THE THREE STANCES OF THE DESIGNER IN A RESEARCH TEAM

Pauline Gourlet

Université Paris 8, Vincennes/Saint-Denis
Paragraphe, team C3U,
EnsadLab, Sociable Media

pauline.gourlet@gmail.com

mollon@telecom-paristech.fr

Max Mollon

EnsadLab, Sociable Media,
Telecom ParisTech,, CoDesign Lab

ABSTRACT

This article proposes a typology of "stances" that designers occupy when collaborating with research teams from other disciplines. The integration of designers has been discussed previously (Sanders & Stappers 2008) as well as the recognition of an emerging design practice of "co-design". Along the research process, designers produce artifacts that are intermediary steps for mutual understanding and that team members can mobilize to orient the progress of the research. The concept of "intermediary objects" has already attracted a great deal of interest in studies on collaboration processes. Nevertheless, this double vision of the artifacts produced during the research process (intermediary objects) and the resulting collaboration, regarding the mutation of the design practice has not yet been described.

This new perspective on the role of designers in collaborative practices emerged from the observation of an ongoing experience where two designers worked on similar tasks but separately, feeding into the research needs of the same multidisciplinary group. We compared the artifacts produced, observed interactions in the team and collected feedbacks from the designers and from some researchers of the team.

Based on our observations we propose a description of two designer "stances" toward collaboration. We expose their singularities, their interest for the research conducted, the collaboration modes they allow, as well as their limitations. Then we discuss the opportunities and the interest research projects to encourage a third mode.

Keywords: collaboration, design, research, intermediary objects, classical design, co-design, participatory design

1 INTRODUCTION

Designers are nowadays often associated with research teams on multidisciplinary projects. They trigger new forms of collaborations and interactions that transform the research process. Sociologists, anthropologists and design researchers have studied the way research teams collaborate, focusing on material artifacts produced at different stages of the process. The team's relationship to these artifacts and the interactions they create between team members has attracted a great deal of interest in studies of scientific activities and conception activities. The early concept of "boundary objects", introduced by Star (Star & Griesemer 1989; Star 1989) helped create a new vocabulary and conceptual model for understanding the role of artifacts in

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collaborative practices. Since, several authors, mainly from social sciences fields, have offered complementary developments such as "intermediary objects" (Mer et al. 1995; Vinck et al. 1996; Boujut & Blanco 2003), "prototypes" (Subrahmanian et al. 2003), "low-fidelity prototypes" (Rudd et al. 1996) or "boundary negotiating objects" (Lee 2005; Lee 2007). These contributions create overlapping frameworks to understand cross-cultural communication through a material perspective.

Our focus is on research activities involving designers. Sanders suggests that design practices are moving from a traditional approach – "the design of 'products'" – to an emerging co-design practice – "designing 'for a purpose'" (Sanders & Stappers 2008). This shift engages new interactions between researchers and designers and invites both to redefine the role distribution in research teams. This paper intends to deepen and complete the framework described by Sanders by closely observing the artifacts produced in the research process. The collaborative research process will be studied from the designer perspective to understand how the designer's stance can influence the broader research agenda and results.

To analyze design practices and stances, we consider the research activity through the artifacts produced by the designers during the research process. As other previous works on intermediary objects, we refer to the "binocular vision" (Latour 1985) about inscriptions, taking into account both the materiality of artifacts and their mobilization in situations. As advocated by the sociology of translation (Callon 1986; Latour 1993; Akrich et al. 2006), the interest of looking at objects is to analyze how their mobilization by certain actors stabilizes or disrupts the dynamics of networks connected to particular issues (these mobilizations tend to reveal alliances and divisions among actors). This double vision reinforces the hybrid nature of artifacts: they materialize ideas and instrument collaboration.

We now describe a case study where two graphic designers were hired by a social sciences research team. We intend a deeper understanding of the concepts of classical design and co-design applied to the context of designers embedded in research teams. We end-up listing the differences between them. Then we discuss their strengths and their limits, as well as the opportunities and interests of switching from one model to another during the research process.

2 CASE STUDY

2.1 THE PROTOCOL: TWO DESIGN PROJECTS

At that point, we should specify that one of the authors, a designer (later on, referred to as the first designer), uses project-research methodology (Findeli & Coste 2007). It implies that for a year, one of the authors has been working as a designer and team member of the research project here described, hosted in a social sciences laboratory. Following Findeli's "project research" methodology, we explored our question without prior hypothesis, through practice.

To understand how design practice influences the research process in a multidisciplinary team, we collected objects and studied the relationships and interactions between team members of a laboratory working on two different research projects. The team was composed of two circles of actors. The core team was made of a sociologist, a philosopher and two designers. An additional

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circle of actors that occasionally played a role consisted of a developer, two other sociologists, an anthropologist, a technical supervisor, and a cameraman.

The two research projects we have been working on were very different, both in their natures and their approaches. One of them dealt with the production of a data-visualization interface on the web. The expected goal was to have a better understanding of the process of producing large-scale scientific assessments, taking the IPCC (Intergovernmental Panel on Climate Change) as an exemplary case study and proposing an interactive visualization of the relationship between organizational dynamics in the IPCC over time and assessment making. Thus, the brief was clearly established and well structured (bolstered by already collected and available data of IPCC contributors) and designers were asked to produce a solution that answered the brief in the most effective manner.

The second project was intended as an experimentation in controversy mapping (Latour 2007). As such, it intended to question the standard publication format of scientific investigations, using digital technologies to show the complexity of scientific and technical issues. And as such, the investigation leads the project making it counter-productive to over determine the outcomes before completing the whole investigation cycle. The research focused on the politics of water management in the Garonne Basin due to the anticipation of climate change and the controversies about the use of water. The only agreement made between the team members from the beginning of the project dealt with the medium of the final restitution. After discussing what could be considered as a legitimate scientific form of publication, the team identified and agreed on the web-documentary medium, which in itself refers to a broad variety of formats. However, the research object itself has been identified and built through the inquiry. The protocol to conduct this inquiry was therefore of prime importance. The design brief , as a result, were necessarily more vague than for the first project. Another specificity of this research method is that the inquiry is made with the use of artifacts produced by the research team. So, artifacts become fully-fledged actors of the research process and serve in the production of new artifacts in a feedback loop.

At first, the two designers participated in the two projects. They both produced objects that they presented during meetings and that all team members – including them – mobilized within the research process. Through two explanatory situated examples, we present some of these objects; we explain how they have been mobilized by the different members of the team and how that defined interactions between them.

2.2 THE OBJECTS

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For brevity's sake, we will reduce this report to one example of design mission per research projects.

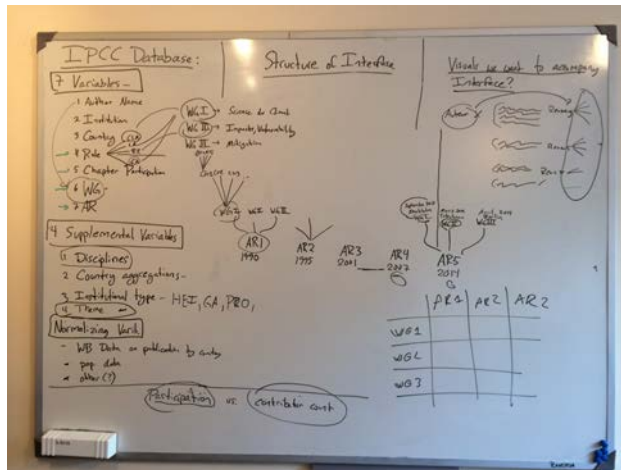### 2.2.1 IPCC Data-visualization (project 1)

Fig.1 – the brief

Two of the sociologists explained the brief (fig.1) to the two designers. The designers talked and drew on a whiteboard what they understood of the data and what they expected from the data-visualization interface. Designers asked a few questions.
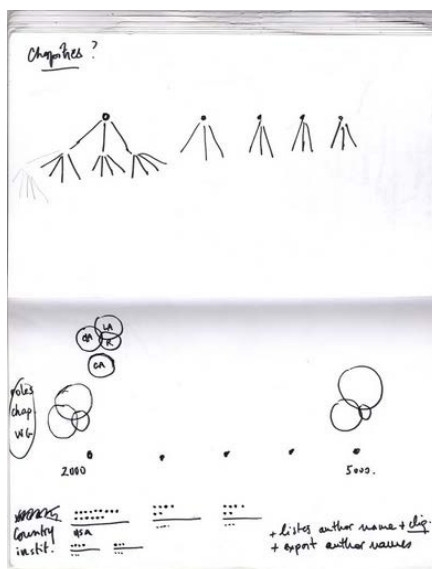

fig.2 – first sketches of the designers

The two designers met to share their first understandings and intentions about the brief and to organize their workflow. Different shapes were produced and discussed. They had several functions for the designers: they were made to represent (get familiar and visualize the data); to translate (prioritize elements of the brief in order to serve best the goal of the research); to communicate

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(explain and defend their points of view); and to coordinate (tasks repartition and organization of the work flow). We can note that these functions aggregate definitions of intermediary objects as proposed by different authors (Vinck et al. 1996; Mer et al. 1995; Boujut & Blanco 2003).
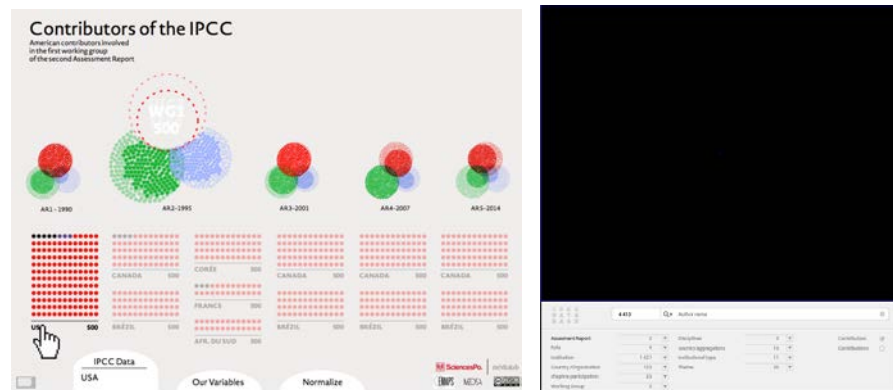

fig.3a / 3b — the two design proposals made to the team

Each designer worked on his own after their first meeting and they presented two alternatives — first, in front of the core team and then, with all the members. Despite their medium similarity, their approaches were significantly different and these differences are seen from the double vision of the representations and the discourses that accompany their presentations.

— designer 1

When presenting, she insisted on the intermediate state of the proposal and its role of dialogue and problem setting. The pictures were mobilized as a diagram of the interface architecture. She worked on all aspects of the interface functionalities, showed different pictures to simulate different states of the dynamic interface, and she raised orally the contradictions and issues that the development of her proposal will face. Team members discussed: they refined the research objectives and made their first choices explicit. The visual code to represent the data — one circle per person — and the interaction possibilities with the data — via a menu and directly via the visualization — was the main topic in the discussion. Graphical choices were not discussed (layout, colors, typeface, etc.).

— designer 2

Then, the second designer submitted his first draft. His proposal was made of an interface menu to filter the data. He explained that it was too early in the process to work on the visualization itself. His representation of the menu was very elaborate and made the team react on much more technical and detailed aspects.

Graphical choices were not discussed (layout, colors, typeface, etc.), apart from the other designer. When asked if she could work on alternatives for the graphical aspects of the menu, the second designer answered that he did not understand because from his point of view, no other solution could be found to represent it.

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These two different types of artifacts can be considered to occupy the poles between open-ended artifacts and close-ended artifacts (Mer et al. 1995). As Mer advocates, the degree of openness in the artifacts – from open to close-ended – corresponds to an axis of collaborative modes: from interpretation to prescription. Here the first designer mobilized the artifact she produced as a means to create an open dialogue with the team. So, if her object could play any of the roles of intermediary objects (translation, communication, representation, coordination, prescription) (Mer et al. 1995; Vinck et al. 1996; Boujut & Blanco 2003), her discourse oriented the way her forms were received and mobilized between the team members, and emphasized the communication function of her artifacts. As representation problems were made visible, each member of the team was put in the position to propose something from this representation and they all discussed representation choices together. The second designer, however, saved representation problems for later, when he would have found the solution. He rendered explicit his responsibility on this matter. His object was a first representation of the final product from which to build the next iterations and to distribute the tasks, as opposed to the communication tool aspect of the other design proposal.

fig.4 – next iterations
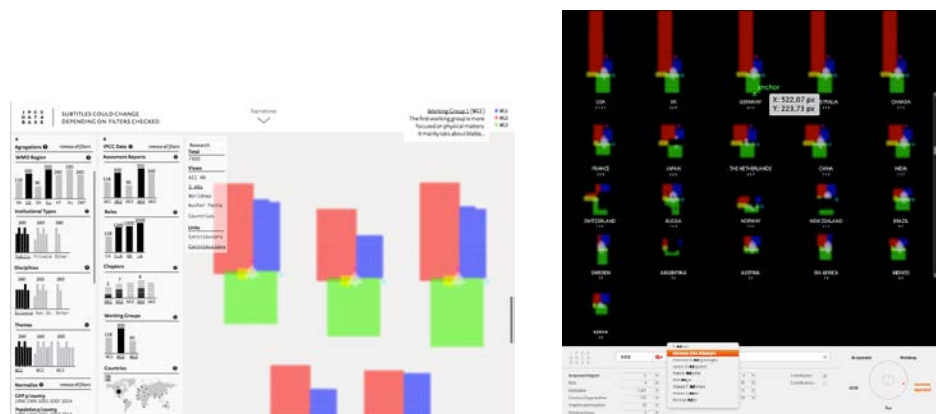
At a later stage of the project, we can see that the first designer moved a lot from her first sketch, whereas the second one kept his general direction, adding features and using the visual code the team agreed on in the previous meeting.

This evolution translates two practices: one uses design proposals to "re-opens" the research hypotheses and aggregates choices when a new consensus is reached, whereas the other one "stacks" from the same initial base form.

Interactions of the team with the designers were of two natures. With the first designer, the main mode of interaction was informal discussions – through mails or informal meetings with part of the team – on whether to choose one feature or another, based on shared references of similar projects, sketches produced by the two sides, and through various iterations trying out different solutions. The other designer met the team on more formal meetings with larger groups and discussed more focused points of the project from his draft that he mobilized as a simulation of the final form of the project. This description of those two design practices based on the artifacts produced during the process and their mobilization, translates a real difference in the designer's stance. It reinforces Sanders' shift between the classical and the emerging practices (Sanders & Stappers 2008). As consequences of these two stances, the collaboration was experienced very differently: the first designer was seen as an integrated

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partner – and the distinction between designer and researcher tended to fade, whereas the second designer was perceived as an external provider occupying a defined designer role, which generated much more conflictual interactions.

### 2.2.2 *Transcription matter (project 2)*

fig.5 – Sociologist's notes of the investigation process

For the second project, which is a research progressing through successive phases of qualitative field-work (filmed interviews and encounters with actors; participant observation), one of the sociologist of our core team organized the investigation using hand-written notes on paper (fig.4). He referred to a timeline metaphor to arrange his writings, which was useful as it linked the research to the final format we chose, an augmented film (web-documentary). Those documents had three main functions: to create a consensus between the team members on the narratives, to coordinate the team – organize the interview planning, the shootings, the collect of data, etc. – to create a feedback loop with the actors of the investigation by showing them the process itself of the investigation – and to test the plausibility of the narrative structure.

fig.6a / 6b – transcription of the sociologist's notes by the second designer (a) by the first one (b)

The second designer, when asked to transcribe the sociologist's notes created a
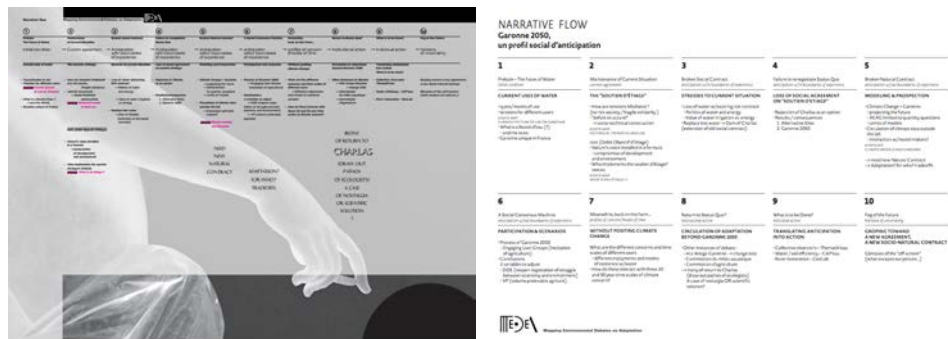
document that the sociologist found complex (fig. 6a). The latter was not satisfied with this document regarding the use he needed it for – especially to show it to the investigation's actors. Therefore, he asked the first designer to transcribe his notes (fig. 6b). The first element that strikes when comparing the two documents is the distance they have from the original document. The will of the first designer to 'envision' this artifact and to create a symbolic dimension is indicative of a certain vision of the designer's role, which involves strong choices

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and personal expression. In comparison, the second one looks very technical and seems to be a simple replication of the original document, unencumbered with graphic "touches" and concerned mainly with functionality and readability.

3 THE TWO STANCES

After a year of collaboration and observation, we chose to detail two cases as pertinent examples of the two different designers stances. Other situations within this collaboration confirmed our findings on these two different attitudes of the designers towards the research team and research process.

On one hand, the second designer felt comfortable in producing objects when he was in possession of the complete data and had a task to achieve. He worked on artifacts close to the final form and stacked iterations starting from the first draft. His collaboration mode relied on discussions about forms.

On the other hand, the first designer helped collecting and producing data and had discussions about the investigation process. The artifacts she produced focused on their role as mediators to facilitate discussion and reflexivity in the research process and she made several compilation documents to communicate the current state of the research and make it progress. She ended-up being integrated in the team as a researcher.

From an interactional perspective, this duality of design practices was hard to maintain. Conflicts appeared within the team members and between the two designers. The core team found it easier to work in a co-design mode. They were indeed strongly involved in the design process, as they considered this process to be an integral part of the research. At some point, frictions became so important that the team divided the work: the first designer worked on the second project – more exploration-oriented (the mapping controversy on water politics and climate change) and the second designer worked on the first project – more solution-oriented (the data-visualization interface).

As we already suggested in the description, these two roles can be likened to the shift proposed by Sanders (Sanders & Stappers 2008) one is a classical design practice, the other one would be a collaborative design practice (co-design). In that last mode, the designer is assimilates him or herself into the act of research, getting to the core of the research agenda and even analyzing data, and the researchers are invited to co-design, led by the designer in that task. We observed these stances not to be determined *a priori* by the team. It is directly emerging from the objects produced by the designer, and even more determinedly, by the discourse employed when the objects are mobilized. The more interpretative (i.e. open-ended) the objects and discourse are, the more the team collaborates, seeking consensus and sharing responsibilities in the progress of the research. We believe that the degree of open-endedness or close-endedness in intermediary objects should not only be considered based on their form. This also relies on the designer's stance expressed when mobilizing them. The designer stance would then imply a co-design mode or a classical (prescriptive) one.

We propose to summarize our findings differentiating these two stances in the following table, completing Sanders' analysis.

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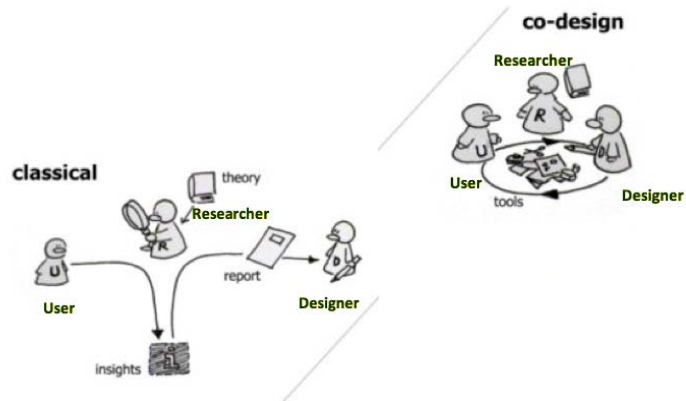
Fig.7 – Sanders figures for the two design practices

CLASSICAL DESIGN	CO-DESIGN
Design of a product	Designing for a purpose
Translator	Aggregator
Form Driven	Collaboration Driven
Problem solving	exploration
close-ended forms	open-ended forms
external provider	assimilated researcher
endorses responsibility	shared responsibility
lot of expectations on the designer	lower expectations on the designer
top Down creative synthesis	Bottom-up creative synthesis
making choices	seeking consensus
expressing artistic sensitivity	Expressing consensus

Table 1 – the two stances of the designer – classical and co-design

4 DISCUSSION

Based on this year of observation, we were able to distinguish precisely these two designers' modes of collaboration but we cannot conclude whether one stance is better for the research activity than the other. We perceived limitations for both and we discuss them here. These limitations address the question of the

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possibility of a third mode for the future of collaboration between designers and research teams.

4.1 LIMITATIONS

4.1.1 *Limitations of the classical design practice*

— Each member of the team exposes his point of view but the synthesis is not made collectively. The designer has the last word and makes iterations on his own. He can take into account some members voices, which create sides inside the team. Progress is made through an arguing and confronting mode at each new iteration proposed by the designer. This can provoke conflictual interactional processes as described by Strauss and Lee (Strauss 1988; Lee 2005), "such as negotiating, persuading, education, manipulating, and coercing" (Lee 2005).

— Iterations are fewer than in a collaborative mode because they rely on one person. The back-and-forth movement is then limited. That is a problem when the research progress and developments can not be planned in advance.

— As it is a stacking process, the final form is determined quite early and not necessarily re-questioned, which increases the risks of getting too far into dead-ends.

— As the designer is first concerned with formal aspects, it might be counter-productive for the overall research purposes. Sometimes this stance neglects some aspects of the data to preserve an aesthetical solution.

4.1.2 *Limitations of the co-design practice*

— In a collaborative mode, the designer is immersed into the research, as much as the researchers themselves. It makes it harder for him to step back and to have new insights.

— As it is an exploratory mode, there is no ending to the process. Unlike the other mode, the designer could endlessly open new questions through intermediary objects. At some point, this exploratory process has to be cut – which can be a collaborative decision – and, from the previous intermediary forms produced and discussed, the designer operates a synthesis and has to adopt the classical stance to produce the final object.

— The last consideration questions the graphical aspect of the intermediary objects and of the final product. The designer might sometimes feel frustrated that the artifacts produced are not always aesthetically satisfying. Because of the aggregation role of intermediary artifacts, to allow more iterations and in order for the objects to be appropriable for each person in the team, the designer has to partly leave his sensitivity aside.

The final object can also be a source of disappointment for the team if each member projects something all along the process, that does not correspond in the end, to the final production.

4.2 MISSING A THIRD MODE

As described above, important limitations exist for the two stances. As collaborations between designers and research teams become common, one could want to know which stance to adopt.

In addition to this difficulty to determine the best stance, the emergence of the *aggregator* – or co-designer – has enormous consequences for the future of design practices and for design education. If co-design is about everyone

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participating to the design process, then what is the specificity of the designer? We think that the two stances analyzed earlier are missing a third mode, which would be the future of designers' practices when collaborating with multidisciplinary teams. As Sanders also suggested, "designers in the future will make the tools for non-designers to use to express themselves creatively." (Sanders & Stappers 2008)

When rapidly trying to identify the emergent practices that would correspond to this third stance, we have detected several types of tools that designers make for non-designers:

— tools to visualize (Healy & Moody in press; Huron et al. 2014)
— tools to explore (W. Gaver & Dunne 1999; B. Gaver et al. 1999; W. Gaver et al. 2004; Cruz & Gaudron 2010)
— tools to communicate and interact directly (Burkhardt et al. 2009; Ishii 2008)
— tools to provoke and stimulate debates (Dunne & W. Gaver 1997; Dunne & Raby 2013; Mollon & Gentès 2014)

This list does not pretend to be exhaustive, but we identify a commonality in all those practices: the "*catalytic*" role of the designer. Whether he is *facilitating* collaboration through visualizing tools or mediation tools, or he is *pushing* team's boundaries of exploration, or even he is *encouraging* reflective practices through debates, the designer is the element that stimulates the team, the way catalysts act for chemical reactions. The precise understanding of this third stance and its modalities remains in our research agenda and will have to be framed in light of prior researches on participatory design (Bergvall-Kåreborn & Ståhlbrost 2008).

4.3 PROJECT PHASES

Another way to avoid the limitations we perceived might be to consider the phases of the project and to best adequate designer stances with the progress of the project. Several typologies of project phases have been proposed (Stappers 2006; Sanders & Stappers 2008; Design Council 2005). It would be interesting to analyze how designer stances influence these models: when are the appropriate moments for each stance and how often to switch from one to another. The two stances described – plus the third one considered – could actually be played by the same designer in the team at different stages of the project. But the opportunity to switch from one stance to another might not always be something easy. Within a team it might be difficult for the same person to deal with so many roles and for the rest of the team to admit these mutant and instable interactions. Would it be best if two designers worked together with different stances? We imagine that the third stance would be more perceived as an external consultant, but further investigations need to be made in order to understand this stances/phases couple.

5 CONCLUSION

From our observations during a year, immersed in a field offering a comparison between two designers, we detailed two stances a designer can adopt when collaborating with a research team and sketched a third one. We exposed their characteristics and their influence on the research process. We have also

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depicted their limitations and question their relevance for research purposes. Several authors from different fields (Cross 1972; Hutchinson et al. 2003; Beck 2002; Sanders & Stappers 2008; Greenbaum 1993) have been calling for a transition toward more collaborative modes of designing, which imply a shift from the first stance described (classical stance) to the second or third stance of our study. We think that the second stance described in this paper might not meant to last and that designers would have to choose between a classical approach and a catalytic approach – that encourages non-designers to adopt the second stance themselves –, even though this last figure still remains to be defined with greater precisions.

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