Authentic Factors in Radical Innovations

In this conceptual framework, it is hinted that radical innovations will include authentic cues related to prior experiences of users with previous product contexts. In the case of Family Follows Fiction product family, users will have genuine expectations related to kitchenware product functionality and usage, together with feeling affection related to their childhood memories. An e-book reader should provide functionality of consumer electronics through smartness and mobility, while it should enhance reading experience through performance, by supporting various reading durations, locations and formats. Finally Nintendo Wii should provide users with experience related to physical activity, while enabling users to play video games in their preferred environments.

Prior to the emergence of a radical innovation concept, users may have various expectations related to authenticity; however they may not objectify them. This is related to suggestions about how ordinary users and human-centred design methods can not directly help the development of radical innovations (Urban & Von Hippel, 1988; Veganti, 2009). Therefore it is only their perception of authenticity related to experiences that can be analyzed during the development of radical innovations; a good example being the focus on psychological studies during the research period of Family Follows Fiction product series (Verganti, 2008). Only after the initiation of the new product

context can designers evaluate genuine authentic expectancies that are directly related to it.

The second set of authentic cues form after the initiation of a product archetype that sets the market standards. Most of the radical innovations are followed by incremental innovations that develop and optimize the new context (Norman & Verganti, 2014-a). Within these incremental innovations, authentic expectations that are related to product archetype may be sought. Until the initiation of the radical innovation, users may not have an idea about how the merged contexts will look like and perform. For example, the initial assumptions about battery life of an e-book reader may be much shorter than that of the actual product. Or playing a video game with gestures may be pictured much more complicated in users' minds. As mentioned before, radical innovations are primary examples of product contexts, so they hold their own authentic cues (Kristav, 2016). The product archetype that sets the market standards may influence users about how certain product contexts can merge to build a radically new product. After getting accustomed to primary examples, users can have new authentic cues in their minds according to their experiences with the archetype. So they may have a tendency to seek these authentic cues in upcoming incremental innovations.

At this point, it should be noted that upcoming products in different radical innovations may have different natures. If a radically new product does not propose a completely new usage scenario, the spread of the innovation may be referred as "imitation". Verganti (2008) expresses that Family Follows Fiction products are "quite imitated", and incremental innovators of product languages can be referred as "imitators" in the literature (Dell'Era & Verganti, 2007). However this may not be the case with every radical innovation. As e-book readers and activity based video games introduce new product uses, they are more open to performance improvements. The upcoming proposals for the contexts that are produced by competitors may still be evaluated as authentic by users, if they are loyal to the quintessence provided by archetype and acknowledged by users. On the contrary, incremental innovations that are based on radical innovations which do not propose a new usage may be regarded as imitations by users.

CONCLUSION AND DISCUSSIONS

The focus of this study was to investigate if traces of authentic expectations related to former product contexts can be detected in design-driven radical innovations. A conceptual framework was built to explore and discuss authentic expectancies of users in radical innovations and incremental innovations that follow them.

The conceptual framework hypothesizes that, as design-driven radical innovations can be built upon existing contexts, they can include authentic cues related to prior experiences of users. However, after the initiation of the new context, users experience the archetype and get accustomed to it to build new authentic expectations from upcoming products.
It is stated in the literature that foreseeing users' assumptions and behavioural beliefs related to product contexts plays an important role in product adoption. Since the success rate of radical innovations are generally low, it may be even more crucial for designers to evaluate user expectations. Therefore it may be important to explore the authenticity concept in radical innovations, as authenticity is one of the factors that is directly related to user experiences and expectations. Inclusion of authenticity in radical innovation studies may enable researchers to develop new methods for understanding consumers' perceptions and expectations related to radical innovations.

In further studies, it may be helpful to distinguish the radical innovations that propose a new product usage from the ones that only propose new meanings. Even though the inclusion of authentic cues related to other products may appear more or less the same way, the authenticity perception in the subsequent incremental innovations may differ.

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