

# DESIGNERS AND USERS: COMPARING CONSTRUCTIVIST DESIGN APPROACHES

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## ABSTRACT

We compare four different design approaches, namely Participatory Design, Critical Design, Non-Intentional Design and Human-Centered-Design. We examine their differences with regard to the involvement of the users in the design process and the role of the designer's anticipation on product use. From the basic assumptions of each approach, we draw conclusions about how to translate constructivist theory into design practice. Our main proposition is that a constructivist perspective in designing requires shifting more decision power to the use situation.

*Keywords: human-centred design, methods, use, anticipation*

## 1 INTRODUCTION

In establishing design research as an academic discipline, Design has been borrowing theories and methods from its neighbouring disciplines. In the 1960s, the Design Methods Movement was inspired by engineering methods in their attempt to formalize the designing process. During the 1980s, the focus shifted towards social science, cognitive sciences and anthropology. Since then, Design has increasingly embraced findings and methods from those disciplines, out of the need to connect design proposals to its social context.

However, some also realize Design must identify its own particular way of knowing in order to sharpen the field's competences and to set boundaries apart from established academic research (Cross 2001).

It is argued that the core competence of designing is its projective power (Jonas 2007). Theories and methods from analytical sciences are insufficient to fill the knowledge gap between description and creation. Without proper appropriation, they are only of limited usefulness to inform design projection, i.e. imagining possible future states (Chow 2005).

In an attempt to bridge the knowledge gap, various designerly methods have been developed (e.g., "cultural probes" (Gaver, Dunne et al. 1999) a method aiming for producing ambiguous but inspirational materials rather than true statements). Those are criticized for not being scientifically rigorous because of their inherent uncertainty (Boehner, Vertesi et al. 2007).

This ongoing discussion on "designerly" methods in Design and in HCI in our view indicates a weakness of linking theory to practice. Although we understand we need designerly research methods, we have not yet fully realized it. We see that theoretical assumptions that underlie practical work are often not made explicit. The same theory, when made explicit, might actually support even more diverse practices. So it is a double loss when practice and theory are not linked.

We see this problem particularly evident with regard to constructivist theory and practice of design. In this paper, we therefore investigate how Klaus Krippendorf's constructivist notion of situated meaning-production is linked to different approaches in design practice. Krippendorf makes his underlying theoretical assumptions explicit and describes their practical implications. By relating other approaches to his account, we investigate how they can be theoretically backed up, and expand Krippendorf's theory and practice, and encourage further methodological development where we identify inconsistencies or gaps. Below, we will further detail the criteria that guided our choice of approaches, introduce the four approaches we chose, and discuss their underlying model and ascription of roles for designers and users.

## 2 A COMPARISON OF DIFFERENT CONSTRUCTIVIST DESIGN APPROACHES

We take Krippendorf's book "The semantic turn" (Krippendorf 2006) as a prototypical constructivist perspective on designing. Krippendorf grounds his human-centred design perspective on ecological

cognitive theory, radical biological constructivism and Wittgenstein's notion of language games. His basic thesis is that users construct situated meaning through language when they encounter artefacts. To him, designers (should) employ second-order-understanding in designing if the artefacts are to be useful, usable and understandable by users. In other words, when designers (can) anticipate the meanings users will assign to an artefact during use, then they successfully represent the user perspective in the design process.

## **2.1 Anticipation and the users' involvement**

To investigate to what extent design practice has successfully appropriated theoretical constructivist accounts, we use anticipation and user involvement as our criteria to choose significantly distinctive design approaches for our analysis. Various design practices, such as HCD, consider it critical that the designer is able to anticipate the interaction between the users and the design artefact correctly. However, we also see that these practices do not apply the implications of the constructivist theory to the fullest. Because if we really believe that meanings are constructed by the users, then we would shift the focus from use anticipation to the delegation of more design decision making power to users during design and use. To illustrate our argument, we will compare and contrast four different design practices that follow the constructivist line of thinking; Human-Centred Design (HCD), Participatory Design (PD), Critical Design (CD) and Non-Intentional Design (NID). In the following, we give a short description of each approach with regard to the two criteria introduced.

### **2.1.1 Human-centered design**

Designers often characterize a human-centred perspective as their distinctive quality and justification for their early involvement in development processes. HCD aims at developing acceptable and marketable yet understandable and successful design propositions in the context of industrial production. According to Krippendorf, HCD methods are trying "... to assure that a design encourages the meanings that lead to reliable interfaces" (Krippendorf 2006, p.230). The motivation is to investigate different stakeholder's existing concepts and to incorporate them into the design proposal instead of imposing the designer's point of view on the user. The reliable anticipation of the user's meaning-production is therefore highly desirable. According to Krippendorf's methods to access the stakeholder's understanding, users (among other stakeholders) are mostly involved during the analysis and evaluation of a design (through narratives of ideal futures, surveys, structured interviews, focus groups, observation methods, protocol analysis and ethnography, pp. 221-230). He mentions more direct stakeholder participation in the design process (p. 229, p. 258), but does not further detail it.

### **2.1.2 Participatory design**

The Participatory Design (PD) approach originated from the democratic idea to involve workers in the design process of their workplace (Ehn 1988). Nowadays it represents a design perspective that ascribes much more ideation and judgment capacity to user than the indirect representation in human-centred design processes (Sanders 2001). Besides synthesizing the material produced by participants into a coherent product, the designer's role in PD is to facilitate, guide and channel the ideation process with the participants. Users as experts of the design situation have to be put into a position where they can express their needs and ideas properly. The goal of this delegation of design to users is, similar to HCD, a more reliable anticipation of use.

### **2.1.3 Critical design**

What is known as Critical Design (CD) in the design community goes mainly back to Anthony Dunne's book "design noir" (Dunne and Raby 2001). He emphasizes design's potential to develop critical objects that do not underly marketplace restrictions. Instead he regards his design objects as a contribution to public debate, putting up for discussion the image of technology as shaped by design. Being focused on the design result, Dunne does not describe the methods used explicitly. The resources he mentions imply that there is an indirect involvement of users (or rather public discourse) during an initial inquiry. In the "placebo" project, he also evaluated his designs in a field study (pp. 75-90). Concerning the user

involvement, the process therefore resembles a classic HCD process. However, the aim is a contribution to discourse. The designed artefact can be seen as a means of provocation that often remains conceptual. The designer's anticipation can remain ambiguous and does not have to be proven right or wrong in real-life use situations.

#### 2.1.4 Non-intentional design

The term Non-Intentional Design (NID), coined by Brandes and Erlhoff (Brandes, Steffen et al. 2000; Brandes and Erlhoff 2006), refers to everyday appropriation of and improvisation with things. They reframe this as acts of designing that redefine designed objects in a sense that was not intended by the designer. However, being a side-effect of design artefacts, the notion of NID as a design effort comparable to those of professional designers is somehow controversial. It is not well explored in terms of a "design method" either. If we accept it as designing, it applies the least amount of anticipation, reflection, variation and time. At the same time, it has the most direct connection of the user's and the designer's meaning, as the two are identical.

### 3 DISCUSSIONS

The four selected design approaches described above characterize variations on how anticipation and user involvement are applied within the design process. We will now discuss the implications of the different accounts for the roles of designers and users.

HCD requires a high reliability of the designer's anticipation while involving users in the design projection only indirectly. This puts the designer into an ambiguous position: Meaning evolves outside the design process, and those who co-construct it are only part of it as representations. The designer needs to adjust her/his understanding to the users. At the same time, the claim to avoid disruptions considerably narrows down the solution space of acceptable design variations: Among the methods proposed by Krippendorf, there is basically one concerned with a fundamental reconfiguration of the interface; the others mostly deal with stylistic modifications. The users are involved as a rather passive resource for information and design justification. Although Krippendorf acknowledges the situated creation of meaning in use, he does not explicitly address it by any of his proposed design methods.

PD, in contrast, considers direct user involvement crucial in order to ensure a highly reliable anticipation of use. Krippendorf's account embraces direct user involvement (what he describes as "dialogical ways of designing", p. 258), but he does not elaborate on how it changes the implications for practice. The matter of PD is indeed not only the final product, but also the designing process and tools, to enable "ordinary people" to develop projection abilities for designing.

The experience in PD practice with shifting ideation to users during the design process also highlighted what goes on during use. Nowadays, PD is also concerned with the configurability of design products to suit needs and practices that emerge in use. Therefore the designing capability is delegated not merely during designing, but also during usage (Henderson and Kyng 1991). Both professional designers and users-designers meet the dilemma of how anticipation can only cover part of the emergent situated behaviour. A reliable anticipation is desirable, but may be unachievable in many situations, as the learning cycle with new products never ends.

CD is closest to what Krippendorf describes as "designing the design discourse" (Krippendorf 2006, p. 32). For the far-reaching and often controversial proposals that CD produces, the designer's anticipation is necessarily contingent. CD expounds the problem of the designers' anticipation as imposing an industry-centred view on the users (p.6), and therefore favours ambiguous design proposals.

By emphasizing the political and societal dimensions of design, designers are put in a powerful position, meant to advance the conceptual space of an artefact as far as possible. Although not directly part of the design process, users also obtain a strong position in CD. Especially the individual, non-conformist appropriation of objects is most appreciated and encouraged and, as such, the individual meaning-creation is an essential part of the design.

As opposed to all other design approaches, its arbitrariness makes NID difficult to exploit for professional designing and highly questions the traditional role of designers. It highlights Krippendorf's argument of meaning-production as a design effort during use, even if only on a very small scale. The phenomenon

as such makes visible the general designing capacity of ordinary people and points out the limits of the designer's anticipation. It could also be regarded as a criterion for the interpretative flexibility of objects, which emphasizes the individual and situated construction of meaning. Currently NID mostly feeds back into HCD as an inspiration for new design. Although it strengthens the users' position and interpretation in the artefact lifecycle, it seems to be impossible for the designer to address it explicitly. It therefore points to a fundamental dilemma in the current designer's role and in the constructivist perspective: If we don't want to regard NID as a problem, we don't know yet how to address it positively.

#### 4 CONCLUSION

Our comparison shows that Krippendorf's constructivist theory backs up more design approaches than he himself proposes. At the same time, it makes clear how limited the impact of design constructivism in practice and theory nowadays is: While lots of studies evolved around both HCD and PD, CD almost exclusively (and voluntarily) stays in the realm of design critique, while NID is considered an arbitrary by-product of "real" designing and its resource in the best case.

The basic assumption that we can increase the reliability of the designer's second-order understanding by involving users – directly or indirectly – has become established as crucial for design practice in order to increase the probability of market success. At the same time, a radical constructivist perspective bears far more implications for design and requires shifting more decision power to the use situation. From that viewpoint, both HCD and PD try to reduce ambiguity of an artefact's meaning and therefore decrease the interpretative flexibility of the artefact in use. Approaches that embrace situated reinterpretation like CD and NID have little influence on design practice if they are not integrated in more established human-centred design activities.

We therefore argue that constructivist foundations for design require a reframing of the designer's anticipation and user involvement in the designing process. We propose to put more emphasis on the actual use process. There is an inherent uncertainty in designing that cannot be fully erased by anticipation and user involvement, as practiced in HCD and PD. Instead, we should look for new ways of reconfiguring the relationship of design and use that embraces this uncertainty. Approaches like CD and NID are useful accounts that emphasize use and emergent meaning. We propose that those will have to be further explored to make design practice more compatible with constructivist design theory.

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