Co-design and Informal-Mutual Learning: A Context-Based Study Demystified Using Cultural-Historical Activity Theory.

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Thesis

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Preface

The sociocultural context of this research study derives from its association with Leapfrog (leapfrog.tools). This was a three-year (£1.2m) UK and Humanities Research Council (AHRC) funded research project led by Lancaster University (LU) and co-hosted by The Glasgow School of Art (GSA), alongside other public sector and community partners (January 2015 - June 2018). I was a member of the GSA research team. Leapfrog used co-design as the methodology to bring people together from different backgrounds and levels of expertise, to engage in dialogue in order to develop transformative agency through community engagement. This entailed a process involving communities in co-design situations and developing engagement tools to take into those communities to support effective engagement. Leapfrog structured the research into five major projects (lasting approx. 10-12 months) and fourteen short projects (approx. 2-6 months) to explore the role of co-design in strengthening communities. Collaborators included the Academy (design research), local/regional authorities (public sector) and the third sector (non-profit organisations, social enterprises, community trusts, etc).

Supported through a nationwide research network of urban and rural communities with a variety of socio-economic-cultural contexts, Leapfrog served as the basis for the setting up of a pilot study and two case studies conducted in the Highlands and Islands of Scotland for my research. This geographical decision responded to funding and sponsor requirements while aiming to strengthen Scottish rural communities through supporting bottom-up and voluntary-sector initiatives. It required a methodological approach adaptable to the geography and infrastructure of the rural contexts as well as being responsive to small communities facing isolation and a shortage of public spaces (Calvo & De Rosa 2017).

Abstract

This practice-led research explored participant learning within the context of community-based co-design practice, with focus on uncovering the designerly conditions whereby such learning could be ignited/supported. As environmental and sociocultural challenges progressively threaten and constrain our present and future qualities of life, we are pressed to re-design ways of living and working together. Design is a key feature in meeting all these challenges, and transforming our environment. Such transformation leads to the emergence of new socially shared meanings, and the rethinking of a society that will be increasingly designed. These pressing sociocultural challenges require interdisciplinary expertise, and I argue that the practice of co-design is an approach that provides such expertise. Co-design is collaborative, and also responds to the cultural demands of a society eager to participate. I argue that these demands require significant research to be undertaken on co-design practice. Informal-mutual learning is central to the emergence of co-design practice capabilities and competences that participants ('designers' included) need. Participant learning is central to co-design. Yet participant learning in co-design has not been investigated holistically in previous studies, which have largely assumed it was just 'embedded' in practice.

The aim, then, was to visually unfold the relationship between informal-mutual learning and co-design practice. The implications of the study lie in its deepening of our understanding on how co-design practice can benefit from such learning, and how this can support societal transformation. In this process people's perceptions are changed, and hence their behaviour, leading to cultural change.

My explorations led me to identify Cultural-Historical Activity Theory (CHAT) as a suitable theoretical framework. It supports a holistic approach to the study of participation and learning. Its strength is in the attention that it pays to multi-dimensional human interactions with the social environment. The unit of analysis,

supporting holistic co-design activity, is the 'activity system'. Using CHAT has enabled me to begin visualising the complexity in co-design practice.

The methodology adopted was a participatory action research (PAR) approach. This was informed by ethnographic and creative methods, developed following a reflective approach in a pilot study and two case studies. Each case study informed the refinement of a rigorous and transferable methodology. This proceeds through five steps: preparation for co-design, co-design situations, follow-up, systematising learning, and dissemination. I deployed my reflective drawing ability and co-design competences to enact an original research-path that enabled me to locate myself as a third-party participant-observer, gradually gaining trust, understanding the local sociocultural contexts and unpicking the generation of shared meanings. The participants' motivations and emotions were revealed to be significant in setting the social environment, and also influencing learning.

The analysis of the data-gathering from the three cases assisted in the formulation of a modified theoretical framework. Using a 3D geometric drawing system to translate the CHAT unit of analysis, I added social and personal dimensions of participant learning. The diagrams illustrate the human-human and human-environment interactions, and represent steps for achieving/enacting genuine collaboration. The modified framework theorises on the relationships of interdependence through a three-phase process. This points to a symbiotic relationship between informal-mutual learning and co-design situations.

Presentation and format of thesis submission

The presentation and format of this thesis falls into the category of *practice-led research*, as its focus is with the nature of co-design practice, where the research implies a significant enactment of creative methods.

It is featured as a *thesis and portfolio of practice*, with five Appendices (provided on USB only), which contain critical documentation, such as ethical procedures, case study proposals, and recruitment procedures. The Appendices also include extensive visual data derived from the pilot study and two case studies: designerly activity-flows, engagement tools, and documentation of the three showcases and a validation workshop. Additionally, they contain, in chronological order, field reports from my ethnographic fieldwork and group reflective sessions, transcripts from interviews, samples of my own reflective drawings and field notes, and reflective journals.

The thesis has been written in the first person. This follows the tradition of participatory action research (PAR) and ethnographic approaches. In this research, I have positioned myself as another agent influencing the sociocultural situation as a means to build a multi-voiced research narrative and embedding reflective practice during the process. I have disclosed my personal background (gender, ethnicity, etc.), highlighting the multiple shifting roles that, as a researcher, I adopted regarding the activities and methods employed. This was to attain a certain membership status within the communities involved and being able then to distribute power and engender egalitarian relationships.

The *Portfolio of Practice* consists of three graphic novels (submitted in hard copy), three audio-visual narratives (provided on USB) and a roadmap poster (hard copy folded and attached to this written document), which are presented as *distinct practice components* from the thesis, and required to be viewed where indicated.

The graphic novels illustrate an emotional and sensory layer of human relationships, which emanated throughout co-design situations, complementing Chapters 4 to 6, and provide a visually engaged story. I coded them:

- Graphic Novel Volume I, Pilot Study – Jump to the water (GN-V-1);
- Graphic Novel Volume II, Case Study 1 – Practice informs methodology (GN-V-2);
- Graphic Novel Volume III, Case Study 2 – Refinement of the methodology (GN-V-3).

The reflective drawings, revealed through the graphic novels and audio-visual narratives, helped me to uncover the socio-emotional states and evolving interpersonal relationships in the environments in which I was researching. The drawings enabled me to unfold sensory information and also to raise awareness of my own lived experiences.

The first two audio-visual narratives have twofold aims: to build a *multi-voiced narrative*, including audio fragments from the interviews and moving images set alongside my reflective drawings; and to *synthesise the findings of each case study* for dissemination during the showcases and to be disseminated through digital networks. I coded them:

- Audio-visual Narrative I, The Space Between II (AVN-1);
- Audio-visual Narrative II, The Space Between III (AVN-2).

Both need to be watched after reading Sections 5.3 and 6.3, respectively.
The *third* audio-visual narrative comprises a sequence of the diagrams developed to *explain the theoretical-framework*, and operates in tandem with Chapter 7. I coded it:

- Audio-visual Narrative III, A Theoretical-framework for Collaboration (AVN-3).

The *audio-visual narratives* and the *graphic novels* are autonomous, since they can be seen as separate visual outputs. Yet when the reader/viewer sees them in

combination, they provide an augmented level of understanding. For instance, they explain, through narrative, what occurred during the co-design situations in each case study, and highlight the patterns that were abstracted thereby evidencing the formulation of a theoretical-framework for achieving genuine collaboration.

The difference between them lies in the tempo of engagement. The *audio-visual narratives* talk to the reader/viewer, activating emotional and kinaesthetic channels. They synthesise a complex process with key fragments, simultaneously, presenting the insights, providing a quick immersion to allow the viewer to grasp an understanding of the socio-emotional aspects. They aim to trigger the reader's/viewer's curiosity and leave a gap to be filled for him/her through reflection-upon-action. The graphic novels on the other hand, afford a slower pace, through their handling, the possibility to observe and query the drawings while simultaneously reading the speech bubbles and short reflections - which is designed to encourage reflection-in-action.

Finally, the *roadmap poster* illustrates a visual map of my practice, defined as the enactment of creative methods, deploying my reflective drawing ability and co-design competences.

From a social constructivist paradigm, the exploration of collaborative agency and learning calls for the study of socio-emotional dimensions enmeshed in cognitive human operations as key drivers in data-gathering and analysis. Therefore, *the thesis and portfolio of practice* are physically and digitally *distinct* facets of the research and operate in tandem. This distinction has been made to equalise the practical and theoretical components, which together, provide a multi-layered understanding of this study.

I have also included digital versions of the thesis and portfolio of practice submission on the detachable USB memory stick.

Roadmap Poster

Acknowledgements

Today is a very special day for me. I have finally been able to articulate a complex doctorate study, due to the personal and professional ambitions that led me to dive into unknown areas of knowledge at the beginning of this personal and theoretical journey. Without any doubt, for me this PhD has been an experiential journey of discovery, a dialogical learning exchange between my social environment and myself; a perezhivanie which has unfolded my socio-emotional limits and overcome them thanks to the support of a huge number of people who have been behind me. I am what I am today thanks to all of you.

Thanks to the GSA for giving me the opportunity to grow professionally and personally. Special thanks to Dr Smith and Dr Sclater (my supervisory team) for scaffolding my research growth and confidence, allowing me freedom to delve into the complexities of working at the edges of diverse disciplines. You made me feel understood. Thanks to Brian Loranger, my ethnographer consultant. Thanks to Prof Ken Neil, Prof Laura González and Dr Nicky Bird, and in general to all the research staff at GSA for providing high standards support for the PhD community at the GSA. Thanks to Dr Susannah Thompson, Head of Doctoral Studies. Your emotional and professional advice has been in my mind throughout this last year. Thanks to Prof Vic Lally. We commenced our relationship as my external reviewer during the annual progressions, and now a colleague, for whom I have a profound academic and personal respect.

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Thanks to UWE, where I have found an amazing breadth and depth of friendship, PhD empathy and professional support: Sally Daniels, Trina Ratcliffe, Dr Lidia Badarnah, Dr Fidel Meraz, Dr Merate Barakat, Anna Nikolaidou, Dr Anna Chatzimichalli, Dr Deborah

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As you can see, I am a lucky person! Yet, there are still more people to whom I am really grateful. The following people have been key in my life for different reasons. Thanks to Irene Bell, Leader of the GSA Product Design Programme. You gave me an opportunity in a moment of uncertainty and despair. I am very grateful because I can call you my friend. Thanks to Elena Marco, Head of Architecture and the Built Environment. You have believed in me and without your empathy and support during this last year, I would not have succeeded. Thanks to Dr Annalinda De Rosa, my friend and collaborator. I love to spend time with you talking about co-design and future projects. To Dr Queralt Capsada Munsech and Dr Viviana Checchia, who took care of me in crucial moments. Thanks to my friends from Pontevedra, my girls, I cannot mention all of you, but you are all here. Thanks to Carmen Fabregat, Izaskun Mayor-Ruiz and Dr Maria Soler for your emotional support and in many other surprising ways – always with a smile. You know me like nobody else and have helped me grow as the person am I now. Finally, my editor and friend, Dr Ian Faller, who has enhanced my writing skills and has taken unconditional care of me. Thanks to Amor Lopez Rubio for your guidance and keeping my motivations high.

Above all, today, I want to thank my family: my aunt Noemi, my uncle Ramiro who recently passed away, my sister Emma, my niece Alex, and to my mum Mirian. To Dad and David who are not with us anymore. You all are always in my heart, and I want you to know that during this journey you have been an emotional cornerstone. I love you.

Author's Declaration

I, Mirian Rodriguez Calvo declare that the enclosed submission for the degree of Doctor of Philosophy and consisting of joint Portfolio with Dissertation meets the regulations stated in the handbook for the mode of submission selected and approved by the Research Degrees Sub-Committee.

I declare that this submission is my own work, and has not been submitted for any other academic award.

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Appendices

Appendix One: Research Strategy

It compiles diagrams depicting the literature review research strategy, reflective diagrams, and affinity diagramming strategy employed in this study, which assisted in articulating the research questions and shaping Chapters 2 and 3.

Appendix Two: Initiation & Planning

It discloses documents related to initiation & planning of case studies: ethical procedures and informed consent forms; CS2 research proposal; recruitment email templates and leaflets; evaluation/feedback tools; and analytical diagrams interpreting evaluation/feedback tools.

Appendix Three: Co-design Engagement Tools

It discloses flow-tables of co-design workshops and the engagement tools designed to support designerly activities in the pilot study and the two case studies.

Appendix Four: Dissemination & Validation Events

It discloses dissemination showcases and validation workshops: The Space Between I (2016), in *Whereabouts you are*, Glasgow, UK; The Space Between II (2018), in *Last Futures*, Glasgow, UK; The Space Between III (2019), part of the mock VIVA, The Glasgow School of Art, Glasgow , UK; Been There Together Workshop (2018), Bratislava, Slovakia; The Space Between III (2019), in *mock VIVA*, Glasgow, UK.

Appendix Five: Entire Gathering Data Documents

It contains the relevant gathering-data set: transcripts of semi-structured interviews and reflective group interviews; field notes and hot reports from context-based observations and co-design situations.

List of Publications

Calvo, M. (2019) Rowing Together, Learning Between: Visualising boundary-spaces in community co-design, in *iJADE Conference: creating spaces.* Goldsmiths University of London, UK, 22-23 February 2019.

Calvo, M. (2017) *Tools for renewal* [online]. Leapfrog Short Project Report. ImaginationLancaster and The Glasgow School of Art, Glasgow. Available from: http://eprints.uwe.ac.uk/37770 [Accessed: 25th January 2019].

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Calvo, M., Sclater, M. & Smith, P. (2016) Cultural-Historical Activity Theory and Informal Learning as a key component of co-design practice in a community initiative, in *ESREA 8th Triennial European Research Conference, Imagining diverse futures for adult education: questions of power and resources of creativity*. Maynooth University, Ireland, 8-11 September 2016. Available from: http://eprints.uwe.ac.uk/37781 [Accessed: 22nd April 2019].

Manohar, A., Smith, M. & Calvo, M. (2016) Capturing the "how": Showing the value of co-design through creative evaluation, in P. Lloyd & E. Bohemia [Eds.] *Design Research Society Conference 2016: Future-Focused Thinking*. Brighton, UK, 27-30 June 2016. Available from: http://eprints.uwe.ac.uk/37771 [Accessed: 22nd April 2019].

List of Showcases

Calvo, M. (2019) The Space Between IV [showcase], as part of the VIVA. Venue: Fyffe & Grace Gallery, Bourdon Building, GSA, UK, dates: 18-19 November 2019 [Show/Exhibition].

Calvo, M. (2019) The Space Between III [showcase], as part of the mock VIVA. Burns Seminar Room, GSA, UK, 1 - 3 June 2019 [Show/Exhibition].

Calvo, M. & Makki Zakari, H. (2018) The Space Between II [showcase], within Kubba, S., Sik, B. & Armstrong, J. (2018) Last Futures. Tramway, UK, 17-25 March 2018 [Show/Exhibition].

Calvo, M. (2016) The Space Between I [showcase], in Biró, E., Butler, J., Calvo, M., Bento Coelho, I., Keehan, A., MacLellan, F.J., Weir, C., Worsley, D., Makki Zakari, H., Zioga, P. & Checchia, V.(2016) Whereabouts you are. Reid Gallery, GSA, UK, 15 Oct – 10 Nov 2016 [Show/Exhibition]. Available from: http://eprints.uwe.ac.uk/37784 [Accessed: 29th April 2019].

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Figure 2.2. (2016) *Reinterpretation of Wenger's components of a social theory of learning: an initial inventory*. Source: Author based in Wenger, E. (1998, xvi) *Communities of Practice*. Cambridge: Cambridge University Press, (fig.0.1).

Figure 2.3. (2019) *Reinterpretation of Horvath et al. (1996) on Tulving's (1972) Theory of Memory*. Source: Author based in Eraut, M. (2000, 117) Non-formal learning and Tacit Knowledge in professional Work. *British Journal of Educational Psychology*, Vol. 70, pp. 113-136, (fig.2).

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Figure 2.5. (2019) *Minimum activity system, reinterpretation from Engeström's model*. Source: Author based in Engeström, Y. (1987, 78) *Learning by expanding: An Activity-Theoretical Approach to Developmental Research*. Helsinki: Orienta-Konsultit.

Figure 2.6. (2019) *Minimum unit of analysis. Reinterpretation from Engeström's model of the third generation*. Source: Author based in Engeström, Y. (2001, 136) Expansive Learning at Work: toward an activity theoretical reconceptualization, *Journal of Education and Work*, Vol. 14, No. 1, pp. 133-156, (fig.3).

Figure 3.1. (2019) *PAR idealised scheme*. Source: Author based in Loewenson et al. (2014, 13) Participatory Action research in Health Systems: a method reader. World Health Organization, (fig.1).

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Figure 7.7. (2019) *Phase 1: Boundary-crossing.*

Figure 7.8. (2019) *Phase 2: Boundary-space.*

Figure 7.9. (2019) *Phase 3: Collaboration.*

Figure 8.1. (2019) *Skeleton of the theoretical-framework depicting sociocultural dimensions of each participant.*

Figure 8.2. (2019) *Perezhivania and social environment in the theoretical-framework.*

Figure 8.3. (2019) *Phase 3 of the theoretical-framework, participants enacting genuine collaboration.*

Glossary of Terms

Boundary-space: Boundary space is a notion introduced by Gutiérrez et al. (1995), with the term 'third space', to describe certain situations in classroom activities where the roles – called by Gutiérrez et al. (1995) 'script' or 'counterscript' – and perspectives of the teacher and the students encounter and interact to co-construct new meanings that expand the boundaries of both. It is a CHAT theoretical notion that delimits a space of confluence where individuals approach from their different perspectives. The boundary draws an imaginary line that establishes and realigns the multiplicity of perspectives, human agencies, personal motivations and structures of social interaction. It is a theoretical notion but simultaneously a social situation.

Co-design: Co-design resonates in design fields (Meroni et al. 2018; Selloni 2017) as "a contemporary progression" (Broadley 2013, 33) of participatory design, being applied to various participatory approaches (Fuad-Luke 2009). Sanders and Stappers (2008) define it as the act of collective creativity applied throughout the whole design process, and describe the origins of co-design as the set of methods used in explorative and idea-generation stages of co-creation (Prahalad & Ramaswamy 2004) with focus on customised view of products. Co-design has evolved to become essentially a social and embodied design process (Fuad-Luke 2009) which emanates from the participants' dialogues (Vaajakallio 2009) in public designerly engagements towards the co-articulation of issues (Lindström & Stähl 2016), and its role being valued by design-researchers and practitioners for its capability of engendering a 'third space' (Björgvinsson, Ehn & Hillgren 2012). Co-design is, then, an engagement-driven process on the basis of social interaction and community participation.

Collaboration: Is an interdisciplinary, interpersonal and effective synergy seeking to accomplish partially-shared goals of motivated individuals, which otherwise, could not be attain if individuals act or work alone (Bronstein 2003). The mutual relationship between collaborators builds upon the dilution of roles, horizontal relationships, continuous consensus, and collective agreement on the flow of rules and social order holding the group together.

Community: Here, this term aligns with Wenger (1998), a group of people who engage in an activity driven by shared motivations and goals, which entails a process of learning by participating in co-design situations.

Community co-design situations: Highly complex 'designerly interactions' of socially engaged multi-actors who join their efforts towards co-articulating societal issues close to the hearts of their communities, and enact collaborative actions.

Cultural-Historical Activity Theory (CHAT): It stems from 1920s Soviet Russia and it is attributed to Vygotsky (1971), Leontiev (1978) and Luria (1976). Alongside their colleagues, they aimed to stir up the field of psychology where the mainstream pathways had adopted scientific and empirical models (Engeström 2006). The aim was to bring cultural, developmental and historical notions into the understanding of human beings.

Emotions: "A emotion is a complex state of the organism characterised by an excitation or disturbance that predisposes to action" (Bisquerra 2015, 42). That predisposition unfolds a motivation, defined as a process (complex knots of needs, desires and emotions) that initiates a chain of actions, and keeps human behaviour moving towards achieving a goal or satisfying a need (Bisquerra 2015). According to Bisquerra (2015), this produces three reactions in our organism: (i) neurophysiological, for instance perspiration; (ii) behavioural, like changes in facial expressions or pitch of voice; and (iii) cognitive, where we become aware of our feelings.

Engagement tools: Are often the products of the co-design process. They are the artefacts that individuals use in the engagement process with members of their community (practitioners, researchers, designers or non-designers involved in community engagement). The concept of engagement tools was developed in the 1980s-1990s in the tradition of system design (Andersen et al. 1990), when Participatory Design acquired a leading role as an approach for developing cooperation in the design of information technology systems (Blomberg & Karasti 2013), involving users, anthropologists and developers. They aim to establish two-way communication, open for input and debate, and to facilitate enriched dialogues on community issues.

Human agency: aligned with Sen (1999), this study defines it as a set of dispositional and intentional (knowingly or unknowingly) human acts directed towards the achievement of goals, intrinsically motivated by socio-personal matters of concern. Agency reveals itself by enacting at individual or collective levels and it is defined by freedom of choice and participation is an expression of it.

Motivations: Are complex knots of individual needs and emotions rather than ones based on an individual's action where the motive appears to be the ""motive of learning", "motive of playing", "motive of reading", and so on" (González Rey 2014, 427).

Participation: Stands for the notion of multi-layered human agency, by which I mean human-directed interference enacting in a series of social situations, design processes or activities – taking an active part in the 'telling', 'making' and 'enacting' (Brandt et al. 2013). Participant denotes each socially engaged individual in co-design situations, including design-trained and non-design-trained.

Participatory Action Research (PAR): It is a multidisciplinary research umbrella that covers an extensive range of approaches, acquiring resonance in education, social justice, social care and activism. It stems from Lewin (1946) and it is considered an immersive investigation (Forth & Axup 2006), where the participants' voices acquire a central position through egalitarian dialogues and 'dialogic actions' (Freire 1970), balancing power relations; a flexible and abstract-applied framework that seeks to validate the knowledge which emerges from practice, and enables a greater understanding of how communities construct their realities and produce knowledge.

Participatory Design (PD): It is a context-based design orientation influenced by democratic social constructivism and participatory action research (PAR) methods and techniques (Glesne 1998; Spinuzzi 2005). It traces back to the early seventies, around the figure of Kristen Nygaard, Ehn and their research colleagues in the Scandinavian countries (Simonsen & Robertson 2013; Spinuzzi 2005), who laid the foundations of a design approach that allows designers to grasp understanding on the sociocultural contexts of participants.

Perezhivanie: It is a Russian word *(perezhivania, plural form)* introduced by Vygostky (1998) to describe a dialectical unit capable of establishing indivisible connections between the

social and the individual dimensions, the "path along which the social becomes the individual" (198). This concept serves to relate the personal development of an individual with the sociocultural environment.

Personal values: Are understood as guidelines that one individual produces over a lifetime, which help in our decision-making, in choosing our behaviour in response to the continuously changing context (Bisquerra 2015). Personal values shape our identities and are the result of our learning through perezhivania.

Phenomenon of transference: Based on Bateston (1972), this study defines it as human agency, consisting of transferring the 'designerly' knowledge-production into introducing new competences and attitudes into participant everyday practice. It can occur at personal or social level, and implies readjustment of relational patterns, as usually an expert role triggers observational learning.

Runaway object: Is a partially-shared object, coined by Engeström (2009b), that unfolds 'matters of concern' (Latour 2004). Those concerns are shared by a wide number of communities, often geographically scattered in a globalised world. They are amorphous challenges in their internal structure and usually difficult to change/transform at the individual level of human interaction (Engeström 2009b); e.g. climatological phenomena like global warming or concerns about the way of living produced through the generation of products and the uncontrolled exploitation of natural resources (Harvey 2016). They need transdisciplinary agency in order to be addressed.

Synergy: Is defined as the interaction or cooperation of two or more organisations (community level) or agents (individual level) to produce a coupled and combined effect greater than the sum of their effects taken separately.

Social environment: Is defined in this study as the set of socio-materials and ecologies interacting in certain ways, setting the socio-environmental conditions for each co-design situation. This notion embraces the idea, developed by Fleer et al. (2017), that the social environment is a source influencing the personal development of the participants. It also aligns with the notion of experience, developed by Dewey (1958).

Socio-emotional competences: According to Bisquerra (2005), they are the set of competences that mediate interpersonal relationships. We produce emotions during the course of action, as well as symbolism. These social competences lead to creating favourable social environments of productive and satisfactory collaboration, and significantly support learning. The emotional competences start by acquiring emotional self-awareness (through reflection and introspection), followed by a grasping of the other person's emotions, as well as the emotional climate of the research context. We can learn to manage our emotions and also modify them, as well as decipher the emotions of others, leading to a greater understanding of the context (Bisquerra 2015).

Glossary of Acronyms

Note: in this document the first time that the acronyms appear are displayed spelling out the entire words, followed by their first letters in brackets. Thereafter, they will be written as shown in this section.

AHRC: Arts & Humanities Research Council (UK)

ANT: Actor-Network Theory

AVN-1: Audio-visual Narrative I, The Space Between II

AVN-2: Audio-visual Narrative II, The Space Between III

AVN-3: Audio-visual Narrative III, A Theoretical Framework for Collaboration

BSCTC: Badenoch and Strathspey Community Transport Company

CD: Co-design

CER: Critical Event Recall

CFP: Creative Futures Partnership

CHAT: Cultural-Historical Activity Theory

CoP: Communities of Practice

CS1: Case Study 1

CS2: Case Study 2

CSn-Pn: Case Study (number), Participant (number)

[e.g. CS1-P1: Participant 1 of Case Study 1]

GN-V-1: Graphic Novel Volume I, Pilot Study – Jump to the water

GN-V-2: Graphic Novel Volume II, Case Study 1 – Practice informs methodology

GN-V-3: Graphic Novel Volume III, Case Study 2 – Refinement of the methodology

GSA: The Glasgow School of Art

HCI: Human-Computer Interaction

ICF: Informed Consent Form

IPCC: Intergovernmental Panel on Climate Change

IML: Informal-Mutual Learning

LU: Lancaster University

MC: Author

NI: Narrative Inquiry

PAR: Participatory Action Research

PD: Participatory Design

Pn: Case Study (number)

[e.g. P1: Participant 1]

PS: Pilot Study

RJ: Reflective Journal

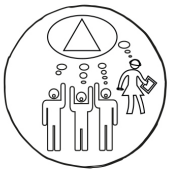
Rn: Researcher (number), e.g. R1: Researcher 1

SRA: Stimulated Recall Analysis

SSD: Social Situation of Development

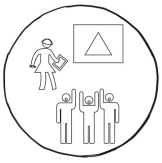
Glossary of Icons


Catalysis workshops


Reflective group interviews,
& rapid idea-generation session


Co-design workshops


Reflective journal


Dissemination methods:
audio-visual narratives,
showcases, & graphic novels


Reflective practice:
first-order &
second-order reflection,
reflective sessions

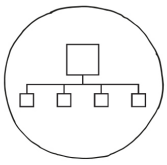

Historical research


Semi-structured interviews


Initiation & planning:
first visits, scoping sessions,
& deliberative walks


Stimulated recall analysis


Narrative inquiry


Systematising learning:
Affinity diagramming


Participant-observation


Test prototype


Reflective drawing


Tool delivery event

Chapter One: Introduction

1.1 Introduction

This research study explores participatory learning in community-based co-design, aiming to uncover the conditions that support such learning, and to visualise the relationship between informal-mutual learning (IML) and co-design. Its significance lies in the discovery that ""local knowledge production" learning strategy stands out as a cornerstone" (Ehn 2017, 9) of an emerging methodology (Nygaard & Bergo 1975) called co-design, which is "a contemporary progression" (Broadley 2013, 33) of Participatory Design (PD). Simonsen and Robertson (2013) define co-design as "a process of investigating, understanding, reflecting upon, establishing, developing, and supporting mutual learning between multiple participants in collective 'reflection-in-action'" (2). This statement highlights that co-design requires participant learning, and foregrounds 'mutual learning' as an essential synergy for the emergence of shared meanings and "diffuse design capabilities" (Manzini 2019, 124), which participants need to learn/improve in order to be ready to co-design (Blomberg & Karasti 2013; Bratteteig et al. 2013).

Nygaard, Ehn and their research colleagues, developed a methodology based on this relationship, and on participatory action research (PAR) approaches (Glesne 1998; Spinuzzi, 2005), including Freire's (1971) emancipatory learning. The local knowledge strategy fitted well with the democratic aspirations of integrating people in the design process (Ehn 2017). Over time, co-design practice undermined its own democratic aspirations, shifting the focus from mutual learning to functional product features (Spinuzzi 2005). Mutual learning was considered a taken-for-granted process (Robertson et al. 2014). This created a theoretical gap, in understanding, between co-design and mutual learning (Brereton & Buur 2008; Karasti 2001).

Bødker, Kensing and Simonsen (2004, 58) based their co-design framework MUST on six principles, one of them being the 'genuine user participation', calling for active integration of people directly affected, and arguing a pragmatic need for

mutual learning between designers and users embracing its inherent democratic stance. They discovered an intrinsic relationship between mutual learning and the flow of co-design activities, influencing the process and outcomes. This underscores the need for holistic research to deepen our understanding of mutual learning and co-design practice in community engagement contexts – the premise of this study. This implies an epistemological reorientation on the focus of co-design, from integrating people and engaging in the making of things, to inviting them to engage in the 'co-articulation of issues' (Lindström & Stähl 2016).

Mutual learning is gaining international resonance (DiSalvo et al. 2017), in parallel with the increasing interest in co-design which promises to tackle "the most pressing societal challenges" (Meroni, Selloni & Rossi 2018, 17), when everybody designs (Manzini 2015). Positioning this *practice-led* research in the context of social design (design motivated by social demands and not by the market (Manzini & Meroni 2014)), I conducted a pilot study and two case studies to explore participant learning during design processes aimed at supporting social innovation. This strand of design research is increasingly used in the voluntary sector as a means to address societal issues, due to its democratic and open design processes (Fuad-Luke 2009).

The notions of practice and research became intertwined when, in the 1980-1990s, art schools and polytechnics were incorporated within university structures, including their curricula. This was accompanied by a shift in understanding about the purpose of higher education, where governments, such as the UK, consider it to be a key driver and contributor to economic development (Sullivan 2009, 43-44). The 'knowledge economy' (Powell & Snellman 2004) and the emergence of the creative industries ignited this shift, positioning intellectual competences as resources of transaction in the value-creation process rather than physical skills. This opened a debate around the interaction between practice and new knowledge-production, where the ends and means of research entail a great deal of practice. This shift in thinking is also echoed in the Organisation for Economic Cooperation and Development's definition of research as a "creative

and systematic work undertaken in order to increase the stock of knowledge – including knowledge of humankind, culture and society – and to devise new applications of available knowledge" (OECD 2015, 44). The OECD highlights new features that can be extended to traditional research – novel, creative, uncertain, systematic, transferable and/or reproducible – and maps out three activities: basic research, applied research, and experimental development. This understanding serves as the basis for including *practice-based* and *practice-led* doctorates in higher education (Sullivan 2009).

Candy (2006) outlines *practice-based* research as "an original investigation undertaken in order to gain new knowledge partly by means of practice and the outcomes of that practice" (3). The originality transpires through creative outcomes, and the significance and research context are described in text-based forms. The UK-AHRC defines *practice-led* research as "a distinctive feature of the research activity... the research methods, contexts and outputs then involve a significant focus on creative practice" (Arts and Humanities Research Board 2003, 10). The original contribution leads to implementations or to the devising of applications/frameworks/artefacts to enhance the practice (Candy 2006). My study falls into the *practice-led* category as its focus is with the nature of the co-design practice, as well as aiming to advance knowledge that can be applied into it.

In this research mode, a great deal of the research is conducted as design practice, which draws from a design research context, where the nature of practice is a fundamental feature within research (Candy 2006). This blurs the boundaries between practice and theory, since the distinctiveness of practice-led research lies in its enactment (Sullivan 2009), leading to a research-trajectory where a "creative impulse reveals an imaginative insight that challenges what we know" (43). Cross (2001) highlights the significance of intuitive ways of knowing in design methodologies. Schön (1987) suggests that *practice-led*, in design research, implies embedding reflective practice as a key driver of data-gathering and analysis. He describes a process of inquiry that entails acting with the socio-material ecologies – observing, experiencing, improvising and transforming them – through

reflection-in-action, and upon-action, to raise awareness of knowledge that emerges from practice. Broadley's (2013) practice-led research adheres to this, and enables her to define her practice as a reflective one, combining illustration and design practice abilities to design engagement tools and techniques. Sullivan (2009, 42) adds, "this process is clarified in retrospect as issues and ideas that are revealed through the process of reflexive and reflective inquiry". On the relationship between practice and theory, Sullivan also observes:

both knowledge production and the functions to which knowledge is put are best seen to be a dynamic structure that integrates theory and practice and contributes to personal, social and artefactual systems of understanding. (47)

This view comes close to the understanding, between practice and theory, adopted in this study, which is elaborated through Cultural-Historical Activity Theory (CHAT) – the overarching theoretical framework. CHAT is a multidisciplinary framework that stems from Vygotsky's (1971; 1978; 1998) works and his Russian colleagues on psychology, and then evolved from different theories coming together (Plakitsi 2013). According to Kuuti (1996), it finds inspiration in German philosophy (Kant 1781; Hegel 1807; Engels 1884; Marx 1867), and more recently, in Engeström's works (2009b; 2008; 2006; 2001; 1999; 1996; 1993; 1987). CHAT aims to bring cultural-historical and developmental notions into the understanding of human agency from both individual and social perspectives (Engeström, Miettinen & Punamki 1999). CHAT understands people as social beings, and consciousness as part of our social nature, so people's activities shape human consciousness. Er (2014) outlines how previous activities influence the way in which we address subsequent ones, describing how human agency has two indivisible processes, internal and external, theoretical and practical, which occur simultaneously. The internalisation of learning enables us to visualise future actions and outcomes, through the use of emotions, imagination and higher psychological operations (González Rey 2018). Therefore, by embracing CHAT as the theoretical lens, this study understands theory and practice as indivisible and occurring simultaneously, likewise, endorsing the inseparable personal and social

dimensions of being, learning, knowledge-production and 'symbolically produced realities' (Fleer, González Rey & Veresov 2017).

Interestingly, CHAT remains unexplored and undervalued in design research (Zahedi, Tessier & Hawey 2017; Nardi 1996). The few studies using CHAT are mostly in human-computer interaction (Sam 2012; Kuutti 1996, 2009; Gay & Hembrooke 2004; Nardi 1996b) or service design and product design (Sangiorgi 2009; Menichinelli 2015). Co-design studies barely register (see Zahedi et al. 2017). The significance of CHAT in this study lies in the attention that it pays to multiple dimensions of human interactions entwined in co-design and in the unit of analysis that it affords to illustrate them composing a coherent participatory activity (Gay & Hembrooke 2004). Understanding participant motivation gained resonance as the study progressed, which revealed that, somehow, participants' emotions intervened in the assemblage of their personal-social motivations, influencing participant learning and the co-design practice. From a historical-cultural standpoint, human agency is driven by human motivation (González Rey 2015; Kaptelinin & Nardi 2006; Gay & Hembrooke 2004). Thus, my study took an activity-based approach and focused on exploring the emergence of participant learning within the context of community-based co-design. Besides, CHAT can also incorporate socio-emotional aspects (Kaptelinin & Nardi 2006), which influence interpersonal interactions in co-design (e.g. building trust, empathy etc.) and learning (Bisquerra 2015).

My practice is the enactment of creative methods, deploying my reflective drawing ability and co-design competences: orchestrating and choreographing designerly activity-flows, devising tools and techniques, re-arranging social environments, facilitating engagements, and reflective sessions to support participants during co-design situations, but also, adopting participant-observer roles, and analysing and theorising about the gathering-data ensued for dissemination. This foregrounds reflective drawings as a way to express my lived experience, unfold participant emotional states, and socio-environmental dynamics, e.g. catalysing group behaviour. As a *practice-led*, design-researcher I adopt different roles within the

research: design-researcher, design-practitioner, facilitator, design-ethnographer, analyst, research-writer and theorist, but also reflective-drawing-researcher, eliciting 'graphic anthropologies' (Ingold 2013). The connecting thread in all the roles is reflection. With its cycles (section 3.4.1), I ensure that the practical and theoretical components continuously speak together, abstracting concrete-personal knowledge, and then communicating it across fields of inquiry, aiming to produce socio-culturally apprehensions about co-design practice.

The roadmap poster attached to the thesis (see detachable poster) graphically illustrates my practice, a visual map of my original trajectory from the beginning of my immersions in the pilot study (first grey-discontinuous line, on the top) until the VIVA, final stop of a personal and theoretical journey. The second grey-discontinuous line (in the middle) depicts case study 1, whilst the third grey-discontinuous line (on the bottom) describes case study 2. All of them are divided into two types of activities. Above each grey-discontinuous line, I illustrate the collective activities, and bellow, individual activities. Each activity is represented with a logo, devised to articulate a visual language, which reinforces the written narrative, disclosing my theoretical positions, the rationale and the course of events that provide evidence to answer the research questions. It identifies the research moments where the methodology started to be articulated (pink logos), and how each case study informed its refinement. It shows the process-led thinking by a pink-discontinuous-organic line, sewing all the case studies together. Likewise, the same happens with the reformulation of the modified theoretical framework, based on CHAT, (light-blue logos and discontinuous-organic line). The roadmap draws attention to the intensive periods of co-design practice and reflective drawings, but also illustrates how the practical element interweaves with dissemination stages. All this is supported by cycles of reflection.

1.2 Previous studies, gaps and research questions

My review of previous studies traversed a variety of social disciplines: community development (Matarrita-Castante & Brennan 2012; Arensberg & Niehoff 2017), community organising (Alinksy 1989), and community engagement (Head 2007;

Escobar et al. 2014). Accordingly, I could recognise leading-edge debates and bring them into my on-going procedural understanding. I also examined theories of evaluation (Forss, Marra & Schwartz 2011), complexity theory (Byrne 2005), actor-network theory (Latour 2004), and socio-technical systems (Baek, Meroni & Manzini 2015), seeking to identify a suitable research framework, a holistic approach which could shed light on a research context consisting of emergence, nonlinearity, uncertainty, adaptation and constant change (Patton, McKegg & Wehipeihana 2015; Patton 2011; Gay & Hembrooke 2004; others). This contextual interpretation revealed a gap: traditional methods of analysis-and-evaluation fail to measure impact, being based on prescriptive processes and pre-determined outcomes (Preskill & Gopal 2014). Most such theories isolate the components - people and community, culture and history, tools and activities (Zahedi et al. 2017; Sam 2012; Kuutti 1996; Nardi 1996a; Roth & Lee 2007) - or simplify socio-material situations into a system of knots and networks, displacing key human processes such as emotion and motivation in the enactment of agency. Successful social innovations depend largely on nurturing human relationships (Fitzpatrick 2012) and collaborative objectives based on trust, intimacy and friendship are easier to achieve (Zahedi 2011; Chiocchio et al. 2011; Cipolla 2008).

My review on co-design found a breadth and depth of gaps regarding the participatory nature of co-design, e.g. how to measure the impact of participation upon the co-design process (Bratteteig & Wagner 2014) or the identification of the different levels of engagement (Wallerstein & Duran 2006; Arnstein 1969). Bratteteig and Wagner (2016) question the notion of participation (how participants contribute, and raising awareness of their contributions), similar to Andersen et al. (2015). Indeed, in the 'era of participation' (Smith, Bossen & Kanstrup 2017) designers intervene in public spheres, in a designer-public relationship, where people are perceived as experts, and designers adopt roles of support (Ehn 2008), where collective creativity is the way to unravel motivations, perspectives, needs and desires of all participants (Sanders 2001). This creates tensions between ‘expert/diffuse design’ (Manzini 2015), interrogates the role of

the designer and the distribution of power between participants and designers (Bratteteig & Wagner 2014). This also contains ethical issues around interpersonal bonding, use of personal data, and ownership.

The multi-actor expertise (divergence) is another requisite in co-design, factoring efficient design outcomes, capable of responding to multiple needs and personal-social situations. This raises another gap, in understanding among disciplines, where Ehn (2017) suggests the creation of a common language, as Zahedi (2011) does, emphasising mutual leaning as a key synergy. As discussed in section 1.1, mutual learning is another requirement in co-design, particularly significant "when the project group is focused on creating common understanding of problems and needs… and working to develop visions of overall change" (Bødker et al. 2004, 64). So, although the journey began by exploring the impact of co-design from the participant perspective, as the study progressed, I redefined my focus of research towards participant learning, a collective learning, which engaged different people, all learning from each other, usually unconsciously. Thus, the overarching research question considers:

1. How and in what ways do participants learn in community co-design?

Aiming to elucidate on the challenge of how "to overcome yes or no answers" (Meroni et al. 2018, 20), i.e. how to achieve genuine collaboration. Two sub-questions ensued:

1.1. When and in which conditions does informal-mutual learning emerge?

On this, Gay and Hambrooke (2004) observe: "how do we make visible and represent multiple, simultaneously occurring processes?" (xix), which aligns with the second sub-question:

1.2. How can design research visualise the relationship between informal-mutual learning and community co-design?

The term informal-mutual learning aims to expand the concept of mutual learning (Simonsen & Robertson 2013; Ehn 2017; etc.) by incorporating social theories of learning (see section 2.5). The word 'informal' denotes another understanding of learning as a social phenomenon arising from experience and participation in social life (Dewey 1997; Vygotsky 1971; Wenger et al. 2015; Wenger 1998; Gay & Hembrooke 2004).

1.3 Thesis structure

In Chapter 2, I investigate the theoretical conceptions about community engagement, social impact and evaluation, co-design, social learning theories, and CHAT, leading me to narrow the scope of the project and reformulate the key focus of research – participant learning. In Chapter 3, I discuss the methodology and methods, which represents a methodological contribution. The research adopts a Participatory Action Research (PAR) approach (Lewin 1946; Freire 1970; Bradbury 2015), informed by ethnographic methods (Salvador, Bell & Anderson 1999; Smith et al. 2016) as a multi-perspective path to the fieldwork, and co-design methods to support participation.

In Chapter 4, I chronicle the Pilot Study (PS) and disclose the findings. Conducted over six months on the Isle of Mull with a total of four visits (17-18 February, 22-23 April, 4-7 May, and 20-21 June 2016), it involved a series of workshops in which a range of stakeholders participated and focused on shared meanings around issues of central concern to community participants. I used a Grounded Theory (Corbin & Strauss 1990) for my immersion, making context the source of knowledge that emerges from practice, rather than assuming a specific viewpoint. It is to be read alongside the *Graphic Novel Volume I* (GN-V-1).

Chapter 5 narrates Case Study 1 (CS1), and presents the results from the affinity diagramming process. In total, six visits (3-5 May, 31-2 June, 4-6 July, 29-30 August, 5-6 October 2017 and a follow-up 22-25 January 2018) drew participants from social enterprises and public service providers operating in the Inverness and

Moray area, devoted to tackling loneliness and isolation, particularly in later life. It served as a community-led living lab where I could apply my open-ended methodology, and thus observe how the spontaneity and improvisation of everyday life affects and modifies the course of events and thus co-design situations. This Chapter is complemented with the *Graphic Novel Volume II* (GN-V-2) and the audio-visual narrative *The Space Between II* (AV-N-1).

Likewise, Chapter 6 describes Case Study 2 (CS2) and its results. Launched in August 2017 with seven planned visits (29-30 August, 4-6 September, 10-14 September, 18-19 September, 29-1 October, 5-6 October 2017 and a follow-up 22-25 January 2018) alongside the Newbold Trust, a social enterprise committed to sustainability in Forres, N-E Scotland. We explored ways in which the renewal of their physical assets could invite and engage the wider community to influence decisions on the uses of such assets. It is to be read alongside *Graphic Novel Volume III* (GN-V-3) and the audio-visual narrative *The Space Between III* (AV-N-2).

Chapter 7 discusses the results of CS1 and CS2, and presents a modified theoretical framework, based in CHAT, which represents a theoretical contribution of this study. The analysis produced a number of findings and suggests that co-design practice can be understood as an informal-mutual learning process of engaged participants, which transpires through the setting of designerly social environments. This is complemented with the audio-visual narrative *A Theoretical Framework for Collaboration* (AV-N-3).

In the final Chapter, Conclusions (Chapter 8), I present my reflections on how participants learn in community co-design situations (research question 1), with focus on the designerly conditions supporting informal-mutual learning (sub-question 1.1), and illustrating a theoretical framework that visualises its relationship with co-design (sub-question 1.2). I then discuss the research limitations, and describe future research-paths.

Chapter Two: Literature Review

2.1 Introduction

This study is concerned with learning in community design situations. The aim of this Chapter is to illuminate the research gaps relating to the focus of this research and its associated research questions. These are concerned with developing an understanding of how and in what ways people learn in co-design situations. This requires, firstly, to question when and under which conditions learning emerges; and secondly, to consider how the visual language of design can assist in uncovering and visualising the relationship between learning and co-design.

This literature review begins by examining the context of this research: community engagement, the notion of impact, and co-design processes, where it provides a critical analysis of the conceptualisation of 'mutual learning' in co-design. Explorations follow on social theories of learning with the intention of expanding the notion of learning and unfolding notions of learning processes. I then introduce Cultural-Historical Activity Theory (CHAT) as the overarching theoretical framework and provide a rationale for its use.

2.2 Community engagement

Community engagement is an approach that is often adopted when conducting community-research partnerships. It is important to examine what is meant by it, because it is an approach that underpins this study. Depending upon the discipline, different names are adopted – Community-Engaged Research (CER) in Health (Goodman et al. 2017), Participatory Action Research (PAR) in social sciences (Walter 2009), and Participatory Design (PD) in design research (Spinuzzi 2005). All of these share community engagement principles: foregrounding participants and their context and aiming for a positive social impact. Community engagement is identified as a suitable means of investigating communities and their sociocultural issues (Davis et al. 2011), and in turn enhancing community conditions (Balazs & Morello-Frosch 2013).

In the last four decades community engagement – also termed civic engagement or public participation – has acquired resonance in the agendas of the voluntary, public and private sectors (Bowen et al. 2010), as well as research agendas (Davis et al. 2011). A myriad of disciplines and organisations have seen a shift away from the so-called top-down approach which fails to meet communities' needs due to its inability to foster bidirectional relationships (Head 2007). Instead, some governments and organisations are increasingly moving "towards a revitalised emphasis on building institutional bridges between governmental leaders and citizenry, often termed 'community engagement'" (Head 2007, 441). This practice responds to the cultural demands of an emerging society in the 'era of participation' (Smith, Bossen & Kanstrup 2017); a vernacular tendency of solemn participation in public and semi-public realms supported by the proliferation of digital domains (DiSalvo 2012; Jerkins 2006). This has led to widespread public engagements in community initiatives of different natures and purposes (Fuad-Luke 2009; Simonsen & Robertson 2013), through bottom-up and informal movements (Matarrita-Cascante & Brennan 2012), which aim to confront societal issues at different levels. This practice is modifying economic and productive systems, as well as development processes, encouraging social innovation (Smith et al. 2017). Yet it also foregrounds concerns about the notion of participation and ethical issues of building interpersonal relationships with the participants, the use of personal data, common rights and ownership.

In the voluntary sector, community engagement is particularly relevant to ensuring that both services and policies are directed towards fulfilling the concrete needs and desires of the different communities. Joy and Shields (2013) state that governments need to put greater commitment into supporting long-term community engagement in the voluntary sector. Indeed, this sector shoulders a greater workload in delivering public services on behalf of governments (Mündel & Schugurensky 2008). The sector needs a strong volunteer force engaging with communities in order to facilitate a service that otherwise would not.

The Brisbane Declaration on Community Engagement (United Nations 2005) defines community engagement as a bidirectional process in which institutions invite citizens to participate in the entire process – from decision-making and planning to policy formulation, delivery of services and evaluation – with the aim of including their needs, desires and personal situations in the transformation of those institutions. As a result, newly-shared meanings and values are produced, defining the nature of engagement. This can vary from a shared sense of belonging to a geographic place or organisation, sharing a common interest-objective, or sharing similar sociocultural situations towards fixing issues around the quality of civic life (Goodman et al. 2017). Community is considered a social unit that remains united because its members share communal values.

'Community' differs from 'society' in that its individuals share the 'unit of will' (Tönnies 2017); i.e. collective subjective configurations of shared values and meanings (González Rey 2008). Human ecology understands community as an organisation of relationships in a specific geographic location (Luloff & Krannich 2002; Poplin 1979), thus linking community and place. Systems theory describes it as a system of networks shaped by social units, which interact between themselves, performing complex functions together, where a social system is a highly-organised structure comprising social and meaningful relationships between people (Bates & Bacon 1972; Luloff & Krannich 2002; Poplin 1979). Thus, community engagement emphasises social relationships where the mutual benefit of multi-actors becomes the driving-force towards the development of agency. It shifts people from passive to active participants in their community, but it also transforms the way in which citizens and institutions relate and therefore communicate.

The Scottish Government (2015) launched the *Community Empowerment (Scotland) Act 2015*, giving community organisations control over community assets and strengthening their influence in re-shaping public services. The Act (2015) states that community engagement supports the flourishing of social connections and sets out a structure of collaboration where non-profit organisations, public sector

and grassroots movements are required to share resources and to support partnerships, thereby "developing a renewed multidimensional framework between institutional networks and interpersonal bonding" (Calvo & De Rosa 2017, S1706), all combining to support the goal of social learning. These partnerships are also present in the European Commission research agenda, which follows a co-creation approach (including citizens) to re-shape public goods and European identities (Torfing, Røiseland & Sørensen 2016). Community engagement builds momentum in the exploration of new approaches for democracy (Smith et al. 2017), yet people perceive it as a tokenistic and an insufficiently inclusive process, which generates scepticism (Escobar et al., 2014). Ways to understand holistically the cultural-historical context of communities need to be identified in order to design participatory approaches that foster sustainable engagement and encourage changing perspectives.

2.3 Social impact and evaluation

The voluntary sector has shifted from a positivist perspective of understanding social impact to a more complex view where culture, economy, demographics and politics are always evolving (Kelly 2010). According to the McKinsey & Company report (2010), social impact implies a significant change in the socio-economic, cultural and political dimensions of a community due to a series of activities and the changes produced in behavioural patterns. Activity is affected on three levels of the social fabric: individuals, community and setting. What is of concern about community engagement is that its impact cannot be pre-determined, because many factors such as emergence, nonlinearity, uncertainty, adaptation and constant change interact simultaneously. Hence, unfolding social impact produced for community engagement practices implies paying attention to the process, the socio-material conditions supporting it, and its value. All these aspects shape complex environments of human interactions. Therefore, evidencing its impact is a challenge for researchers and practitioners.

In order to overcome this challenge, effective evaluations have been requested internationally and locally, influenced by the recent recession (Forss, Marra &

Schwartz 2011), and the onus on voluntary organisations to reflect outcomes against funding applications and budget expenditure. These demands have highlighted the *deficiency* of traditional evaluation approaches in evidencing social impact (Preskill & Gopal 2014; Patton 2011). Such methods stem from prescriptive theories (Dillman 2013) that formulate a set of principles to be followed, and implementations lead to predictable outcomes. Smith (1993) outlines a gap between these theories and the practice of evaluation due to the challenge of interpreting and applying such principles to complex research situations - less than 10% of practitioners base their evaluation on an evaluation theory (Christie 2003). Evaluations therefore need to embrace new approaches that are adaptive, responsive and aimed at systematic assessments in order to evidence the value. Patton (2011) proposes a developmental evaluation framework, neither formative (improvement) nor summative, but incremental in capabilities and competences. This aligns with Sen's (1999) notion of development, a process by which people increase their alternatives of choice; the freedom of choice that individuals or communities can make about socio-political and economic aspects of life. According to Sen (1999), capability refers to the options a person can feasibly achieve. Developmental evaluation bases its principles on complexity theory and theories of change: recognising complex interactions, embracing uncertainty, loss of control, relationship-building and collaboration (Patton 2011). It focuses on observing, improvising, learning as it goes and establishing feedback loops. Feedback is crucial in evaluation because on it resides the learning capacity of individuals, communities and the process (Hargreaves 2010; Rogers 2011). The value lies in how people want to live and in enabling capabilities.

Another research gap addressed here involves *participation levels* (Wallerstein & Duran 2006). Few research studies have addressed this concern of measuring such an impact upon the participants and the process itself (Goodman et al. 2017; McCloskey et al. 2012). Khodyakov et al. (2013) illustrate the complexity of measuring community engagement by developing and comparing two frameworks: one based on general criteria of the distribution of power and the level of

engagement (from non-engaged to deeply-engaged); and the other, developed after thematic analysis of participant interviews. The second framework, called Community Engagement in Research Index (CERI), aims to depict a multidimensional approach, able to absorb challenges such as evolving research-community relationships or differences in perspectives. It does, however, simplify the findings based on the type of engaged-activities describing twelve indicators.

In this context of research, evaluation frameworks address societal challenges (Silverman & Patterson 2015) arising from practice (e.g. sustainability, constraints in public services, the emergence of social inequalities and the increasing need to engage communities). Accordingly, social relationships become relevant to exploring what constitutes impact. As Fitzpatrick (2012) observes, successful social impact depends to a great degree on the nature of human relationships. The community cannot be controlled or described in terms of cause and effect (Preskill & Gopal 2014) and the unique cultural-historical background of each community influences impact (Kelly 2010).

In this study, interest in evaluation theories resides on their value (Rosenstein 2014). When the goal is transforming community conditions positively, *learning* becomes crucial to the evaluation purpose (Kirkpatrick & Kirkpatrick 2016; Stufflebeam 2001). Taylor et al. (2005) emphasise the *value of learning* inherent in evaluation because it allows people to establish a relationship of learning from everyday practice.

2.4 Getting together in the era of participation

In the last half-century, there have been calls to consider new design methods (Sanders & Stappers 2008). According to Cross (1972), traditional design by its nature excludes people from the creative process and so fails to address the complexity of current challenges. The 21st century is witnessing diverse challenges: human migration (Ahmed 2017), environmental sustainability, climate change, cutbacks in public services, increasing social inequality and privatisation of education and healthcare (Silverman & Patterson 2015) etc. All of these interact in

our everyday lives, constraining our possibilities to choose based on our needs. Cross (2011) observes: “we are on a journey from an industrial world ruled by certainty, precision, and logic to a natural world characterized by unity, unpredictability, and complexity” (15). Methodological frameworks must now be capable of capturing the dynamic processes of social impact.

The calls for change exude democratic principles embedded in a myriad of practices aiming to support the increasing demands on participation. Practices such as co-creation, social design and design activism, co-design and participatory design are intertwined (Bason 2010). They share the idea that creativity resides in everyone and therefore any creative process should include participants covering the social spectrum – private, public and voluntary sectors with all types of citizens. Jungk (1973) envisioned a motivational shift in design which would radically reshape the future of the discipline. This shift has arrived (Fuad-Luke 2017); society now wants designers back in the public sphere, with greater involvement in socio-political problems and civil society (Swann 2002). To confront such challenges and fulfil societal demands, we all need to get together towards joint goals, join our efforts, share knowledge and embrace social learning in-between spaces and time.

2.4.1 Co-creation

The notion of co-creation is introduced in management disciplines (Prahalad & Ramaswamy 2004) to explain the shift in business models from a centred to a customised view of products. Tseng and Piller (2003) illustrate enterprise models adopting 'mass customisation', rather than 'mass production'. They identify a gap of understanding around the impact of integrating users into value-creation processes in knowledge management. They describe the necessity for further research on methods of a customer-centred enterprise, a kinship of user-centred design, which has yielded benefits on consumer products such as value chain, customisable offer and knowledge-transfer (Fogliatto, Da Silveira & Borenstein 2012). Sanders and Stappers (2008) refer to co-creation as "any act of collective creativity" (6), comprising a wide range of processes. Bason (2010) defines co-

creation as the process of “placing people’s wants, needs and situations at the centre of the creative process as a powerful way to generate the insights that allow us to create with people and not for them” (144). This is the prime insight modifying the landscapes of design, expanding its frontiers towards fields such as service design or organisational design. 'Design-with-people' merges a society eager to participate and the principle that everyone is creative, hence we all design (Manzini 2015). This aligns with Schön’s (1987) concept of design as a process of transforming the environment around us, a catalyst to action through a process of interacting with the material ecologies, observing and experiencing until we feel comfortable enough in our new environment.

According to Bason (2010), co-creation brings two benefits: divergence and execution. Divergence appears when an increase in the number of ideas and inspirations brought about by diversity prompts more appropriate solutions. Divergence has a direct relationship with the introduction of different knowledge-based approaches, such as the application of ethnographic research, qualitative data-gathering and turning the role of researchers into participant-observers. Hess and Adams (2007) add that divergence enables conversations with a fresh slant on the same issue, hence changing perspectives and inviting new solutions. Execution alludes to human agency and anchors the participants throughout the whole creative process to ensure success (Bason 2010; Halse et al. 2010). Further, Gillinson, Horne and Baeck (2010) disclose their 'radical efficiency model' after analysing more than 100 case studies from different contexts and the scale of research worldwide which follow co-creation processes with focus on reshaping public services. In the report, they chronicle ten successful social innovations. The radical efficiency model offers an opportunity for profound transformative agency in designing and delivering public services through centralised-strategies towards supporting local action, and change. Similar to Nygaard & Bergo’s (1975) local knowledge-production strategy at the dawn of participatory design, Gillinson et al. (2010) recommend governments devolve power to local communities who have the responsiveness and empathy required to release social innovation. They identify four steps to pursue this: (i) developing 'new insights' through divergence;

(ii) 'new customers' – redefining the notion of users; (iii) 'new suppliers', that means paying attention to who does the job – this includes re-contextualising the role of users; and (iv) 'new resources' – releasing latent human abilities, forgotten assets, and strengthening institutional networks. The aim focuses on engendering new perspectives about social issues. This leads to innovative transformations of services – based on the people experiencing them.

2.4.2 Socialisation of design

Design research increasingly concentrates on exploring approaches that can foster social innovation, shifting from design driven by the market to design motivated by social demands, promoting meaningful social impact towards sustainability (Manzini & Meroni 2014). Design methods have been applied in the public sphere (e.g. public services, community-based development, etc.) aiming to achieve creative solutions that meet the needs and desires of people, going beyond conventional methods (Mulgan 2014). Design is ubiquitous in contemporary life (Fuad-Luke 2009), so as Papanek (1972) observes, we all design all the time, as design embeds itself with human agency. From this perspective, people can adopt design roles (knowingly or unknowingly) in reshaping their everyday life – blurring the frontiers of design and raising tensions between 'expert/diffuse design' (Manzini 2015). The socialisation of design is a conscious act "geared to goals, objectives and aims within a broad societal context" (Fuad-Luke 2017, 281), thereby "in the intimate interweaving between aesthetics and the political… an interesting answer to the activist nature of design activism is to be found" (Markussen 2013, 39). The micro-politics and the aesthetic dimensions of design will be unfolded more in detail in the case studies, since they have been identified as key insights in this study. Yet the literature considers 'the political' (Mouffe 2013) dimension of design as the condition of dissent that each individual may experience within a concrete designerly situation. The political dimension of design has the means to re-mould pervasive and conventional structures of power because it embodies activist strategies for transforming community paradigms and values (Calvo & De Rosa 2017).

Design, as social action, raises awareness of sustainable ways of living and working together; it renegotiates the relationships we establish within the socio-materials of human situations– between what we do and how we feel about doing it (Markussen 2013). So design aesthetics embed *emotional reconfigurations* and the allocation of meaningful meanings to such socio-materials. This entails incorporating people's needs within the designing process in order to foster alternative forms of inhabiting and reshaping identities, hence eliciting social and behavioural change (Calvo & De Rosa 2017). This requires methodologies able to study human agency and its interactions with the socio-materials of situations. Think of design as an act of intervening in people's perceptions and affecting their behaviour. It also requires an explicit awareness of the learning process underpinning such an impact, which also relies on social capital factors. Such factors are related to community networks and interpersonal bonding: building trust, social conventions, norms of cooperation and partnership, networking and community engagement, as well as formal and informal organisations (Ostrom & Ahn 2009). As Silverman (2013) outlines, trust and empathy are key factors in ensuring that qualitative data is rich enough to produce deep insights. Qualitative inquiry has been gaining relevance in social design as it provides the means to systematically document human interaction and participation. In this sense, ethnographic research - used in this study - provides a set of methods that enable designers to gather richness and in-depth data.

2.4.3 Community-based co-design

Increasingly, co-design resonates in community engagement and in the voluntary sector as a strategy, aiming to confront societal issues in the public sphere, due to its democratic and open-ended design process (Fuad-Luke 2009). Whereas user-centred design, which objectifies people in the design process, and suits consumer products, seems unable to address those challenges. Gay and Hembrooke (2004) illuminate a "shift from user-centered design to context-based design... from a focus on human-computer interaction to a focus on human interaction that is mediated by technology in context" (xvii). This shift emerged in the 1980s and 1990s in the field of interaction design (see Kaptelinin and Nardi 2006; Spinuzzi

2005; Zahedi 2011) when its definition expands: from being focused on the computer moving towards designing the sociocultural (hybrid) spaces of human interaction (Winograd 1996). As Kaptelinin and Nardi (2006) state, our society is increasingly designed, “furnished with technologies at every turn” (10). These statements recognise the relevance of the social environment in configuring human interactions (designerly situations); and also places emphasis on the intentionality (emotions, motivations and subjectivities) behind any design outcome. Bannon (1991) advocates for a change in the systems design process, from meeting ergonomic specifications (human factors) to foregrounding greater involvement of the people acting with technology (to human actors) on the whole design spectrum. Consonant with the insight that the ultimate input is on the users (people) to define their functionality, technology is then understood as an important part of human activities with a mediating role in their development. In user-centred design, social scientists were brought to mediate between designers and users (Simonsen & Robertson 2013). Over time, as Sanders (2002) describes, both disciplines mutually learnt that the most productive designs come from direct exchange of experiences when the stakeholders come together (Gay & Hambrooke 2004; Zahedi 2011). Both disciplines found in their combination strong allies (Brandt et al. 2013; Sanders 2002). With focus on participatory experiences, co-design emerges as "promising at tackling the most pressing societal challenges" (Meroni, Selloni & Rossi 2018, 17). Sanders (2002) uses the term postdesign, a distinctive attitude to people, who, given appropriate tools to configure a hybrid language (Ehn 2017), become creative contributors to the design process.

Selloni (2017) illustrates co-design as a form of community engagement to strengthen communities, and as a prior step to co-production. Co-design is also associated with social innovation as it can create a 'third space' (Muller 2009) where the multiplicity of expertise and perspectives (divergence) can be disclosed and assembled (Manzini 2015). Cruickshank et al. (2012) define innovation as a systemic process requiring collective and creative activities to be performed by interdisciplinary expertise that emphasises knowledge-exchange amongst

participants and disciplines (Cruickshank 2010). Collier and Williams (2013) propose *reflective practice* to solidify such knowledge, out of what we learn and experience in the community.

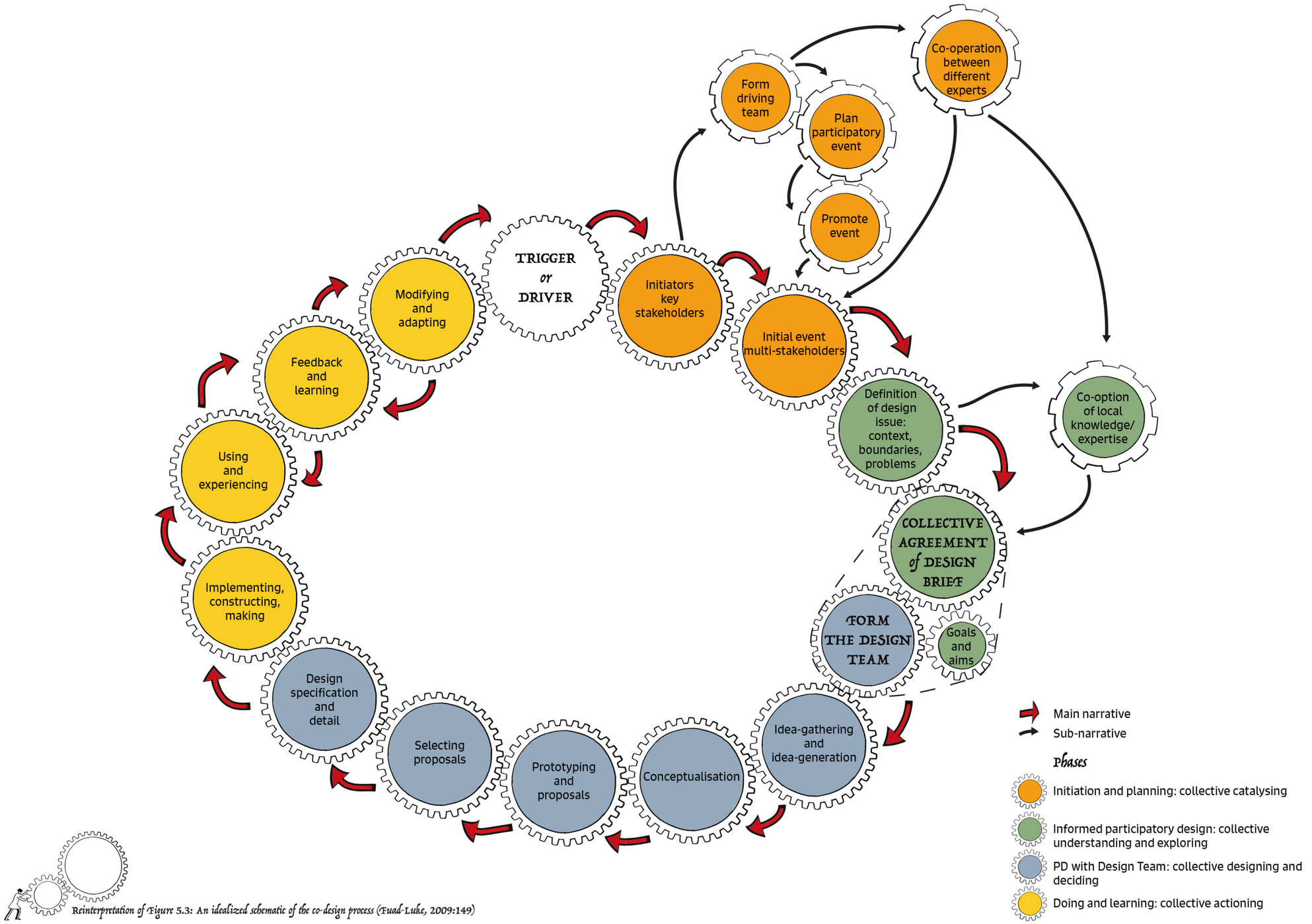
The notion of co-design refers to the act of collective creativity applied throughout the whole design process (Sanders & Stappers 2008). This paradigm shift also involves a shift in the role of designers, who move from designer-to-designer to designer-to-public, and more recently, to public-to-public roles. Here, designers need to acquire/emphasise social skills in order to facilitate 'public designerly engagements' (Lindström & Ståhl 2016). In public-to-public relationships, those 'non-trained-in-design' still contribute to the designing (Lee & Ho 2012), thereby democratising (and socialising) the design process. In designerly engagements, designers intervene in public spheres, in a designer-public relationship, where people are perceived as experts, and designers adopt roles of support (Ehn 2008). With grassroots and bottom-up social innovations, communities take the lead and designers serve as triggers for local action (execution), their role being to activate and facilitate civic-collective creativity (Lee & Ho 2012), alongside designing the socio-materials of designerly engagements for 'the co-articulation of issues' (Lindström & Ståhl 2016).

2.4.4 Co-design and participatory design - a semantic shift

Recently the label of 'co-design' has been applied to various participatory approaches (Fuad-Luke 2009). This practice has been developed under another label, 'participatory design' (PD). Nowadays the term 'co-design' resonates more in related fields (Meroni et al. 2018; Selloni 2017) as "a contemporary progression" (Broadley 2013, 33) of PD. Sanders and Stappers (2008) describe the origins of co-design as the set of methods used in explorative and idea-generation stages of co-creation, emphasising the customised view of products. This led to the revisiting of issues to do with authorship, redistribution of power and roles, blurring boundaries between expertise/diffuse designs (Manzini 2015). This notion has evolved to become a complex design process, and its role being

valued by design-researchers and practitioners for its capability of engendering a 'third space' (Bjögvinsson, Ehn & Hillgren 2012).

Figure 2.1 reinterprets the Fuad-Luke's (2009) "idealized schematic for the co-design process" (149), which illuminates four phases: (i) 'initiation and planning' (collective catalysing); (ii) 'informed participatory design' (collective understanding and exploring); (iii) 'PD with design team' (collective designing and deciding); and (iv) 'doing and learning' (collective actioning). This model has been key in the development of my own methodology, as I used it as a theoretical reference to observe the chain of events unfolded during my immersions (See Chapter 3).



Reinterpretation of Figure 5.3: An idealized schematic of the co-design process (Fuad-Luke, 2009:149)

Figure 2.1. Mirian Calvo, reinterpretation of Fuad-Luke's (2009, 149) idealized schematic for the co-design process, 2017

PD can be traced back to the early seventies with the emergence of the work of Kristen Nygaard and his research colleagues in the Scandinavian countries (Simonsen & Robertson 2013; Spinuzzi 2005). At that time, innovation consisted of including trade unionists and workers in the designing of computing technologies introduced in the workplace (Ehn 2017). Since then, PD has been used in human-computer interaction (HCI), design interaction, and recently expanded to other design disciplines such as urban design, social innovation and public participation (Meroni et al. 2018). Nygaard, Ehn and their colleagues laid the foundations of PD: a research methodology based on democratic social constructivism and participatory action research (PAR) methods and techniques (Glesne 1998; Spinuzzi, 2005). Nygaard and Bergo's (1975) research revealed that local knowledge-production learning, out of divergence and execution, was the cornerstone of an emerging methodology. As Ehn (2017) states, "our ambition was to unite participatory actions research in the field with systematic theoretical reflections aiming at a productive interplay between academic and local knowledge production" (10).

PD borrows from Lewin's (1946) work and PAR, with a vast social research tradition. It has developed methods and techniques to study the dynamics of social life through an approach focused on participation, collaborative enterprise, and reflection (McNiff 2002). Lewin's work (1946) aimed to shift traditional research (Cartesian view) by bridging the gap between theory and practice. For almost a half-century, PD has been advancing a methodology based on situated research, using designerly engagements to ensure participation with people and their context (Ehn 2017; Spinuzzi 2005). Thereby, the goal of design research is to encourage transformative agency and societal change (Manzini 2019).

PD also found inspiration in Freire's (1970) emancipatory learning notion, which helped assemble epistemological strategies. As Ehn (2017) explains, two strategies are aligned: (i) the 'decentralisation' of power underpinning local knowledge-production (Nygaard & Bergo 1975), through central strategies and local actions (execution) around disruptive practices in the workplace (similar to Gillinson et al.

2010); and (ii) the emphasis on community-contextualised learning as the means for emancipation and liberation (Freire 1970), which opposes traditional theorisations of learning (formal-learning based on knowledge-acquisition).

Then PD reached the US, where trade unions were less powerful in the workplace, so the democratic aspirations of the Scandinavian researchers focused instead on functional product features (Spinuzzi 2005). The developing of methods and techniques led to user-centred design, which differs from PD, as the design research concentrates on users, whereas PD centres on people (Kaptelinin & Nardi 2006; Iivari 2004; Gay & Hembrooke 2004). The focus on *mutual learning* lost relevance on the agenda of design research because it was considered a taken-for-granted process (Robertson et al. 2014). Nowadays mutual learning is gaining resonance again (DiSalvo et al. 2017). Manzini (2019; 2015) and his research colleagues argue that co-design is the up-and-coming approach to democratise design, foregrounding the political dimension of collaboration and design (Markussen 2013). Selloni (2017) states that now participatory competences in co-design should be valued as a 'public-interest service', consonant with the demands on participation (Smith et al. 2017). Manzini (2019) observes, engagement tools "enable the achievement of shared results but also have the beneficial collateral effect of improving the design capabilities of everybody involved" (124). He describes a *collective informal learning process – a collateral effect* that reflects unconsciousness and unintentionally in informal learning (see section 2.5.3).

Co-design and PD are currently being used interchangeably. Both notions are based upon the following principles: (i) people involved, knowingly or unknowingly, in the development of a design have the right to vocalise and intervene in the design process (Carroll 2006); (ii) it encourages an interdisciplinary and multi-actor framework that collectively draws attention to the context of research (Fuad-Luke 2009); (iii) it aims to question the traditional hierarchies of power and inclusiveness (Manzini 2019; Fuad-Luke 2017; Broadbent 2003); (iv) it requires 'mutual learning' (Fuad-Luke 2009); and (v) it needs the setting of a 'boundary

space' (Lally & Sclater 2013; Edwards 2011), also referred to as a 'third space' (Björgvinsson et al. 2012; Gutiérrez 2008) in which the abstract and concrete spaces (Lefebvre 2003) can converge (Lee 2007). This turns into a powerful insight-generating approach, which enables designers to co-construct with people (Halse et al. 2010). Powerful in the social field because it foregrounds society and its transformation, affording a 'third space' (boundary space) and time frame for collaborating creatively towards joint goals (Burns et al. 2006). Collective creativity is the way to bring forth the motivations, perspectives, needs and desires of all participants (Sanders 2001).

2.4.5 Research gaps and challenges in co-design

Co-design is, then, an engagement-driven process on the basis of social interaction and community participation (Simonsen & Robertson 2013). This highlights some semantic confusion between participation and engagement or involvement. Participation is the act of taking part in something, implying commitment but also activation. Involvement denotes an emotional or personal connection with others. Engagement comes from the French 'engager', meaning 'to commit to a cause' and in its origins designated a legal or moral obligation, although nowadays this sense of commitment has lost currency and it is understood as an "ongoing and active relationship" (Head 2007, 442). In this study, participation stands for the notion of multi-layered human agency, by which I mean human-directed activity enacting in a series of social situations, design processes or activities – taking an active part in the 'telling', 'making' and 'enacting' (Brandt et al. 2013). Epistemologically, this notion opposes the idea of participation developed by Andersen et al. (2015), where using actor-network theory (ANT) as the theoretical framework, they placed participants at the same level as objects involved in the co-design - such as reports or engagement tools. Their concept of participation is seen, in a broader sense, as *any kind of relationship* established by the actor-networks without specifying whether the objects or people are directly involved in the activity. This theoretical framework is also unable to incorporate socio-emotional aspects (Kaptelinin & Nardi 2006) which influence interpersonal interactions (e.g. building trust, empathic relationships) and learning (Bisquerra 2015).

The notion of participation is multi-layered, since different levels of participation co-exist with regard to the roles that people adopt in each situation: observing, peripheral or central positions. This aligns with the idea of participation developed by Wenger (1998), where participating with others and with the environment influences what we do, who we are becoming and how we interpret the activities we undertake. This also relates back to one of the gaps illuminated in section 2.3, of how to identify the different levels of participation (Wallerstein & Duran 2006) and how they impact the co-design process (Bratteteig & Wagner 2014). Bratteteig and Wagner (2016) identify that the motivations to participate in co-design lie in pragmatism (having participants enhances the design result), and in a political stance that emphasises the right of people to prompt the future uses of designs. They identify a research gap in relation to what constitutes participation: how the participants contribute, and how they can raise awareness of such contributions. The vastly reinterpreted Arnstein's ladder (1969) of participation is based on the distribution of power amongst participants in decision-making processes. This raises another challenge in co-design: the distribution of power between participants and designers (Bratteteig & Wagner 2014). As Lee (2008) reports, the distribution of power should be equitable, to ideally configure a 'space of collaboration'. This leads to possibly the prime challenge of co-design, how "to overcome yes or no answers, facilitating the emergence of complex ideas, combining not only opinions, but also visions and proposals" (Meroni et al. 2018, 20), i.e. how to achieve genuine collaboration. In line, Zahedi (2011) explores the role of the designer as a mediator, with focus on enabling designerly conditions for the blossoming of participant learning through collective-reflection-in-action. She illustrates a theoretical model depicting a three-step process to achieve 'optimal' collaboration: (i) familiarisation – assembling different knowledge expertise; (ii) co-creation of a common language, which enhances communication (as Ehn 2017); and (iii) co-reflective practice, which leads to aligning perspectives and defining the participants' needs and desires as the goals of the project.

The multiplicity of expertise and skills in co-design reveals two other challenges: (i) how to integrate the voices of those who are not familiar with the design language (Ehn 2017); and (ii) how to enable those participants to envision what it is they get from such a design process - a priori - without having a sense of what is possible (Simonsen & Robertson 2013). These reveal another gap, in understanding, between co-design and mutual learning processes (Brereton & Buur 2008). In the same vein, *The Utopia* project discloses the need to mutually develop a design language game (Ehn 1988). This also relates to the conceptualisation of 'boundary space' or 'third space' (Calvo 2019; Lally & Sclater 2013, Bjögvinsson et al. 2012), the assembling space of divergence.

Design research also has the imperative to investigate the added value of design associated with social innovation and the public sphere (Meroni et al. 2018; Simonsen & Robertson 2013). Here, another research gap arises, between what constitutes and qualifies the social impact of co-design and the participants' perspectives and their communities. The impact of a co-design process may evidence itself later on, when the project and the research are already finished, and it can even emerge in different social environments (Calvo, Sclater & Smith 2016). In this sense, a range of factors influence the value-creation process: from personal and social dimensions, such as changing assumptions and/or readjusting personal feelings of discomfort at being in unusual situations (out of one's comfort zone), to addressing design barriers such as the visualisation of design thinking or the language of design (Yee, White & Lennon 2015).

Gay and Hembrooke (2004) explore ways of visualising complex processes in co-design, "how do we make visible and represent multiple, simultaneously occurring processes?" (xix). This aligns with my sub-question 1.2, on *visualising the relationship between informal-mutual learning and community co-design*. They observe the need for designers to grasp understanding on the dynamics enlivening socio-cultural situations. They suggest five changes in the practice of design: (i) 'user centered to user involved', thus, participants involved in all stages of the design process and designers attending to context-based situations, where ethnographic methods can

assist in this endeavour; (ii) 'laboratory to context', from "understanding specific needs and behaviors... to an emphasis on understanding the activities and the meanings of those activities in social and networked contexts" (xviii); (iii) 'rigid to emergent design practices' – calling for flexible and adaptive design frameworks, contextualised in real experience; (iv) 'individual to groups', emphasising technology as relational and socially constructed, involving communication and collaboration with people and with the environment; (v) 'bounded activities to cross-boundary tasks', bringing to the fore the fluidity between time and space.

2.4.6 Mutual learning in co-design

As discussed in Chapter 1, mutual learning is considered the cornerstone, the foundation, for the flow of interpersonal synergies. These synergies characteristically are highly complex, due to the multiplicity of agency, motivation, power relations and the diversity of roles each participant brings and therefore, they influence the setting-up of group dynamics (Blomberg & Karasti 2013; Bratteteig & Wagner 2016). Synergy is a multi-actor interplay that produces an impact greater than the efforts alone. Hence, it can deepen our understanding of how the impact of community co-design occurs. From this viewpoint, co-design is explored as an amalgam of human interactions, and the synergies influencing mutual accommodations among participant's perspectives. This implies analysing such synergies which cause it, with focus on mutual learning. Manzini (2019) calls for 'diffuse design capabilities', referring to the mutual learning in which participants engage. He states, "Although the ability to design is a human capacity potentially available to all, to fulfill this potential, needs to be cultivated" (124). He observes a societal demand (need) in increasing citizenry participation in design processes with focus on mutual learning.

Originally, mutual learning in PD (or co-designing) was understood as an emergent learning, "hands-on, project-based learning in real-world situations" (Sanders 2017, 213). As discussed in section 2.4.4, the meaning of learning came close to Freire's (1970) pedagogical approach of human emancipation. Over time, this political principle was undermined as designers concentrated on suiting consumer

products. Then learning was understood as the process of designers acquiring a better understanding of the participants' contexts and, simultaneously, the non-design-trained participants acquiring knowledge about possible future design solutions (Karasti 2001; Bjerknes & Bratteteig 1989). However, this concept manifests a traditional view of learning based on knowledge-acquisition, where it still resonates at certain levels of hierarchical relationships like teacher-student. This opposes the concept of learning adopted in this research, influenced by social theories of learning, discussed below. Freire's (2004) emancipatory aspirations need to come to the fore.

According to Bratteteig et al. (2013), mutual learning is bidirectional and enables participants to know enough about the problématique. By understanding the different stances and perspectives, participants develop mutual respect and build trust (Bejknes & Bratteteig 1988). This leads, in turn, to balancing the power-relations and 'having power implies having responsibility' (Bratteteig et al. 2013, 132). This mutual partnership relies on the principle that participants are experts in their respective fields (Manzini 2015; Meroni et al. 2018), and it differentiates co-design from other design processes (Spinuzzi 2005). Embracing a democratic social constructivist stance, this study explores "the process of participatory design as one within which hidden latencies become visible and new perspectives and/or reflections emerge; this is the process by which learning "happens"" (Light & Boys 2017, 158). Learning emanates throughout the unfolding of participant's latencies and collective reflections (Zahedi 2011).

2.5 Social theories of learning

Central to this study is the exploration about the ways people learn in community co-design. Thus it is pertinent to review the basis of social theories of learning in order to bring a fresh slant from a large research tradition.

2.5.1 Situated learning and communities of practice (CoP)

For Lave and Wenger (1991), learning is always situated in a socio-cultural context. This includes the physical environment, human activities and the people involved, knowledge contributing to the performance, knowledge embedded in the activities and also the social interactions prompting those activities. Later, Wenger (1998) defines learning essentially as a social phenomenon. Thus, learning is unintentional and occurs as a complex (cognitive) function during interactions with our surroundings, hence, through participation (Wenger, 1998). "Participation is always based on situated negotiation and renegotiation of meaning in the world" (Lave & Wenger 1991, 51), implying that theory and practice are indivisible. The mind is part of a corporal entity; they mutually constitute the human being. Participation breaks down traditional divisions between abstraction and experience because the material ecologies of social situations, the people involved (participants) and their agencies entwine in the production of thought, communication and learning, or knowledge (Eraut 2000). Participants, in this study, include all the people involved in designerly situations and engagements (design-researchers, practitioners, non-design-trained, and laypeople), aiming to legitimise from full to peripheral participation. This notion of participation fits well with the discussion in section 2.4.5. Wenger (1998) indicates that learning through participation assists in assembling what we do, who we are becoming and how we reinterpret the activities we undertake. This occurs in four dimensions (fig.2.2): (i) meaning: changes in our understanding through experience; (ii) practice: compilation of cultural-historical background that gives rise to the body of knowledge, which continuously evolves by doing; (iii) community: the social structure determining the values and beliefs, performance, competence and skills of the members; and (iv) identity: changes in the perception of oneself within the

community of practice imply a re-construction of autobiographical/personal narrative.

Figure 2.2. Mirian Calvo, "Components of a social theory of learning: an initial inventory" (Wenger 1998, xvi)

Wenger et al. (2015) discern three levels of learning through participation: personal learning (related to personal knowledge); community learning, which "entails a process of alignment and realignment between competence and personal experience, which can go both ways" (14); and 'landscapes of practice', a notion introduced to illuminate the highly-complex layers shaping different practices, related through boundaries. They explain how one belongs to many communities of practice, adopting different positions (peripheral-full participation), being influenced by all of them, and vice versa. 'Competence' is "the dimension of knowing negotiated and defined within a single community of practice, 'knowledgedgeability' manifests in a person's relations to a multiplicity of practices

across the landscape" (13). Therefore, competence is part of the specific 'codified knowledge' (Eraut 2000) of a community of practice, being influenced by its members/practitioners; whereas 'knowledgedgeability' recognises that one can be competent in a specific practice and, at the same time, knowledgeable in some landscapes of practice.

2.5.2 Formal, non-formal and informal learning

The era of participation (Smith et al. 2017) is fuelled by the 'knowledge economy'. Intellectual competences such as creativity are now sought by organisations, being directly associated with the emergence of innovation (Bason 2010). Intangible assets and higher levels of knowledge are also required. This leads to an expansion of adult education and to questioning intellectual property in the 'information feudalism' (Drahos & Braithwaite 2002). This also leads to promoting higher formal education (Molla & Gale 2014). Educational science outlines three learning subsystems: formal, non-formal and informal. As Mündel and Schugurensky (2008) explain, formal learning is highly institutionalised and related to schooling curriculum-based activities; non-formal learning is associated with workshops and activities with some sort of intended and recognised learning outcomes; informal learning encompasses the rest of human agency, drawing on a wide and undervalued spectrum of learning situations.

2.5.3 Informal learning

Eraut (2000) defines learning as the process by which individuals acquire knowledge. He outlines two types of knowledge: codified knowledge (also named public knowledge or propositional knowledge); and personal knowledge. Codified knowledge forms the body of knowledge of community expertise; subject to peer-review and debate, it defines the content of educational programmes and assessment. It is therefore explicit. Personal knowledge is the set of cognitive resources enabling us to think and react or behave in response to everyday situations, embedded in an intricate combination of "codified knowledge in its personalised form" (Eraut 2000, 114), alongside experiential, procedural and process knowledge, and feelings from 'episodic memory' (Tulving 1972), based on

past personal experience. Personal knowledge can be either explicit or tacit, and it involves the enactment of skills, competence and expertise.

For Eraut (2000), the 'learning context' influences the acquisition of codified knowledge, thereby emphasising the social dimension of learning. These conceptualisations of knowledge and learning form the basis of social theories of learning opposed to the dominant view where learning is confined to an individual cognitive process over a limited period, in the way teaching is generally designed. These theories also emphasise the dualism between their personal-social dimensions which are indivisible and shape human agency and identity. From a neuroscientific stance, Davidson and Begley (2012) evidence how cognitive and emotional processes are entwined and indivisible. They propose the theorisation of the plasticity of human brains, capable of adapting and adjusting to environmental conditions and to behavioural changes. These studies corroborate the idea that learning is a lifelong process.

Horvath et al. (1996) build upon Tulving's (1972) theory of memory and illustrate a scheme (fig.2.3) depicting the knowledge-acquisition structures. They divide both types of knowledge, previously discussed, for analytical purposes. Codified knowledge, through formal, non-formal and some sort of informal learning, transforms into semantic memories. This knowledge is too abstract to be applied directly to an eventual situation; it requires cognitive processes (Eraut 2000). By practice and experience, we create episodic memories (autobiographical events), through learning-by-doing, learning-by-experiencing, called experiential learning (Kolb 1984; Dewey 1916), which eventually form semantic memories. Horvath et al. (1996) state that, through experiential learning, we acquire tacit knowledge, which consists of an implicit learning. Tacit knowledge is knowledge learned unconsciously, as Polanyi (1966) describes, things we know but we are not aware of (knowing-how). Tacit knowledge is usually engendered through informal learning.

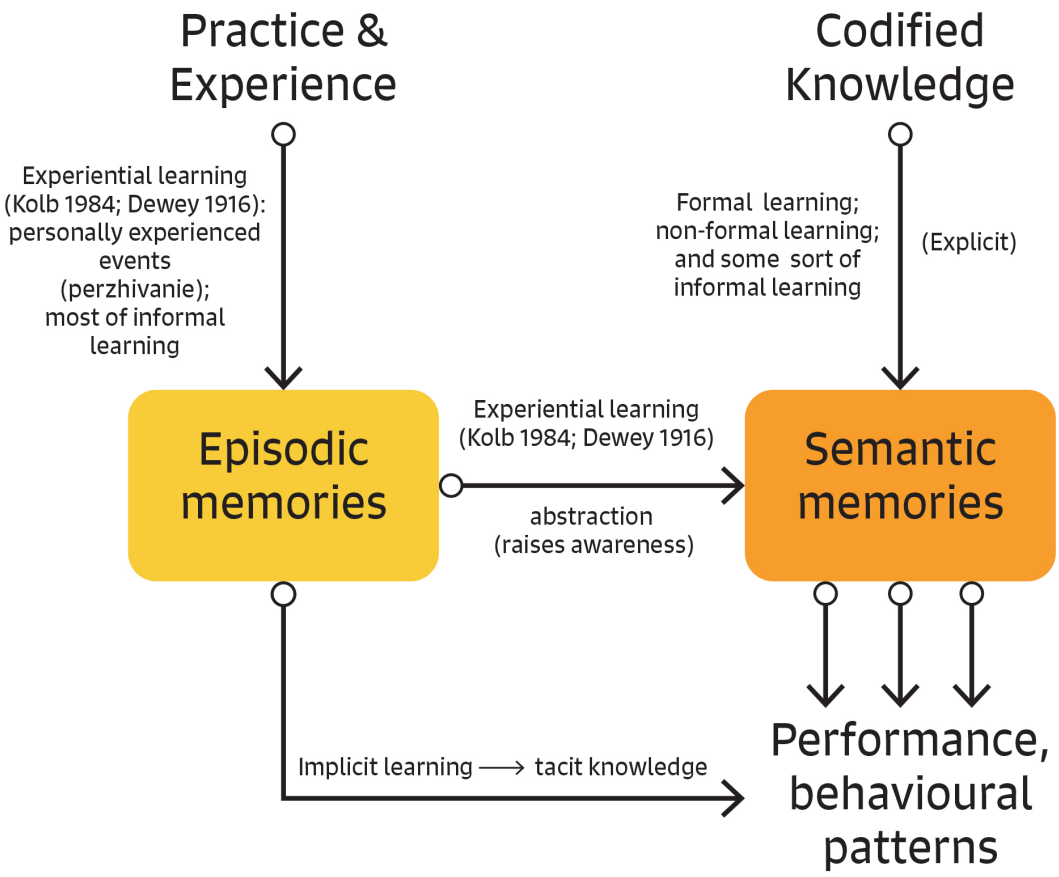


Figure 2.3. Mirian Calvo, Reinterpretation of Horvath et al. (1996) on Tulving's (1972) Theory of Memory.

Eraut (2000) distinguishes three types of tacit knowledge: (i) 'tacit understanding of people and situations'; (ii) routinised activities; and (iii) tacit rules supporting intuitive decision-making. He notes that tacit knowledge entails four cognitive processes: (i) 'reading the situation', (intuitive mode); (ii) taking decisions, (analytical mode); (iii) 'overt activity' and (iv) metacognition (both deliberative modes of cognition). He notes that learning is both explicit and implicit, as it draws inputs from a myriad of sources; the senses play a key role as intermediary between the mind and the world outside. The resultant knowledge is highly complex, combining both codified and personal knowledge. This illustrates the difficulty of researching learning processes, particularly in informal and designerly situations where learning is unconscious and unintentional. Originally, mutual learning in PD (or co-designing) was understood as an emergent learning, "hands-on, project-based learning in real-world situations" (Sanders 2017, 213). As discussed in section 2.4.4, the meaning of learning came close to Freire's (1970)

pedagogical approach of human emancipation. Over time, this political principle was undermined as designers concentrated on suiting consumer products. Then learning was understood as the process of designers acquiring a better understanding of the participants' contexts and, simultaneously, the non-design-trained participants acquiring knowledge about possible future design solutions (Karasti 2001; Bjerknes & Bratteteig 1989). However, this concept manifests a traditional view of learning based on knowledge-acquisition, where it still resonates at certain levels of hierarchical relationships like teacher-student. This opposes the concept of learning adopted in this research, influenced by social theories of learning, discussed below. Freire's (2004) emancipatory aspirations need to come to the fore.

Schugurensky (2000), on the twin dimensions of intentionality and consciousness, distinguishes three types of informal learning: (i) self-directed learning (intentional and conscious), (ii) incidental learning (unintentional but conscious), and (iii) learning through socialisation, which generally is unintended and unconscious. Singh (2015) contends only formal learning is validated and recognised by educational frameworks. However, informal learning represents between 80-90% of people's life-learning processes, and is considered effective because people can choose what they want to learn, from whom and when (Cross 2011), augmenting their capabilities. It usually occurs in community engagement settings with non-hierarchical relationships (Mündel & Schugurensky 2008; Freire 1970; Dewey 1916), which nurture a collective power capable of solving the actual issues of communities because such engagement can lead to initiatives within that social context. It advocates another way of learning, drawing strength from the construction of knowledge (Freire 2004), both personal and social (Eraut 2000). The situatedness condition of learning adds value to human resources and hidden talents (latencies) that emerge from learning through socialisation (Gibbs & Angelides 2004) or rather, participation in society. Creativity arises from participation and through lived experience (Hallam & Ingold 2007), where informal learning scenarios afford many opportunities where people can choose in what ways they want to learn (Calvo et al. 2016).

Likewise, mutual learning, associated with co-design, is a form of informal learning, unintended and unconscious (and thus invisible), frequently leading to tacit knowledge (Mündel & Schugurensky 2008); invisible because such social situations are not thought of as educational, which is reinforced by the pervasive social assumption that learning happens only in the classroom (Wenger 1998). This condition of invisibility, also identified by Gregorčič and Krašovec (2016), is, I argue, the prime challenge this study needs to address in order to begin unpicking how learning emerges. The participants learn collectively in an informal atmosphere where people negotiate how they choose to engage and learn continuously. Mündel and Schugurensky (2008), researching informal learning from volunteers in several settings, align with this view and highlight the challenge for researchers to draw out such learning, benefitting both individuals and organisations. Their findings illuminate three areas of informal learning in community engagement: (i) 'instrumental learning', prompted by conducting concrete tasks leading to routinised activities; (ii) 'learning to work together', a category which includes "dispositional learning such as openness toward people with diverse ideas and backgrounds" (53); and finally (iii) 'learning about the role and importance of volunteering', comprising learning about the practice of community engagement and volunteering. According to them, the first two areas emerge from implicit learning, whereas the third requires reflexivity or explicit learning. On this matter, Singh (2015) states that building self-awareness of community-based learning is key in order to understand our identity as individuals and as part of the community. This leads to developing conditions like deployability and employability, they argue, capacities directed to enhance participation and socialisation. Gibbs and Angelides (2004) add that self-awareness promotes authenticity of one's self and solidarity with others.

2.5.4 Motivations in informal learning

Mündel and Schugurensky's (2008) study reveals that the commonest motivation for volunteering is wanting to contribute to the community; generally, for reasons like the transference of experience and skills (personal knowledge) and to endorse the non-profit cause. According to Meusburger (2009), two types of motivations exist, intrinsic and extrinsic, influencing our creativity and learning. Intrinsic motivation relates to personal interest in the subject matter and thus in expanding individual knowledge. It is also directed at enjoyment while performing different tasks. As Cooper and Jayatilaka (2006) explain, people intrinsically motivated usually spend time and energy exploring the issue, so they are more likely to produce creative ideas or solutions. Conversely, extrinsic motivations are driven by external rewards such as money, diminishing their creativity. Cooper and Jayatilaka (2006) also recognise a third type, the obligation motivation, attached to the rule of reciprocation, for example, feeling obligated to future compensation of help.

2.6. Cultural-Historical Activity Theory

Cultural-Historical Activity Theory (CHAT) is a multidisciplinary framework that focuses on the study of human agency from individual and social perspectives. Extensively used in psychological, educational and ethnographic studies (Engeström 1987, 1993, 1999), it has somehow remained largely unexplored and undervalued in design research. This review identified some studies using CHAT in human-computer interaction (Gay & Hembrooke 2004; Nardi 1996b; Kuutti 1996, 2009; Karasti 2001; Sam 2012), interaction design (Kaptelinin & Nardi 2006), service design (Sangiorgi 2009; Menichinelli 2015), and few studies in collaborative design (see Zahedi et al. 2017) exploring the value of CHAT as the lens to explain design situations.

Zahedi et al. (2017) identify two applications of CHAT in design: (i) as a tool to uncover disturbances in design processes, usually applied at early stages assisting in the co-articulation of issues; and (ii) as an analytical framework to study human synergies in collaborative design. Creating a visual analysis tool, using the CHAT

triangular model (fig.2.5) as a mapping tool, attached to a timeline with periodic intervals, they visualise group dynamics. Gay and Hembrooke (2004) illustrate "an iterative design cycle" (12) informed by CHAT, a spiral diagram which finds inspiration in PAR. The cycle proceeds through six stages: (i) study current activities; (ii) identifying disturbances; (iii) developing new solutions; (iv) testing and evaluation; (v) re-conceptualisation of designs; and (vi) re-identifying disturbances, – similar to Light & Boys' (2017) approach from the differences.

My explorations led me to identify CHAT as the suitable theoretical framework, a holistic approach to elucidate the study of participation in designerly public engagements, and assists in eliciting unintentional and unconscious learning processes. Most theories isolate the components - people and community, culture and history, tools and activities (Gay & Hembrooke 2004; Kaptelinin & Nardi 2006; Kuutti 1996; Nardi 1996a; Roth & Lee 2007; Sam 2012) - or simplify socio-material situations into a system of knots and networks, displacing emotions and motivations in the enactment of agency (see section 2.4.5). Its strength comes from the attention that CHAT pays to "multiple dimensions of human engagement with the world and in the framework that it provides for configuring those dimensions and processes into a coherent "activity""(Gay & Hembrooke 2004, 4). CHAT as the overarching research framework provides a strong theoretical structure to begin visualising the mutual accommodations and to incorporate those key dimensions configuring co-design situations: personal and social, tools and design activities, rules and social conventions, roles and distribution of power (Gay & Hembrooke 2004). Drawing also on other social learning theories (section 2.5), CHAT is applied to the assembling of the theoretical constructs emerging during my immersions, described in Chapters 4 to 6, following a developmental methodology explained in Chapter 3. My aim is to integrate socio-emotional aspects influencing the co-design situations and the participant learning.

2.6.1 First generation of the unit of analysis

CHAT stems from 1920s Soviet Russia and it is attributed to Vygotsky (1971), Leontiev (1978) and Luria (1976). Alongside their colleagues, they aimed to stir up

the field of psychology where the mainstream pathways had adopted scientific and empirical models (Engeström 2006). The aim was to bring cultural, developmental and historical notions into the understanding of human beings. According to Kuuti (1996), CHAT finds its inspiration in German philosophy (Kant 1781; Hegel 1807; Engels 1884; Marx 1867) and focuses on the study of people's activities because they shape human consciousness. Er (2014) outlines how previous activities influence the way in which we address subsequent ones, describing how human agency has two indivisible processes, internal and external, which concur simultaneously. The internalisation of learning enables us to visualise future actions and outcomes, through the use of emotions, imagination and higher psychological operations (González Rey 2018).

Kuutti (1996, 25) identifies four principles in CHAT: (i) 'activities as the basic unit of analysis'; (ii) 'tools and mediation'; (iii) 'history and development' (26); and (iv) 'the structure of an activity'. The unit of analysis (i) stems from Vygotsky's (1978, 40) triangular model of mediated act (fig.2.4) "in which the conditioned direct connection between stimulus (S) and response (R) was transcended by 'a complex, mediated act'" (Engeström 2001, 134) depicted by X. "An activity is the minimal meaningful context for understanding individual actions" (Kuutti 1996, 28). Personal motivations are crucial human aspects in the development of such an activity, but also to the object. Er (2014) contends that motivations and objects are continuously changing; they are dynamic and subject to the development of human agency, but also to the sociocultural context (Kaptelinin & Nardi 2006). Human agency is mediated by its context (Vygotsky 1978); hence cultural mediation intervenes in the formation of higher psychological configurations such as artistic activities.

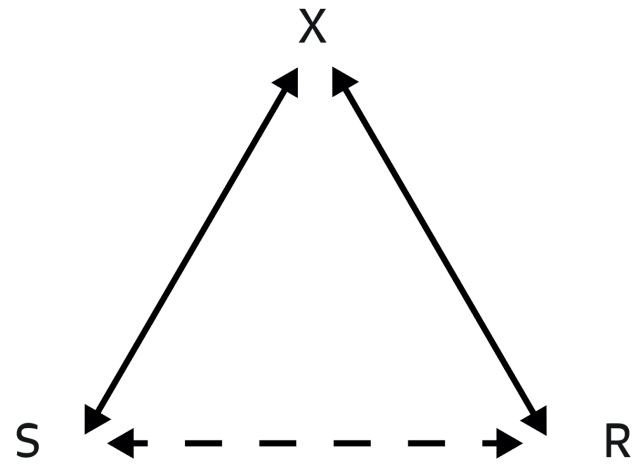


Figure 2.4. Triangular model of mediated act. Vygotsky's model (1978, 40)

Individuals undertake activities mediated by tools (ii). Those tools are developed within a particular cultural-historical context and embody knowledge (Er 2014) built by humans (Kuutti 1996). Tools range from methods and thinking procedures to man-made objects. The interest in tools lies in their ability to mediate an activity, empowering their users and simultaneously by restricting certain actions, facilitating the process. An activity has a history based on its development (iii) through practice over time and the concurrent knowledge-production (codified knowledge). Here we appreciate a semantic shift - whereas Eruat (2000) and colleagues talk about knowledge-acquisition, CHAT (and CoP) discuss knowledge as a human production. This is emphasised as a relevant methodological principle in "the study of the unconscious processes that cannot be known by direct means" (Fleer, González Rey & Veresov 2017, 197).

2.6.2 Second generation of the unit of analysis

CHAT understands people as social beings (as CoP), and consciousness as part of our social nature. Ryder (2013) observes that human activities are governed by cultural standards that society establishes. These standards function as regulators of individual behaviour in social situations, hence in co-design situations. That is why Engeström (1987) expanded the triangular model, including the component of

the community, with the intention of studying individuals learning and personal development within a socio-historical and cultural context.

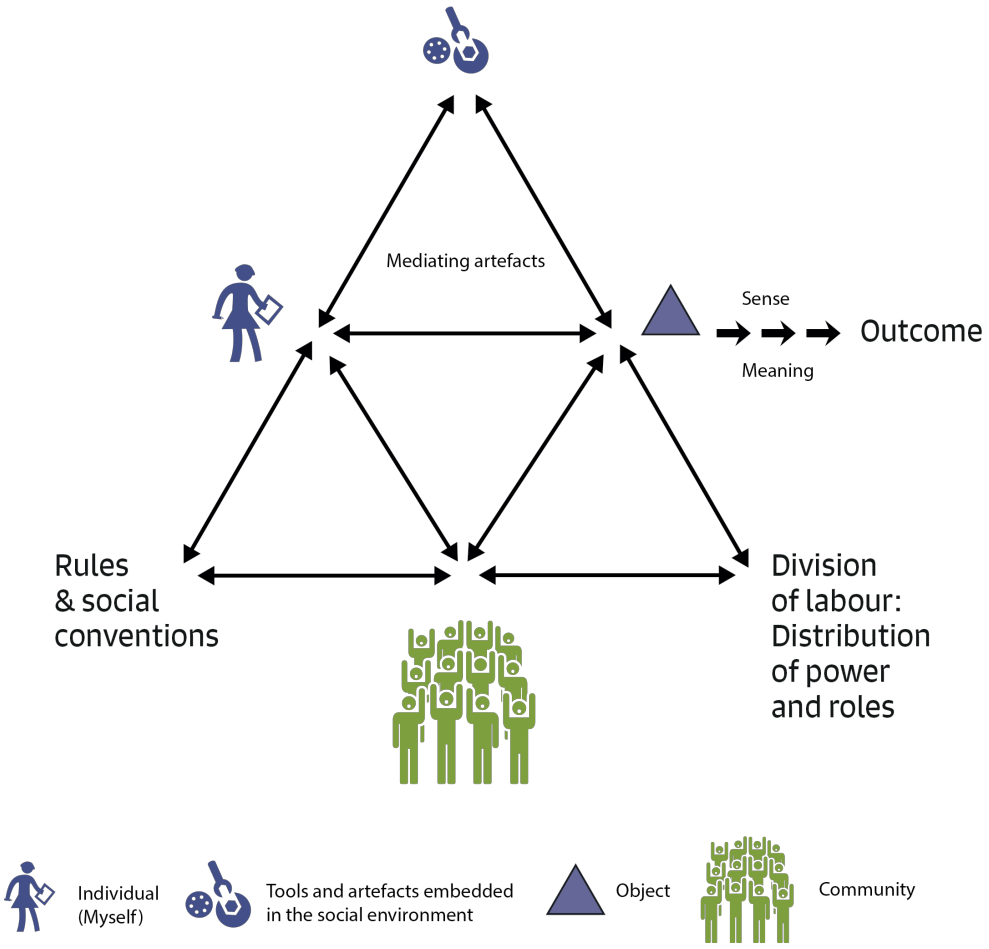


Figure 2.5. Mirian Calvo, Minimum activity system. Reinterpretation from Engeström's model (1987, 78)

Figure 2.5 illustrates the components of social activity: the individual (each participant of co-design situations), the object (motivations, purpose, or goals) and the community (the historical-cultural background of each participant and their communities of practice). This model also illustrates another three components which mediate on each interaction: between the individual and the community lie a set of rules and social conventions influencing (mediating) such interaction; between the individual and the object, Engeström (1987) considered mediating artefacts or tools; and between the community and the object, the division of labour also mediates, which in this study is understood as the distribution of power and roles. Rules can be implicit and explicit. Explicit rules are those contained in

codes of practice, such as dress codes. Implicit rules are present in the background. As Bateson (1972) notes, people learn them unconsciously. In relation to this, learning might be viewed as the shared motivation to bring people together or it might be an unexpected outcome. According to Engeström (2009a) the model was developed to examine and grasp the whole myriad of interactions, thereby avoiding the separation of connections.

2.6.3 Third generation: runaway objects

In the third generation of CHAT, the unit of analysis expands, trying to explain the sociocultural and historical complexity, relating two or more activity systems (units of analysis) that, in some way, interact through their common interest in a partially-shared object, called by Engeström (2009b) a 'runaway object', defined as 'matters of concern' (Latour 2004). Those concerns are shared by a wide number of communities, often geographically scattered in a globalised world. They are amorphous challenges in their internal structure and usually difficult to change/transform at the individual level of human interaction (Engeström 2009b); e.g. climatological phenomena like global warming or concerns about the way of living produced through the generation of products and the uncontrolled exploitation of natural resources (Harvey 2016). The main societal issues addressed in the pilot study and the two case studies are considered each a runaway object: how to re-engage people in community initiatives (PS); how to tackle loneliness and isolation in elderly life (CS1); and how to involve wider communities in exploring sustainable ways of inhabiting and working together (CS2). In this study, figure 2.6 illustrates the minimum unit of analysis of an activity. In the interstitial space between objects (ellipses), a conceptual space emerges, called in this study boundary space (see section 2.4.6).

Roth et al. (2008) explore the inclusion of emotional aspects into this model, (as does Sannino 2008); whereas Engeström (2008) identifies two challenges for CHAT to evolve: (i) exploring the relationship between the community and the individual level; and (ii) the need to further research on what happens when a

runaway object entwines with activity systems, hence, enabling the framework to evolve by connecting systems, and communities.

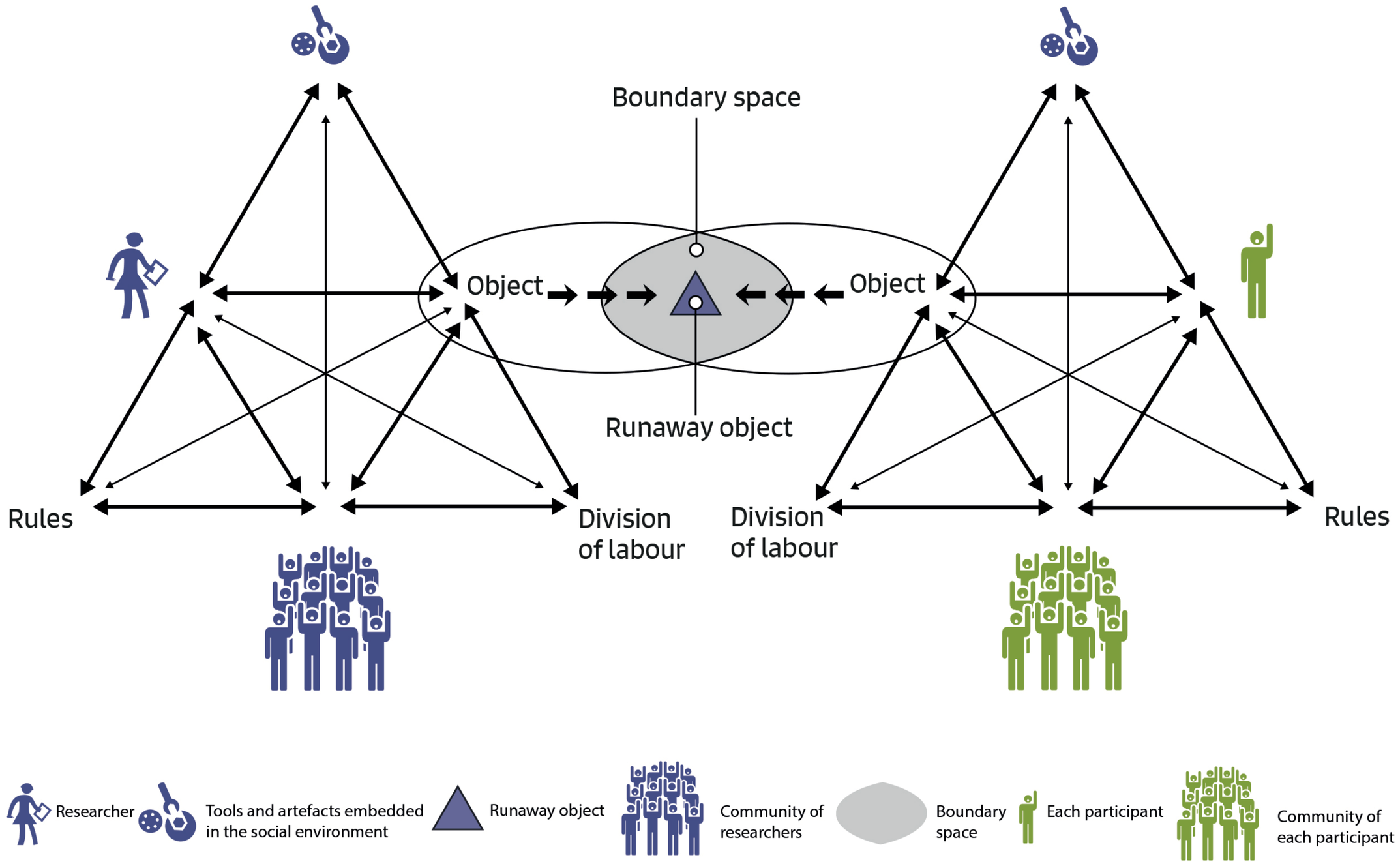


Figure 2.6. Mirian Calvo, Minimum unit of analysis. Reinterpretation from Engeström's model of the third generation (2001, 136)

2.6.4 CHAT conceptualisations relevant for learning in co-design situations

In CHAT there are a number of conceptualisations further developed over the last decades, which are pertinent to review, as their roles have been related to the primary research question about the ways participants learn and under which conditions.

Boundary crossing

The concept of boundary crossing, developed in the 1990s, reflected the transition of individuals interacting between various practices (Suchman 1994). Also considered in situated theories of learning (Lave & Wenger 1991) and in CoP, it was particularly advanced in educational sciences and psychology. CHAT considers it a "category of the cognitive process" (Engeström et al. 1995, 321), in which an individual enters unknown spaces of practice and needs to overcome the challenge of re-negotiating social and relational positions vis-à-vis the other individuals who also crossed the boundary (Akkerman & Bakker 2011). It is formed on the principle that every learning process entails boundaries, which establish differences in expertise (Engrestöm 1987) or differences between peripheral and central members within a community of practice (Wenger 1998). Thus, boundary crossing takes place when moving and establishing relations across different disciplines or sites (Suchman 1994).

A boundary is defined as the imaginary contour dividing (different) sociocultural stances, causing different ways of doing and thinking in human agency. It is seen "as a dialogical phenomenon" (Akkerman & Bakker 2011, 132). Also, boundaries relate to other boundaries which are relevant to them by establishing connections and interdependences. Roth and Lee (2007) relate the notion of boundary to the discovery of (personal or interpersonal) contradictions by observing different activity systems interacting around a runaway object. Contradictions between activity systems are perceived as situations that can promote change and development. Consider, for example, the case study conducted by Bogenrieder and van Baalen (2007) about people simultaneously working in diverse organisations. The participants observed how discontinuity in their participation

could hinder or was perceived as a barrier to continuing with their participation in the different organisations, while still being accepted as equal members within each organisation.

Engeström et al. (1995) state that people 'boundary-crossing' need to ""face the challenge of negotiating and combining ingredients from different contexts to achieve hybrid situations" (319). In this process, each individual also needs to learn from the others' expertise and come up with his/her own 'recipe' through the combination of these 'new ingredients', which entails a learning process (Akkerman & Bakker 2011). Boundaries delimit different practices and accumulate knowledge. Thus, there is a great potential for learning to be supported at the boundaries, an essential dimension for communities to keep evolving in a dynamic interaction with another ones (Wenger et al. 2015).

Boundary space

Boundary space is a notion introduced by Gutiérrez et al. (1995), with the term 'third space', to describe certain situations in classroom activities where the roles - called by Gutiérrez et al. (1995) 'script' or 'counterscript' - and perspectives of the teacher and the students encounter and interact to co-construct new meanings that expand the boundaries of both. As Gutiérrez (2008) states, the third space emerges from differences in the engagement and participation, as well as from the multiple social scenarios that informal situations provide, which are based on egalitarian structures of power-relations and therefore, the conversation flows under inclusive and *comfortable* social conventions.

Perezhivanie

Perezhivanie is a Russian word introduced by Vygostky (1998) to describe a dialectical unit capable of establishing indivisible connections between the social and the individual dimensions, the "path along which the social becomes the individual" (198). This concept serves to relate the personal development of an individual with the sociocultural environment. The paradigm shift lies in understanding the social environment as a source that has the capacity to

stimulate the personal development of individuals interacting in such an environment. This dissolves the deterministic vision that social environment and its material ecologies determine our development (González Rey 2008) and draws attention to experiential theories of learning (Kolb 1984), which build upon the Aristotelian concept of the development of virtues and character through a lifetime of experience (Stonehouse, Allison & Carr 2011). On this, Alinsky (1989) adds that happenings turn into experiences once they are assimilated and reflected back to previous 'symbolically produced realities' (Fleer et al. 2017). Dewey (1958) states "It is not experience which is experienced, but nature – stones, plants, animals, diseases, health, temperature, electricity, and so on. Things interacting in certain ways are experience" (4a). So the difference between 'experience' and 'experienced' lies in the human senses, emotions and cognitive processes that emerge – stimulated by the social environment. It also presents a socially-related and constructed environment operating on symbolic and emotional levels, called culture (Bandura 2006; 1991). In other words, experience must be lived, and it is through living experience that individuals learn. This concept widens the focal point of understanding of learning based on social constructivist theories (Bruner 1966; Vygotsky 1978) where the nature of knowledge and hence, learning, is seen as a synergy between human interactions with others and within the sociocultural context. This understanding of socially-constructed learning calls attention to informal environments and experiences. It has gained greater resonance in education (Gerber, Cavallo & Marek 2001) focusing on childhood and students, but also within organisations and workplaces (Cross 2011) focusing on adult education.

Piaget (1964) defines the development of knowledge as a spontaneous process that encompasses the development of higher psychological and bodily operations. He defines learning as a process mainly "provoked by situations" (176), where development has the means to explain learning in the shape of personal narratives, since learning is the assimilation of experiences through the mediation of higher psychological operations. Piaget recognises the mediating action of an individual in adopting a particular course of behaviour, depending on the situatedness. It also

emphasises the role of internal structures shaped through a continuous process of learning across a wide range of sociocultural contexts. This intermediary role of structures of the human psyche could be aligned with the theorisation of emotions, perezhivanie and subjectivity as indivisible entities perceived as generative operations embedded in the process of learning, leading to consciousness-raising (Fleer et al. 2017). The individual, in turn, establishes bidirectional dynamics within the social situation through living the experience in a never-ending process of subjective constructs, of subjective realities. The notion of learning is employed here in its broader sense, including the co-articulation of mutual understanding and, hence, new understanding of different perspectives, broadening everything from knowledge-based horizons, personal development in values and motivations, attitudes and behaviour, to transformative agency within the participants' practices and, lastly, organisational development through the reconfiguration of relational patterns.

Subjectivity, motivations and emotions

As Van Oers (1998) states, "An activity approach, rather, tries to understand context functions (e.g. particularization and coherence) in terms of dynamical features of activity systems and the embedded process of emergence of meanings" (474). Context here includes external cultural-historical factors (e.g. environmental conditions such as light or texture, people, tools etc.) and internal factors such as mood and mind-set. The paradigm shift here reveals that human agency cannot be reduced to an object-directed activity determined by external conditions. According to González Rey (2014), humans have the creative and generative capacity to interact with the socio-materials of situations. We live experiences not through objective storylines that are occurring at this precise moment, but through the emotions and symbolic productions that we generate during the experience. This approach breaks down the idea of cultural-historical determinism. We produce our realities through emotional-symbolic engagement in a never-ending process of 'subjective configurations' (González Rey 2015). "As a result of this capacity to generate senses, subjective configurations become the

main motive of any human action" (González Rey 2014, 433). Human motivations are seen here as complex knots of individuals' needs and emotions.

Subjectivity is understood "as an epiphenomenon of activity" (Fleer et al. 2017, 3) where an individual produces symbolic realities throughout his/her involvement in an activity. A highly complex process, it generates new positions of the self in relation to others and to the environment during lived experience. The 'symbolically produced realities' entail the production of emotions. Subjectivity is seen here as "a motivational system... [and] represents a new human production that is part of this world, but it never reproduces it" (4), stressing the uniqueness of each lived experience, of each perezhivanie. Emotions, from this cultural-historical perspective, acquire a sociocultural dimension. They are expressed in social contexts, in contact with others. It is within this interaction with a concrete situation where emotions acquire a cultural meaning that reconfigure people's relationship and interdependencies (Fleer et al. 2017), leading to emotional development and socio-emotional regulation competences (Bisquerra 2015).

Social situation of development

According to Vygotsky (1998), a social situation of development (SSD) illustrates "the initial moment for all dynamic changes that occur in development during the given period" (198). Vygostky's (1998) works focus on childhood development of personality, embedding the social environment as a source of development and interpreting the mediating action as a generative capacity of the individual. This unfolds an activity approach with complex and dynamic relations between activity systems as well as between the person and the environment (Chen 2017; Van Oers 1998). The social environment is "not merely the still physical environment but indicates the presence of the ideal form and its interactions with the... present form" (131), which draws attention to cognitive processes, like imagination, to anticipate or perceive social situations, based on our personal subjectivity, through perezhivanie.

Zone of Proximal Development

Discussing the relationship between learning and development, Vygotsky (1978) introduces the concept of the Zone of Proximal Development (ZPD) as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (86). This statement anchors the Vygotskian conceptualisations of mediation, dialogic interactions and internalisation. It also distinguishes two types of human development: one achieved through independent (alone) formal learning; and a second one facilitated by a more knowledgeable/capable person who mediates (guides) in the individual's development.

The ZPD has been widely reinterpreted in science education, phycology and related fields, aiming to expand its definition. Lave and Wenger (1991) illustrate three main reinterpretations of the ZPD: (i) the gap between individual and assisted performance; (ii) the gap between codified knowledge (Eraut 2000) and informal knowledge (also called active knowledge); (iii) the gap between individual and social activity. Engeström (2015) advances this third reinterpretation and defines ZPD as " the distance between the present everyday actions of the individuals and the historically new form of the societal activity that can be collectively generated as a solution to the double bind potentially embedded in the everyday actions" (138). Here the ZPD describes societal transformations caused by the collective efforts to enhance daily social ways of doing. This highlights the bidirectional influence between the individual and the sociocultural order holding society together.

2.7 Summary

This literature review has assisted in identifying the advances and insights, but also the challenges and gaps, related to the context of the research. Thus, it has helped in defining the research area, and in formulating the primary research question related to the ways participants learn in co-design situations; and subsequent questions, on how learning emerges and under which conditions, and how the language of design can support the visualisation of the relationship between learning-co-design to elicit awareness of it. Here I draw attention to the nature of learning in co-design situations, which, as discussed in section 2.5, is seen as a type of informal learning: unintentional and unconscious, through participation and socialisation in co-design situations; and potentially incidental learning, unintentional and somehow conscious, sometimes becoming conscious by reflection (Mündel & Schugurensky 2008). The inclusion of the word 'informal' denotes another understanding of learning, ubiquitous phenomenon arising from "our ability to experience the world" (Wenger 1998, xvi) and the continuous reformulation of meanings. We produce knowledge (personal knowledge) and transfer it to the socio-cultural system, once shared, abstracted and validated (codified knowledge) by our communities and landscapes of practice. Learning is multidimensional (Engeström 1987), complex (Lave & Wenger 1991), and emerges out of interaction with people, material cultures and tools (Kuutti 1996). Tools include language, semantics, drawing and body language, mediating communication between individuals (Lektorsky 2009); where human motivations and the creativity embedded in each person are seen as crucial psychological aspects to understand behaviour, performance and agency. It is a lifelong learning process, as Bateson (1972) states: "the word learning undoubtedly denotes *change* of some kind. To say *what kind* of change is a delicate matter" (287). This highlights the leading thread of reasoning of this research but also express the complexity of the endeavour.

Central to community co-design is the *process* itself, not the design outcomes, as it provides the "co-articulation of issues" which arises throughout the "designerly public engagements" (Lindström & Ståhl 2016, 195). The 'designerly public

engagements' are co-design situations, and the 'co-articulation of issues', the informal-mutual learning (IML) process. This shifts the focus on the practice of co-design away from integrating people and onto engaging in the making of things, more precisely, inviting them to engage in the co-articulation of issues, an 'experience-making' (Bate & Robert 2007) and a 'decision-making' exploration (Zahedi 2011) of a particular phenomenon: the 'runaway object' (Engeström 2009b). This entails an epistemological shift, which draws our attention back to IML, lying as it does at the outset of the combination of the disciplines of anthropology, ethnography and design (Simonsen & Robertson 2013).

Chapter 3 will explain the methodology and methods that have been central to unveiling the relationship between IML and co-design situations. Additionally, it will illustrate how the gathering of meaningful data can help illuminate this relationship in order to further advance the implications and limitations of the ways in which participants learn. Thus this research has a twofold focus: (1) devise a methodology capable of collecting meaningful data that will assist to deepen understanding on this relationship; and 2) reflect upon the relevant dimensions influencing the flourishing of IML and therefore, elucidating in what ways participants learn.

Chapter Three: Methodology and Methods

3.1 Introduction

The purpose of this chapter is to introduce the methodology and methods. These were developed as a consequence of engaging in dialogue and reflection during my immersions in a pilot study (PS), followed by two case studies. Each case study has informed the refinement of a developmental methodology. I use the term 'developmental' methodology here, referencing Patton (2011), aiming to unfold a responsive and transferable research-design. The methodology has gradually taken shape via a systematic process of planning, observing, improvising, reflecting and abstracting insights, foregrounding my reflective drawings as a method to visualise *"perezhivanie"* (Fleer et al. 2017) through dialogical learning with the social research situations. This has involved studying research procedures, followed by assembling suitable methods. I draw inspiration from participatory action research (PAR) approaches, informed by design ethnographic methods for the fieldwork, as well as orchestrating co-design methods and techniques to ensure multi-actor participation, divergence and execution. Multi-actor participation entails infrastructuring collective intentions (emotions, motivations and subjectivities) towards object-driven human agency (Engeström 2009b), addressing community-based concerns or runaway objects. It adjusts to the situatedness, applying different theoretical methods and techniques depending on the focus of research: delving into the ways that participants learn in co-design situations.

Chapter 2 served to enlighten the ontological assumptions adopted in this study about the nature of knowledge and learning. Informal-Mutual Learning (IML), is essentially understood as an unintentional and unconscious process, unfolded through participation and socialisation in co-design situations towards the co-articulation of issues. IML is experiential-based learning practice, where theory and practice are indivisible and occur simultaneously, likewise, endorsing the inseparable personal and social dimensions of being, learning, knowledge-production and 'symbolically produced realities' (Fleer et al. 2017).

3.2 Methodology: Participatory Action Research & Design Ethnography

In this study I adopt a PAR approach to develop the methodology because it foregrounds participants and their context as the core of the investigation (Whyte 1991). It also embeds social change as part of the research agenda – aiming to produce a positive social impact on the communities (Walter 2009). In this sense, this approach is well supported by experts coming from social science (McIntyre 2008) and design research (Swann 2002) and fits well with co-design (Ehn 2017; Sanders 2006; Spinuzzi 2005). Theories of practice and design research share the same principle: *human interactions* in the telling, making and in the enactment of socio-material ecologies, which support concrete practices, mediated in the continuous re-negotiation of sociocultural meanings (Shove, Watson & Ingram 2007). This highlights the mediating role of tools and the social environment in knowledge-production. Consonant with social theories of learning (see section 2.5) and CHAT principles (section 2.6), the study adopts a *practice-led* design project where my design practice is interwoven with the implementation of the methodology and knowledge-production, where theory and practice are ontologically assumed as indivisible (bidirectional) entities. One needs the other for existence, and vice versa.

On this point, PD and PAR frameworks adopt similar positions. As discussed in Chapter 2, PD has borrowed and built upon PAR methods and techniques to further advance research designs, based on the joint premise of local knowledge-production and systematic reflection (Ehn 2017; Spinuzzi 2005). The methods derived from PD usually integrate people to engage in making things (Lindström & Ståhl 2016), ostensibly driven by specific design needs, with the focus on designing artefacts, and services; PAR, on the other hand, is considered an immersive investigation (Forth & Axup 2006). In PAR, the participants' voices acquire a central position through egalitarian dialogues, balancing power relations (Freire 1970). PAR is understood as a flexible applied framework that seeks to validate the knowledge which emerges from practice. Hence, it also seeks to acquire a greater grasp of how communities construct meanings, their realities, and produce knowledge based on experiential learning.

PAR operates as a type of scaffolding (research approach), that gives shape to the research-design. The difference between a methodology and a research-design is that the first one operates on abstract levels of thinking; the second one is the implementation or materialisation of the methodology (Gray & Malins 2004). PAR is seen as a theoretical umbrella that draws theoretical guidelines to 'gear' and combine the methods, which in this study represent my practice.

Design ethnography is applied here as a set of methods assembled in the research-design, therefore, deployed into each case study, whilst PAR infrastructures the relational level among the three case studies, allowing each one to inform the subsequent. This allows me to develop a context-based and incremental methodology that 'learns' as it goes, hence, each case study assists in narrowing and reframing the premise of research. PAR focuses on the process rather than on the outcome, therefore it becomes the most appropriate umbrella, since IML occurs through interactions/activities without stipulating a set of intended learning outcomes and emphases its participatory and social nature - unintentional and unconscious.

PAR stems from Lewin (1946), a social psychologist focused on shifting away from scientific tradition, and establishing democratic principles in research, with a view to reshaping research itself (Chevalier & Buckles 2013). Community engagement, group dynamics and experiential learning inform a research approach oriented to address social issues. The concept of knowledge-production emanates from Dewey's (1958) theorisation on learning from experience. According to Reason (1994), PAR has twofold objectives: (i) generating knowledge that can be applied directly to human agency through the use of research with a strong focus on learning in informal environments; and (ii) strengthening participants by the process of producing their own knowledge, hence, nurturing emancipation (Freire 2004).

PAR illustrates a framework that proceeds through a spiral of stages where, after critical reflection, each stage informs the following one (McNiff 2002). Each stage is also represented by a cycle that follows a series of steps which are responsive to one another: 1) planning: systematising experience and problematising; 2) action: reflecting and choosing action; 3) reflecting upon the action: observing the course and consequences of action and change; 4) systematising learning: coding and organising insights; and 5) dissemination: validating and sharing new knowledge. Figure 3.1 illustrates my reinterpretation of the spiral model of PAR, inspired by Loewenson et al. (2014, 13) PAR diagram, one of many interpretations (see Robson 2002). These five steps have served as the theoretical guidelines to design the proposed research-design (see fig.3.4), implemented to explore, gather insights, analyse, and formulate a response to the research questions. It is evident how these five steps resemble to the five steps proposed in figure 3.4.

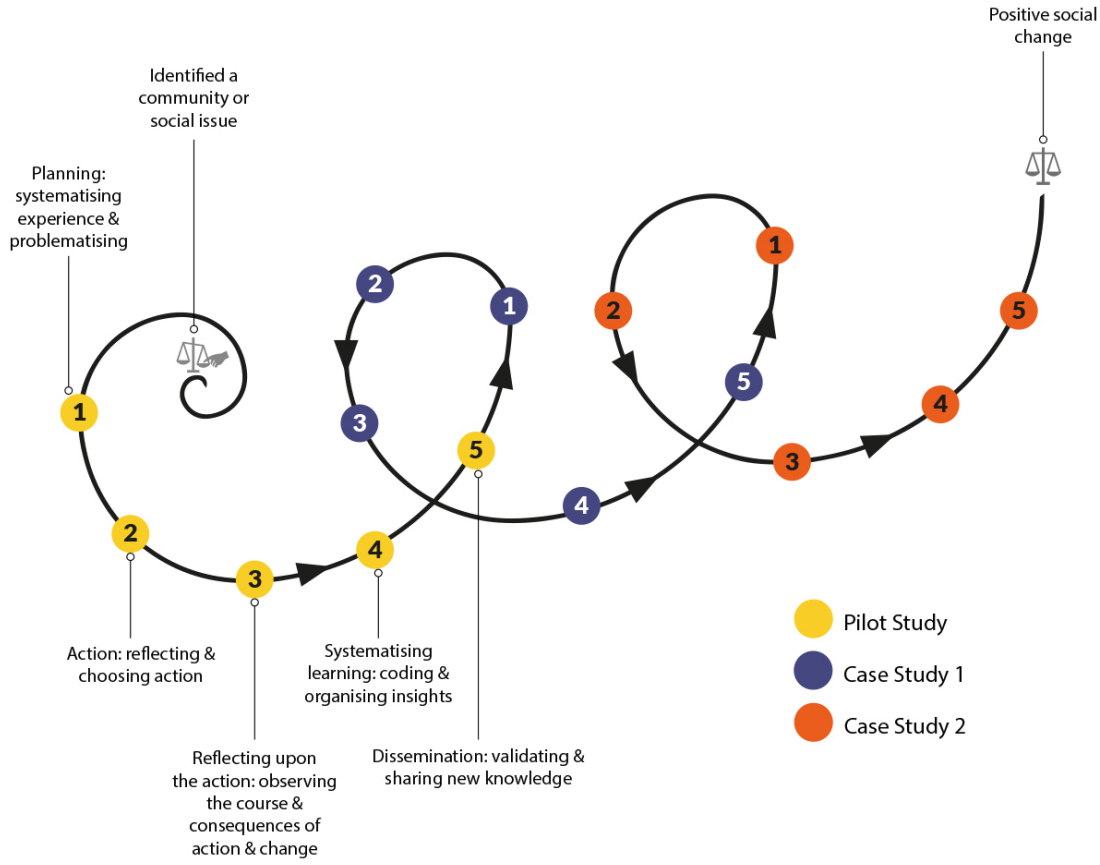


Figure 3.1. Mirian Calvo, PAR idealised scheme, 2019. Reinterpretation Loewenson et al. (2014, 13) cyclical and spiral process of PAR.

PAR is an interdisciplinary research umbrella that covers an extensive range of approaches, open to new innovations or contributions that may arise from its interaction with other disciplines. In fact, this is one of its limitations, criticised in some arenas for lack of consistency in the employment of methods (Martin & Hanington 2012). However, this feature makes it compatible with community co-design and brings an adaptive and solid abstract framework to 'infrastructuring' inquiry about community-driven contexts, which blend with forms of activism and where everybody designs (Manzini 2015). It can also be combined with CHAT as the theoretical framework, since both approaches share the following premises (see Somekh & Nissen 2011; Stetsenko & Arievitch 2004): (i) knowledge arises out of practice; (ii) both focus on the study of human agency; (iii) research has to produce benefits in societal practice; and (iv) both are socio-critical approaches. My starting point here resides in the fusion of their theoretical and (methodological) practical strengths in the assembling of a research-design. I also draw on the strength that ethnographic methods bring to the study of social life and symbolically-produced realities. Therefore, the methodology, I suggest, can gain from embedding design ethnographic methods into the fieldwork and adapting/applying co-design methods to accommodate participants' agency and activate participation. All these methods, aligned with PAR operating at an abstract level, turn into a consistent research-design path to study IML.

Both PAR and co-design have a strong tradition of incorporating ethnographic methods to cope with the issue of understanding the context of those researched. PAR, informed by ethnographic methods, stems from its immersion in community dynamics in order to build equal relationships with laypeople (Reason & Bradbury 2001); while in co-design, ethnographic studies resonated as the way to study mutual learning and enable designers to learn from the context (Smith et al. 2016; Simonsen & Robertson 2013; Zahedi 2011; Gay & Hembroke 2004). The idea of embedding design ethnography methods to fieldwork lies in its capacity to reveal the dynamics of social interaction that would otherwise go unnoticed. Understanding concrete experience is crucial to identifying those learning moments by participating. Observation, undertaken through reflective drawings

was, for me, a visual way to document what people did, what they said. It also enabled me to focus on how they said it whilst relating to participants and the social environment. It also enables the setting-up of a multi-perspective path to holistically gather the diversity of learning experience. Equally, it aligns coherently with CHAT principles.

3.3 Research-design development

Assembling the methodology first involved the implementation of a pilot study (PS), using a grounded theory approach. Grounded theory relies on the principle that everything is continually changing, and nothing can be predetermined, since people have the means to respond to changing environmental conditions (Corbin & Strauss 1990). This enables the context to be the source of knowledge that emerges from practice, instead of representing a specific viewpoint. This exploratory and context-based approach helped form a developmental methodology, an on-going research-design which in the PS adopted five steps: (i) co-design situations; (ii) learning from the context; (iii) delivery; (iv) access to natural settings; and (v) systematising learning. All steps were synchronised with four visits to conduct the fieldwork. The PS allowed me to experiment with ethnographic methods, and design and test engagement tools. It also enabled me to re-appropriate my drawing ability to uncover kinaesthetic and sensory insights through reflective cycles and helped to improve my understanding of co-design situations and their dynamics.

I developed the first iteration of the research-design after analysing the PS and adjusted the focus of research towards exploring participant learning. The complete articulation of the research-design (with a solid and defined structure) occurred in parallel to CS1. In this, I conducted a comparative analysis between the five-step cycle model drawn from PAR (fig.3.1) and the schematic idealisation (fig.2.1) of the co-design process developed by Fuad-Luke (2009, 149). Layered onto this research-design, I adapted and introduced ethnographic methods, and drew on both reflective and analytical techniques from other applied disciplines.

I also mapped out the sequence of interactions in CS1. Figure 3.2 depicts the mapping process. Following a time-circle, the inner ring illustrates the co-design phases interpreted from Fuad-Luke's (fig.2.1) diagram (orange-colour coded), the outer ring the interactions and activities I embedded (first contacts, interviews, participant-observations, reflective sessions, etc.). The yellow logos and arrows depict my participation, green is for the deliverables, red arrows are actions towards the next co-design situation, and black arrows depict other participants. The logos I designed (see Glossary of Icons), which were developed from my reflective drawings, configured a visual language for the study and hence, the beginnings of visualising a complex process. At the beginning I found inspiration in systems thinking theories and in sociotechnical approaches, where their graphic visualisation of methods and frameworks follow a mechanical appearance. I also was inspired by the internal watch gear machinery. The idea that the gears were interconnected and could go backwards and forwards, influencing and informing each other, for me was understood as a metaphor that could depict the idea that the research-design needed to be flexible, adaptive and responsive to absorb the continuous constraints of the co-design process. Thus, I devised a visual language using gears until Participant 3 (CS1) reflected upon this decision. He outlined a potential misunderstanding in illustrating my research, where intuition, subjectivity and emotions were as relevant data as cognitive and rational ones. I reflected back about it and decided to simplify the icons and use circles. This evolution in the visual language can be found when comparing the AV-N-1 (gear-icons) and the AV-N-2 (circle-icons).

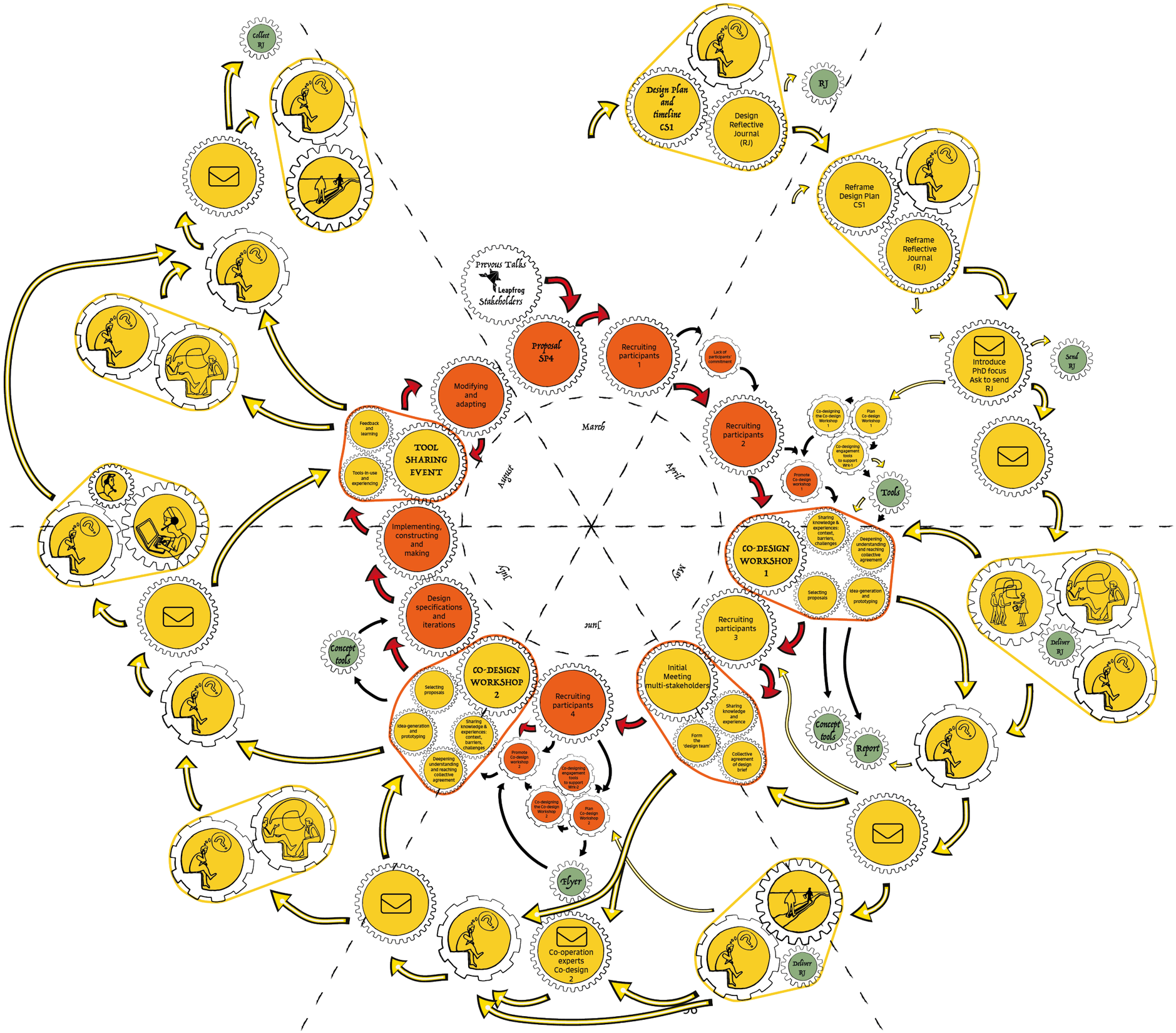


Figure 3.2. Mirian Calvo, CS1 participation map. 2017

Figure 3.3. Mirian Calvo, CS1 Abstraction of methods from practice, 2017

Figure 3.3 illustrates the abstraction of methods and steps for assembling the research-design with a timing estimation for each step, using the participation map (fig.3.2), this time from practice to theory. Each logo is a reflective drawing that represents the accrual of techniques as well as my design knowledge: a unique set of visual, creative and participatory-based methods that allowed me to operate at the boundaries of different disciplines (of each participant) and draw out their insights into the study of participant learning in co-design situations.

The duration of CS1 was extended and the research-design was adjusted to accommodate the ongoing negotiations between participants and design-researchers. Each interaction helped to support the planning for the next step. The process involved dialogic learning and the application of theoretical frameworks to the social realities and vice versa. This revealed the need to develop an adaptive methodology capable of absorbing the continuous changes in context. This iterative process continued in CS2 and assisted in the refinement of the research-design, where reflective drawing was used to elicit such knowledge produced through practice.

3.3.1 Research-design

The purpose of the research-design is to gain a greater understanding about how and in what ways people learn. This would be used to reflect upon the nature of IML, to identify the areas in which the participants learn, and finally theorise on the relationship between IML and co-design, paying attention to the design conditions supporting such a relationship and opening up future research questions on how co-design frameworks could benefit from focusing on supporting IML. As discussed in Chapter 2 (section 2.5.3), IML is an unintentional and unconscious phenomenon arising out of participation and socialisation (Mündel & Schugurensky 2008), usually remaining invisible (Gregorčič & Krašovec 2016; Eraut 2000; Wenger 1998). The crucial challenge lies in how to identify such learning. The research-design, therefore, aims to animate two processes: (i) to enable design-researchers to gather descriptive accounts through immersion in the participants' context, describing phenomena from the viewpoint of those engaged; (ii) to encourage participants to embed reflection to raise awareness of IML (Mündel & Schugurensky 2008).

The research-design proceeded through five steps: 1) preparation for co-design; 2) co-design situations; 3) follow-up; 4) systematising learning; and 5) dissemination. This five-step process, illustrated in figure 3.4 by two-way gears, reflects the flexibility, adaptability and responsiveness of a research-design to the contextual changes that may arise, so co-design requires embedding the participants' own terms and their own ways from the outset. The different sizes of the gears symbolise the estimated amount of time for each step (fig.3.4).

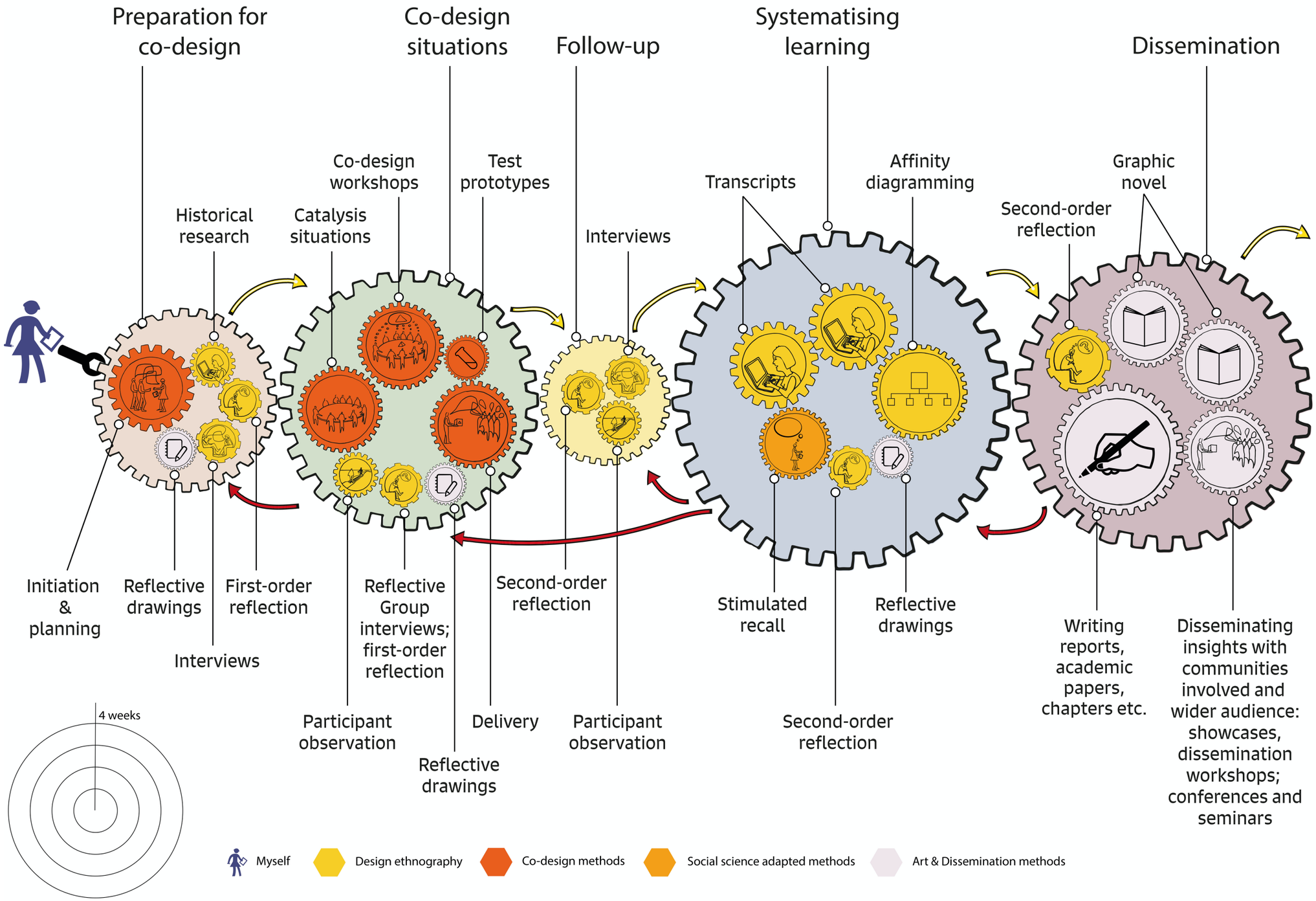


Figure 3.4. Mirian Calvo, Research-design framework, 2018

1) Preparation for co-design:

This first step of three stages is depicted with small, exchangeable gears, meaning that one stage informs the others and vice versa. This involved: (i) initiation and planning and collective catalysing; (ii) historical research; and (iii) interviews. During the initiation and planning, as a researcher, I would initiate conversations with community and public partners – collectively defining the problématique, establishing a bidirectional dialogue for identifying the challenge/focus, co-designing a research plan and timeline, and inviting participants to sign the informed consent agreement. In this stage I would also begin infrastructuring the series of co-design events by breaking down objectives, identifying venues and devising the timetable. Ethical approval from the academic institution and organisations involved would also be sought while conducting historical research. The interviews that I conducted were semi-structured and my aim was to build rapport and trust, but also to begin understanding the personal context and motivations of people who wished to participate. This involved an initial visit to the context, the development of reflective drawings, and requesting consent from participants to record their thinking in the reflective journals that I had designed and issued (see section 3.4.3).

2) Co-design situations:

Step two was the most intense and immersive from the point of view of participatory activities. It comprised several stages: (i) catalysis situation; (ii) co-design workshop; (iii) prototype testing, (iv) delivery; (v) design ethnography: reflective group interviews, participant-observation and reflective drawings.

The aim of the catalysis stage was to encourage participants to share their 'stories' and knowledge, collectively systematising experiences in an effort to build interpersonal connections and support group dynamics, thereby bringing IML consciousness to the fore. It would entail 'tell-techniques' (Brandt et al. 2013). This required orchestration and facilitation in order that participants could focus on key aspects and share perspectives through designerly engagements. This stage would be used to support the subsequent co-design workshops and also included

participant-observation modes, and developing reflective drawings as part of the first-order reflections.

The co-design workshop consisted of a one-day workshop in which participants proceed through four main phases: 1) a reflective session on previous engagements, 2) deepening understanding and reaching collective agreement, 3) idea-generation and prototyping activities, and 4) presenting concepts/prototypes and selecting proposals. The aim here was to effectively co-design the defined goal. After the workshop, the research team would take concepts forwards and develop them into prototype tools before presenting them back to the participant group in another co-design workshop.

If group enthusiasm remained high, some participants would identify actual situations for prototype testing and would then assemble or try out the prototype tools. What was enacted was a feasible potential situation that could also involve improvisation or experimentation, including the use of theatre-techniques (Brandt et al. 2013). This situation favoured letting the participants take the lead, and design-researchers adopting supporting and observer roles.

The delivery aimed to present the prototype tools to the participants, focusing on progressing the materialisation of the prototypes through dialogic learning and doing. Affordances, signifiers, shape, know-how, and audience-targeting would feature here, and the dialogue would lead to fresh participant-driven iterations.

Alongside these workshops, I would conduct design ethnography and reflective group interviews. The reflective group interviews (approximately one hour) would be conducted in the days following each workshop. The aim here was to encourage reflection upon the co-design situations (see Calàs & Smircich 1999; Yanow & Tsoukas 2009) with a focus on raising awareness of participant informal-mutual learning (IML). In terms of design ethnography, it involved me adopting a participant-observer role and spending time observing, drawing and narrating their everyday life. Ethnography serves here to gain an insider's view about

participants motivations in order to support engagement in co-design situations and to advance my theorisations.

3) Follow-up:

The follow-up step consisted of revisiting some of the participants once the case study was complete, using (i) participant-observation and conducting (ii) reflective interviews (this included using Critical Event Recall (Lally 2002), using the reflective drawings as prompts), observing the course and consequences of the co-design situations in perspective; perceiving potential change in agency. The focus was on gathering data about the IML that could have transpired or any changes in behaviour or perceptions in the participants. In other words, to observe how participants may implement IML outcomes in their everyday practice by recalling their lived experience

4) Systematising learning:

This step comprised the analysis and involved (i) transcribing interviews and completing field reports; (ii) affinity diagramming, which embedded (iii) Stimulated Recall Analysis (Messmer 2015), (iv) Narrative Inquiry (Chase 2008) and (v) production of second-order reflective drawings. This step aimed to produce an interruption in the course of the research dynamics, creating the space needed to step back and ponder the meaning of events. This granted me an outsider perspective. These so-called 'arresting moments' (Greig et al. 2013) – also found in ethnographic studies (Anderson 1994) and in CHAT (Engeström 1996) – enabled me, as a researcher, to see myself as an agent alongside the other actors. In conjunction with the affinity diagramming, I also used stimulated recall analysis (see section 3.4.4), which involved the combination of second-order reflective drawings and narrative inquiry. CHAT was employed as a lens through which I was able to observe from the background of my theorising. It enabled me to interpret items, build patterns and higher structures about how IML was occurring in co-design situations, using the unit of analysis (fig.2.6) as the foundational theoretical structure.

5) Dissemination:

Following PAR principles, the last step aimed to close the circle by presenting to the participants and other relevant audiences the theoretical concepts uncovered by the study. The purpose was to set up a space for engagement with the research, to collect feedback and to validate the contribution of knowledge. This involved attending conferences, delivering seminars and talks, and writing journal papers, and reports. It also consisted of dissemination and validation workshops (see appendix 4). At these events, I exhibited my reflective drawing and my practice in three showcases (compiled in appendix 4), in addition to a fourth one during the VIVA. The purpose of the showcases was to display my on-going practice outputs and artefacts: diagrams, maps and reflective drawings (included in the written thesis and portfolio of practice), engagement tools (disclosed in appendix 3), and audio-visual narratives (which accompany Chapter 5-7). The dissemination also involved the development of three graphic novels (one for each case study), which present a combination of my reflective drawings and field notes, and participant reflective narratives. The audio-visual narratives and the graphic novels were returned to some participants to disseminate the 'research stories' and, in some cases, I included the manuscripts of the relevant chapters. This provided an opportunity to validate their perceptions about how things unfolded.

3.3.2 Case Studies

A case study is an exploratory research method focused on gathering detailed knowledge about the course of certain situations. It is an approach that helps researchers to formulate a greater understanding of existing phenomena. The descriptive accounts emerge from data-collection and its subsequent analysis. It comprises three phases: (i) selecting the case; (ii) studying the case in its sociocultural context; and (iii) data-gathering and applying a variety of methods (Robson 2002). Case study has been identified as a suitable method in design research due to its similarities to the design process (Breslin & Buchanan 2008).

3.3.3 Ethical dimensions of participative context-based research

Traditional ethnographers in naturalistic observations would avoid excessive interaction with observed people and their social situations for the sake of objectivity in reporting findings and overcoming possible bias (Stocking 1983). However, in postmodernist cultural inquiry, this view of the ethnographer as a distinct person disappears (Angrosino 2008, 63) as new roles of participant-observer emerge. This view recognises that without the ethnographer's presence as another agent influencing the sociocultural situation, such a descriptive account would be impossible to gather or convey.

Participant-observation raises other challenges: how to harmonise the simultaneity of participation and observation, how to balance empathic bonds, interpreting local meanings and values, applying accurate judgments, and how to distribute power and engender egalitarian relationships. Such challenges stress the importance of including the design-researcher's personal background (gender, ethnicity, etc.), highlighting the multiple shifting roles that, as a researcher, I adopted regarding the activities and methods employed, (design-researcher, facilitator, participant-observer and ethnographer, drawing researcher, and research analyst) in order to attain a certain membership status within the communities involved. As Angrosino (2008) states, currently context-based research is mostly conducted with communities that are part of a globalised world, supported by vast networks of communication and transportation (Webber 1998). Likewise, in this study, the communities involved (with sociocultural nuances between them) are part of a local-yet-globalised cultural system. So my immersions should not be deemed significantly culturally intrusive, as the participant recruitment on the demographic spectrum featured white adults aged 25 to 65+ (mostly women), of diverse origins (Scots, English, Welsh, Irish, US, Canadian and EU), all literate, depicting a context-base I could fit in as an adult Spanish white woman. The recruitment was open to anyone willing to participate, without strategic research restrictions. Limitations in announcing and inviting people were addressed through several institutional networks that facilitated the process.

In an era of participation, we operate in collaborative research contexts, building egalitarian researcher-public participation, and defining "observation as a context for interaction among those involved in the research collaboration" (Angrosino 2008, 165) – the twofold ethical dimensions being institutional and personal. For the former, each case study has been reviewed and approved by the Glasgow School of Art Research Ethics Committee under the GSA Research & Knowledge Exchange Ethics Policy (Hay 2016). In addition, this study is associated with the Leapfrog Project, which had its own ethical approval procedures and advisory review boards to back it up. See appendix 2 for further details on ethical procedures and Informed Consent Forms (ICFs).

On the personal dimension, the participant-observer role is intrinsically intrusive, entailing certain levels of engagement in participants' lives. Therefore, I needed to immerse myself gradually and adopt an open-minded approach, continually re-negotiating my relationships with those involved, building trust and not forcing situations, stopping if disagreement was raised, and being ready to blend into the social atmosphere, but also with awareness of my own bias. Co-design situations are actually public designerly engagements, where participants previously agree to participate, by reading and discussing the brief of each activity before signing the informed consent forms (ICF).

The dilemma emerged between engagements, while trying to balance the academic and participant agendas. Accordingly, I based my personal ethical approach on the ethical framework developed by McCormick and Ramsey (1980), which relies on three principles: (i) using methods and techniques that will not harm the participants (including myself) and would enable valuable data-gathering; (ii) given that all methods are potentially harmful, choosing the most benign; (iii) ensuring the methods utilised never undermine the meanings and values of the research context.

3.4 Methods

The methods described below reveal the IML process arising from participation in co-design. This implies detailed observation and participation in actual contexts with the intention of validating the experience of those directly participating in co-design situations. Thus, the methods are understood as the combination of tools, techniques and agency directed to obtain multi-perspective qualitative data while targeting shared goals. Methods should be compatible with data-collection and stimulate reflection. My practice (see roadmap poster) is defined as a complex process in which I deploy my reflective drawing ability and co-design competences. This brings to the fore my reflective drawing practice as a way to express 'perezhivanie' (see section 2.6), subjectivity and motivations, but it also unfolds participant emotional states as well as group and environment dynamics, such as catalysing group behaviour or hierarchical relationships.

3.4.1 Ethnographic methods

Design ethnography comes close to traditional ethnography but draws attention to the wide patterns of daily existence relevant particularly for idea-generation and developing a design outcome (Salvador et al. 1999). It is about gaining insights into the socio-cultural environment of research through observing and participating in co-design situations, in natural settings with consenting participants. Encompassing a set of methods, ethnography allows the research-design to develop a holistic account of the social environment, understood as a source influencing "the behaviour and beliefs of individuals" (LeCompte & Schensul 1999, 19). Those methods embed reflection and reconstruction in practice as a way to assemble a rationale of inquiry. "By including our role within the research, and... systematically exploiting our participation in the settings..., we can produce accounts of the social world and justify them" (Hammersley & Atkinson 1995, 21). Additionally, it assists in building rapport and empathy with participants (Calvo et al. 2016; Broadley 2013). The ethnographic methods adapted for this study include: reflective practice, historical research, participant observation, semi-structured interviews, reflective group interviews, and affinity diagramming (expanded in section 3.4.4).

Reflective practice

This study embeds reflection across the whole research-design, aiming to include participant perspectives. The reflection process, aligned with ethnographic practices (Hammersley & Atkinson 1995), establishes successive cycles of reflections, each cycle comprising two stages: (i) first-order reflection conducted during fieldwork; and (ii) second-order reflection recalling the lived experience conducted post-fieldwork, bridging theory and practice. Likewise, Schön (1987) introduces the notion of reflective practice as the activity which affords practitioners awareness of the learning and construction of knowledge that flourishes from lived experience, making analysis and criticism essential dimensions of the design process. Designing leads to the construction of a new perspective through "a reflective conversation with the materials of a situation" (Schön 1987, 42). Reflection is therefore embedded in design ethnography, but also in the iterative designing process. According to Ledwith (2005), reflection leads to developing critical consciousness that helps to connect deeply personal stories with the structures of power; reflection is therefore a key aspect for collective action. In PAR, reflection is used to elicit awareness of local knowledge that can be applied in the context of research, and simultaneously develop a theory that goes beyond practice (Greenwood 2002; Reason & Bradbury 2001). In line with Gorli et al. (2015), theorisation is the result of cycles of reflection and the affinity diagramming process of each case study.

Historical research

Contextualising the problématique means gathering data on the cultural-historical situation of the community or organisation, with a pre-fieldwork phase comprising desk research and helping define the context, its boundaries and framing proposals. This may entail searching organisation websites, reading reports in newspapers about the 'runaway object' and contacting key people to interview.

Participant-observation

Participant-observation (see Junker 1960) generates situations whereby the design-researcher gains a unique perspective of the sociocultural environment (Labaree 2002). This role positions the design-researcher in an insider-outsider space, understood as "a third space, a space between… conjunction and disjunction" (Corbin Dwyer & Buckle 2009, 60); in other words, as a researcher I will never be a complete insider because my perspective is shaped by my lived experience (my perezhivanie) and by my position in the research. This entails forming non-biased opinions about observations (Hammersley & Atkinson 1995). It serves to gather contextualised data, providing rich and comprehensive insights about what people do, rather than what they say they do (Anderson 1997). It dwells on a few participants' perspectives but immediately this information is linked with the wider picture, going in and coming out again (micro-macro). This is achieved through the use of drawing as a way to support reflection-in-action. I take field notes to complement the gathering-data and record the experience, thereby acquiring a bigger picture of the context through their eyes. This requires building

a rapport of trust with them beforehand. Validated rich data can be misleading if the participant feels uncomfortable.

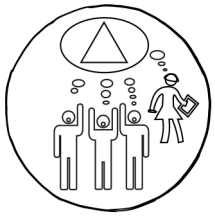
Semi-structured Interviews

Semi-structured interviews are one of the most popular methods in context-based research, and particularly suitable for small-scale case studies (Drever 2003). I carried out this study in person, observing body language and gestures, thereby gathering an enriched contextualised set of accounts. When this was not possible, I conducted interviews by videoconference. Semi-structured interviews differ from structured ones in that they do not follow a strict script of questions, setting an informal conversation, adaptive to the emergence of detours. I established a series of themes around a general structure, based on the findings emerging from my immersions, and then I developed the main questions linked to the research questions. Some of those themes were related to the CHAT-unit of analysis (fig.2.6). During the interviews I introduced CHAT using the triangular model (fig.2.1). This allowed me to talk about its components and theii interactions to explain my theoretical lens but also to initiate a theoretical conversation with the participants. I also devised a CHAT engagement tool (see appendix 3.1, 2) to map out the conversations. The detail of each conversation was framed by mutual agreement throughout, allowing the interviewee to feel more comfortable, with a greater level of freedom to choose what topic to expand on, what to say and how to express it (Drever 2003), potentially gathering more sincere responses.

Critical Event Recall

During the follow-up, I used semi-structured interviews with eleven questions linked to the research questions, adjusting them to the conversational flow. Here I also included 'critical event recall' (Lally 2002), a technique used in education to uncover the symbolic constructed realities attached to past situations, revisiting

memories and unfolding emerging patterns while describing participant perspectives (Kain 2004). According to Smith (2013), it fits well with CHAT "as it provides an understanding of the activity from the perspective of those involved in the activity" (130). This technique is usually conducted with fragments of video recorded during fieldwork, but in this study, I used my reflective drawings as prompts for interviewees to recall their experiences and to invite them to reflect on their learning processes, using the drawings to spark the interviewees' dialogic imagination (Bakhtin 1981).



Reflective group interviews

The aim of reflective group interviews was to encourage collective reflection through a social and collective interview that can raise consciousness of IML. The interviews also adopt semi-structured questions previously formulated and aligned with the research questions. The questions serve as prompts to initiate a dialogic learning situation where the design-researcher focuses on facilitating the topics for discussion: motivations, emotional moods, learning experiences. The activity links with the reflective journal (see appendix 5).

3.4.2 Reflective drawing as a method for eliciting sensory inquiry

The relationship between drawing and ethnography dates back to the dawn of the discipline (Ramos 2015). Drawings first, later also photographs and filmed-fragments made during the fieldwork, have being used as "graphic anthropologies" (Ingold 2013)- visual data to recall the ethnographer's lived experience, and assist in writing accurate accounts (Newman 1998). In an increasingly visually

consumerist society (Pallasmaa 2005), the proliferation of image-capturing devices has led to expand the use of visual research methods: from architecture (Cook 2008; Pallasmaa 2009), art and design (Adams 2016), to participatory anthropology (Azevedo & Ramos 2016; Pink 2006) etc. Drawing here is thought of as a universal tool for human expression and reflection (Ingold 2016).

Exploring the iterative use of drawing in architecture, Ewenstein & Whyte (2009) pinpoint the ways in which each iterative drawing explores the past, analyses the present, and begins speculating on future transformations of a site-specific, which responds to concrete functionalities, human needs, and aesthetic cultural values. They underscore architectural drawing as an unfinished process (also Schön 1987), contrasting mainstream notions of artistic drawing perceived as a finished object. In line with this, anthropologists Avezedo and Ramos (2016) qualify anthropological drawing as an unfinished and longitudinal process embedded in the design-research, even when drawings turn into exhibited/published materials of evidence. Drawing is then a mediating thinking tool, an act of reflective practice in itself (Schön 1987), embodying the relationship between oneself and one's culture, between representation and imagination (Ramos 2015), and thus it places the object and the subject in relationship to one another (Robbins 1994). According to Pallasmaa (2009), our senses are the link with the outside world and our consciousness is both sensory and corporeal. These traditionally separated parts are actually indivisible; they have the same nature, the human body. Thus, our senses and muscles are more than receptors of stimuli. They are involved in the process of knowing and hence are a primary source of knowledge-production. For instance, 'intelligent hands' (Pallasmaa 2017, 101) comprehend the physicality of an abstract idea and materialise it into a concrete thing. As Balzac (in Merleau-Ponty 1964, 18) argues, "a hand is not simply part of the body, but the expression and continuation of a thought which must be captured and conveyed". Indeed, the interconnectivity between the hand and the mind is crucial to understanding the concept of reflective drawing.

Unpacking the process of drawing, Colloredo-Mansfield (1999) develops a sensory approach to inquiry, the object and its "social life" (51). He describes a myriad of shaping-formats that such 'graphic anthropologies' adopt: from sketchbooks full of drawings with text conducted in fieldwork, sketches of material ecologies, to the adaptation of comic and graphic novel formats to disseminate knowledge-production in laypeople language. Miller's (2014) 'dialectograms' represent an original and personal use of drawing (with short inscriptions) over large-sized paper *cartographing* participants' perspectives, depicting paths of human interactions. Being all the drawings curated together in large-size papers, the dialectograms invite the viewers to engage physically with it, sparking new dialogues, hence brokering meanings. Foregrounding socio-emotional designerly skills to delve into participant IIML (Research Question 1), in this study the term reflective drawing denotes the use of drawing as a tool to support research reflection. It is aligned with PAR informed by ethnography, and assists in (i) first-order reflection (conducted during second-phase: co-design situations), and (ii) second-order reflection (during the third and fourth phases: follow-up; systematising learning – affinity diagraming) to recall lived experience and elicit awareness of our perezhivania. Reflective drawing also assists in the theorisations of the methodology and the theoretical framework (disclosed in Chapter 7) and is re-purposed to give shape to theoretical structures, giving sense to relational patterns unfolded during my immersions, using geometrical, graphic and architectural notions of drawing.

Reflective drawing builds upon Broadley's (2013) use of drawing, establishing a bridge between tacit knowledge and eliciting consciousness of it; an experiential tool to symbolically unfold subjective realities, and re-interpret them with the participants. The difference in relation to both approaches resides on the purpose. Whilst Broadley's drawings concentrate on the tools and on the interactions that ignite, reflective drawing, for me, enables me to establish *empathic bonds* with the participants, drawn and situated in sociocultural environments, as key drivers of data-gathering and analysis. E.g. during the affinity diagramming (see section 3.4.4, first phase), new reflective drawings were made based on the gaps identified by

displaying the storyboards. This helped to identify changes in participant relationships, documenting/comparing rotating social environments, and unfolding the emotional dynamics which through writing would be uneasy to identify, as "drawing promotes the observation of non-verbal interactions, an immersive way of knowing the place, of creating integrative memories, and of contouring them in a non-abstract way" (Azevedo & Ramos 2016, 148).

During first-order reflections, drawings were made to record data and enable reflection-in-action, complementing field notes and disclosing visual and kinaesthetic learning. I would draw rough lines creating the framework, capturing the instant and then would finish them at home in subsequent reflective sessions. Reflective drawings are selective visual narratives derived from experience, perspective-driven views. I would use these drawings as decoys to recall the experience in second-order reflections - these would help me to step back and "ponder the meaning of what has recently transpired to us and to others" (Raelin 2001, 11). They would inform subsequent steps, identify behavioural patterns, unveil synergies and elaborate on culture theory-building. When I draw, simultaneously, I think, recall and reconstruct what happened. Thus, drawing supports learning arising from the emotional-rationalisation of lived experience, of perezhivanie. They represent an original contribution to visual research methods, a method by which to visually depict the dialectical and aesthetic interaction between oneself with the social environment, a tool for consciousness-raising (see appendix 5.2.5 and 5.4.3, the graphic novels and audio-visual narratives).

3.4.3 Co-design methods and techniques

Co-design workshops

The workshops provided a social environment that animated people to engage collectively, but they also served to support the acquisition of creative thinking towards the co-articulation of common issues. My participant-observer role suited the collective experience, and this helped to unfold the hidden dynamics - although occasionally I was also a facilitator. All the workshops comprised previous work relating to the designing of engagement tools, devising the techniques for supporting the different designerly engagements and strategically formulated towards the objectives of each workshop. It is important to highlight that the time frame and venue of the workshops depended on the number of participants and the scale of each case study. Tools, techniques and activities would be tailored and designed depending on the 'runaway object' (Engeström 2009b) and on the refined proposal. The ideal was to have a design research team to support the shift in roles and manage the course of activities, as well as design each co-design situation. To collect data, I would take field notes, make reflective drawings and record the session, as well as take pictures.

Engagement tools

Engagement or 'generative' tools form at the crossroads of various disciplines: design, psychology and psycholinguistic theory (Brandt et al. 2013) and even in PAR (Minkler & Wallerstein 2008). The concept was developed in the 1980s-1990s in the tradition of system design (Andersen et al. 1990), when co-design acquired a leading role as an approach for developing cooperation in the design of information technology systems (Blomberg & Karasti 2013), involving users, anthropologists and developers. Engagement tools aim to establish dialogic learning through egalitarian dialogues. They are the 'material components' used in co-design activities (Sanders et al. 2010). In this study tools are loosely defined as

including artefacts or processes that mediate in orchestrating participation and collective creativity, thus influencing IML and being part of the social environment. The interest in engagement tools relies on their capability to influence IML. For more information on the engagement tools designed in this study, see appendix 3.

Reflective journal

The reflective journal (see appendices 2.2 and 5.3.3) is a tool halfway between cultural probe (Gaver et al. 2004) and generative tool, designed to support participant reflection on their participation, with a focus on eliciting awareness of their IML. According to Brandt et al. (2013), this type of tool employs tell-techniques "used to continuously inform the people involved about the project's progression" (164). Figure 3.5 illustrates the tool, shaped in A5-notebook format, with a brief summary of this study, including an ICF (in order to be able to use the resulting data). The ICF would inform people about the purpose of the research and the use of the data gathered, asking for consent to document our encounters for later use in dissemination. If they were in agreement, they would sign. It also included a timeline map with the activities configured with the logos. The visual aspect would enable people to easily understand how much commitment would be requested, facilitating people's decision-making on whether to or not to participate.

Divided into three sections, the reflective journal outlined the methodology: 1) preparation for co-design, 2) reflections on co-design situations, and 3) on learning processes. The first section contains sixteen questions that function as prompts to guide the focus of each reflection, while the other two sections have blank pages, offering freedom of expression. The focus questions are thoughtfully articulated and linked to the research questions. The journal was designed in an attempt to

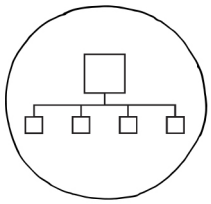
encourage participants to write but also to draw, producing visuals and narratives of multi-participant reflections - being themselves the interpreters.

Figure 3.5. Mirian Calvo, CS1 reflective journal, 2017

Deliberative walks as informal-mutual learning situations

The idea of using a deliberative walk as a method in co-design situations emerged during CS2. Walking unravels collective action towards imagining future scenarios, attributing new symbolic meanings to the spaces. Ehrström (2016) developed this method as "a participatory process in which the participants, by deliberating in small groups and joining facilitated walks, tackle a complex policy issue that has

highly intertwined social and physical dimensions" (6). Other influences trace back to the 1990s, with the Stalker group, to the 60s Situationists and even 20s Dadaism. According to Careri (2001), in the nomadic origins of humanity, walking became the first symbolic and architectural transformation of the natural environment, by transforming the meaning of that environment. I therefore adapted this method, embedded in human agency, to activate visual and kinaesthetic learning processes (Ehrström 2016).



3.4.4 Systematising learning

The analysis of the data commenced from my earliest immersions and continued throughout the process of writing and drawing. The first stage entailed transcribing interviews and writing field reports from participant-observational research and co-design situations. It also included developing reflective drawings in-situ which were finished later during first-order reflections. This stage was usually done whilst conducting the co-design situations and follow-up steps, although there was always work to be completed at the end of each case study. Once the data was collected and organised (see appendix 5 for transcripts and field reports templates examples), the affinity diagramming began.

Analytical trial

As with the methodology, I used the PS to experiment, in the analysis stage, as a means to unpick a greater appreciation of the social dynamics emerging from the co-design situations. Once all the data was collected, I then re-read my field notes and transcripts from the interviews, observed the reflective drawings and recalled my experiences. New reflective drawings emerged, bringing forth insights related to the social environment and attitudes. During this analytical engagement of drawing out insights (quotes, observations and impressions), I wrote these on sticky notes and then stuck them onto an 'evidence-wall' without following any

spatial organisational rationale. Seeing the insights out there, configured in an admittedly visual mess, inspired me to revisit CHAT, the theoretical framework. Here, I decided to use the components illustrated in the third unit of analysis of CHAT (fig.2.6) to begin making connections between the items and arranging them over the space in order to identify patterns.

The arranging followed a circle diagram, represented in figure 3.6. The concentric axes depict the analytical categories (CHAT-components): individual, community, the objective (runaway object), rules and social conventions, tools, and division of labour.

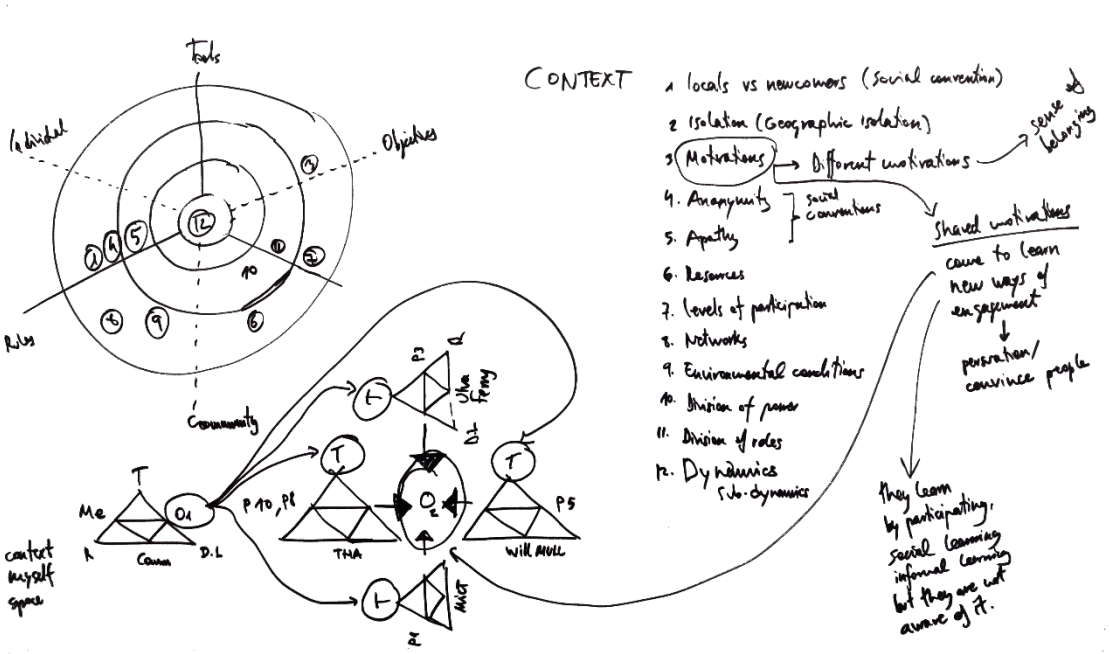


Figure 3.6. Mirian Calvo, Analysis scheme and circle diagram of PS, 2016

I arranged the notes into the circles and clustered them by affinity to the nearby axes. For instance, the quote from participant 3 - "We need to keep people updated regularly. There are a lot of rumours around and so I want to tell people: 'that is not truth! This is what is happening'. That is very common in rural areas" - was placed under the label of 'rural social conventions', in between the community and individual axes as the interrelation of both levels can be inferred from the quote. The circles aimed to illustrate peripheral patterns (outer circle) alongside patterns fully influencing the co-design situations (inner circles). This exploratory

analysis used affinity diagramming and developed my understanding of co-design situations under the gaze of CHAT. In addition, new items transpired from the practice, which will be presented in Chapter 4. The patterns discovered led me to adjust the focus of this study towards uncovering participant ways of IML through the practice of co-design.

Affinity diagramming

For CS1 and CS2, I used paper-based affinity diagramming as the prime method - similar to the PS - but differing in terms of the spatial clustering and organisation. There are two reasons for this. Firstly, the extensive qualitative data gathered from implementing more structured research-designs (with more research encounters), hampered the clustering of items using the circle diagram. Secondly, affinity diagramming is considered "an interpretive, reflective method that is used to achieve new insights and ideas - not to provide definite, objective answers" (Harboe & Huang 2015, 96), thus it follows abductive reasoning (Simonsen & Friberg 2014). The initially semi-unstructured items placed on the physical space were organised bottom-up (Judge & McCrickard 2008), enabling the data to speak for itself.

Affinity diagramming is an ethnographic method consisting of arranging pieces of paper-based data on a physical space like a wall. It has been also associated with the KJ method (Beyer & Holtzblatt 1998), a collective clustering process coined by Kawakita (1975). Extensively used in design disciplines, management and anthropology (Scupin 1997; Simonsen & Friberg 2014), affinity diagramming resonates for context-based data analysis, but is equally useful in idea-generation, decision-making (Harboe & Huang 2015), and usability tests (Martin & Hanington 2012). Both interactive and conceptual, it requires intuitive inquiry supported by deep reflection and dialogic imagination. Dialogic imagination emphasises the indivisible relationship between thinking and doing, where the physical dimension plays a key role. According to Harboe and Huang (2015), the tangible and physical manipulation of sticky notes over a surface animates kinaesthetic, visual and verbal

channels to embrace the data as one panoramic overview. This allowed me to 'walk the wall' and zoom in and out, inviting me to challenge the data, providing opportunities for the emergence of unexpected items. It follows a three-phase process (each one illuminating a higher level of abstraction): item, pattern and structural analysis (LeCompte & Schensul 1999). This analytical process, initially conducted for CS1, where the overarching categories behind it are drawn from the PS analysis, was then systematically repeated for CS2, adapting the overarching categories discovered from CS1, enabling each cycle of research to inform the subsequent one, following PAR principles.

First phase: items

The first phase began by recalling my immersions: re-reading the field reports and transcripts, and observing the reflective drawings from the first-order reflection. Firstly, I prepared the evidence wall, dividing the spaces into sections spatially and chronologically (fig.3.7). I then introduced the first-order reflective drawings, creating a storyboard. As gaps appeared through second-order reflection, new reflective drawings were created to complete the 'fragments' thereby enabling an intuitive process of knowing.

Stimulated recall analysis

Secondly, I expanded my field notes using stimulated recall analysis (SRA), defined by Messmer (2015) as an introspective method for studying the conditions of reconstructive sociocultural research. It has been applied in educational environments to disclose the thinking process of individuals participating in events. Through the exposure of prompts, I was able to enhance the access of internal-processing memory configurations (Gass & Mackey 2000) by stimulating different channels. This involved listening to recordings, observing and making new

drawings all of which functioned as prompts to re-visit and reflect upon the emerging items.

Narrative inquiry

Thirdly, I re-read the text-based data (interviews, field reports, academic papers and reflective journals), adapting narrative inquiry as a method to extract meanings created by the participants. The notion of narrative is understood as an "introspective meaning making – the shaping or ordering of past experience… Narrative is a way of understanding one's own and others' actions, of organizing events and objects into a meaningful whole, and of connecting and seeing the consequences of actions and events over time" (Chase 2008, 64).

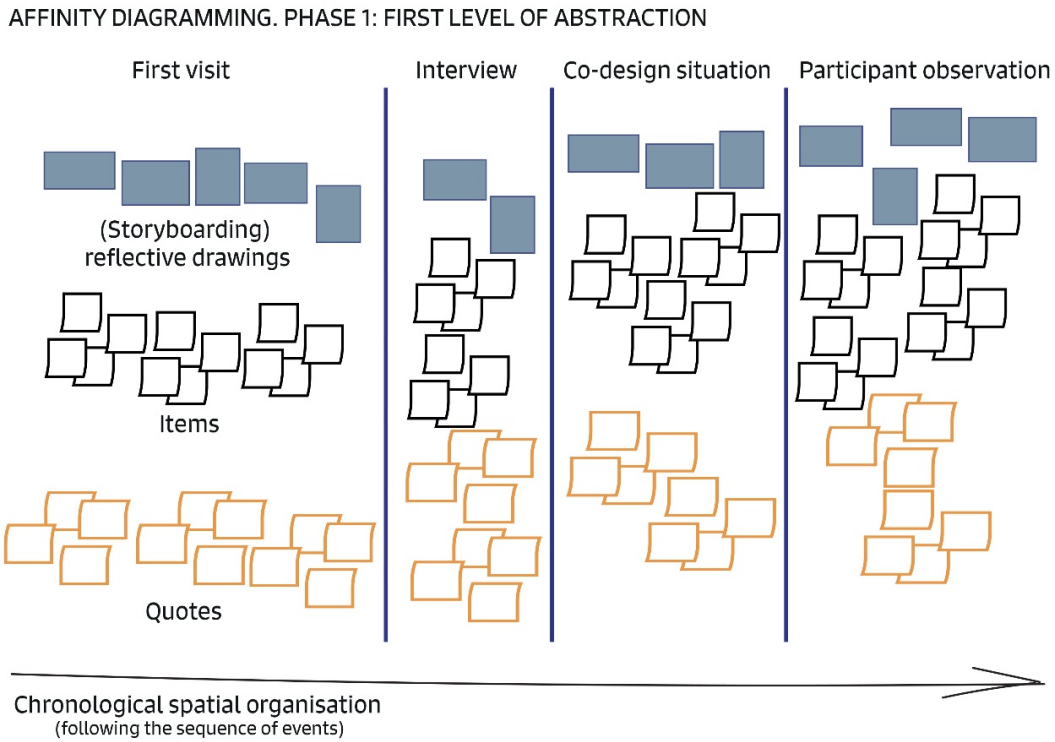


Figure 3.7. Mirian Calvo, Affinity diagramming: items. Spatial chronological organisation, 2018

Thus, narrative helps to chronicle a unique interpretation of past experience and expresses perezhivanie; where the narrator is, to some extent, the principal actor within the context. It embodies a descriptive account, an emotional journey and the narrator's own symbolically-constructed reality, summoning the singularity of each human activity and the interactions upon it. The data was then reviewed – here I looked for emerging patterns without having a specific observational lens, the aim being to step back from my involvement and ponder upon the readings, eliciting awareness of my own, inevitable, personal assumptions, as a Spanish white woman. The fact that I was born and raised outside the UK and Scotland has its advantages. My sociocultural background, for example, is not grounded within the idiosyncratic barriers of the sociocultural contexts of each case study. This helped me equalise the data and treat the participants equally whether they were peripheral or full participants.

Figure 3.8. Mirian Calvo, Interpreting the reflective drawings of CS2, 2018

Whilst reading, I wrote down the items on separate sticky notes (fig.3.8), colour-coded to depict each overarching category (PS into CS1, and then into CS2). Quotes were also written on larger sticky notes, following the scheme illustrated in

figure 3.7, and then stuck on the wall. This took a significant amount of time (approx. one/two weeks) of extracting around 800-1000 items and then placing them individually on the wall. Figure 3.9 depicts the CS1 storyboarding phase and the first clustering, with sections divided using marking tape. The items disclose: (i) quotes from participant interviews and from the co-design situations; (ii) observational data from my ethnographic encounters (field notes and reports); (iii) and from the interpretations emerging from the reflective drawings.

Figure 3.9. Mirian Calvo, Display of CS1 affinity diagramming: first phase, 2018

Second phase: patterns

This step began by 'walking the wall', an adaptation step from Holtzblatt et al. (2005), observing the whole diagram from different viewpoints, pondering and processing the data. This allowed me to challenge the data, including my own interpretations, generating new conceptualisations, with CHAT always in mind. Then I started clustering the items (including the drawings) by affinity: (i) compiling them, deconstructing the order; (ii) adopting abductive reasoning, enabling intuition to guide the inquiry. Figure 3.10 shows a schematic diagram of this phase, where the spatial arrangement changed according to the emerging higher abstractions, thereby creating patterns. Figure 3.11 illustrates a new spatial re-arrangement of CS1. Patterns progressively emerge bottom-up.

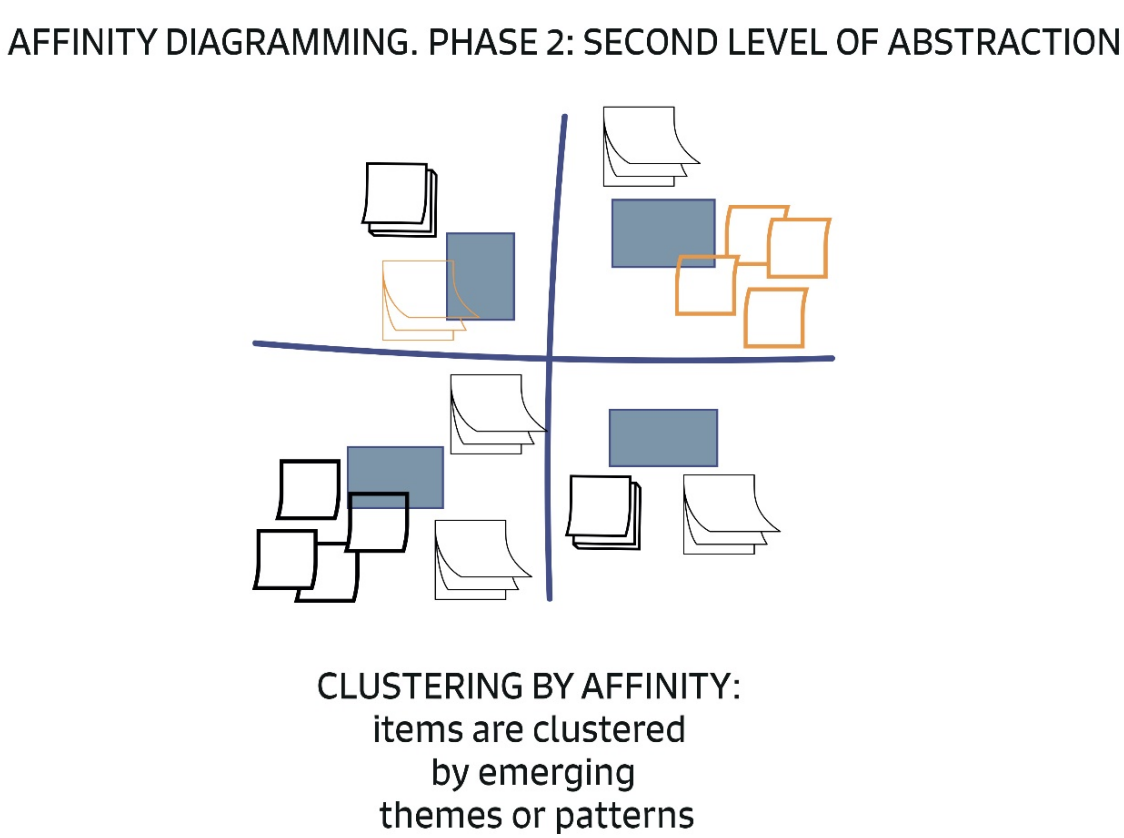


Figure 3.10. Mirian Calvo, Affinity diagramming: second phase, 2018

Figure 3.11. Mirian Calvo, CS1 second clustering, 2018

This phase took one or two days and it was crucial to constantly revisit the research questions. Therefore, whilst clustering, I also developed succinct briefs against the research questions, such as figure 3.12. Note how the reflective drawings are, alongside participant quotations, key drivers in the abstraction of patterns and structures of cultural-building theory.

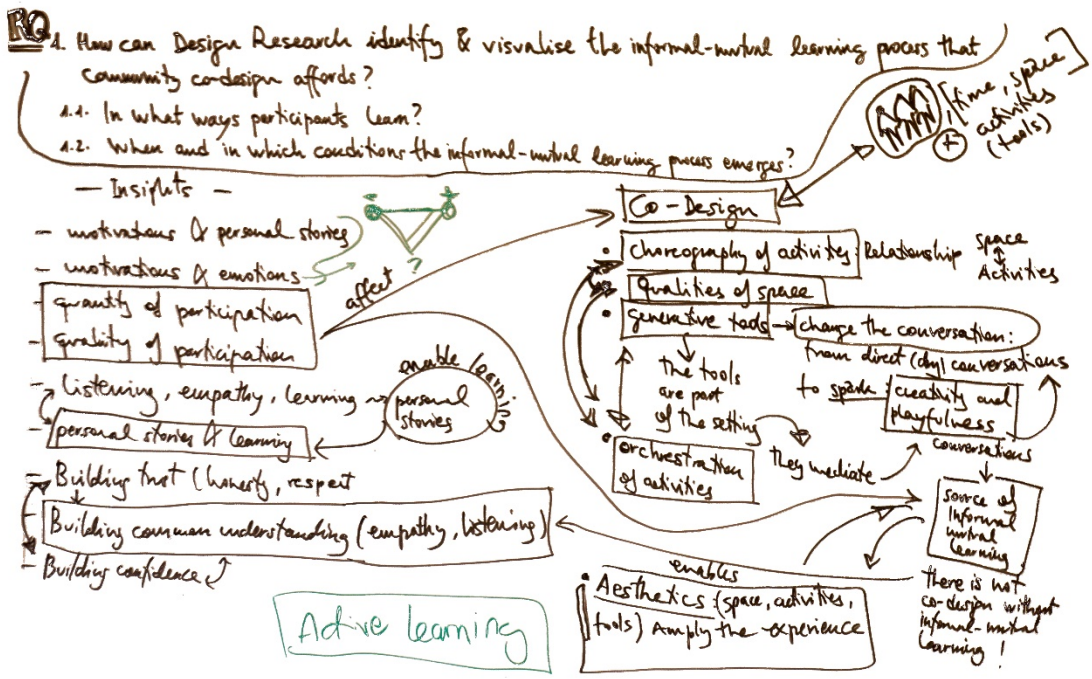


Figure 3.12. Mirian Calvo, CHAT sociocultural theory building process, 2018

Third phase: structures

Figure 3.13 depicts the third phase schematic diagram. Patterns begun to connect with other patterns, leading to higher levels of abstraction. Figure 3.14 represents the highest level of abstraction achieved in this study. The red arrows relate to the structures, which have served as evidence to formulate a theoretical framework, repurposing the CHAT-unit of analysis and using the visual language of design to visualise the relationship between IML and co-design.

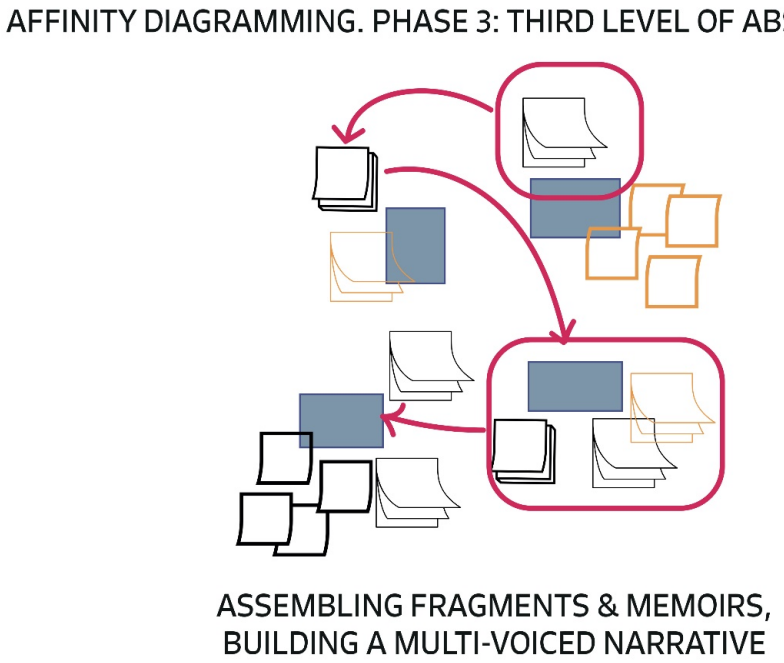


Figure 3.13. Mirian Calvo, Affinity diagramming: third phase scheme, 2018

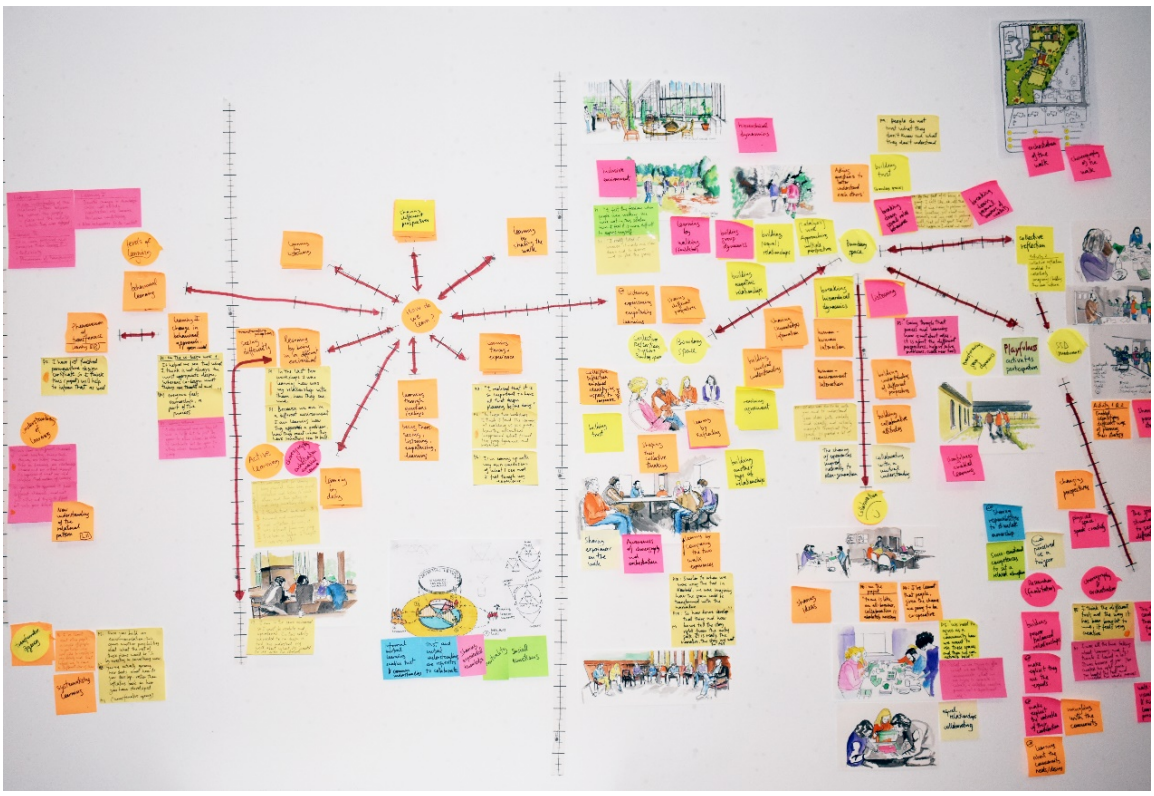
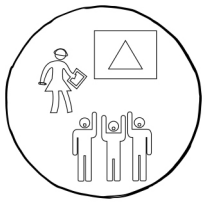


Figure 3.14. CS2 third clustering, 2018



3.4.5 Dissemination and validation methods:

This phase is crucial in PAR as a way of closing the cycle of research. It focuses on disseminating the findings and contributions of this study. The aim is to validate them by sharing with the communities involved, and relevant audiences. Here I adapted three artistic methods for disseminating and establishing a dialogue with wider audience, one outside academia, in addition to the conventional academic routes of reports, conferences, seminars, and publications (see list of publications).

Audio-visual narratives

During this study, I produced three audio-visual narratives. The first two – called *The Space Between II* (AVN-1) and *The Space Between III* (AVN-2)– were created after the affinity diagramming of CS1 and CS2, respectively, as a way to synthesise the findings. They combine the reflective drawings, made during each case study, as moving images, and an audio (accompanying the images) assembled with some participants' fragments – recordings of interviews and co-design situations. Each fragment expounded and the accompanying drawings are evidence preceded by a sentence summarising each finding out of the analysis. These two practical elements need to be viewed after reading section 2 of Chapters 5 and 6 (sections 5.3 and 6.3) in order to complement the written information. These were sent to some participants, hence, gaining their insights in order to assemble a meaningful multi-voiced story. Additionally, I produced a third audio-visual narrative, called *A Theoretical Framework for Collaboration* (AVN-3). It is recommended to view this after Chapter 7, which comprises a sequence of the diagrams developed to explain the theoretical framework (see Chapters 7 and 8), accompanied by an audio describing its structural components, its interactions, and its phases. The aim is to disseminate the theoretical framework to wider audiences, using digital networks, and invite them to contribute/apply/advance on our understanding about the relationship between IML and co-design (research question 1).

Showcases

I also produced installations to showcase the on-going work. In relation to this, I have presented three showcases: (i) The Space Between I, in "Whereabouts you are", The Reid Gallery, GSA, 15th October - 10th November, 2016 (Appendix 4.1); (ii) The Space Between II, in Last Futures, Tramway, Glasgow, 17th - 25th March, 2018 (Appendix 4.2); (iii) The Space Between III (part of the mock VIVA, Burns Seminar Room, GSA, UK, 1 - 3 June 2019 (Appendix 4.3). Using feedback tools (detailed in appendix 2.5) located on a table with a basket and pens, I invited the viewers to leave their opinions on the artefacts, reflective drawings, and the audio-visual narratives composing each installation. This provided a light form of engagement with the dissemination and allowed me to take the feedback and inform my study.

Graphic novels

Scott (1994) explains graphic novels as any visual media placed in order, composing a 'sequential art'. Lately this format has gained resonance as an appropriate medium to convey/disseminate 'graphic anthropologies' (Azevedo & Ramos 2016; Ingold 2013). Persepolis (Satrapi 2000) or Palestine (Sacco 2001) were authors who inspired me. I composed a visually engaged story for each of the case studies: (i) Pilot Study – Jump to the water (GN-V-1); (ii) Case Study 1 – Practice informs methodology (GN-V-2); (iii) Case Study 2 – Refinement of the methodology (GN-V-3). Together they represent the second practical element of the submission, alongside the audio-visual narratives and appendices, and they need to be read in tandem with Chapters 4-6. Each graphic novel draws into each chapter an emotional and sensory layer of human relationships, which emanated throughout co-design situations. The graphic novels were sent to some participants to gain their perspectives and make it multi-voiced. The final version was sent to participants as part of the dissemination step.

Validation workshop

An external collaboration with *Been-There-Together*, a social engagement game devised by Nina Mikuskova, provided the opportunity for me to design a four-day co-design workshop in which I tested the methodology and the theoretical framework in a different research context: Bratislava Train Station, Slovakia [31st May – 3rd June 2018](Appendix 4.4). Here, we invited citizens to engage in a series of design activities, where I adopted a participant-observer role, towards learning from each other and co-producing shared meanings about the particular characteristics of the train station, with the intention to use that knowledge and develop a new iteration of the game tailored for that specific site. Here I re-used the activity-flow and some of the engagement tools used in CS2 (see Chapter 6 and GN-V-3). My observations of the application of the methodology assisted me to make some small amendments to the final version (section 3.3), and to inform the theoretical framework.

3.5 Summary

In this Chapter I have outlined my ontological assumptions on the nature of IML as an unintentional and unconscious human phenomenon with two indivisible dimensions, personal and social, arising through interactions with the social environment, and thus a source for personal development through participation and socialisation. This also aligns with my ontological position of knowledge as a form of human production that is socially and symbolically constructed; where practice and theory are entwined indivisible entities, where one cannot exist without the other and vice versa. This also aligns with the ontological assumptions of CHAT, where human activity is considered the unit of analysis. This helped to unfold a developmental methodology, incremental and responsive to changing socio-environmental situations, following a PAR approach that enabled me to assemble a five-step research-design process: preparation for co-design, co-design situations, follow-up, systematising learning, and dissemination. Next, I proceeded to describe the methods and techniques employed during this study, which adopts ethnographic approaches and co-design methods to ensure multi-actor participation, divergence and execution, as well as the emergence of methods

adapted from other applied disciplines. I have provided an overview of the ethical dimensions and the role of the design-researcher, alongside detailed information about the affinity diagramming analytical process.

In Chapters 4 to 6, I will provide an overview of the pilot and case studies. Each of the chapters is structured into two sections: section one narrates the implementation of the methods and the key interactions oriented to learning, and section two focuses on illustrating the results of each affinity diagramming. Section one needs to be read in tandem with the corresponding graphic novel, which shed light onto the socio-emotional and designerly environmental conditions for IML in co-design situations (research sub-question 1.1). In Chapters 5 and 6, after reading section 2, I suggest the reader views the audio-visual narratives: AVN-1 and AVN-2, respectively. The first two audio-visual narratives build a multi-voiced narrative, and synthesise the findings of each case study for dissemination during the showcases, also aiming to be disseminated through digital networks. They need to be viewed after sections 5.3 and 6.3, respectively. Then Chapter 7 will unfold the theoretical framework, based on CHAT, an original contribution to knowledge. The third audio-visual narrative comprises a sequence of the diagrams developed to explain the theoretical-framework, and operates in tandem with Chapter 7.

Chapter Four: Pilot Study

4.1 Introduction

The pilot study (PS) involved research in a project called Peer-to-Peer Community Engagement (https://bit.ly/2RJx5BX). The aim was to co-design innovative ways to conduct effective community engagement in the context of remote rural communities living in the Inner Hebrides. PS was an experiment conducted on the Isle of Mull (fig.4.1) with participants drawn from five different non-profit organisations operating on the island: Highlands and Islands Enterprise (HIE), Mull and Iona Community Trust (MICT), Wild Mull (WM), Ulva School Community Association (USCA) and Tobermory Harbour Association (THA). Participants were developing different roles (e.g. volunteers, community managers, chief officers etc.). They came and participated in several co-design situations. Each individual brought a different agenda (e.g. HIE's participant was interested in developing a broadband network on Mull; THA's, MICT's and USCA's participants were motivated in acquiring new engagement skills and tools to keep momentum in their community development projects; WM's participant wanted to convince more inhabitants to adhere to his cause; etc.). Overall, their shared objective was to learn from each other's experience of community engagement, and to collectively develop tools to support engagement activities within their respective communities. This opportunity enabled me to introduce myself to these communities in the role of participant-observer, an experiential learning environment comprising a process in which I gradually gained access to the human dynamics of some participants. At the same time, it allowed me to make reflective drawings and capture socio-emotional and interpersonal situations, which the graphic novel unfolds. The GN-V-1; Pilot Study – Jump to the Water, complements the first section of this Chapter, providing evidence of the social environment, describing emotional processes entangled in building trust and rapport, and unpacking my perezhivanie. This represents one of the practical elements submitted alongside the written document (thesis).

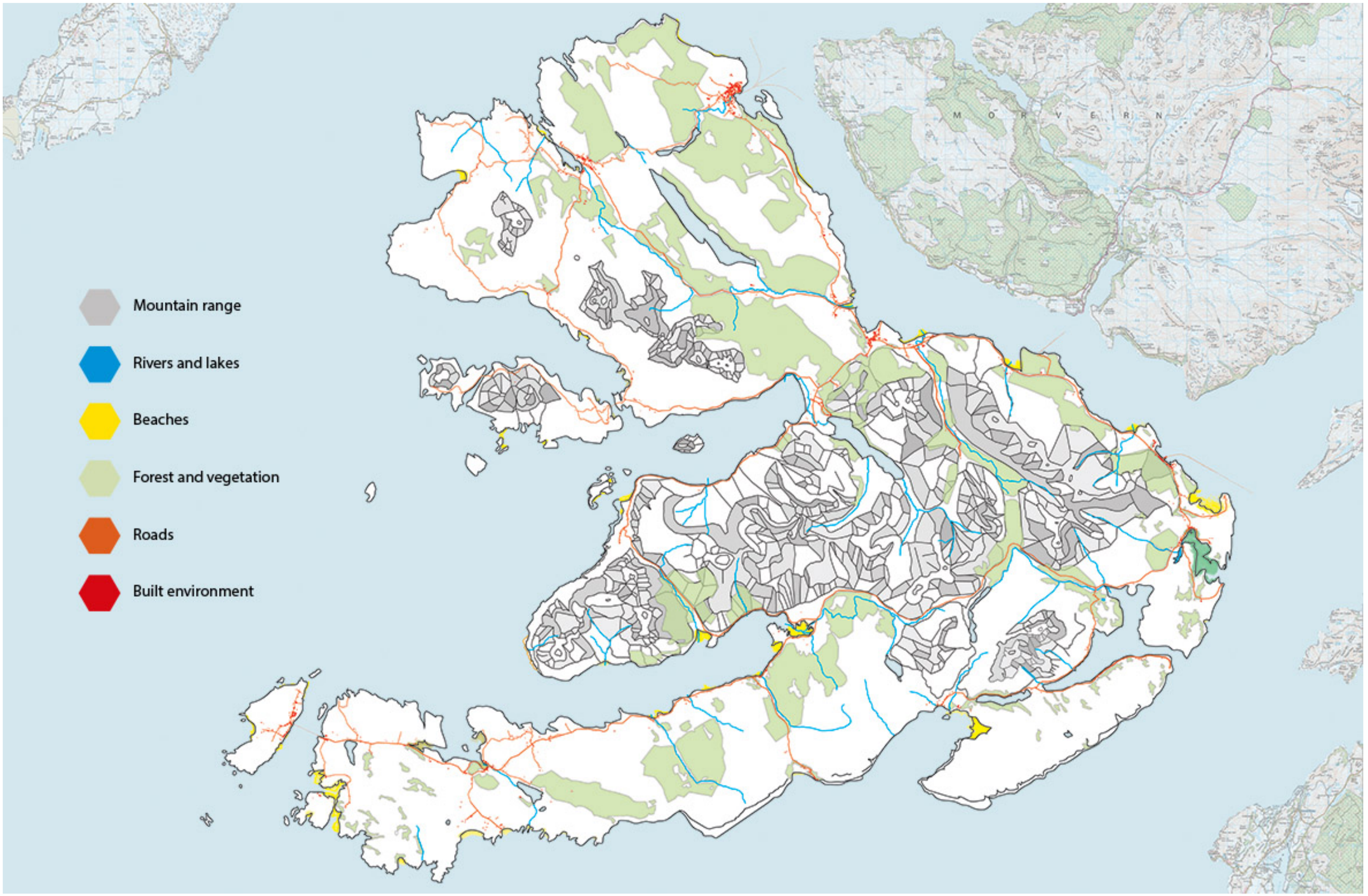


Figure 4.1. Mirian Calvo, Isle of Mull map, 2016. Source: © Crown Copyright and database rights 2016 Ordnance Survey. All rights reserved. (2016).

4.2 Section one

PS lasted six months (January - June 2016), with a total of four visits (17-18 February, 22-23 April, 4-7 May, and 20-21 June 2016), which served as the basis for developing an incipient methodology (fig.4.2): (i) co-design situations; (ii) learning from the context; (iii) delivery, (iv) access to natural settings; and (v) systematising learning. I used Grounded Theory as the theoretical-framework because one of the issues of being an insider-outsider within communities is that, as researchers, we bring our own assumptions and theoretical standpoints and this can mislead the research. In keeping with Corbin Dwyer and Buckle (2009), researchers are involved in data collection and analysis, but also in shaping the context alongside the community members. Besides, theory cannot lead; rather, it is the immersion in the context that explains what is happening.

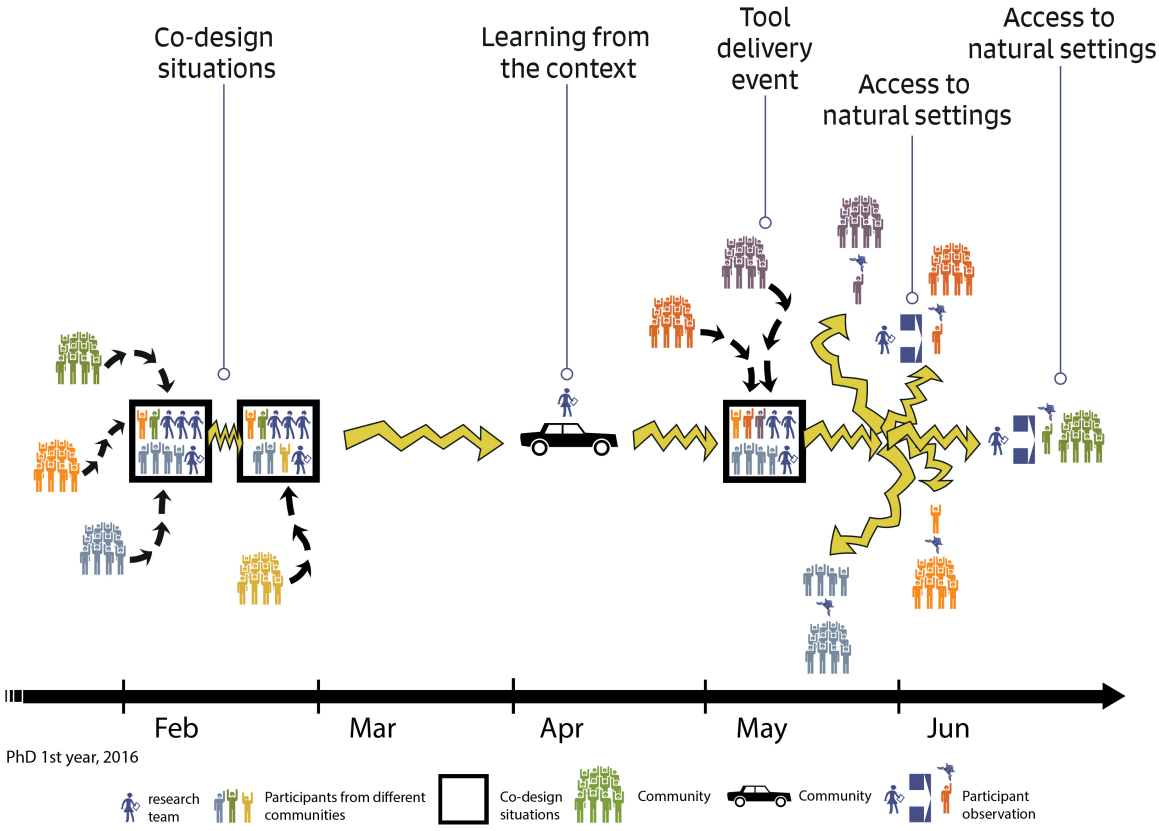


Figure 4.2. Mirian Calvo, PS methodological diagram, 2016

4.2.1 Co-design situations

First visit, *17-18 February 2016*

Co-design workshop 1

The workshop (Craignure, Isle of Mull) brought together six participants from three different communities (MICT, WM and USCA) and three designers in a small room with two tables and nine chairs (see fig.4.3). On each table there was a designer facilitating the conversation with three participants. The third designer adopted a passive role, documenting the event and controlling the flow of the workshop. It took me some time to get into the conversations. The first thing I noticed was that the physical space was too small to accommodate collective and creative activities for the number of people in the room (GN-V-1, 12). The physical realm plays its role in enabling or preventing human behaviour and social interactions (Gehl & Svarre 2013; Whyte 1980). Tables and chairs permit human activities such as taking notes, listening, being comfortable and sitting down, but they also encourage people to behave as students – passive agents in a one-way conversation (Calvo & De Rosa 2017).

We discussed barriers and opportunities experienced in their communities. In terms of barriers, P1 and P4 talked about the conflict between newcomers and locals, two different communities with different objectives. Newcomers come looking for confinement and tranquillity, while locals aim to break the isolation, bringing new job opportunities particularly oriented to the young population, thereby invigorating the local economy. People also found that anonymity was a barrier. Participants linked this back to a characteristic of living in rural areas, where everyone knows each other. This seems to be one reason that prevents weak voices from finding the space to express (themselves) freely. Somehow these

rural communities, through their subculture, perpetuate traditional power relations.

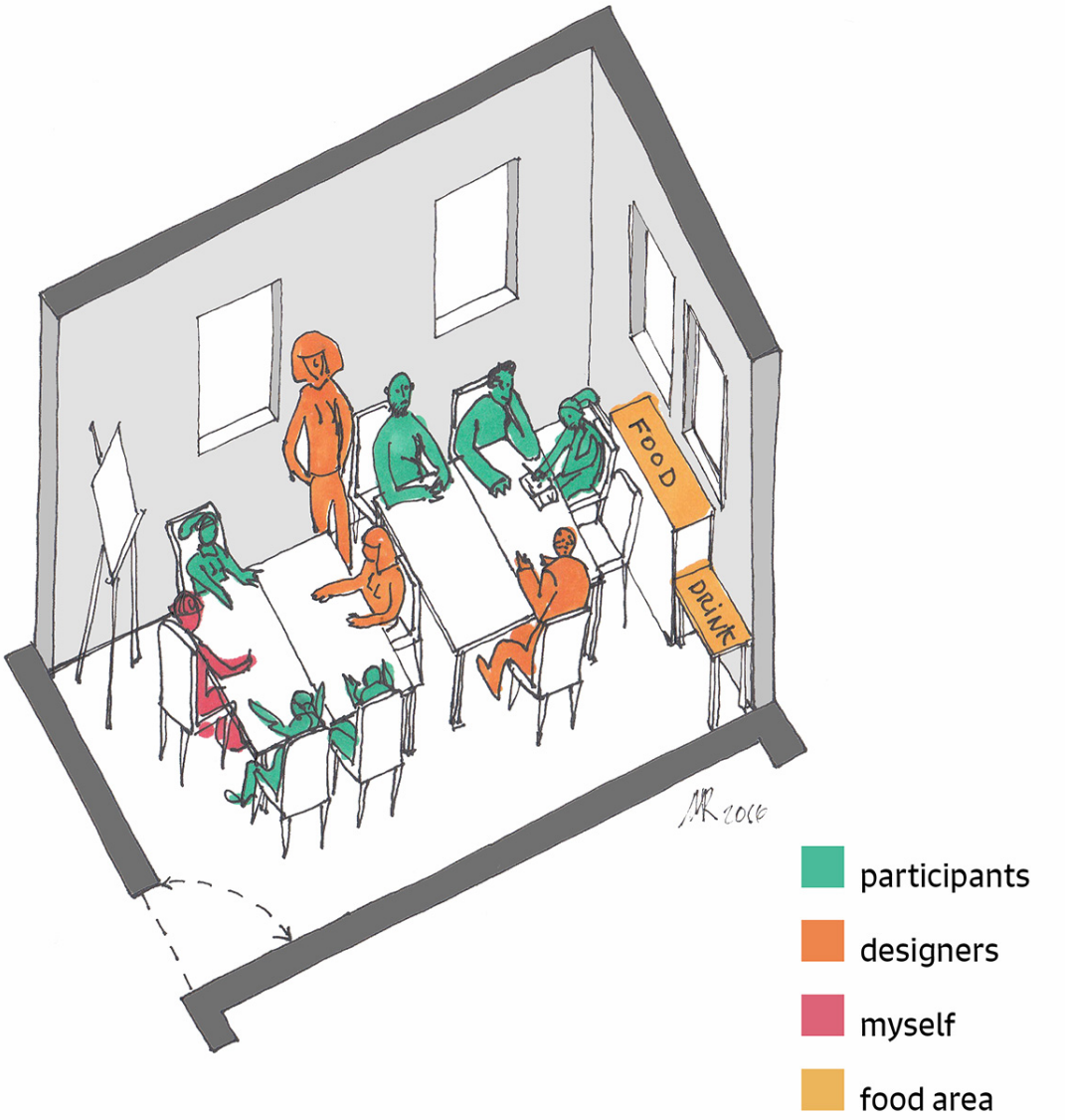


Figure 4.3. Mirian Calvo, PS co-design workshop 1, 2016

Other barriers identified were apathy – in general terms, newcomers are reluctant to engage in community matters – and lack of time: people are busy and cannot engage, (see the engagement tool designed for this co-design workshop in the GN-V-1, 13).

At the break people kept talking about barriers, making me think that this collective dynamic is, in itself, a barrier to transforming their activities. This first workshop aimed at analysing participants' conflicts and searching for opportunities to transform their practices in the following workshop.

We returned to work in small groups. We talked about how such barriers could become opportunities. This task was tedious and not very fruitful, to my understanding, because they kept up an attitude of complaint. P1 was the strongest voice in our group – he was proactive and focused on the main conversation. P3 and P4 were immersed in another, more private, conversation. They were listening to the main conversation while whispering between themselves about certain ideas emerging from our talk. They were thinking of using these ideas in a community event in which they were involved in the organisation. Here I noticed that almost every conversation, any barrier identified, was somehow related to a particular geographic location. I realised I did not know much about the participants' contexts (settings, background, culture, the community they belong to or what they do for a living). I also realised that those interwoven conversations were also a vehicle for sharing knowledge. In a way, they were learning from each other, but they were actually unaware that I was learning too. At the end, all the participants agreed to focus on improving community engagement, on how to reach more people – people who do not engage in their communities. Therefore, the themes for the second workshop were: young locals, rapid tools and planning event tools.

Reflective session

After dinner, I started writing up what happened and I began drawing the participants and some moments from the workshop. I use drawing as a way to revisit the experience, connect with my emotions and establish an empathic accord with people. This helped me to articulate what occurred, and why, hence distilling my learning from practice. In this session, I noticed that in theory, things are clearer – all the components (in CHAT) have their function and the relationships between them are clearer, but in practice components intermingle, generating an

amalgam of non-stratified layers, making it difficult to understand the dynamics. The degree of complexity was higher and unpredictable. From my point of view, there was no collective driving-force, as the theory suggests. Additionally, observing was difficult because there were a larger number of variables interacting simultaneously, like the parallel conversations happening at the same time which were also intertwined. In fact the main conversation, which was proposing ideas, sparked P3 and P4 to connect an idea with a concrete case of their own practice. In other words, there were different levels of conversations which could be related to the levels of participation. People belonged to different organisations and they thought about their own issues, working separately without knowing how to work together.

Co-design workshop 2

Five participants turned out from four communities (MICT, Wild Mull, USCA and Glengorm). I decided that, before talking to anyone, I would take some time to observe the participants' behaviour. I felt that we all needed time to acclimatise to the environment. The workshop started with a brief recap about the last session. Then we worked in groups to co-design tools. My partner understood what the activity was about after I presented a few examples of what a tool could be. After that, we began conceptualising ideas together. I realised that she used her previous experience to generate new ideas. At that moment, we were, somehow, co-constructing new meanings which we were allocating to these concept-ideas. Then we all shared our ideas using the wall. Some of the concepts were similar and others were combined into one more structured tool, such as the planning event tool. At the end, I approached the participants and asked them if I could keep in touch for future visits and to interview them. All agreed and we exchanged email (GN-V-1, 20-21).

Reflective session

I identified a strong component of informal learning. People attended for various reasons, some personal and some collective. They came with different levels of social commitment. Yet all of them shared one motivation: learning how to engage better in their community. They participated collectively, sharing their creativity to shape new ideas, which are not owned by one, but by all of us.

4.2.2 Learning from the context

Second visit, *22-23 April 2016*

Ethnographic tour

My second visit came after two months in which I was mainly immersed in reading. The insight of feeling out of context brought me to the island, aiming to fill a gap in my own understanding about their context. The conversations I listened to were geographically referenced. Hence, it was important for me to understand such territory, where different communities live. This took me two days in which I had the chance to experience at first hand the isolation amongst communities.

My first stop was Tobermory, the biggest village and home to the bulk of the population. I conducted passive observations in different venues: at coffee shops, pubs and outdoors, all so I could gather a sense of what kind of people were there, how they interacted with each other and so on (GN-V-1, 25). Then I went to Ulva Ferry, passing through Salen and then Cruline. I stopped in a car park where there

was a van selling sandwiches and drinks. I found it strange to find a food kiosk in a rather desolate area, since all along the route I had seen few houses and all of them were scattered among a wild and natural landscape. A young girl was in charge and told me that she was selling local products. She was able to name the fisherman and the farm where the meat and fish came from. She also told me that such an area was popular for tourists who come to observe birds, especially the sea eagle. I continued my journey to the South, passing under the imposing Balnahard Cliff, crossing Gribun Rocks - the locals call this place 'the Wilderness' – until I reached Fionnphort, at the south-west end of the island. It was a place with four fishermen's houses and a port where boats depart to Iona and Staffa. There was also a large car park for buses full of tourists who visit Iona's Abbey, a great attraction. My insight from this visit was that the isolation of communities shapes the lifestyle and makes the residents develop a strong bond with the place.

Interview: P5

I met in Craignure with P5 to conduct a semi-structured interview with a focus on the following themes: cultural-historical backgrounds of participants, opinions about community engagement, informal learning, individual and collective motivations, – which were based on the CHAT-unit of analysis (see fig.2.5).

Over a map of the island, P5 mentioned that the distinctive characteristics of the local geography influence the human settlements, which make it difficult to build infrastructures such as roads and broadband networks, corroborating my insights from my trip. He said that the north and the south of the island operate almost entirely separately in terms of community initiatives.

"They tend to be almost a separate community. (…) This community trust is developing a community plan for the Northern part, while the South has its own community plan and they are not connected somehow".
(Appendix 5.2.9)

He shared his perspectives on issues around community engagement on Mull:

To me the issue is that there is not an overarching community to which people subscribe. As you say, people pursue their own interests, working separately addressing different areas but there is not anything to me that seems to hold all together. That is my impression.
(Appendix 5.2.9)

About community engagement, he added:

People don't want to feel that they are being told how to run their lives. They have their own view of their lives and their community. (…) Indeed, it is a big barrier! Particularly in a small community (…) People get their opinions from a lot of different perspectives: people, circumstances… And it is not clear where this community (...) It is not very clear what the key influences are that persuade people to look at our ideas.
(Appendix 5.2.9)

I could detect in his words a sense of persuasion as a motive for participating in our workshops, persuasion being a social influence on values, attitudes, motivations and behaviour.

4.2.3 Delivery

Third visit, *4-7 May 2016*

Tool Delivery Event

I went back to participate in the delivery event. We (design-researchers) had been designing and developing prototypes based on the concept-ideas co-designed during the first visit (Appendix 3.1, 3-37). So we brought the prototypes with us expecting that the participants would bring insights on how to refine them.

I began by adopting a passive-observer role for an hour, taking notes and drawing what was happening, aiming to gather information about personal and collective motivations, as well as gaining a better understanding of the informal learning process. Despite that, I ended up joining in the conversation. I found it difficult to detach myself from the people, the project and the conversations. I also felt at times uncomfortable, out of context, since most people knew me, and those who did not observed me, wondering what I was doing.

Seven people turned out from four different communities (MICT, Wild Mull, THA and HIE) with three design-researchers. Five of the participants had attended all the previous workshops, but now there were two newcomers. The event took place in the same room. The table functioned well as a hinge connecting all the participants, creating a central space where the prototypes were shown. In this first part, the designers talked and the participants listened. Slowly but steadily, the participants started interacting with the designers, asking questions. People engaged in conversations. P9 paid attention for the entire session, although I appreciated that he was a busy man because from time to time he checked his mobile and texted. This triggered the insight that there were different types of motivation regarding the stance of participants, corroborated later on in the

literature (section 2.5.4). P9 seemed to be motivated by external/obligation matters. P2 and P6 had been at all the events, although it was unusual to hear them give their opinions. They were both taking notes in their notebooks. I perceived that P5 sat on the same chair at all three workshops. I found this behaviour odd: he was the only one who kept the same place. I found this pattern by observing my reflective drawings in the affinity diagramming (see GN-V-1, 16-17,21, 28). In the first part, it was clear that the designers transferred their knowledge-skills to the participants, who focused on following the explanations. They were learning by listening, learning through participation.

In the second part, the conversation was already fluid and participants felt comfortable. They were sharing ideas and also questioning each other in an informal atmosphere. They were not aware that they were learning from each other.

Interview: P3

P3 was working for one of the community trusts as a project manager, facilitating public engagement in a community development project in one of the most rural areas of Mull, Ulva Ferry. As she said: "we are building two affordable houses for local people to rent, to stimulate the community and make it more sustainable". Then we talked about participation in her community project and she said: "Maybe five people participate and do everything. (...) People participate in many different ways, but there are people who do not or are against". Then we talked about her motivations for coming to the co-design workshops. She replied:

It is just to get more tools or experience on how to increase the participation in the community. (…) Things happen in Mull because community members make them happen because we don't have infrastructure of services. (…) That is the way it works! So in any rural community you cannot rely on the council services.
(Appendix 5.2.6)

Once more the theme of persuasion was emerging, but she also revealed her values and beliefs. When I asked her about how community co-design could impact on the community, she replied:

Just getting people more confident in themselves, I think. (…) You know, I am a very positive person. (…) I am always thinking in the next step but not everybody thinks in the same way. I think it is very appreciated that not everybody thinks like that. It is quite difficult sometimes. So I am always being very enthusiastic.
(Appendix 5.2.6)

Here, I could appreciate her frustration, because the members of that community were not responding to her engagement. Frustration is an emotion connected with sadness, ire and disappointment (Bisqerra 2015), yet she kept motivating herself. This emotion was clearly behind the real motive that moved her to participate in the co-design workshops. Simultaneously, she mentioned self-confidence, which could be understood as an attitude about future behaviour. On this matter, Bisquerra (2015) defines an attitude as the tendency to act for or against something or somebody as a result of emotions (GN-V-1, 30).

Interview: P8

We talked about her event, which consisted of the inauguration of a coastal path developed by her organisation (THA), as she said:

It's going to be a really good community event, and I thought it was going to be the right moment to start consultation (…) I have got display boards, I can show them what the area is like at the moment, the ideas that we have got for development, a few visuals of what it could look like.
(Appendix 5.2.8)

I was keen on experiencing first-hand her context so I asked if I could be a participant-observer, a volunteer. She agreed. (GN-V-1, 31).

4.2.4 Access to natural settings

Participant-observation 1

This experience involved me closely helping P8 for about three hours while she was setting up her stand and during the event (see GN-V-1, 32-35). This enabled me to holistically observe her moods, body language, her pace and the way she interacted with other people. I used field notes and made drawings during the event in order to collect a big picture of the context through her eyes. The objective was to become an insider-outsider in order to truly understand the individual and collective contextual factors which play simultaneously. However, I needed to build a rapport of trust with her beforehand. This was a crucial aspect and I also had to develop an empathic sense with her in order to notice if she was

feeling comfortable in order to get validated rich data, otherwise information might be misleading.

When we met at the venue, I noticed her defensive mood. It seemed to me that she was uncomfortable with my presence, something I could interpret from her body language. I made explicit the reasons of being there: understanding the context by participating in it. I thanked her for offering me the opportunity to be 'one of them'.

From that moment I became an insider-outsider - in a space in-between. She introduced me to her team as her personal assistant, which was the truth. At some point in the event, I decided to go with the flow and participated as one of them. I had lunch and I talked to people about their motivations to engage in community life and about the learning process through community events. Finally, I gathered a deeper understanding of the community that happily embraced me and enabled me to know them better. This understanding can be summarised in the words of a man I interviewed during the event:

This community is strongly-knit; nearly everybody participates in the community. They understand the sense of community and because, in that way they embrace you when you arrive, suddenly you are involved in the community doing things for the others, as well as the others do for you. They know that they cannot survive in this place without the others. They need each other.
(Appendix 5.2.5)

Interview: P10

A little before finishing, I was able to interview P10, the project officer in charge of the development of the seafront which we were celebrating that day. She said: "it is a great hub here for bringing people together and just enjoy". For her the impact consisted of enabling social interaction, getting people together, and as a result, igniting collective action. We also talked about informal learning through participation in community events. She commented:

I think there is a very important learning behind these events. All the schools on the island are very used to community events, helping to put their efforts into entertaining other people as well. So there is a lot of exchange between different organisations… The children learn from a very young age about being part of the community and helping in these sorts of events. And they have this memory thing of what it is like when the events all come together and the impact that has is on the community.
(Appendix 5.2.7)

She related learning to schools and children, reinforcing my notion of informal learning as an unconscious and unintentional phenomenon arising out of participation and socialisation.

Fourth visit, *20th -21st June 2016*

Participant-observation 2

My last visit consisted of an invitation to P4's house. She was collaborating in a community association (USCA) in Ulva Ferry. The community has around 110 inhabitants spread over a coastline of 12 miles. When we met, I felt welcome. We talked about the projects that the organisation was developing: "we have now raised money to put two very sustainable houses, very well isolated and for rent, for a reasonable rent". She seemed enthusiastic about the project and looked different, rejuvenated and comfortable. We also talked about individuals taking their own initiatives in order to energise the area, such as the young girl who set up her food van at the car park: "her uncle is a fisherman, so you can buy his mussels. It is interesting… there are young people with very good ideas". We went to see the projects. Our first stop was at the pontoon, at the harbour that crosses to the Isle of Ulva. She told me: "we are putting into the water a pontoon for the boats to come and tie up. So if we get visiting tours, nowadays they want a pontoon". Afterwards, we went to see the school and the area where they were about to build the two houses. She introduced me to some members of the community. One used to be deeply involved in the community but at some point left. I realised that the issue was not one of engaging people; it was more about re-engaging them. Most of the people I met had been involved in the past, but they became exasperated and disaffected. People like them lost interest over time because, in their view, they didn't see their objectives translate into outcomes. I also detected a sort of apathy. Such attitudes hide a perception of community engagement as an endeavour that consumes time and effort, and one which is complex and slow. Besides, many of them did not see the effects of the community problems in their daily lives, and therefore were reluctant to change (see GN-V-1, 37-40).

4.3 Section two: systematising learning

In this section I will present the items and patterns discovered after the exploratory and experimental analysis (section 3.4.4). Figure 4.4 illustrates the refined clustering of data by affinity, where six themes emerged: (i) the context of research (yellow-coded); (ii) dialogic learning between CHAT and co-design situations (yellow-coded); (iii) informal learning processes (orange-coded); (iv) conditions for informal learning (pink-coded); (v) emotions (green coded); and (vi) participant motivations (blue-coded). This analysis raised seven key insights:

4.3.1 The context

One challenge in co-design lies in identifying ways to understand holistically what is called the context, a set of highly complex non-structured layers of interactions that include micro-politics. In most cases, designers reach the community with little time to formulate a coherent picture of the setting, i.e. understanding the relationship between the individuals within the setting and the goals and motivations which they bring to the setting. It also includes understanding their relationship to one another. One of the key insights is that a greater awareness of context (i), from a cultural-historical standpoint, helps designers to understand the relationship between individuals and the related sociocultural factors to which they are inextricably linked (see Calvo et al. 2016).

Figure 4.4. Mirian Calvo, PS affinity diagramming, 2016

4.3.2 Participant-observer role: outsider-towards-insider

At the beginning I was an outsider who knew nothing about the island, its residents and what it was like to live there. One of the perks of being an outsider is that I did not bring preconceptions about participants and their social life. As Asselin (2003) suggests, researchers can adopt a role of 'not knowing' as a way to prevent personal views from pre-configuring contextual scenarios, in order to ensure that the data emerges from proper experience. So, without any clear sense of the nature of this approach, I was naturally following her recommendation. However, although I could not directly relate to the full experience of living and being a full community member of Tobermory, Craignure or Ulva Ferry – which would imply a traditional ethnographic approach of staying on the island for longer periods of time – I could certainly empathise with two participants at the level in which they allowed me to be a participant, observe them, and experience a bit of their lives, toward the final stages of the study; observation as means for interaction and gathering insights on the ways participants learn (iii). This enabled me to gather a greater understanding about their personal and community contexts. Further, my exploration of the literature about CHAT and other theories, as well as the pilot study, put me in a position in which I could no longer consider myself an outsider. My perspective of the research was gradually gaining deeper understanding and made me realise that the matter of concern is multidimensional. In other words, there are a myriad of components intertwined, some of them functioning at the macro and others at the micro level, with some that sway between both. This positioned myself in a space in-between, in a 'third space' (Gutiérrez 2008), in a space of confluences (this was an inspiration for the titles of the audio-visual narratives and showcases). Hence, I became an insider-outsider, a way to unravel participants' emotions (v) and motivations (vi).

4.3.3 Socio-emotional skills

Social relationships are interwoven with emotions. I noticed that in every conversation, there was an invisible thread of emotions intermingled between the participants. For instance, the skills of listening and empathy were found key to adopting pro-social attitudes. These social competences lead to creating favourable social environments of productive and satisfactory collaboration, thus, they should also be considered as conditions to support learning (iv). Emotions are the essence upon which we build social relationships and make decisions (v; vi), leading to a greater understanding of the context, and also to achieve/enact genuine collaboration.

4.3.4 Power dynamics: micro-politics

Within the co-design workshops the designer had all the power in the conversations because people, somehow, came seeking to be taught (one-way conversation, student behaviour). They perceived the designer as the expert in the conversation. Therefore, the designer has to distribute power equally amongst the participants to ensure that all voices have a space to express themselves, although sometimes people are reluctant to talk (iv). To achieve this goal, researchers need to make explicit that the designer's rationale is to learn from them because they are the experts, thanks to their experience in the field (Calvo et al. 2016).

4.3.5 Boundary-space

As described in Chapter 2 (section 2.6.4), every learning process entails boundaries (Engrestöm 1987; Akkerman & Bakker 2011; Wenger 1998; Suchman 1994), depicting the divergence of participants' relational interactions across different disciplines and sites. When these boundaries interact in egalitarian conditions (Wenger et al. 2015), the actors expand their respective boundaries (Gutiérrez et al. 1995), thereby engendering a boundary-space, which accumulates knowledge at the edges (Gutiérrez 2008) through participation in multiple social scenarios, with specific structures of power relations and therefore, rules and conventions (ii). In setting this boundary-space, I realised that designers share and transfer cognitive mechanisms to participants, as I did in the workshop, which to

some extent helped them become more creative. The method involved bringing examples from past experience or which emerged from the conceptualising-ideas as a way to show concrete ideas. This drove people to contextualise the focus of each co-design activity and to better understand what an engagement tool was and what its aim was, breaking down the barriers to thinking. This begun creating a hybrid language in a boundary-space.

4.3.6 Informal learning

Co-design emphasises the place of people in their social context. This approach advocates informal learning (iii), which draws strength from the co-construction of social knowledge based on consensus and negotiation between participants (Calvo et al. 2016). The understanding of learning processes placed in a social context adds value to human resources and hidden talents that emerge from learning through participation and socialisation (Freire 2004; Mündel & Schugurensky 2008). Developing self-awareness of informal learning through participation in co-design could, I argue, be viewed as an impact of the co-design process on a personal and collective level. Throughout the chain of actions (reading, planning, 'doing stuff' and reflecting) that I conducted through my participation in the pilot study, I have been gaining self-awareness of my own informal learning process, experiencing to some extent the impact on myself. Alheit (2015) mentions that the sociocultural protocols that rule our context through lived experiences influence our development. Our personality is shaped by complex "interrelationships of influences that actually make up our lives" (Alheit 2015, 22). However, we keep the feeling that we are, to some extent, in control of our decisions despite the restrictions coming from social convention. This feeling relates directly with the way in which we, as subjective individuals, process our biographical knowledge, a knowledge emerging from the reflection about our experiences. This, in turn, leads to the re-shaping of an individual's thinking process and transformational agency (Haapasaari, Engeström & Kerosuo, 2014).

4.3.7 Motivations

All participants shared one motivation: learning how to engage better with their community. Behind this motive I identified another one: convince or advocate (by persuasion) as many members of their community as they could. This finding caused me to reflect upon the nature of human motivations such as persuasion, and to view these as complex knots of individual needs and emotions, (see Glossary of Terms, def. emotions, human agency, and motivations).

4.4 Summary

PS has been a foundational study to begin itemising the components and relational synergies entangled in co-design situations, trying out a reinterpretation of the CHAT-unit of analysis. Figure 5 illuminates how I began specifying the unit of analysis, introducing the items and patterns from the affinity diagramming. The orange triangle in the centre depicts the adjustment of the premise of research. The blue circle represents the personal dimension, and the green semi-circle the social dimension of motivation and learning, whilst the yellow circle is the runaway object which brought people to join efforts.

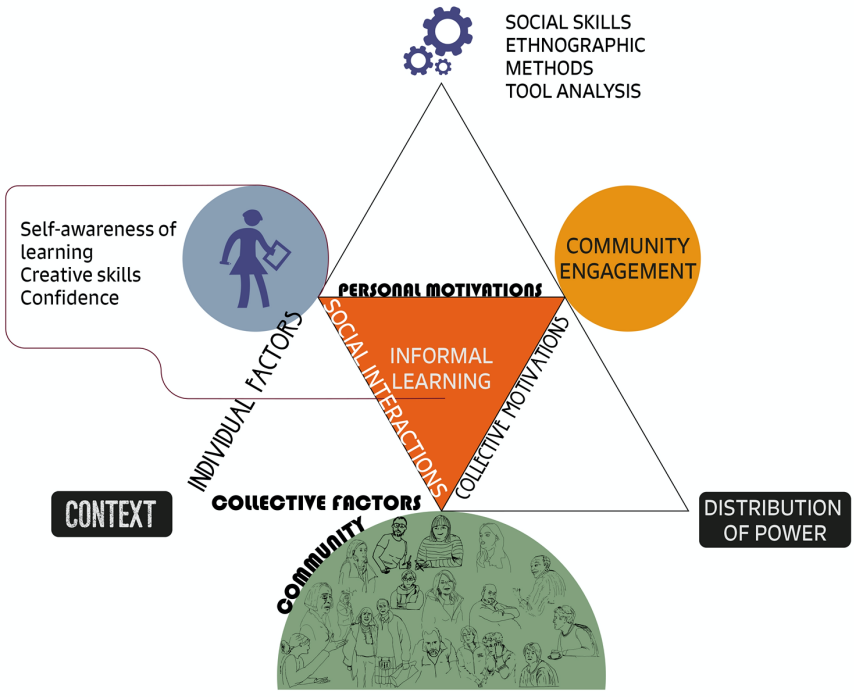


Figure 4.5. Mirian Calvo, Reinterpreting CHAT-unit of analysis, 2016

In this chapter I firstly unfolded the emergence of co-design situations and ethnographic encounters, using Grounded Theory, as means to enable the context to be the source of knowledge. I then advanced the notion that the impact of co-design upon the participants could be understood as the informal learning process that such practices bring about (knowledge-transfer and skill-transfer between designer-participant and vice versa; co-construction of knowledge and meaning; achievement of creative thinking and socio-emotional skills; negotiation and consensus; cohesion; rituals and group dynamics). People learnt through participation, influencing each other, although they were unaware of this. This item, out of the analysis, led me to develop a 'developmental' methodology which could help participants in the following two case studies (Chapters 5 and 6) to fathom their informal learning through the use of reflection as a way to promote critical thinking, (e.g. reflective journal, appendix 2.2, 14). Recognising what is happening helps people to process knowledge-production. Thus, on the one hand, I sought to help participants to articulate their own learning. On the other, I aimed to develop a design-research that helps designers to identify the impact on participants and, to some extent, on their communities.

Chapter Five: Case Study 1

5.1 Introduction

Case Study 1 (CS1) involved immersion as co-researcher in a project entitled Tackling Loneliness and Isolation (http://leapfrog.tools/project/tackling-loneliness-and-isolation). Loneliness and isolation were growing dramatically in the rural areas of the Highlands and Islands, and gaining resonance in national news. At that time, the Scottish Government begun developing strategies to tackle those issues by providing services to support social networks/friendships, and community cohesion. Under this matter of concern, the project brought together participants from social enterprises and public service providers operating in the Inverness and Moray area (fig.5.1): Badenoch & Strathspey Community Transport Company (BSCTC), Health and Social Care Moray, Family Outreach, Art Therapy, Let's Eat Forres, Unit Credit, TSI Moray, etc. Conversely to PS, in this case the participants agreed on the objective of the project beforehand, which was crafted during the initiation and planning phase, and focused on developing tools which could enable them to share assets, resources and best practice (tacit knowledge emerged through their everyday ways of working). Their individual reasons to participate were diverse: from intrinsic motivations (e.g. personal fulfilment, feeling good, adhering to a good cause, curiosity to collaborate with the GSA, identifying the lonely and isolated in rural areas etc.), obligation-motivations (feeling obligated to return a favour or help), to extrinsic motivations (e.g. work duties).

In this chapter, section one narrates the course of methods and events developed, and section two illustrates the insights from the affinity diagramming which have shed light onto the premises of research, focusing on exploring the ways participants learn in co-design situations (research question 1) and contributing to a greater understanding of the designedly conditions for informal-mutual learning (IML) (research sub-question 1.1), while visualising the relationship between IML and co-design (research sub-question 1.2). Section one operates in tandem with

the GN-V-2. Read them together. Likewise, the AVN-1 complements section 1, which I suggest to watch at the end of this chapter.

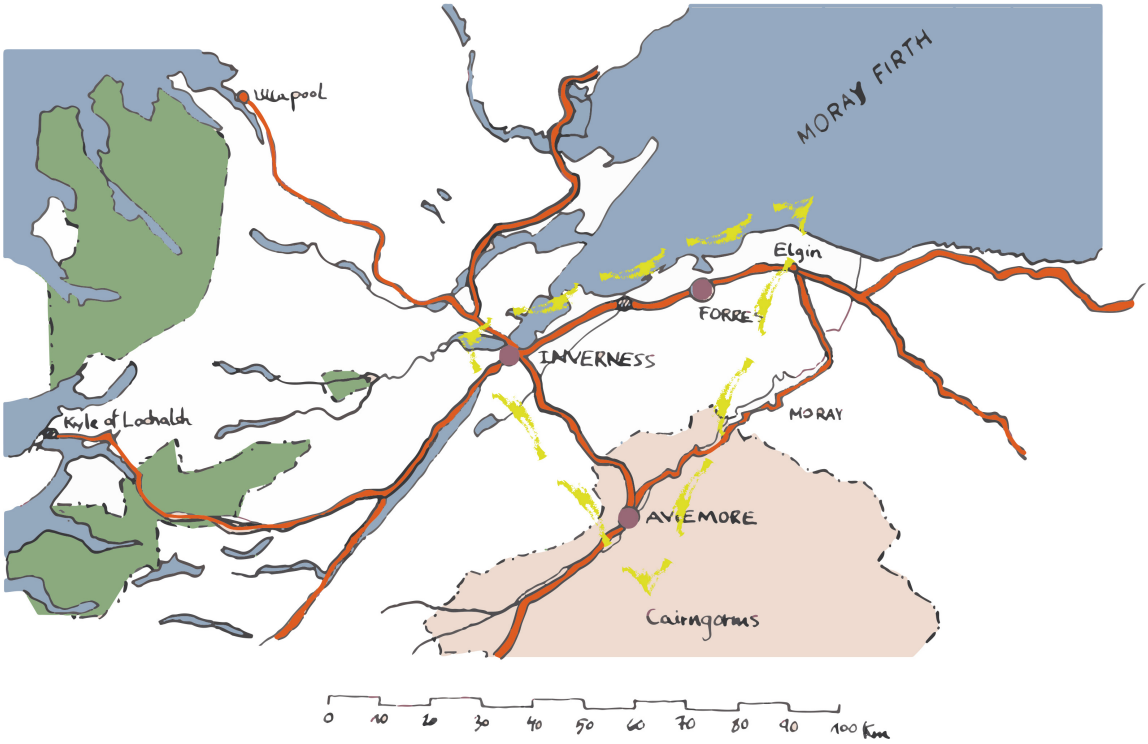


Figure 5.1. Mirian Calvo, CS1 geographical map, 2017

5.2 Section one

CS1 was launched in April 2017 after delays for lack of participation. In total, six visits (3-5 May, 31-2 June, 4-6 July, 29-30 August, 5-6 October 2017 and a follow-up 22-25 January 2018) drew participants from the aforementioned public and third sector organisations, where they had diverse roles (e.g. social care officers, wellbeing coordinators, art therapists, volunteers, etc.), devoted to tackling loneliness and isolation, particularly in later life. Together we explored issues experienced, sharing tacit knowledge with organisations (and people) involved in the same venture. In the interests of best practice, we embarked on a series of co-design situations and ethnographic encounters as a creative platform to share experience and knowledge born of practice. CS1 served as a community-led living laboratory where I could apply developmental methodology, and observe how the spontaneity and improvisation of everyday life affects and modifies the course of events and thus co-design situations.

5.2.1 Preparation for co-design

Initiation and Planning

First, I developed the time plan, embedding the research-design (Chapter 3). Figure 5.2 summarises the dates and the context-based research situations disclosed in this section. This consisted of a flexible framework to support the orchestration of participants through the co-design situations, delving into their IML process through participant-observations and semi-structured interviews. I started by crafting the first co-design situations. The flow was divided into three stages: (i) sharing current practice and building common understanding through IML; (ii) crystallising insights and construction of shared meanings; and (iii) idea-generation. For further details, see appendices (proposal, appendix 2.3,1, 37; co-design workshops, techniques and engagement tools, appendix 3.2). Simultaneously, I contributed to recruitment and conducted historical research on stakeholders and the runaway object: loneliness and isolation (see GN-V-2, 4-11). From this, I learnt that in the UK there are 1.2 million chronically lonely people (Age UK 2018), which impacts directly on the health and wellbeing of individuals and communities (De Koning et al. 2017). At that time, the Scottish Government was developing a strategy to tackle these issues by providing services to support the blossoming of social networks/friendships.

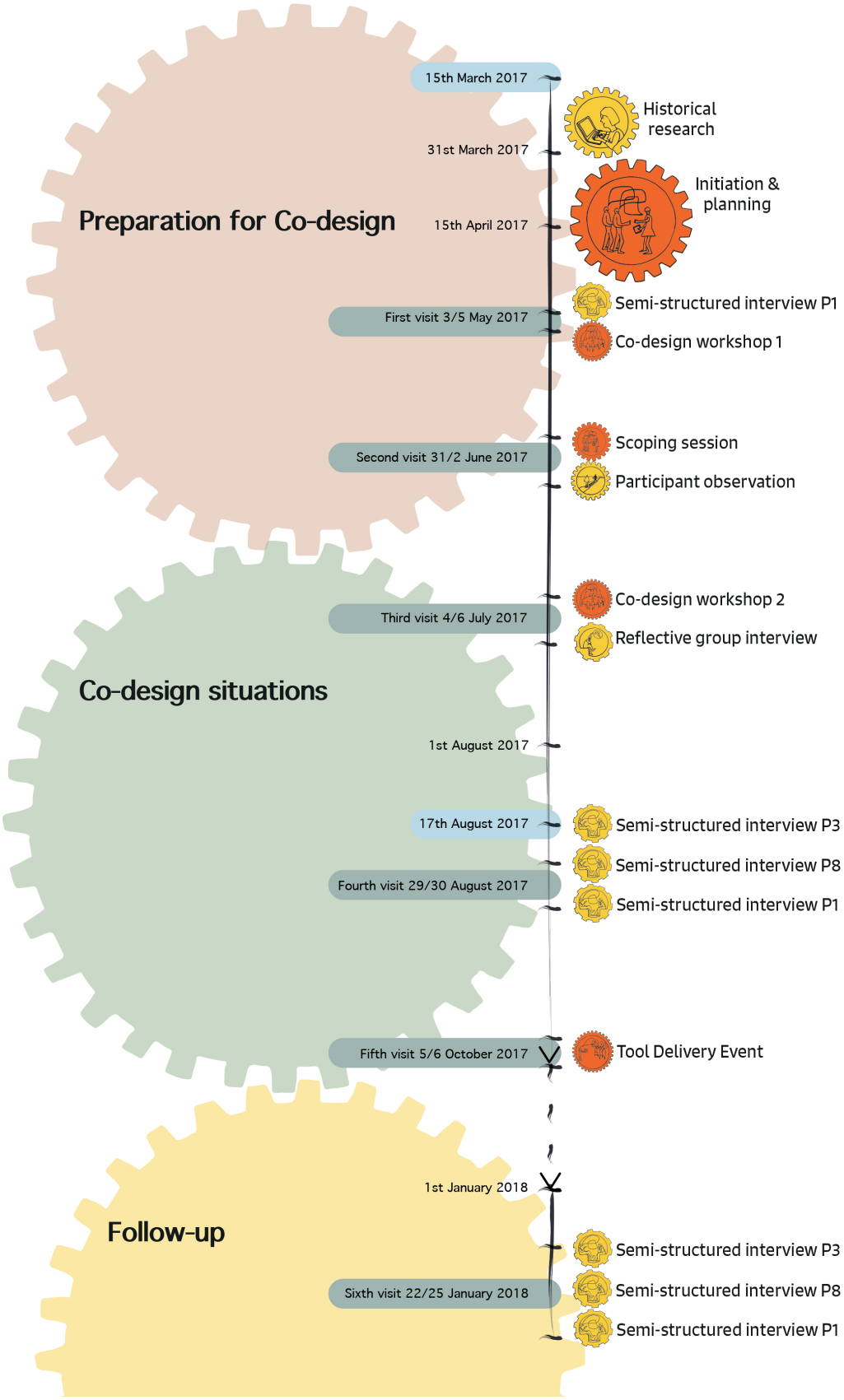


Figure 5.2. Mirian Calvo, CS1 time plan, 2018

First visit, *3rd – 5th May 2017*

Semi-structured interview: P1

I arranged a meeting with P1. I wanted to know about her background and her motivation regarding our project (GN-V-2, 10-13). During our conversation we built trust and learned from each other by sharing personal stories. To explain her motivations, she shared a sequence of key experiences which she connected in a way that was meaningful for herself:

After living in Kenya, I came home and, of course, after an experience like that (volunteering for a year) I did not want to go back to the private sector. I wanted to do something that would make a difference in my mind. What motivates me is to feel like I am contributing rather than just taking.
(Appendix 5.3.1)

P1 seemed open to learning, a collaborative and enquiring person who shared her local knowledge, trying to make potentially helpful connections.

Co-design Workshop 1 (catalysis workshop)

I adopted a facilitator role, which entailed certain responsibilities in shaping the atmosphere to support co-design, orchestrating activity for example. Here, orchestration is understood as the planning and coordination of socio-material conditions aimed at supporting co-design situations. It also implies finding the balance between controlling and letting go within the group dynamic, keeping positive synergies between everyone and establishing power-balanced

relationships in order to ensure a safe, friendly and inclusive space (a boundary-space). According to Buur and Larsen (2010), the facilitator is not neutral, but performs in constant interaction within the self-organised cycles of participation and needs to be perceived as an equal participant who brings another perspective (Shaw 2002). This role requires the researcher to have certain socio-emotional skills (section 4.6), which allow for reading the evolving social situation on twin levels, the emotional group state and the nuances of individuals. Such reading of the situation allows for improvising and adjusting planned activities, following the natural course of the collective (appendix 5.3.1.1).

Activity 1

After a brief introduction to the research context, I introduced the first activity - building common understanding by sharing stories from past experience (Appendix 3.2). With only three of us it was important go deeply into engagement. The conversation soon grew fluent and friendly. We were comfortable and I realised I was learning about the issue thanks to P5's stories. I realised that our personal stories enabled IML by a simultaneous process of listening and empathising. From this activity emerged the key insight that people are an essential resource for the volunteering sector, as P5 summarised:

The most valuable are the people, our volunteers and our clients and also the groups that we network with to get information from, mainly third sector groups that we work with, resources. But the people are the valuable resource.
(Appendix 5.3.1)

Activity 2

This activity aimed at unveiling personal narratives around what the participants do to tackle loneliness and identify best practice. This activity brought forward the participant's values and motivations in the shape of another story from P5:

In our coffee meetings we identified the needs for elderly people to move around, like shopping, so we decided to set up a supporting-shopping service with the taxi operators, a door-to-door service with assistance at the shop. I think seeing people together made a difference. They see each other once a week and this makes them feel good.
(Appendix 5.3.1)

Activity 3
This aimed to reflect on our networks, visualising and interconnecting them. We recognised best practice: taking care of volunteers, freedom of choice, cohesion and dialogue. Personal narratives made us start grasping some understanding about the context of this project (GN-V-2, 17-21).

Reflection session

Overall, I felt that the conversation was in-depth and enabled me to develop a deeper understanding of the context. IML emerged with more intensity at the beginning and it seems to be crucial for building trust, respect and understanding, hence crystallising group efforts towards co-designing. Yet the activity of generating ideas was less creative - at least that was my impression. I felt this activity was fruitless because there were not enough contributions and perspectives that informed the learning and creative processes. Here I realised how much the quality and quantity of participation influence IML. With a little distance, I began to understand that co-design workshop 1 consisted of a workshop somewhere between a scoping session and a catalysis workshop.

Second visit, *31st – 2nd June 2017*

Scoping session

We met at the Creative Campus at the GSA in Forres. We all sat down around a big table with coffee/tea. I asked for verbal consent on recording the conversation and its use in posterior dissemination. Everyone agreed. R1 introduced the aim of the project. There were lots of questions, with P1 the most enthusiastic (GN-V-2, 24). Participants talked about themselves and their practices, emphasising their needs and barriers, and we eventually came up with the idea of co-designing a set of cards that would help them engage with the lonely, and inspire them in building conversation.

Participant-observation 1

The following day I adopted a participant-observer role in a natural setting by introducing myself as a volunteer for the assisted shopping round Avimore for BSCTC. The session objectives were to find out the volunteers' motivations, and I immersed myself in order to understand why they do what they do and to experience at first hand life as a volunteer (GN-V-2, 25-29).

P6 introduced me to the staff and we went out. P9, an elderly and cheerful man, gave me an induction on the kind of tasks I could perform. He was the driver of a mini-bus with wheelchair access and I was to be his volunteer. Before we left, I asked for verbal consent to ask questions of both volunteers and clients, as well as recording some conversations. P6 replied that everyone was aware of, and

consented to, my presence and the purpose of my research. I could therefore perform my fieldwork without any issues, I thought, as long as I could ensure the safety of everyone, including myself. I assisted P11 during the shopping. I felt welcome and comfortable. At the end, I gained an enriched account of the volunteers' motivations. P9 said:

All my life I have been working, like in the offshore oil and gas industry. I have been all around the world and you see different things in different countries. Lately we decided to retire, we came up here to retire. So it was my wife who got me involved. They were struggling for drivers so she came down and spoke to them and then she put my name down for it. Once they found out what my history was, they wanted me there because of my knowledge of seating and negotiating and that.
(Appendix 5.3.1)

P10's motivations seemed to be related to an individual feeling of obligation. Obligation motivations are associated with the conventional rule of reciprocation, which leads to a feeling of obligation to return a favour or help out in the future (Meusburger 2009). She said: "I joined because the people in the office are friendly and they helped me to settle my parents here". Her parents live in Aviemore and she works in London. She continued: "it means a lot to me to be able to help people, I like to think that when I get there, there will be people to help me because I do not have children".

P6 was a staff member of the company. Her motivations seemed driven by her strong belief in what she does: making a difference (value-driven motivations). Likewise, this is her work and therefore, a reward for reasonableness, which is related to obligation motivation:

We take people in a bad way, not being out for a long time, lonely and without self-esteem; and just taken out shopping, it expands their whole life. Suddenly their life opens up again rather than being in this wee dark room.
(Appendix 5.3.1)

Throughout this brief observation, I learnt through immersion in their everyday lives. We shared our perspectives and discussed the benefits of working together.

5.2.2 Co-Design Situations

Third visit, *4th – 6th July 2017*

Co-design workshop 2

I adopted a participant-observer stance. This enabled me to change roles from active participant to passive observation, according to the evolving group dynamics. The aim was to co-design a pack of cards, a conversational tool for tackling loneliness and isolation (Appendix 3.2). Twelve participants, three men and nine women, came from different organisations (Health and Social Care Moray, Family Outreach, art therapy, Let's Eat Forres, wellbeing coordinator at Unit Credit, TSI Moray etc.) and had diverse roles. We directed them to the central area where we provided information sheets about the project, alongside the ICFs. See the physical space and its distribution in the GN-V-2 (30). Once these were signed, I introduced the project. Then they introduced themselves and shared their motivations for attending.

Activity 1

We gave them 5 cards each and invited them to write their five top pieces of advice, drawn from their experience. This was not a group task - participants reflected alone or in pairs.

Activity 2

R2 explained the rules and the purpose of the game, highlighting its experimental nature, and reminded everyone that they were the experts. Facilitating workshops

like this one is no easy task: it requires paying attention to group dynamics, balancing egos, adapting activities to group attitudes and making everyone feel safe and comfortable. It was important that the participants understood from the beginning that this was a friendly, open-minded atmosphere to experiment in, trying things out, with everything open to imagination. This subtle message to the participants helped create an inclusive and comfortable boundary-space. As P1 commented during the reflective group interview:

I sat eyes closed, a bit of silence, and I felt that was openness in the room. I was surprised how open and how quickly there was a connection. So that is the connection of all the people.
(Appendix 5.3.2)

During the first part, people asked questions about the advice shared because they wanted to know and understand each participant's context. They also added layers of knowledge and reflections on each participant's story. During this process, they co-negotiated and established the social conventions that would set the tone of the dialogue. They found their common language and agreed on the terms. All these processes pass, unnoticed and unconscious, in human interaction. The group dynamic (social order) emerged from the way participants conducted themselves as a collective, and the sense of the context from their interactions. At one point, P4 was repeating insights voiced by other participants in such a way that I felt she wanted to take ownership of them, so I observed her audience: some seemed disengaged from what she was saying, while others stared with facial gestures suggesting she be quiet and let the conversation flow. Such subtle group behaviour was managing the kind of human interactions allowed. We researchers were there on equal terms and perceived as other participants. Nobody made a signal asking us to set the rules of the social conventions, the group responded and we were part of that.

The conversation, facilitated by the tools and the game rules, became deeper in the second part (Appendix 3.2, 42-50). Participants began using the category chips to

cluster the insights. We shared intimate moments where some people became quite emotional. It was no longer about getting to know each other as trust and common understanding were already emerging. The boundary-space seemed to settle during this process, once the human interactions were negotiated. In a way, the facilitation team designed the conditions to create an inclusive space that would support collective creativity and IML. Then people decided whether to enter it and moved freely, re-shaping their participation as the activities and group evolved.

By the end we derived a common understanding on the issues by sharing, listening and empathising with the stories. Personal stories enabled IML. R3, who was listening quietly, intervened to recap and reflect on the conversation. After some debate, people agreed on the following themes: listening, activities, mobility, support (physical and emotional), self-awareness and networks.

Activity 3

Participants sat at three small tables placed in the south wing of the room, divided spontaneously into groups of four. On each table lay a card mat and three different packs of cards, with A3-sized sheets to document the reflections of our analysis. R2 explained the activity: to try different games with an analytical mind-set and unpack the principles and structure of each game to inspire the next activity: idea-generation. We needed to analyse everything – what the cards looked like, the rules, the relationship between the cards-rules and the players, relationships between players etc. People seemed excited. At my table we played with poker cards for a while but soon realised that it was no fun without betting, so we took the Monopoly cards and decided to combine both decks. Now the game was more interesting and exciting, with the betting for thrills. Then we took the tarot cards. They were visually attractive and open to interpretation. This was an important insight because it informed the shape of the prototype game we devised later on. After comparing the three games, we moved on to thinking organically, shifting into co-design.

Activity 4

We took a co-design kit (scissors, glue, coloured card etc.) and we all started prototyping ideas. Little by little, the idea was taking shape. The group had an active dynamic, so I thought it was time to step back and let them materialise our idea. I took notes and made some drawings. Once the cards were made, we started thinking about how to play the game. This was a difficult task, one we could not complete, as it was time to present the ideas. We all envisioned potential uses along with each presentation. When we finished, we agreed to develop two of the ideas.

Reflective group interview

Everyone had good feelings about the workshop and agreed there was a good group dynamic. Expectations were fulfilled. They mentioned that the enthusiasm of the researchers passed on to the participants. In terms of their impressions, they seemed aware of what went on during the workshop, as they commented on the conditions that would enable IML, and hence collaboration, to happen. P2 said:

The way you devised the games and the sequence of those games allowed somebody like him also bringing his valuable contribution, which, you know, another way he might not done it if evolving just chat, chat, chat, chatting. He might not be able to engage without that at all but through the thing of writing down the things in the cards and then share it. You know, that was fun. It was just fun.

(Appendix 5.3.2)

This resonated as a key aspect in supporting learning, in conjunction with playfulness. In terms of IML outcomes, they built confidence in themselves, developed their own understanding of co-design, and reinforced some of their personal values. P1 shared:

I understand co-design is a much wider thing. I could be co-designing something at work by discussing the process or the next steps of the project. For me, this is my understanding: when two minds come together with the intention of creating something new or building on something new, where there is more than one person inputting into that. Now I can see in the way that co-design happens in loads of different things that I could not until I actually taught myself and had the experience and understand it a bit more.
(Appendix 5.3.2)

P2 agreed: "it made me realise that when I am delivering my classes, I can talk too much and there is no harm in me cutting that back. They just want to get on with making something". This is behavioural learning, an adjustment of behaviour as a refinement of internal operations. It could also denote transformative agency.

Semi-structured interview: P3

P3 was a peripheral participant, although he kept in touch with me and engaged with the reflective journal. Our interview was online, and I used some of my reflective drawings to share my impressions on the incipient theoretical-framework. He replied: "I think that sense of connection was very important. To feel even at a distance, I was still a part of the group and my input was important". He added:

Trust is very important, commitment, the balance between control and letting go control. Those central principles that your work raises, the "co" in co-design and collaboration is a reminder that the best work emerges out of community.
(Appendix 5.3.2)

He felt that his contribution was valuable to him and to me as the distance provided a different reflective space.

Fourth visit, *29th – 30th August 2017*

Semi-structured interview: P8

His motivations involved learning how design and collaboration could be applied in community engagement. When asked about a moment when he thought he learnt something during the project, he replied:

I thought that game (activity 2, co-design 2) *was really good: making the physical space, so this diagrammatical, visual representation of people's contribution, and the element of getting agreement. It matched people's thinking. Without the game, we'd just be talking.* (Appendix 5.3.2)

He pointed out the specific moment when the participants were sharing personal stories, so I asked about this. He said: "stories come from experience but the way (transmission) is not direct". This sentence made me think about the nature of stories and its relationship with IML.

Semi-structured interview: P1

The following day I met P1 at the Community Café. I asked her how she felt that learning emerged. She replied:

For me, I watch other people and I see what they are doing and how they are doing it… also the attitudes and the sharing of stories about yourself, so sharing something that breaks any kind of tension, like dropping a pebble into the water, you broke the surface tension.
(Appendix 5.3.2)

Fifth visit, *5th – 6th October 2017*

Tool Delivery Event

Five women turned up to the last event. There was a brief presentation recalling the steps of the process and then a consultation session in which R2 asked the participants to report their feedback and impressions. Here I adopted a passive observer role, sitting round the table but keeping my contributions to a few comments within the on-going conversation. I took notes and made drawings.

P1 said her learning was based on other people's sharing and the whole co-design process, watching how people interacted. P1 admitted to initial scepticism about the collaboration and doubts about the cards' usefulness, but she changed her perceptions and now was thrilled to have been part of it.

5.2.3 Follow-up

Sixth visit, *22nd – 25th January 2018*

Reflective interviews

With the intention of gathering data, I conducted three reflective interviews, semi-structured, with eleven questions (see appendix 5). I used CER (Lally 2002), using my reflective drawings as prompts to help the interviewees recall their learning. The objectives were to unpick their memories and invite them to reflect on their IML.

Interview: P2

P2 said the reflective drawings conveyed a visual representation of what she experienced. She added: "I would like to try to develop ways to engage my groups, making the initial contact and introductions much more interactive". Here I noted an evolving thinking process aiming to implement activities in her own practice inspired by her participation in the project, one indication of transformative agency.

Interview: P1

She talked about what she gained from her participation: "I think it helped me to expand my awareness and confidence in dealing with aspects of community engagement, (…) just to think in different ways to make that bridge".
(Appendix 5.3.2)

It was behavioural learning that impacted most. She too identified transformative agency in her practice, a shift in her attitude to receiving feedback at work:

It helped in having more confidence and just go and try things (...) and also in reframing failure. It helped me in not seeing things that do not work but things that have information to inform me how to do it next.
(Appendix 5.3.2)

This could be interpreted as level 2 in Bateson's (1972) levels of learning, a reinterpretation of the context that leads to change in behavioural approaches, possibly implying a re-adjustment of values.

Interview: P8

The interviewee's motivations centred on his curiosity about the runaway object. Initially, he too was sceptical about the collaboration, only to be pleasantly surprised by the way it was set up and by the interactions. When we engaged with the reflective drawings, he said:

It reinforces the emphasis on people and connections and collaboration. Collaboration is one of those words that, it is easy to use, it is not so easy to demonstrate, and it is in fact quite hard to picture.
(Appendix 5.3.2)

5.3 Section two: systematising learning

Section one briefly chronicled the sequence of events of CS1, the first three stages of the research-design: (i) preparation for co-design; (ii) co-design situations, and (iii) follow-up. Focusing on assembling a multi-voiced narrative in tandem with GN-V-2, it assisted in unfolding some statements and theorisations from my cycles of reflection.

Figure 5.3 illustrates a map of how the main patterns emerged and the data-gathering methods. Think of the first stage (preparation for co-design) where, for instance, the CD workshop 1 (catalysis workshop) helped me gain an in-depth grasp of participant motivation, as I observed how the quantity of participation directly influences the quality of the co-design process, but more importantly influences divergence and learning. My participant-observations called for attention to personal stories as channels for expressing personal motivation. This led to identifying intrinsic, extrinsic and obligation motivations, simultaneously to the realisation that personal stories are also vehicles for IML. During the CD situations, workshop 2 and the subsequent reflective group interview drew attention to the social environment as a source influencing the development of the co-design practice alongside learning. This is one key insight that developed into reframing the CHAT-unit of analysis (see Chapter 7). Finally, the follow-up methods gathered insights about the nature of IML in co-design situations, identified key areas as well as 'key moments of IML' that the participants recalled during the reflective interviews where reflective drawings were shown as prompts.

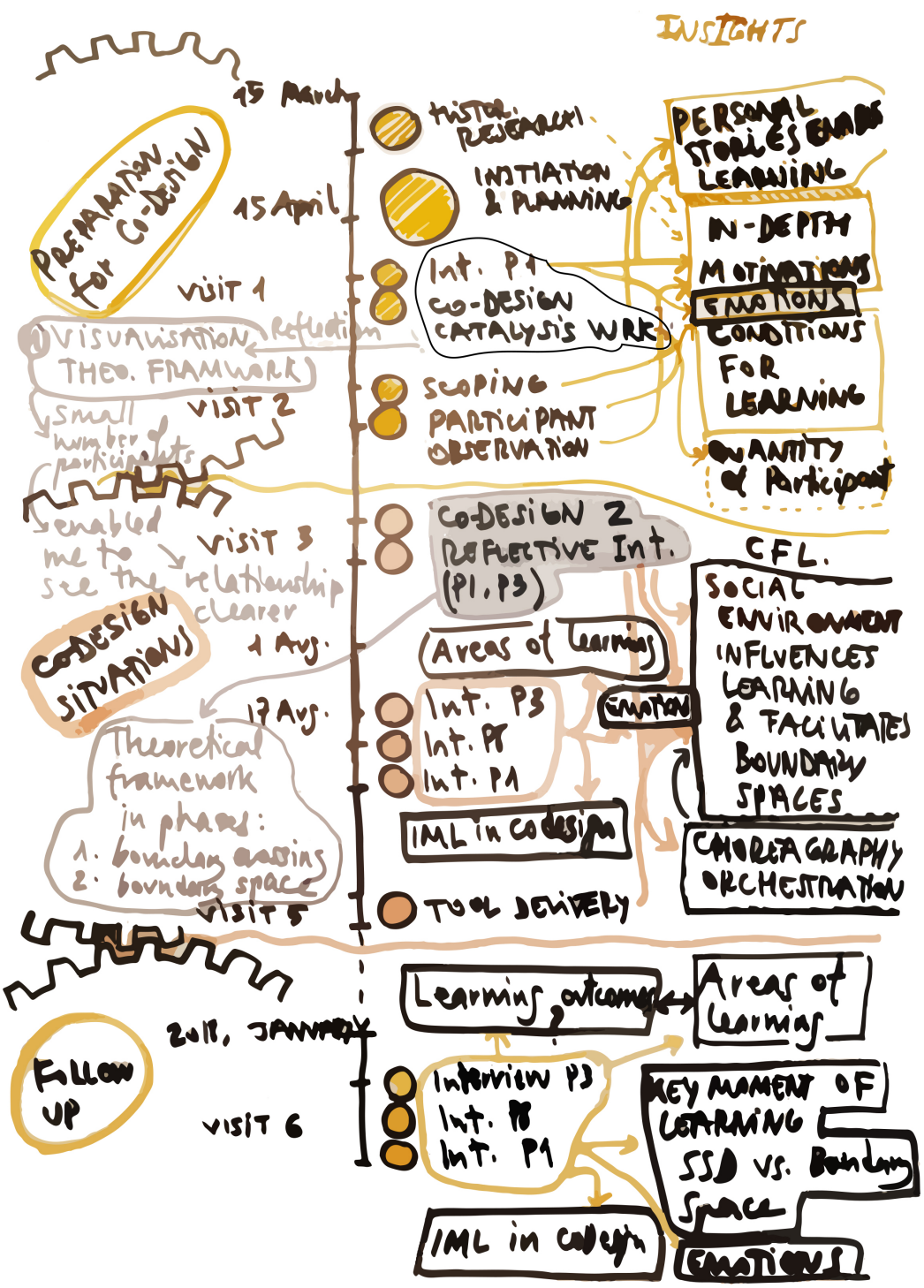


Figure 5.3. Mirian Calvo, CS1 map of methods and insights, 2019

Section two focuses on presenting the items, patterns and incipient structures of higher abstraction which emerged from the affinity diagramming. This leads then

to visualise the AVN-1, which provides a multi-voiced story, and simultaneously, discloses the analysis findings by assembling participant reflections and reflective drawings which evidence them. This ethnographic analysis followed the three-phase process (see section 3.4.4). Figure 5.4 illustrates a fragment of the first phase, CD workshop 2 and the reflective group interview, a self-organised chaos of drawings and colour-coded post-it notes. The categories were drawn from the PS analysis: (i) motivations and emotions (green); (ii) informal-mutual learning (orange); (iii) conditions for informal-mutual learning (pink); (iv) CHAT-unit of analysis and boundary-spaces (yellow); and (v) surprising items (blue).

Figure 5.4. Mirian Calvo, CS1 affinity diagramming: first phase (items), 2018

Patterns emerged around aspects related to IML (ways of IML, key areas of IML, etc.); personal stories (sharing, listening, empathising); motivation and its relationship with emotional processes; the quality and quantity of participation; choreography and orchestration of activities; aesthetics as a relational synergy between individuals and the social environment; design-researcher role-shifting; setting up inclusive and horizontal power-balance environments, group dynamics, social rules, designerly activities and tools. This process took me another two rounds of abstracting and consolidating data. From this systematic and analytical process, the following patterns emanated:

5.3.1 Motivations, emotions and personal stories

According to the analysis, the participants' motivations were directly related to a personal search for fulfilment (satisfaction), in line with Mündel and Schugurensky (2008), endorsing the social cause. Satisfaction is a positive emotion related to intrinsic motivations, for instance, as P1 said: "for me, the feeling of fulfilment that I am doing something worthwhile. Actually, in the end it comes back to me, it gives me a feeling of satisfaction". P5 also commented on this: "I think seeing people together made a difference. They see each other once a week and this makes them feel good". In this statement, P5's motivation to do what she does unfolds implicitly. I also found a few negative emotions like frustration - P5 said:

I would love to go to the Scottish government and say, I am going to put you in that wheelchair with the blindfold and then I want you to go shopping.
(Appendix 5.3.1)

Frustration occurs when something hinders achievement (Bisquerra 2015). It is a lived experience where our expectations are not fulfilled, a common element in our lives. Learning to cope with frustration became part of some participants' motivation for the project – seeking to learn and expand their knowledge in order to cope with obstacles/barriers and hence, achieve their goals.

Curiosity was another key factor in explaining motivation: for P1, "my curiosity to know about the GSA. What does the GSA do up here, I was thinking, so I have been asking people what their perception is of the GSA". Curiosity is intrinsically related to the expansion of knowledge and positive emotions, in fact some experts categorise it as an emotion. It is also associated with intrinsic motivation (Meusburger 2009; Cooper & Jayatilaka 2006) and positive attitudes towards achieving creativity and innovation. I also identified the obligation motivation in P6 during the participant-observation session. She felt obligated to do things, meeting the pervasive rule of reciprocation – feeling obligated to future compensation of help:

It means a lot to me to be able to help people, I like to think that when I get there, there will be people to help me because I do not have children.
(Appendix 5.3.1)

However, this obligation motivation was not identified with the participants' motivations to get involved in the co-design project. In fact, the most-mentioned emotion during the whole process was enjoyment, with laughter the most-repeated action, as it shows figure 5.5, which illustrates the two-dimensional cluster (vertical and horizontal axes).

Personal value-driven motivation

Evidence shows that participants' motivation for what they do and the effort they make beyond the boundaries of work/volunteer/commit will lie in the set of their personal values. On this matter, I identified a pattern where people resorted to personal stories to explain their motivations for doing what they do and for getting involved in the project. Motivations were informed by past experience and some were so important that they explained the motivations meaningfully and hence informed present decisions. Again, this relates to the concept of perezhivanie (section 2.6.4), a key lived experience that has intervened in the shape of an individual's identity, values and beliefs, and motivations. These crucial lived experiences inform our behaviour in response to the situatedness (see def. personal values in Glossary of Terms).

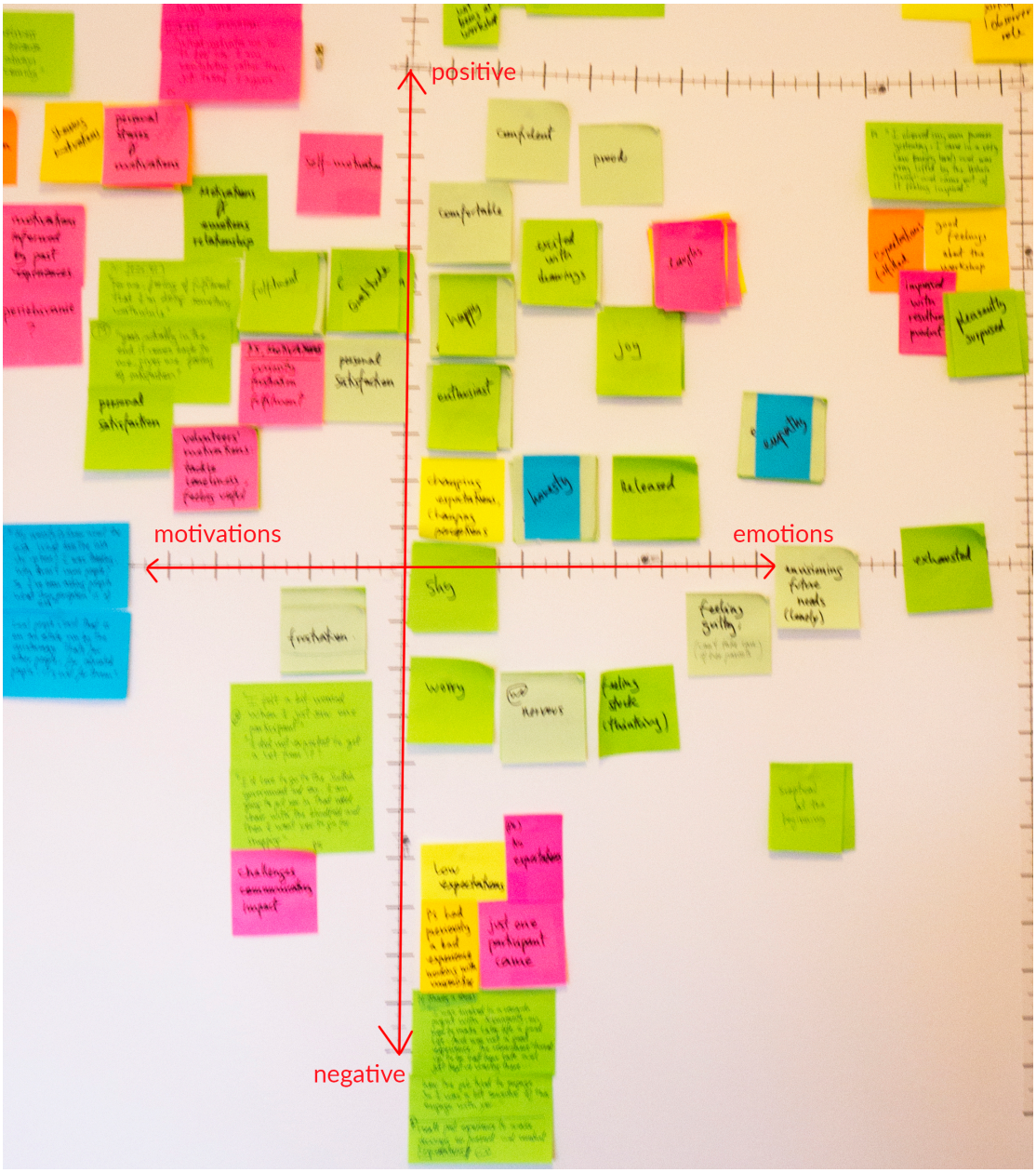


Figure 5.5. Mirian Calvo, Motivations and emotions, CS1 affinity diagramming: third phase, 2018

5.3.2 Ways of informal-mutual learning

How did the learning happen? Through participation and socialisation (see section 2.5.3); through experiencing, playing, listening and having fun, and observing how people behaved. As P1 said during the reflective interview:

By listening, by having fun, we were connecting in that moment of hearing the stories, hearing other people's opinions in a good atmosphere that it was not a debate, or people trying to get rid of others. It was comfortable, fun, sharing. It was playing. So kids learn all

the time. Having a common purpose. We were around the table and the common purpose - to try to tackle isolation and loneliness.
(Appendix 5.3.2)

This statement was shared with all the participants interviewed and it emphasises the powerful insight that personal stories enable IML.

Figure 5.6. Mirian Calvo, Ways of IML, CS1 affinity diagramming: third phase, 2018

Figure 5.6 depicts the items related to participant learning methods. A large cluster of sticky notes gather round the pattern of 'sharing personal stories enables IML'. From my observations I deduce that the participants learnt mostly through sharing their personal stories in a two-way, collective process of communication that activated different learning channels through listening, empathising (emotional connection) and hence understanding holistically people's identity, values and the motivations behind their stories. For instance, P8 said:

I feel like a really high quality interactive experience, and also the ideas, actually, the ideas were flying (snapped his fingers) like that! Sometimes it is the chemistry of people.
(Appendix 5.3.2)

This reinforced my view that the emotional state of the group and its dynamics played a key role in facilitating/enabling IML.

5.3.3 Key areas of informal-mutual learning

1. Eliciting awareness of informal-mutual learning

Figure 5.7 represents the cluster of patterns related to participant understanding of IML, gathered through the reflection activities (see section 3.3.1). P8 commented on this:

The learning involves some skill or knowledge and then being able to put in practice, trying it out. That is for me the process of knowing that I have learnt.
(Appendix 5.3.2)

The statement emphasises human agency as a means of knowing, while doing is embedded in the process of learning, something that could pass unnoticed without the reflection session. P8 added:

It certainly broadens out my understanding and feelings of how to relate to people and systems... I think the game and having fun in those activities was essential to learning... In terms of how the learning happened, well, most was interactive and fun. For me that is the peak experience of learning, you know, that is learning at its very best.
(Appendix 5.3.2)

P8 expanded his understanding of IML in co-design situations, mainly through human interaction and collective fun, key conditions for IML. He also changed or reinforced his dispositional learning towards embracing openness from the divergence of ideas brought to co-design. This insight also falls into the fourth

category, interpersonal learning, suggesting that qualitative data is difficult to disentangle into research categories, as life binds these aspects together in complex and more lofty human configurations.

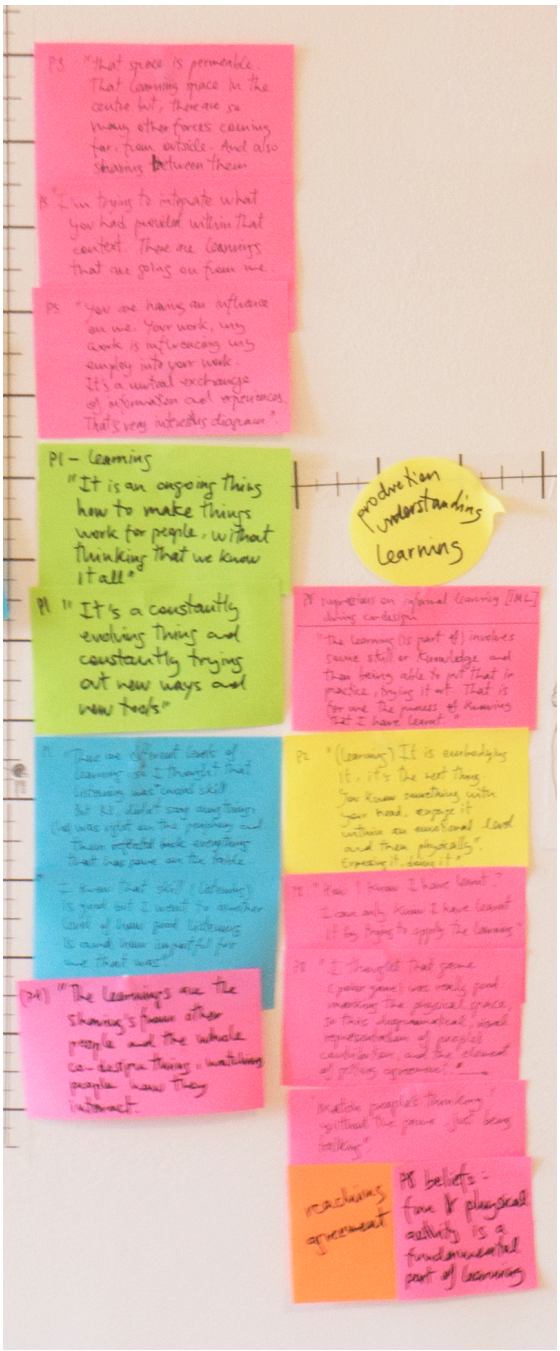


Figure 5.7. Mirian Calvo, Awareness of IML, CS1 affinity diagramming: third phase, 2018

2. Producing meanings of co-design and collaboration

The use of collective reflection shed light onto the second category, where the interviewees produced their own understanding of the co-design process and collaboration. The degree of consideration made this area of learning explicit. Participants expanded their understanding of co-design, as witnessed in the first quote in section one, from the reflective group interview, when P1 gave her own definition: "Now I can see the way that co-design happens in loads of different things that I could not until I actually taught myself and had the experience". The follow-up interviews also provided insights into this, as P8 said: "It reinforces the emphasis on people and connections and collaboration". Figure 5.8 illustrates the cluster of this area of IML, which compiles the key quotes and patterns, like P2's comment:

It is embodying it. It is the next thing. You know something with your head; engage with it on an emotional level and then physically, expressing it, doing it.
(Appendix 5.3.2)

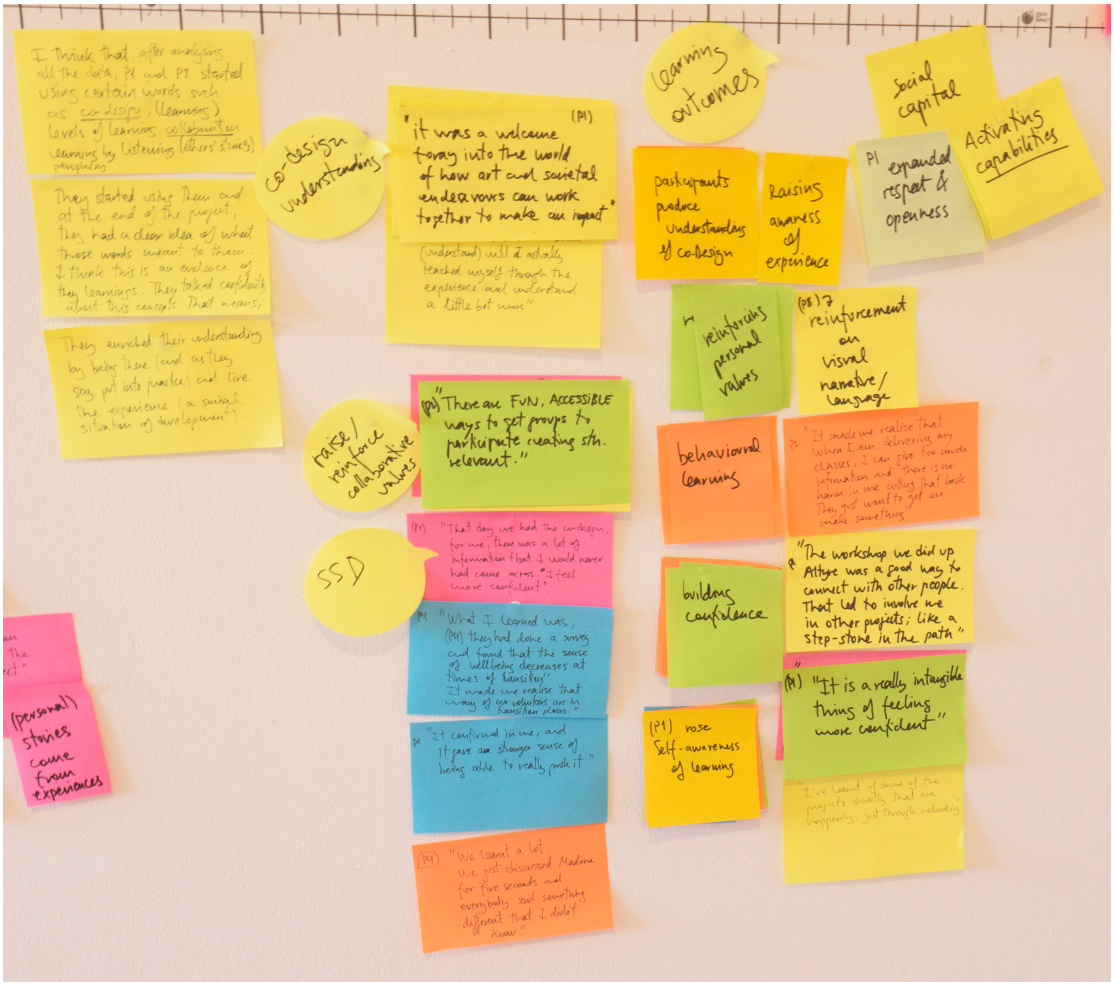


Figure 5.8. Mirian Calvo, Producing meanings, CS1 affinity diagramming: third phase, 2018

3. Sprouts of transformative agency

Figure 5.9 depicts the cluster of sprouts of transformative agency, with several quotes that capture insights around this potential dispositional learning; implicit learning, which usually transfers into tacit knowledge, was made explicit through reflection. For instance, during the reflective group interview, P2 shared her thoughts on changing the way she was performing her art-and-craft lessons therapeutically:

I'll give more thought to flow, so the people really get the best out of their experience. That made a big impact to me yesterday, and what was achieved at the end of it... I would like to try to develop ways to engage my groups, making the initial contact and introductions much more interactive.

(Appendix 5.3.2)

P1 also mentioned nascent personal transformative agency in her own practice during the tool delivery event:

Any time now that I need to do something at work, I have a voice inside me saying, come on, just do it, if people do not like it, you can change it. Just do it!
(Appendix 5.3.2)

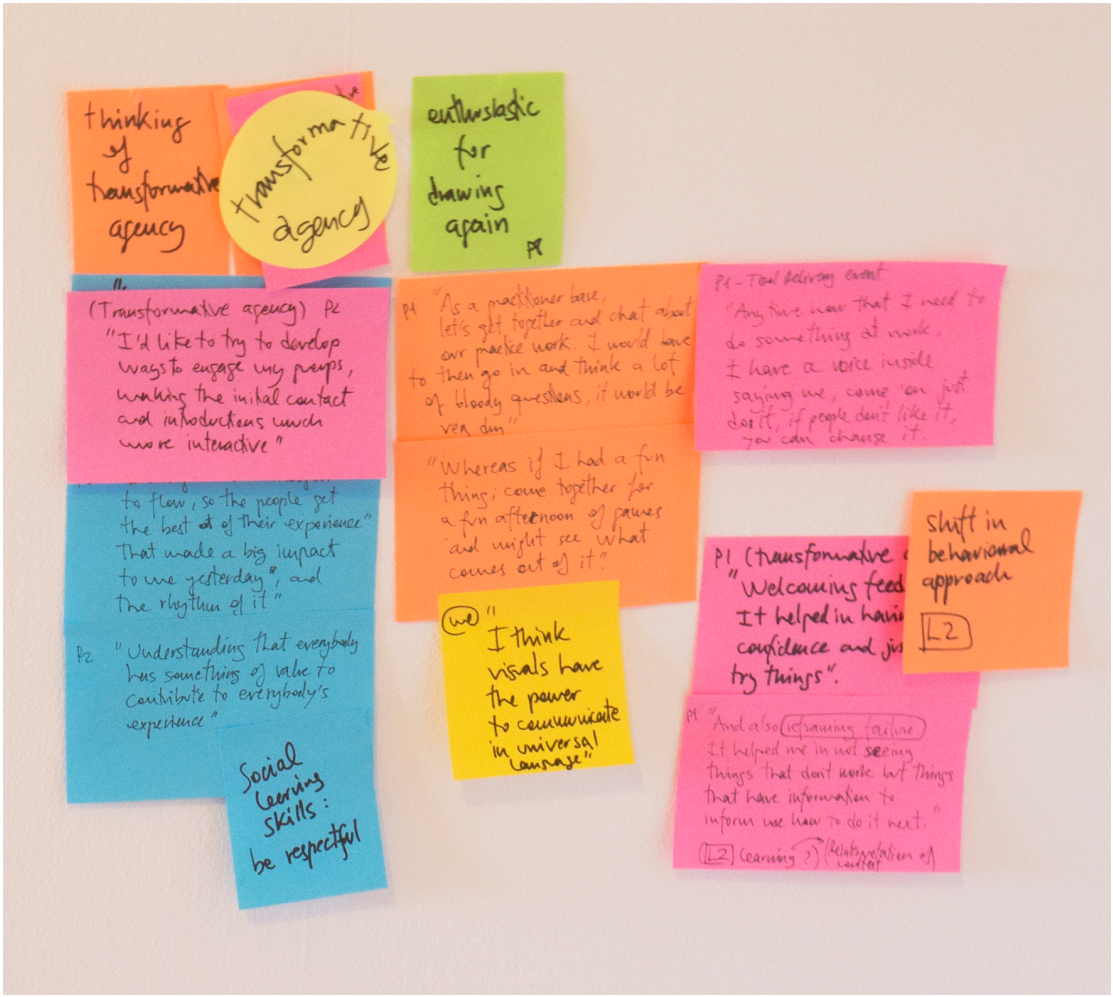


Figure 5.9. Mirian Calvo, Transformative agency, CS1 affinity diagramming: third phase, 2018

4. Interpersonal learning

Involving an important area of IML also called 'people skills' (Muündel & Schugurensky 2008), learning in this category involves the configuration of a new understanding of listening: building confidence, mutual understanding and respect towards the other participants and reinforcing personal values and attitudes towards the runaway object. This led to openness to learning from the others' perceptions and different stances in life. For example, on the skill of listening, P1 reflected:

There are different levels of learning, so I thought (before participating) that listening was a crucial skill, but R3 did not say anything, he was right on the periphery and then reflected back everything that has gone on the table. I knew that skill (listening) was good but I went to another level of how good listening is and how impactful for me that was.
(Appendix 5.3.2.2)

Regarding building confidence, P1 added:

I have confirmed my belief that part of the work is not straightforward, working with others, not thinking that one group has the answers and they can do stuff on their own. That day, there was a lot of information that I would never have come across. I feel more confident.
(Appendix 5.3.2)

Confidence is related to security in decision-making and in encouraging hope. As a result of her participation, she strengthened her networks and found out about ongoing community projects she was unaware of:

The workshop (co-design 2) was a good way to connect with other people. That led to involving me in other projects, like a stepping-stone on the path.
(Appendix 5.3.2)

5.3.4 Conditions for informal-mutual learning

From the design perspective, this is one of the most powerful insights emerging from this case study. After realising that IML was an essential synergy in co-design situations of this scale and typology, emerging unconsciously and unintentionally in the process of building mutual understanding, respect and trust, I focused on the conditions supporting collective learning. Intent on revealing the designerly dimensions and the elements where designers could intervene to improve the co-design process, I started thinking about facilitating learning instead of paying attention to the resulting design products. The analysis draws attention to four conditions:

1. Choreography and orchestration

As the analysis revealed, the sequence of activities, the support tools and their distribution and (theatrical) performance over the physical space set the conditions for IML and collective creativity to thrive (see The Space Between II). Choreography and orchestration have the means to amplify IML, as evidenced in P2's first quotation in the reflective group interview, and in P8's semi-structured interview (section 2.2.3). During the tool delivery event, the participants agreed that the venue was inspiring and helped them bring forward collective creativity, relating the choreography and orchestration with the spatial/physical qualities of the space.

2. Aesthetics

Aesthetics amplify the experience and activate sensory symbolic constructs, which enclose our interpretation of ourselves within its context. Aesthetics can communicate from, to and about emotions and relate to a wide number of material ecologies that define co-existence in time and space. This includes the physical realm, designerly activities, tools and techniques but also sounds and lighting, and inside-outside connections, woven into aesthetic language, setting up a safe and comfortable atmosphere. That is why I conceived IML as an aesthetic process. IML in co-design entailed learning through all the channels; it was amplified by exposure to all the stimuli that reach us through the senses. Learning started on

the outline of my skin and went beyond what my eyes could see or what my hearing could detect. We prepared the physical space and its use; we embellished it with casino mats and chips. Everything was decorated with touches of a casino scenario. We used the physical space to help us in facilitating the different activities in order to guide participants towards co-design.

3. Playfulness (activates participation)

The game broke the traditional conversational dynamics by bringing in the element of playfulness. Where usually the stronger voices monopolise the content of conversation and use personal stories to persuade the others to align with their thinking, playfulness re-shapes the terms of the conversation. Considered a key factor in supporting high-quality experiences of learning as well as being capable of creating inclusiveness, playfulness took away all the social aspects embedded in our identities - to some extent, we felt like children playing again, learning free from social constraint.

4. Quality and quantity of participation

Comparison of CD workshops 1 and 2 reveals the importance of the quality and the quantity of participation. Qualities of participation are directly related to the setting of the group dynamics and the quality of conversation: building common understanding alongside trust and respect; inclusiveness and power-balance relationships featuring honesty and empathic connections; comfortable, safe and friendly environments etc. Nevertheless, the number of participants also influences the co-design outcomes and the learning capabilities, the multiplicity of expertise and skills being directly linked to the quality and the quantity of participation. In CD workshop 1 we had one participant, so IML was limited, whereas in CD workshop 2 there were many enriched conversations with divergent perspectives, suggesting that a correlation exists between participation quality/quantity and project scale - the resources available (financial, human, facilities etc.).

5.3.5 Boundary-space

Co-design situations can foster boundary-spaces (section 2.6.4). IML emerged once the boundary-space was generated around activities 1 and 2 of CD workshop 2. Here the participants went through the process of boundary-crossing, once the group of people subtly and implicitly negotiated the rules of the conversation. This boundary-space accumulated the knowledge of each participant and hence amplified the potential of mutual learning. Here the IML process sprang from intermediary synergy in the process of building common understanding, trust and respect for the other participants. The activities, games and tools helped in the process of setting the terms of such a conversation, integrating the quieter voices while at the same time compressing the strong ones. This emerges from P8's quotation:

The consideration and the planning for the event, certainly the first event; It was people-based collaborating right from the start and making people feel comfortable, and offering opportunities for everybody to participate. Many interactive opportunities favoured the more theatrical performance of one person.
(Appendix 5.3.2)

5.3.6 Social situations of development

The affinity diagramming made me realise that everyone interviewed after the process referred to the same moment (activity 2, CD workshop 2) when asked about a key moment when they felt they had learned something new. P2 said: "This 'A-ha!' moment came when we were playing the card and chip game. Everyone contributed in a very equal way". She added: "there are fun, accessible ways to get groups to participate in creating something relevant". This pattern could be related to the notion of SSD, discussed in section 2.6.4, comprising the constructs produced between individuals and the sociocultural environment. SSD represents the beginning of a unique moment that impacts on the development of identities, values and motivations, yet the same social situation of development is interpreted and valued differently by each person. Our emotional-cognitive productions of the

situatedness are not directly dependent on context, but rather on the way we value and interpret our experience within that context.

5.4 Summary

Chapter 5 disclosed the enriched accounts gathered through immersion in concrete situations of co-design and ethnographic encounters, focusing on unfolding answers to my research. Section 1 and the GN-V-2, together, unfold the sequence of situations in a continuously-changing social environment. The graphic novel complements this narrative, bringing forth other aspects of CS1, such as the visual narrative created with the reflective drawings, which are also present in the audio-narrative, recommended to watch after section 2. The aim is to help the reader engage with the data through different channels, perhaps leading to in-depth understanding of the context of research. Likewise, it displayed the findings through affinity diagramming, and the incipient theorisations on the ways people learn in co-design situations (research question 1), the conditions for IML (research sub-question 1.1) and how these dimensions could be integrated into the CHAT-unit of analysis, leading to the elaboration of a theoretical-framework (see Chapter 7). The analysis suggests that co-design situations have the means to create boundary-spaces and social situations of development (SSD) (see section 2.6.4). These lead to amplifying IML among participants, who learn by active engagement in co-design activities. Thanks to IML, the participants were ready to co-design. Their engagement and contributions were especially relevant for generating social situations of development (SSDs). Another key insight is that personal stories enable IML, but especially the social contract pre-negotiated between people (mutual accommodations). In other words, it is about the story and the context in which it is shared. During the co-design workshop, the participants established a set of rules based on common values: inclusiveness, collaboration, honesty, listening, empathy, and enjoyment. Under those social rules, the stories were conveyed to expand their knowledge in mutual support.

Chapter Six: Case Study 2

6.1 Introduction

Case Study 2 (CS2) is based on a project I led called Tools for Renewal (http://leapfrog.tools/project/tools-for-renewal). This Chapter expands on the Final Report (Calvo 2017). It comprised a close-knit collaboration with the Newbold Trust, a social enterprise committed to sustainability in Forres (fig.6.2), N-E Scotland.

At the beginning of 2017, the trust initiated a transformative process, shifting away from an organic and unstructured community to a social enterprise. This internal shift involved renewal of both its physical assets and its identity as a social enterprise. The community reflected on their role within the local community and the insight was that, although they had been in Forres for the last 35 years, the community felt isolated from community life in Forres and the Moray area. They approached me to set up CS2 with the objective of initiating a long-term community engagement process with the communities living and operating in the area. They wanted to open up the doors of their property to include local communities in the physical transformation and decision-making of their future spatial uses. The participants' reasons to participate were similar to CS1: intrinsic motivations (e.g. committing to sustainable causes, seeking to nurture their personal inner life, curiosity about the GSA and the Newbold community), obligation motivations (e.g. contributing to the local region, etc.), and few extrinsic motivations (e.g. call of duty).

This chapter is divided into two sections. Section one unfolds the sequence of methods carried out after reframing the research-design (see section 3.3.1), based on the observations made in CS1. Focusing on the ways the participants learnt throughout their participation, we explored methods that could facilitate community engagement with renewal projects. The GN-V-3 complements this section. Section two discusses the theorisations and patterns that emerged from

the affinity diagramming process, which is completed with the AVN-2. Interestingly, the breadth and depth of results are quite similar to CS1. In fact, the emergence of repetitive patterns of informal-mutual learning (IML) in both case studies has led to a theoretical interpretation, through the lens of CHAT, of its unit of analysis (fig.2.6), and to the formulation of a theoretical-framework (further discussed in Chapter 7). The findings also shed light into the ways (research question 1) and the conditions in which the participants learnt through participation in collaborative social design endeavours (research sub-question 1.1).

6.2 Section one

CS2 launched in August 2017 with seven planned visits (fig.6.1 chronologically illustrates the dates and methods described in this section: 29-30 August, 4-6 September, 10-14 September, 18-19 September, 29 September -1 October, 5-6 October 2017 and a follow-up 22-25 January 2018). My collaboration with the Newbold Trust established favourable conditions for attempting an immersive approach, and my stay accelerated my immersion as I navigated their social life and accessed otherwise private areas. The flourishing of social connections was the ultimate motive of Newbold community's decision to embrace the project. They wanted to explore ways in which the renewal of their physical assets could become an activator of positive change within the wider community. Hence we invited local communities to participate in the renewal of their facilities, as well as in the re-shaping of their identity. After a series of co-design situations, walking (Careri 2002; Ehrström 2016) emerged as the method to engage such communities.

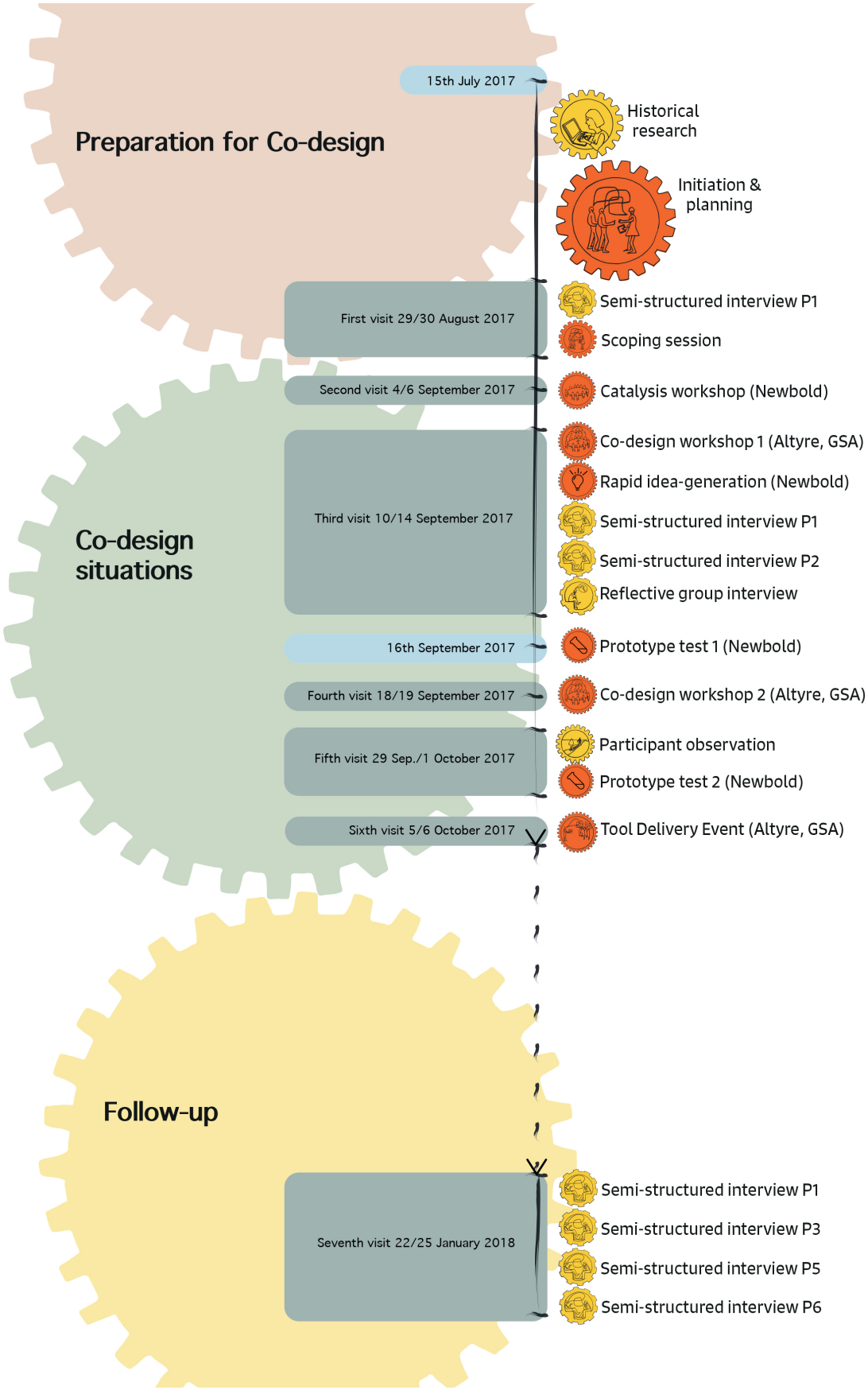


Figure 6.1. Mirian Calvo, CS2 time plan, 2018

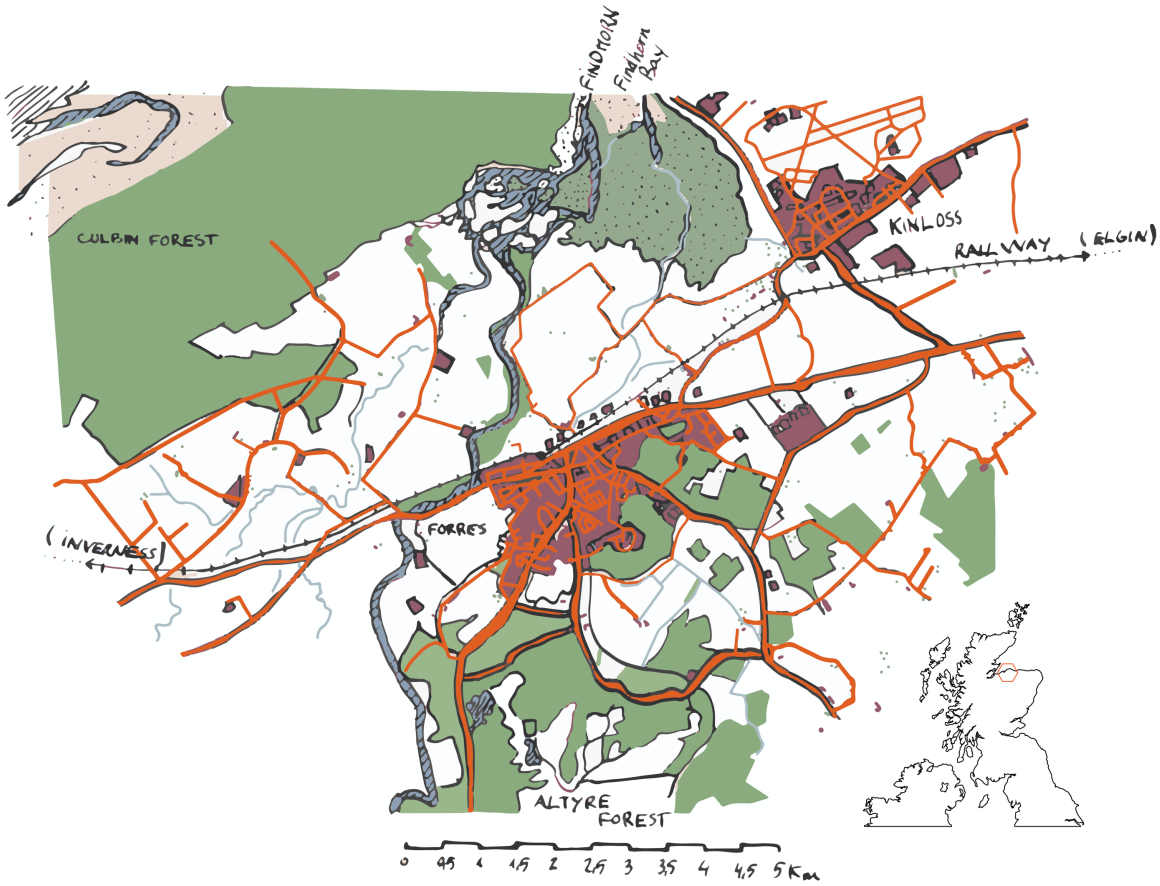


Figure 6.2. Mirian Calvo, Forres map, 2017

6.2.1 Preparation for Co-design

Initiation and Planning

Following scoping conversations since July 2017 with P1, we co-developed the proposal (appendix 2.3.2, 38) and devised a time plan. Based on my observations on CS1, I introduced a new co-design situation: the catalysis workshop (see section 3.3), an event halfway between a multi-stakeholder initial meeting and a co-design workshop, focused on collectively systematising perspectives and reaching agreement. Designed to enhance the construction of group dynamics, it brought participants together to share their spatial and personal stories about engaging

communities and building social connections. This helped me to complete, I argue, a flexible research-design in continuous dialogue with the contingencies of the research context. I also conducted historical research about the social enterprise. We scheduled my first visit to grasp a greater understanding about community needs and desires.

First visit: Planning a deliberative walk

29th – 30th August 2017

Semi-structured interview with P1 & scoping session

The interview was short, about fifteen minutes, followed by a two-hour walk around the inside of the house and the grounds, with the focus on seeing at first hand the spatial assets for renewal. I gained enriched, incipient accounts of the context of research while adopting a participant-observer role.

Touring around the Newbold grounds (approx. seven acres), we shared our understanding about the notion of community, approaching perspectives. Through this conversation, we began building mutual understanding. He explained to me that the community was ruled by a system called sociocracy, which entailed regular meetings mingling the three types of membership within the community: volunteers, staff members and trustees. In the meetings they created an inclusive space for everyone to propose services or projects like ours, debate them and collectively decide. We reached a greater understanding, bridging the space between us. He expressed his enthusiasm at being involved in the project - his main motivation to participate was the desire of opening Newbold to local communities.

6.2.2 Co-design situations

Second visit: *4th – 6th September 2017*

Catalysis workshop

This workshop drew twelve participants from the Newbold Trust, the Findhorn Foundation and the Forres local community. I welcomed them and invited them to read the ICFs, offering my help with any questions that might arise. I introduced the project, my research, and then Activity 1 (Appendix 3.3, 51). People seemed excited and intrigued about the whole process. Then we followed P1 who was about to facilitate Activity 1: the deliberative walk (Appendix 3.3, 57-62).

Figure 6.3. Mirian Calvo, Tool-map for a deliberative walk, 2017

Activity 1

Figure 6.4. Mirian Calvo, Deliberative Walk at Newbold House, 2017

I adopted a participant-observer role, so I could mingle with the small group of people that naturally moved from one spot to another. We moved, walking in small groups, comfortable, observing our surroundings and letting ourselves be embraced by the environment (fig.6.4). Following the thread, at nine planned spots (fig.6.3) two members of Newbold provided an improvised narrative entangling those physical spaces with the past, present and future desires of Newbold (GN-V-3, 19-23). Participants seemed enthusiastic, enjoying the activity. P11 said:

Oh it is so beautiful. You know what? Walking slowly is fantastic. Also it is creating awareness of this place, raising my consciousness, I can feel it. We usually just drive very quickly; we do not really walk through.
(Appendix 5.4.1)

At some point, the participants started imagining possible changes and alterations walking through those spaces, writing or drawing on their cards (Appendix 3.3, 55). People kept organically forming small groups. Walking closer together functioned as a lure to initiate a conversation and the thread of the conversation became the

way to tie up the group until we reached the next spot. As a result of this spontaneous group dynamic, I had the chance to mingle with different people who viewed me as an equal individual. Walking was breaking down the hierarchies of power between the members of the community. For instance, at the beginning P1 and P11 seemed to have a formal conversation, framed under the internal conventions and social terms established within this concrete community. They stayed together and the rest of the staff members kept some distance from them, even leaving an empty chair between them and the rest (see graphic novel) during activity 2.

Activity 2

We gathered around an A1 blank canvas, where we mapped out our impressions and thoughts. This created a boundary-space for sharing multiple perspectives about the walk. P1 said:

I felt freedom when people were walking; we were not in this situation, staring at each other. Here it is more difficult to express myself. When we were walking, we were talking at the same time freely.

(Appendix 5.4.1)

P14: "I think this is the first time that I had quality time with the staff members. I cannot experience that without being there". P10 said that the walk helped him to structure his thinking and put the ideas and projects in connection to each other. It helped people prioritise the projects. See the description of the space where the activity took place in the GN-V-3 (19-23).

Reflective session

I concluded that the catalysis workshop began to create horizontal group dynamics. We reached the point where participants started building other types of relationships. Working together, in this case, did not mean collaborating. Each staff member in charge of each department tended to work independently and autonomously. I could also sense a degree of intrapersonal friction. Within the community, there was an ideological split between two groups: those who pushed to turn Newbold into a sustainable and self-sufficient business and others who resisted the change and longed for the return of a bohemian lifestyle.

Third visit: *10th – 14th September 2017*

Co-design workshop 1

The aim was to reflect collectively upon the previous walking experience, and, as a collective, to co-design ideas where walking could be adapted for community engagement. The workshop was held at the Creative Campus (GSA) (See flow-table in Appendix 3.3, 52-53).

Activity 1

Ten participants turned up for a fully creative day. We began with lunch and an opportunity to analyse the data collected during the first deliberative walk (Appendix 3.3, 68-90). Using string hanging from side to side across the room, they began organising the insights according to their collective criteria, shaping a timeline of interventions based on the values of the group (fig.6.5). This helped

them to consider what 'type' of exchange they were looking for in engagement and the methods they might need to use to gather, interpret and act on information gathered during the exchange.

Figure 6.5. Mirian Calvo, Hang-it-up, 2017

This activity sought to break with the hierarchical dynamics that the participants unconsciously brought to the workshop, an influence that, in my view, would deny members the freedom to behave without wondering if they should agree with the ideas of a superior. Once finished, we reflected on the activity and on the resulting timeline during Activity 2: priority building (Appendix 3.3, 91-92).

Activity 2

This enabled participants to collectively identify different approaches to their strategic plan. The participants had an in-depth dialogue. Their facial expressions tensed, trying to capture and elaborate ideas while listening carefully and making thought connections. This activity was about building mutual understanding, yet it was difficult to break the hierarchical stances of the trustees.

Activity 3

With this activity, I aimed to create the conditions to put participants into the shoes of the people that they would ultimately involve in their deliberative walks, once this project had finished. In groups of three people, I sent them off on a walk of discovery around the campus grounds and buildings (Appendix 3.3, 93-95).

Figure 6.6. Mirian Calvo, Discovering Altyre, 2017

I followed them, observing from a safe distance. I saw them having fun, smiling and laughing. Unconsciously, P3, P4 and P12 realised that they were not able to write on the sheets, so they used each other's backs as an improvised support to write their thoughts, showing a collaborative attitude (fig.6.6). The participants approached the activities with joy, going with the flow, comfortable. In turn, they gained the ability to put themselves in the place of their future walkers and thus grasp the two perspectives of the walk.

Activity 4

An interesting insight was the importance of somehow tailoring and planning the route of the walk into the purpose of the engagement. P3 commented on this:

The flow of the walk needs to be tied into how someone who does not know about this place may interact with it and how one feels. The reason why we are doing this is how to interact with the space. That would be also related within the experiences.
(Appendix 5.4.1)

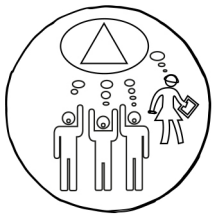
This session allowed them to gain a better understanding of their participation in the project. P6 said: "Walking around the fields stimulated emotional responses. It is more about qualities. Looking at that as a way to imaging the development of Newbold". P10 mentioned:

Similar to when we were using the tool in Newbold, we were imaging how the space could be transformed within the narrative. How do we develop that thing and how do we tell the story right from the entry gate? It is really the narrative, the story that we want to tell to people.
(Appendix 5.4.1)

The narrative was a crucial component that needed to be addressed. The participants naturally began to imagine possibilities. The sharing of spatial and personal experiences facilitated the co-articulation of the runaway object; thereafter, it shifted away towards co-producing ideas (boundary-space towards actual collaboration, see Chapter 7).

Activity 5

The participants went through a process of idea-generation and building prototypes (execution). At the end, the workshop produced three idea-prototypes and we decided to focus on one, which we explored at Newbold the following day (GN-V-3, 32).



Rapid Idea-generation session

This improvised session was held in Newbold with four members, a community-driven initiative to crystallise the idea of the walk and to test with the upcoming Erasmus student group. The fact that the participants identified situations in which to test the prototypes within their everyday life activities helped them in the idea-generation process, sparking the use of their imagination in co-designing the deliberative walk as the engagement method. After drawing and conversing on some ideas on blank sheets, we came up with a tool for capturing the walkers' observations (Appendix 3.3, 96). We worked hard to collectively design the first prototype during the week, in order to test it with the incoming students (GN-V-3, 33).

Semi-structured interview: P1

About learning he said: “because we are in a different environment, I am learning how they (staff) approach a problem, how they react when they have something new to build”. Co-design situations provided new conditions for them to learn more about their team, a behavioural learning.

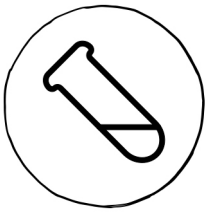
Semi-structured interview: P2

On learning she said: “I think the different tools and the way it has been brought to me, it feels very creative”. The choreography and orchestration of the designerly activities facilitated setting the conditions for IML. She also said: “In these two workshops I think I found the learning at watching us as a group, how the interactions happened, what formed the group dynamic and perspective”. The process was helping them to redefine their interpersonal relationships, an adjustment of behaviour.

Reflective Group interview

In terms of learning, P3 reflected on his understanding of the co-design process: "I think it is trying to give space to not present an answer but to give them the information they are looking for and to leave space for questions"; awareness of inclusivity. P4 shared her frustrations: "I wanted to do something more, but I am

not in a position to do it". She was in charge of the bookings and she could not be as involved in our project as she would have liked. Conversely, P3 was the communications manager, more engaged and with more capabilities to contribute. At the beginning, P4 seemed more confident and took the initiative. Yet, faced with P3 and an argumentative attitude, she gave way and P3 took over the conversation, diminishing P4's confidence. This illustrates the barrier of hierarchical relationships within the organisation, as well as the need to break them if collaborative attitudes are to be attained.



Prototype test 1: Doing and Learning

Between the rapid idea-generation session and the second co-design workshop, P5 had facilitated the walk with a group of Erasmus students and collected the observations written on the postcards. He brought them to our next co-design workshop and we used them to start a reflective conversation about how to enhance the tool.

Fourth visit: *18th – 19th September 2017*

Co-design workshop 2

(See flow-table in Appendix 3.3, 54)

Activity 1

Nine participants attended the workshop. We started by reflecting on the test. P5 shared his experience: "I participated with them and said a bit on these places. The dialogue was great about how we operate". He added:

For me it was a strong sense of engagement with the people. This was a tool that actually helped me engage in more dialogue as we moved around with the people.
(Appendix 5.4.1)

The walk was the method to offer the students an inclusive and comfortable atmosphere to spark informal conversations and so imagine through stimulating all the channels of learning. I noticed no hierarchical relationships between the participants.

Activity 2
We next split into small groups of two or three people and spent the rest of the workshop co-designing new iterations of the tool with a view to enhancing it. We were involved in a conversation around how to draw in people and invite them to participate. We agreed to schedule a deliberative walk during the Harvest Festival, an important engagement event organised by Newbold, and test the new iteration. So during the week I further developed the prototype (GN-V-3, 38-39).

Fifth visit: *29th September – 1st October 2017*

Participant-Observation and prototype-test 2

The Harvest Festival gave us an opportunity to conduct a second prototype-test (fig.6.7). It was also the biggest community event Newbold had organised and included sharing activities with other local communities (see graphic novel for detail). During the morning, I adopted a volunteer role, helping set up the outdoors exhibition, and over lunch I adopted a participant-observer role, mingling with the visitors and members from other local communities. We had a short meeting to plan the garden tour, facilitated by P5, and then we gathered to participate in the

deliberative walk. In total there were twelve of us. P5 guided us through the walk with two stops in the garden.

Figure 6.7. Mirian Calvo, Prototype-test 2 at the Harvest Festival, 2017

I kept making sketches and taking notes to document the test. People were smiling, with comfortable expressions of admiration. We walked through the gardens and orchards for about an hour. Similar to the catalysis workshop, the walk sparked small groups who walked together, having conversations between themselves, asking questions to P5 and sharing their ideas about the spatial assets. People were surprised about all the natural resources the community had and how they managed to make the most of them. The walkers engaged with the narratives of the walk in an informal atmosphere. At the end, the participants spent some time writing their reflections about their experience and gave the prototypes back (GN-V-3, 40-45).

Reflective session

After the event, we reflected on the experience and we concluded that the prototype worked well, although some adjustments needed to be addressed. So we agreed on designing a third version, more flexible and adaptable, according to the needs and purposes of the walk.

Sixth visit: *5th – 6th October 2017*

Tool Delivery Event

The workshop, held at the Creative Campus, began with a collective and reflective session. To guide the reflections, I had prepared a presentation with pictures depicting all the activities and workshops conducted up to that point. The pictures aimed to recap the participants' experiences and trigger them to share their impressions around each activity, using the technique of critical event recall. An insight emerged: the qualities of physical space and their rotation contributed to the emanation of interpersonal learning. As P7 said:

When you go out from the house (Newbold House) and you have conversations like these with the same people but out of your usual environment, you understand maybe better or from a different way. This becomes a tool to know each other better, in a different way.
(Appendix 5.4.2)

This project helped them to know each other better and hence start working as a team. The next activity consisted of interacting with the tool (Appendix 3.3, 97-

111). This hands-on activity led to some very interesting conversations around what information should be included in the tool. At this point, we started to underpin ways in which the tool could be used to invite people to the walk. By the end, all the participants had built their own tools for renewal, which they took away with them. Finally, I thanked them for all their hard work and for their strong commitment to co-developing this project. This would not be possible without all of their hospitality, kindness and open-minded approach, and the project drew to an end.

6.2.3 Follow-up

Seventh visit: *22nd – 25th January 2018*

Reflective interviews

I conducted four semi-structured interviews (section 3.4; appendix 5.4.2), adapting CER (Lally 2002), encouraging reflection, and revisiting the participants' experiences, with focus on IML.

Interview: P1

His personal motivations were related to his curiosity to see what design could bring forth to their context. A new relational pattern transpired from his participation:

You have to solve problems everyday and sometimes you do not have time to stop and think how to do things. On this we learnt that we needed to stop and think and talk and create these conversations.
(Appendix 5.4.2)

He disclosed himself in his director role, answering for the community. He kept thinking and then added: “We need a more in-depth conversation. But it is up to us what we want to get from this walk, from this tool”. He also recalled his experience on the first co-design workshop, which, according to him, foregrounded an SSD, the beginning of a unique moment that impacted on the way he perceived the other participants, unfolding hidden personal competences and skills. It activated his learning and this led to reshaping the group dynamic.

Interview: P3

He analysed his experience and identified that the co-design project provided a learning outcome: the need to collaborate towards a common goal. He stated: "Going through that process and learning how it is not about roles, it is about the different perspectives, that helped us solve problems, create new tools". He understood the relevance of merging different perspectives as a synergy that renegotiated the relational patterns of working together and their feelings about this way of working. When asked about a key moment of IML during the project, he referred to co-design workshop 1 as a whole experience and to the way that was framed, which allowed them to co-design tools. He said: "what we have actually got out of it was people having a discussion about how we interact with customers". It suggests that the project set the conditions for the creation of boundary-spaces, to reflect collectively about inside community concerns.

Interview: P5

P5 began by outlining his motivation to participate, which concentrated on bridging the gap between Newbold and the local communities. He felt that the final product was unfinished. I knew from the other interviews that the walk and the hang-it-up activity (appendix 3.3, 90) were embedded in their organisation. The walks were held regularly with an improvised narrative each time. Yet the tool needed more preparation and planning. They were in an evolving and transformative process.

Interview: P6

Regarding his expectations, he expressed surprise about the process, however, he said: "my only reservation is that it was too quick and I think we needed more time to really expand on what we were doing". He commented that they had embedded Activity 1 of CD workshop 1 in their meetings: "I remember the planning day, we used the time line (hang-it-up)". He reflected back, comparing both experiences and concluded: "I might consider moving more, getting up and moving as a really important part of decision-making. That has to be named because people do not get it in this culture". CD workshop 1, in particular Activity 1 (hang-it-up), was for him a key lived experience (perezhivanie) associated with an SSD, shaped and amplified by the designerly conditions for IML (choreography and orchestration of activities, and relational aesthetics).

6.3 Section two: Systematising Learning

Section one unfolded the sequence of co-design situations and ethnographic encounters in the early stages of research-design (section 3.3), emphasising the spatial conditions entangled with the emergence of IML, for instance, P7's quote in 'Tool Delivery Event' explaining how the qualities of physical space and their rotation facilitated interpersonal learning and mutual understanding. Figure 6.8 reveals the relationship between the methods used and the gathering of data they contributed. In this regard, it seems that the greatest volume of insights was revealed during the second phase (co-design situations) due to the intensity of activities, both designerly and observations. Yet the reflective interviews of the third phase (follow-up) proved crucial in identifying specific learning situations during the project, theories on how participants learned, and a growing appreciation of outbreaks of transformative agency. The sense of ownership was embedded in the group dynamic right from the start.

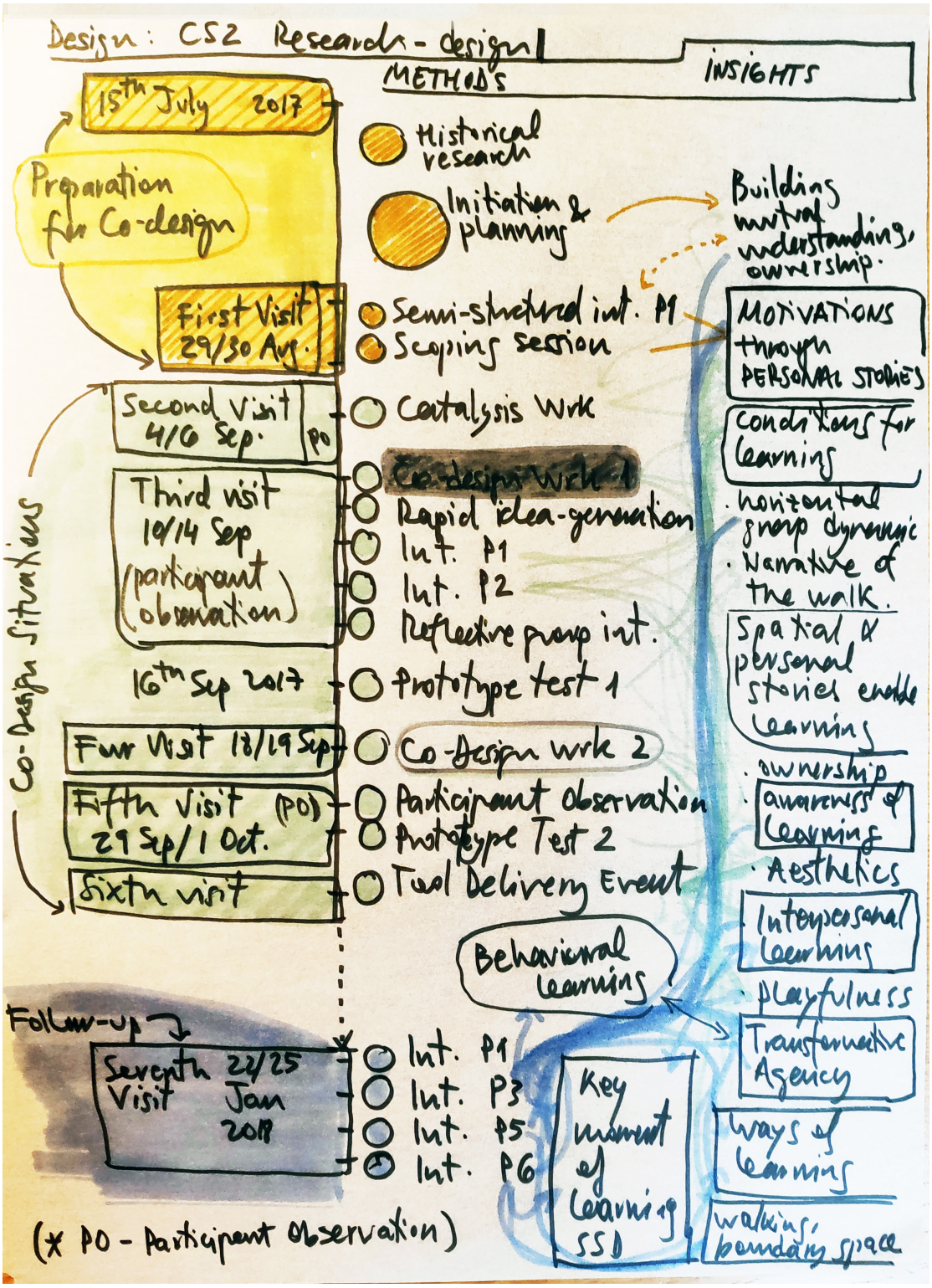


Figure 6.8. Mirian Calvo, CS2 map of methods and insights, 2019

Section two presents the patterns discovered during this case study by adopting the analytical process of affinity diagramming (described in section 3.4.4). Figure 6.9 illustrates the first phase of abstraction; the evidence wall divided into sectors, each one condensing the items that emerged from each method, all chronologically

arranged. Square post-it-notes represent the items extracted from the systematic engagement with the data, whilst the rectangular ones inscribe the quotes from the readings of the field notes, reports and transcripts. The data was colour-coded, based on the structures found in CS1, – following the PAR principle: (i) motivations (blue colour); (ii) emotions (green colour); (iii) informal-mutual learning (orange colour); (iv) conditions for IML (pink colour); and (v) boundary-spaces, perezhivania, and social situations of development (yellow colour). The reading of this section is accompanied by visualising of the AVN-2.

The process went through two more phases, re-arranging the items by affinity, bottom-up, and consolidating theoretical structures, which began configuring during the analysis of CS1. The patterns that unfolded reinforce the insight that informal-mutual learning ensues in co-design situations. Through participating in public designerly engagements, the participants elicited awareness of their own learning processes by intercalating reflective activities; they expanded their horizons and produced a series of competences, skills, knowledge, attitudes and values. This type of learning, I argue, could be understood as particularly relevant for achieving or enabling actual collaboration.

Figure 6.9. Mirian Calvo, CS2 affinity diagramming: first phase, 2018

6.3.1 Motivations, emotions & personal stories.

Like CS1, the affinity diagramming discloses the pattern of participants tracing back to personal stories to unfold their motivations. For instance, P1 said about his motivation to work in the third sector:

Six years ago I had an awakening. I was always working for these big brands. They have the power in the world. I realised it was not the right way to help. So I started studying again. When I finished, I came here as a volunteer. They offered me a position. I did not go back to Spain.
(Appendix 5.4.2)

A series of key lived experiences (perezhivania) made him reshape an important set of values. This transformation of his behavioural approach entailed a self-validation process, an assessment of his personal values. On this, during my third visit, P3 commented: "I wanted to come back to the community I grew up in. So, to come back as an adult that is able to give something back". This unfolds an obligation motivation, feeling of reciprocation with his home-community. P2 said:

I was in a community before I came here. Then the community dissolved. Then I spent a lot of time without having an immediate community and I missed it. I just needed more stimulation, connection with people.
(Appendix 5.4.2)

She traced her past to explain her intrinsic motivations, the need of being surrounded by people, and unravelled the relationship between emotions and motivation (see def. emotion, motivation and personal values in Glossary of Terms). The assessment of stimuli relies on each set of personal values, as the same stimulus may produce different emotions in different people. This would explain why the participants revert to their personal stories to disclose their motivations. As Bateson (1972) states, we learn to adjust our behaviour to stimuli

or even to shift our behavioural approaches in a social, relational and constructed learning process.

Figure 6.10 shows that the emotions most repeated during the entire process were enthusiasm and enjoyment alongside the adoption of a comfortable attitude, and laughter the action most repeated. Curiosity (fig.6.11) was also revealed as a key factor in explaining motivation. P6 explained: "at the beginning it was curiosity and also responsibility, being a trustee. After, I just wanted to do it because it became really interesting". He experienced a shift in motivation. At the community level, the motivation to participate and commit to the project seems to be related to the desire, or rather the need, to connect with local communities and hence overcome the community feeling of isolation. P2 mentioned: “through these tools we can find the way to change perspectives, to enable this place to be utilised”.

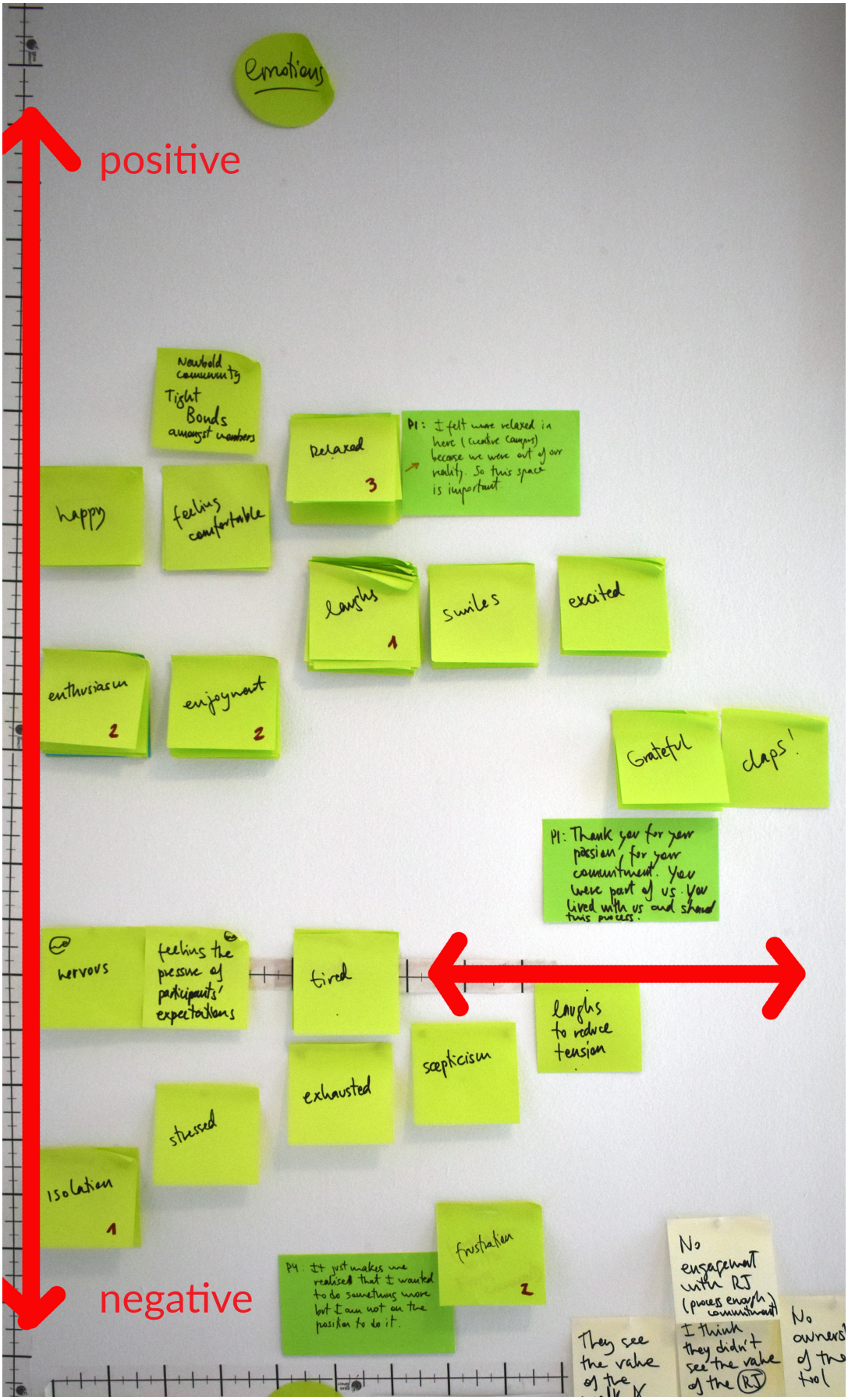


Figure 6.10. Mirian Calvo, Emotions, CS2 affinity diagramming: third phase, 2018

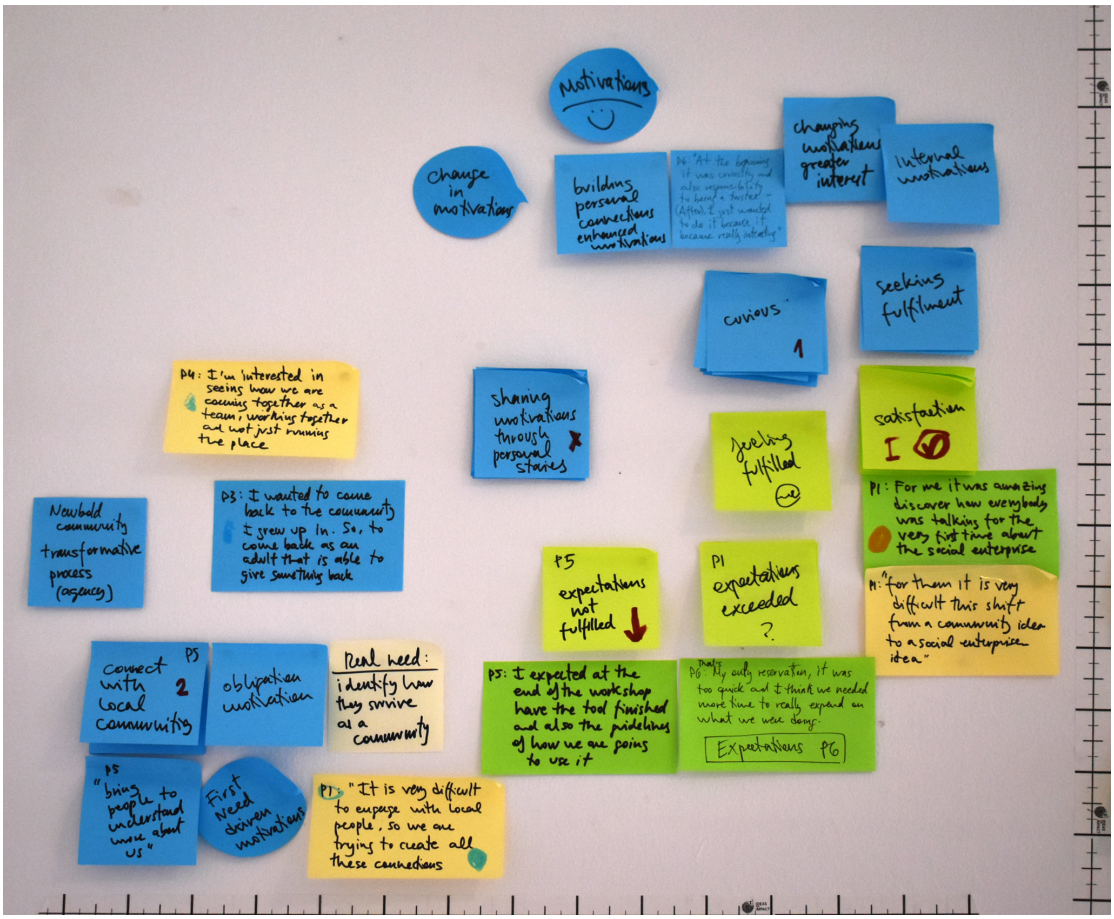


Figure 6.11. Mirian Calvo, Motivations, CS2 affinity diagramming: third phase, 2018

6.3.2 Ways of informal-mutual learning

As in CS1, IML happened through participation and socialisation: learning through experiencing, through playing, listening and having fun, and observing how people behaved. There is evidence suggesting that we learn through all the senses. About this, P6 stated:

We learnt in different channels, visual, auditory, kinaesthetic etc. our feeling channel, then our dreaming, our relationships channel and our cultural channel. My impression of what you did reinforced that notion of learning as you have to approach it from different channels, and not just sitting and trying to figure it out with your brain.
(Appendix 5.4.2)

The participants acknowledged having learned through their experience; listening and sharing different perspectives on the different spaces explored through the

facilitated walks. This reinforces the idea that stories enable IML. In CS1, the stories were personal, as the participants barely knew each other. Here they took the shape of spatial stories. The analysis unveiled a pattern of behaviour (in informal environments) in which the participants learnt mostly through sharing their perspectives, many times shaped as spatial stories, and by observing different behaviours. According to De Certeau (1988), "stories carry out a labor that constantly transforms places into spaces or spaces into places" (118); places are immediate 'infrastructuring', which determines the relational shape of positions, and spaces a composition of intersections of actors and objects in continuous movement. Spatial stories disclose the organisation in play and chronicle the relationships between the space and the place, human interactions and boundaries.

6.3.3 Key areas of informal-mutual learning

As with CS1, I organised the items and patterns into four key areas of IML: (i) eliciting awareness of IML; (ii) producing understanding of collaboration and boundary-spaces; (iii) transformative agency; (iv) interpersonal learning (attitudes towards getting together and collaborating). Figure 6.12 shows the patterns consolidated after the third phase of abstraction.

1. Eliciting awareness of IML

As described in section one, through embedding reflective sessions, the participants raised certain levels of consciousness about their learning: witness the previous quote from P6, during the follow-up.

2. Producing meanings of collaboration & boundary-spaces

I also found evidence of participants producing their own understanding on collaboration, as when P5 said during the follow-up: "it is about deepening a connection, so we found out more about the other people, just inhabiting this world. That was quite powerful for me". Also, they developed notions of boundary-spaces. P1 said: "it is necessary to create spaces to discuss how to be more focused

on a specific subject, the importance of putting people in a different environment". This learning was explicit, through the use of Critical Event Recall.

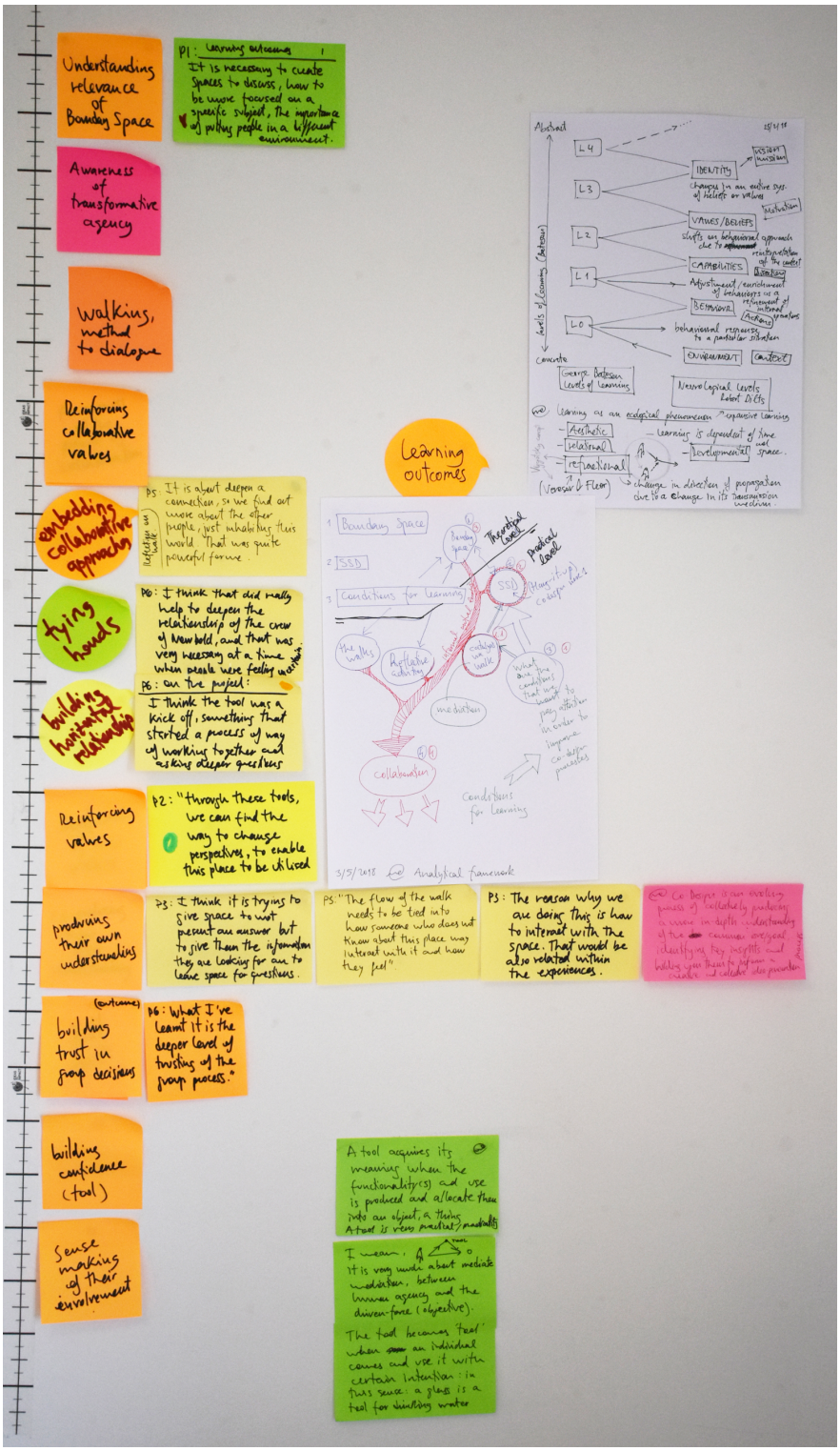


Figure 6.12. Mirian Calvo, Areas of IML, CS2 affinity diagramming: third phase, 2018

3. Sprouts of transformative agency

During the follow-up, P6 reflected on adopting “moving as an important part of decision-making”, denoting potential transformative agency. About this, P2 said: “I realised it is so important to have all that design planning before doing. I have just finished a permaculture design certificate. I think this project will help to inform that as well”. She expressed a phenomenon of transference, from one context into another (Learning II, Bateson 1972), bridging spaces across two communities of her practice. Another sprout of transformative agency was to realise that participants adopted the walk and the hang-it-up activity in their community meetings. P1 shared:

The process helped to open ourselves up and our relationship is a little different now. We are more comfortable. For instance, we used to have a non-flexible system. Every week we had like a business meeting, and we decided, during the process, we would have meetings when we really needed them.
(Appendix 5.4.2)

4. Interpersonal learning

This category draws on 'people skills', comprising skills and competences such as learning to listen to people, building trust and respect for different perspectives, changing perceptions and expanding mutual understanding towards working together. For example, P5 said: "it taught me a little bit to just be open to other ideas, be able to contribute but be open to other ideas because it is a group". He learnt how to collaborate better by making his attitude more open to listening to others. He added: "Having the input of many people I realised is much more powerful, because everybody is involved, we can develop something which everybody is comfortable with", raising awareness of collective ownership. P4 shared: "I am interested in seeing how we are coming together as a team, working together and not just running the place". P2: “It helped me see that what I think is not always the most appropriate design, whereas with co-design most things are thought of and everyone feels ownership”. P6: “what I have learnt is the deeper

level of trusting of the group process". On changing perceptions, he added: "I have learnt about other people, a couple of people who were able to really see clearly and that helped me to have a different view of them".

6.3.4 Conditions for informal-mutual learning

1. Choreography and orchestration of activities

The choreography and orchestration of designerly activities was intended to amplify the participants' experience, thereby encouraging a playful and theatrical performance. This also assisted in co-creating boundary-spaces. P6 evidences this insight:

It was very good for learning, being physical, then being quiet, reflective and listening to each other, and then getting up and doing something else. I think that back and forward, and movement and reflection, for me, it was different from any group I have been in before. I thought it was very useful.
(Appendix 5.4.2)

2. Aesthetics: a deliberative walk

The use of deliberative walks (Ehrström 2016) animated an engagement process amongst participants. Walking proved to be a useful method to read and imagine those physical spaces, revealing opportunities and dilemmas, through a process that had the means of reducing interpersonal conflict and foregrounding boundary-spaces. The walk aimed to create the space for collective reflection about issues where social and physical dimensions converged. By discussing in small groups, walking helped us to see things differently. P11 shared:

The walk was a really good idea and the reasons I am giving are because we saw and spoke to each other about different perspectives. It also was fun to be with you and to understand your ideas both verbally and visually, and critically navigate throughout the space. It sparked loads of ideas. I really liked it because it made me slow down, observe, and feel the spaces.
(Appendix 5.4.1)

The activity generated an embracing atmosphere for the participants to reflect in situ and contribute to the focus of the project. The walk amplified IML, activating visual and kinaesthetic learning processes. It also broke down the hierarchies that sometimes can be found in traditional environmental conditions, such as round tables indoors. Careri (2002) states that walking is an art form which discloses an interpretation of ourselves within the environment, an aesthetic recognition through the experience of understanding (Rasmussen & Wright 2001), a production of meaning through perezhivanie.

3. Playfulness activates participation

Aligned with the insight that the most repeated emotion was enjoyment (in motivations), the affinity diagramming suggests that playfulness was embedded in the designerly activities planned. For instance, many interviewees traced back to the 'hang-it-up' activity (act.1, CD workshop 1) when I asked them to identify a key moment of IML. Almost like in a game, people stood up and formed circles where they held conversations. In this activity there was a strong element of playfulness, which transformed the nature of the conversation by setting a new body of social and relational rules. This was also found in the deliberative walks, for example, P2 said: “I was excited about discovering the buildings, feeling like a child” (CD workshop 1, discovering Altyre). P15 said: "for me was feeling quite excited with everything I saw. I was imagining what it could be. There is space for creativity everywhere” (catalysis workshop).

4. Quality of participation

In terms of the quantity of participation, there are no insights, as all the co-design situations ranged between 10 and 13 participants, an optimal size, I would argue, for the resources in place. Yet the affinity diagramming suggests that the creation of boundary-spaces amplified the quality of conversations, a projection of the quality of participation. Likewise, boundary-crossing (Engeström et al. 1995) introduced a dimension of constructive confrontation, approaching from different angles and enacting dialogical phenomena. The IML from such conversations drove

the participants to establish different interpersonal interactions, unfolding dispositional learning. On reflection, for the next project I would create more divergence to ensue multi-perspective conversations, with the intention of enhancing the quality of participation.

5. Qualities of physical space and their rotation

The analysis illustrates the relevance of the physical space supporting co-design situations. Design strategies oriented to embed these material ecologies look for spatial qualities such as comfortable and inclusive environments (Calvo & De Rosa 2017). About this, P6 reflected:

It was a great physical space (Creative Campus, GSA). Nobody felt confined. We were able to get up and move around, even when we went outside to look at things. That environment really encouraged people open up and to be creative. So the environment of the buildings and the outside was part of the learning.
(Appendix 5.4.2)

Another insight related to the physical dimensions of co-design was that rotating the physical locations of the workshops also contributed to IML. Being removed from their workspace strengthened people's creativity and capacity for reflection. Conversely, using the work environment also energised the co-designing process, creating the momentum to crystallise ideas through the identification of immediate situations to employ on the walk, for instance, recognising the need for engaging with the imminent arrival of the Erasmus students. This rotation seemed to amplify the choreographic and orchestrated qualities, animating a more theatrical and performative interaction between the participants. They learnt how to see their physical resources from different perspectives through participation, using all senses.

6.3.5 Boundary-crossing, boundary-spaces & social situations of development

The phenomenon of boundary-crossing is captured in P6's quotation:

By the fact of us being a group, I felt like all the stuff of me having to perform or do something, just about me personally and my need to perform well, that just fell apart. That just did not happen, so I comfortable and enjoyed it.
(Appendix 5.4.2)

The climate created during the workshops stimulated him to behave differently and he felt free to be himself, acknowledging a change in his attitude. The affinity diagramming (fig.6.13) calls for attention to several co-design situations, which were perceived as boundary-spaces, such as the deliberative walk. The boundary-spaces helped to build new relational patterns and identify better ways of doing, as P3 shared:

Once you build an accommodation, this opens other possibilities about what the rest of these plans would be. So by investing in something now, you are opening new doors about how do you develop, rather than reflecting back on how you have developed.
(Appendix 5.4.1)

IML was spontaneous, unintentional, and mostly unconscious, primarily a dialogical phenomenon, through multiple perspectives (divergence) and egalitarian relationships of power. Here I identified the notion of identification, a dialogical learning mechanism (Akkerman & Bakker 2011) that enabled the participants to gain an understanding of different perspectives shared over the boundary-spaces. P1 said:

The string, the moment when we were talking as a group, we were not sitting down, we were standing up in the room talking, with the papers (hang-it-up). That moment was nice (smiled). I have learnt a lot about how my team think, just listening in a different environment, doing something absolutely different.
(Appendix 5.4.2)

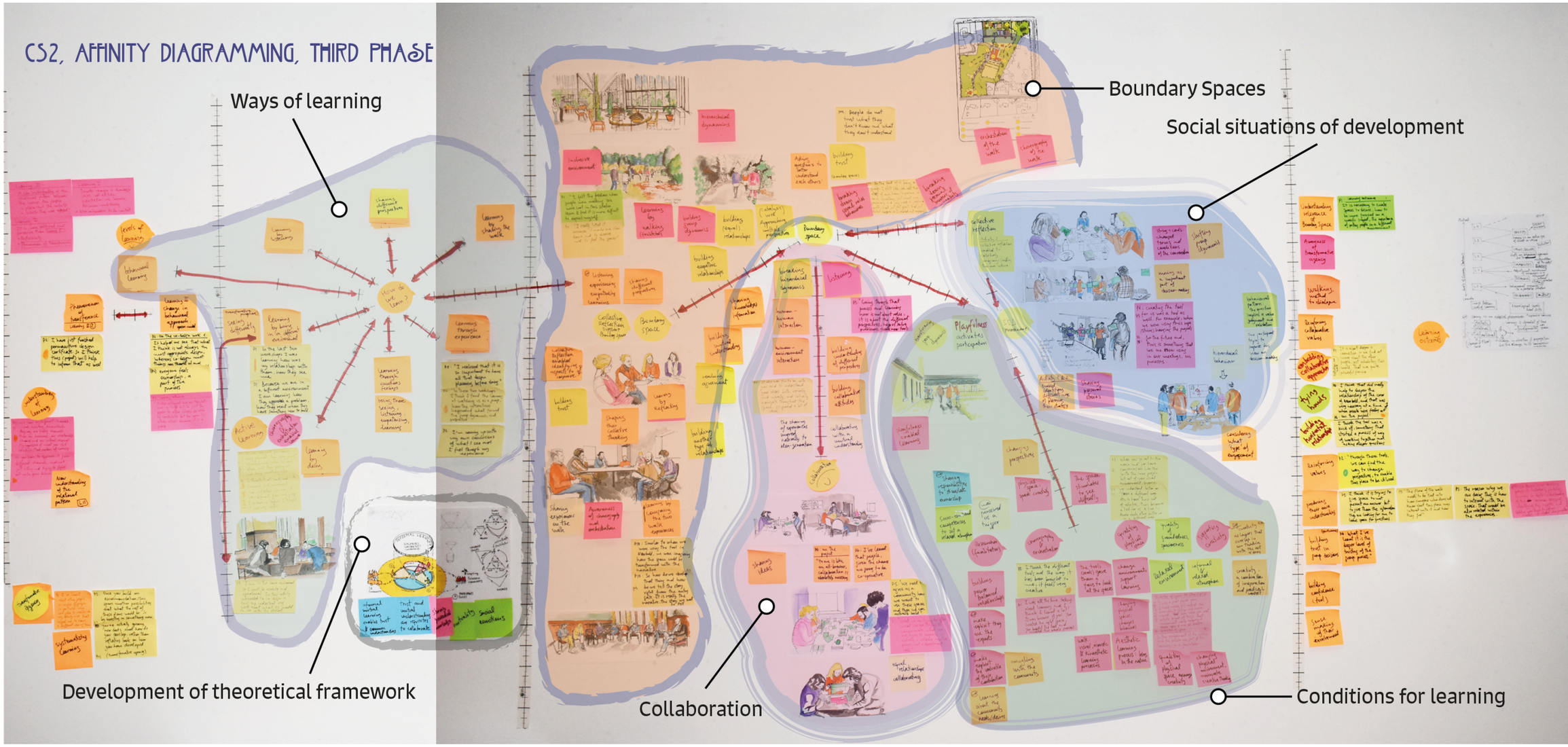


Figure 6.13. Mirian Calvo, CS2 affinity diagramming: third phase, 2018

Another dialogical learning mechanism identified was transformation, a transformative agency towards working together (see key areas of IML). P6 said: "that did really help to deepen the relationship of the crew of Newbold, and that was very necessary at a time when people were feeling uncertain". Learning here is understood as an impact (of the project) upon the participants, a behavioural learning that produces new relational patterns between community members. He added: "I think the tool was a kick-off, something that started a process of a way of working together and asking deeper questions".

Boundary-space is a theoretical concept (see section 2.6.4) related to the setting of a social situation of development (SSD). As with CS1, the sequence of the first two activities during CD workshop 1 was perceived as an SSD, as P1's quotation shows. In fact, they adopted hang-it-up in their meetings. P1 commented:

Creating the tool for us was a tool as well. When we were using this rope (string) hanging the projects for the future and, this is something that we are now using in our meetings.
(Appendix 5.4.2)

This moment of IML represented for some participants the outset of a unique situation that impacted upon their perceptions and motivations, through learning. P6 shared:

When we were doing the timeline and I thought 'wow, look at how they are cooperating together'. It was really nice because there was not any arguing, any 'I am right and you are wrong'. Everybody was quick in conversations and actually to have that activity helped to resolve any conflict at all, so that really struck me.
(Appendix 5.4.2)

This reveals the insight that co-design can generate SSD and amplify IML by paying attention to the conditions for IML. It also illuminates how IML mediates in the

process of building mutual understanding, trust and respect for the other participants, thus achieving collaboration. See AVN-2.

6.4 Summary

Evidence suggests that co-design processes have the means to create boundary-spaces, amplifying IML through (designerly engagements) participation. The designerly engagements and tools helped in the process of setting the terms of egalitarian conversations, breaking down the hierarchical power relations. They brought forth inclusive and comfortable environments, facilitating the emanation of boundary-spaces. As with CS1, IML was a crucial step in the co-construction of knowledge from the sharing of personal and spatial stories. It also foregrounds the theorisation that IML is an essential and intermediary synergy in co-design which emerges in the process of reaching mutual understanding. This led the participants to deepen their relationship and change their perspectives about the others. It opened up their minds to perceive their own purpose and enterprise as a collective process, instead of a confined modus operandi. IML catalysed the individuals' roles and motivations into an inclusive group dynamic towards working together. Chapter 7 then will compare CS1 and CS2 findings through the lens of CHAT, and explain the theoretical-framework, whilst Chapter 8 will disclose the identified contributions to knowledge.

Chapter Seven: Discussions

7.1 Introduction

In this thesis, a context-based study was conducted to explore the ways in which participants learn in community co-design (research question 1), with particular focus on the designerly conditions (sub-question 1.1), thereby gaining a greater understanding of the relationship between IML and co-design (sub-question 1.2). After four years of research, the analysis produced a number of findings (disclosed in detail in Chapters 4 to 6), and these suggest that the practice of co-design can be understood as an informal-mutual, designerly-experience-based learning process of engaged participants which occurs through the setting of boundary-spaces for collaboration.

In this Chapter I will discuss the findings through the lens of CHAT, foregrounding IML as an essential and intermediary synergy that mediates the multiplicity of expertise (divergence) towards the co-articulation of issues. Here, CHAT was employed as a lens to assist in: (i) extracting and connecting patterns during the affinity diagramming; (ii) focusing upon specific, consenting participants, and (iii) interpreting their descriptive accounts using the CHAT-unit of analysis (fig.2.6) as the foundational theoretical structure. I will then present my theoretical-framework, which elaborates on this CHAT-unit of analysis, and propose an innovative (alternative) model for researchers and practitioners to study community co-design. Organically devised during the research situations that I 'lived' and during the analysis, the adoption of an analytical-observational mode, as a design-ethnographer, enabled me to identify, encapsulate and distil the key structures embedded in a three-phase process towards achieving/enacting collaboration. The framework aims to support reflections on how to facilitate genuine collaboration, hence *enhancing* the practice of co-design. The theoretical-framework affords the means to reflect on this prime challenge in co-design practice (see section 2.4.5): how to “overcome the yes or no responses” (Meroni et al. 2018, 20), visualising a complex process of human-human and human-

environment interactions where IML is stimulated through the social designerly situations.

7.2 Comparing case studies

The PS was an excellent opportunity to establish a two-way conversation with the theoretical exploration. That is how I began wondering about Engeström's (1987, 78) model, deepening and questioning what types of interrelationships bound the subject and the community, the subject and the object, the subject and tools, the community and the object, etc. Chapter 4 and the GN-V-1 detail my early findings, which have been a determining factor in shaping the methodology (see Chapter 3). Here, I discovered a series of ethical accountabilities for design-researchers to ensure good practice. For example, many socio-emotional competences (empathy, building trust and respect, transparency, awareness of personal bias, making explicit that participants are experts in their respective fields, and ensuring egalitarian power-relationships) can assist in the setting of boundary-spaces. The use of drawing as a reflective medium to visualise socio-emotional (human) aspects and my *perezhivanie*, in parallel to the deployment of my ethnographic and co-design competences, led me to gain greater understanding of the participants' context and observations, thus identifying motivations and emotions as essential human processes in building social relationships, decision-making, and more importantly, influencing a collective learning process. Such learning was implicit, in that all interviewed were unaware of the degree of their own knowledge-production, competences, skills, and/or dispositions to engage in co-design situations or even in volunteering within their communities. Thus, creating self-awareness of learning became a necessary objective for responding to the prime research question, as Mündel and Schugurensky (2008) suggest - how does one make explicit an implicit process (IML). Consciousness-raising about their creativity could help toward breaking the social hierarchy, thereby balancing power.

My study then took a context-based activity approach, trying to understand collaborative agency, with focus on motivations, emotions and the emergence of meanings. It focused on unpicking the specific 'designerly dynamics', combined with participant-participant interactions, but also human-environmental interactions: through the participants' *perezhivania*, using engagement tools, reflective drawings, and participating in tailored designerly activities, choreographing the flow of co-design workshops, prototype tests and so on. The methodology, crafted within CS1 and CS2, enabled me, firstly, to elicit certain levels of the participants' consciousness about their own learning, through embedding individual and collective reflective tasks/activities, encouraging them to make these explicit; secondly, it allowed me to capture some productions of meanings. These meanings are perceived, simultaneously, as the ultimate result of IML, and as "our ability to experience the world" (Wenger 1998, xvi) in meaningful ways.

Interestingly, the findings from CS1 and CS2 were similar across both case studies, which I classified into five categories: (i) motivations and emotions; (ii) ways of informal-mutual learning (IML); (iii) key areas of IML; (iv) conditions for IML; and (v) boundary-spaces and Social Situations of Development (SSD), CHAT conceptual notions (see section 2.6) that enabled me to assemble a theoretical-framework illustrating the relationship between IML and co-design, towards achieving and enacting genuine collaboration.

7.2.1 Motivations, emotions and personal stories

This first category deepens my understanding of key psychological operations, structures and cognitive processes occurring in participation (socialisation), collaboration, and in participant learning.

In both case studies, a great amount of participant motivation related to a personal search for fulfilment and satisfaction, endorsing the social cause. Both analytical processes associate motivation with enjoyment and enthusiasm (the most-mentioned emotions), which is supported by the pattern that laughter was the

action most repeated. Comfortable attitudes and curiosity (related to the expansion of knowledge through the use of creativity) also seem to feature in shaping motivation, describing a socio-emotional state of intrinsic motivation. This suggests that community co-design would benefit from drawing in intrinsically-motivated participants as a driving-force; conversely, through designing social environments, design-researchers could animate intrinsic motivations. As Bateson (1972) states, we learn to adjust our performance to stimuli or even to shift our behavioural approaches in a social, relational and constructed learning process. Another pattern unravelled is that participants reverted to personal stories to disclose their motivations for community engagement, and in the case studies. Such personal stories chronicled their set of personal values, emotions and attitudes, – some of them are illustrated in the graphic novels and the audio-visual narratives.

7.2.2 Ways of informal-mutual learning

This category and the following one, illuminate how and in what ways participants learned, (research question 1). CS1 and CS2 indicate that IML emanated through socialisation and participation in design interactions with the social environment and with the people involved - a complex process which revealed itself within concrete sociocultural situations. This leads to the conceptualisation that IML is situated (Lave & Wenger 1991), unintentional and unconscious (Müngel & Schuguresky 2008), and has two indivisible dimensions: personal and social (Fleer et al. 2017; Eraut 2000). The quotations in sections 5.3.2 and 6.3.2, for example, disclose how participants learnt mostly through sharing personal and spatial stories in a two-way, collective process of communication that activated different learning channels, stimulating the senses and generating emotions. The patterns suggest that IML functioned as a means to build trust and respect from the divergence of perspectives in co-design practice, and enabling mutual understanding to be reached. Participants also learnt through their *parezhivania* – the dialectical unit between each participant and the social designerly environment.

7.2.3 Key areas of informal-mutual learning

Via affinity diagramming, I found a breadth and depth of items and patterns of informal-mutual learning (IML). Intending to organise and present them in an understandable way, I arranged them into four key areas of IML (sections 5.3.3 and 6.3.3): (i) eliciting awareness of IML; (ii) producing meanings of co-design, collaboration and boundary-spaces; (iii) transformative agency; and (iv) interpersonal learning - comprising skills, knowledge and attitude towards working together, e.g. strengthening networks, building confidence, reinforcing personal values and building mutual understanding, trust and respect for other participants. Chapters 5 and 6, in tandem with the graphic novels and audio-visual narratives, discuss the evidence of these four areas of IML in detail and present my theorisations.

From my observations, I have deduced that encouraging reflective practice through reflective activities during the co-design workshops, e.g. reflective group interviews, using CER (Lally 2002) during the 'follow-up' stage, the reflective drawings and journals etc., raised awareness of participants' learning. Collective reflection and individual reflexivity made learning explicit, to some extent, although at different levels. For instance, in CS1, the participants embraced the reflective journal (section 3.4.3; appendix 2.2) with enthusiasm. In CS1, Participant 3, was only able to participate in one co-design workshop but they used the reflective journal (RJ), as a means to keep and feel connected with the project, and also provided a peripheral and insightful perspective about the project. In his RJ, he wrote about his understanding of co-design:

I imagine co-design as an activity during which two or more people connect to share their vision and ideas which might achieve desired outcome. They will think both "inside and outside the box" in order to co-design tools, a process which can facilitate the desired outcome; yet at the same time they will be flexible enough to allow their collaboration to new thinking, – it is not only about solutions but about innovative thinking, allowing for

prototyping, "failure" and rethinking + design. Co-design is a collaborative adventure, a deep diving into principles and practice of design and creativity.
(Appendix 5.3.3)

His peripheral position also highlighted the relevance of collective reflection as a way to learn from experience, associating learning with the emergence of emotions for being present:

I think part of the periphery experience is that you are doing a lot of thinking on your own without the interaction with other people. And I realise that interaction stimulates a lot of thoughts and feelings. So my ability to reflect really deeply is limited by the fact that I am not interacting with the team of people. And that leads me to thinking about the whole emotional collaboration of working with the team.
(Appendix 5.3.2)

Figure 7.1 illustrates his perception of co-design (his reflective drawing), depicting a circle with dots at the contour and a central one, all connected with lines representing interactions. Yet in CS2, participants did not engage with the RJ - only Participant 6 completed it. When asked during follow-up interviews, the CS2 participants reported that the journal seemed to them to be too much work.

More participants developed analytical and deliberative meanings around co-design, collaboration and boundary-spaces (see sections 5.3.3 and 6.3.3, point 2) where the meaning-production was directly connected to their *perezhivanie* (Vygostky 1998; González Rey 2018, 2014), stimulated by the emergence of an SSD. In fact, some participants translated, through the phenomenon of transference, their learning (tacit knowledge) into introducing new competences and attitudes into their social practice alongside the co-articulation of issues and readjusted their relational patterns. This is evidenced, for example, in CS1-P2's quotation (section 5.3.3, point 3) when she reflected back on how to enhance her art therapy, or CS2-P2's quote (section 6.3.3, point 3) when she commented that

her participation on the co-design project would help her in her permaculture design course.

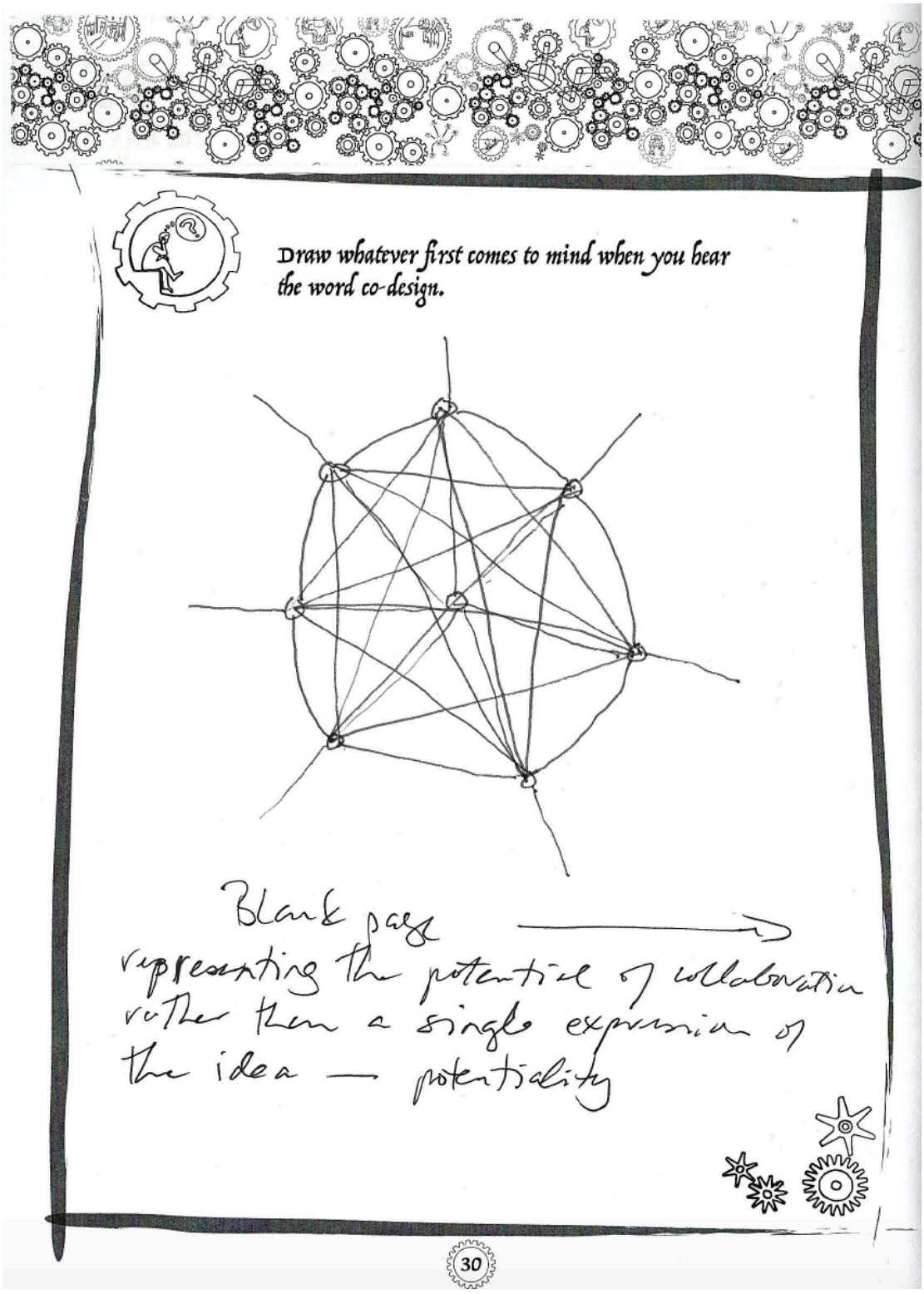


Figure 7.1. CS1-P3's drawing on co-design, 2017 (appendix 5.3.3)

7.2.4 Conditions for informal-mutual learning

This category compiles a set of patterns uncovered during the analysis that define key conditions to support IML: (i) choreography and orchestration of co-design activities; (ii) aesthetic dimension of design; (iii) playfulness; (iv) quality and quantity of participation; and (v) qualities of the physical space supporting co-design situations. All of them connect and point to the first sub-question, about when and in which conditions IML emerges. Chapters 5 and 6 (see audio-visual narratives) disclose these conditions supported by the participants' observations, alongside my own.

The choreography and orchestration of designerly activities are fields of the design-researcher. They include preparation and planning of co-design situations, designing the sequence of collective activities, understanding which objectives belong to each, designing the engagement tools and games (see appendices 2 and 3), and their use (designerly techniques), etc. They also imply qualities of physical space. Figure 7.2 illustrates the differential qualities of the two venues used to host CD Workshop 1 and CD Workshop 2 in CS1. The left-hand drawing (workshop 1) depicts a room with no connection to the outside, significantly smaller than the drawing on the right, while the layout provides a skein of possible social interactions. Additionally, the right-hand drawing (Workshop 2) flows organically between inside and outside, introducing natural light, and visual and physical options to go outside and conduct outdoor activities. The production of meanings and their allocation to the social environment is particularly captured in CS2, through the deliberative walks. Careri (2002) theorises about the first architectural interventions as an act of walking the world, tracing back to our nomad ancestors to explain how they conferred meanings to the landscape they were walking through. Transforming the natural environment through nomad knowledge-production conveyed and expanded by way of mouth, depicting song paths such as used by Australian aborigines (Chatwin 1987).

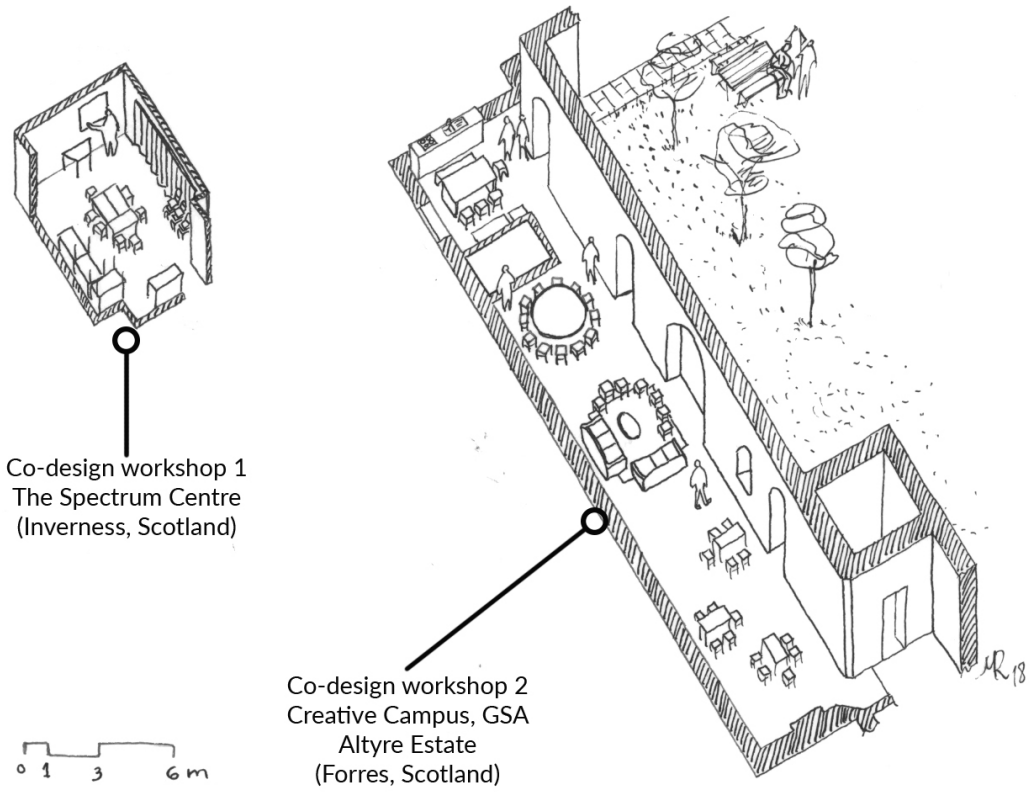


Figure 7.2. Mirian Calvo, CS1 physical space qualities, 2017

Each detail, when setting the social environment, matters. Through affinity diagramming, I deduced that the designerly activities, games and tools, as well as the way in which they were designed, displayed and intended for collective use over the time and space, all assisted in creating a performative and playful atmosphere. The designerly social environment sent stimuli to the participants, facilitating the process of changing the terms and tone of interactions, shifting the relational patterns towards an openness to learn from each other. The aesthetic dimension of design played a key role in this, dissolving hierarchical power relations and the societal constraints associated to each participant's usual role.

As Markussen (2013) points out, the aesthetic dimension of design is disruptive: it opens up a boundary-space between the social and performative actions of the participants and the production of 'new' emotions. This notion of relational

aesthetics aligns with the notion of aesthetics developed by Rancière (2010), and resonates with the notion of *perezhivanie* (Vygostky 1998; González Rey 2018, 2014), a dialogic form of learning (through the dialectical unit) with the social environment, which "reorients perceptual space, thereby disrupting socio-culturally entrenched forms of belonging in and inhabiting the everyday world" (Markussen 2013, 44). By combining the aforementioned conditions for IML, it becomes evident that community co-design has the means to generate boundary-spaces, and SSD. Both notions detailed in Chapter 2 are essential situations for the emergence of IML, hence, expanding our 'knowledgedgeability' (Wenger et al. 2015). These statements articulate my theorisations, and result from the merging of my theoretical explorations with my deductions based on the cycles of reflection and the affinity diagramming process. In this, I understand practice and theory as indivisible conceptualisations.

The set of design conditions for IML is where, from my perspective, design-researchers and practitioners can directly intervene in the co-design process. With our design (codified and personal) knowledge, competences, skills and dispositions, we can ensure and devise the appropriate social environment to support the creation of boundary-spaces (see section 2.6). Aligned with Lindström & Ståhl (2016), this insight advocates for an epistemological shift in the practice of design, away from drawing people into the co-design of 'things' and more towards making the focus of each co-design situation the facilitation of IML.

7.3 A theoretical-framework to achieve/enact collaboration

A theoretical-framework was taking shape throughout CS1 and CS2, where the previously discussed patterns (findings) assisted in its formulation, reinterpreting the third generation of the CHAT-unit of analysis (fig.2.6) alongside the use of the visual language of design (a designerly set of competences). Figure 7.3 is the first reflective drawing illustrating the framework, made during a reflective session, after I participated in CD workshop 1 of CS1 (section 5.2.1, 152-154; GN-V-2; appendix 3.2, 38; appendix 5.3.1.1). I used figure 7.3 during my reflective interviews with some participants to share my early theorisations assembling the social and personal dimensions of IML, and the social environment with the CHAT-unit of analysis (fig.2.6). The interviewees found the diagram useful to begin understanding the relevance of the bidirectional interactions with the other participants and also to consciousness-raising about the relevance of the social environment. The drawing allowed them to engage with intangible synergies and interactions by make them visible and start seeing them as part of a whole, which configured the designerly situations. This led to enriched conversations which brought forth crucial insights regarding their learning experience (see section 2 of Chapters 4-6). This also enabled to validate my ongoing theorisations with people who had lived the situations.

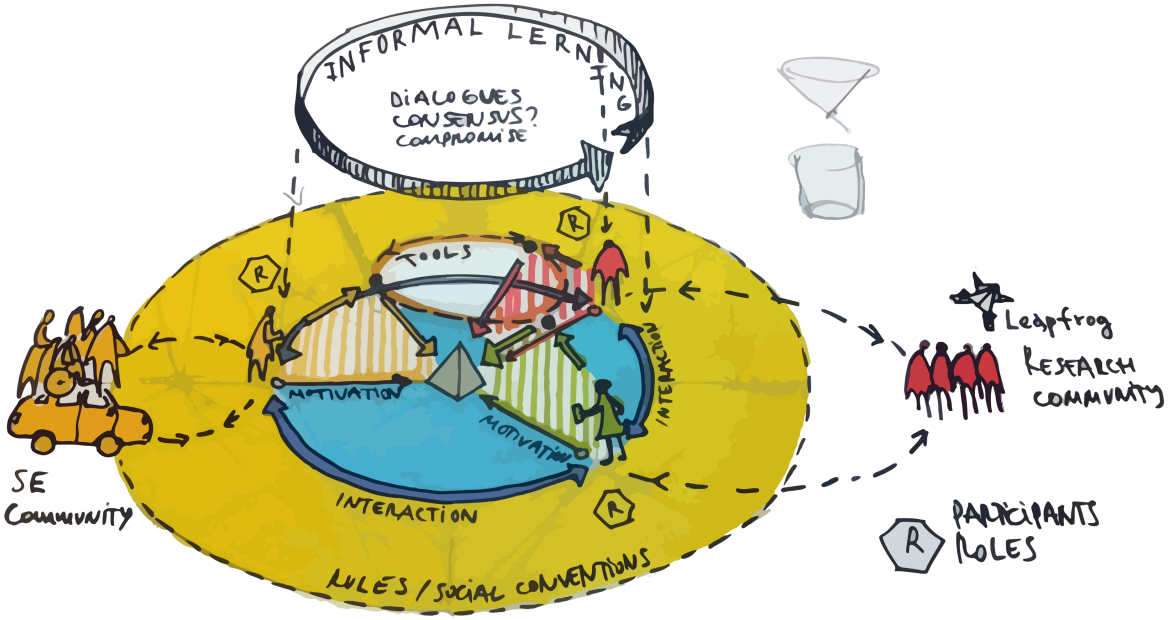


Figure 7.3. Mirian Calvo, Initial scheme of a theoretical-framework, 2017

The yellow ring represents the rules and social conventions necessary to establish egalitarian power relationships; the blue circle depicts the boundary-space, a theoretical concept largely discussed from several disciplines (see Chapters 2 and 8), and strongly reinforced by the observations on the analysis (Chapters 4-6; and the audio-visual narratives). I drew each participant of the co-design workshop described by an activity system (fig.2.5), and I realised that we interacted in both personal and social dimensions all at once, in essence through human-human and human-environmental interactions, through dialogue and *perezhivanie*. Then I realised that IML emanated spontaneously through both interactions, but also that IML has two indivisible dimensions, as an intrinsic human feature. This first theoretical articulation/visualisation adds two new components to the CHAT-unit of analysis (fig.2.6): social learning (IML); and the relational and physical dimensions of participant-tool interaction (orange ring in the middle of the cylinder) – in other words, the social environment. This drawing is a good example of how the practical and the theoretical elements have been co-operating together in this study, blossoming as an indivisible synergy. Through 'experiencing' and participating myself in such a concrete co-design situation, I could learn that the quantity of participation is a key designerly condition for IML. By the fact of being

three participants, I could visualise us represented by an activity system, interacting towards joint goals (runaway object) in a concrete co-design situation. This brings to the fore the practical elements produced (graphic novels, audio-visual narratives, the roadmap poster, and appendices), equally relevant, working in tandem with the theoretical one, to unpack a holistic theorisation of participant learning.

Figure 7.4 illustrates the skeleton of the theoretical-framework in which each participant is represented by an activity system (CHAT triangular-model of bidirectional arrows) approaching the boundary-space (grey circle), with the runaway object at the centre (the locus of each co-design situation). Figure 7.5 reflects the reinterpretation done in this study of the activity system (fig.2.5). The diagram illuminates the relationships of each participant. In this case, the person depicted is myself, the design-researcher, engaging with the socio-materials, which define the social environment, through my *perezhivanie* and my socio-personal motivations (research agenda) for participating in the co-design situation.

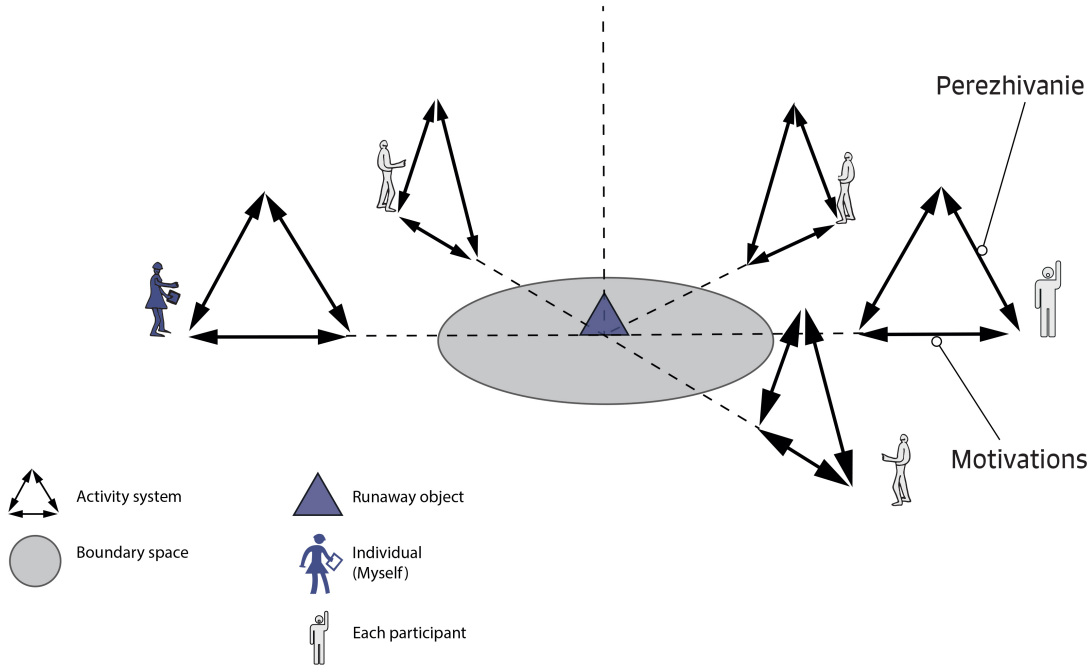


Figure 7.4. Mirian Calvo, Theoretical-framework structure 1, 2019

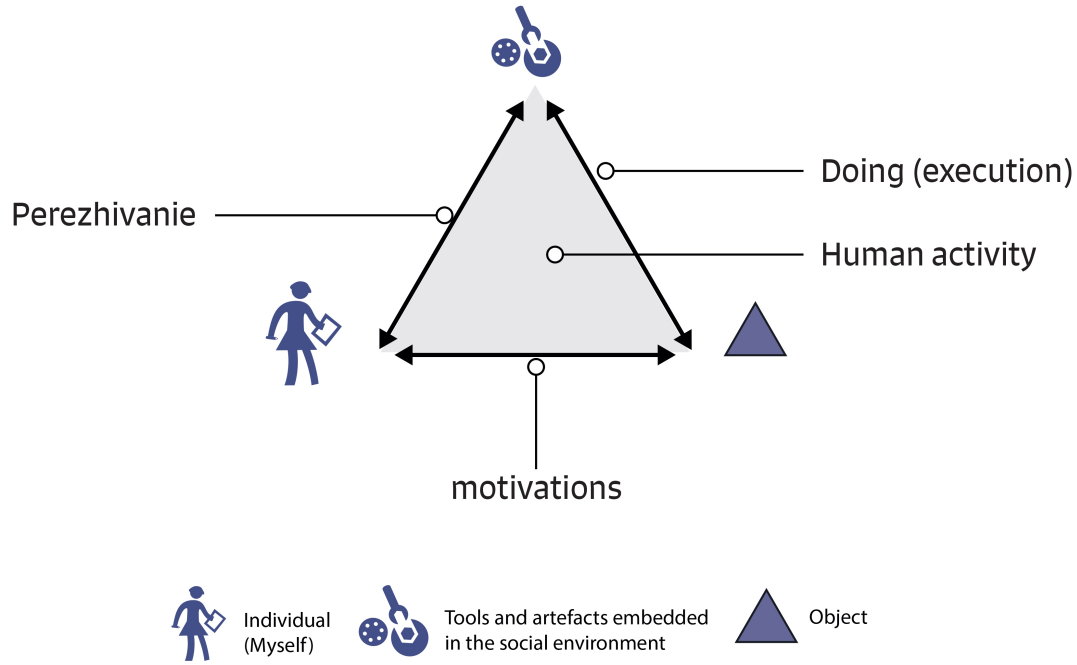


Figure 7.5. Mirian Calvo, Elements and relationships of each activity system, 2019

Figure 7.6 shows another two dimensions that make up the skeleton: the social environment (orange circle) and the boundary-crossing space (green peripheral ring), representing the first phase of the theoretical-framework.

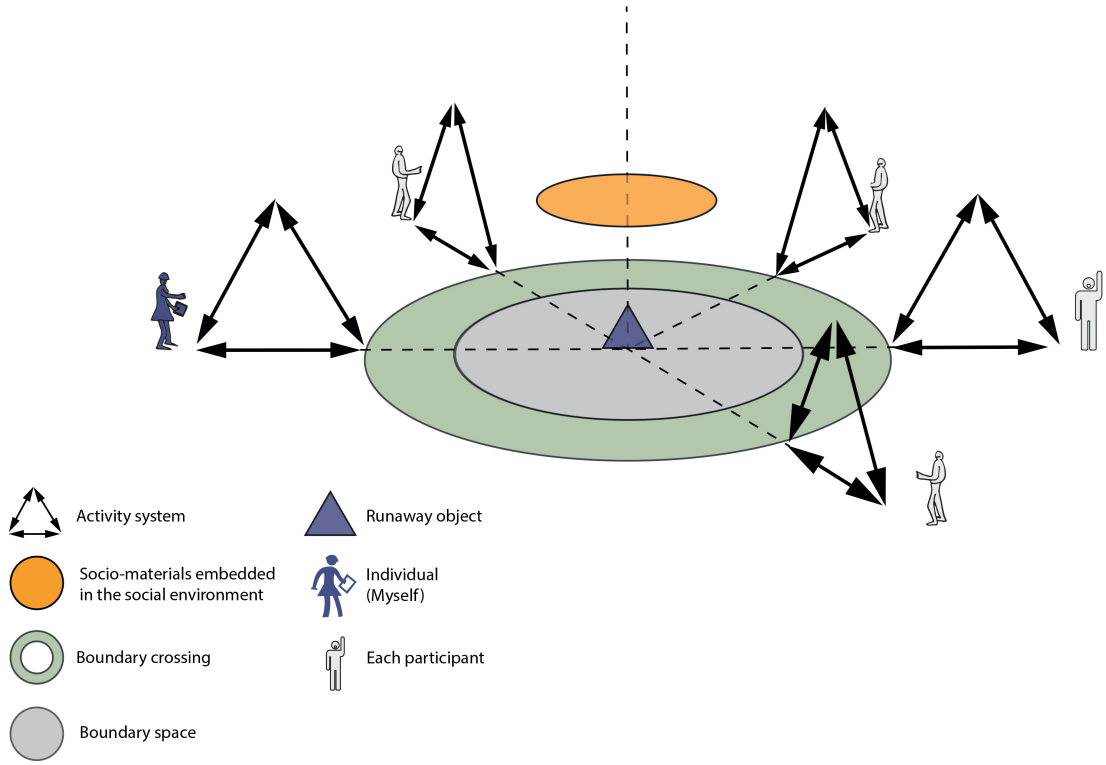


Figure 7.6. Mirian Calvo, Theoretical-framework structure 2, 2019

Once all the components and dimensions had been revealed, I proceeded to unfold the theoretical-framework as a three-phase process: (i) boundary-crossing, renegotiating the terms and conditions for the flourishing of inclusive and creative spaces; (ii) boundary-space, learning from each other from balanced positions of power 'towards the co-articulation of issues' (Lindström & Ståhl 2016); and (iii) collaboration.

7.3.1 Phase 1: boundary-crossing

To reach the boundary-space, the participants of this study firstly experienced the phenomenon of boundary-crossing. Boundary-crossing describes a social situation in which participants enter an intermediate phase that reconfigures the terms and conditions under which human interactions and cooperation will occur, based on the co-construction of dialogues, and by engaging in the choreography and orchestration of designerly activities (see Chapters 4-6; graphic novels; appendices 3 and 5). Figure 7.7 depicts this phase, the participants are in the boundary-crossing, with two interactions: human-human interaction (big green two-way arrow), and socio-environmental interactions, through *perezhivanie*. The participants subtly readjust their attitudes, adopting roles free of the social pressures that contract and recalibrate our behavioural patterns according to our learning, based on our *perzhivania*, which defines us as social individuals. This recalibration of attitudes can be understood as a learning mechanism named 'identification' by Akkerman and Bakker (2011). Identification entails redefining our identity by putting ourselves in relation with other participants. Gay and Hembrooke (2004) call this process 'mutual accommodations' (9), which unravel interpersonal tensions in a multidimensional, context-sensitive, and mediated sociocultural environment. The sociocultural differences brought by the divergence of multiple experts and perspectives lead to a negotiation of the diverse identities in place. This brings forth a new consensus that, as Garfinkel and Sacks (2005) explain, sets the norms, values, rules and distribution of power between the parties involved in the conversation.

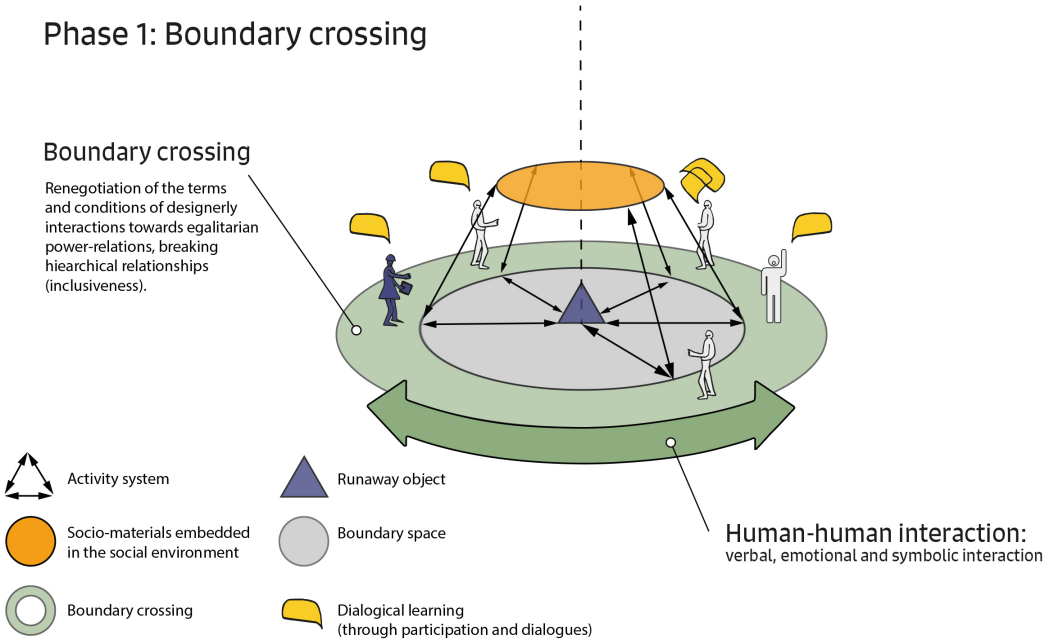


Figure 7.7. Mirian Calvo, Phase 1: Boundary-crossing, 2019

Designers are highly accountable for setting favourable socio-environmental conditions to engender boundary-spaces, the inclusive spaces for assembling divergence. They have the means, consequently, to intervene in participant behaviour (mediated through the aesthetic dimension of design) towards adopting horizontal relationships. For instance, in CS1, P2 reflected on how the choreography and orchestration of the co-design activities brought playfulness as an implicit rule, which allowed quieter voices to participate:

The way you devised the games and the sequence of those games allowed somebody like him also bringing his valuable contribution, which, you know, another way he might not done it if evolving just chat, chat, chat, chatting. He might not be able to engage without that at all, but through the thing of writing down the things in the cards, and then share it. You know, that was fun. It was just fun!
(Appendix 5.3.2.1)

This reflection shows how the social environment is capable of supporting or hindering inclusiveness and creativity, but also IML. In CS2, P6 mentioned:

By the fact of us being a group, I felt like all the stuff of me having to perform or do something, just about me personally and my need to perform well, that just felt apart! That just did not happen! So I relaxed and enjoyed it.
(Appendix 5.4.2.3)

This quote reflects how P6 experienced boundary-crossing, and how he felt once he entered the second phase: (ii) boundary-space. Here he expanded his boundaries by recalibrating his power-relations with the other participants, and also his (theatrical) way of performing, adjusted to the 'new' social order.

7.3.2 Phase 2: boundary-space

The second phase began when the participants became comfortable and understood the hybrid situation, their roles in relation to the others, and the social designerly environment. Figure 7.8 illustrates the second phase: (ii) boundary-space. The diagram shows how the boundary-space expands, including each participant under the implicit rules of co-design: inclusiveness, diversity, tolerance, respect, egalitarian relationships and mutual understanding. This is facilitated by the orchestration and choreography of collective designerly engagements (graphic novels), the games, the tools and techniques displayed (appendix 3). The orange truncated cone represents the human-environment interaction, through perezhivanie. It also describes how IML emerges from collective engagement. This is disclosed in two indivisible dimensions: social learning (upper yellow ring) and personal learning (two-way orange arrows). IML, in its social dimension, condenses the sharing, listening and understanding of multi-voice perspectives, which were unfolded through in-depth conversations, enabling dialogic learning. Each participant had the generative capacity of mediating in the co-design situation. This reveals a designerly activity approach illustrating the dynamic relations between activity systems: between the people and the environment (Chen 2017) as a whole.

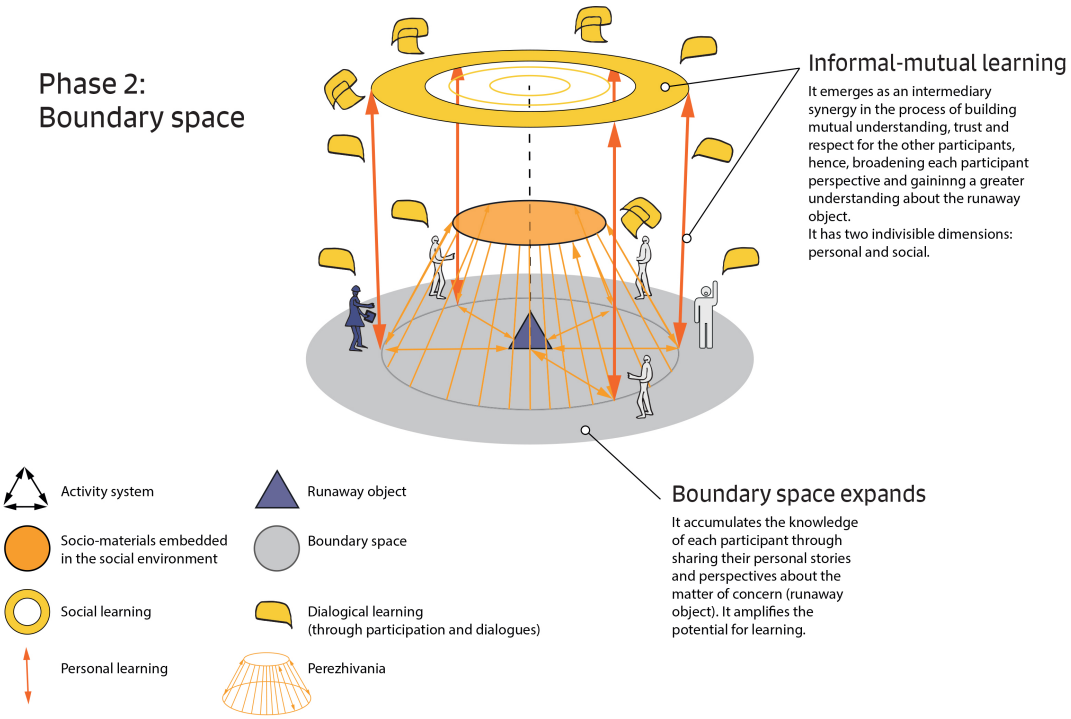


Figure 7.8. Mirian Calvo, Phase 2: Boundary-space, 2019

The notion of boundary space comes close to the Vygotskian concept of the Zone of Proximal Development (ZPD), as both theorisations describe the time and the space required for people engaging in social activity to achieve their greatest potential development. The ZPD illuminates a more individual process of development which takes place in social situations. This concept relies on the figure of a more capable person who facilitates/guides an individual's development. According to Eun (2019), the word 'zone' emphasises the notion of "development as a continuous process rather than a point on a scale" (20) measuring distance between two entities/objects (see section 2.6.4). This is related with the concept of the Social Situation of Development (SSD), defining the moment whereby the ZPD begins. Through perezhivanie, each individual configures his/her path to internalise the social-learning, thus, making it personal. Yet boundary space is a theoretical situation co-constructed and re-negotiated by the participants through the previous phase of boundary-crossing, which sets up a new social order based on egalitarian structures of power-relations. Both dimensions (personal and social) of development flow under inclusive and comfortable social conventions. The boundary space illustrates a more social

conceptualisation of human development, where the roles adopted usually shift during the social situation. This underscores the divergence of knowledgeability and capabilities of the participants, because each interaction flows freely and the participants are not always adopting the same role. The boundary space focuses on social dynamics of human-human and human-environment interaction.

7.3.3 Phase 3: collaboration

Analysis uncovered a pattern in the co-design situations where participants, after gaining mutual understanding and broadening their perceptions, shifted the focus of conversation and activity from co-articulating the issue towards idea-generation, the making and enacting of design concepts (e.g. appendix 5.4.1). The matter of concern was co-defined by the sharing of multi-perspective stories, and in turn, it was perceived as an opportunity to explore transformative agency in their practice of community engagement.

Figure 7.9 describes this moment: the social dimension of IML (upper yellow circle), in its idealisation as a theoretical-framework, becomes saturated thanks to the congestion of personal narratives (illustrated by the yellow speech bubbles); then a collaborative synergy ignites, depicted as an inverted cone of green lines connecting the social learning and the runaway object, mediated through the social environment, and the participants, all collaborating towards materialising ideas.

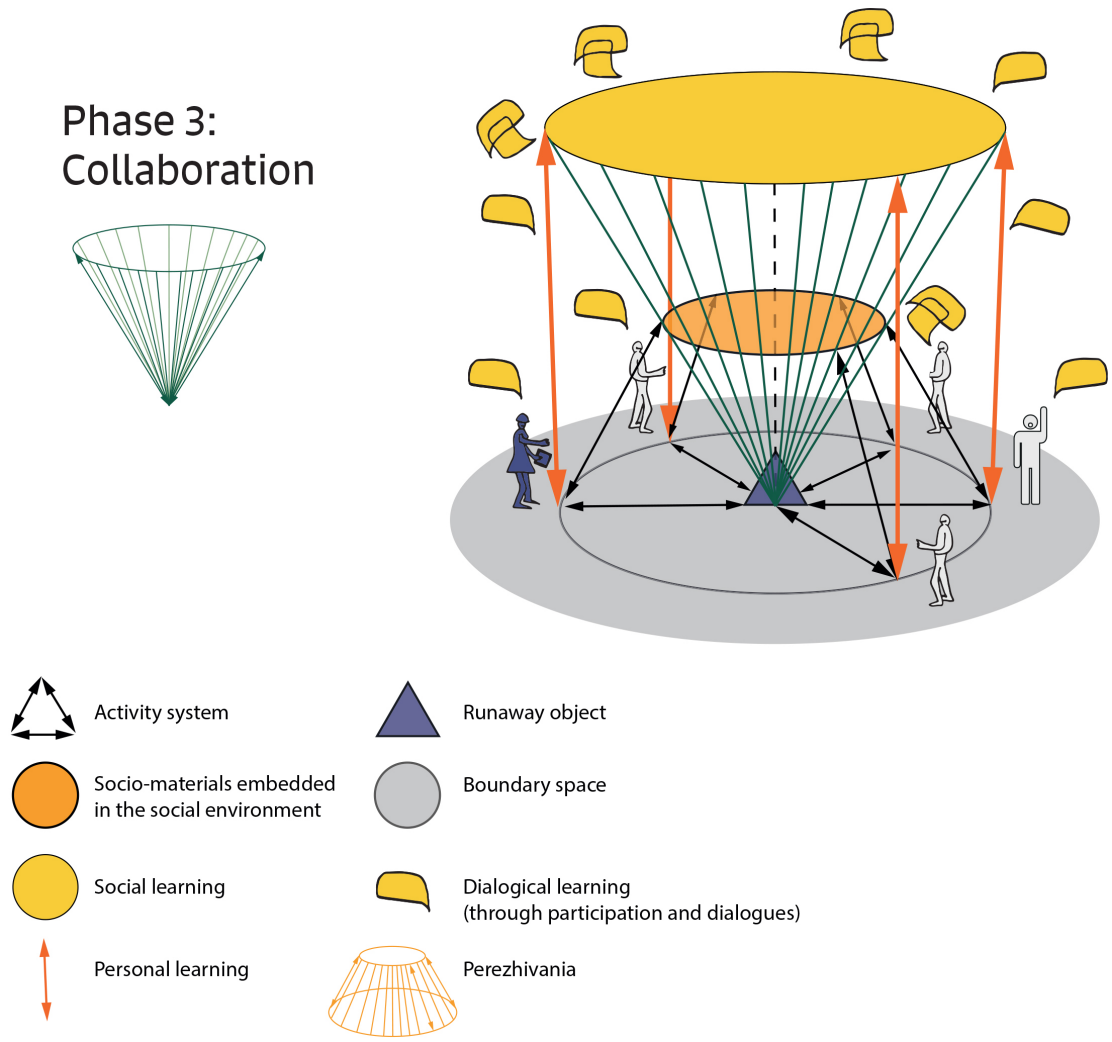


Figure 7.9. Mirian Calvo, Phase 3: Collaboration, 2019

In line with Bronstein (2003), this study defines collaboration as an interdisciplinary, interpersonal and effective "process that facilitates the achievement of goals that cannot be reached when individual professionals act on their own" (299). Hence, collaboration differs from other interpersonal processes such as cooperation, communication, coordination and partnership (Bruner 1999). For instance, coordination describes a process of differentiation of roles where leadership and decision-making are not consensual (Kane 1980); as opposed to collaboration built upon the dilution of roles, horizontal relationships, continuous consensus, and collective agreement on the flow of rules and social order holding the group together. Evidence of group dynamics can be found in the graphic

novels, unfolded through the reflective drawings. E.g. in GN-V-2 (32-33), the drawing illuminates how the group implicitly catalysed leader-voices, a reinterpretation of the participants' facial gestures, looking at one participant who was trying to lead the conversation.

The theoretical-framework illuminates an abstract model to describe highly complex designerly public engagements, itemising participant interactions and describing their relationships and dynamics. The framework identifies and visualises this relationship (research sub-question 1.2)- when IML emerges and under which conditions (research sub-question 1.1)- and it can support the reflections of designers and practitioners on how participants learn in co-design situations (research question 1).

7.4 Summary

This Chapter has presented an overview of the insights (items) and patterns uncovered throughout this research study which have assisted in the elaboration of a theoretical-framework in response to the research questions. The study suggests that IML is an essential mediating synergy which encourages participants, by listening and sharing personal perspectives and by 'being-there', to build empathic relationships of trust, respect and mutual understanding. All these interpersonal features are essential requirements to reach the point where the participants are ready and willing to collaborate. This crystallises group dynamics in an inclusive and creative space (e.g. reflective drawings, GN-V-2, 34-37; GN-V-3, 18-23), where social and professional roles are broken and diluted, breaking down hierarchies and establishing horizontal relationships. This draws attention to the theoretical concept of boundary-space. According to CHAT, boundary-space is a theoretical outline that delimits a space of confluence which individuals approach from their different perspectives. The boundary draws an imaginary line that establishes and realigns the multiplicity of perspectives, human agencies, personal motivations and structures of social interaction, mutual accommodations towards collaboration. The 'co' in co-design is, of course, crucial, since IML plays a key role in the co-articulation of the issue and, ultimately, in collaboration. I suggest to

watch the third audio-visual narrative, *A Theoretical-framework for Collaboration* (AVN-3), part of the practical element, which describes the three-phase process of the theoretical-framework, aiming to disseminate it in digital formats and potentially reach wider audience for its validation, open for debate and enhancement. Chapter 8 will disclose the contributions of knowledge elaborated out of this study, in an attempt to respond to the research questions.

Chapter Eight: Conclusions

8.1 Introduction

This study has reported a context-based process of inquiry with the purpose of deepening our understanding of how participants learn in community co-design (research question 1). A series of tentative conclusions were articulated in Chapter 7, the results of a systematic, dialogic learning process which consolidated throughout the affinity diagramming process (section 3.4.4), of the PS, CS1 and CS2, each one elucidating the next cycle of research.

The use of CHAT to understand participant learning during my cycles of reflection (including affinity diagramming) facilitated the articulation of a holistic theoretical-framework. This framework illuminates the 'designerly' socio-environmental conditions, responding to the research sub-question 1.1; and also illuminates the personal-social dimensions of each participant. All the aforementioned dimensions and conditions for informal-mutual learning (IML) are assembled in the theoretical-framework. The framework theorises on its relationships of interdependence through a three-phase process which points to a mutually beneficial/symbiotic relationship of reciprocation between IML and co-design situations. The visualisation of the framework (through the graphic diagrams) answers the sub-question 1.2, on how to visualise their relationship. The diagrams were made through reflective drawings, aiming to include IML's dimensions/agency/synergies in the CHAT-unit of analysis (fig.2.6). This process of visually inquiring how the patterns uncovered and the unit of analysis could be related led me to assemble them together in meaningful ways, thus, formulating the three-step theoretical-framework.

Crafting a 'developmental' methodology (Chapter 3) that led to a PAR approach informed by ethnographic methods and reflective drawings, while orchestrating and choreographing co-design activities, I devised a research-design, which provided the means to elicit participant learning awareness, a prime challenge in

the study of informal learning (section 2.5.3). The research-design also supplied responsive guidelines (steps), methods and techniques to gather enriched qualitative data which uncovered the ways IML happened, and identified key areas of IML, addressing the prime research question of this study, on how we learn in co-design.

8.2 Theoretical contributions to co-design & design research

From a design research perspective, this study has ratified the arguments pointing to co-design as a suitable methodology to confront runaway objects (Meroni et al, 2018; Fuad-Luke 2017, 2009; Ehn 2017; Smith et al. 2016); sociocultural challenges that threaten and constrain our present and future qualities of life. Today we live in turbulent times. The ripples of the recent recession are still spreading, globally re-moulding the sociocultural and political-economic spheres. Economic experts envision another recession which will lead to the post-oil era (Ahmed 2017). The IPCC (2018) reports the sociocultural need to urgently reshape our lifestyles and consumerist modes. Internationally, we are witnessing movements claiming egalitarian power-relationships (women) and transformative agency towards embracing sustainable ways of working and living together (teenagers).

The challenges society faces are amorphous in their structure, and exerted by emergence, nonlinearity, uncertainty, adaptation and constant change (Silverman & Patterson 2015). Design features in all these challenges, I argue, as it is in essence the transformation of the natural environment into the built one: cities, public space, products, clothes, technology, etc. More importantly, such transformations comprise the emergence of shared meanings that we, as humans, factor into these transformations, creating an environmental system (through design) in symbolic and emotional sociocultural structures. What I have suggested in this study is that co-design, as a socialisation act, has the means to configure boundary-spaces, spaces that can merge the nascent demands of participation (Smith et al. 2017; DiSalvo 2012; Jenkins 2006) and the divergence of expertise

required towards co-articulating the issues, a driving-force that can confront currently societal challenges.

The notion of boundary-space is not new in co-design. Chapter 2 registered a skein of references: Muller (2009) mentions it under the term 'third space' (also in CHAT: Edwards 2011; Gutiérrez 2008); Lee (2007, 2008) calling it the 'realm of collaboration' to describe a power-balanced space of convergence; Björgvinsson et al. (2012) refer to 'infrastructuring' as the means to create a space for assembling the multiplicity of expertise and divergence (also in Meroni et al. 2018; Smith et al. 2016) regarding the need for co-developing a common design language (Ehn 2017, 2008, 1988); and Markussen (2013) underscores the disruptive aesthetic of design as a key dimension to opening a space between emotions and human agency, leading to consciousness-raising (Fuad-Luke 2017, 2009; DiSalvo 2012; Rancière 2010). Here the notion of boundary-space is elaborated through CHAT and other social learning theories which brought a freshness to its definition. This represents a theoretical contribution to the field of design research, since there are no registered publications making such a proposal, apart from the ones published under this doctoral study.

From a co-design perspective, the theorisation of boundary-space, through the lens of CHAT, has contributed to visualising the relationship between IML and co-design situations (research sub-question 1.2), a gap identified in this field (section 2.4.5). The literature identifies 'mutual learning' as the cornerstone of co-design (see section 2.4.6), but this relationship has not been investigated holistically in previous studies which assumed it was embedded in practice (Robertson et al. 2014; Spinuzzi 2005). The inclusion of the word 'informal', joined to mutual learning, expands the notion of this type of learning, looking at social learning theory insights in order to bring their contributions to the field of co-design - another theoretical contribution advocating a wider definition of learning, ways of knowing and knowledge-production in a socially-related environment. IML is perceived as a spontaneous (Piaget 1964) social phenomenon (Wenger 1998),

situated (Lave & Wenger 1991), unintentional and unconscious (Mündel & Schugurensky 2008), aligned with Dewey's (1958) notions of experiential learning.

Figure 8.1 illuminates the skeleton of the elaborated theoretical-framework, using a 3D geometric drawing system to translate the CHAT-unit of analysis (fig.2.6), adding new features (which this study has deduced): (i) the twin social-personal dimensions of IML (insights from social learning theories) and its interdependences with the activity systems (participants) in the boundary-space; (ii) assembling higher psychological operations involved in learning – emotions, perezhivanie and subjectivity; (iii) expanding the notion of 'tools/artefacts' in the CHAT-unit of analysis (fig.2.6) towards 'designerly social environment', socio-material ecologies and the spatial and temporary qualities of co-design situations. The tangential circles (light-blue and pink) on the boundary-crossing (green-ring) represent the cultural-historical community of practice for each participant, drawing on CoP as another complementary theoretical influence.

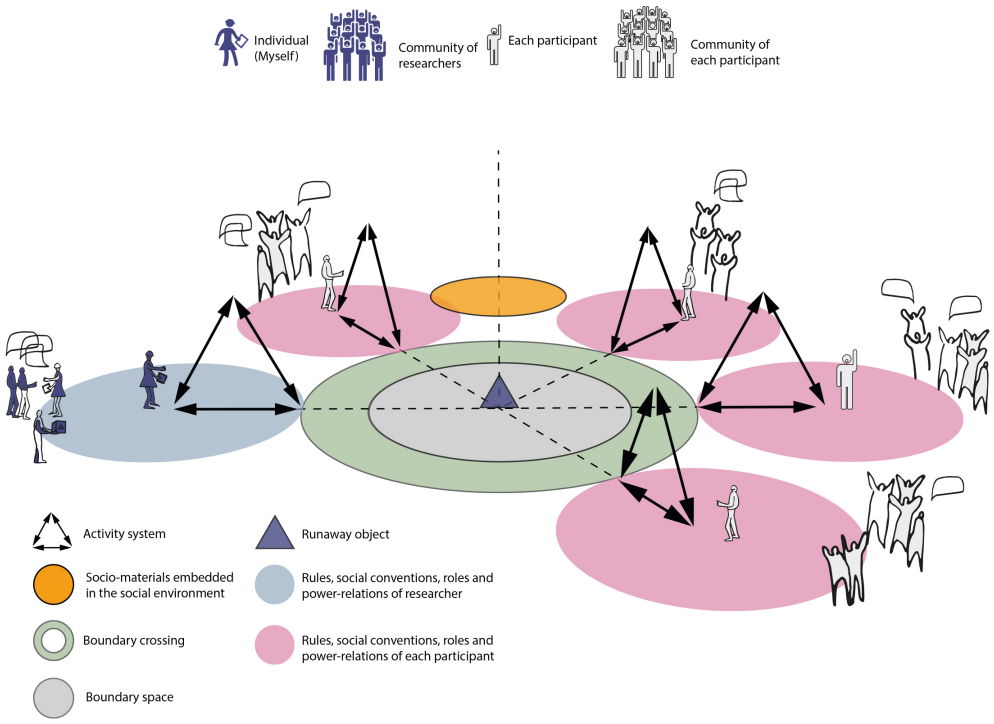


Figure 8.1. Mirian Calvo, Skeleton of the theoretical-framework depicting sociocultural dimensions of each participant, 2019

The social environment is understood as a source influencing participant perception, facilitating renegotiations of the terms and the 'order' under which behaviour would take place (first phase: boundary-crossing), leading to reconfiguring mutually-shared meanings (second phase: boundary-space). In design research CHAT has been applied as a tool to unearth disturbances/tensions in early stages of design processes, and as an analytical framework to unveil designerly collaborative engagements (section 2.6; Zahedi et al. 2017). Yet it has remained unexplored as a theoretical framework. This also features another theoretical contribution to design research, since there are no registered publications applying the CHAT-unit of analysis in tandem with the conceptualisations of perezhivanie, subjectivity and emotions – inherent motivational units for each participant (Fleer et al. 2017).

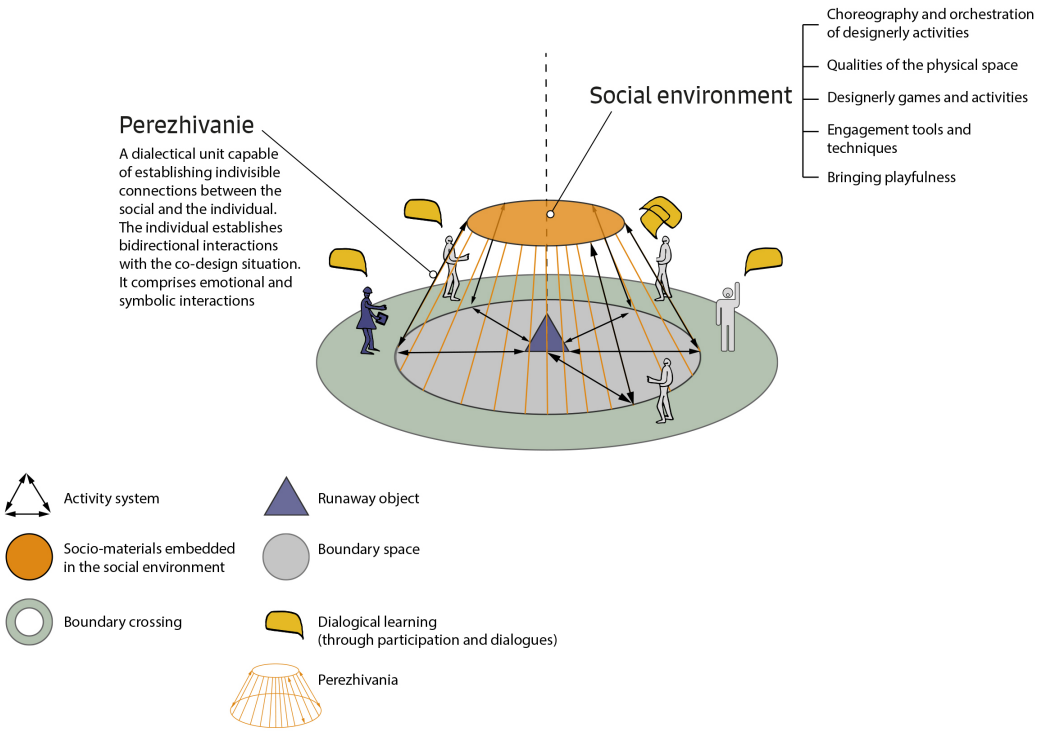


Figure 8.2. Mirian Calvo, Perezhivanie and social environment in the theoretical-framework, 2019

Figure 8.2 isolates these two key aspects, defining *perezhivanie* as an aesthetic and relational dialectical unit between the participant and the designerly stimulated social environment. What I suggested was that design-researchers and

practitioners have the means to directly intervene in the social environment, through orchestrating and choreographing design activities, supported by techniques, engagement tools and design games (appendix 3). This subtle and complex designerly act should consider the aesthetic and the 'political' (Mouffe 2013) dimensions of design. This also requires design-researchers and practitioners gaining socio-emotional competences to understand participant ways of feeling and doing (Markussen 2013), understanding and stimulating group dynamics, and reading the group mood in order to reorient the flow of engagements as needed. The reflective drawings assisted in unfolding sensory inquiry, thus, capturing such insights. Herein we find an opportunity to stimulate the emergence of egalitarian power relationships through playfulness, activating free, performative human interaction, creating spaces of inclusiveness – boundary-spaces. In turn, SSD may emerge, since most interviewees in CS1 and CS2 identified the first two activities conducted in the first co-design workshop as key IML moments (appendices 5.3.2.2 and 5.4.2.3).

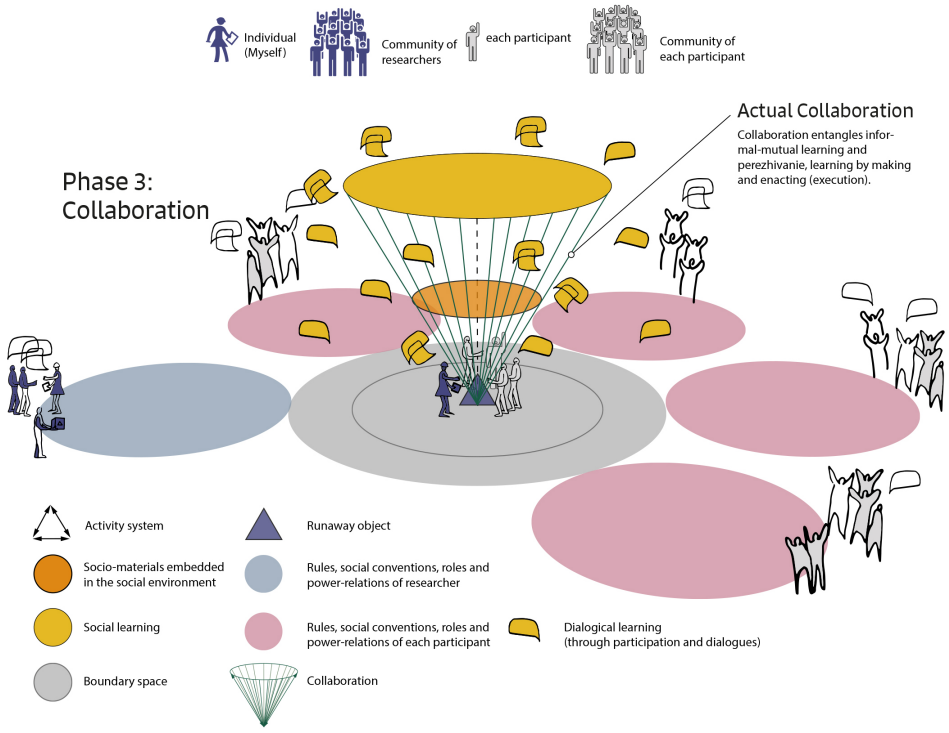


Figure 8.3. Mirian Calvo, Phase 3 of the theoretical-framework, participants enacting genuine collaboration, 2019

This framework represents another theoretical contribution to co-design, since there are no holistic models capable of interlacing the duality of the personal and social levels of being, learning, and design agency. Furthermore, it includes participant needs, desires and personal-social situations in the setting of each co-design situation. Further, it points out that IML emanates as an intermediary synergy in the process of building trust and respect, thus redistributing responsibilities and ownership. Lastly, it describes a democratic, multidimensional and interpersonal bonding to support IML. It can also assist in the debate (section 2.4.5) about how to overcome consultation for the sake of unleashing genuine collaboration. The significance of these conclusions leads me to suggest an epistemological shift in the practice of co-design, towards supporting favourable conditions for IML, since IML leads to collaborative enactment. Co-design has the capacity to stimulate processes of change, however small, which reinforce or produce a set of values and attitudes that embrace the principles of collaboration.

8.2.1 A theoretical contribution to CHAT

From a historical-cultural standpoint, the theoretical-framework theoretical-framework can be seen as an alternative or innovative model advancing studies of the interaction of multiple activity systems under horizontal power relations. This could shed light on one of the challenges of CHAT, enabling the framework to evolve. The strength of the framework lies in merging, to a degree, the CHAT-unit of analysis (fig.2.6) and the concepts of perezhivanie, emotions and subjectivity (Fleer et al. 2017; González Rey 2018, 2015, 2014) after a reinterpretation of Vygotsky's (1998; 1978; 1971) works.

8.3 Methodological contributions to co-design

From a methodological stance, this study has rigorously attempted to overcome the challenge of eliciting awareness of participant learning in co-design situations (section 2.5.3), in order to gather enriched data, with the intention of enlightening the research questions. A series of valuable meanings were produced and captured during the follow-up (stage 3, design-research). The interviewees manifested open attitudes (dispositional learning) toward others, different perspectives (subjective realities) and ways-of-doing. Such learning resulted mostly from learning by doing, playing and enjoying together, through socialisation and participation, answering to the prime research question of this study. All these items and patterns were captured thanks to the use of reflective drawings and devised reflective tasks/activities. Particularly relevant were the reflective interviews, where CER (Lally 2002) was a key method, which I combined with my reflective drawings as prompts to recall participant *perezhivanie*. Showing my reflective drawings became a means to recall their lived experience. By touching-handling, observing and inquiring my drawings, the participants had a greater access to their thoughts (and my thoughts) than through my verbal accounts. As a result, several tentative key areas of IML and ways of IML were detailed in Chapters 5-7. Yet this learning is usually implicit, going unnoticed through participant eyes, generally leading to tacit knowledge (Mündel & Schugurensky 2008), hence, invisible (Wenger et al. 2015). Adopting reflective practice facilitated the process of making implicit learning, to some degree, explicit.

Reflective drawing was another methodological contribution, which found influence on Broadley's (2013) use of drawing to "expressing my own subjectivity" (58) and "to interpret what may exist after the designer's intervention" (70), a tool for reflection. As mentioned in section 3.4.2, the notion of reflective drawing refers to the deployment of my drawing competences to assist in the cycles of reflections (embedded in the research-design): (i) first-order reflection, raising consciousness of my perezhivanie, establishing empathic bonds with the participants, unpacking group dynamics and emotional states as key drivers of data-gathering; (ii) second-order reflection, making more drawings throughout the process of stimulating

recall analysis (section 3.4.4); (iii) stimulating reflections on participant learning during the reflective interviews; and (iv) giving sense to relational patterns unfolded during my immersions, using geometrical, graphic and architectural notions of drawing to formulate the theoretical-framework, based on CHAT. Drawing is seen as a mediating activity to articulate theorisations, e.g. in the elaboration of the research-design (section 3.4.4) and the theoretical-framework (section 7.3). This outlines an original contribution to visual research methods, a method to visually depict the dialectical and aesthetic interaction between oneself and the social environment, a conscious use of drawing to support reflection and meaning-making, a vehicle to reflect and learn in a holistic manner. This led me to include the direct use of my senses, integrating visual, sensorial and kinaesthetic ways of learning: observing in-depth the details, connecting the parts and the whole. Through drawing I was, to some extent, attuned to participant emotional state through detailed observation of their emotions that were reflected in their facial expressions, gestures and body language. In turn, it provided insights into the emergence of relational patterns of group and individual behaviour, e.g. unfolding hierarchical power relations between the trustees and the staff of Newbold Trust in CS2 (GN-V-3), or, in CS1, breaking down interpersonal barriers between some participants (Graphic Novel Volumen II). This raised my awareness of the relevance of socio-emotional aspects in the formation of group dynamics, the social conventions, and the renegotiated norms of conversation and collaboration. The drawings located participants together, situated within the designerly social environment, so complementing other traditional ethnographic data-gathering methods, unpicking emotional dynamics which mere writing would find hard to identify. From my experience, ethnographic field notes help the researcher pay attention to what is being said and co-articulated, whereas reflective drawing foregrounds how such sharing-listening of personal stories is occurring, underscoring the ways of doing and socialising. It shifts the observational focus towards non-verbal interactions, contouring episodic memories, thus making them explicit to some extent. In fact, such an original deployment of reflective drawing has not been found in published papers.

In my view, the elaboration of a flexible and responsive methodology also represents another methodological contribution to co-design practice, one capable of absorbing the situatedness and constraints of constantly-changing research contexts. Its strength resides in fusing a PAR approach to the methodological framework of co-design (developed by Fuad-Luke (2009, 149) illustrated in fig.2.1), informed by ethnographic methods. PAR guided the scaffolding of the abstract level of the methodology, a dialogic learning following the spiral model of PAR research stages. Co-design methods subsequently focused such principles on choreographing and orchestrating the multiplicity of expertise and perspectives. Prime importance was accorded to multi-actor participation and socialisation in public designerly engagements towards the co-articulation of issues. 'Towards' has been the premise of this study: the value-creation process for the flourishing of shared meanings, divergence, and execution, leading to collaboration. This raised concerns over participation, and unravelled ethical and pragmatic issues on the process of building trust and respect amongst all the participants, including sensorial, socio-emotional and motivational aspects interwoven in learning (Bisquerra 2015). Ethnographic methods allowed me to observe, make reflective drawings, and live the experience, underscoring dynamics of social interaction that without participation would go unnoticed. My participation in concrete experience was crucial to forming sound and idiosyncratic understanding for identifying those IML situations.

I next devised a research-design (fig.3.3) that allowed me (and future design-researchers and practitioners) to deploy my own interdisciplinary and co-design practice in both case studies, focusing on intervening in designerly conditions for IML, fostering boundary-spaces to ignite multi-voiced ideas, envisioning collective futures, all leading to collective action. The two-way gears (fig.3.3) illustrate a five-stage process where each stage enfolds a number of methods drawn from different applied disciplines. Each method influences the others and vice-versa, reflecting the responsiveness and flexibility of the research-design, analogous to the mechanical movement of a watch, which enables back-and-forth movement. Each stage is linked with the same principle of reciprocation, and the different sizes

of the gears estimate the volume of time, based on my observations during CS1 and CS2. This, to my mind, is another ethical concern: a developmental research-design suggests a strong commitment to establishing egalitarian relationships.

8.4 A critical overview on the research: limitations

The study of community co-design is highly complex, and even more so the endeavour of drawing out participant learning associated with it, usually perceived as invisible since such situations are not thought of as educational, but usually as unintended and unconscious learning activity. As I understand it, the limitations of this thesis lie in the notion of participation. On its twin dimensions, social and personal, participation entails human-human and human-environment interactions. This highlights the production of emotions, subjectivity and perezhivanie (Fleer et al. 2017) as motivational units, generative systems producing renewed subjective realities from 'designerly social situations' onto each participant, dynamic features of activity systems representing participant performance and the emergence of meaning.

The multi-layered condition is another dimension in participation. By assembling diverse activity systems, I could recognise different levels of participation. For example, CS1-P3 was a peripheral participant. His participation was supported through two elements: the reflective journal, and my 'stimulated' interactions. I adopted a trigger role, making explicit that his participation and contribution were valuable, since I could gather insights from diverse levels of participation. He was unable to participate more fully due to the contingencies and temporalities of his personal situation. Similarly, CS1-P2 and CS2-P4 manifested intrinsic motivation, wanting to participate, but at some point of each case study unable to continue, becoming observers of the process from a distance. CS1-P3 unfolded his learning during the interview (see Chapter 7; appendix 5.3.2). Much of the learning strength fell back on the human-human interaction between us, indicating the relevance of establishing empathetic relationships in co-design. In this sense, these empathic and inclusive dimensions must be stimulated by the design-researcher, who inevitably develops different interpersonal bonds with participants.

On average, about a dozen individuals participated in each case study. Some adopted more central positions, e.g. CS1-P4 was actively engaged in several co-design situations but reluctant to engage in the ethnographic encounters, interviews or use the RJ and this choice was a personal one. This led me to reflect on another limitation, the recruitment process, inherently discriminative toward potential participants, with open debate in co-design about whom to invite and under which criteria. CS1-P4's motivations were strong enough to commit to the co-design situations, but her 'unknowing' about my research led her to decide not to participate in further activities. CS2's participants, who reported that the additional reflective activities were too much for them, largely adopted this pattern. During CS1, I experienced issues in recruiting participants, delaying the launch and extending the project beyond the scheduled agenda. This hindered contacting participants beforehand and time was spent explaining in more detail the implications and reasons behind committing to the study. This was a powerful, personal lesson which made me reflect on my limitations and led me to redo the methodology, reinforcing the principle of flexibility and capacity to absorb the emergence of contingencies caused by a continuously evolving sociocultural context of never-ending reconfigurations.

Other limitations were the quality and quantity of participation, essential conditions in co-design, due to their ability to influence co-design outcomes as well as the IML. The quantity of participation limited CD Workshop 1 in CS1, where the co-design consisted of two researchers and one participant. This evidenced the importance of directing efforts to reach as wide an audience as possible in order to overcome, even partially, the challenge of inclusiveness: potential participants with a valuable contribution to make who have not been reached due to a wide range of factors such as the time-constraints of a tight research agenda, reframing the scale of the project, and the resources available (economic, human, and facilities). This raises another limitation created by the contextualisation of this study, focused as it is on developing fieldwork in rural areas, geographically dispersed across the Highlands and Islands of Scotland. The geographical research decision aimed to

make a theoretical and practical contribution to this particular area, where my sponsor had an interest in strategically supporting local knowledge-production, echoing Nygaard & Bergo (1975).

Participant limitation also affects design-researchers who invariably reach the community with little time to familiarise themselves with its sociocultural context. The challenge here was met by adopting an ethnographic approach to access, giving greater accountability to the rationale behind participants doing what they do and how. This led to foregrounding their motivations and emotional journeys, which proved decisive in assembling the theoretical-framework and in understanding participation from a social constructivist position. In my view, the design-researcher must adjust to the situatedness. This requires role-shifting (designer, facilitator, choreographer, participant-observer, drawing-researcher, and research-analyst). Observation as a means for interaction emphasises another challenge, namely access to participants. In this study, the data collected had naturalistic limitations, contending with a limited number of participants (PS six, CS1 ten and CS2 twelve) who gave me access to their natural settings, allowing me to bring their voiced perspectives to the fore. To this extent, the study's limitations imply that the theorisation and final understanding may prove significant, contributing to theoretical advances in the aforementioned fields, when the theory is interpreted under the umbrella of the situatedness of diverse social environments, and from there co-generated by the people who, combining knowledge and motivation, decided to engage in the different research encounters.

8.5 Suggestions on future research

This study has conducted a context-based process of inquiry to uncovering how participants learn in community co-design (research question 1), with close attention to the designerly conditions for supporting such learning (sub-question 1.1), and formulating a theoretical-framework, through the lens of CHAT, to unfold and deepen our understanding of the relationship between IML and co-design (sub-question 1.2). The methodology gathered a breadth and depth of participant

learning evidence resulting from the orchestration and choreography of co-design situations. Yet the tentative conclusions articulated, in my view, need further research, with a number of aspects requiring further consideration.

Further implementation of the developmental methodology

The methodology was crafted, based on systematic dialogic learning with a pilot study and two case studies, all conducted in three rural areas in the Highlands and Islands of Scotland. Despite idiosyncratic nuances in these three locations, the patterns unfolded only reflect a specific geo-cultural spectrum of communities, which hampers the possibility of generalising. Despite testing the methodology in the validation workshop within the urban context of Bratislava (section 3.4.5; appendix 4.4, 41-73), I believe that implementation in a wider range of sociocultural contexts would benefit its refinement, strengthening a methodological approach to the practice of co-design.

Further research on the theoretical-framework

I contend that the tentative theoretical-framework elaborated here could become an innovative model for design-researchers and practitioners to employ as a holistic theoretical tool to observe the blossoming of multi-actor participation in designerly public engagements. Its strength lies in its capacity to translate a vast and deep tradition of research associated with CHAT, making it digestible to lesser expert audiences. In my view, implementing CHAT involves diving deep into an ocean of knowledge, and herein the framework could be seen as a potential opportunity to expand CHAT and its unit of analysis, and cross over to design research. The theoretical-framework has been validated, to some extent, by presenting it through an academic paper in the iJADE conference (February 2019), which was well received by the audience. Yet the theoretical-framework requires further study and implementation in different contexts of research, with different runway objects, observing the aforementioned socio-personal dimensions, designerly social environment, and the interactions unfold in order to tune it. This would advance our understanding of IML and co-design, which in turn

can deepen our understanding of the impact of co-design upon participants in learning terms.

Future research questions

This study proposed an epistemological shift in co-design practice, suggesting a focus on the designerly conditions for IML. This opens future research questions on how co-design frameworks could benefit from embracing such a suggestion. In this regard, Bødker et al. (2004), while developing a framework called MUST to conduct IT design projects, discovered a direct interrelation between how IML is established and how the project flows, affecting infrastructuring, tools and even the final design. The study suggested that co-design needs IML and this one argues that IML facilitates the enactment of genuine collaboration; therefore, scope exists for further research into the extent of mutual need and benefit.

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