

SOCIO-CONSTRUCTIVIST ACCOUNT OF COLLABORATION IN CONCEPT DESIGN

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1 RESEARCH PROBLEM

The concept design stage, referred to as Project Definition in the Lean Project Delivery (Ballard, 2008), consists of a multidisciplinary task to identify and translate project requirements into performance criteria and initial design of both product and production process. However, during this stage, designers usually have limited understanding of how other designers operate in the project and how their work has interdependencies with others (Cross and Cross, 1995; Arias et al., 2000). This is usually considered as a collaboration problem, and it can be experienced as misunderstandings between team members around vague design representations and undocumented decisions (Maher et al., 1996). Most of the time, these misunderstandings occur due to different languages, standards, and wrong assumptions between design disciplines (Parrish et al., 2008). Researchers have argued that one of the reasons for this problem, is that traditional models of design activity fail to realise the social constructive nature of collaborative design (Coyne and Snodgrass, 1993; Dorst, 2006). The social construction theory suggest that reality is not objectively given, but rather, constructed through social interactions generating interpretations, as collective meanings, that emerge from conversations among individuals in the social space (Gergen, 1985). In this context, professional expertise, technical competence, and skills should not be seen as a commodity for individuals, but rather existing within a community (Schön, 1983; Coyne and Snodgrass, 1993, Dorst, 2006). The aim of this paper is to present a model of collaborative concept design, seen as a socio-constructive action. This model offers a conceptual framework to understand how team members build shared understanding on collaborative concept design situations. Consequently, this model will support further investigation on how to measure and improve team performance in collaborative concept design.

2 BACKGROUND

Donald Schön (1983) conceptualises design as reflective activity, replacing the logic-based models (i.e. Herbert Simon, 1969) that have driven traditional design research. In this model (figure 1), designing is experimentation, and design moves can be seen as actions to test hypothesis and explore a phenomena, either affirming or negating that move (Schön, 1983). The evaluation of the performance of the hypothesis will be based on the way the designer framed the situation setting a particular perspective of the problem to be solved.

Consequently, in a collective design situation, each participant sees the object of design differently, based on their position of responsibility and, more importantly, on the paradigmatic nature of their discipline (Bucciarelli, 2003). This means that nobody will have a total understanding of the object and process of design. Therefore, the design task cannot be fully disaggregated or reduced to subtasks that can be independently pursued, and demands actions for

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reconciling and harmonising claims, requirements and proposals of different participants, in a process that evolves through discussion and negotiation across object worlds (Bucciarelli, 2003).

In this context, the idea of shared understanding in design would be deeply rooted in a collective process of reflection upon design moves within the shared context of the design activity supporting the integration of various perspectives (Arias et al., 2000). Moreover, collaborative design is a situation of shared creation, in which the collection of agents with complementary skills interact to create a shared understanding about a process, a product or an event that does not pre-exist that collective situation (Schrage, 1995), which fits to the nature of the Project Definition phase in Lean Project Delivery. More precisely, collaborative concept design can be defined as a collective creative situation, in which a multidisciplinary team collectively contribute in the representation activity to compromise on design decisions while being collectively aware of the consequences of those decisions.

3 RESEARCH FINDINGS

Following this conceptualization and expanding on Schön's idea of design activity, it is suggested that collaborative design exists in terms of skilful team interactions for social construction of meaning involving three complementary efforts: collective appreciation, collective representation and reflective dialogue, as showed in the model of collaborative concept design (figure 1).

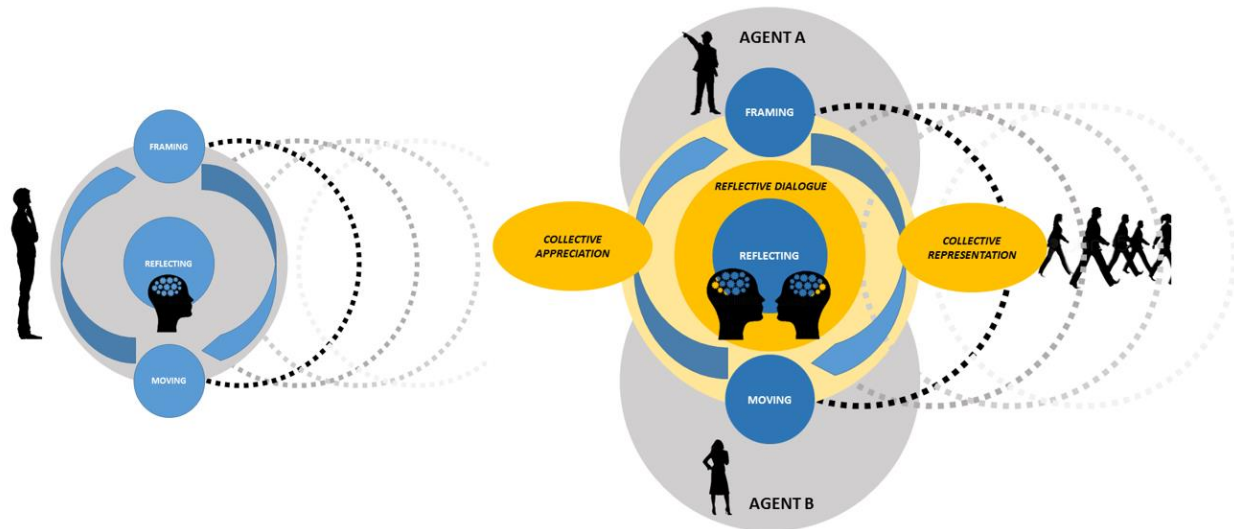


Figure 1: Schon's idea of design situation and the model of Collaborative Concept Design

In this model, the three modes of action (framing, moving, reflection), suggested by Schön (1983) remain as the motion trigger of the design situation, while the three “lateral” actions function to converge the diverse reasoning processes of the team, working as a “gravitational force” generated by the collective engagement on design actions.

We suggest that the key element on this dynamic model is how the design team collectively articulate interdependencies during concept design activity, while they collectively move around different modes of action. In this sense, possible measures of the collaborative design performance would be related to how much of the design decisions, graphically or verbally represented, have the contribution of the “key players” in the situation (Collective Representation); how much the design decisions take into consideration the appreciative systems of the team members (Collective Appreciation); and how much the designers are able to engage in reflective conversations, to expand or negotiate the collection of interpretations and representations supporting decision-making (Reflective Dialogue).

Further investigation on the usability of those measures and on the validity of the proposed model will be developed through case studies in different collaborative concept design practices.

