Distributed fieldwork and networked co-design for collaborative economies

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Abstract. The article opens a window on the complex knowledge generation processes shaping large, cross-national Research-through-Design projects. We describe and discuss the distributed fieldwork and co-design activities conducted along a period of over two years in a European project, to consider the implications that a cross-national field brings forward to a multidisciplinary and culturally composite research team —a collectivity-of-practice—in terms of collaboration, knowledge co-generation and sharing, and internal dynamics. More specifically, we focus on the epistemological and methodological challenges of studying and supporting collaborative economy initiatives through ethnography and co-design practices, particularly in the case of projects involving distributed fieldwork and networked co-design. From the viewpoint of research, the most debated issue concerned the construction of the research tools and the actual way to use such tools in practice. In order to understand the complexity of networked co-design, we reflect on cooperation between "resident" and "nonresident" ethnographers. This reflection unveiled important themes such as the effect of direct vs. mediated relations, access and field participation on collaborative design processes. We discuss such processes highlighting the role of design artefacts as boundary negotiating objects and considering how the cultures at stake and the practical work of a cross-national project may intersect and affect collaboration in several ways. We close the paper with practical suggestions on how to bring about a successful co-design process traversing cultural, epistemological and political issues.

1. Introduction

In their analysis of the past and future of interaction design, Sanders and Stappers (2014) foresee a move from designing with users through collaborative sessions, to designing by networks of diverse teams and individuals through interrelated networked activities (*ivi*: 31). This complex environment is addressed in this paper by reflecting on a cross-national and interdisciplinary project that was oriented toward the co-design of a platform for supporting bottom-up initiatives of social cooperation and collaborative economy. Research and design activities

were conducted in three European countries and included field research, design workshops, and iterative prototyping. By reflecting on this, the paper considers processes of *ethnographically-informed design and development of digital systems aimed at sustaining collaborative* practices. We consider the cross-national, multidisciplinary team as a collectivity-of-practice, and focus on the practices it enacted in a distributed scenario and cross-epistemic arena through several boundary negotiating artefacts.

2.   Related work

The European tradition of CSCW (Schmidt and Bannon, 1992) brought computer science and ethnography together to look at ICTs as elements of collaborative environments in connection with Workplace Studies of ethnomethodological tradition (e.g., Luff et al., 2000; Dourish and Button, 1998; Crabtree, 2004; Crabtree et al., 2012). Similarly, participatory Design (PD - Schuler and Namioka, 1993; Kensing and Blomberg, 1998) regarded the user as the expert, looking at technologies in their context, and considering people's sense-making about technology as important as its technical features. However, the focus rested on the single workplace, community of practice (Wenger, 1998) or city-based intervention. Different approaches tried to extend "PD beyond the local" (Teli et al., 2017). Obendorf and colleagues (2009) levered the notion of community of interest (Fischer, 2001, 2004) as opposed to community of practice to discuss distributed PD; public design (DiSalvo et al., 2014; Teli et al., 2015) considered publics in formation and how to foster and sustain engagement.

Since its development, multi-sited ethnography (Marcus, 1995) was related to interdisciplinary, transnational arenas, as a research mode "that acknowledges macrotheoretical concepts and narratives of the world system but does not rely on them for the contextual architecture framing a set of subjects. […] as this mode investigates and ethnographically constructs the lifeworld of variously situated subjects, it also ethnographically constructs aspects of the system itself through the associations and connections it suggests among sites" (*ivi*: 96). Later elaborations (Falzon, 2009a, b) focused on the selection process underlying multi-sitedness (Gallo, 2009). These reflections, however, remained within the "lone ranger" paradigm (Erickson and Still, 1998), whereas we aim to extend them to more complex scenarios.

Indeed, since a couple of decades, "the issue of team ethnography and qualitative research teams has begun to be addressed" (Creese et al., 2008: 199). Most of this small body of literature focuses on the benefits and challenges of "doing ethnography in teams" (Clerke and Hopwood, 2014), ranging from couples (Buford May and Pattilo-McCoy, 2000), to small groups of researchers with different "cultural selves" (Creese et al., 2008), to multidisciplinary teams engaged in large multi-sited projects (Austin, 2003; Garland et al., 2006; Bikker et

al., 2017), sometimes explicitly aiming at "global ethnography" (Jarzabkowski et al., 2014; cf. Hannerz, 2003). Challenges range from task division and coordination, to data management and communication among distant partners; from constructing a shared understanding, to ensuring comparability; from inter-group and interpersonal dynamics, to disciplinary and organisational differences.

A significant issue concerns the trade-off between a "divide and conquer" approach (Easterby-Smith and Malina, 1999) and shared immersion across sites (Creese et al., 2008), with various intermediate solutions (Jarzabkowski et al., 2014; Bikker et al. 2017). When field sharing is involved, the balance of "traditional" and "rapid" ethnography conducted by "resident" and "nonresident" ethnographers respectively (Austin, 2003: 150) is central. However, the literature discusses "pure" ethnography and mostly focuses on fieldnotes writing and sharing. There is a lack concerning sites selection, research tools construction, and other issues related to qualitative methods in Research-through-Design (RtD) cross-national projects.

The nature of multidisciplinary teams was considered by Lindkvist (2005), who proposed a specification of the notion of community of practice (Wenger, 1998, 2000). Lindkvist considered less stable and more dispersed groups (such as task forces and project teams) and proposed the concept of "collectivity-of-practice" to identify a temporary association of people and organisations sharing a productive goal and relying on each other knowledge and activities as forms of *distributed knowledge* in a network. They typically

> consist of people, most of whom have not met before, who have to engage in swift socialization and carry out a pre-specified task within set limits as to time and costs. Moreover, they comprise a mix of individuals with highly specialized competences, making it difficult to establish shared understandings or a common knowledge base. (*ivi*: 1190)

Lindkvist also distinguished between "knowledge communities", reminding of epistemic communities (Holzner, 1972; Foucault, 1970), and "knowledge collectivities", where "[r]ather than resting on communal background knowledge […] concerted action is here a matter of the well-connectedness of individual knowledge bases" (*ivi*: 1207).

The scholarship in International Relations (IR) (e.g., Haas, 1992; Adler, 2005; Mayntz, 2010; cf. Dunlop, 2012) studied epistemic communities providing insights on the role that processes rooted in professional cultures (Cross, 2013), or disciplinary-based division of labour (Drake and Nicolaïdis, 1992) play in internal dynamics. Roth (2008) underlined the *co-evolution of cognitive and social aggregates* in constituting epistemic communities and identified *artefacts as the coordination tools* allowing for some degree of stability and for distributed cognition (cf. Hutchins, 1995, 2014). Bueger (2015) leveraged practice theory and Actor-Network Theory to analyse knowledge generation in IR as "epistemic practices" unfolding within, and simultaneously enacting "epistemic infrastructures" (Knorr-Cetina, 2008, cit. in Bueger 2015). Epistemic practices, or

"making things known", assemble, translate and represent knowledge by manipulating material and representational objects as well as their mutual relations.

Some scholarly work on qualitative methodologies used the lenses of epistemic communities to analyse mixed-methods research (Schwartz-Shea and Yanow, 2011, ch. 8). Whereas such communities are transdisciplinary, mixed-methods research involves a combination of different ontological, methodological and epistemological presuppositions in conversation within a *cross-epistemic arena*. Schwartz-Shea and Yanow deem such conversation fruitful within the space of a research topic including several questions. In satisfying this criterion, the project on which we focus adds the complexities of design and development. In this respect, the concepts of "boundary zone" (Dalsgaard et al., 2014) and "boundary negotiating object" (Lee, 2007) are helpful.

3. The project

The design and development of commonfare.net iterated a set of research and co-design activities in three countries. Participants included unemployed youth, precarious workers, vulnerable self-employed, welfare recipients, and non-European migrants. Therefore, the project spanned across multiple field sites and within a *multi-lingual* and *multi-cultural* context. The consortium included academic, research and development organisations and activist organisations, called pilot partners (PPs), through which we engaged project participants.

Research and design activities belonged to three categories: distributed fieldwork, design workshops and iterative prototyping. Overall, distributed fieldwork had the aim of understanding the context, collecting requirements and evaluating artefacts, also through team ethnographies (Bassetti, 2019, this volume). Four Design Workshops (DWSs) have been carried out, serving as points for consortium members to engage with each other and with local communities at field sites. In the periods between the DWSs, the design team engaged in iterative prototyping and collected feedback through co-present and remote activities. Prototyping was used to build boundary objects connecting research results, partners, and participants. The development followed an incremental approach based on staged releases.

4.   Distributed fieldwork

Interviews, focus groups, and fieldwork with local communities, grassroots movements and collaborative economy initiatives were conducted to understand socioeconomic conditions, emerging needs and desires, and coping practices of people in financial difficulties (Fumagalli et al., 2017; De Paoli et al., 2017a, b). A research plan for all PPs was elaborated, discussed at a project meeting, and

further refined through remote meetings, shared documents and email exchanges. The most debated issue concerned the construction of the research tools.

The issue of *research tool co-construction* has to do with the identification and formulation of questions and discussion dimensions. With its socio-economic disciplinary background, PP#1 initially proposed a questionnaire including multiple-choice questions plus a list of discussion dimensions. This caused some misunderstanding as partners were expecting qualitative tools and the word "questionnaire" made them think to quantitative research. The proposal went through several rounds of revisions in English (additions, deletions, and reformulations of questions) before being translated into the pilot languages. Matters at stake mainly related to the national context and the target groups specificities, although the different background and expertise of the PPs played a role too. Another issue regarded the degree of directorial-ness and standardisation in conducting interviews —here, differences among partners played a major role.

After discussion, the following was collectively understood, decided and noted down:

> a survey plus a qualitative interview […] The word "questionnaire" is misleading in our transdisciplinary environment and shouldn't be used. The survey-questions are a reference for the interview and its results, checkboxes may be filled in with specific stories. The results of the survey are not constituting a base for quantitative research, but for qualitative evaluation. (Design Workshop Internal Report I)

Once transposed in a formal academic environment, this agreement means nothing. However, in the dynamic context of co-present interaction, it meant reciprocal understanding and convergence about the following:

- the "questionnaire" was a combination of something expected (qualitative guide) and something unexpected (multiple-choice questions);
- such a duplicity had to be captured somehow, and the two parts of the "questionnaire" to be separated and named differently;
- the research tool was to be used flexibly (e.g. treating multiple-choice questions as a guide to collect narratives, or "stories");
- whatever the use of the research tool, the epistemological and methodological framework remained interpretive and qualitative.

Eventually, two artefacts were used by pilot partners based on respective attitudes and necessities: a list of multiple-choice questions, and a semi-structured guide both for interviews and focus groups. The work of revision was fundamental to grant comparability in terms of scientific objectives despite such a flexibility.

A second interview guide, to be used by academic partners (vs. PPs) with people at field sites (De Paoli et al., 2017a), was drafted in English and elaborated in the weeks following the project meeting. This process took less time and iterations due to the common background in qualitative research of all the people

involved and the fact that all those who were going to conduct the interviews were among those drafting the guide. This brought other partners to provide "general" feedback, in a more detached way than that entailed in foreseeing oneself using the tool in practice, in the first person, within one's network of relationships as it was the case for the "questionnaire". Moreover, as PPs' network of contacts was involved, an important role was played by the interpersonal relations of trust and mutual esteem holding among PPs' members and the other partners that were going to run the interviews.

4.1.   Direct vs. mediated relations

The direct vs. mediated character of the relation was crucial both in terms of critical engagement (more critical where direct relation with participants) and of trust among partners (higher trust when direct relation with colleagues). The degree of criticism towards research tools increased as much as the relation with those with whom to use such tools was direct. The degree of trust among colleagues rose as much as the reciprocal relation was direct, as they (got to) know each other. This posits that direct relations among partners can downplay the effect of having direct relations with participants with whom to use research tools designed by others. One should favour this condition, where criticism is constructively exercised within a trust context (Condition #1 in Table I), rather than conditions entailing a spiralling of detached-to-harsh critique (#2), or a dangerous lack of criticism, with or without trust (respectively, #3 and #4).

"I" (each partner)	Direct relation with research participants	Mediated relation with research participants

Direct relation with other partner/s	+ criticism
	+ trust
	        Condition #1: Direct - Direct
		- criticism
		+ trust
		        Condition #3: Mediated - Direct

Mediated relation with other partner/s	+ criticism
	- trust
	        Condition #2: Direct - Mediated
		- criticism
		- trust
		    Condition #4: Mediated - Mediated

Table I. Conditions of critical engagement and mutual trust among project partners.

5.   Networked co-design

At the heart of the project lays the goal of assembling, translating and representing the outcome of distributed fieldwork and turning it into a digital space able to support and foster engagement in grassroots collaborative economy initiatives. Activities basically consisted of four Design Workshops (Table II) and other co-design and evaluation sessions organised mostly at field sites.

	DWS1	DWS2	DWS3			DWS4
Location	Zagreb	Toplice Tuheli	Rotterdam	The Hague	Amsterdam	Milan
Date	Sept. 2016	Jan. 2017	June 2017			April 2018
Activities with research participants	Focus group	Workshop and informal conversation	Workshop and field visit	Workshop and field visit	Workshop and field visits	Field visits
Workshop participants	5 young precarious / unemployed workers	10 young precarious / unemployed workers	12 welfare recipients	10 community stakeholders	10 freelancers	/
Moderators / resident ethnographers	PP#3 members (n. 2)	PP#3 members (n. 2)	PP#2 members (n. 2)	PP#2 members (n. 2)	non-PP researchers (n. 2) / PP#2 members (n. 2)	PP#1 members (n.2)
Partners: nonresident ethnographers and other attendants	1 — collecting visual data	1 — collecting visual data All	6 — passive attendance All	8 — active attendance All	11 — passive attendance All	All
Language	Croatian	Croatian	Dutch, with translator	English	English	English and Italian
Research tools	- Focus group guide (by PL, in EN) - N. 4 R1 mockups (by designer based on co-design sessions among partners)	- Workshop guide (by PL, in EN) - R1 prototype (by designer, then refined based on co-design sessions among partners)	Workshop guide (by PP#2 and PL, in EN)	Workshop guide (by PP#2 and PL in collaboration with community gatekeeper, in EN)	Workshop guide (by non-PP researchers, with PP#2 and PL in EN)	- Ethnographic interview guide (by partners in co-presence, in EN) - R3 interactive prototype (by designer)

Table II. Design Workshop Series (DWSs) overview

DWSs lasted two to three days, were held at pilot sites, involved all partners, and resulted in internal reports. Activities were designed by coordinators and the relevant PP, then refined through consortium-wide feedback. DWSs often entailed parallel activities, with the PP working with participants in the relevant language

—with or without the presence of other project members — and other partners conducting co-design sessions among themselves. DWSs entailed also field visits and conversation where all partners engaged with participants.

Evaluation sessions were conducted between DWS2 and DWS3 (Spring 2017); usability tests were run before and after DWS4 (Autumn 2017 and Spring 2018).

5.1.   Direct vs. mediated access and participation

Methodologically, DWS3 was the most complex. The presence of other researchers besides those conducting the workshop was a crucial point of discussion during preparation. The project leader (PL, first author) presented reservations on multiple occasions, but eventually accepted the decision of those with closer knowledge and relationship with the field, PP#2.

In Rotterdam, the presence of "attending researchers" —that kind of "fly on the wall" that no ethnographer would advocate— went progressively unnoticed by participants thanks to (a) the physical setting (Figure 2), and (b) the expertise of researchers that allowed them proactively to go unnoticed, also by leveraging (c) the physical impossibility to hear the interpreter all together at all times, which brought them to rely on systems of signs other than verbal. In The Hague, the active participation of project members was requested by the community gatekeeper, so that the "fly on the wall" issue was solved since the beginning.
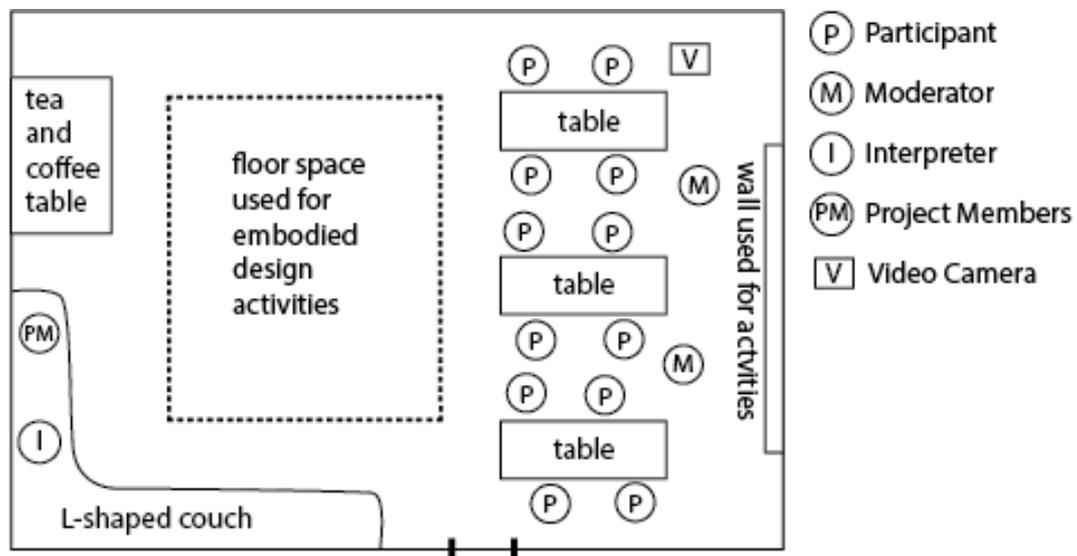

Figure 1. Arrangements at the workshop run in Rotterdam during DWS3.

In Amsterdam, on the contrary, the attendance modality by project partners was passive, the physical setting was too much theatre-like (Figure 3), and half of attending partners were not expert in qualitative methods (beyond "nonresident ethnographer" case). This resulted in reciprocal dissatisfaction among partners

and brought the PL to hold a debriefing session. To give a couple examples of the matters at stake, the use of some words by workshop moderators was not appreciated by those with the contacts on the field, PP#2 —a matter of reputation, "face" (Goffman, 1959), and relationships— and neither was the fact that some partners were taking notes on their laptop instead of paper notebook, as that was interpreted by PP#2 as "minding one's business" and hence disrespectful, whereas partners less expert in fieldwork (and more on programming) were using the artefact with which they were most familiar.
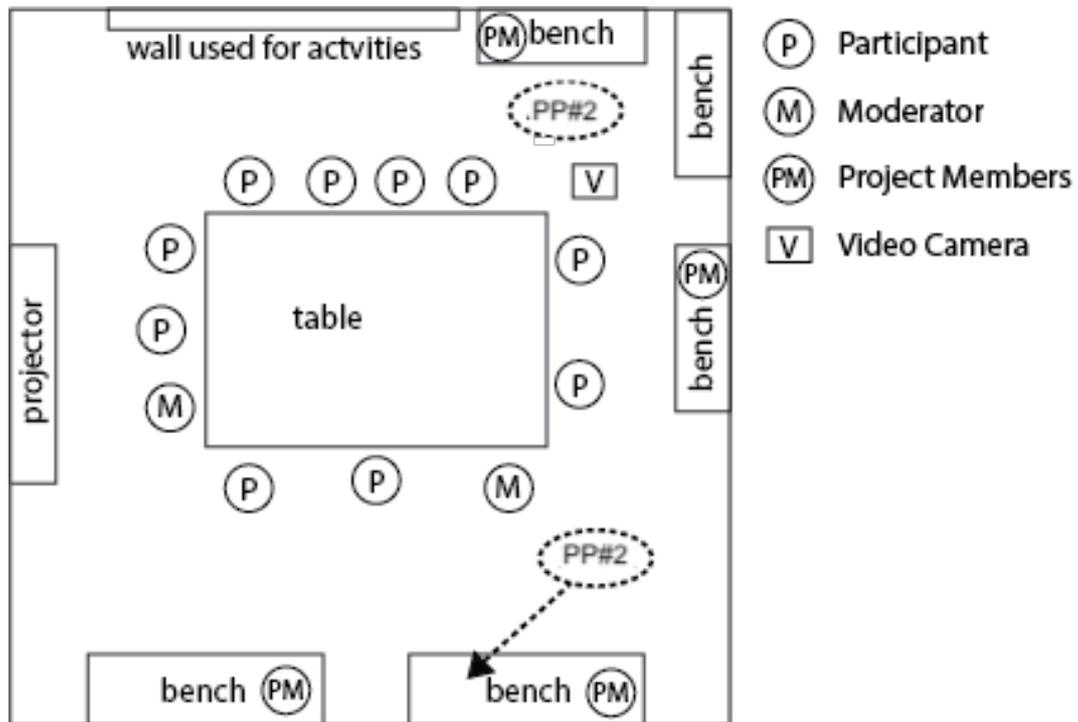

Figure 2. Arrangements of the workshop run in Amsterdam during DWS3.

7.   A distributed networked process

Team ethnography bear their own challenges, and the same holds for cross-national fieldwork. When the two are combined in RtD projects, with their typical multi-disciplinary teams operating within cross-epistemic arenas, we find engrossed challenges. They stem from the multiplicity of languages and the distributed nature of the endeavour, impinging on actual collaboration. Translating in English all the data collected in the three pilot languages was deemed overly effortful by the consortium. Therefore, what partners actually shared as a collectivity, and what constituted the basis for other activities such as designing, were mostly research reports in English —that is, analysis and findings— rather than the raw data (except for selected excerpts included in reports, yet anyway

translated). Raw data were analysed, summarised and translated by and within groups of researchers of the same organisation, and often the same national culture (either by origin or residency) although different disciplinary backgrounds —a process that went without particular difficulties. Data gathering and first-level analysis have been fully shared only within sub-teams of partners. Research tools went through an inverted process: co-constructed as boundary negotiating objects in English and then translated into the pilot languages, they were the outcome of an entirely collaborative process.

Findings from first-level analytical work materialised into reports and constituted the basis for secondary analysis. Such a collaborative work resulted into further knowledge and artefacts, such as mockups —translations of another kind (Callon, 1980, 1986; Latour, 1999; Law, 1999). This was performed by and within groups of researchers belonging to different organisational, national, and disciplinary cultures, but engaged in goal-oriented interaction and practice —a non-linear process that was at times difficult. Finally, the outcomes of this second-level work were to take their place in the larger puzzle, thereby being exposed to partners' evaluation not only in general terms, but also in terms of (a) reflecting other partners' and participants' effort, and (b) fitting with the other puzzle pieces —*practically* and *culturally*. Here, conflict and mutual dissatisfaction have been larger, and this is particularly true between PPs and the RtD team. This is due, we believe, to three factors.

Firstly, within task-oriented sub-teams, members from different organisations and countries are anyway able to rely on cross-organisational and cross-national similarities stemming from common disciplinary and occupational cultures, in a context where disciplinary/occupational knowledge is pivotal in accomplishing the task. This condition was missing in consortium-wide feedback-giving and puzzle-building, where oscillations were frequent between full recognition of roles and competence and the unilateral valorisation of one's own take on any topic. Leaning towards this second extreme was frequent when the issue at stake was framed in ethical and political, rather than practical terms. A collectivity-of-practice may encounter particular challenges when *practice* fades onto the background and the arena becomes fully cross-epistemic.

Secondly, within goal-oriented sub-teams, practical collaborative action tends to bring to the forefront commonalities and mutual learning rather than differences and reciprocal judgement, simply because shared knowledge and situated consensus are helpful in converging towards a solution. On the contrary, when the posture is evaluative, and the evaluation also concerns (a) what one perceives as the recognition of one's expertise, and (b) the opportunities a partner's work provides, as a puzzle piece, to keep one's "face" in front of relevant communities (e.g., local communities on the field, the scientific community, the open software community), reputation and relationships are back at the centre, and differences to the forefront. Which differences? Whatever

available and discursively apt to the current occasion, as it is usually the case in everyday life. It may be national differences when the RtD team is under critique, since most of its members were Italian, although belonging to organisations only half of which located in Italy. Or it may be organisational and disciplinary differences, when academics were perceived by developers as excessively prone to consider fieldworkers' findings to allow to deliver a product on time.[1] At its very lowest, it may come down to gender differences. In short, when one's *identity, reputation and relationships* are at stake, members of a collectivity-of-practice tend to use whatever cultural scaffolding onto which constructing differences is at hand —an interactional dynamic that is largely transcultural, and somehow defies the project underlying ethos of inclusion and collaboration.

Thirdly, if the multi-language character of the field and the platform entails complexities from a design and development viewpoint, *multi-culturality is particularly challenging for co-design*. Translating field reports into design artefacts is a complex, nonlinear activity, especially when its outcome is exposed to partners' and participants' evaluation. Indeed, such artefacts not only assemble, translate and represent knowledge, they actually *objectivate* (Liberman, 2013) it —and they objectivate knowledge generated by others, who are among the evaluators.

8.   Conclusion

If an understanding of the process of knowledge generation is important in RtD projects in general (Zimmerman et al., 2007), when they "are carried out as a large collaborative effort […], understanding the different dynamics that unfold in the process is vital" (Stappers and Giaccardi, 2014). We described and discussed the complexities of knowledge co-generation processes within a project conducted through distributed fieldwork and networked co-design by a collectivity-of-practice. One could talk of *multi-layered distributed-ness* of the endeavour. Research and co-design activities were distributed across countries, cities, field sites and local communities, and among researchers and participants —knowing was distributed (cf. Brown, 2015). Knowledge and cognition were distributed too across artefacts, participants, and members of the collectivity-of-practice —actors and artefacts co-evolved (Roth, 2008) within the project that worked as the "fragile" epistemic infrastructure (Bueger, 2005). Coordination and management were distributed across roles, institutions, and disciplines —coordination had no centre (Suchman, 1997), only a large and varied network of circulating, boundary negotiating, changing artefacts.

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[1]   It is worth noticing that this had diminished since the small R&D organisation originally responsible for development merged into a larger institution with broader academic connections and higher internal multidisciplinarity.

In this scenario, "embracing chaos" (*ibid*.) was the only way through. However, doing so within the framework of a large, externally funded project with strict timeline and commitments, and a geographically distributed consortium with few opportunities for co-present meetings, hands-on collaboration and socialisation, was far from easy. Understanding how such conditions affect collaboration, epistemic practices, and design is crucial, as more and more scientific research is organised in such a way. Multidisciplinary collaboration requires mutual learning, the construction of a shared vocabulary to reach across cultures, and as much opportunities as possible for task-oriented collaborative work, which sends differences to the background whereby allowing for tacit reciprocal learning. Practically, based on our experience, we would suggest to:

- have one-day mutual teaching in respective areas of expertise at the beginning of the project;
- collectively build a glossary to "establish shared understanding" and to develop an (objectivated) "common knowledge base" (Lindkvist, cit.) —the glossary being the first boundary negotiating artefact;
- plan collective reflexive moments to identify misunderstandings, lack of reciprocal comprehension, and cultural issues behind conflict;
- allow for flexibility while simultaneously keeping with rigour, to support a comfortable application of the shared research tools for each researcher as situated in their cultural and relational network, within their "tiny public" (Fine, 2012) which is part of the larger public in formation.

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