Confuse the User! A use-centered participatory design perspective

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ABSTRACT

Participatory design assumes designing to be a basic human capability. On the other hand, considering the usage of artefacts as a designing activity is not yet a popular position. However, there are several theoretical approaches to the human-artefact-relationships that support this point of view, ranging from theories about meaning-production in use to situated improvisation and non-intentional design. Especially for innovative artefacts, there are fewer cultural and social conventions that constrain the interaction, and the object's social role still has to evolve. Anyway, once a (professionally designed) artefact is released into society, designers have no influence on how their work will be socially adopted.

We propose the creative appropriation, re- and misuse of artefacts to be regarded as a form of user co-creation of artefacts. To make it accessible for design, we refer to the systemic evolutionary position that Wolfgang Jonas developed (Jonas 2007), that describes the designing process as the production of variations of human-artefact-interfaces. To broaden the range of those variations, we propose the purposeful use of discontinuities in innovative products. We then argue how irritation (that we see as a by-product of new artefacts in general) can help to provoke the user's active co-creation of artefacts in usage, and how it can be used as a form of participatory design.

Keywords

Design-in-use, irritation

BACKGROUND

An important assumption for (participatory) design is that designing itself is a basic human capability. However, participatory design methods often focused on integrating users into the professional design process. Considering the usage of artefacts as a designing activity is not a popular position in participatory design, probably because this apparently reduces the user's involvement to mere evaluation purposes.

of a situation. Klaus Krippendorf, who is a strong proponent of constructivist foundations in design, states that the situated meaning-production of users is an activity similar to that of designers [2]. Brandes described the improvisational mis- and reuse of designed objects as "non-intentional design", a designerly activity without the conscious goal to create new things, but to serve immediate needs [3]. Their positions support the notion of usage as an ongoing designing process during the adoption and appropriation of artefacts in society. It is, in any case, more than a mere passive reaction to the thing itself. Until recently, this form of designing and its potential for professional design has not caught much attention.

This is partially because well-trained designing strategies of second-order understanding are difficult to apply in those cases. There have recently been several projects in HCI to delegate design by emphasizing user appropriation and diverse (unintended) interpretation [4-7]. The associated discussion also tackles with the question of how determined or open the constraints for interpretation of an object can and should be. As most design-in-use does not happen intentionally or even consciously, we know few about how to provoke such behaviour through designed artefacts. It is therefore easier to integrate the users' expertise about his circumstances during a professional designing process, and to treat the usage phase as a source to inform human-centred design.

Regarding use as a form of designing requires a different view on the designer's role in the lifecycle of artefacts and in society. In this discussion, Wolfgang Jonas proposes a position that may be helpful when thinking about how to design for design-in-use. He integrates evolution theory with systems theory, identifying "variation", "selection" and "restabilisation" as three major phases of a sociomaterial system [8]. Those phases can be mapped to the designing, adoption and appropriation activities we described above. From Jonas' point of view, designers work only in variation, while they have no influence on the adoption and appropriation of artefacts. There may be no progress in designing, but only change and variation in the human-artefact-interface. This also means that difference and newness is a value in itself in designing. The

judgement about the artefact's meaning, its usefulness and social role is made during use.

Design is re-design of the existing, recombination of cultural references. The reframing that it requires is likely to cause (at least some) irritation for the user. The conforming of user expectations has just been one strategy that has been emphasized in work-related design domains. For other areas, designers have ever successfully applied surprise strategies to make the human-artefact encounter more enjoyable and enable new experiences. Surprise and irritation are therefore unavoidable side-effects of the encounter with new artefacts, as the new experience still has to become meaningful to the user. They are, though, not necessarily negative and harmful.

If we regard artefacts as mere tools to perform certain tasks, then discontinuities have to be considered disturbing. If we see them as descriptions of how to perform an activity, we can question the established forms and be more open to alternatives.

Additionally, with the internet and new production methods like CAD and rapid prototyping, it is now cheaper and easier to produce sophisticated prototypes and small series of products. This opens up opportunities for designers and users to interact on different levels of the production process. It has also become more common to offer more control about the configuration of a product to the customers and delegate some design decisions to them. The notion of a product as a finished matter-of-fact is challenged by the interactivity that those new production techniques offer. Finished products with a determined purpose may become just one form of designed artefacts, and other stages that are now exclusively accessible to the designer may open up for the users as well.

Besides, idiosyncratic innovative forms of usage are easier to share and be adopted by other users via the internet (i.e., see hacking sites like ikeahacker, hackaday or makezine.com [9-11]). The idea of users as "prosumers" therefore does not only concern the designing decisions before buying, but also their active re-construction of the reality of designed artefacts.

IRRITATION AS AN ENTRY-POINT FOR CO-CREATION
Based on the developments and positions described above, we conclude the following statement:

Innovative artifacts without established cultural conventions will necessarily irritate the user to a certain extend. This irritation forces the user to reframe her/his understanding of an artifact and the activity it serves. The cultural patterns that apply to the activity are thus redefined in practice. Designing innovative artifacts therefore provides an area where designers can exploit the irritating moment as an opportunity for co-design in use.

Drawing on the notion of the professional design activity as the production of variations, we advocate to open up the range of alternatives offered. We propose applying discontinuities to artifacts to cause user irritation. This might then ease, provoke and enable original individual reinterpretation of the discontinuous artifact and thus design-in-use.

In the following, we will try to further sharpen the concepts of irritation and discontinuity that we apply in this article.

Discontinuity
The rationale in human-centered design for critical situations is to make all aspects of an artifact compatible with its prospective usage. The final product should give as many comprehensive hints about its purpose as possible, through the appearance and expression, the materials used, the interaction proposed. An aspect that is not aligned can be considered a discontinuity.

For well-known artifacts, those unaligned, surprising aspects can be appealing and make them more desirable to their owners [12]. For example, visual-haptic discontinuities are exploited in design artifacts like furniture to create an outstanding experience. For new artifacts, on the other hand, it may be difficult to "align" all aspects of an object if its purpose is rather undetermined because of its novelty.

Discontinuities rely on conventions and expectations. Discontinuous innovation, i.e., refers to an artifact that introduces a different paradigm to a certain domain instead of small incremental changes. It challenges its users to reframe their understanding of both the object and the activity it serves. Making former immobile technology mobile can be thought as a discontinuous innovation in various fields: It transfers private activities into public space.

In challenging conventions, discontinuous changes also rely on them while emphasizing individual differences in interpretation. Often discontinuities result from technological alterations of an artifact (like the WII remote control that uses an accelerometer). It is the designer's domain to introduce discontinuities in the formal interface (which may then require technological development). Karin Ehrnberger's work shows the effect of discontinuities in expression and function by reversing the formal appearance of a mixer and a screwdriver [13]. Tony Dunne's GPS table can be seen as a discontinuity between functionality and form that, in this case, makes the purposeful use of its "function" difficult and opens up the space for interpretation [14].

Discontinuities force the user to reframe her concept of the object at hand. We propose discontinuity between the different aspects accessible to design to cause irritation in use. The reframing process should then provoke original application and reinterpretation of the artifact.

Irritation
Irritation can be thought of as the effect of a discontinuity.

We can think of an irritation when a person, in an encounter with an artifact, needs to revise her understanding of the artifact and the activity it serves. According to an object's appearance and structure, it is perceived and judged, categorized and interpreted in a certain way. During the interaction, the user probably needs

to correct her assumptions on how the object can be treated, and what it is good for. When designing in fixed categories, designers cite cultural patterns that are attached to those categories. If the user then acts upon the (visual) affordances of the object, expecting a certain effect, and is deceived by the object's reaction, she will feel irritated. Discontinuities are likely to produce irritation, as they do not confirm the user's expectations.

VALUE OF IRRITATION FOR USER CO-DESIGN

Irritating artifacts can be especially interesting for innovative ICT artifacts that are not for critical use situations and are likely to have impact on social practice. As production methods allow to produce more intermediary steps before the established and well-defined product, the introduction of small series of irritating artifact can be though of as a democratic way to delegate the definition power of new technologies to the users in an early state of development. Such prototypes are not for evaluation in an iterative process, but have a value of their own. Just as user groups get more differentiated, it is possible to address all kinds of people by providing very different interfaces for a new technology, and to explore the reaction in a real setting.

The involvement of "selection" and "restabilisation" then truly can happen instead of being anticipated by designers and market researchers. The range of available artifact variations opens up and does not rely on the judgment of designers alone.

Irritating artifacts are surely not the most comfortable products for users, as they demand self-initiative and certain robustness to frustration. By demanding active involvement, they may as well address the users' desire to apply their personal understanding of things and activities. They are therefore not comparable to established and specialized products that communicate a well-defined mode of use and usage situation. For those, the attached activity is well settled and rigid, while for new artifacts, conventions still have to be defined. Using discontinuity as a way to irritate people means to provide an opportunity of active redefinition of the object's role.

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