

**Dynamics of Respectful Design in
Co-Creative and Co-Reflective
Encounters with Indigenous
Communities**

Elizabeth Simone Reitsma

PhD

2015

**Dynamics of Respectful Design in
Co-Creative and Co-Reflective
Encounters with Indigenous
Communities**

Elizabeth Simone Reitsma

A thesis submitted in partial fulfilment
of the requirements of the
University of Northumbria at
Newcastle
for the degree of
Doctor of Philosophy

Research undertaken in the
Faculty of Arts, Design & Social
Sciences

June 2015

Abstract

This research focuses on designing with indigenous communities. The use of design raises concerns in this context. Because of the aim to ‘improve’ lives and the emphasis on innovation, design approaches have the probability to colonise. As designers, we have to find ways to deal with such concerns. Approaches that do this within the context of indigenous communities are Sheehan’s respectful design and Tunstall’s culture-based innovation. Both approaches acknowledge that the community should benefit from projects. In this, the role of the designer becomes to spark the resourcefulness of the community members to find such benefit. However, neither approach states in pragmatic terms how such a space can be reached. Therefore, this research aims to: explore the dynamics of a respectful design space in co-creative and co-reflective encounters with indigenous communities; and to provide recommendations to reach such a space.

The explorations were performed by introducing co-creative design methods during a case study with three indigenous communities. Some co-creative processes led to respectful design spaces, others did not. All processes were analytically studied by combining annotated portfolios and content analysis in timelines. The aim was to find patterns of dynamics essential for respectful design. The dynamics that arose were: 1) ownership through the type of design participation, 2) indicators of ownership, 3) the type of novel expressions made and 4) the type of material culture introduced. This led to contributions of this research being, firstly, a framework of a respectful design space and recommendations of how to reach such a space. Secondly, the concept of constellations of design initiatives, to understand respectful design in situ. Thirdly, the importance of inclusion of the community’s own material culture to facilitate dialogical spaces, and, finally, the analytical approach used to find the dynamics.

- Contents -

Abstract	5
Contents	7
List of Figures	13
Acknowledgements	17
Declaration	19
<i>One</i> Introduction	21
1.1 StoryBeads	23
1.2 Sarawak, Malaysia	25
1.3 My Positionality as a Researcher	27
1.4 Design Approach and Concerns	28
1.4.1 Research-through-Design	29
1.4.2 Design versus Anthropology	29
1.4.3 Concerns	30
1.5 Dealing with Concerns	31
1.5.1 Indigenous Knowledge	33
1.5.2 Indigenous knowledge in Perspective	35
1.5.3 Why Indigenous Knowledge is Important	36
1.6 Research Focus: Aims and Objectives	37
1.7 Limitations of this Research	38
1.8 Outline of the Thesis	38
<i>Two</i> Co-Creation with Indigenous Communities	39
2.1 Colonising Discourses	39
2.2 Background of Participatory Design	40
2.3 Contemporary Participatory Design & the Connection to Respectful Design	41
2.4 Ideals of Participatory Design	41
2.5 Criticism towards Participatory Design	42
2.6 Challenges of Participatory Design in non-Western Contexts	44
2.7 Respectful Design and Culture-based Innovation in relation to Participatory Design	45
2.8 Symbiotic Collaborations	46

2.8.1 Temporary Togetherness	46
2.8.2 Roles	47
2.8.3 The Good Enough Designer	49
2.8.4 Becoming a Good Enough Designer	51
2.8.5 Analysing Symbiotic Relationships	54
2.9 Constellations of Design Initiatives to access “Third Spaces”	57
2.9.1 Empathy	59
2.9.2 Third Spaces	60
2.9.3 Boundary Objects	61
2.10 Conclusions and Gaps	63
<i>Three Methodology</i>	65
3.1 Research-through-Design Process	66
3.1.1 Design Process	68
3.1.2 Research Process	69
3.2 Data	70
3.2.1 Research Diaries	71
3.2.2 Visual Diaries	73
3.3 Design Methods: Constellations of Design Initiatives	74
3.3.1 Design Seeds	75
3.3.1.1 <i>Implementation of Probes</i>	77
3.3.2 Design Initiatives	79
3.3.3 Analysis	79
3.3.3.1 <i>Schematics of Constellations of Design Initiatives</i>	79
3.3.3.2 <i>Content Analysis</i>	80
3.4 Design Researcher: Analysis to Find Respectful Design Space	81
3.4.1 Shaping Virtual Worlds	82
3.4.2 Analytical Coding Concepts	85
3.4.2.1 <i>Ownership</i>	86
3.4.2.1.1 <i>Ownership of Process: Design Participation</i>	86
3.4.2.1.2 <i>Marking of Ownership: Indicators of Ownership</i>	88
3.4.2.3 <i>Novel Expressions</i>	91
3.4.2.4 <i>Type of Design Seeds & Indigenous Knowledge</i>	93

3.4.4 Reflection-in-Action	93
3.5 Rigor & Validation	98
3.6 Conclusion	98
<i>Four</i> Empirical Case Description – Preliminary Visits	101
4.1 Preliminary Visits	101
4.2 Personal Preparation	102
4.3 Process and Methodology of Preliminary Visits	103
4.3.1 Probes	104
4.3.2 Activities	105
4.3.3 Group Discussions	105
4.3.4 Research Diary & Reflections	108
4.3.5 Photobooks	108
4.3.6 Making Constellations of Design Initiatives	109
4.4 Experiencing Long Lamai	109
4.4.1 Long Lamai: Access & Acceptance	111
4.4.2 Long Lamai: Reflections on Use and Responses towards the Design Probes	114
4.4.3 Long Lamai: Conclusion	115
4.5 Experiencing Ba’Kelalan & Long Bawan	118
4.5.1 Ba’Kelalan & Long Bawan: Access & Acceptance	122
4.5.2 Ba’Kelalan & Long Bawan: Balancing Access and Acceptance	123
4.5.4 Ba’Kelalan & Long Bawan: Conclusion	126
4.6 Experiencing Pa’Lungan	126
4.6.1 Pa’Lungan: Access & Acceptance	129
4.6.2 Pa’Lungan: Local Designers and Design Probes	131
4.7 Deciding on a Community	134
4.8 Conclusion	136
<i>Five</i> Empirical Case Description: Co-Creative Encounters	137
5.1 Defining Design Direction	137
5.2 Personal Preparation	137
5.3 Constellations of Design Initiatives	138

5.3.1 Design Seeds	140
5.3.1.1 Design Probes	140
5.3.1.2 Technology Probes	141
5.3.2 Design Initiatives	144
5.4 First Co-creative Encounter	146
5.4.1 Detailed Description of my Stay	147
5.5 Second Co-creative Encounter	152
5.5.1 Detailed Description of my Stay	152
5.6 Third Co-creative Encounter	153
5.7 Outcome	157
5.8 Exhibitions	166
5.9 Constellations of Design Initiatives - an Overview	168
5.10 Conclusions	170
<i>Six</i> Roles - Interpretation Part 1	173
6.1 The Annotated Portfolios and Timeline Sheets	175
6.1.1 The Preliminary Visit	176
6.1.2 First Co-Creative Encounter	176
6.1.3 Second Co-Creative Encounter	177
6.1.4 Third Co-Creative Encounter	177
6.1.5 Exhibitions	181
6.1.6 Pattern Sheets	181
6.2 Design Activities	198
6.3 Initiative	200
6.3.1 Initiative: Research Diaries	200
6.3.2 Initiative: Annotated Portfolios	204
6.3.3 Consequences of Initiative Division for Respectful Design Space	204
6.4 Involvement	205
6.4.1 Garen and Other Parents	212
6.4.2 Youngsters	213
6.4.3 Elders	214
6.4.4 Consequences of Involvement for a Respectful Design Space	215
6.5 Design Participation	215

6.5.1 Innovation	217
6.5.2 Changing Attitudes	220
6.5.3 Negotiating Design Participation	222
6.5.4 Acceptance is followed by Patience	225
6.5.5 Towards Motivational Design Participation	227
6.5.5.1 <i>Motivational Design Participation as Ownership Marker</i>	229
6.5.5.2 <i>Pagang Stories and Motivational Design Participation</i>	229
6.5.6 Design Participatory Dynamics in a Respectful Design Space	231
6.6 Conclusions	232
<i>Seven</i> Material Culture – Interpretation Part 2	235
7.1 Indicators of Ownership	236
7.1.1 Indicators of Ownership: Research Diaries	236
7.1.1.1 <i>Enquiries and Expressions as Indicators of Ownership</i>	237
7.1.1.2 <i>Nurturing and Protection as Indicators of Ownership</i>	241
7.1.1.3 <i>Pride as an Indicator of Ownership</i>	243
7.1.1.4 <i>The role of No-ownership to Understand Ownership</i>	244
7.1.2 Indicators of Ownership: Comparing Research Diaries and Annotated Portfolios	247
7.1.3 Positioning Indicators of Ownership in Respectful Design Space Model	247
7.2 Novel Expressions	251
7.2.1 Proactive Novel Expressions	251
7.2.2 Contributory Novel Expressions	254
7.2.3 Design Seed Types and Novel Expressions	255
7.3 Design Seeds	259
7.3.1 The Community’s Design Seeds	260
7.3.1.1 <i>Embedment</i>	261
7.3.1.2 <i>Disconnection</i>	262
7.3.1.3 <i>Exploring Novel Concepts</i>	263
7.3.2 Combinations	264
7.3.3 My Design Seeds	265
7.3.3.1 <i>Considerations</i>	266

7.3.4 Design Seeds: Dynamics of a Respectful Design Space	268
7.4 Connection to Indigenous Knowledge	270
7.5 Reflection in Action - Learning Iterations	275
7.6 Conclusions	275
<i>Eight</i> Conclusion	281
8.1 Dynamics of a Respectful Design Space	282
8.1.1 Design Process: Co-reflective and Co-creative Encounters	283
8.1.2 Identifying Coding Categories for a Respectful Design Space	284
8.1.3 Reflection-in-action Process	284
8.1.4 Outcome	284
8.1.4.1 Ownership of Process: Design Participation	285
8.1.4.2 Indicators of Ownership	285
8.1.4.3 Novel Expressions	286
8.1.4.4 Indigenous Knowledge	287
8.1.4.5 Respectful Design Space	288
8.1.4.6 Recommendations	288
8.1.5 Design Constellations	290
8.2 Contributions to New Knowledge & Understanding	291
8.3 Future Work	294
Appendix One Content Analysis for Design Direction	297
Appendix Two Design Participation Codes	313
Appendix Three Indicators of Ownership Codes	351
Appendix Four Novel Expressions Codes	387
<i>Appendix Five</i> Reflection-in-Action Schematics	407
<i>Appendix Six</i> Ethics	419
<i>Appendix Seven</i> Publications	443
References	444

List of Figures

Figure 1.1 - The implementation of Xhosa cultural aesthetics in contemporary fashion by South African designer Laduma Ngxokolo (photo from MaXhosa by Laduma 2013).	21
Figure 1.2 - StoryBeads	24
Figure 1.3 - An overview of Malaysia.	25
Figure 1.4 - Sarawak.	25
Figure 1.5 - The three communities I intended to visit: Long Lamai, Ba'Kelalan & Bario.	26
Figure 1.6 - The reflective transformative design process as introduced by Hummels & Frens (2008).	28
Figure 2.1 - Lee's design participation tactics (2006).	50
Figure 2.2 - Adaptation of model of Burton-Jones (2001) by Dion-Stout & Kipling (2001).	53
Figure 2.3 - Dewey's (1965), Schön's (1983) and Kolb's (1984) learning model in comparison to each other.	55
Figure 2.4 - The elements of a descriptive framework as introduced by Dorst (2008).	56
Figure 3.1 - The research-through-design process of this project.	67
Figure 3.2 - An overview of the different co-creative encounters.	69
Figure 3.3 - An impression of the exhibitions	70
Figure 3.4 - An overview of all the type of data collected in the research diaries.	72
Figure 3.5 - An overview of all the types of data collected throughout the process.	74
Figure 3.6 - Triangulation in this research-through-design process.	74
Figure 3.7 - Sanders and Stappers' (2014) framework of probes, generative toolkits and prototyping.	75
Figure 3.8 - An overview of the type of probes used throughout the process.	77
Figure 3.9 - A fragment of the visual timeline that arose from the visual research diaries.	83
Figure 3.10 - The highlighted moments that arose from the visual timeline.	83
Figure 3.11 - Adapted design participation tactics framework (based on Lee's (2006)).	87
Figure 3.12 - The ownership framework that I used for the content analysis and annotating.	89
Figure 3.13 - Unworth's (2001) creativity matrix (above) and my adaptation: The novel expressions matrix that I used for the content analysis and annotating.	92
Figure 3.14 - The virtual world that I created through my analytical process for the research diaries.	94
Figure 3.15 - The virtual world that I created through my analytical process for the annotated portfolios.	96
Figure 4.1 - The probe set for the preliminary visits.	106
Figure 4.2 - The photo books for the communities.	109
Figure 4.3 - An annotated portfolio on my perspective on Long Lamai.	113

Figure 4.4 – Community meeting during which we co-reflected on all the different probes created.	114
Figure 4.5 - The constellation of design initiatives of Long Lamai.	116
Figure 4.6 - An example of drawings that were made to explain Oroo' to me.	118
Figure 4.7 - An annotated portfolio on my perspective on Ba'Kelalan.	121
Figure 4.8 - The constellation of design initiatives of Ba'Kelalan.	124
Figure 4.9 - an impression from my hike through the rainforest.	128
Figure 4.10 - An annotated portfolio on my perspective on Pa'Lungan.	131
Figure 4.11 - The constellation of design initiatives of Pa'Lungan.	132
Figure 4.12 - The 'arup' design.	134
Figure 4.13 - An overview of the constellation of design initiatives for each community.	135
Figure 5.1 - An overview of the content analysis process of the preliminary visits.	138
Figure 5.2 - The design probe for the co-creative encounters.	142
Figure 5.3 - The concept sketch of the musical instrument.	144
Figure 5.4 - The concept sketch of the lights.	145
Figure 5.5 - The timeline of the first co-creative encounter visit.	148
Figure 5.6 - Constellation of Design Initiative Diagram- First co-creative encounter.	150
Figure 5.7 - The timeline of the second co-creative encounter visit.	154
Figure 5.8 - This design made by Connie is the design that we choose because it had the most beautiful pattern.	156
Figure 5.9 - Playing the pagang.	156
Figure 5.10 - Constellation of Design Initiative Diagram - Second co-creative encounter.	158
Figure 5.11 - The timeline of the third co-creative encounter visit.	160
Figure 5.12 - Constellation of Design Initiative Diagram - Third co-creative encounter.	162
Figure 5.13 - Batu' Nue – The light shades.	165
Figure 5.14 - Lakat Tesen – the Pagang is resting on the platform.	165
Figure 5.15 - The Proud to be Penan -boxes.	167
Figure 5.16 - The welcome to Long Lamai -banner.	167
Figure 5.17 - Constellation of Design Initiative Diagram - Exhibitions.	169
Figure 5.18 - An overview of the constellations of design initiatives of the co-creative encounters.	171
Figure 6.1 - The virtual worlds that are discussed in this chapter and in Chapter 7.	174
Figure 6.2 - The annotated portfolios explained.	176
Figure 6.3 - The annotated portfolio of the preliminary visit to Long Lamai.	178
Figure 6.4 - The content analysis timeline of the preliminary visit to Long Lamai.	180
Figure 6.5 - The annotated portfolio of the first co-creative encounters.	182
Figure 6.6 - The content analysis timeline of the first co-creative encounters.	185
Figure 6.7 - The annotated portfolio of the second co-creative encounters.	186
Figure 6.8 - The content analysis timeline of the second co-creative encounters.	189
Figure 6.9 - The annotated portfolio of the third co-creative encounters.	190

Figure 6.10 - The content analysis timeline of the third co-creative encounters.	193
Figure 6.11 - The annotated portfolio of the exhibition stage.	194
Figure 6.12 - The content analysis timeline of the exhibition stage.	197
Figure 6.13 - The pattern sheets (an overview).	198
Figure 6.14 - The length of each stage of the design process.	198
Figure 6.15 - An overview of the role of the design activities in the design process.	199
Figure 6.16 - The pattern sheet for the division of initiative in the research diaries.	202
Figure 6.17 - The pattern sheet for the division of initiative in the annotated portfolios.	206
Figure 6.18 - The involvement pattern sheet for the research diaries.	208
Figure 6.19- The involvement pattern sheet for the annotated portfolios.	210
Figure 6.20- The pattern sheet for design participation.	218
Figure 6.21 - The timeline for establishing the design direction during the first co-creative encounter.	223
Figure 6.22 - Design participation implemented in a respectful design space.	232
Figure 7.1 - The indicators of ownership pattern sheets for the research diaries.	238
Figure 7.2 - Patterns of enquiry and expression phases within the design process as they arose from the indicators of ownership pattern sheet.	242
Figure 7.3 - The indicators of ownership pattern sheets for the annotated portfolios.	248
Figure 7.4 - Indicators of Ownership implemented in a respectful design space.	250
Figure 7.5 - The novel expressions pattern sheet for the research diary.	252
Figure 7.6 - The novel expressions pattern sheet for the annotated portfolio.	256
Figure 7.7 - The design seeds that were connected to the novel expressions pattern sheet of the annotated portfolios	258
Figure 7.8 - Novel expressions implemented in a respectful design space.	260
Figure 7.9 - The design seeds pattern sheet for the annotated portfolios.	261
Figure 7.10 - Interactions between our design seeds to support a brainstorm about the musical instrument.	264
Figure 7.11 - Drawings about Oroo’.	266
Figure 7.12 - Design seeds implemented in a respectful design space.	269
Figure 7.13 - Glimpses of Indigenous knowledge throughout the process.	272
Figure 7.14 - The perfect fit of the Pagang on the platform.	271
Figure 7.15 - The respectful design space framework.	274
Figure 7.16 - The reflection-in-action process of this research project.	276
Figure 7.17- The recommendations divided into five categories.	277

Acknowledgements

During this research journey one of the inspiring people I met said to me:

If you want to go fast go alone, if you want to go far go together.

This saying characterised the journey I took, for without all the people that I met during this process, I would not have made it this far. I want to thank all my ‘travel companions’ for their support along the way.

Firstly, I want to warmly thank my supervisors Paul Rodgers, Ann Light, Jayne Wallace and Trevor Duncan. Their support, feedback and challenging questions have been the foundation of my development as a researcher. Furthermore, I am grateful for the substantial (financial) support that I received from Northumbria University for without it, I would not have been able to perform this research.

I gratefully acknowledge the communities that took part in this project. Their hospitality, openness and trust were truly heartwarming.

I want to thank the entire Long Lamai community. I am especially thankful to Garen Jengan, for sharing his wisdom and guiding me to understanding the ways of his community. Furthermore, I want to thank Wilson Bian Bilare’ and his wife Joy for teaching me the Penan language and for providing a home away from home. I want to thank Sasha Bana, Connie and the youngsters of the community for their friendship. I am grateful to the elders of Long Lamai, for consenting to and taking part in the research. From Ba’Kelalan I want to thank Edwin and Kayan Meru for their friendship and for making me feel like I belonged to their family. I want to thank Ellyas Yesaya, Alex Balang and Alex’s family for their hospitality and knowledge during my stay in Long Bawan. Furthermore, I want to thank Supang Galih and Nabun Aran from Pa’Lungan. They have been like parents to me during my stays in Malaysia. I will always Sekenan (remember) them!

The support provided by UNIMAS has been of great significance for this project. I am grateful for Tariq Zaman’s support, friendship and advice. Without him this project would not have been possible. I further want to thank Alvin Yeo, for inviting me to work at ISITI and giving me access to their network. Furthermore, I want to thank Roger Harris for his advice along the way. I am grateful for the support this project received from the Knowledge Transfer Programme Project KTP/03/2012(02) E14099 funded by Ministry of Higher Education Malaysia.

I want to thank Peter Sercombe and Bob Woodward, as in my preparations for my journeys to Borneo, my conversations with them were of great value to me.

I am truly grateful to Bastiaan Ekeler, who once again helped me out and made my ideas reality.

I warmly thank Laura Warwick, Mersha Puente Aftab, Pablo Puente, Victor Martinez, Alana James, Malcolm Jones and the rest of Northumbria's PGR community, Virginie De Gouveia, Liz Roberts, Neal Holcroft, Carlos Galan-Diaz and Paul Gault who not only made this journey far more fun, but also provided me with support and advice when I needed it. Furthermore, I want to thank the world's best housemates: Dragos Naicu and Manuel Nuno, for listening to my concerns, helping me improve my work and for all the amazing food that helped me enjoy my time while being on this journey.

Without Nicola Bidwell and Heike Winschiers-Theophilus and their generous invitation to the IKTC'11 in Namibia, I would most probably not have ended up in Borneo. I am grateful for them believing in my work and for the possibilities they have provided me.

Lastly, I want to thank Daniel Brandon, Yta Beetsma, Ben and Jelmer Reitsma, Doutje Riegstra, Rob, Carla and Monica Brandon and the rest of my family for being there for me wherever I was. They have provided me with the sturdy home base, that enabled me to truly enjoy the feeling of having reached (home).

Declaration

I declare that the work contained in this thesis has not been submitted for any other award and that it is all my own work. I also confirm that this work fully acknowledges opinions, ideas and contributions from the work of others.

Any ethical clearance for the research presented in this thesis has been approved.

Approval has been sought and granted by the Faculty Ethics Committee on 11 July 2013.

I declare that the Word Count of this Thesis is 84827 words.

Name:

Signature:

Date:

One | Introduction

The field of design is engaging more and more in questions like, “*What does it mean to be human?*” (Tunstall 2011) and “*What does it mean to stand in someone else’s shoes?*” (Wright & McCarthy 2008). Through these empathic questions designers try to explore what it is that makes life rich, meaningful and personal. This results from the holistic emphasis of contemporary design on understanding spaces, interactions, meanings between people and artefact - rather than the artefact as a sole entity (Clarke 2011). These questions enable human-centred design to therefore, become more culturally relevant (Suri 2011). As a result, I observed that there is an inclination in the field of design to apply a personal or more specific focus in which no *one size fits all*.

Traditionally, design has been vastly Western oriented. I, however, became conscious of a trend in which influences from cultures outside ‘the West’ have found their way into design. I contribute this to the realisation that if design does not provide space for such influences, richness and diversity in the global material culture it will disappear. Other contributing factors that I consider are the increasingly multicultural societies and growing interaction between cultures due to the ease of travelling. To illustrate this shift in design we can look at the implementation of (indigenous) cultural values and aesthetics in design. The focus on cultural aesthetics in the work of, for example, Laduma Ngxokolo (MaXhosa by Laduma 2013) (see Figure 1.1) and Edric Ong (Edric Ong n.d) suggests an openness towards traditional indigenous aesthetics. This openness is interesting considering the perspective of-

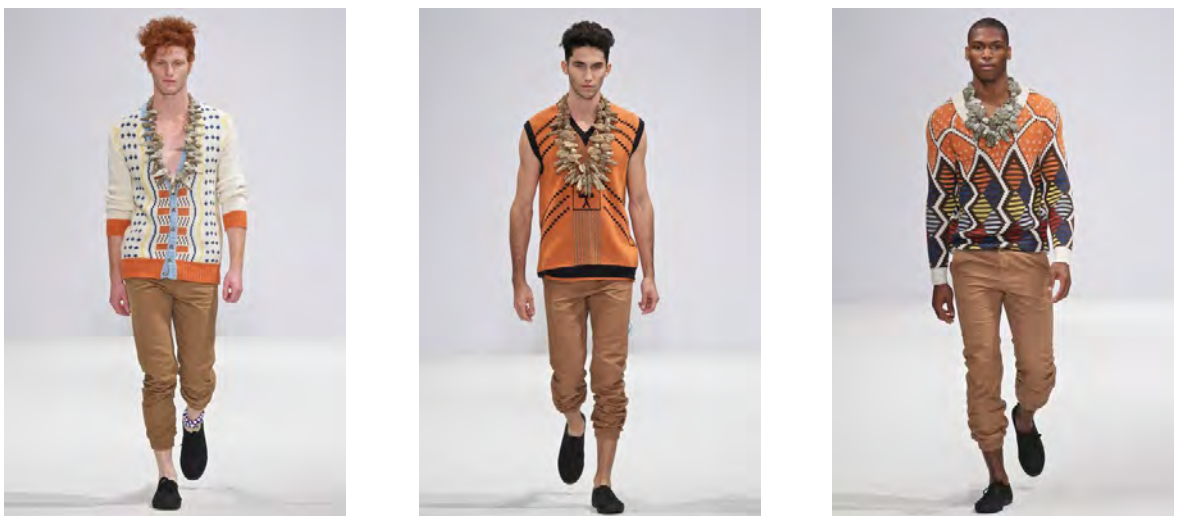


Figure 1.1 - The implementation of Xhosa cultural aesthetics in contemporary fashion by South African designer Laduma Ngxokolo (photo from MaXhosa by Laduma 2013).

ten taken in design to produce new and innovative projects - looking into the future, rather than back towards tradition. By using indigenous aesthetics, the designer has the ability to keep them alive, thereby preventing them from disappearing completely.

In October 2012, the International Council for Communication Design (Icograda) organised a conference in Sarawak (Borneo), Malaysia. The theme of this Icograda conference was *Rediscovery*. The organisers framed the theme Rediscovery to be:

a celebration of indigenous design and will highlight the relevance of local culture in a globalised world. It will invite participants to survey creative practices of local indigenous people and provide a context to re-think the future of design in relationship to cultural assets. It will also aim to demystify the magic of Borneo for local and international designers. - Icograda (2012)

As I see it, this focus on the importance of implementing indigenous aesthetics, values and culture in design, will beyond question lead to cross-cultural collaborations. Such cross-cultural collaborations have a tendency to raise issues such as on ownership and communication.

Designers contributing in cross-cultural collaborations are becoming aware of these issues and try to find practical answers. This can be seen in the emergence of events such as the symposium and workshop facilitated by UAL (University of the Arts, central St. Martins) and the AHRC in March 2014: *Bridging the Divide: Developing and Applying Design Methodologies for Cross Cultural Collaboration Symposium and Workshop* (Rhodes 2014). I attended this event. The central discussion was about how designers can work within this cross-cultural context in a respectful and ethical way. These discussions took place on a practical hands-on level, concerning questions like: “*How should I approach an indigenous community?*” and “*How should I deal with difficulties arising from cultural differences?*”. Several academics, such as Borgès (2012), Sheehan (2011) and Tunstall (2011) have emphasised the need of corresponding discussions. Rather than giving direct answers, their contributions highlight concerns on an abstract level about design approaches when working in a cross-cultural context. Both Sheehan and Tunstall introduce abstract approaches that deal with those concerns.

This thesis connects to discussions and concerns related to cross-cultural collaborations. It focuses on co-creative encounters with indigenous communities in Sarawak (Borneo), Malaysia. By means of a research-through-design case study and a reflective analysis of it, I have explored the dynamics of a respectful approach in such cross-cultural collaborations. During these reflections I specifically focused on my attitudes within this collaborative field.

My contribution through this work consists of pragmatic insights that focus on personal challenges that can arise when embarking on cross-cultural collaborations. I relate those personal challenges to dynamics of a respectful approach, thereby bridging the gap between abstract approaches such as de-

scribed in Sheehan, Tunstall and Borges' work and hands-on contributions such as discussed during events such as the workshop organised by Rhodes (2014). In this way, I consider this research relevant to other researchers embarking on participatory design projects with similar concerns, contexts and communities different to their own (whether to this extreme or not) in which design is central. Although the work described in this thesis is strongly connected to Human Computer Interaction (HCI), due to the focus on technology during the co-creative encounters, I consider this work to be equally valuable to designers working within other fields of co-design. Additionally, I see this work as being relevant for design educators, because I believe that this work shows that the traditional design education and its paradigms do not necessarily provide a space in which co-creativity can blossom.

1.1 StoryBeads

The co-creative collaborators within this project came to be three different indigenous communities in Sarawak (Borneo), Malaysia. I came in contact with these Malaysian communities through StoryBeads (Reitsma *et al.* 2013), my final project for the Master of Industrial Design at the Eindhoven University of Technology (TU/e). I shaped the StoryBeads project during an internship I undertook at the Meraka Institute of the CSIR, Pretoria, South Africa.

At Meraka, I met Ishmael Makitla. Ishmael is of the BaNtwane tribe, a tribe indigenous to South-Africa. This tribe has a rich beadwork tradition. Ishmael voiced a concern about the rapid pace in which the knowledge connected to the traditional beadwork was disappearing. He was worried that when he would have children, they would be unable to learn about the beadwork stories, because the knowledge would have disappeared completely. This concern became the foundation of StoryBeads, when Ishmael invited me to come up with a way for his community to keep the knowledge about the beadwork alive.

I started with visits to the community, in order to learn about the beadwork tradition and the oral storytelling of the BaNtwanes. I translated these insights into a first prototype of StoryBeads. StoryBeads is a recording system that uses a tangible bead, with an RFID tag to record or play back a story (Smith *et al.* 2011). I introduced this prototype to the traditional healer of the community. Traditional healers have a rich understanding about the BaNtwane beadwork and therefore this evaluation was of great importance to make StoryBeads culturally relevant. I translated the understandings and insights I got from this encounter into an adapted StoryBeads design. This design was adapted to the BaNtwane aesthetics and their way of storytelling (see Figure 1.2).

With this new design I went back to the BaNtwane community. I introduced it to two beadwork ladies, whose profession it is to create the beadwork. They used the design in a storytelling session concerning the knowledge about the beads. StoryBeads was successful in facilitating a session that adhered to the community's way of sharing a story. This was supported by the design of StoryBeads, which was designed to 'disappear' during the sessions (Reitsma 2015). This caused the ladies to fo-



Figure 1.2 - StoryBeads

cus their attention on the audience around, instead of on the recording device.

Although this iterative design process involved interactions with the community, it was not a co-creative process, unlike the process introduced in this thesis. It was however through this process, that I became interested in exploring the possibility of taking a more co-creative approach towards designing with indigenous communities. Another event that triggered the focus of this research was the encounter during which I introduced the prototype to the traditional healer of the BaNtwane community. On arrival, my colleague and I greeted the traditional healer, but he ignored us completely. His son told us that he first had to consult his ancestors to get approval to welcome us. We attended a ceremony of which we did not understand anything. After this ceremony the traditional healer welcomed us heartily. It was then that I realised that when working with indigenous groups, there will always be layers of knowledge that you do not understand. It was because of this realisation that I became interested in how to deal with accepting that you can not understand it all in a design process with indigenous communities.

I presented StoryBeads at the Indigenous Knowledge and Technology Conference 2011 (IKTC11) in Namibia. Here I met dr. Tariq Zaman from the Universiti Malaysia Sarawak (UNIMAS)'s Institute of Social Informatics and Technological Innovations (ISITI). He was interested in my work, and he anticipated that the communities that ISITI was working with would be interested in this kind of work as well. I was at that moment a few months into my PhD, and I was searching for communities to work with. My aim was to focus on cultural heritage. Tariq Zaman explained that many of the communities they worked with encountered the loss of cultural heritage. He invited me, if it was relevant for my research focus and if the communities agreed, to perform my research through the ISITI with local Sarawakian communities.

1.2 Sarawak, Malaysia

Sarawak is one of the thirteen states of Malaysia. Malaysia can be divided into two parts: Peninsular Malaysia (where Kuala Lumpur is located) and Borneo. Sarawak is one of the two Malaysian states on Borneo. The other Malaysian state on Borneo is Sabah. Borneo also has an Indonesian state: Kalimantan. UNIMAS and with that ISITI is located near the capital of Sarawak: Kuching. Figure 1.3 shows an overview of Malaysia. Figure 1.4 shows Sarawak.

The aim of ISITI is to empower societies by addressing their developmental needs in a sustainable manner by connecting them to a wider social and economical context. ISITI uses a multidisciplinary approach, focused on generating, disseminating, applying and preserving knowledge. One of ISITI's focuses is providing telecenters to remote, indigenous communities (ISITI-CoERI, *our mission*, 2014).

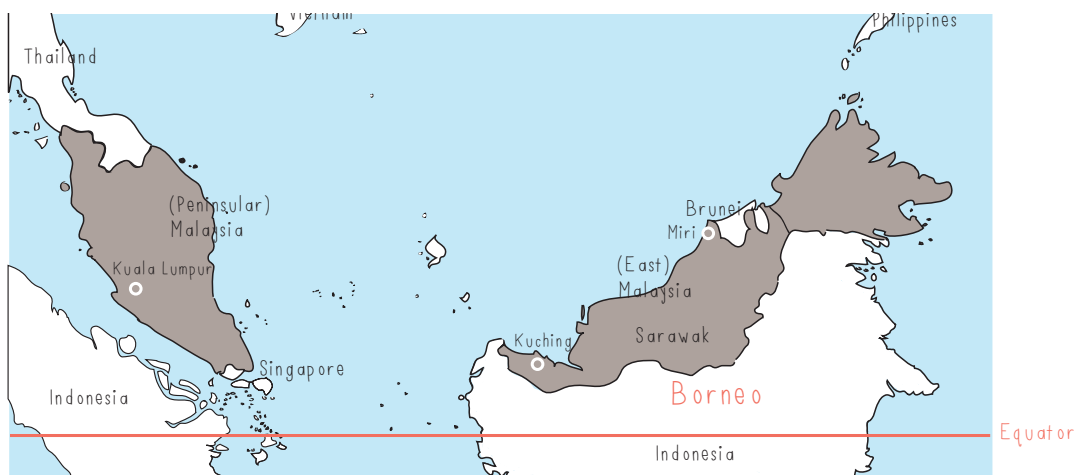


Figure 1.3 - An overview of Malaysia.

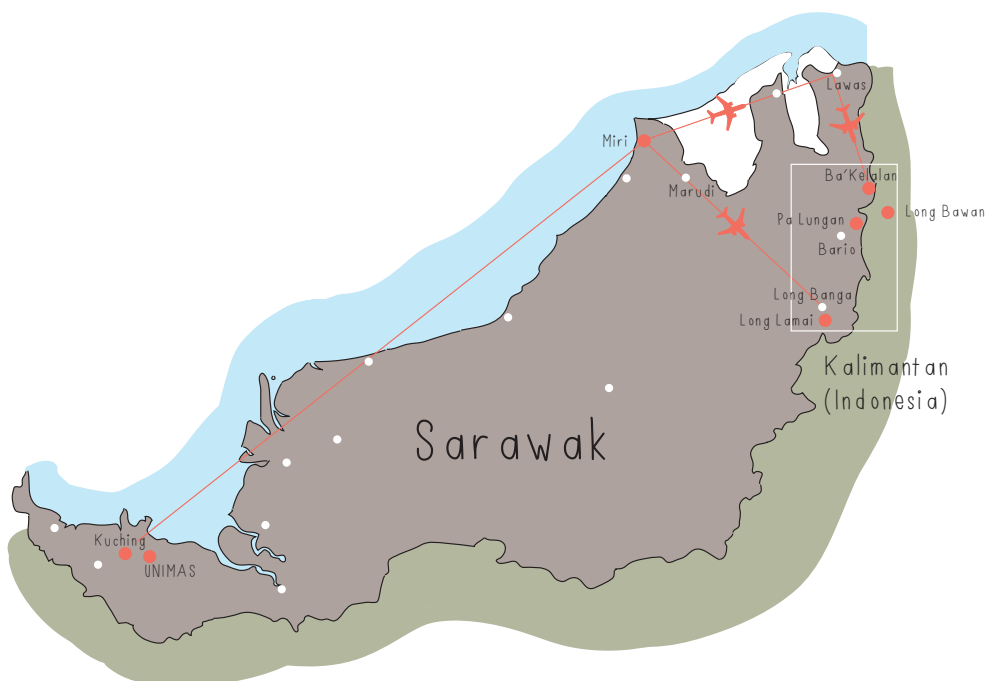


Figure 1.4 - Sarawak.

The first of those telecenters was started in 1999, in Bario. After that, others followed. In total ISITI is now collaborating with ten remote, indigenous communities through telecenters. Those communities are located in Sarawak, Sabah and in Peninsular Malaysia. In Sarawak there are: Long Lamai, Bario, Ba’Kelalan and Kampung Serasot-Bau. In Sabah there are two sites: Kampung Buayan and Pulau Lrarian. Furthermore, ISITI is working with four other sites in Peninsular Malaysia: Pos Lenjang, Pos Sendirut, Pos Bala and Pos Gob (Yeo *et al.* 2011).

Prior to the co-creative encounters starting, I undertook a preliminary visit to three different communities. For this visit, I had three months. In order to provide time for explorations with the different communities, I wanted to limit the amount of travelling between the communities. To make this possible, I aimed to find communities that I could travel between and that were not too difficult to reach. Another factor that played a role in the decision on which communities to visit, was the history of collaboration between the communities and ISITI. Since some of the communities were relatively new collaborators, the trust and understanding was not yet strong, which might have made it more complicated for me to go there. I therefore decided to connect with communities that ISITI had a longer history with. After several discussions with Tariq Zaman, and his conversations with the communities during which they showed interest in me visiting, I decided on visiting the three communities in the interior of Sarawak, close to the border with Kalimantan: Long Lamai, Ba’Kelalan and Bario (see Figure 1.5). All three of them can be reached by plane (and road/river) and are the three oldest

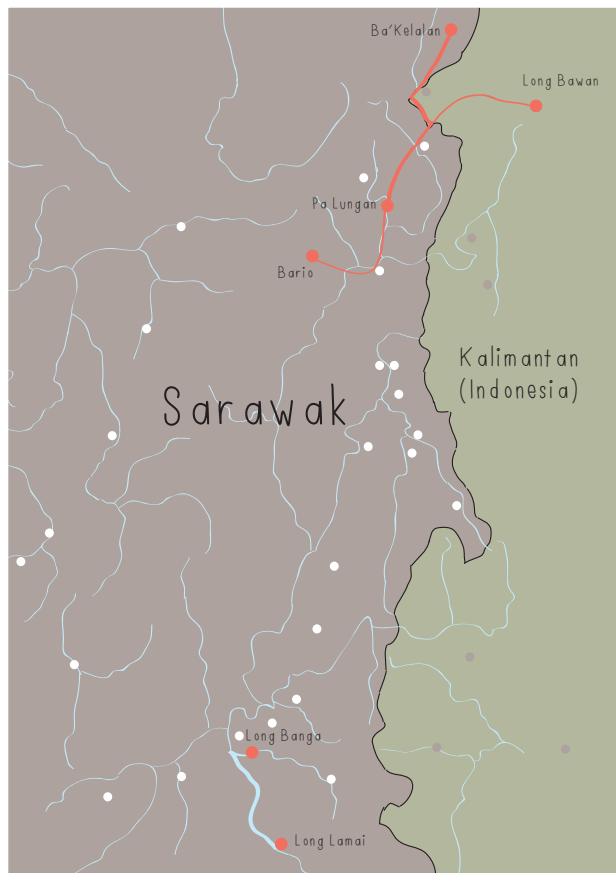


Figure 1.5 - The three communities I intended to visit: Long Lamai, Ba’Kelalan and Bario.

collaborators of the telecenter project. After the preliminary visit, I agreed with the Long Lamai community to continue the project with them. In Chapter 4, I will provide a more detailed insight into my visit to each of the communities.

1.3 My Positionality as a Researcher

The research presented in this thesis has a constructivist paradigm. In a constructivist paradigm, reality is a social construct (Flick 2004). This means that it cannot be understood independent of the researcher and the participants who make that reality. This is the reason why I will write this thesis in first-person narrative. It is also for this reason that I consider it important to give an insight into my educational background, since it is this that shaped me as a researcher/designer.

Before embarking on my PhD at Northumbria University, I did my bachelor (undergraduate) and my master degree at the Eindhoven University of Technology at the faculty of Industrial Design (ID). Industrial Design in Eindhoven focusses on the design of intelligent products, systems and services. Intelligence, as used in this context, entails: “adaptive behaviour, context awareness and highly dynamic interaction” (Hummels & Frens 2008). This focus on interaction suggests a strong connection to HCI and Interaction Design. A difference is that the educational model of ID is based on four pillars, not just technology and usability (like HCI) but also design and business. One of the focuses in ID is to design aesthetically pleasing objects and interactions (Overbeeke *et al.* 2002). The education model is rooted on competence-based learning. A competency within ID is defined as: “the ability of an individual to select, acquire, and use the knowledge, skills and attitudes required for effective behaviour in a specific professional, social, or learning context” (Hummels & Frens 2008). It puts equal weight to knowledge, skills and attitudes and stimulates learning by doing.

At ID, we were not assessed using marks. Instead, we had to write a self-reflective essay after each semester on which we were assessed. Through this essay we had to reflect on the developments we had made throughout the semester. This assessment method is based on Schön’s *the reflective practitioner* (1983). In this work, Schön puts emphasis on ‘knowing-in-action’. ‘Knowing-in-action’ integrates knowledge, skills and attitude (Hummels & Frens 2008). Because tacit knowledge is difficult to teach, Schön introduced reflection-in/on-action. Such reflection helps practitioners to develop and guide their ‘knowing-in-action’, which is a consequence of reflection-in-action (Schön 1983; Hummels & Frens 2008). Students at ID are assessed on their ability to reflect on their skill development rather than on the skill development itself.

At ID, we were stimulated to use a reflective transformative design process, introduced by Hummels and Frens (2008) (see Figure 1.6). At the core of such a design process lays the appreciation that a design context can be complex and ill-defined, without definite conditions or limits (Rittel & Webber 1973; Buchanan 1992). Such a context can be explored, set and framed by putting it in practice (Fallman 2003). Such an approach can be referred to as research-through-design. The reflective transformative process (Hummels & Frens 2008) is based on the idea that a designer should make

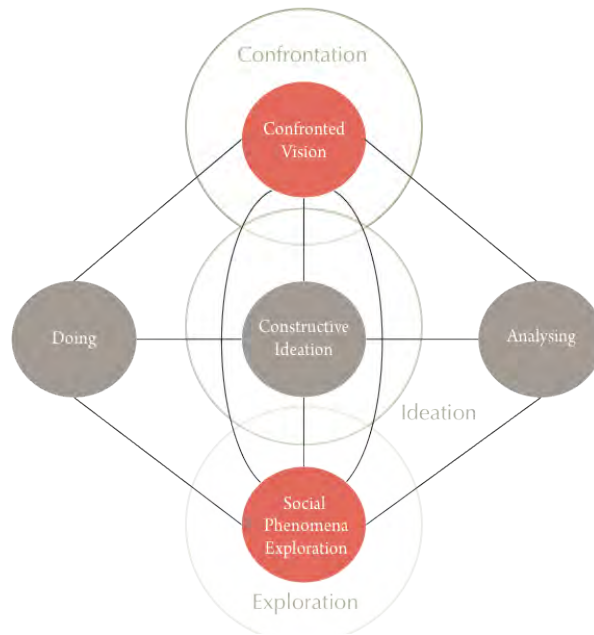


Figure 1.6 - The reflective transformative design process as introduced by Hummels & Frens (2008).

his/her decisions as best possible in that moment even if those decisions turn out to be incorrect, since the process enables validation and adjustment of decisions. By putting an idea or understanding in practice, it can be validated, resulting in a deeper understanding of the context. As such, design action thus helps the designer to generate knowledge as well as being a tool for analysis.

In a reflective transformative design process, there is a space in which community and designer interact, which is separate from the space in which the designer tries to make sense of the context. This matches the design participation tactic that Lee (2006) introduced as *innovation*. In such design participation the designer is the design expert, the role of the community is that of representatives of a group.

Moving between activities invites a moment for reflection, which designers can use to adjust their understanding of the context. The reflections and the validation moments, invited by the process, provide opportunity for designers to converge the design vision towards the reality of the context.

All these assets, such as the focus on reflection to guide personal development and iterative design in order to deepen understanding of the context and the focus on intelligent, aesthetically pleasing design, make me who I am as a design researcher.

1.4 Design Approach and Concerns

In this section I will explain the design approach I am taking, how this relates to anthropology and what the concerns are of using such an approach in the context of the project I am embarking on.

1.4.1 Research-through-Design

The approach that I take in my work can be characterised as research-through-design. In this I am both a designer and a researcher. I cannot be a researcher without being a designer, as both are intertwined in the approach I take. My research is informed by the experience of designing. This requires a strong focus on reflection-in-action. The design in this can be seen as a physical hypothesis.

As previously mentioned, my previous education had a strong focus on this type of design research. Because of the societal, embedded nature and its interdisciplinary character, the context of design has no set problem and no set outcome (Buchanan 1992). Research-through-design serves as a way to obtain an understanding of this context. In this work, the word design is used as the activity of designing as well as the outcome of this activity: the artefact (Friedman 2008).

Frayling (1993) was the first to mention research-through-design. However, there were others that began formulating more thoroughly what research-through-design actually entails. Jonas (2006; 2007) and Zimmerman *et al.* (2007), amongst others, continued the focus on research-through-design and described it as being characterised by:

- 1) its holistic integration of knowledge from other disciplines;
- 2) its iterative nature that leads to deeper insights into the context and desired opportunities;
- 3) its focus on the future;
- 4) its aim towards innovation;
- 5) its interaction between learning through making and reflection on what this means in the wider context.

The tools for research are objects, designs, prototypes and mock-ups (Koskinen *et al.* 2011). This physicality enables information and insights to arise that differ from information resulting from observations or interviews (Wallace *et al.* 2013).

Friedman (2008) and Zimmerman *et al.* (2010) expressed criticism towards the term research-through-design. According to them, research-through-design lacks a strong theoretical foundation. Koskinen *et al.* respond to this criticism in their book, *Design Research Through Practice* (Koskinen *et al.* 2011) by formulating research-through-design as constructive research. Constructive is in this sense, the creation of something. By naming it differently, they hope to disengage from the negative associations that are attached to the previous term. I, however, will be using the term research-through-design, because I think its name helps to differentiate it from other areas of design: research for design and research about design.

1.4.2 Design versus Anthropology

As my work involves working with indigenous communities, there is often assumed that there is a connection to anthropology. This is however not the case. This assumption is enforced by the type of question asked, which is like in anthropology about what it means to be human (Tunstall 2011)

and about being in the world (Overbeeke *et al.* 2002). Both fields study people and their behaviours. However, there is a difference in the way both fields understand what they see and what they do with the information.

Design is generative, speculative and transformational (Hunt 2011). To intervene with the context is part of a designer's working method (Hunt 2011). A context is explored globally, divergently and selectively (Hunt 2011). This exploration is about obtaining a first-hand experience rather than about fact finding or interpretations informed by theory (Koskinen *et al.* 2011). In this, it does not matter that much what you look at, but what you do with what you see (Suri 2011). Design often takes place in a relatively short timeframe (days or weeks instead of months) (Koskinen *et al.* 2011).

The temporality of anthropology is different in essence (Lenskjold 2011). In anthropology the researcher often patiently immerses himself/herself in the context and stays within this context for as long as it takes for them to understand what they want to understand (Hunt 2011). In understanding, the field is much more focused on detail (Hunt 2011). It is about holistically understanding a context, rather than about speculating on what happens next. Reflexivity is at the core of anthropologists working method. They acknowledge that they intervene, but they do not go in purposefully to change the context in a particular direction (Hunt 2011).

Thus, even though the questions in both fields are of a similar nature, both fields deal with understanding the context differently. I will obtain my understandings as a designer, I will use design skills and I try to use design methods where possible. The outcome of this research is thus an account contributing to the field of design.

1.4.3 Concerns

As mentioned in the previous section, the questions that design tries to answer are increasingly of an anthropological nature. By moving towards these types of questions designers move closer to problems, issues and concerns that anthropologists already encountered in their work. Because of its history and critical reflections on what asking those questions means, the field of anthropology has found attitudes to respectfully deal with these concerns. Since the field of design is relatively young and because it only started recently to broaden its focus on questions of a more anthropological nature, those issues, concerns and problems are relatively new to designers. I therefore consider it important to look at the lessons from anthropology in order to develop attitudes that deal with these issues, concerns and problems in a respectful manner. For this reason, I will focus in detail on this in the upcoming Chapter (2). There are however also concerns that are more specific for design.

The first of these concerns is that of design enabling processes of colonisation, such as expressed by Tunstall (2011). A group of older people expressed strongly in the Presence project that they did not want to contribute in a project where such a process was at the core:

"We don't need your patronising help, you designers. If you've come here to help us, you're wasting your time; we don't want to be helped, thanks just the same. Yet we do have some interesting observations to make about our daily lives, about our lifestyles,

about our communication, and about all of their attendant dysfunctions. If you could kindly change your attitude and help us explore how we will live, then perhaps we can do something together.” Thackara (1999)

Colonialism is about relationships of exploitation. It uses the weakness of others to strengthen oneself (Smith 1999). Because design is asking questions that explore how to ‘improve’ the human condition, the possibility of colonisation is stimulated. Seeing others as ones who need help, because they will not be able to help themselves, suggests colonisation. Such a perspective is even more sensitive in contexts with indigenous communities due to their history of being marginalised and patronised.

Connected to the concern of colonisation, is design’s focus on innovation (Tunstall 2011). Design is often celebratory about innovation. Connected to innovation are modernist values that progressively leave the past behind. It is about improving and since this ‘improving’ is often done by the elite/experts, innovation and the aim for it is again closely related to colonialism (Smith 1999).

Another concern that is related to the one introduced above is the intervening nature of design. This characteristic of design might not be desirable in all contexts. Not only is it questionable to introduce things in general, it is also challenging to predict the effect a specific intervention can have.

A further concern lies within the cross-cultural nature of and short-term engagement of this project. The people I am working with in this project have a different cultural background than myself. This influences the project in many ways: especially in understanding each other both on linguistic and cultural levels. And even though I strive towards empathic understanding, I know that with my best efforts I will only understand fragments. Due to time constraints, I will not have the time to learn the language of the people I will be working with, nor will I have unlimited time in the communities in order to truly experience the way they live in order to deepen my understanding.

Throughout this thesis and throughout my research I tried to be as empathic and respectful as I could be given the meeting of two cultures and the time-scale of the project. Within my methodology chapter I explore methods and attitudes to help me manage to be as respectful as possible given the nature of design and the concerns connected to this. In the next section I introduce approaches that provide perspectives to those concerns and therefore became the foundation of this PhD.

1.5 Dealing with Concerns

I looked at different approaches to find inspiration on how to work with indigenous groups in a way that acknowledges their way of living and their values. It has been difficult to truly understand how to provide space for this, since I did not really know what their way of living entailed. Tunstall (2011) introduced culture-based innovation. This approach acknowledges the problematic nature

of innovation as often referred to in the previous section. In culture-based innovation it is about making sure that the communities have the ability to create innovation and be the direct beneficiary of it. Culture-based innovation is about cultural recognition and respect. It is aimed at communities under environmental and/or social distress, both economic and symbolic remuneration. In order to provide space for culture-based innovation, the role of the designer is to facilitate the resources for the community to define beneficial project directions. Often in indigenous communities, the self-resourcefulness is much higher than in other places (Tunstall 2011). It is therefore important to stimulate this resourcefulness. Tunstall says that such an encouraging attitude is important for the sense of self-definition of the community. By providing answers directly for the community, the designer diminishes the resourcefulness of the community. At the same time, the provided answers might not even be relevant. Community-based innovation acknowledges the community's way of living and their values because it is a dialogue between design and indigenous knowledge. This acknowledgement of the community's indigenous knowledge is important since it lies at the foundation of these cultures. I explored other approaches that also practiced respect towards indigenous communities and their knowledge system. This resulted in finding the respectful design approach, as introduced by Sheehan (2011). I consider this approach very relevant to my research. Respectful design is informed by indigenous knowledge. Indigenous knowledge, as he states, is a layered understanding containing different streams of knowledge that interrelate nature and culture. To respect indigenous knowledge is to acknowledge that our perspective on things is always incomplete and that we therefore should show care and awareness when identifying, exploring and assessing meaning. Thus, an important dynamic in taking a respectful design approach is to be humble instead of taking the role of design expert. The complexity of the position of design in the natural systems and the social world with which it interacts requires us not to take the role of design expert. In order to position design in the natural systems and social world with which it can interact, design conversation and engagement are required. Only by adopting these is the design researcher able to co-create innovation that attempts to contribute positively to the wellbeing of the whole community.

In essence, both Tunstall and Sheehan's approaches are very similar. Both culture-based innovation and respectful design require the design researcher to take a step back, not direct the process, but offer a space and the resources for the community to be able to define in which direction they want to take the project. It is important to stimulate the resourcefulness of the community. Both approaches are about taking a humble perspective on what design can bring to the context. Both are about co-creating innovation of which the community is the direct beneficiary. And both are strongly intertwined, through dialogue, with indigenous knowledge. However, both approaches remain abstract. Neither states in practical terms what this dialogical space entails and how space for such a dialogue can be provided. Nonetheless, I do consider both approaches to be of great inspiration for participatory design involving indigenous communities. I therefore used the research described in this thesis to explore the dynamics of providing space for dialogue. I explored the role of the community and my

role. I, however, can only reflect on my experiences and on the observations from my perspective.

1.5.1 Indigenous Knowledge

The central role of indigenous knowledge within respectful design and community-based innovation is unique. To understand the importance of providing such a role for indigenous knowledge in participatory design involving indigenous communities, it is important to understand the role of indigenous knowledge in the community's culture.

There is no universal definition of what indigenous knowledge is, nor is there agreement about how to name indigenous knowledge. In this section, I will describe what indigenous knowledge is and what it is not, according to literature. From that I will introduce a definition of indigenous knowledge as will be used throughout my work.

Warren (1991) states that indigenous knowledge is local knowledge that is specific to a culture or community. This specific knowledge is intertwined with place, outside which it becomes irrelevant. According to Flavier *et al.* (2011), indigenous knowledge is dynamic and flexible in nature. It can change both through internal and external sources (Grenier 1998). Ruddle (1993) states that indigenous knowledge and the transmission of indigenous knowledge shapes culture and society such as culture and society shape indigenous knowledge and the transmission of indigenous knowledge. It is for this reason that the knowledge base of (indigenous) communities can change over time (Grenier 1998).

This also emerges from the way indigenous knowledge is transmitted, which is often through oral means (Grenier 1998). There is only a certain amount of knowledge that can exist in orality. The knowledge that appears to be irrelevant is not repeated anymore and will therefore disappear from the knowledge system (Ellen & Harris 1996).

Indigenous knowledge is social knowledge, meaning that it can only keep existing when it is shared (Grenier 1998). It is shared from generation to generation. Each person gets their own set of knowledge. Because of that, no one has all available knowledge. Indigenous knowledge is socially segmented. People will get a set of knowledge that is dependant on their status, gender or age. Indigenous knowledge is community-based. In this way, it shapes the collective memory of a community (Dion-Stout 2001).

Indigenous knowledge is often referred to as being holistic: knowledge is part of a knowledge system that combines all kinds of areas (Lalonde 1993). The knowledge cannot be divided into clear-cut categories, because all categories are interwoven.

Indigenous knowledge also reflects on the place of human beings in the bigger whole (Sheehan 2011). According to Sheehan, indigenous peoples do not believe they stand above other things in the world. In this world view, humans are merely a small part. They see the world as being alive, just like human beings, and that everything has its own place within this world. It is for this reason that indigenous peoples act with great respect towards their surroundings. Indigenous knowledge is also strongly connected to the spiritual world. There is often a central role for ancestors of the community, not only spiritually but also because the ways of doing have emerged from the ancestor's ways

of doing (Tunstall 2011; Lalonde 1993). This is connected to the fact that indigenous communities are often more dependent on their environment. They have developed ways to life with respect for their environment. Indigenous knowledge is also described as holistic in the sense that it enables the people, to which it belongs, to act on their intuition (Lalonde 1993). It gives them the wisdom to analyse a situation and act accordingly. This is because the knowledge is built through generations of experience (Marsden 2005). It has been tweaked through years and years of trial-and-error. All this has adapted the knowledge to the environment and to the people that use it. Because of this, it can be used as a pool of wisdom to base decisions on (Rosenfield *et al.* 2009). Eythorsson (1993) gives an example of a fisherman, who will react spontaneously on observations that deviate from the normal pattern. When he observes something unusual he will interpret this within the context of his experience and indigenous knowledge. He will decide on how to react either through consulting his community (and fellow fishermen) or base his decisions on intuition.

The indigenous knowledge is stored in people's memory and activities and will express itself through, for example, stories, materials, laws, rituals and and craft objects (Grenier 1998).

There is also a political meaning attached to indigenous knowledge. This meaning comes forward when looking at the meaning of 'Indigenous'. According to Marsden (2005), indigenous peoples are marginal people, dispossessed or threatened minorities.

Although the term Traditional Knowledge (or Traditional Ecological Knowledge) (Berkes 1993) is often used alternatively for indigenous knowledge, this term suggest that there is no room for innovation or change. It is also referred to as Local Knowledge (Marsden 2005; Warren 1991), but according to me this leaves out important characteristics such as that it is the knowledge of marginalised people or that it is community based. The word Folk Knowledge (Marsden 2005) refers too much to knowledge that cannot be taken seriously. Another word that is used is Vernacular Knowledge (Berkes 1993), but since it is not as commonly used as indigenous knowledge, I will not use this term.

To sum up, indigenous knowledge (IK) is:

- Local knowledge, community based;
- Dynamic and flexible (open to innovation if needed);
- Socially segmented (nobody knows all, the community together has all the knowledge);
- Holistic, respectful;
- Intuitive;
- Built up slowly (generations of experience);
- Marginal knowledge;
- Acknowledges spiritual dimensions;
- Collective memory;
- Narrative focus & oral based;
- And it vocalises through oral history, rituals and crafts.

1.5.2 Indigenous knowledge in Perspective

It is naive to say that indigenous communities solely rely on indigenous knowledge. Also the idea of indigenous communities being ‘undisturbed’, as people often seem to think, is not a realistic view. In this world we live in, all cultures are interacting. You will find televisions, mobile phones or Internet connections in the communities that I describe in this thesis as indigenous. This is the nature of cultures (Grenier 1998).

In the previous section it was stated that indigenous people live in harmony with nature, with respect to their environment. In essence this is true, but the reality of indigenous peoples can make this different. This is because of different pressures from outside. Sochaczewski (2012) describes this dilemma beautifully in his novel *an Inordinate Fondness for Beetles* (page 165-172). He describes his encounter with an indigenous man in Indonesia. This man shows Sochaczewski his garden. In order to make money from this garden, he has to walk two days to reach the nearest market. Even then he is not sure that he will be able to sell his products or that it will make enough to cover his expenses. A quick way to make money would be for him to shoot a few birds of paradise (which are protected) and to sell those to Chinese merchants in town. However, this is illegal. The WWF introduced a solution: they engaged local indigenous people in a butterfly-farming program. This program gives the indigenous people income and protects the butterflies. It seems like the perfect world and the writer thought that the man he spoke to embraced the importance of nature conservation. But on the day that Sochaczewski leaves the village and wants to say goodbye to the man, the man starts to show interest in his watch. Sochaczewski is not planning to give it to him and therefore the man offers to make a trade: the watch for a bird of paradise skin.

Indigenous communities often have a predominantly pre-modern value system (Tunstall 2011). At the core of such a system lies: social cohesion, being part of nature and following the way of the ancestors to ensure that cosmic harmony is maintained. However, such a value system is also interacting with other value systems. It can for example interact with modern value systems, which are about universal individuality. In modern value systems the sacred and the profane are separated and it is about a progressive future: ‘let’s leave the past behind!’ (Tunstall 2011). It also can interact with post-modern value systems in which the fragmentation of self and other is at the core, nature is experienced through simulation and in which time and space are compressed (Tunstall 2011).

Through interactions between the pre-modern value system and other systems, those systems start to mix. If modernist or post-modernist value systems take the force in these indigenous communities, it is very likely that they will progressively leave the past behind since that is in the nature of these value systems (Tunstall 2011). This will result in the disappearance of the pre-modern value system and with that of the indigenous knowledge. Pressures from economic models such as capitalism or neo-liberalism, can have a similar effect (Fulcher 2004; Steger & Roy, 2010). For example, capitalist values such as profit and private property force local economic systems to become more profit-driven and less based on exchange. Such a shift will support individualism, thereby also resulting in the loss of indigenous knowledge. As a reaction, Tunstall (2011) suggests to stimulate the adoption of

trans-modern value systems. Trans-modern value systems provide the ability to pick and choose from different value systems. By adopting a trans-modern value system, each community has to define which values to pick. But if it were that easy, then there was no such thing as the long power struggles for ethnic, cultural and political autonomy, that have been connected to post-colonialism (Young 2003). Because even though after colonialism, the formal dominance of Western rule ended, an informal dominance of Western culture remained within postcolonial societies (Young 2003). Ideas of civilisation that are connected to Western culture still control in pillars of for example governance, law, science, economics, music, art and design (Young 2003). So, in cross-cultural collaboration that is respectful to the indigenous knowledge of a community, there should be mechanisms in place, to stimulate the potential for grounding the collaboration in a trans-modern value system.

1.5.3 Why Indigenous Knowledge is Important

There are different reasons why it is important to keep indigenous knowledge alive. A reason for this is the uniqueness of individual cultures through local adaptations as a result of a long history of fine-tuning responses to the environment (Marsden 2005). The knowledge that is indigenous can be very valuable for sustainability, since it is mostly the indigenous cultures that live next to nature in a balanced manner (Grenier 1998). This indigenous knowledge could also establish a niche in business, in which development countries could flourish (Marsden 2005). Indigenous knowledge furthermore enables people to make decisions. As mentioned earlier, indigenous knowledge gives people a pool of wisdom to base their decisions on. When this pool of wisdom disappears and the people who have relied on indigenous knowledge, have to draw from Western knowledge they suddenly become very reliant and lose their independence.

Another important aspect of indigenous knowledge is its ability to guide the younger people of indigenous communities in their construction of identity (Szalavitz & Perry 2011; Wexler 2009). Indigenous knowledge helps people to position themselves in relation to history and to their society. It also situates them as actors in their community and in the world (Szalavitz & Perry 2011; Wexler 2009). Many younger people of indigenous communities, as Wexler (2009) describes, have difficulties to connect their personal experiences to the shared cultural experiences. This is because they are often juggling multiple identities. They are partly connected to the Western society, since they often have moved away from the community for educational reasons or in order to find work. On the other side, they are also partly connected to their indigenous identity. As can be concluded from the previous section, they are in between value-systems that have contradictory values. Due to this positioning these younger people often suffer from an identity crisis (Szalavitz & Perry 2011; Wexler 2009). It is of great importance that young people engage in their culture, because according to studies that Wexler describes, there are strong correlations between young people's well being and their personal engagement with their culture (Wexler 2009).

1.6 Research Focus: Aims and Objectives

I based the approach as described in this thesis on the respectful design approach of Sheehan (2011) and culture-based innovation by Tunstall (2011). Since both approaches have at the core that there should be benefit for the community, there was no set project direction from the start. Instead I had a global area in which I positioned the project: *cultural heritage*. Because of cultural and linguistic barriers emphasis on spoken accounts was complicated, less trustworthy and less comfortable for the communities and me. I therefore explored methods that focus on communication through making, such as design probes (Wallace *et al.* 2013) and co-reflective sessions (Tomico 2009).

I realised that by gaining a more thorough understanding of dynamics of respectful design I would be able to get a more thorough and pragmatic insight into what is required for a respectful design space or an a project based on community innovation to arise. My research aims thus became:

(A) To explore dynamics of a respectful design space in co-creative and co-reflective encounters with indigenous communities

In order to achieve this aim I:

- (1) performed co-creative and co-reflective encounters with indigenous communities;
- (2) identified expressions of respectful design from visual accounts and reflective research diaries resulting from those co-creative and co-reflective encounters;
- (3) translated those expressions into concepts for analysing respectful design and its dynamics that stand in relation to broader research;
- (4) designed a method to distill the expressions of respectful design through the use of analysing concepts from the visual and reflective diaries;
- (5) designed a method to discover patterns between the different analysis concepts in different stages of the research.

And:

(B) To obtain an understanding of what those dynamics mean for attitudes to be taken in order to reach a respectful design space.

In order to achieve this aim I:

- (1) defined what a 'respectful design space' entails, based on my understanding of dynamics of a respectful design space as acquired through aim A;
- (2) developed a reflective analysis process to support the reflections on my attitudes in providing a respectful design space;
- (3) connected these attitudes to the patterns in the dynamics of a respectful design (as obtained through A5)
- (4) defined recommendations for other researchers trying to create a respectful design space

based on the reflective process.

1.7 Limitations of this Research

This research has certain limitations. One of these limitations is that I am the sole designer-researcher. I am both the designer and the researcher. By separating those roles throughout this project, I created a distinctive design process and a distinctive research process. Through reflection-in-action I aimed to direct my own abilities to provide space for respectful design in situ. Due to time restrictions as a cause of the geographical distance and monetary pressures, I was only able to do this to a certain depth. Deeper reflection on my attitude and dynamics of a respectful design space took place in the research process, after the design case study. It was at this moment that I had a full overview of the process. However, this also meant that major issues that required deeper reflection to surface would only arise at the research stage. The consequence of this was that the adjustments that this deeper reflection suggested could not be implemented and tested.

I tried to reach a respectful design space to the best of my ability - based on my preparations prior to the visits and on my character. In each of the communities I visited I took the same approach, meaning that I was not able to compare different attitudes. The approach that I took was the approach that felt most natural to me and that I would be able to sustain throughout the case study.

1.8 Outline of the Thesis

This thesis is divided in eight chapters. In Chapter 2, I provide a literature review in which I have focused on co-creation with indigenous communities. I connect respectful design and community-based innovation to the broader field of participatory design. After that, symbiotic collaborations are explored, in which the collaboration is beneficial for everyone involved. In this, I examine the role of the designer and the role of the community in such a mutual beneficial collaborative space. Then, the notion of 'third' spaces is introduced, which are spaces in which there is no dominant cultural identity. In Chapter 3 the methodology of the research presented in this thesis is detailed. The focus lies on taking a design case study approach that can provide for third spaces to arise. Also in this chapter, the analytical process that I used to explore dynamics of a respectful design space, following from the data that arose from the case study is presented. Chapter 4 and 5 detail the case study and the preparations for it. In Chapter 4 I focus specifically on the preliminary visits to the Sarawakian communities of Long Lamai, Ba'Kelalan and Bario. I will explain how Long Lamai came to be the community taking part in the continuation of the project. Chapter 5 describes the co-creative encounters with the Long Lamai community. In Chapter 6 and 7 I explain my interpretations of the analytical process. I conclude this thesis with Chapter 8. Here I will detail the contributions to knowledge that this research brings.

Two | Co-Creation with Indigenous Communities

In this research I focus on designing with indigenous communities. These communities have been the focus of many researchers. Smith (2005) states that indigenous communities have become “the most researched’ in the world. In the approaches of many of those researchers, research has become a colonising construct (Mutua & Swadener 2004: 1). As Linda Tuhiwai Smith (1999:80) writes:

“They came, they saw, they named, they claimed”.

Research performed in such a way has a strong research-for-research-sake focus. The communities do not have any gain in participating in the research, but still put their time and effort into it. From many indigenous communities complaints have risen against these colonising and marginalising ways of doing research (Menzies 2001). Colonialism is about relationships of exploitation. It uses the weakness of others to strengthen oneself (Smith 1999). Research-for-research-sake places the participating indigenous community in a very vulnerable position because of these power structures. The paradigm often connected to such colonising research is a positivist paradigm (Liamputtong 2010): which is a very dehumanising approach for research in such contexts because it objectifies ‘the other’. In this objectification, interests, concerns and powers of the researcher that determine the research outcome remain hidden under the veil of neutrality and objectivity (Bishop 1998). Taking a constructivist paradigm emphasises the human factor in doing research and enables an empathic foundation for the research and participation (Light & Akama 2012). This reduces the vulnerable position of the communities. Smith (2005:126) emphasises that in the process of colonisation, which is happening when research becomes a colonising construct, something gets lost. This something is the indigenous knowledge and culture belonging to the indigenous community on which the research is focussed. Therefore, I sought an approach for this project that facilitated both empathy and respect towards the community’s indigenous knowledge.

2.1 Colonising Discourses

As I have mentioned before, there are multiple examples of projects where the indigenous communities on which the research is directed are disrespected, colonised and merely serve as a research subject (Smith 1999). This predominantly arises from:

- The research being started from the perspective of the researcher without exploring how the project could be beneficial for the community (resulting in knowledge for knowledge’s

sake (Geertz 1988)). Often when the researcher leaves, the community is left without anything valuable from the research (Smith 1999; Geertz 1988). Light *et al.* (2011b) posit that there has to be a balance between the benefit for the community and for the researcher,

- the lack of culture-sensitive ways of doing research and empathy towards the community (Steinhauer 2002),
- research being done on an indigenous community rather than with an indigenous community (Menzies 2001),
- alternatives to academic knowledge are being seen as less valuable (Smith 1999; Louis 2007).

It is for these reasons, as well as for the reasons introduced in the previous chapter, that I embrace respectful design (Sheehan 2011) and culture-based innovation (Tunstall 2011) as my approach towards this research (Reitsma *et al.* 2013). Both approaches fit within the tradition of Participatory Design Research due to their focus on providing space for dialogue in order to co-create innovation of which the community is the direct beneficiary. In order to understand contemporary Participatory Design Research, it is important to understand where it came from and how it has been used in contemporary projects. In this chapter I will first reflect on how other design researchers working within the sphere of Participatory Design with indigenous communities or with communities in developing countries deal with the challenges connected to this. After this I will formulate the character based on how I see Participatory Design within respectful design and culture-based innovation.

2.2 Background of Participatory Design

The tradition of Participatory Design research started in the 1970's in Scandinavia (Kensing & Blomberg 1998). It emerged when the trade unions of Norwegian Iron and Metal Workers decided that workers should be involved in the design and use of new computer applications that were being introduced in their workspace (Hussain & Sanders 2012; Bødker & Sundblad 2008). This process resulted in a close collaboration between designers, trade unions and workers (Bjerknes *et al.* 1987). The main values of design participation in this tradition were to provide democracy to the design process and to provide support to skilled workers (Björgvinsson *et al.* 2010). Consequently, it had a strong political character (Hussain & Sanders 2012). In North America another emphasis arose on Participatory Design Research, which was less politically rooted (Hussain & Sanders 2012). Here, the focus was on the design of useful and innovative products - interconnecting design and use (Greenbaum & Loi 2012). Whereas the Scandinavian tradition focussed mainly on organisational and workspace projects, the Northern American tradition focussed on all domains of people's life (Hussain & Sanders 2012).

2.3 Contemporary Participatory Design & the Connection to Respectful Design

These days, Participatory Design has become a hybrid of many sorts (Greenbaum & Loi 2012). Sanders *et al.* (2010) deal with this by defining Participatory Design broadly as:

a design practice that involves non-designers in various co-design activities throughout the design process. (Sanders et al. 2010)

Through such a broad definition, many approaches can be defined as Participatory Design. I value the emphasis on co-design or co-creative activities within this definition and will use this as a foundation of the definition of Participatory Design as I will formulate it at the end of this section. I, however, am also aware that this definition is very broad and does not reflect the democratic character of Participatory Design, in which all participants gain from the participation. Manzini and Rizzo (2011) highlight the importance of social innovation as the outcome of Participatory Design. As Bossen *et al.* (2012) and Madden *et al.* (2014) state, Participatory Design should be about improving the quality of life of those involved. Manzini and Rizzo (2011) formulate Participatory Design in cases where social innovation intersects with Participatory Design. This is what Participatory Design should be like according to them:

a constellation of design initiatives aiming at the construction of socio-material assemblies where social innovation can take place. (Manzini & Rizzo 2011)

In the case of this project, it is not about social innovation, instead it is about cultural innovation. It has to be noted that the initiative for the innovation should come from the community rather than from the designer in order to be truly respectful as stated by Tunstall (2011). In order to reach this, the community members become designers. This is a process in which the community should be supported. With no professional design experience, the resourcefulness of the community is something that can become the driving force of such innovation (Tunstall 2011). The role of the design researcher then becomes to support the community in this process by encouraging them to draw on their resourcefulness. This is not highlighted as such by Manzini and Rizzo (2011). However Light *et al.* (2013) do discuss this dynamic. They state that the process of Participatory Design should enable the beneficiaries to take action and influence the design, rather than just being part of the process. Their emphasis lies on ownership.

2.4 Ideals of Participatory Design

Within Participatory Design there is a broad variation of ideals of what the participation should look like (Bossen *et al.* 2012). There are for example ideals that directly connect to respectful design and

culture-based innovation. Those ideals state that Participatory Design is about:

- Involving those who are affected by the design (Björgvinsson *et al.* 2012).
- The research is being done by, for and with people who will benefit from it and is thus strongly connected to Participatory Action Research (Bossen *et al.* 2012).
- It is democratic and emancipatory (Greenbaum & Loi 2012) - which means that it aims to equalise power relations and find ways to give a voice to those for whom the design is intended.
- Participatory Design aims to understand use before use, both for the designer and for the participants from the community (Redström 2008).
- Both the process and the product are shaped by Participatory Design (Greenbaum & Loi 2012).

This connects to respectful design and culture-based innovation because one of the main focuses of both approaches is to make whatever is done, beneficial for the community, by involving the community in order to provide space for dialogue about possible future realities. Not only should the community be involved in shaping the design, they should also be involved in shaping the process of getting to that design (Light *et al.* 2013).

2.5 Criticism towards Participatory Design

Even though Participatory Design has utopian ideals, it has often been criticised due to its inability to live up to its potential in reality. This for example can be contributed to the type of design participation dominant in facilitating the interaction between designer and participants. There are different design participation tactics that can arise in a participatory field (Lee 2006). Each of those is connected with a different role for the designer and the participants. In one of these tactics, innovation, the designer is the expert, the participants' role is to represent a certain 'user group'. This way, the participants become merely a source of ideas and inspiration for innovation (Bossen *et al.* 2012). In this, the focus lies on early adopters - users that are more likely to embrace new ideas (Moore 1991; Rogers 1983). The focus of designers on this type of users comes from a concern for creating new ideas and innovation rather than caring for the lives of a broader user group (Bossen *et al.* 2012). This prevents the project from reaching a level of empathic understanding of what it means to live the life of the other person. Empathy should therefore be the foundation for research relationships in Participatory Design (Wright & McCarthy 2008). In order to reach empathy, the way research relationships are created should change (Lee 2008). Lee states that the focus of improving participation should be not on creating practical information about how to conduct Participatory Design, but instead on reflecting on the attitudes taken in creating relationships between designers and users. Only through that, can empathy be reached. According to Lee (2008), this is where true development can be made in relation to Participatory Design.

To conclude, I consider it important therefore to have a strong focus on reflecting on your own attitude as a researcher, within a Participatory Design process. In order to become more aware of your own attitudes, reflective learning processes are important to develop a thorough understanding of your own attitudes (Dewey 1965; Hummels & Frens 2008; Schön 1983).

Muller and Druin (2008) point out that only few Participatory Design projects focus on communities of ordinary people outside a high-value work context and outside an organisation. Manzini and Rizzo (2011) confirm this by highlighting the focus that has been given to big projects in Participatory Design. Participatory Design can be equally relevant, or more relevant in small local projects. The gains of such small local projects are more direct, and participants have more say in smaller projects. In a smaller project, participants often take part in the process as Manzini and Rizzo (2011) call them “non-professional designers”. By becoming “designers of their own reality” the communities get much more attachment to the project (Light *et al.* 2013). Transferring the role of ‘designer’ to the participants is important in creating a respectful space, but it raises the question which role the professional designer then plays within the process. Thus, embarking on a respectful design process requires really re-thinking the roles of participants as well as those of the designer (Light & Akama 2012).

It is important to note that although stakeholders might be involved in the process, this does not necessarily mean that there is Participatory Design (Merritt & Stolterman 2012; Iversen *et al.* 2012). Iversen *et al.* (2012) state that true Participatory Design is about negotiating values. Dearden and Rizvi (2008) voice that a critical examination should be done on the mainstream participatory methods and whether they are able to break power relationships. Iversen *et al.* (2012) posit that researchers often call a project participatory because they made use of participatory methods. However, as stated by Iversen *et al.* (2012) this is invalid. Instead, reflections and attitudes on how, when and why you would use these methods are just as important, if not more, for a project to become truly participatory (Iversen *et al.* 2012). Dearden and Rizvi (2008) voice that in many cases, participatory methods suggest that they are able to deal with power divisions, while in fact these methods are not able to do this. They point out that Participatory Design is moving constantly away from its original focus on balancing power. Dearden and Rizvi state that Participatory Design in non-Western contexts is even more affected by unequal power balances. The attitudes that have been devised are devised to deal with power divisions between people with a similar cultural background. It is difficult to translate those attitudes to multicultural contexts. In order to diminish power differences within the participatory process, there should be an aim towards symbiotic collaboration, in which mutual benefit arises from participating within the process. Balka (2010) points out that outcomes of projects that are based on Design Participation are seldom discussed. This is remarkable when looking at the main ideals of Participatory Design: to improve the life of those involved, its focus on social innovation, democracy and emancipation in its decision making. Bossen *et al.* (2012) state that especially the

input from participants in this process is often lacking. Bossen *et al.* (2012) reflect that this type of information is often sought for informally during or after a project. A structured analysis of the gains experienced by the participants is mostly lacking.

2.6 Challenges of Participatory Design in non-Western Contexts

Participatory Design has not been developed to work in a multi-cultural context, because of its Western focus (Dearden & Rizvi 2008). In order to make Participatory Design relevant for projects within multi-cultural contexts, researchers working within this field have started to vocalise challenges specific to working within this context. Oyugi *et al.* (2008) organised a workshop at the Participatory Design Research Conference 2008 during which challenges have been identified for performing Participatory Design within a non-Western context. Winschiers-Theophilus *et al.* (2010), Dearden and Rizvi (2008) and Puri *et al.* (2004) have identified similar challenges.

One of these challenges lies in balancing the power within a multicultural context (Bauman 2011). Camara *et al.* (2008) introduce this problem through a case-study. They performed Participatory Design work both with a Tanzanian and a Swedish community. Where in Sweden, the participants took the lead; the designers seemed to dominate in the Tanzanian case. By stepping into a community as a researcher, you have to acknowledge that your cultural background unintentionally will have consequences for the balance in power.

This is why Winschiers-Theophilus *et al.* (2010) introduce the concept of ‘being participated’ as a researcher. In this approach, the designer should not exclusively hold leadership roles. They highlight that the process of establishing participation is an emergent process. However much you want to prepare it before going into the field it can only be truly negotiated in situ (Winschiers-Theophilus *et al.* 2012). Without a democratic focus, in which the power balance is as equally divided as possible, there is no true Participatory Design. Even though I agree with Winschiers-Theophilus *et al.* (2010) that the true dynamics should be negotiated in situ, I also realise that it is important to have an attitude towards equal participation beforehand, in order to be able to create space for this negotiation to take place.

Another challenge lies in the cultural and linguistic barriers between host communities and the visiting designers (Oyugi *et al.* 2008). These challenges have to be incorporated within the approach and methods introduced. In addition, low-literacy levels might influence the ease of collaboration and hence also have to be taken into account and facilitated for within the approaches and methods. Furthermore, there is the challenge of introducing Participatory Design techniques and methods. It might be that those techniques are incompatible with the values of the participants. There might be communication codes that influence flows of participation (Hussain & Sanders 2012; van Rijn *et al.* 2006) towards which methods should be selected and used. This raises questions about how to adapt

the methods prior to the research with challenges such as geographical distance and poor quality of telecommunication. I therefore consider it important that flexibility is incorporated that enables trying out and adjusting tools as you go along. Heavy reliance on language should be avoided.

2.7 Respectful Design and Culture-based Innovation in relation to Participatory Design

To summarise the previous sections, respectful design and culture-based innovation fit within the tradition of Participatory Design. This is because both approaches emphasise providing a dialogical space to co-create innovation of which the community is the direct beneficiary. Both approaches share the ideals of Participatory Design to be democratic and emancipatory. Furthermore, both approaches share Participatory Design's focus on involving those who are affected by the design, with the intention to improve the quality of their lives. The involvement of those affected by the design should have a symbiotic character: there should be mutual benefit for the community and for the designer.

In the case of respectful design and culture-based innovation, the aim is to create cultural innovation and not social innovation of the kind described by Manzini and Rizzo (2011). In this creation, the community should take the initiative. Participatory Design aims to envision innovations before the innovation truly exists. The participants, in order to reach culture-based innovation as well as involving them in the design process, become designers. The design researcher can facilitate this exploration through co-creative activities. Manzini and Rizzo have termed these activities as constellations of design initiatives.

Challenges within Participatory Design are in negotiating tactics of design participation in order to provide space for the participants to take part in the explorations of new realities. By stimulating participants to contribute actively as non-professional designers, the focus can lie on the true wishes, concerns and values of the community. In order to learn what it means to live the life of the other person, in order to understand their wishes and concerns, empathy should have a central role. Empathy is also important in the creation and negotiation of relationships. Hence, I will characterise the Participatory Design in respectful design or culture-based innovation as:

Co-creativity stimulated by a constellation of design initiatives that involves symbiotic collaboration between professional and non-professional designers in order to provide space for empathic dialogue to explore potential culture-based innovation.

Like other researchers, who have focused on Participatory Design projects in developmental or multicultural contexts highlight, this focus brings some extra challenges. Balancing power relations is already difficult and challenging in Participatory Design between people with similar cultural backgrounds. However, this is even more challenging in developmental or multicultural contexts due to

(unintentional) assumptions based on post-colonial power-hierarchies.

Another challenge lies in the uncertainty about the appropriateness of methods and techniques in relation to the communication code and cultural values within the host community. This, together with other challenges, such as cultural/language barriers, low-literacy, the geographical distance and poor-quality of telecommunication tools make it difficult to find applicable tools and methods.

In the following sections I will explore attitudes towards balancing power relations within Participatory Design. In this I will focus on how other researchers have dealt with the challenges of defining roles and symbiotic collaborations.

After that, I will focus on what 'space for dialogue' can mean. Then, I will focus on what constellations of design initiative can look like, how they can stimulate co-creativity and how they can attempt to overcome challenges of cultural differences, distances and communication.

I consider all of these elements important in order to understand how a potential respectful design space could be facilitated.

2.8 Symbiotic Collaborations

When working within a co-design project, it is important that the designer does not take a dominant role. Ultimately the designer should embrace a supporting role, in order to help the collaboration blossom. This section is concerned with how designers can embrace such a role, what the role of the community can be like and how to provide space for a symbiotic collaboration to flourish.

A symbiotic collaboration is a collaboration based on symbiosis. The word symbiosis refers to a mutually beneficial relationship between different people or groups. This reflects the important dynamic of both respectful design (Sheehan 2011) and culture-based innovation (Tunstall 2011) that the community involved should have a benefit from participating. Only when the participants get sufficient authority to determine and guide the research and the research agenda, can a project be truly participatory (Winschiers-Theophilus 2009)

The true reasons behind embarking on a Participatory Design process should always be known from both directions. Such an ethical and transparent approach is the foundation for a true symbiotic relationship (Van Klaveren 2012).

However, the challenge according to Sanders and Stappers (2008) is to reach such design participation.

2.8.1 Temporary Togetherness

In her work, van Klaveren (2012) explores the concept of what she introduces as togetherness. Togetherness refers to the temporary feeling of belonging together that arises from having a similar goal and to work towards that goal collectively. According to van Klaveren (2012) time is of great importance for togetherness to arise. Geertz (1973) states that through long term interaction with the

community, the project can obtain a participatory foundation in which the community contributes actively to the insights. This foundation is not based on thinking realistically and concretely about them. Instead it is about thinking creatively and imaginatively with them. As Lippard (2010) states about the importance of time in relationship building:

'by building relationships over time with the community, you can overcome the level of tourism and collect valuable insights rather than souvenirs.' (Lippard 2010 pg 102)

Van Klaveren (2012) states that through time, an outsider can become an insider. I however, do not agree with this. It is important to realise that when embarking on community-based projects it should never be the aim to become part of the community forever or at all in fact. It is about shaping volatile, liquid communities, that crystallise due to a sense of common identity, a commonly envisioned gain or because they are based on a shared conceptual platform (Rodil *et al.* 2012). The moment this commonly envisioned gain is fulfilled, and each actor goes separate ways, this togetherness disappears (Bidwell *et al.* 2011; Walker *et al.* 2008). In relation to this temporality of the sense of togetherness, I would suggest to change the name of the concept togetherness into temporary togetherness.

You can look at temporary togetherness as a collective of people that have become a community of practice (Wenger 1999). Wenger defines such communities as: “groups of people who share a concern, a set of problems or a passion about a topic and who deepen their knowledge and expertise in this area by interacting on an on-going basis”. In order to take part in a community of practice you have to get permission to take part (Lave & Wenger 1991) and be accepted as a member. Then you can gradually take full participation.

Co-creative activities can create a temporary feeling of togetherness (Van Klaveren 2012). By making things together, you start sharing visions about possible futures. Sheehan (2011) reflects on co-creation as a way to get a deep interaction, facilitating a connective process. Wallace *et al.* (2013) reflect on this as co-creativity, which has a democratic dynamic since both participants and researcher need to invest. In these participatory practices, the initiative should be shared. The initiative should not solely arise from the designer or from the community. Instead it should start from a collaborative sense of direction. From here, beneficial design directions can be explored. Even though this project is a community-based project, not everyone in the community will be interested to take part in these explorations. There should be no pressure towards the community. Self-selecting stakeholders have to stand up to join the process of creation (Chesbrough 2003). If this does not happen, there is no foundation for a Participatory Design project.

2.8.2 Roles

Traditionally, the designer would be the one in charge of the making and the final design (Sanders & Stappers 2014). Through co-design, the participants become invited into making in order to explore and make sense of their own futures (Sanders & Stappers 2014). This connects to, as I have found, and presented in the previous sections, the importance for the community members to become active

contributors in charge of the process and of the final design. This, however, asks for reconsidering the role of the designer within such a process. As stated by Manzini and Rizzo (2011), the designer's role as facilitator has been recognised most as the new role for the designer within the Participatory Design process. Even though the role of the designer that I propose might be interpreted as that of a facilitator I do not connect this terminology to it, because like Thorpe and Gamman (2011), I feel like it suggests that the designer is not really part of the process but instead stands above it.

Instead I consider each actor in a co-design process as a participant. Myself included. Each participant brings different knowledge, ideas and competences to the process (Manzini & Rizzo 2011). Madden *et al.* (2014) therefore acknowledge a partnership of experts. In such a partnership the community would bring in their expertise on their lives and their indigenous knowledge. I would be the expert on design, being able to contribute with methods, knowledge and approaches to explore a design space in order to reach culture-based innovation. Similarly, Manzini and Rizzo (2011) give the designer a role of a co-actor within the process. Sometimes this will mean that the designer takes an expert role, sometimes he/she will not. In such a partnership I acknowledge like Manzini and Rizzo (2011) that each of the participants has the potential to be creative. Each of the participants potentially has management capacities and each has the capability to figure out, enhance and manage new solutions. This is linked to the idea of resourcefulness, which I will use in this thesis as the ability to find quick and clever ways to overcome difficulties. To overcome difficulties, reaching out to ones own resources is key. In a partnership of experts, the resources one has is the expertise one brings. As stated by Odom (2010) the resourcefulness of the community is of great importance and a driving force towards culture-based innovation. Ultimately, the community members would become the driving force of the process and of the final design. However, resourcefulness is not an immediate attitude that will emerge straight from the outset of the project from the community members. The type of collaborative space that I introduce - a design space - is new to them. They first should have the ability to find their way in this.

In Participatory Design there are often references to highly resourceful participants, for example in DiSalvo *et al.* (2008) and in Bjorgvinsson *et al.* (2010). This is not just a characteristic of the participants, but also of the designer who is able to provide space for those participants to reach such high resourcefulness. The result of this is that in contexts in which the participants are characteristically less resourceful, there is still the potential to reach resourcefulness from the participants if the designer is able to provide a structure for them to reach out to their own skills, knowledge and expertise (Aarhus *et al.* 2010). So, within a respectful design space the most important role of the designer is to encourage the resourcefulness of the community members. This role has different facets. For instance, there is a catalysing side to it, in which the designer should try to stimulate the community members to reach out for their own resourcefulness. Manzini and Rizzo (2011) refer to this facet as the designer's role to trigger. According to Meroni (2010) and Simeone and Corubolo (2011) the role of trigger uses the best of a designers capacities and sensitivities. Using these capacities and sensitivities can result in sparking new initiatives and dialogues about what to do and how. Manzini and

Rizzo (2011) state that designers should use their creative skills to make things happen. This facet is related to the role of the designer that is about providing for engagement of community members to become part of the partnership of experts. It is about providing spaces, resources and structures that help participants embrace their own resourcefulness. As stated by Dindler (2010) engagement is related to the design of situations and technologies that invite participants to invest their knowledge, efforts, capacities and imagination. For this engaging facet, the designer can also use her creative skills in order to create constellations of design initiatives that support this engagement. Both the catalysing and the engaging facets are thus materialistic and require the design expertise of the designer (Hillgren *et al.* 2011; DiSalvo *et al.* 2011; Manzini & Rizzo 2011). Then there is a nurturing facet, for which the designer encourages the community members to become confident within the design space by exploring their own capabilities.

Resourcefulness can only flourish if there are no power divisions to prevent the community from reaching out for their resourcefulness (Tunstall 2011). A start will be to acknowledge this in terming the different participants. Rodil *et al.* (2012) and Holcombe (2011) state that it is important to be careful not to imply power relations through the terms we use. It is for this reason that I use the terming of Rodil *et al.* (2012) who talk about local designers and external designers. This acknowledges that ultimately the community members should be the designers of their own culture-based innovation. By referring to them as local designers and to me as an external designer, I do not suggest a hierarchical structure. Instead I imply that within this collaboration everyone can be an expert. Local refers to the expertise of the community members. External refers to the expertise I bring that triggers the collaboration. Thus, it acknowledges that every designer within this process draws from different resources and thus has a place within the collaboration. From this point on, I will refer to the participants as local designers and to myself as the external designer.

2.8.3 The Good Enough Designer

The different facets of the role of the external designer as introduced in the previous section, within a respectful design space suggest a flexible role, adjusting to the process. Thorpe and Gamman (2011) introduce, in relation to this, the idea of the good enough designer. This is based on the idea of a good enough mother (Winnicott 1953).

In the first stages of her infant's life, the mother will almost completely adapt to her infant's needs. However, when time proceeds she will start to adapt less and less completely and gradually according to the infants growing ability to deal with her failure (Winnicott 1953: 93).

The good enough designer does not try to do it all for the other actors. Instead she actually tries to enable other actors in the design process to develop and build their own capacities (Thorpe & Gamman 2011). The good enough designer is responsive to societal challenges rather than responsible for it. This idea resonates very well with the idea of culture-based innovation. The good enough designer provides co-creative infrastructures, rather than being responsible for the final designs. These infra-

structures may make the local designers decide to go on a co-creative journey. The role of the good enough designer is flexible: he/she can also decide to take part in the co-creative journey. The design initiatives that the good enough designer creates help co-navigate towards collectively articulated destinations (Thorpe & Gamman 2011).

The idea of a good enough designer suggests that there is a transition in the role of the designer throughout the process. This corresponds with Lee’s (2006) design participation tactics (see Figure 2.1).

Even though Lee does not suggest that the tactics are in chronological order, the tactics match with Thorpe’s good enough designer that suggest that she commits less and less with the project progressing and providing therefore space for the local designers to take charge. In my opinion, the idea of the good enough designer fits well within the ideals of respectful design and culture-based innovation.

I consider this concept of the good enough designer as highly relevant as the role for the external designer in a respectful design or culture-based innovation project, due to:

- the flexibility of the role;
- the nurturing aspect of enabling people to enhance their capabilities;





Space of Operation	What’s Design Participation for?	The relationship between the designers’ space and the users’ space	The role of ‘designers’	The role of ‘users’
Designers’ space	1. Innovation (designer only)		Masters/ authorities	Imagined user/representatives
Realm of collaboration (between designers and People)	2. Collaboration (designer-driven)		Co-designers/ facilitators	Co-workers/ partners
	3. Emancipation (user-driven)		Stimulators	Creative people/ advisers
Users/ people space	4. Motivation (user only)		Craftsmen/ builders	Active clients

Figure 2.1 - Lee’s design participation tactics (2006).

- being responsive to rather than responsible for societal challenges;
- the use of creative skills and design sensitivities of the good enough designer to shape co-creative infrastructures;
- the transition towards committing less to the project and thus providing more space for the local designers to take charge.

2.8.4 Becoming a Good Enough Designer

From the previous sections it became apparent that the different roles of each of the actors within the Participatory Design process is delicate. In order to provide a respectful dialogical space, those roles have to be adhered to. Otherwise, there is a potential in hindering a respectful design space to emerge. In this section, I will first look at how to become a good enough designer. In the next section (2.8.5), I will focus on the importance of analysing whether a respectful design space has come into being.

In general, according to Dorst (2008), design researchers provide very little of an explanatory framework of why observed patterns occurred. Most of the time, the research is described by jumping from description to prescription. Even though this does not necessarily mean that the explanatory framework does not exist in most works, it is often not made explicit.

To adhere to the concept of being a good enough designer, the role of the external designer is in transition, throughout the process. As a good enough designer it is very important to be aware of your own taken stances. It is also important to understand how much space you provide for the local designers to really take part in the Participatory Design process. In order to become more aware of your attitudes within a participatory process, reflective learning processes are important, to develop your understanding of your own attitudes.

I am searching for a way, which helps me to rigorously reflect on my personal attitudes within the Participatory Design process. My aim is to have this process as a learning process to transform my attitudes taken in Participatory Design processes, in order to make respectful design possible. A research diary would be a conventional way to this (Borg 2001) and there are many researchers in Participatory Design that seem to benefit from using such a tool. However, in most accounts I find it difficult to understand how the reflective diary leads to personal development as a co-designer/good enough designer. I liked the account of Rodil *et al.* (2012) who provide an account of connecting reflections to the design process, in a cross-cultural context. Their account describes the reflections of the lead researcher (Rodil) on what he encountered while doing research in a different cultural context. The reflections of Rodil are placed over the events that occurred, as a transparent sheet that adds another layer to the context. It however remains descriptive of the understandings of Rodil rather than a transformative understanding of how Rodil can adjust his attitude for future encounters. It is like placing a research diary next to the process - enriching, but not leading to transformation. Ho *et al.* (2011) introduce a phenomenologically informed practice to examine the engaging expe-

rience of novice designers in learning Participatory Design for social inclusion. Even though the account is interesting and insightful, the novice designers are not engaged in the reflection process and therefore will not learn (as much) from the experience. It will not be transformative for them. Hussain *et al.* (2010) explain in their work that they seek understanding in the context. They define their own layers of pre-understandings of the context. Their reflection uses a psychological hermeneutics pyramid model (Maslow 1943). By moving from one layer to another, they can learn how their pre-understandings have evolved. They however do not use this model to learn about their own attitudes but to define latent tacit user needs.

Because of the work of Schön (1983), who states that design is a reflective conversation with the situation, reflection has achieved an important role in design. Hummels and Frens (2008) introduce the reflective-transformative design process. In this process, space for reflection is articulated within the design process. The aim of this reflection however is related to the design object: to come up with a suitable design solution in relation to the context, the design process and the users (instead of actors).

I however, consider Schön's (1983) account equally valuable as a means for a designer to reflect on his/her attitude. Through reflection, knowledge is obtained: knowledge-in-action. Knowledge-in-action is knowledge built up by responding to a problem through activities. These activities help to reflect on the problem, thereby building up knowledge. Schön refers to this as reflection-in-action. Through reflection-in-action, a designer has the ability to alter or develop his or her identity as a practitioner (Wenger 1999). Reflection-in-action will help to redefine who they are and how they interpret what they do.

The question that arises from this, is how such reflection-in-action leads to knowledge that would enable me to become a good enough designer?

Most conventional learning tools are based on transmission models such as the model that is introduced in Figure 2.2, which is an adaption by Dion-Stout and Kipling (2001) of Burton-Jones' knowledge supply model (2001).

The model explains how data is transformed into knowledge. In the adapted model, data as proposed by Burton-Jones, is replaced with narratives (Dion-Stout & Kipling). Information (Burton-Jones) is replaced with experiences (Dion-Stout & Kipling). Such a transmission model is based on the idea that there are pre-existing fixed ideas that are transmitted to the learner (Kolb 2005). This however does not fit to the constructivist paradigm of the research introduced in this thesis. Kolb's (1984) experiential learning theory however does acknowledge constructivism in its foundation. The learning theory proposed by Kolb is based on social knowledge that is created and recreated in the personal knowledge of the learner. In experiential learning, learning is the process 'whereby knowledge is

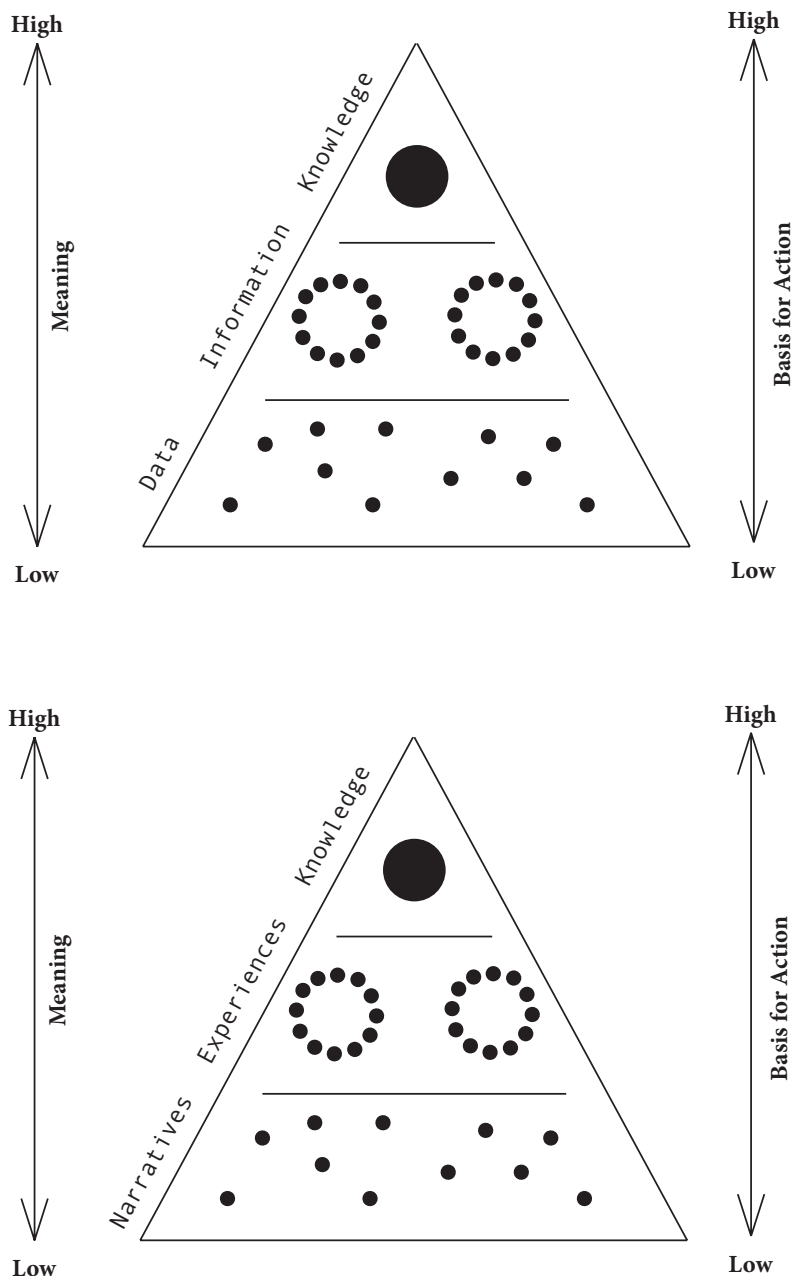


Figure 2.2 - Adaptation of model of Burton-Jones (2001) by Dion-Stout & Kipling (2001).

created through the transformation of experience' (Kolb 2005: pg.193). Kolb's theory is amongst others based on the work of Dewey. Dewey introduced the concept of *primary* and *secondary experiences* (Dewey 1965). *Primary experiences* are experiences that result from a minimum of incidental reflection and that occur through practice. *Secondary experiences* are a consequence of continued and regulated reflective inquiry (Dewey 1965). Dewey argued that in order to obtain practical knowledge, one needs to move back and forth between practice (*primary experience*) and reflection (*secondary experience*). Schön (1983) promoted the same idea in the process of reflection-in-action. He said that obtaining knowledge occurs through iterations of the stages: appreciations, actions and re-appreciations. This connects to Kolb's idea that all learning is relearning. As Kolb states, learning is best conceived as a process, rather than as its outcomes. Kolb introduced grasping experiences and transforming experiences (Kolb 1984). Transforming experiences are similar to the actions as introduced by Schön and switches between active experimentation and reflective observation. Grasping

experiences switch between concrete experiences and abstract conceptualisations. Figure 2.3 shows Dewey's, Schön's and Kolbs learning models in comparison to each other.

In order to obtain rigour in reflection-in-action, Schön (1983) suggests to create a virtual world. This virtual world is meant to be leisurely examined. The virtual world aims to provide space to slow down in order to create time for insights to arise. Within this virtual world, all moves are reversible, so mistakes do not have a consequence. I thus have to create a virtual world in which I can slow down in order to provide space for rigorous reflection-in-action.

Such a virtual world can be what Dorst (2008) highlights as a descriptive framework on the dynamics between object of activity (design space), the actors, the context in which activities take place and the design process in order to retrieve a holistic understanding of the research. Figure 2.4 shows my interpretation of this descriptive framework and its connection to Schön's (1983) reflection-in-action.

In the case of this project, I thus should aim to explore the dynamics between the design space, the local and external designer, the context in which activities take place and the structure of the design initiatives being studied. I consider observing this framework and the dynamics between all of them to be a valuable way of reflecting on the external designer's attitude, in order to understand whether the external designer (me) provides space for the other actors to take ownership of the process and design space.

2.8.5 Analysing Symbiotic Relationships

A symbiotic collaboration is built on a mutual beneficial relationship. Such a symbiotic collaboration is essential to create a respectful design space. It is therefore important to get an insight into whether the community has experienced the collaboration to be symbiotic. Even though I found many accounts that state that it is important to create equal benefit for the participants, the advantage of taking part in the participatory process for participants is little researched. This has also been highlighted by Balka (2010). There are a few exceptions:

The first exception is Bossen *et al.* (2010; 2012). They performed post-project interviews with participants of Participatory Design projects. The aim was to get an understanding of the participant's perceived gains of participating. They also wanted to get an insight into the participants' perceived frustrations. A strength in Bossen's work is that they compared two type of projects: an ideal scenario project (Bossen *et al.* 2010) and what they call a 'critical' case scenario (Bossen *et al.* 2012). The ideal project shows that participants have experienced gains and that the frustrations were minimal. The other, the critical case scenario, was different as no or little empowerment or emancipation was perceived by the participants. An important conclusion of Bossen *et al.* (2012) is that participants found it difficult to express their frustrations. Bossen *et al.* (2012) therefore highlight the value of developing evaluation tools that are not necessarily dependent on retrospective interviews.

Other accounts have looked more holistically to Participatory Design and their analysis of it. Clem-

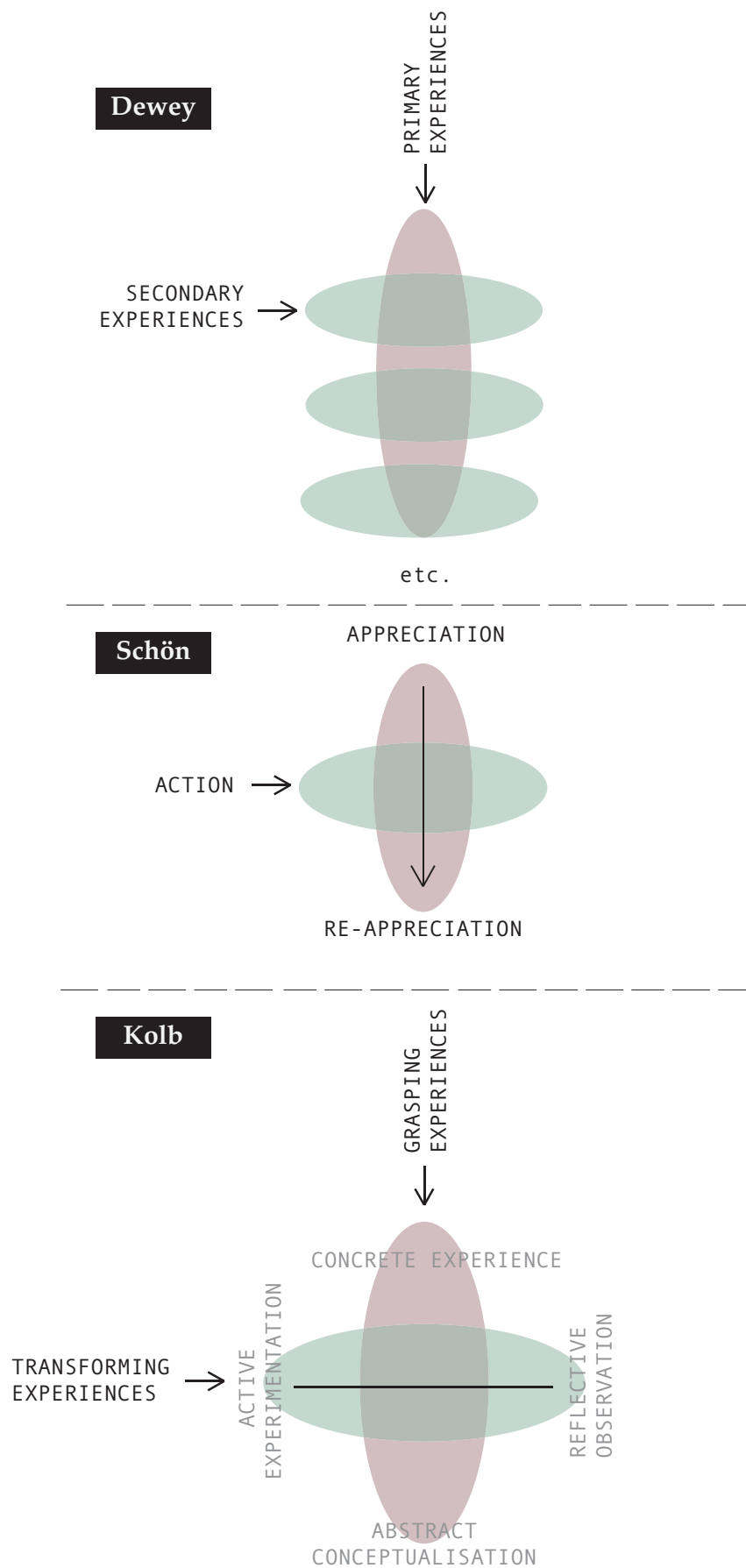


Figure 2.3 – Dewey’s (1965), Schön’s (1983) and Kolb’s (1984) learning model in comparison to each other.

**VIRTUAL WORLD FOR
REFLECTION-IN-ACTION ON
DESIGNER'S CO-DESIGN
ATTITUDE**

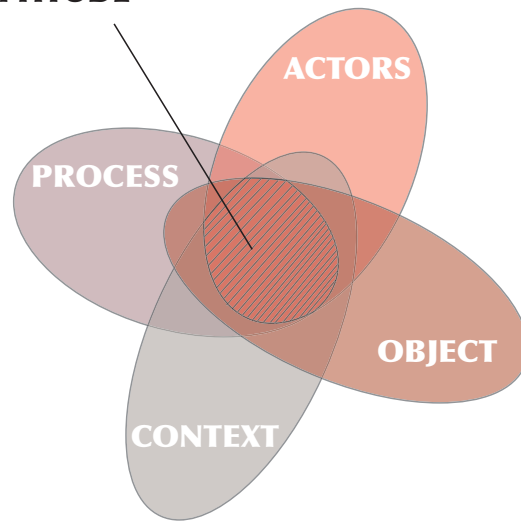


Figure 2.4 - The elements of a descriptive framework as introduced by Dorst (2008).

ent and van den Besselaar (1993) for example did long-term assessment on a set of Participatory Design projects. They aimed to get an understanding of the potential of Participatory Design to affect the relationship between participants and designers. It was for this reason that they needed to understand whether a project could be analysed as being participatory. The collection of data took place through questionnaires, by researchers that were not involved in the Participatory Design project. In total, ten projects were compared. These characteristics of the analysis make it very different from an analysis that would be suitable for determining whether the project as introduced in this thesis has been successful in reaching a respectful design space. However, it does provide an elaborate contribution to understanding the dynamics of Participatory Design.

Blomberg and Henderson (1990) analysed the *Trilium* project through evaluating meeting notes and observing the collaborations between developers and users. Through this, they learned that even though on the outset the Trilium project had looked like a Participatory Design project, this was not really the case. This suggests the importance of analysing whether a truly Participatory Design space has been reached. What must be noted is that the researchers were not involved in the Participatory Design process. So, their approach towards understanding Participatory Design differs from mine, as I, as the external designer, am thoroughly engaged in the design process.

Carroll *et al.* (2000) engaged in a long-term Participatory Design project with teachers at a high school. They analysed the role of the participants in the Participatory Design process and how this evolved throughout the project by taking a developmental perspective. Their rich account provides important insights into how the role of the participant can change through the design process and how participants can develop their experiences. I posit that understanding the changing roles of the designer in relation to those changing roles of the participants would provide an important insight into the role of the good-enough designer.

As Balka *et al.* (2010) have pointed out, not much attention is given to analysing whether a project

has been successfully participatory. This also shows in the concept of respectful design (Sheehan 2011) or culture-based innovation (Tunstall 2011). Neither author provides insights into how it can be reflected whether or not the sensitivities that they have pointed out in working with indigenous communities have been successfully dealt with. The cases that have been described before (Clement & Van den Besselaar (1993), Bossen *et al.* (2010; 2012), Carroll *et al.* (2000)) have a strong focus on language in understanding whether a project has been participatory or has provided benefit to the community. Such a reliance on language will not work in the context that I am working in, due to the challenges of linguistic barriers and low literacy. Equally, due to cultural-values, it would be difficult for the participants to reflect critically on whether they consider the project as successfully participatory. There is thus a need for analytical methods of the failure or success of creating a respectful design space, in which the community's contributions are not affected by these challenges.

I therefore consider such an analysis method important, since it will help to develop the approaches of respectful design or culture-based innovation from philosophical approaches to hands-on approaches. Those hands-on approaches can then be implemented as a way to make design projects in indigenous communities more respectful.

The lack of reflective accounts on the attitude of designers within a Participatory Design process provides another interesting and important opportunity (Light & Akama 2012). For me, this will be a personal development process, towards becoming a good-enough designer in order to provide the possibility of shaping a respectful design space. For other researchers, this process may lead to insights on creating respectful design spaces. It might also lead to insights on how they can personally use reflection-in-action in order to develop their attitude in order to facilitate respectful design spaces in a Participatory Design process.

2.9 Constellations of Design Initiatives to access “Third Spaces”

As mentioned in the previous sections, empowerment, self-determination and feelings of temporary togetherness can be facilitated through the use of co-creative methods. This is important to enable the community to make the project beneficial for them (Conrad & Campbell 2008). To reach benefit for the community, good dialogue between the researcher and the community is critical (Sheehan 2011; Light *et al.* 2011a; Jones *et al.* 2007; Wright & McCarthy 2010). This opens up questions about how to create a dialogical space in situations where you are hindered by linguistic barriers.

Since dialogical spaces are of such importance within co-design and Participatory Design, many different visions about what this space should be like and what these should be named, have been introduced. Manzini and Rizzo (2011) and Hillgren *et al.* (2011) talk for example about agonistic spaces. Such spaces are built to facilitate critical feedback through which visions and insights are revealed. These spaces are especially meant to reach out to groups in the society that are marginalised. These spaces go beyond the basic idea of participatory democracy in that they involve consensus in

decision-making. It aims to put contradictory agendas and agencies out there. This is valuable in giving those groups a voice, however, cultural differences may make such a critical approach difficult. DiSalvo *et al.* (2011) introduce the concept of collective articulation. This collective articulation is meant to provide collective agency among and between actors. In this way the participants become local designers who contribute to the design process. In doing so, space is created for them to take ownership of the project.

Collective articulation connects strongly to a concept labelled co-reflection, introduced by Tomico and Garcia and Yukawa (Tomico 2009; Tomico & Garcia 2011; Yukawa 2006). Tomico and Garcia and Yukawa suggest providing a dialogical space through co-reflection. By embedding co-reflection in the design process, several stages in the process offer space for reflection and validation. This reflecting is a mutual exercise for both the local and the external designers. It is an empathic practice, as it requires both cognition and affection in order to gain a deep understanding (Yukawa 2006).

A co-reflective process is iterative. Because of this characteristic, the design vision can grow and converge towards a relevant reality (Hummels & Frens 2008). This fits with what Redström (2011) calls the dialectic process of design research. The outcome of experiments influences the program and research question.

Kleinsmann and Valkenburg (2008) emphasise the importance of different actors within a co-creative process. Each actor can bring specific knowledge in, in order to create shared understanding and to achieve the larger common objectives: the new product to be designed. All actors have their own strength to bring to the process.

This idea is strongly connected to Steen's definition of co-design. Steen (2013) defines co-design as collaborative design thinking in which all actors are stimulating this process: local and external designers and the tools for co-design. Important, according to Steen is that co-design is a process of abduction - 'something that may be'. The philosopher C.S Peirce has introduced the concept of abduction (Peirce 1931-1935). It refers to something that has potential to happen but does not necessarily need to happen. This in contrast to deduction, which proves that something must be, or induction in which something is actually already operative.

Like Steen (2013), I consider Dewey relevant to co-design. Dewey proposed that knowledge should be concerned with exploring alternative futures with promoting communication and collaboration and with organising positive change (Dewey 1938). This is what co-design can be like. Dewey promoted processes in which people are empowered to jointly reflect on their practices and experiences. Through such co-reflective processes they are stimulated to communicate and cooperate and to improve their own or other people's situation. Such explorations can be triggered by constellations of design initiatives. In such a process there exists what Dewey (1938) considers as joint inquiry and joint imagination. In this:

"Inquiry is the controlled or directed transformation of an indeterminate situation into ...a unified whole". Dewey (1938)

Joint inquiry is about feeling what it could be like to live a certain reality. It is thus not a purely logical process. It is about imagining what it could be. Steen (2013) considers two roles for imagination important in co-design. Firstly the role of imagination as an empathic process. It enables people within a co-creative process to respond directly and empathically to others and to their feelings and thoughts. And secondly, as a way to escape current patterns and find alternatives. Through joint inquiry and joint imagination, existing tools and materials can be brought together in order to create novel, creative and reflective ideas. Such ideas can help to break existing patterns of thinking.

2.9.1 Empathy

At the core of both co-reflection and joint inquiry and imagination lies empathy as it requires both cognition and affection in order to gain a deep shared understanding (Yukawa 2006). This is essentially a relationship building process. In such a process empathy is essential (Young 2014). Empathy, as stated by Wright and McCarthy (2008), is important to get a deep, holistic understanding and engagement with what it feels like to live the life of the other person. It enables explorations on what makes the life of the other person, personal, rich and meaningful. This does not mean that you become the other person, but that you can respond to the other from your perspective as a designer. According to Wright and McCarthy (2008) empathy involves a felt response based on values. Each actor brings in particular value positions. Understanding the other's particular value position is not an indifferent neutral examination. Rather, it is based on what Wright and McCarthy (2008) articulate as aesthetic seeing.

Kouprie and Visser (2009) write about design empathy. However, to me the way they suggest this, seems to refer to a somehow synthetic approach towards empathy. According to my perspective on empathy, it is not about taking on a role when you are performing your profession. Rather, it is the very human ability and true interest to understand what it feels like to step in someone else's shoes. Since empathy requires an emotional connection, it requires personal engagement. The level to which you engage is therefore dependent on your own willingness (Battarbee 2003).

Reaching deep empathic understanding is not easy. It takes time, effort and requires an empathic relationship to start off from. It is also dependent on the person. We have senses other than the physical senses - the soul senses: intuition, peace, foresight, trust and empathy (Szalavitz and Perry 2011). These senses are there, everyone has them, but not everyone is open towards them, or knows how to interpret them. The extent to which our soul senses are developed depends on how we were raised and whether these senses have been nurtured while we were growing up (Szalavitz and Perry 2011). In doing constructivist research based on an empathic relationship, these soul senses are of great importance because these lie at the foundation of building relationships.

According to McDonagh-Philip and Denton (1999) people have a personal "empathic horizon". This empathic horizon refers to how able a person is to empathise beyond his or her own personal characteristics such as age, nationality, culture, gender, experience or education. This idea of empathic horizon is related to what Heidegger (1962) refers to as pre-understandings. However strongly we

want to lose those pre-understandings when we embark on empathic encounters, we cannot, since pre-understanding is a condition for understanding. Everything that we experience will be interpreted through the framework of our background. Our pre-understandings do not merely arise from ourselves (Gadamer 1975). Rather, our pre-understandings are ramifications of everything that has gone on before us. Our pre-understandings, for example, are influenced by our parents and by the nation in which we were born. Since people can never have exactly the same past, our pre-understandings will also be different (Gadamer 1975). These pre-understandings can change. They are not static. This change can occur through experience and training.

Ho *et al.* (2011) state that in order to empathise one should leave one's own context and understandings behind. However, following from Heidegger (1962) this is not possible, because our pre-understanding are the foundations of understanding. Instead, there should be an aim to acknowledge our pre-understandings in order to negotiate spaces of a shared understanding of a context.

Johnson (2000) states that it is not possible to create real, full empathy in a cross-cultural field, because of the differences in background and pre-understandings. However, I believe that aiming for empathy, in this sense of being open towards what it feels like to live the other's life, and being open towards exploring a shared understanding should be what it is about. This is what Gadamer (1975) calls a 'fusion of horizons'.

2.9.2 Third Spaces

In order to reach empathy or 'a fusion of horizons', a dialogical space is required (Wright & McCarthy 2010). This raises the question of how to reach a dialogical space in which the power is balanced? One of the challenges is related to introducing objects or technology to the community (Verbeek 2006; Verbeek 2005). Being in the position to introduce objects or technology is in itself a powerful position, implying a role of dominance which is connected to cultural identity. Being aware of the role of this position in proposing design suggestions is therefore of great importance (Merritt & Stolterman 2012). Iversen *et al.* (2012) introduce another challenge in relation to this. They say that the values an external designer and the way in which an external designer interprets the values introduced by the community will colour his/her stance in the design cycle. Through design initiatives I have to aim to provide a space in which these values can be explored. But, what can such a space look like in which values can be negotiated?

Another challenge lies in balancing hierarchies. When embarking on cross-cultural projects, it is easy to end up speaking and thinking in culturally binary: Western versus non-Western, myself versus 'the other'. When looking at those binaries in relation to the past and post-colonialism, they suggest a strong hierarchical division.

In order to attempt to balance out those hierarchies, a liminal third space can be created. This third space is built up from attributes brought in by the different actors that create a third space (Muller & Druin 2008). Those attributes are dynamic, shaping unpredictable and changing combinations within the third space. A third space is a space in which there is no dominant identity, or in which the

dominant identity is not the external designer's identity. Such a space is important to help balance power. Both local and external designers may find that throughout the design process, their needs and constraints are shaped and changed. Potentially, the differences between them can become smaller. Thus, through co-creation, the horizons of the local and the external designers can merge - a 'fusion of horizons' such as introduced by Gadamer (2008). In this way, a cultural hybridity can arise that embraces differences without an assumed or imposed hierarchy (Bhabha 1994).

The notion of cultural hybridity is about challenging the static cultural binary oppositions as introduced before. By challenging these oppositions, a more nuanced approach towards understanding culture is offered. Hybridity helps to soften the differences between the self and the cultural other. Consequently, otherness becomes a dynamic concept, rather than a static concept (Merritt & Stolterman 2012). Therefore, cultural hybridity is an essential tool of embracing empathy. According to Merritt and Stolterman (2012), interaction and context inform hybridity.

This is related to looking at co-design as a conversation, based on the idea of Winograd (1987) in order to stimulate cultural hybridity. Such a conversation is a co-ordinated sequence of acts that have meaning and that can be interpreted as such. This meaning does not necessarily have to be linguistic. Jones *et al.* (2007) and Iversen *et al.* (2012) agree with co-creative processes as a conversation, but adopted David Bohm's theory of dialogue (Nichol 2003). According to this theory, people take a position within a dialogue and they will keep this position relatively static. Even though this position is negotiable, people often hold on to their stances. It is for this reason that something needs to intervene to create a negotiable dialogical space.

2.9.3 Boundary Objects

Such intervening triggers can be boundary objects. Boundary objects can be seen as materialistic expressions of cultural hybridity. Boundary objects were introduced by Star and Griesemer (1989). Star and Griesemer defined boundary objects as objects that are liquid to be adapted to the constraints, wishes and needs of the different participants yet robust enough to facilitate a common identity between them. This suggests that boundary objects can become representations of third spaces and triggers of negotiation.

Ehn and Kyng (1991) used the notion of boundary objects as objects that facilitate shared articulations of knowledge. Vines *et al.* (2013) state the benefit of boundary objects to provoke people to articulate existing practices and concerns connected to those.

Boundary objects have the ability to represent shared identities, as objects have the ability to become spatial representations of identity (Gonzalez 1995). The creation of the objects and the objects themselves, functions as a method to order the mind (Miller 2011; Csikszentmihalyi & Halton 1981; Csikszentmihalyi 1993). Both object and the process of co-creation can serve as a way to provide a space in which the different participants can explore and negotiate their needs and constraints (Goffman 1959). Co-created objects are representations of identity and thus can be seen as material pre-

senters of the evolving third space (Björgvinsson *et al.* 2012). Co-creative processes and co-creations thus can have a valuable role in order to provide a negotiable dialogical space. Gadamer (1975) sees the process of co-creation as a hermeneutic process, between local and external designers. Hermeneutics is about cultivating the ability to understand things from the perspective of someone else. It is about understanding the cultural and social forces that influences this perspective. It is about applying this understanding in order to interpret the meaning of symbolic artefacts (Gadamer 2008). Co-creative design tools can be 'read', the stories that the community tell about the objects is another kind of 'text'. Through the co-creation of artefacts and thus the creation of a shared dialogical space, local and external designers extend their horizons. This dynamic makes the very essence of co-creative design tools serve as a foundation for creating a shared third space. The use of artefacts, and the creation of it, to learn about each other's point of view and pre-understandings is thus one of great relevance.

Due to the importance of tangible tools in co-design, many different ideas and perceptions about what those boundary objects can be have been put forth. To give a few examples, Sanders and Stappers (2008) call such tangible tools generative design tools. Ehn (2008) calls them design devices. Botero and Hyysalo (2013) call them design seeds. I personally prefer design seeds, since it suggest that in order to blossom, the design seeds need to be nurtured. If this does not happen, they will not bloom. Whether or not they will be nurtured depends on the context and the attachment local and external designers give to the seeds.

The design seeds are artefacts that aim to trigger design or support design initiatives. They are flexible, diverse and can be grouped in different ways (Manzini & Rizzo 2011). Design seeds are never neutral (Oosterlaken & van den Hoven 2012; Winner 1986; Verbeek 2006; Latour 1992).

Design seeds can help to stimulate imagination and creativity in people who might not necessarily use their creative skills often (Van Klaveren 2012; Wallace *et al.* 2013). In this sense, design seeds can spark resourcefulness - as tools to encourage confidence in one's own capacities. Furthermore, in order to spark resourcefulness, they can take the role of triggers in co-creation and they can engage local designers to put their knowledge, efforts, capacities and imagination into the process. The role of the external designer is thus to shape design seeds and design initiatives. How the external designer decides to do this can vary as much as designers themselves. There is no recipe. Each design initiative and design seed needs to be skilfully applied and adapted to become suitable for a certain time and space (Törpel *et al.* 2008). Through the design initiatives the aim is to help the local and external designers reach reflection and deep understanding of different views and perspectives. Through co-creation in culture-based innovation, the aim is not for the external designer to get an understanding of the local designers to base design on. Instead it is about developing a dialogical space between local and external designers and the artefact created. This is what Ehn (2008) refers

to as a socio-material assembly. In such an assembly of humans and non-humans, it is about shaping and staging each actor. Through connections, they come in constellation. Within these constellations of design initiatives and actors, third spaces can be reached.

2.10 Conclusions and Gaps

In order for a symbiotic collaboration to arise, in which the community can gain from the collaboration, the designer should not take a dominant expert role. Consequently, the roles of the designer and those of the community should be redefined. Ideally, an interaction should start in which visions about possible futures are shared - resulting in a temporary feeling of togetherness. Co-creative activities can initiate such feelings. In these co-creative sessions, no one is the sole expert. Instead it consists of a partnership of experts, in which the community members are the local designers and I would be the external designer. My role would be that of being a good enough designer, based on the idea of a good enough mother. The good enough designer does not try to do it all for the other actors, instead (s)he actually tries to enable other actors in the design process to develop and build their own capacities. This fits to the idea of the role of the designer in both respectful design as well as in culture-based innovation. They both require the design researcher to take a step back, not to direct the process, but to offer a space and the resources for the community to be able to define in which direction they want to take the project. That said, it is remarkable that there has only been little research done on analysis of the perceived success or failure of a Participatory Design process by the participants. More specifically, neither Sheehan (2011) nor Tunstall (2011) have given insights into how to explore whether respectful design or culture-based innovation has been successful in regards to addressing the sensitivities interwoven in such a project.

I consider it very important to create a reflective space in which to reflect on the attitudes I take throughout the design process in order to be able to become a good enough designer. I consider this important since I am aware that as a designer you can take on attitudes, which can prevent you from truly engaging in Participatory Design. Through explorations in existing research I found that very little research is done on the reflective process that helps the development of the researcher's attitude towards respectful design. In order to reflect on my attitude as an external designer, I should look holistically at the dynamics between the different elements of design: the object of activity, the actors (of which I am one), the context, the process. In order to do so, I can use reflection-in-action as introduced by Schön (1983). In order to reach rigour in reflection-in-action, I should create a virtual space that brings together different layers of reflection and that provides the opportunity to slow down, and take a step back from my experiences.

In abstract terms there are many speculations on how to reach a third space through co-creative activities, but pragmatic accounts are mostly ambiguous. As described in the Introduction Chapter, both respectful design and culture-based innovation neither state in practical terms what this third space entails nor how such a space can be provided. Both approaches are described more in abstract terms, and do not give an account on what it feels like to provide that space, nor on personal challenges in

providing that space. Thus, I have found a gap in research in how constellations of design initiatives (as assemblies between local designers, external designers and design seeds) can facilitate the creation of third spaces in respectful design and culture-based innovation projects, in which there is no dominant cultural identity, or where the dominant cultural identity is not that of the external designer.

Three | Methodology

In this chapter, I will describe the rationale behind the methods that I have adapted for the collection and analysis of the data, both for the preliminary and co-creative encounters. In the following chapters - Chapter 4 and 5 - I will give a more detailed, empirical account of the methods and I will describe how they were implemented within each stage of the process. In Chapter 6 and 7 I will present the interpretation of the analysis of the co-creative process, leading to an understanding of the research aims.

My research aims during this project were:

To explore the dynamics of a respectful design space in co-creative and co-reflective encounters with indigenous communities.

and consequently:

To obtain an understanding of what those dynamics mean for attitudes to be taken by the designer in order to provide a respectful design space.

In order to reach the aims I have devised a research process to facilitate the exploration of what a respectful design space entails. The pragmatic choice for the methodology as the foundation of this research process became that of a research-through-design theory generating approach. This choice was based on:

- my educational background as a reflective practitioner;
- the aim of understanding which attitudes of a designer influence the shaping of a respectful design space;
- linguistic barriers between the communities and me.

At the core of research-through-design lies how experience and knowledge can be obtained through the act of designing. In this, reflection plays a major role, personal accounts are thus very important. Furthermore, because of linguistic barriers, the methods could not rely too much on language. Therefore, making as a method became relevant from this perspective.

It is the choice for a research-through-design methodology that also influenced the paradigm chosen for this research: constructivism. Another reason for considering this paradigm as the most relevant for this research was that it had the potential to address power concerns as it focuses on the human factor in research. Unlike positivism that considers only one reality: that of the objective researcher, this makes such a paradigm a potentially colonizing construct. The methods chosen for this research, thus, became methods that centered on reflection, personal accounts and making.

I will describe the research-through-design process in Section 3.1. After that, I will introduce the data collection methods I used throughout the process. Then I will focus on the methods I used within the co-creative process. In Section 3.4 I introduce the methods I used for the analysis process.

3.1 Research-through-Design Process

As a foundation for the methodology of this study, I have taken a field approach to research-through-design (Koskinen *et al.* 2011), through a case study (Yin 2009).

The research-through-design process as devised for this project can be seen in Figure 3.1. This research-through-design process was divided in two different sub-processes: a design process and a research process. The design process was the case study that was analysed in the research process. For each of those processes, my role was different, as were the aims.

Within the design process I took the role of external designer, as introduced in the previous chapter (2.7.2). I used my expertise of design methods, knowledge and understanding to help the community to draw on their own resourcefulness. In this process I aimed to be a good enough designer (as introduced in Section 2.7.3). I tried to the best of my abilities to encourage the community to reach a respectful design space and throughout the process I tried to alter my attitude to enable this to happen. The objectives for this design process, based on Sheehan's (2011) respectful design and Tunstall's (2011) community-based innovation, thus became to:

- *Find a community interested to participate in a respectful design process;*
- *Facilitate a process in which the community can define beneficial design directions;*
- *Encourage the resourcefulness of the community.*

I made use of design methods in order to reach those aims. I will detail these in Section 3.3. Reflection was of great importance throughout the design process as it helped me reach the aims. Reflection-in-action also informed the approach I took towards defining and designing the design seeds and initiatives. This reflection took place during the visits and in-between the visits. After the design process, within the research process, I drew on the design process and analysed this process as a design researcher. The research aims are described in the previous section. They are not only the aims

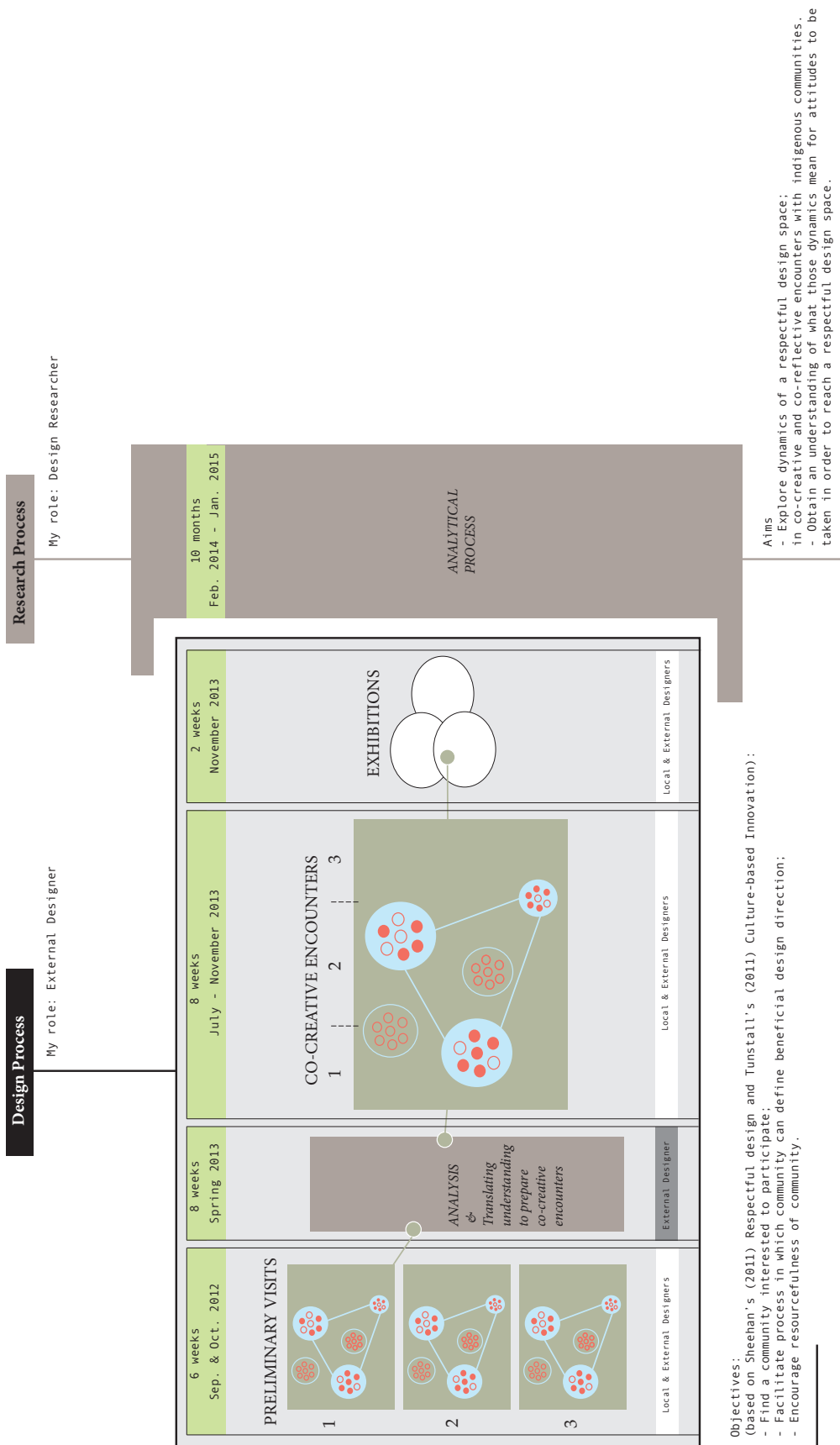


Figure 3.1 - The research-through design process of this project.

for the research process but also the broader research focus of the research-through-design process presented in this thesis.

As can be seen, the process comprised five stages: 1) preliminary visits, 2) an analysis process to define the project direction, 3) co-creative encounters, 4) exhibitions and 5) the content analysis to define a respectful design space and find recommendations to reach such a space.

In the upcoming sections I will describe the design process and the research process separately, as each of them has different approaches and methods to work towards their own specific aims. I will make the same distinction between those two processes in the upcoming chapters: Chapter 4 and 5 focus on the design process. Chapter 6 and 7 focus on the research process.

3.1.1 Design Process

The design process functioned as the case study within the project. In this design process, I tried to implement my understanding of a respectful design space to the best of my ability based on the work described in the literature review (Chapter 2) and contextualisation (Chapter 1). In order to enable the design aims, I undertook the process in the following way:

The first stage consisted of the preliminary visits. In order not to force a project on a community, I first undertook a preliminary visit to three different indigenous communities in Malaysia: Long Lamai, Ba'Kelalan and Pa'Lungan. Tariq Zaman, who was, as mentioned in Chapter 1.2, my contact from the University of Malaysia Sarawak's ISITI informed me that each of the three communities was initially interested in starting a project around the theme of cultural heritage preservation. They invited me, through Tariq Zaman, to visit. My aim for these visits was to explore together with each of the three communities whether they would be interested in embarking on a project with me. For each of the communities I prepared design initiatives. These design initiatives focussed on the broad theme of cultural heritage preservation. Another aim of the preliminary visits was for me to get an understanding of the context, in order to adapt my approaches to the communities I was working with. Furthermore, it became a relationship-building encounter. In each of the communities I stayed between one to two weeks. During this time, I co-creatively explored with community members who, as explained in Chapter 2.7.2, through the co-creative process become local designers, what a project could be like and how it could be beneficial for them. One of the communities, Long Lamai, showed a very strong interest in working with me on the project. They expressed potential benefits and proactively came up with design ideas. Based on my intuition, the philosophy of culture-based innovation and respectful design and negotiations with each of the communities, I selected Long Lamai as the community with whom I would continue this project.

The next stage was an analysis stage. Back in the UK, I performed an analysis on the data obtained. This step was taken based on the idea of co-reflection (Tomico & Garcia 2011), as introduced in the previous Chapter (2.8.3). In co-reflection, the design process is a dialogical process between participants and the designer or in this case local designers and external designers. By analysing

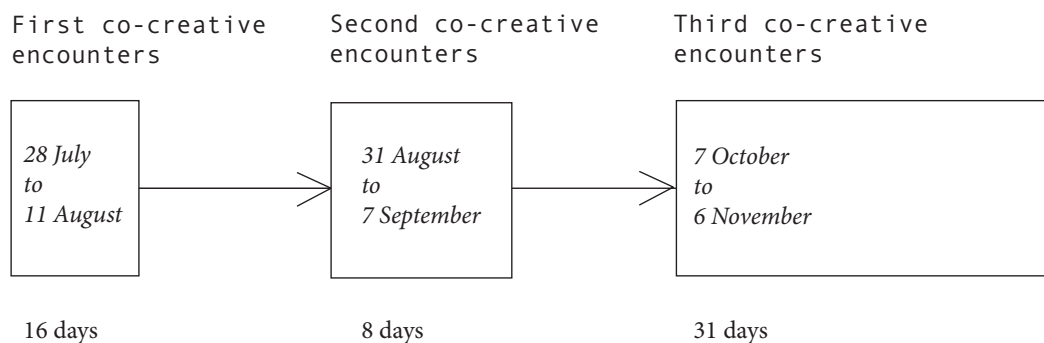


Figure 3.2 - An overview of the different co-creative encounters.

what had happened and by translating this into a design direction, I reflected on my understanding of the context, which I could then introduce as boundary objects in order to negotiate a third space with the community. The community could then express whether they agreed with the third space as introduced through the boundary objects, or reflect on what should be changed in order to make it relevant.

Following the analysis stage, I proceeded to the next stage, the co-creative encounters (see Figure 3.2).

I went back to Long Lamai for three co-creative encounter visits. The first of those three encounters was at the beginning of August 2013 and took fifteen days. The second took place at the beginning of September and took eight days. The third started in October and lasted thirty-one days. During these encounters, we negotiated the contents of the third space and co-created design probes and three design exhibits.

After the co-creative encounter stage, an exhibition stage was performed (see Figure 3.1). As a conclusion of the design project, we presented the design exhibits at a research event for indigenous people in a neighbouring community. Prior to that, we held a pilot exhibition in the community to get consensus on whether and how to present the exhibits at the research event. Figure 3.3 shows an impression of the exhibitions. These exhibitions served as a clear deadline for the project and it meant that we had no expectations for further collaboration after that point. This resulted in a clear period in which temporary togetherness was essential.

3.1.2 Research Process

In order to understand what a respectful design space entails, and which attitudes should be adopted, I examined the data that arose from my interactions with the Long Lamai community. I looked at the data from the preliminary visits, from the co-creative encounters and from the exhibitions. This resulted in an understanding of important dynamics in providing a respectful design space. I structured these dynamics into a framework and drew recommendations from them. In Section 3.4 I will detail the research process.



Figure 3.3 - An impression of the exhibitions (On the left the pilot exhibition in the village. On the right the exhibition at the research event).

3.2 Data

As mentioned in Section 3.1.1 the project consisted out of two different processes: 1) the design process and 2) the research process. Each stage was characterised by different aims. Consequently, each process required the data collected to answer or explore different questions.

For the design process these questions were:

- Which (if any) community is interested in participating in a respectful design process?
- Which design directions are seen by the community as being beneficial?

For the research process, these questions were:

- Which dynamics are important within a respectful design space?
- Which attitudes can an external designer take in order to encourage this respectful design space to take shape?

I explored methods of data collection to explore/answer these questions, that would be non-interruptive, manageable in a fieldwork context, deployable by a sole researcher (me) and that would provide the ability to embed accounts on personal attitudes taken. With these requirements it became clear that the data needed to be empirical and qualitative. Through the methods taken, I also had to be able to deal with challenges such as cultural and linguistic barriers, which made methods such as interviews or focus groups difficult. Moreover, the approach also had to provide insights into the entire process and thus needed a systematic approach to data recording. Given all these requirements, I decided to use research diaries and visual diaries as my data collection methods.

3.2.1 Research Diaries

Throughout the stays in the communities I kept a research diary. Keeping a diary is not just a way to keep track of or storing information regarding what is taking place. It is much more about providing a researcher with an ongoing developmental conversation with him/herself (Schatzman and Strauss 1973; Borg 2001). Keeping a research diary helps to deepen the researcher's understanding of the research process as well as providing an opportunity to provide other researchers with insights into the research process (Borg 2001). Even though a research diary is often used as a supplement to the data, in this research process, the research diary is the data. This is because the research focus of the process requires an understanding of what happened in relation to my attitude.

There are no strict rules to research diary writing. The researcher has to find a style and a format that fits to the needs of the project as well as being useful and workable for the researcher (Newbury 2001). The preliminary visits were for me a moment to find my personal style. Throughout these visits I experimented with different formats and found through this process a suitable way. In this experimentation, I considered issues like:

- What kind of research diary should it be?
- How often do I want to make an entry?
- How much time do I have to commit to it?
- How will I, throughout the research, be able to keep the same level of commitment?
- How do I want to use the information at a later stage?
- How will I extract information from the diary?
- What medium will I use?
- How will I make sure it is backed up?
- How do I make sure that I understand it later on?
- How do I deal with ethical issues?

I decided that for the aim of my diary, it was important to record daily and to provide an overview of the day. I realised that I was better and more efficient in expressing myself when writing in my mother tongue, which is Dutch. I tried paper as a medium, but found it easier to write on the computer.

Using the computer also made it easier to re-access my notes and to use them in whatever form later on. I chose to use Evernote, which is a software that provides the opportunity to create diary entries. Those diary entries can be organised by giving them keywords as well as the date of entry. It also provides the ability to sort the entries in different folders. A very important feature in Evernote is that it saves the entries, when connected to the Internet, automatically to the ‘cloud’. For me, such a backup was important because of the context in which I was doing my research. As a backup, for example during power cuts, or when I was unable to bring my laptop, I used paper notebooks as entries. I did not write the names of people I worked with in the diaries, instead I developed a notation system to code the names, in order to protect the privacy of the participants. I used this system until the people that had taken part in the project had been consulted about the texts written about them, so that they could decide for themselves how they wanted to be acknowledged within the final thesis.

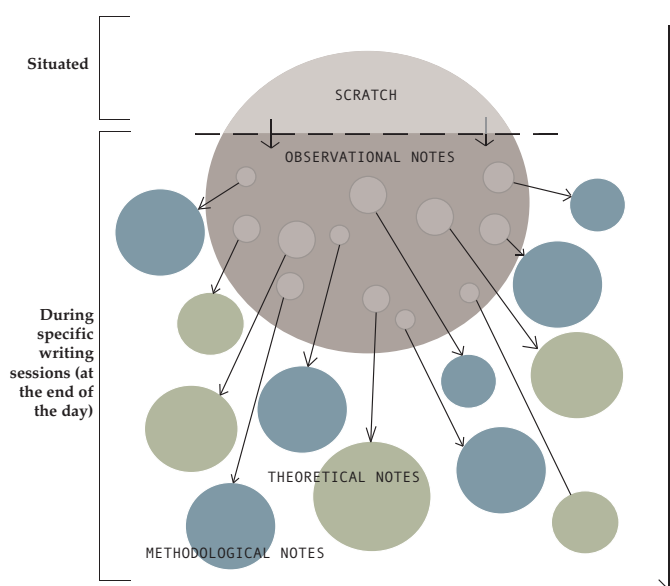


Figure 3.4 – An overview of all the type of data collected in the research diaries.

I created a distinction in the notes between observational notes, theoretical notes and methodological notes (Schatzman and Strauss 1973). The observational notes consisted of statements of events experienced through watching and listening. They are disconnected from interpretation and are as reliable as the observer can construct them. Observational notes, describe the who, what, when, where and how of whatever happens (Schatzman and Strauss 1973). They record everything that seems to be important enough to include. Theoretical notes are: “reflective, self-conscious and controlled attempts to derive meaning from the observational notes” (Schatzman and Strauss 1973:101). Methodological notes are also reflections, that reflect on completed or planned operational acts. They serve as personal instructions as well as reminders of or critiques on the methodological tactics that have been adopted.

I did not make a distinction between each of the type of notes while writing them. I tried this at first, but this was too slow and inefficient. However, in the analysis process I was able to distinguish between the note types. During the day and the events that took place, I would make rough notes -

scratch notes (Sanjek 1990; Emerson *et al.* 1995). This type of notes are meant to record memory in order to write in full later. Due to practical reasons (e.g. taking part in daily life activities or the spontaneity of the event) it was not possible to write everything in full directly. In the evening, I would translate the scratch notes of the day into observational notes. The scratch notes would either be short written accounts or photos. Figure 3.4 shows an overview of all the types of data collected in the research diaries.

3.2.2 Visual Diaries

The role of photos as data extended beyond their use as scratch notes as introduced in the previous section. I also used them to create a visual diary. This diary would tell the story of what happened through a different medium. The use of a visual diary next to a written diary, enriches descriptions. As Prosser and Schwartz (1998) state:

The notion of photographs as visual diary reintroduce the researcher and the qualities of the medium into the research process. That is, a diary is a self-reflexive and media-literate chronicle of the researcher's entry, participation in, and departure from the field. The images generated within this paradigm are acknowledged to be the unique result of the interaction of a certain researcher with a specific population using a particular medium as a precise moment in space and time (Prosser and Schwartz, 1998: 108).

Young (1998) has pointed out that the descriptive power of photography adds an empathic dimension to the data and it is thus of great significance as a descriptive medium. Photographs can function as reminders of what it felt like to be there, through detail that is difficult to reach through written texts. However, the use of photos in this process goes beyond recording only the context. Since the focus of this research lies in creating visual tangible artefacts, a focus of data that can help record this aspect of the research was of great importance. I did not want to take away the artefacts that we had created from the community because I felt it was fair to let them keep the designs they had created. Photographs came closest to having the artefacts for analysis.

The visual diaries thus consisted of two different types of accounts: one part focussed, like the written research diaries, on the co-creative design process. The other type focussed on the finished artefacts, the co-created designs.

3.2.3 Overview of Data

Figure 3.5 shows an overview of all the types of data collected throughout the process.

The yellow area represents the visual diary. The grey area represents the written research diary. The first two layers are 'objective'-accounts, even though they are from my perspective. In some cases I also let the local designers take photos of the events, to get an idea of their perspectives and to get records of interactions between local designers and myself. The bottom two layers, those of the theoretical and methodological notes, are my reflections. In order to obtain rigour in the theoretical and

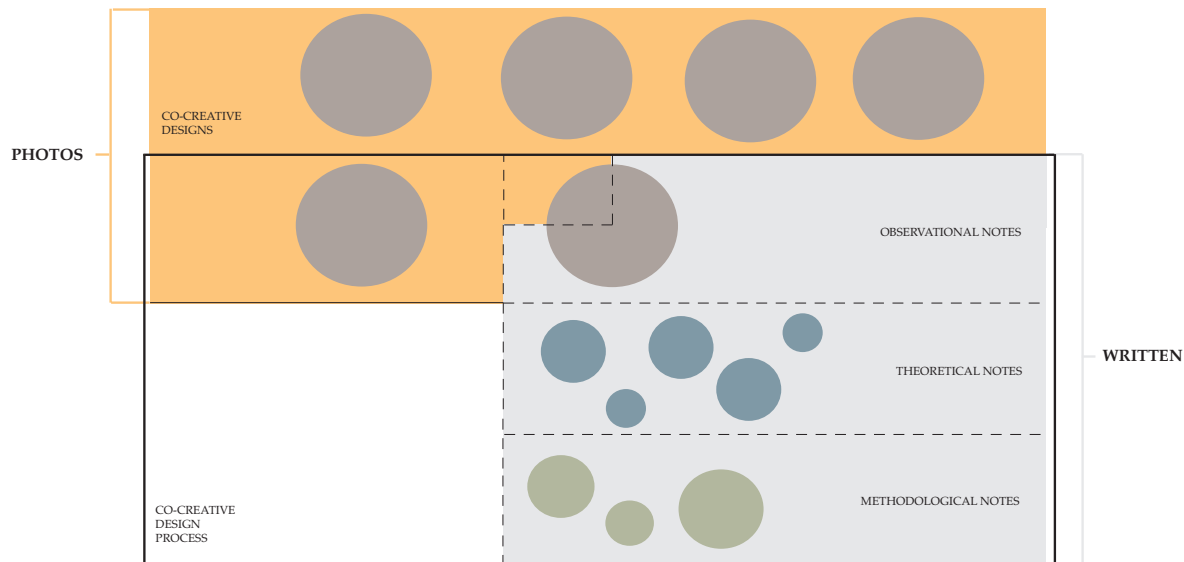


Figure 3.5 - An overview of all the types of data collected throughout the process.

methodological notes I refer to Schön's (1983) notion of creating a virtual world. In this case, the virtual world is my research diary and the written entries. The purpose of a virtual world is to provide an opportunity to leisurely examine information. It forces you to slow down in order to create time for insights to arise, thus stimulating rigour.

All of the entries, either written or photos have a timestamp - they can be associated to a particular moment within the process. By cross-checking between those two representations, triangulation is applied, see Figure 3.6. Due to this triangulation, claims to validity, reliability and credibility of the data can be made.

3.3 Design Methods: Constellations of Design Initiatives

In this project I have taken a research-through-design case study approach. In this approach, due to the contextual difficulties such as linguistic and cultural barriers, I aimed to find methods that provided flexibility, so that they could be adapted and adjusted in situ. The idea of constellations of design initiatives enables this, because it provides the opportunity to create a flexible toolkit of design initiatives that can be based on different methods. The design initiatives can be used flexibly, whenever seems appropriate. Design initiatives do not always have to be prepared in advance. New design initiatives can also be initiated throughout the process by the local designers, or by the exter-

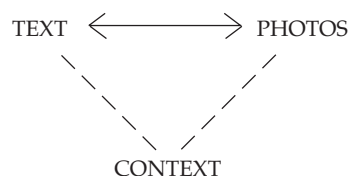


Figure 3.6 - Triangulation in this research-through-design process.

nal designer. This enables the tools to be adjusted to the context at that moment.

Prior to approaching a community, I would prepare different design initiatives, such as a co-reflective session or design probe activities. This pre-prepared set could be supplemented with initiatives shaped in situ, such as brainstorming sessions. To support design initiatives I prepared design seeds. Multiple design seeds could be designed for each initiative. They could also be shaped in situ. I used the idea of design constellation as a way to understand the co-creative process between the community and myself. In Section 3.3.3.1 I present how I used the concept of constellations of design initiatives as an analysis tool to reflect on respectful design spaces from the perspective of a designer. In the next section, I will explain how I use the notion of design seeds in this work.

3.3.1 Design Seeds

Design initiatives are built up from design seeds. I use the term design seeds, to highlight their flexible nature. They can be ‘nurtured’ and start blossoming, but this will not be the case if no one takes care of the seeds or if no one shows interest in them. The aim of the seeds in this research process was to stimulate the local designers in making. Seeds could be introduced by me or by the community. The seeds that I used can all be described as probes. The seeds that the community introduced took other shapes (such as daily life objects or drawings). Traditionally probes were positioned by Sanders and Stappers (2014) in the pre-design and designing for-category (see Figure 3.7).

Probes can be described as being design-led and expert-driven, mostly used in pre-design stages of the design process, aiming to obtain inspiration (Gaver *et al.* 1999). Now, they are more and more used in other stages of the design process (Sanders and Stappers 2014). They are also used to facilitate designing with ‘users’ (Sanders and Stappers 2014; Gaver *et al.* 2004). Probes are designed to facilitate flexible explorations (Wallace *et al.* 2013). Toolkits are used in more focussed and steered types of facilitation (Sanders and Stappers 2014; Sanders 2000). Prototypes are meant to evaluate the design, to experience a vision in action (Sanders and Stappers 2014; Madden *et al.* 2014). Even though I describe the seeds in this project as probes, the boundaries of the description started blurring

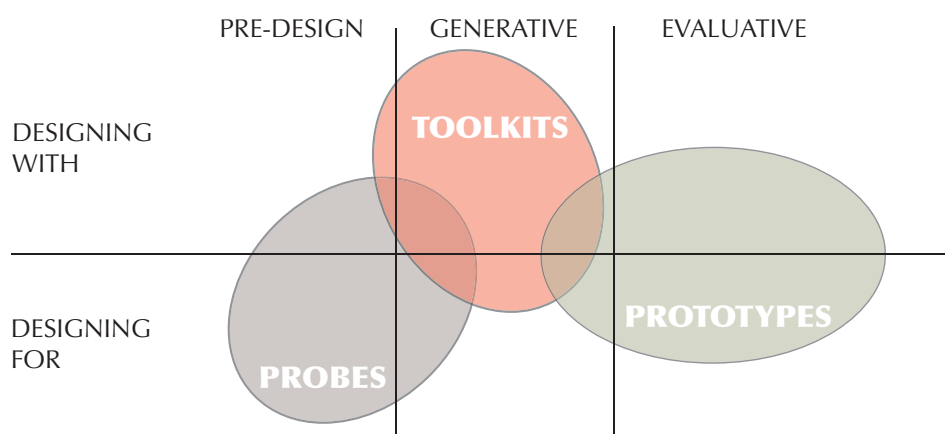


Figure 3.7 - Sanders and Stappers' (2014) framework of probes, generative toolkits and prototyping.

when I started using them in generative phases of the design process. By using the probes in generative phases of the process, the probes started showing strong similarities with toolkits. The focus of this project is on designing with local designers, therefore blurring the boundaries even more. The (technology) probes that I introduced turned into prototypes resulting in even more unclear boundaries. As Sanders and Stappers (2014) pointed out, there is a strong overlap between each of those tools and it is likely that the overlap will become stronger. I refer to probes and I am aware that they could equally be defined as toolkits or prototypes. However, I prefer to use the term design probes because of the openness and flexibility that probes suggest. They suggest that they can be triggers to motivate people to find their own direction, rather than steering explorations. They thus support the community to find their own resourcefulness.

There is a diverse set of visions on what probes are, for example: cultural probes (Gaver *et al.* 1999), design probes (Wallace *et al.* 2013; Mattelmäki 2006) and empathy probes (Mattelmäki and Battarbee, 2002). In this research I have taken Wallace *et al.*'s (2013) notion of design probes. I considered this notion most relevant since these probes strongly emphasise empathy. Mattelmäki and Battarbee (2002) introduced empathy probes - suggesting an empathic approach to probes. However, they designed these probes in order to communicate an empathic understanding of the 'user' to designers of a client company. They were consultants in the process: a bridge between designers and users. This indirect approach stands far away from what I am trying to achieve and the direct and personal notion of Wallace *et al.* (2013), with the potential to create a dialogical space between designers and 'users', is therefore more relevant for this project.

The design probes introduced by Wallace *et al.* (2013) are based on the cultural probes developed by Gaver *et al.* (1999). Gaver *et al.* introduced cultural probes to participants to provide inspiration for the designer for further design activity. Design probes (Wallace *et al.* 2013) have a slightly different emphasis: Wallace *et al.* introduced them as tools for empathic understanding. Each artefact is designed specifically to relate to a specific question and context through its materiality and form. According to Wallace *et al.* (2013) it is in this materiality that the strength of the design probes lies. Through the materiality of the technique, they state, the ability to be creative is facilitated and it supports exploration, reflection and expressions in subtle and gentle ways. It enables a question to be framed in a specific way. It provides a structure that facilitates participants' creativity and response. The materiality of design probes also helps to physically create a space that stimulates thinking differently about a topic. At the same time a unique environment can be created for dialogue between researchers and participants. The technique provides a slowness that enables the local designers to work on the probes at their own pace. This provides them with time to reflect, because even though they do not work on the probes, the question is still in the back of their mind. Through the probes, empathic engagements with the local designers are facilitated around issues centred on self-identity and personal significance. Probes can be seen as a form of co-creativity. In this co-creativity, relationships are built in a more democratic way. By inviting curiosity and by making the probes with care,

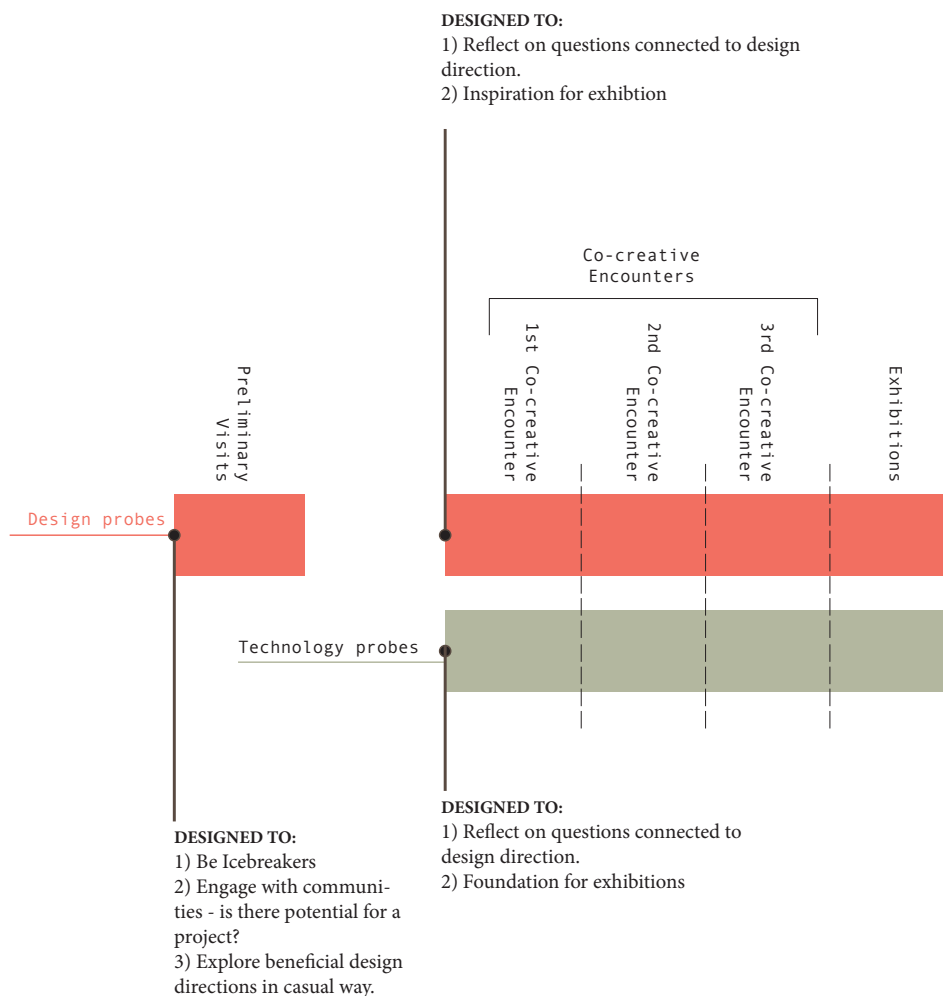


Figure 3.8 - An overview of the type of probes used throughout the process.

people become more motivated to participate and engage in the reflective activity, which can then lead to empathic understanding. The participants are in charge of their contribution to the probes. They have the power to reject and edit the probes, as they deem appropriate.

In order to stimulate an effective use of design probes, the external designer has to get truly involved in them by investing time and resources in the process. Both the making and the introduction of the design probes should be done with care and consideration towards the local designer. In this way, the external designer is able to communicate investment and respect. Those values are important in initiating trust and collaboration (Wallace *et al.*, 2013; Van Klaveren, 2012). Furthermore, it is important as an external designer to be open to grasp what the local designers are saying about their reality through the probes. Such an open attitude is important in order to obtain a deeper understanding of what it feels like to step into the shoes of the local designers (Wallace *et al.*, 2013).

3.3.1.1 Implementation of Probes

The use of the probes differed slightly between the preliminary visits and the co-creative encounters (see Figure 3.8)

During the preliminary visits, the probes were designed for exploration whereas during the co-creative encounters, the probes were designed for reflection. While the probes were always designed with flexibility in mind - since they could not be tested with a similar participant group prior to the research - the probes for the preliminary visit were designed with even more focus on flexibility than those of the co-creative encounters. Through introducing the probes during the preliminary visits, their success could be explored. Those lessons could be integrated in the design of the probes for the co-creative encounters.

During the preliminary visits, the probes were especially meant to engage with the participants. They had the ability to facilitate a casual and playful way to approach the communities and to enhance dialogue between external and local designers. These characteristics worked particularly well to bridge language barriers and cultural differences. This approach towards probes corresponds with what Wallace *et al.* (2013) refer to as “icebreaking” and probes’ ability to facilitate dialogue (Mattelmäki 2008). The probes for the preliminary visit aimed to inspire both the communities and me to look at relevant issues towards which the research could be directed. In this sense, they aimed for inspiration and a casual exploration of the context, which is according to Gaver *et al.* (1999), the particular strength of probes.

During the co-creative encounters, the probes were designed specifically to facilitate deep reflection on specific questions and topics. The probes were meant to help the local designers create exhibition pieces that expressed their thoughts, feelings and/or ideas (Sanders 2000). The specific questions and topics embedded in the probes arose from the analysis I performed after the preliminary visits.

During the co-creative encounters another type of probe was introduced: technology probes. The technology probes were introduced because of the community’s wish to implement technology in the project. This wish was articulated during the preliminary visit. Technology probes were originally introduced by Hutchinson *et al.* (2003). Hutchinson *et al.* introduced three goals for the use of technology probes. The first was to reach an understanding of the reality of their users by exploring their needs and desires. The second was to field-test new technology and the third goal aimed to inspire both the users and researchers to consider and explore new technologies. Since then, technology probes have moved away from this definition. Now, technology probes are used much more broadly than initially introduced by Hutchinson *et al.* (2007). In the case of this project, Hutchinson’s goals were not relevant. Instead, technology probes were used more in the sense of opening up new design spaces. Similar to Madden *et al.*’s (2014) account, the technology probes were designed to be directly usable, by implementing functionality right from the start. They provided the ability for local designers to take part in the design process and allowing them to steer the direction of future designs. Besides that, the technology probes were created to be flexible. Although they had initial functionalities, those could be altered depending on the paths the community decided to take.

At the moment of introducing the probes to the local designers, I emphasised that the probes could be used flexibly. I pointed out that there was no set order and that not all probes needed to be used. I highlighted that the local designers could choose which probes they were most interested in.

3.3.2 Design Initiatives

Design initiatives are activities aiming to provide a dialogical ‘third’ space between local and external designers and design seeds. The design initiatives can take many forms. Throughout the process, some design initiatives were prepared, others were spontaneous. Some of the design initiatives were initiated by me, others were initiated by the community. The aim of design initiatives is to, through design seeds, help the local designers to come up with a deeper understanding of their own reality and their views and perspectives. Unlike in other methods, such as focus groups, or cultural probes activities as described by Gaver *et al.* (1999), the aim is not for the external designer to get this understanding in order to base designs on. Instead it is focussed on stimulating the resourcefulness of the community. Examples of design initiatives that were used within the design constellations were: spontaneous brainstorming, workshops and design probe sessions, co-reflective sessions, making sessions and me taking part in the daily life of the local designers.

3.3.3 Analysis

The aims of the analysis performed as the external designer of this project were 1) to understand which of the visited communities (if any) was interested in participating in a respectful design project, 2) to understand the dynamics of the co-creative space and 3) to define a project direction that through co-creative explorations appeared to be of benefit for the participating community. To reach aims one and two I used schematics of the design constellations that shaped throughout the co-creative processes. To reach the third aim, I performed a content analysis. Each of the processes are described in the upcoming sections.

Besides those analytical processes I made use of reflection-in-action throughout the process, during and in-between visits in order to inform the preparation of tools and design initiatives. Furthermore, such reflection-in-action informed which attitudes I took throughout the visits. To facilitate this reflection-in-action that was interwoven in the design process, I made use of: 1) the design seeds created by me, 2) those created through co-creative interaction with the local designers, and 3) those created solely by the local designers. Furthermore, I reflected on responses of the local designers towards me to inform my reflections within my research diaries.

3.3.3.1 Schematics of Constellations of Design Initiatives

In order to understand the dynamics of the co-creative space and to learn which community was interested in participating in a respectful design space, I focused on understanding the constellations of design initiatives in each stage of the project. Constellations are emergent, they take shape

through interactions between local and external designers. I used this idea and the visualisation of constellations of design initiatives in order to understand the dynamics of the co-creative process. I devised the constellations in such a way that they provided information on who was initiating the design initiative, which design seeds were used, by whom they were introduced, who was involved and what the design initiatives evolved towards. This information reflects Dorst's (2008) descriptive framework as introduced in Figure 2.4. In order to shape the constellations, I used the data of the visual research diaries. The benefits of using the constellations of design initiatives as analytical diagrams was that they were relatively fast to create and that they provided a quick insight into the dynamics of the co-creative processes. In Chapter 4 and 5 I will go into more detail on how I created those constellation diagrams.

3.3.3.2 Content Analysis

In order to analyse the written research entries, I used content analysis. As a designer I used this technique to define beneficial research directions based on the explorations with the community. One of the main strengths of content analysis is the ability to find patterns or the presence of certain concepts within the data. In the approach on content analysis taken in the analysis stages, the codes are suggested by the data. Urquhart (2013) calls this type of coding: Bottom-up coding. Different versions of content analysis introduce different stages of coding. Urquhart suggests, following the Glasarian approach (Glaser & Strauss 1967) towards the grounded theory method, to only use three different stages in the content analysis:

1. Open coding. During this stage you go through the data line by line (paragraph by paragraph), while doing this, you attach codes to the data.
2. Selective coding. In this stage, the open codes are grouped into larger categories. These categories shape the basis of the key categories that shape the theory.
3. Theoretical coding. In this stage, one looks at how the categories are related to each other and the relationships between them are considered. This is the actual act of building theory, or in this case, the aim is to find a direction for the research.

Urquhart (2013) suggests making theoretical memos during all of these steps, in order to develop the definition of a category but also to get an insight into which bodies of theory or literature might be relevant to that category. Keeping theoretical memos ultimately also helps to find relationships between categories or between elements of categories.

I used these three steps in my method of content analysis, as well as the advice to make theoretical memos throughout the process. This approach towards content analysis was chosen, because when comparing the stages of content analysis following the Glasarian approach with stages in other approaches, the Glasarian steps seemed transparent and easy to distinguish.

3.4 Design Researcher: Analysis to Find Respectful Design Space

The aim of the research process was to find the dynamics of a respectful design space. In order to find this, I collected data during co-creative encounters with the Long Lamai community. This data was collected as written research diary entries and visual research diary entries. My aim was to find patterns in these entries over time, in relation to shaping a respectful design space. Furthermore, I wanted to be able to compare whether the visual entries gave similar outcomes to the written entries. Additionally, I wanted to be able to deeply reflect on my own attitudes in order to develop my skills as a co-creative designer.

As a design researcher I went through another analytical process. This analytical process was meant to understand what the relations were between events that took place and my attitude within the process in relation to a respectful design space. I was searching for an analysis tool that provided synergy between verbal and visual forms and that showed changes and patterns through the course of the process. Since I did not find a tool that was suitable in combining verbal and visual forms through timelines, I used different tools and combined those into a new tool. This tool I devised through a reflection-in-action process as introduced by Schön (1983). At the foundation of the process that I went through lay two analytical techniques: content analysis (Urquhart 2013) and annotated portfolios (Gaver & Bowers 2012).

In the following sections, I will detail the analytical process that I have devised for this project. I also will introduce the development process of this analytical process.

Content analysis and annotated portfolio served as the foundation for the research analysis. I used content analysis in a similar way as in the shaping of the design direction in the analysis process of the design process (Section 3.3.3.2). The focus lay on finding patterns in the written research diaries in relation to the attitudes taken by me throughout the process.

In the analysis of the visual diary I wanted to acknowledge the design focus of this project. My research can be characterised as research-through-design.

In research-through-design, the focus lies on the interaction between learning through making and reflection to understand what it means in a wider context (Zimmerman *et al.* 2007). It is therefore important to acknowledge the knowledge embedded in the artefacts. One of the critiques of research-through-design is that it lacks theory (Fallman and Stolterman 2010; Gaver 2012). Annotations were introduced by Gaver as a reaction to the critique on research-through-design (Gaver 2012). Gaver introduced annotations as doing some of the work of ‘theory’, while still acknowledging the design. Annotations articulate the interwoven thoughts that are connected to the artefact. Fallman and Stolterman (2010) have stated that the ‘theory’ of design has the ability to connect rigour and

relevance to the design. Through annotation, rigour and relevance can be obtained without losing the connection to the materiality of design (Bowers 2012).

I acknowledge both the importance of theory as well as the importance of the materiality of the design. I also consider it important to create a 'virtual space' as described by Schön (1983), in order to reach rigour in reflecting on the design process. Searching for rigorous analysis tools that acknowledge these facets made annotated portfolios stand out. Consequently, in order to give the visual diaries as much weight as the research diaries and to provide a virtual space, I implemented annotated portfolios.

In this research I use the notion of annotated portfolio as introduced by Bowers (2012). According to this notion, annotations form a collection of designed artefacts and are shaped into a systematic portfolio. Annotated portfolios enable the ability to compare artefacts and to show similarities and dissimilarities between artefacts. Depending on the purpose, interests and audiences, annotations can be created in order to focus on different perspectives. I use codes, such as used in content analysis, in order to annotate and find similarities and dissimilarities. Annotations thus shape how artefacts can be understood and what value is attached to them. Annotations and the artefacts they refer to are strongly interwoven; they cannot be seen separately from each other, without losing meaning. Annotated portfolios can be shaped in whichever way seems appropriate. Annotated portfolios typically acknowledge failures as well as successes in order to accommodate a reflective space.

Each of the annotations as well as the codes that arose from the content analysis, contained a timestamp. In order to understand the dynamics of respectful design through the course of the research, I plotted all codes and annotations on timelines, referring to the date on which they occurred in my diaries. This led to the creation of analysis sheets for each of the project stages. From the analysis sheets I created pattern sheets that combined the plotted codes of all the stages per coding concept thereby providing an overview of the entire project. Those analysis sheets and pattern sheets are data visualisations. By using data visualisations to explore and present the analysis I acknowledged my design skills and my preference towards thinking visually. In my data visualisations I used Tufte's work as inspiration (Tufte 2001; Tufte 1990). His focus lies on creating aesthetically pleasing, clear and creative data visualisations.

3.4.1 Shaping Virtual Worlds

The development of the analytical process consisted of four different actions. The development was rooted in a reflection-in-action process, which meant that adjustments were made to the process as a consequence of reaching a deeper understanding. I will go into detail on this in Section 3.4.3. Here, I will describe each action as it was performed initially.

First action - defining concepts

The first action is about defining which concepts I would use to analyse the data. This is what Urqu-

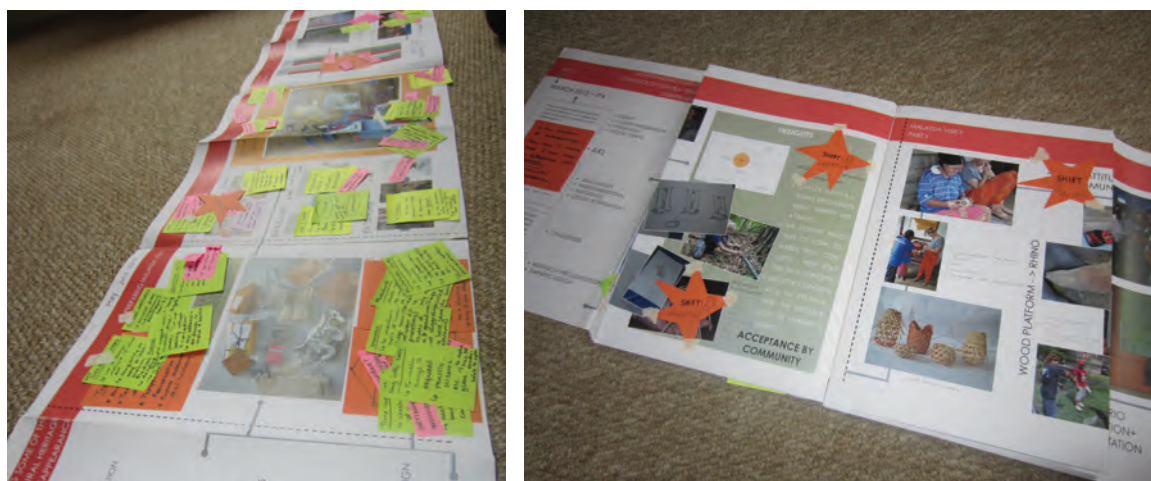


Figure 3.9 - A fragment of the visual timeline that arose from the visual research diaries.

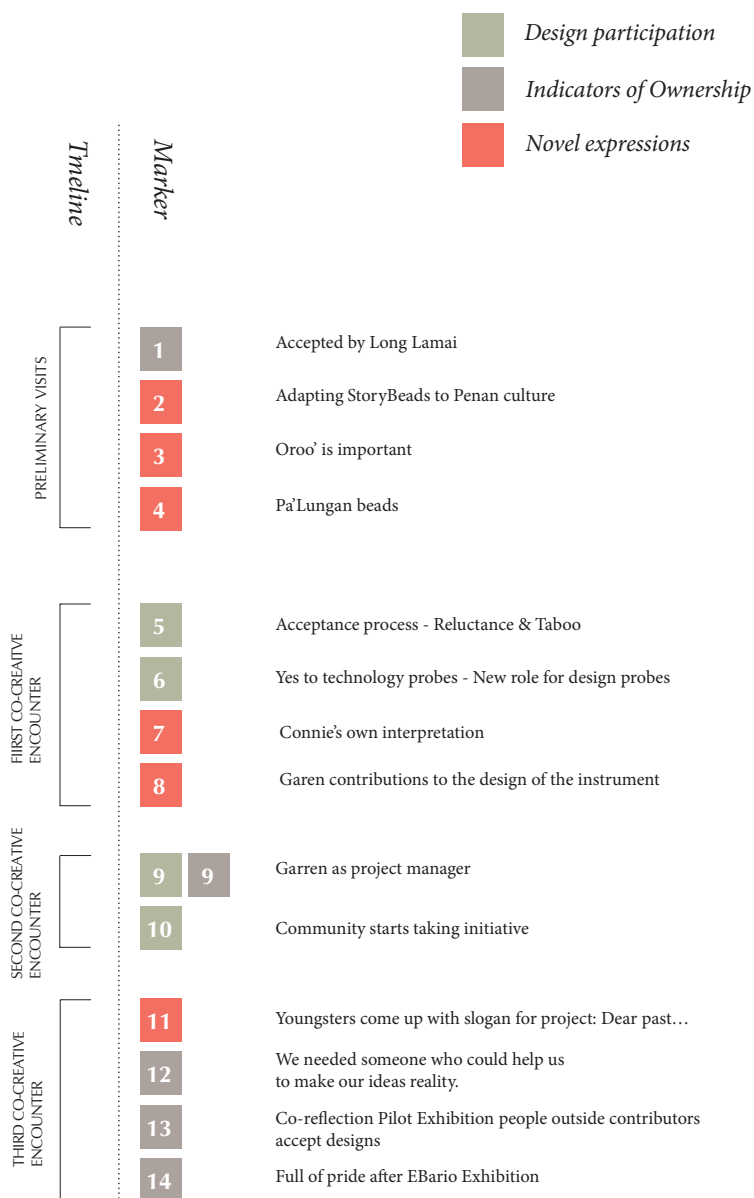


Figure 3.10 - The highlighted moments that arose from the visual timeline.

hart (2013) called open-coding in content analysis. I had two data sets: the written research diaries and the visual research diaries. Since both data sets had a collection of data of the same events, I chose to only do open-coding on one of the data sets. I selected the visual data, and created a visual timeline of this. The visual timeline consisted of visual accounts and written annotations. Figure 3.9 shows a fragment of the visual timeline.

In this visual timeline I highlighted moments that I considered significant in the shaping of a respectful design space. I then grouped the highlighted moments that belonged together and formulated concepts. The coding concepts became: Ownership as design participation and as indicators of psychological ownership, novel expression types. Figure 3.10 shows an overview of the highlighted moments that arose from the visual timelines.

For each of those coding concepts, I searched for existing analytical frameworks. For some, I found relevant frameworks in literature which I adjusted slightly, for others, I shaped new frameworks from information in existing literature. In Section 3.4.2, I will explain the frameworks.

Second action - finding codes

In order to discover whether the analytical concepts that I had defined in the frameworks appeared in the data, I performed, as introduced in the previous section (3.4.1) a selective coding content analysis (Urquhart 2013) on the written research diaries and I created annotated portfolios (Gaver & Bowers 2012) from the visual diaries. For this, I used the concepts and the frameworks that I had created for each of them. I divided the codes and annotated photos into different design activities:

- General design direction
- Design probe activities
- Technology probes (general)
- Musical instrument
- Lights
- Stories

This was done in order to distinguish between successful and less successful respectful design spaces. I positioned the codes in code tables (see Appendices 2-4).

Third action - Timelines

In order to get an understanding of the appearance of the coding concepts in the course of the project, I connected a timeline to the annotated portfolios. I did the same to the codes that resulted from the selective coding content analysis of the research diaries.

I then started the reflection-in-action process, as I will discuss in more depth in Chapter 7. Through this process, I found layers of information that I considered important to add to the timelines and annotated portfolios. By adding those layers to the initial analysis method, I created new spaces for

reflection. For example, I added a layer to define who the contributor of each of the codes was. I also started differentiating between codes that came from the community, codes that came from me and codes that were a result from the interaction between us. I furthermore found to other coding concepts: design seeds and indigenous knowledge glimpses.

From this stage I could learn whether there were clusters in codes or whether there were highlights in the appearance of codes in certain days. I could see the changes in the characteristics of codes and in the frequency of codes. The end result of this stage were analysis sheets - consisting of a content analysis timeline and an annotated portfolio. I created one analysis sheet for each of the visits to Long Lamai.

Fourth action - pattern sheets

In order to understand the patterns over time I created pattern sheets from the analysis sheets. Those sheets focussed on the occurrence of the specific coding concepts. This resulted in the following pattern sheets:

- Ownership:
 - Indicators of ownership (both for the research diaries and for the annotated portfolios);
 - Design participation (for the research diaries);
- Novel expressions (both for the research diaries and for the annotated portfolios);
- Indigenous knowledge (for the research diaries and for the annotated portfolios);
- Design seeds (for the annotated portfolios)

I realised the importance of understanding who the local designers were that contributed to the design process. I therefore created a pattern sheet explaining the contributors. I also created a pattern sheet that showed whether the initiative for expressing the code had come from the community, from me, or from an interaction between us. In order to get an understanding of the entire process, and patterns that occurred throughout the process, I compared the patterns and clusters for each design activity over the course of the project. I compared both the annotated portfolios as well as the content analysis in order to see whether they showed similarities.

In the next section I will detail the coding concepts and the frameworks that came from them.

3.4.2 Analytical Coding Concepts

I reviewed the literature to determine more specifically what the coding concepts entailed. Through the literature review, I defined frameworks as the foundations for the content analysis and annotation process.

In the next sections I will describe the concepts, the literature review and the frameworks that arose from them.

3.4.2.1 Ownership

In the next sections, I will detail how I define ownership, why it is important and how it is expressed. When I talk about ownership in my work I talk about psychological ownership. This is meant to differentiate it from legal ownership. Where legal ownership is recognised by the society, psychological ownership is foremost recognised by the people who experience the ownership (Pierce *et al.* 2001). Legal and psychological ownership can exist without each other.

Through the visual timelines I found psychological ownership and design participation as coding concepts (see Figure 3.10). After deeper reflection I learned that what lay at the foundation of the design participation coding concept was who was controlling the design process. This is a characteristic of the design space that highlights the potential division of ownership. The ownership coding concept focused on the indication and marking of experiences of ownership either by the local designers or by me. Thus, this coding concept was more concerned with giving an indication of whether ownership was perceived and by whom. From now on, I will term this coding concept: indications of ownership. Especially in collaborative processes, it is important to understand the division of ownership among the contributors, because such processes have the potential to bring transformational social change to the contributors (Light *et al.* 2013). In fields where participatory projects also have the potential to bring about change, such as in developmental studies, there lies an emphasis on understanding the division of ownership. However, as stated by Light *et al.* (2013), there are only few accounts in participatory design that connect the same emphasis on ownership. Besides Light *et al.* (2013), other accounts I found came from van Rijn and Stappers (2008) and ten Böhmer *et al.* (2012).

In the upcoming sections, I will distinguish between the ownership of process (Section 3.4.2.1.1) and indicators and markers of ownership brought by the different contributors in the design process (Section 3.4.2.1.2) in order to understand the division of ownership among the contributors. These distinctions resulted in two different coding frameworks: the design participation framework and the indications of ownership framework.

3.4.2.1.1 Ownership of Process: Design Participation

Taking ownership of something provides people with the ability to take control and explore and alter their environment (Beggan 1992; Furby 1978b; Furby 1978a; Furby 1980; White 1959, Rudmin and Berru 1987, Csikszentmihalyi & Halton 1981). Conversely, objects that cannot be controlled do not provide space to take ownership of them (Lewis & Brook 1974; Seligman 1975). This is what Wang *et al.* (2006) call the instrumental motive of ownership. This instrumental motive of ownership is related to ownership of the process. Both Tunstall (2010) and Sheehan (2010) stated that in the approaches they propose for working with indigenous communities, one of the key factors is that the community can direct the process and the project direction.

Pierce *et al.* (2001) give an example of the importance of having control for perceiving ownership. They come from organisational psychology and state that people who can shape their own job tasks

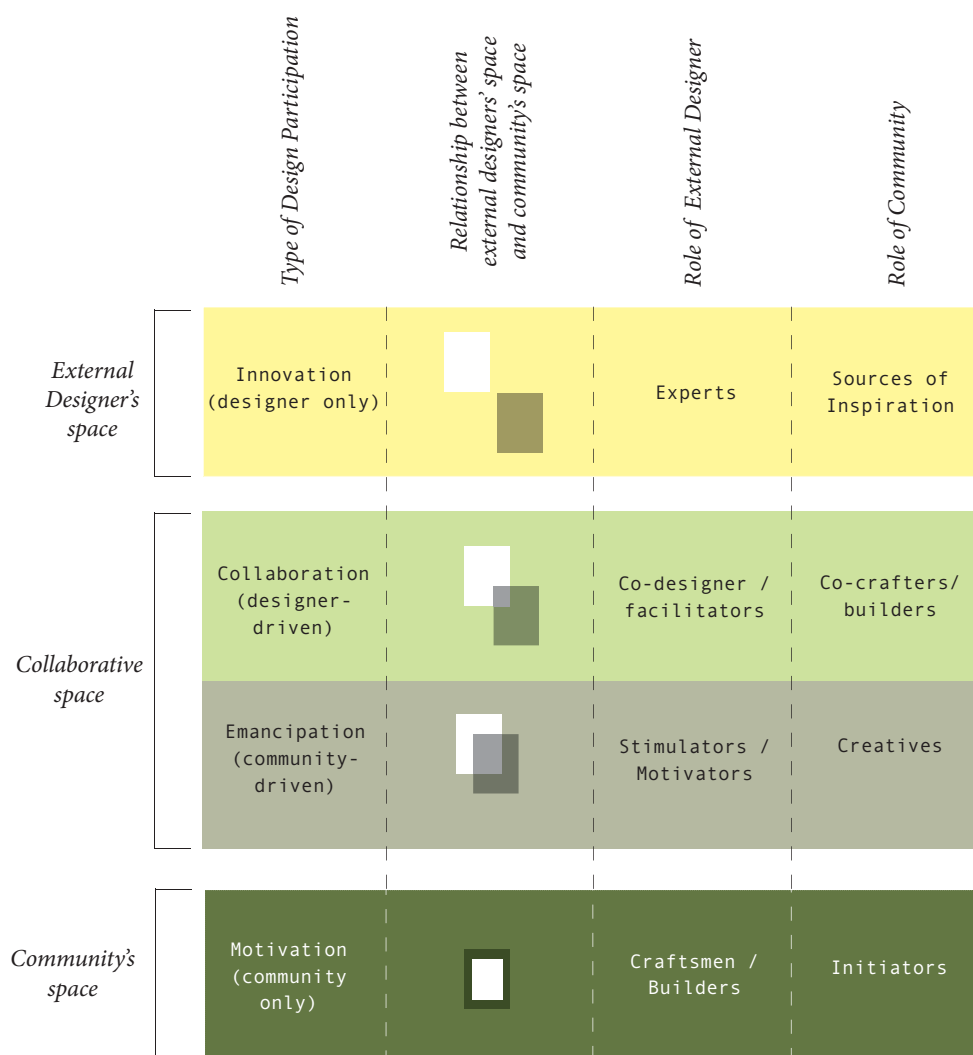


Figure 3.11 - Adapted design participation tactics framework (based on Lee's (2006)).

are more likely to perceive more ownership of their job and of the company they work for. This is because things that are created by individuals are more likely to raise feelings of ownership by those individuals (Das 1993). Similarly, having intimate knowledge and information about something (be it an object, artistic creation, process, place, concept, etc.) can result in having a stronger relationship with it (Beaglehole 1932). For example a gardener, who has been working in a specific garden for a prolonged time: after a certain time, this gardener will feel as though the garden belongs to him (Weil 1952:33). This is because we own our labor, through investment of energy, time, effort and attention. Therefore, by shaping, creating or producing things, it is likely that we feel like we own it (Csikszentmihalyi & Halton 1981). Becoming aware of the importance of understanding who is in control of the design process, let me reflect on how this can be comprehended from the research data. I realised that it is important to understand the type of design participation in order to understand who is in charge of the process.

As detailed in Chapter 2, in the section about the good enough designer (Section 2.6.4), I see a connection between being a good enough designer as introduced by Thorpe and Gamman (2011) and the

types of design participation as described by Lee (2006; 2008). Figure 2.1 (in Section 2.6.4) shows the framework of design participation tactics as introduced by Lee. I slightly adapted Lee's framework to make it more appropriate to respectful design in communities. This adapted framework is shown in Figure 3.11. This is the framework that I will be using.

As a project progresses, Thorpe and Gamman's (2011) good enough designer commits less and less time and effort and thus provides the space for the local designers to take charge. Even though Lee (2008) did not intend the type of design participation to appear in the process in a certain order, I consider that when aiming to be a good enough designer, a designer might transfer from an innovative type of design participation, to a collaborative design participation to emancipation design participation. The ultimate goal then can be to reach a motivational design participation. Lee's (2006; 2008) design participatory tactics can be understood as follows: The design participation types, innovation, collaboration and emancipation are all initiated by the designer. However, the relationship between community and designer is different. Innovation is positioned in the designer's space. The designer's role is that of a design expert. The role of the community is that of representatives of a group. Collaboration is positioned within a shared space of the community and the designer. Both innovation and collaboration are mission-oriented. The goal is to obtain information and data that then can be used for the design. The role of the designer in a collaborative type of design participation is that of a co-designer or facilitator. The role of the community is that of co-workers. It is about designing for people, instead of with people. This is different for emancipation. It is positioned in a shared space, like collaboration, but is focussed on designing with people. The role of the designer is that of trigger. The role of the community is to be creative or to advise. Motivational design participation is the only type of design participation that is positioned completely within the community's space. The designer is a crafter or builder in such a process; the community is the active client. The community has autonomy to steer the design process.

3.4.2.1.2 Marking of Ownership: Indicators of Ownership

In cases where the local designers can control the process, it can be expected that they perceive ownership. This perceived ownership can be signalled. Wang *et al.* (2006) refer to this as the perceptive, social-cognitive motive of ownership. Through this signalling motive it becomes clear who owns what, so that no misconceptions can arise. Because of this signalling, meant to make others aware of our perceived ownership, you can 'read' ownership. The people owning the object can express ownership and ownership can be marked on the object that is taken ownership of. In understanding who controls the project, it is important to understand these signals, as they give additional information about (the potential of establishing) a respectful design space.

There are three concepts of expressions that I found from literature:

- Enhanced responsibility - The more ownership we feel towards something, the more we

express responsibility. Taking responsibility means being protective, caring or nurturing (Pierce *et al.* 2001). Taking responsibility comes from a desire to maintain, protect or enhance the identity that is linked to the things that it is taking ownership of (Pierce *et al.* 2001). In teamwork, thus also in co-creative processes, overprotectiveness impedes teamwork and co-operation (Pierce *et al.* 2001).

- Increasing value - Another way in which ownership is expressed is through the perceived importance of the target object by the owner (Rudmin & Berry 1987; Rudmin 1991).
- Pride - Pride is also a way of expressing ownership and shows the emotional attachment to the object (van Rijn & Stappers 2008).

Things, ideas or artistic creations (or other sources to which potential ownership can be attached) can also contain ownership markers. Those markers refer to behaviours that can construct and communicate to other people that someone has taken ownership of that particular object (Brown *et al.* 2005). In order to express that something is owned, symbols and boundaries can be used (Becker 1991). A distinction can be made between two different types of ownership markers: the ones that are communicative (proactive) and the ones that are defensive (reactive) (Wang *et al.* 2006). The communicative markers refer to markers that suggest ownership without preventing access (Wang *et al.* 2006). Again

Ownership Markers _ Distinctions:

Communicative (Wang *et al.* 2006):



Defensive (Wang *et al.* 2006):

Things that physically prevents access to an object such as a lock.

Figure 3.12 - The ownership framework that I used for the content analysis and annotating.

Ownership Expressions _ Distinctions:

From literature	<p>PRIDE (van Rijn & Stappers 2008)</p>	<p>INCREASED VALUE (Rudmin & Berry 1987; Rudmin 1991)</p>
Understandings based on dictionary definitions	<p>A feeling of deep pleasure or satisfaction derived from one's own achievements, the achievements of one's close associates, or from qualities or possessions that are widely admired.</p> <p><i>ENGLISH: self-esteem dignity honour self-respect ego self-worth self-image self-identity self-regard pride in oneself pride in one's abilities</i></p> <p><i>DUTCH: arrogant hooghartig hoogmoedig ongenaakbaar opgeblazen fier ongenaakbaar triomfantelijk zegevierend statig tevreden voldaan</i></p>	<p>Perceived importance of target object by owner (in which owner is not necessarily in legal terms). It can also relate to importance perceived before the object actually exists or before it is owned.</p> <p><i>ENGLISH: value respect prize cherish treasure admire hold in high regard hold in esteem rate highly think highly of think much of have a high opinion of set store by</i></p> <p><i>DUTCH: waarderen aanslaan achten apprecieren bewonderen hoogschatten respecteren valoriseren aanbidden eerbiedigen hoogachten op prijs stellen</i></p>
From literature	<p>ENHANCED RESPONSIBILITY (as care, protection and nurturing) (Pierce et al. 2001)</p>	
Understandings based on dictionary definitions	<p>CARE</p> <p>1] feel concern or interest; attach importance to something; 2] the provision of what is necessary for the health, welfare, maintenance, and protection of someone or something.</p> <p><i>ENGLISH: concern consideration attention attentiveness thought regard mind notice interest caringness sympathy management looking after responsibility supervision</i></p> <p><i>DUTCH: aandacht inspanning onderhoud zorg bekommerning vlijt bezieling loyaliteit zelfopoffering bescherming onderhoud enthousiasme overgave verknochtheid</i></p>	<p>PROTECTION</p> <p>Having or showing a strong wish to protect something or someone.</p> <p><i>ENGLISH: solicitous caring mindful careful wary watchful vigilant warm possessive</i></p> <p><i>DUTCH: bezorgd beschermend zorgzaam</i></p> <p>NURTURING</p> <p>1] care for and protect (someone or something) while they are growing 2] help or encourage of something to cherish (a hope, belief, or ambition).</p> <p><i>ENGLISH: encouragement promotion fostering development cultivation boosting furtherance advancement support</i></p> <p><i>DUTCH: koesteren heel goed verzorgen versterken</i></p>

Figure 3.12 (continued) - The ownership framework that I used for the content analysis and annotating.

there are two different types that can be distinguished: the identity oriented markers and the non identity oriented markers (Wang *et al.* 2006). An example of an identity-oriented marker is a lunchbox containing a label with the name of the child to which it belongs. An illustration of the non-identity oriented marker is a wedding ring. It marks the connection to someone else, but does not identify the whom. An example of a defensive marker is a lock. It prevents people from actually taking the object. By bringing those insights together, I was able to shape a framework that can be used to distinguish ownership in the annotated portfolios and the research diaries. Figure 3.12 shows this framework. There is a division between expressions (on the left) - or effects, as they are termed by Wang *et al.* (2006), and markers on the right. I used synonyms in English and Dutch to understand how ownership expressions can manifest.

3.4.2.3 Novel Expressions

The following coding concept that I found to be important for a respectful design space was creativity (see Figure 3.10). However, through my explorations of the literature in this field I found that it would be better to term this coding concept novel expressions. In this section I will explain how I came to this understanding and which framework I decided to use.

In this thesis, I do not define creativity in the mysterious way it is often spoken about. Instead of connecting it to artists like Picasso and Dali thereby contributing it to genius, I aim to describe it in a way that acknowledges initiative from the community.

In his work, Johnson-Laird (1988) introduces a definition for creativity from the dictionary of psychology (Reber 1985):

Creativity is: A term used in the technical literature basically in the same way as the popular, namely to refer to mental processes that lead to solutions, ideas, conceptualisations, artistic forms, theories or products that are unique and novel. (Reber 1985)

Johnson-Laird adds to this that it should be unique and novel to the creator, not necessarily to everyone.

Glavenau (2010) introduced the cultural psychology of creativity. This notion describes creativity as: “a fundamentally relational, intersubjective phenomenon”. This is related to Csikszentmihalyi’s (1996) notion of creativity that states that creativity is in essence relational. In this, creativity is a system in which three elements interact. The first of these elements is a culture comprising symbolic rules. The second element is someone bringing novelty into this cultural domain. The third element consists of a field of experts. They validate and recognise the novelty as creative. The process of creativity then is the process that leads to changing the cultural domain and the symbolic rules of which it comprises.

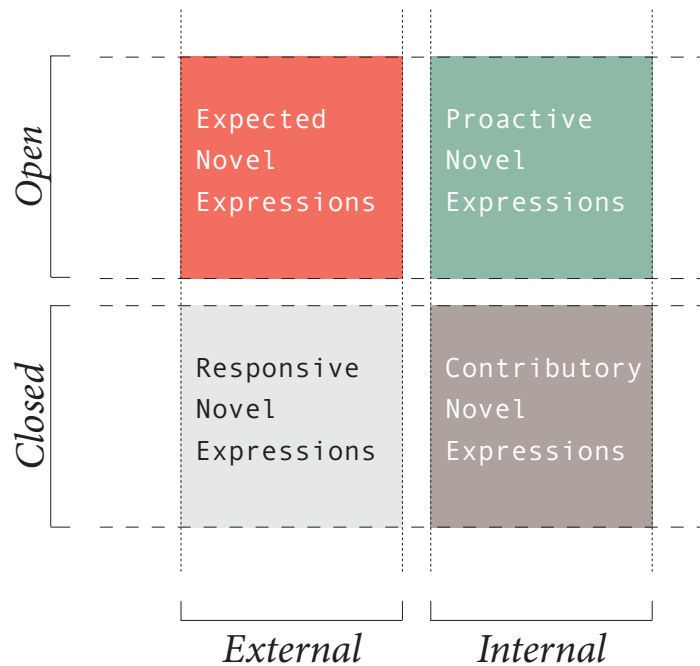
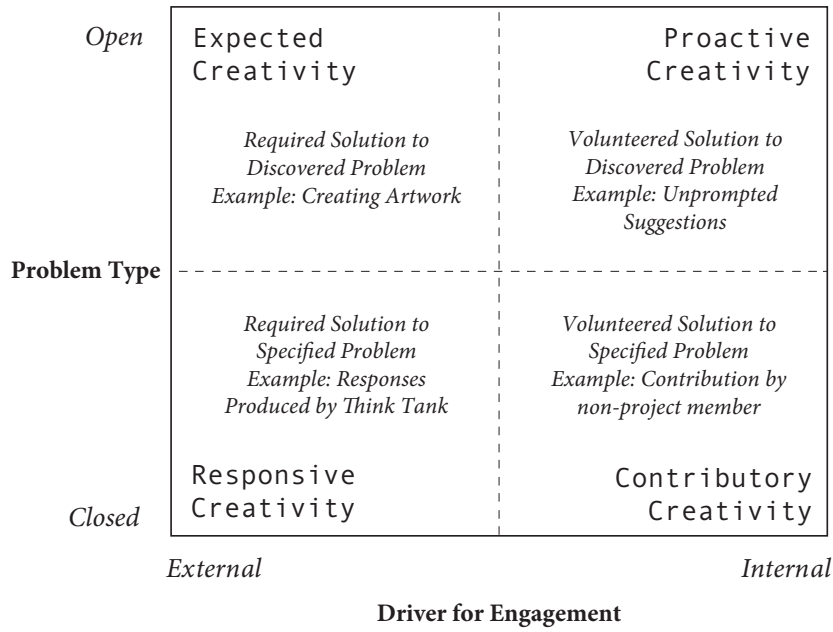


Figure 3.13 - Unworth’s (2001) creativity matrix (above) and my adaptation: The novel expressions matrix that I used for the content analysis and annotating.

I realised that what I in first instance called creativity, was not creativity when looked at from Csikszentmihalyi’s definition. Instead, the highlighted moments I marked in the visual timeline were about novel expressions. Each of those has the possibility to result in creativity; however, this is dependent on the three elements within the system and the interaction between them, as mentioned before. Since I did not only want to highlight successful cases, I realised that I should alter the designation of this concept towards: novel expressions.

Unsworth (2001) introduced a matrix with four different creativity types in which she distinguishes between creativity types by the problem type (open vs. closed) and the driver of engagement (external vs. internal). This means that what Unsworth defines as creativity, is not creativity in the sense of how Csikzentmihalyi has determined it. If we look at Csikzentmihalyi's definition of creativity, something is only creative if it "changes an existing cultural domain or if it transforms an existing domain into a new one". Thus, what Unsworth terms creativity, Csikzentmihalyi would term as a novel expression. Since I take on Csikzentmihalyi's systematic perception of creativity, I alter Unsworth's terming of creativity to novel expressions. The types defined by Unsworth are: Expected Novel Expressions (open, external), Responsive Novel Expressions (closed, external), Contributory Novel Expressions (closed, internal) and Proactive Novel Expressions (open, internal). Figure 3.13 shows an adapted version of Unsworth's matrix. This matrix is used in this research as a coding framework.

3.4.2.4 Type of Design Seeds & Indigenous Knowledge

Through the reflection-in-action process I found two other coding categories that might be important to consider in the dynamics of providing a respectful design space. These coding categories are the type of design seeds used and insights through indigenous knowledge.

Through the design probes and technological probes, I introduced design seeds that I had created. However, in the course of the project, the local designers also introduced design seeds that were of their own material culture. Since these introductions were often accompanied by novel expressions, I initially connected this coding concept to the novel expressions coding concept as introduced in the previous section. In the annotated portfolios I however also acknowledged the type of design seeds as a coding concept in its own right. I did this in order to understand the quantity of the design seeds that the local designers introduced in relation to the design seeds that I introduced.

The coding concept that focused on the insights through indigenous knowledge was added in order to understand whether there was space in the design process for the indigenous knowledge. This is an important dynamic of respectful design as stated by Sheehan (2011) or culture-based innovation as stated by Tunstall (2011).

3.4.3 Reflection-in-Action

In order to reach the insights and interpretations, as I will present in Chapter 6 and 7, I went through an intensive reflective process. This process provided me with space to reflect thoroughly and in a structured way on my own attitudes taken during the co-creative encounters and the preliminary visits. This process guided the analytical process. I used Schön's (1983) reflection-in-action. The method of analysis enabled me to shape a space to develop myself as a good enough designer. By adding layers to the initial analysis method (the timelines and annotated portfolios), I created new spaces for reflection. Such spaces are what Schön calls: virtual worlds. Virtual worlds provide the potential to

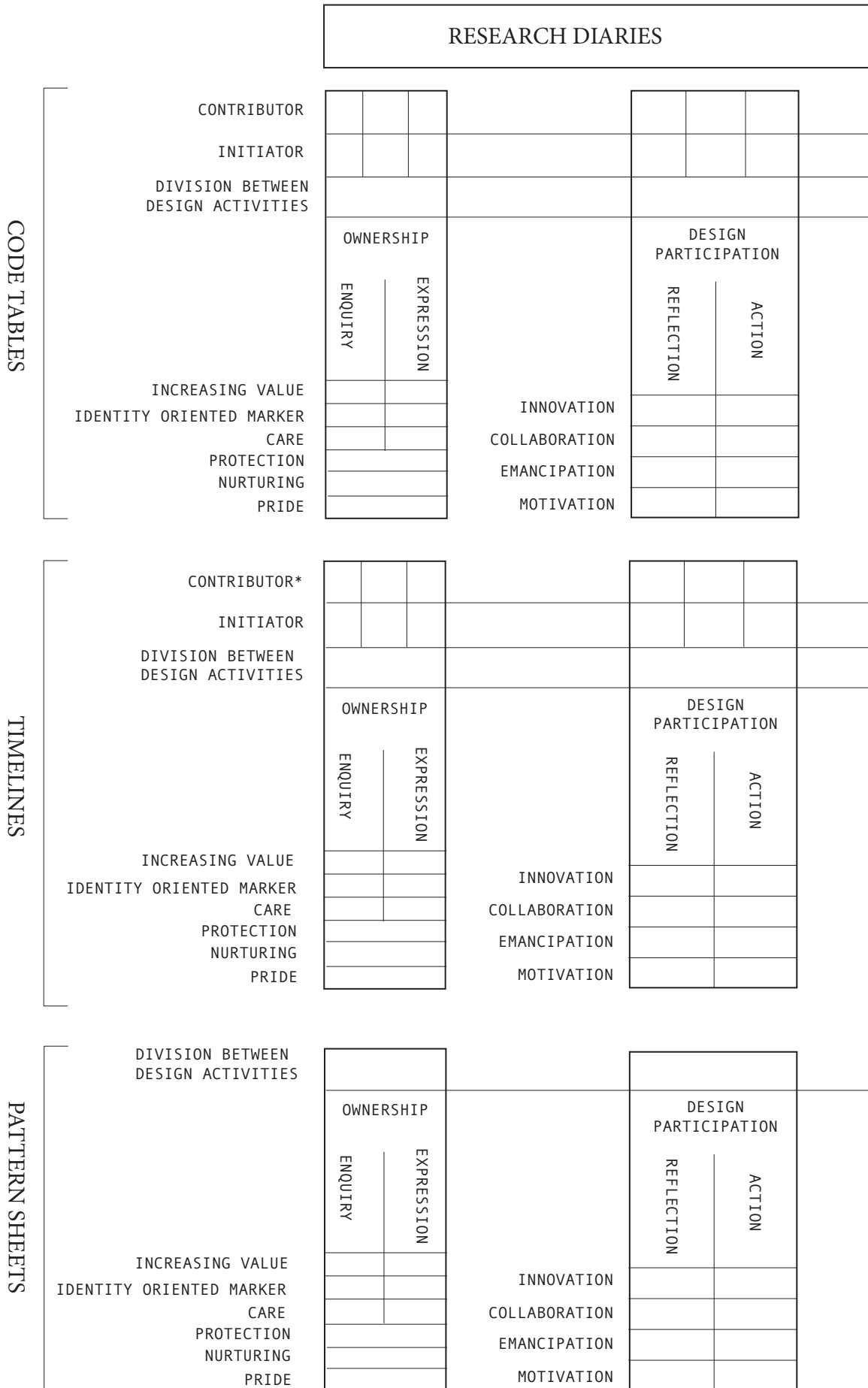


Figure 3.14 - The virtual world that I created through my analytical process for the research diaries.

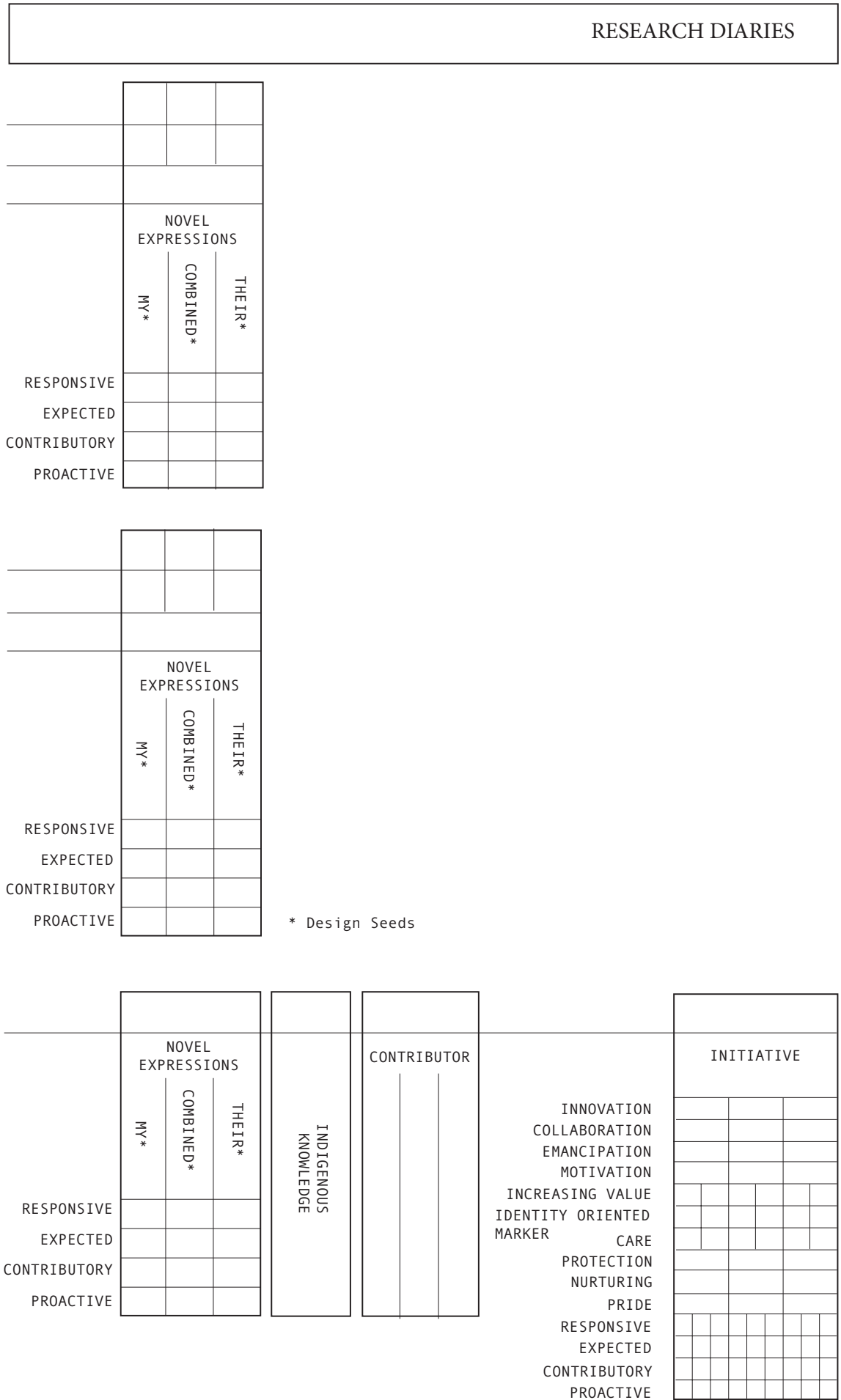


Figure 3.14 (continued) - The virtual world that I created through my analytical process for the research diaries.

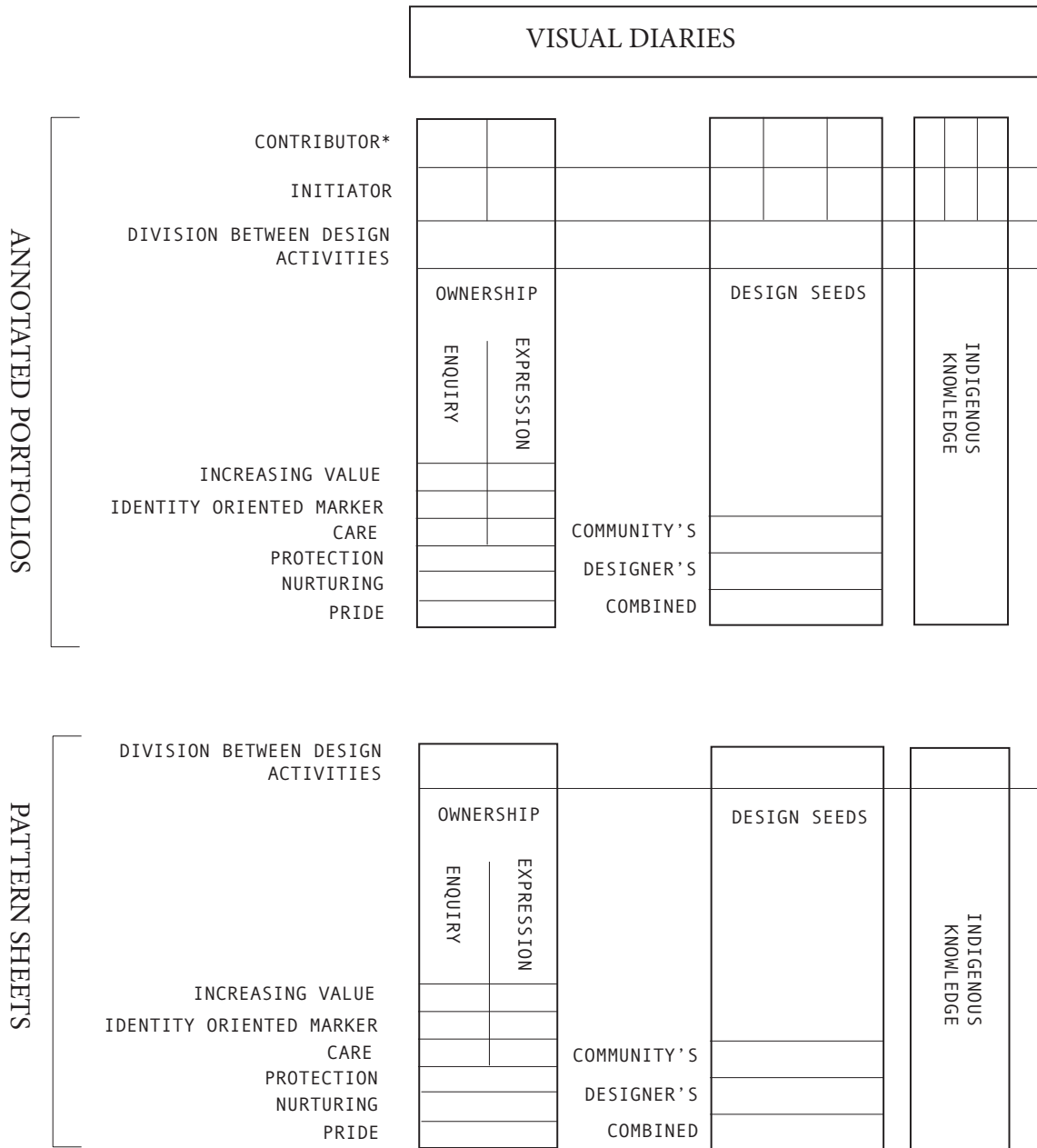


Figure 3.15 - The virtual world that I created through my analytical process for the annotated portfolios.

slow down. This is important for providing time for new insights to arise. In these spaces, no move is irreversible. This is of importance for stimulating exploration without boundaries. Through these characteristics, the use of a virtual world facilitates rigour. Through my analysis process, I shaped layers that build the virtual world that I was working in. The reflection-in-action process took about ten months. Figure 3.14 shows the virtual worlds for the research diaries, with the layers that it contains. Figure 3.15 shows the virtual worlds for the annotated portfolio.

Because information in the earlier actions is translated to the later stages, whatever insights are

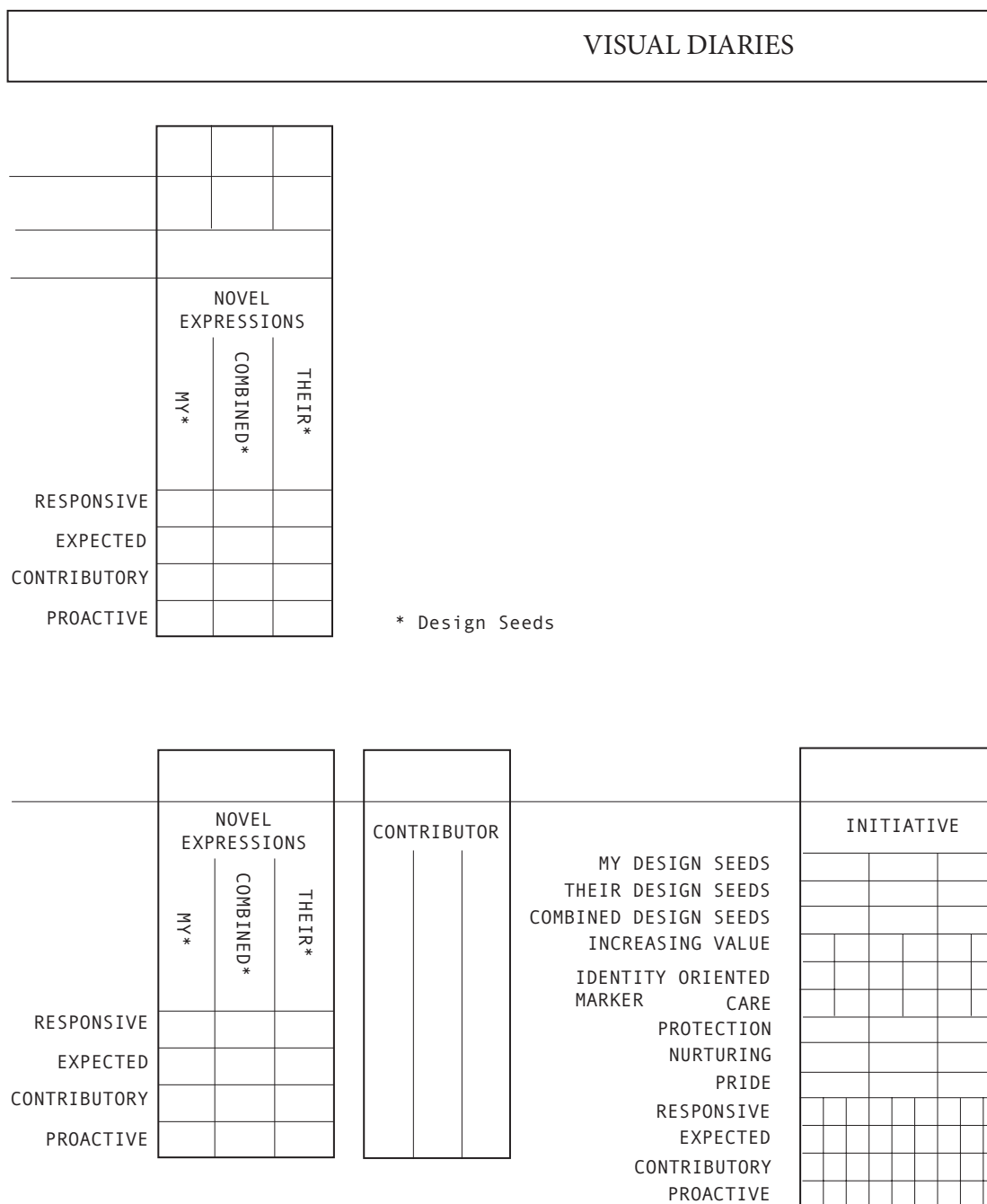


Figure 3.15 (continued) - The virtual world that I created through my analytical process for the annotated portfolios.

gained through later action, will cause the earlier actions to change. For example, if a coding category is redefined by shaping the timelines, all other actions that went before also alter. Or, if a new coding category is found through reflections in the pattern sheet, all other virtual worlds change consequently - the timelines, the code tables and the annotations in the research diary. It is thus an emergent, dynamic process. I will detail the dynamic nature of the process in Chapter 7, where I will give an overview of how the reflection-in-action process led to the conclusions and recommendations, while at the same time steering the analytical process.

3.5 Rigor & Validation

In order to reach rigour, I incorporated triangulation (as explained in 3.2.3) and virtual worlds through a reflection-in-action process (as explained in 3.4.4). Besides that, I let representatives of the different communities read through the passages of my stay in their respective community within this thesis. Each of the representatives have validated the texts and confirmed the accounts as accurate. Besides increasing the credibility of the work, this approach also fits to a respectful design approach as stated by Holcombe (2011) as it empowers the community because it does not solely take information but incorporates their suggestions in order to make it accurate.

3.6 Conclusion

This chapter explained the methodological rationale taken in this research. My aim was to explore the dynamics of a respectful design space and how my attitude could hinder or provide this space. This research was conducted as a research-through design process. I performed a design case-study after which I analysed this case-study in a research process. My role during the case study was that of external designer, my role during the research process was that of design researcher. The data that was collected throughout the process consisting of my written research diary entries and photographs both of the process as well as of the final designs. Through these methods of data collection I had the ability to create relatively objective observational notes to describe the process. On the other hand, theoretical and methodological notes provided the ability to embed accounts on personal attitudes taken. Both these processes had different aims.

The design process aims were following from Tunstall's (2011) notion of culture-based innovation and Sheehan's (2011) notion of respectful design to find a community interested to participate in a respectful design process, to facilitate a process in which the community can define beneficial design directions and to encourage resourcefulness of the community. I shaped the design and analysis tools such that they supported answering these aims. In order to get insights into the dynamics of co-creativity with indigenous communities I initiated a co-creative design process that was divided into different stages. These different stages were important in order to comply with taking a respectful design approach in which a community can decide for themselves whether and on which grounds they would like to take part in a design project. Through the stages, co-reflective dialogical space arose during which I introduced my understanding of the communally created third space. The dialogical space enabled the local designers to articulate whether my view of the communal third space was fitting to how they saw it. In order to create those dialogical spaces, I prepared design initiatives. Those design initiatives characterised the design process by making the process flexible. This was important in order to accommodate the challenges that are connected to doing participatory design in developmental or multicultural contexts. The constellations were built up from design initiatives that were supported by design seeds. Design initiatives could be started whenever deemed appropri-

ate and new initiatives could be introduced both by me or by the local designers. Design initiatives as used in this project are activities aiming to provide a dialogical space between local and external designers and design seeds. Design seeds are also flexible, they can be used or ignored. They can also be transformed into other design seeds that ask different questions than the initial questions attached to them. The seeds that I prepared were all probes. Those tangible artefacts were in the earliest stage of the design process - the preliminary visits - used for inspiration and to provide a casual exploration of the possible design space. During a later stage - the co-creative encounters - the probes were designed specifically to facilitate deep reflection on specific questions and topics.

The aims within the research project are the same as those of the overall research: to explore the dynamics of a respectful design space in co-creative and co-reflective encounters with indigenous communities and consequently to obtain an understanding of what those dynamics mean for attitudes to be taken by the researcher in order to provide a respectful design space. With the set of data I wanted to understand what the relations were between events that took place in relation to my attitude within the process. I selected content analysis to analyse my written accounts. For the visual accounts I selected annotated portfolios. I combined those tools into a new tool to provide a synergy between verbal and visual forms and that showed changes and patterns through the course of the process.

I used this analytical process as a reflection-in-action process, aiming to develop my skills, expertise and understandings as a co-creative designer. At the same time, it was through this process that the analytical process was shaped. I started off with the written research diaries and the visual diary entries. I coded these using content analysis and annotations. The coding categories were:

- Ownership;
 - Indicators of ownership (distinguishing: increasing value, enhanced responsibility, pride and (non) identity-oriented markers);
 - Design participation (distinguishing: innovation, collaboration, emancipation and motivation);
- Novel expressions (distinguishing: responsive, contributory, expected and proactive);
- Design seeds (distinguishing: the material culture I introduced, the material culture that the community introduced and a combination of our material cultures);
- Insights through Indigenous Knowledge.

I then positioned these codes into a timeline and I created annotated portfolios. I used these to reflect on changes in code concepts and characteristics as well as on clusters of codes. I then created a pattern sheet for each of the coding categories, as well as sheets containing information about the main initiator (me, community or together) and the contributors within the process. I used the pattern sheets to reflect on the dynamics of a respectful design space. In the reflection-in-action process, I went through reflective cycles. Those cycles bridged different virtual worlds. I, for example, would find a pattern in the design participation sheet, which I would then compare with the research diary

in order to understand what made such a pattern arise. In Chapter 7, I will go into more detail on this reflection-in-action process. In Chapter 6, and in Chapter 7, I will introduce my interpretations of the analysis. In the next Chapters (4 and 5) I will present the design case study of this project.

Four | Empirical Case Description – Preliminary Visits

In this chapter I will detail the first part of the design process. This stage consists of the preliminary visits to three Sarawakian communities. My role in this design process was that of external designer. This chapter and the next chapter (5) focus on trust growing as an important process of respectful design. In order to show that this trust growing process is not straightforward and that temporary togetherness requires time to grow I have provided detailed accounts of the visits to the different communities. I narrate this process, as the building of relationships with the communities and the interactions had consequences for the further project.

In this chapter, I will detail my preparation for the preliminary visits. I will explain the design seeds that I designed along with the design initiatives that I envisioned. After that I will describe the preliminary visits. I will provide a character sketch for each of the communities I visited. Then I will give an account of the access and acceptance process and the dynamics between both. I will provide an overview of the reactions towards each probe and how constellations of design initiatives were shaped. Then I will conclude whether I considered it possible to start a respectful design project in each of the communities. I then describe how the decision for one community was made.

4.1 Preliminary Visits

I started this research by seeking to understand some of the dynamics of the disappearance of culture heritage. By means of that, I hoped to find a starting point through which I could connect with the communities I visited. The aim of this was to provide a platform for the communities to explore beneficial project directions in order for them to gain from the project. Benefit for the community, towards which the research is directed, is an important dynamic of respectful design, according to both Tunstall (2011) and Sheehan (2011). However, from a review of existing literature, as explicated in the first section of Chapter 2, it is evident that in projects such as these, the researcher often decides on the community and the direction of the project. In such cases, the outcome is foremost meant to enrich academic knowledge. The community applies their time and effort to the research project, however can get little in return of any direct benefit (Menzies 2001; Smith 1999). I assert that this dynamic could be addressed and that research could be practiced differently with more respect for the communities and the indigenous knowledge system they relate to. In order to address this dynamic, I consider it important to, even before a research project is proposed, start a dialogue with commu-

nities about whether they are interested in participating in research and how it could be used to their advantage. This way, the decision about what and who the project should be aimed at starts through dialogue rather than through a decision made by the designer. As a designer embarking on respectful design, you should not choose a community. Instead, the community should choose you. In order to enable such dialogue to arise, I conducted a foundation study prior to framing the research project. This foundation study existed out of preliminary visits.

As mentioned in the Introduction Chapter, through Tariq Zaman, a researcher at the Institute of Social Informatics and Technological Innovations (ISITI) of the Universiti of Malaysia Sarawak (UNIMAS), I learned that some of the communities he was working with might be interested in participating in a project about cultural heritage preservation. Since he already worked with those communities, he already had build up a trust relation and therefore could introduce me to them.

All of the communities were indigenous and faced a problem of a disappearing cultural heritage (Siew *et al.* 2013). This problem arose due to, for example, a large part of the younger generation leaving the communities to find work or education in the cities. The communities each had a different cultural background. Besides that, the practical characteristics of each of those communities, such as relatively easy access and the possibility of visiting multiple communities in one trip, resulted in the choice of three different communities. These communities were the Penan community of Long Lamai, the Lun Bawang community of Ba'Kelalan and the Kelabit community of Bario. Figure 1.4 in Chapter 1.2 shows a map of Borneo and the position of each of the communities. The stay in each community was approximately ten days. This period was chosen as a balance between pressures such as budget and time, while still being able to give significant time to explore whether future collaboration was of interest both to the community and to me.

The attitude that I took in approaching each community was based on a respectful design approach as described in the previous chapters.

The preliminary visits took place following ethical procedures, both meeting the data protection act of the UK and the cultural protocol of the communities (in Appendix 6 I have given an overview of the ethical procedures of this research).

4.2 Personal Preparation

Before I met Tariq Zaman, I never thought about focusing my research on Borneo or more generally on Asia. I thought about continuing my focus on South-Africa like in my StoryBeads project, because of the contacts I have there. I had never been to Asia. Through conversations with Tariq, I learned that going to Borneo was a good option for this project. Tariq helped me arrange all the practical issues. In order to prepare myself for the preliminary visits, I undertook several activities.

I did a thorough ethical procedure with a rigorous risk assessment. I wanted to be prepared to take on an ethical attitude in the communities. I also wanted to be able to keep myself safe.

I continued my conversations with Tariq about what to expect when I would go to the communities.

Tariq introduced me to a linguist from Newcastle University, Dr. Peter Sercombe, who is specialised in the Penan language. One of the communities that I was planning to visit is of the Penan culture. Besides giving specific insights into the Penan culture, Peter Sercome could also introduce me to what doing research in Borneo was like. Peter Sercombe went to Borneo often. I met him and he gave me insights in what to expect, who to talk to and what to bring. He also gave me travel advice. He assured me that in order to get a sense of what the life of the people was like; I needed to experience the rainforest. He advised me to walk from Ba'Kelalan to Bario, because of the stunning rainforest there. If I would only use airplanes and 4x4's I would not feel what 'rainforest' actually was. Besides my conversations with Tariq Zaman and Peter Sercombe, I also had conversations with other people who spend a lot of time in Malaysia as a preparation for the preliminary visits.

In order to get a more empathic understanding of what Borneo was like and what I could expect from the communities, I started reading about being there. I read the following books: *Stranger in the forest*, by Eric Hansen (2000), *Into the heart of Borneo* by Redmond O'Hanlon (1986), *Espresso with the headhunters, a journey through the jungles of Borneo* by John Wassner (2001) and *the lonely planet guide* about Borneo (Robinson *et al.* 2011). I also watched the movie about Bruno Manser: *Laki Penan* (Bruno Manser - Laki Penan 2007).

Stranger in the forest gave me an insight into the life of the traditional Penan. The traditional Penan are nomadic. Even though the Penan in Long Lamai have settled and thus are not living the same kind of life as the Penan described in this book, it gave me some sense about the cultural background of the community. It also gave me an idea about what living in the rainforest means. To learn more about the Penan, I watched the movie about Bruno Manser. Bruno Manser was an activist for the rights of indigenous Sarawakian tribes. He lived with the Penan, until he disappeared in 2000. His activism was about fighting against deforestation in order to preserve the Penan's way of life. This movie is, because of the life of the person it describes, highly political. Even though I do not attempt to make this project a political statement, I considered it important to learn about Bruno Manser's life with the Penan. He has been a very important person for the Penan and not knowing about his life, would be missing an essential part of Penan culture. By watching the movie, I however did not only learn about the Penan's struggle for keeping the rainforest but also about their daily life.

By reading *Espresso with the headhunters, a journey through the jungles of Borneo*, I learned more about the cultural background of the Kelabit (Bario) and the Lun Bawang (Ba'Kelalan). Through this book I also learned more about the contemporary life of the Kelabit and Lun Bawang. *Into the heart of Borneo* provided me with a general understanding about what traveling through Borneo can be like. The *lonely planet* guide provided me with practical insights about traveling in Borneo in general.

4.3 Process and Methodology of Preliminary Visits

I felt that the methods used to explore potential for starting a project, had to be informal, playful,

and without the need for continuing research in order to make the preliminary visit relevant for the particular community. Due to the geographical distance to those communities, all with a distinct culture, there was no opportunity to evaluate the suitability of methods prior to the preliminary visits. Therefore I decided to design a flexible toolkit of design seeds and design initiatives in order to provide the flexibility to create a dynamic process, adjustable to specific situations, and to the specific community.

4.3.1 Probes

Following the convention of probe use (Gaver *et al.* 1999) there was no fixed order for introducing the probes, neither did all probes have to be introduced in each community, nor did they have to be introduced in the same way. I also brought materials that could be used to create new probes, in order to react to the context within the communities. In order to create fitting probes, multiple design iterations were undertaken, ensuring that the probes were made with care and inclusion of the culture reflected in the design (Wallace *et al.* 2013). I made, for example, an individual set for each culture, with the local language used to reflect the effort applied. Peter Sercombe advised me on appropriate words in the Penan language. For the other languages (Lun Bawang and Kelabit) I asked Tariq Zaman to enquire what appropriate words could be used for the probes I had designed. The probes were all designed to enable communication that does not prioritise speech in order to bridge the language gap, by relying on visual means of communication such as taking photographs through Polaroid cameras. I brought a traditional polaroid camera, a pogo, which is a digital polaroid camera, a photo printer and a digital camera that could be connected to the photo printer. These tools provided the possibility to enable the local designers to keep their own copy of pictures they wanted to have. The reliance on visual means was important in order to develop a relationship with the participants without the reliance on a translator. The design probes that were used during these visits were designed around one (or more) of the following themes:

1. Getting to know each other (in order to start empathy building);
2. Perspectives on preservation;
3. Traditional modes of transferring cultural heritage;
4. The type of cultural heritage relevant to preserve for future generations.

The individual sets consisted of 6 design probes (see Figure 4.1).

The probe sets contained a photo book introducing my daily life and an empty photo book saying the name of the community on the cover (both fitting in the first theme - getting to know each other). Furthermore, the set included a scenario probe showing how I learned to knit from my grandmother. She taught me the basics. The scenario shows that ,because of the geographical distance between my grandmother and me, I will never be able to learn the more sophisticated skills that my grandmother has. The scenario was designed around the second and the third theme - perspectives on preservation (2) and traditional modes of transferring cultural heritage (3). I included this probe to show that I am

not an expert. I do not state that they have a problem with preserving knowledge. Instead, I do state that in my culture I am experiencing disappearing cultural heritage. The probe is meant to be open towards talking about knowledge loss, to explore whether that is even the case in the community, and whether it is perceived as a problem. The time-capsule probe is a bag saying: “remember” in the local language. It functions as a time-capsule inviting people to place photos inside of cultural attributes they want their great-grand children to know about (designed around theme 4 - the type of cultural heritage relevant to preserve for future generations).

Envelopes containing photo-exercises were also part of the probe kit. Those exercises were designed around theme 2 (perspectives on preservation), 3 (traditional modes of transferring cultural heritage) and 4 (the type of cultural heritage relevant to preserve for future generations). The local designers were invited to explore and answer questions on the envelopes by making photo collages. The farewell package contained envelopes with my address and stamps that would provide them with the ability to send me the envelopes back. This probe was meant to signal that the communication did not need to end at the moment the researcher left. It was a non-committal signal, and only applied if the community wanted to keep communicating.

4.3.2 Activities

Taking part in daily life activities was mainly meant to get an insight into the daily life activities of the community members. Such activities entailed: collecting vegetables in the rainforest, catching snails in the river, learning to prepare traditional dishes, learning how to make traditional crafts, going to church, going to church band practice, helping to feed the animals, visiting the local salt well, taking part in sport activities such as playing volleyball or football and joining in with catching buffalos. By taking part, I showed an interest into helping out and in learning about their culture. Showing such an involvement in what they do is important for empathy building. By participating in their life, I got a sense of what it feels like to walk in their shoes, which is an important foundation for empathy. None of these activities were planned. I just took a very open attitude, open to be approached by people to invite me to join in their activities. During the activities I showed enthusiasm and interest, which made me easily approachable. In each community, I had a few people who would take me to places, which was very important to get access. I could also ask them if I could join them in certain activities. When they realised that I was interested in what they were doing during their daily lives, they became more open towards inviting me to take part in all sorts of different activities. One of the important activities that I planned to do was hiking through the rainforest and spending the night there. Each of the cultures I visited had a very strong connection to the rainforest and since the concept “Rainforest” was new to me, I decided that it would be important to experience what this entails. It was therefore that I hiked (with a guide and a porter) from Ba’Kelalan to Bario, spending one night in the rainforest.

4.3.3 Group Discussions

Before farewell, I aimed to have a group discussion with the people I worked with to talk about their



Remember Probe

A time-capsule-kit exists out of a bag that says: “remember” (in the local language). The bag is chosen because it will make it easier to bring multiple kits with me. The bag contains labels that also have the text “remember...” on them. Those ribbons can be connected to objects or things that they would like their great-grand children to know. The pictures taken of those things or objects can be placed in the bags.

The people of the community can take polaroid pictures with the cameras that I brought. I brought one PoGo (a digital polaroid camera), a photo printer + digital camera and a traditional polaroid camera.



Farewell Probe

This probe contains envelopes with my address written on it and the right amount of stamps on it to make it easier for them to send something to me. I have also included a thank-you letter with pictures taken in the village. The suggestion this probe hopefully makes is that the contact will not be over after I leave.



Figure 4.1 - The probe set for the preliminary visits.

Design Probes

Preliminary Visits

Empathy Building	■	■	Traditional Modes of Transfer
Perspective on Preservation	■	■	Explore Relevant Oral History

Photo-exercise Cards

This probe contains envelopes that all give a suggestion on what to photograph, draw or brainstorm about. It also contains empty photo paper, so that photos can be printed out on the spot.



"This is Me" Photobooks

Since this visit is about building up an empathic relationship, I have included a photo book about myself and my life, so that I can also show who I am and where I come from. I think building empathy should come from two directions. One of the researchers who previously did work in Sarawak mentioned to me that people love to see pictures about your life.

Furthermore, I have included empty photo books (4) that can be used by the communities to introduce themselves to me. Thus to start an empathic relationship.



"Knitting" Photoscenario

This photo scenario shows how I learned to knit from my grandmother. I learned the basics from her, but since she lives far away and we do not see each other very often, she cannot teach me how to make traditional patterns as she learned to make them. It is for this reason that I will never reach the same level as her. This way it introduces my thoughts on this project, but I don't take an expert stance, since it only introduces something I have encountered. I hope that this way conversations will start about the traditional modes of the transfer of oral histories and about why those modes might not work anymore.



Figure 4.1 (continued) - The probe set for the preliminary visits.

attitude towards a possible project, the probes, the direction in which we saw the project going and whether they agreed that I would take the information with me. According to Sheehan (2011), group discussions are important since they enable respectful design. However, such events were only formally organised in Long Lamai. These events relied on a translator. The decision for this was based on realising that most people in Long Lamai felt most comfortable talking in their own language. Instead of hindering the process of empathy building, this really helped to involve everyone in the process of participating in the discussion. Both a visitor with whom the community was already working and the telecenter manager functioned as translators. In the other communities, the discussions moments were more casual; they were not shaped as organised events. In both communities, the level of English was good. People felt comfortable speaking and discussing in English. Therefore no translator was involved in these discussions.

4.3.4 Research Diary & Reflections

As described in the previous chapter, Chapter 3, I used a research diary and a visual diary to collect data. In this part of the project, part 1, I used this data to find a project direction. In the last stage of the research project (which is described in Chapter 6 and 7), I used my research diary and visual diary to get an understanding of which dynamics are important in providing a respectful design space. Throughout the stays I wrote in the diary at the end of each day and I took a separate reflection moment after a probe activity had taken place. Important conversations were also written down as soon as possible in order not to lose rich information. The process of reflection and writing down observations and conversations helped in making decisions on which probes seemed valuable to introduce in a certain stage. This was because the research diaries provided a virtual space for reflection-in-action. The research diary also helped me to keep a distance in the decision making process. Maybe I would normally have pushed activities more, or the process of acceptance, but due to the reflections in the research diary I could more easily accept that I had to go with the flow since that was the only way certain actions could be successful.

After the visits, the research diary and the reflections helped a lot in making a decision on which community to continue working with. Of course, this was not only my decision to make. But in correspondence with the enthusiasm of one of the communities, I could confirm through my research diary that it was not only intuitively a good choice to continue the participation with that community. In order to find a design direction that would be beneficial for the community that wanted to participate in the project, I undertook a content analysis of the written research diary entries.

4.3.5 Photobooks

In order to thank the communities for their hospitality and their efforts, I created a photo book for each of them after I had left. I sent a copy of the photo book to the communities. Each photo book contained the data that the local designers had collected in the design probes. Figure 4.2 shows the photo books. I considered the photo books important in order for the communities to also be able to use the collected data to their benefit.



Figure 4.2 - The photo books for the communities.

4.3.6 Making Constellations of Design Initiatives

In order to understand which community seemed to be most receptive for a project on respectful design terms, I created constellations of design initiatives. Those constellations provided, for each of the stays, a general overview of the process and insights into design seeds introduced, by whom they were introduced and who were involved. Since there is no method described by Manzini and Rizzo (2011), who introduced the concept of constellations of design initiatives, I devised a method for shaping a constellation of design initiatives. The steps of this method are as follows:

- 1) From the visual diary select photos of design seeds that were used in a design initiative
- 2) Map out for each initiative who were involved, who introduced the design seeds, how one design initiative led to another.
- 3) Separate the initiatives, depending on in which design activity they arose (only in cases where there were different design activities).

I made a constellation for each of my visits. I then placed them next to each other to be able to compare them. In Section 4.4.7 I present this comparison.

4.4 Experiencing Long Lamai

Long Lamai is a Penan community. The traditional Penan culture is nomadic and Penan people traditionally live in and from the rainforest. The people in Long Lamai descend from this nomadic Penan, but as they have settled, their lives are different from those of the traditional Penan. Most of the people inside Long Lamai are farmers, but they are still dependent on the forest for hunting and collecting various forest products. Long Lamai is remote. It can be reached by flying to the closest larger village, followed by an hour by boat. Twice a week there are flights from this airport. The stay within this community was 10 days.

The community has a telecenter and a micro-hydro project, which in the future will provide a con-

nection to electricity for the entire village. At this moment only a few households have generators, and the telecenter uses solar power.

The community has a primary school. For the secondary school, the children have to leave home, to study in a different community. Because the secondary school is far away and because of the financial resources of the community, there is a high dropout number from secondary school.

Long Lamai is an alcohol- and smoke-free community. This is to control the wellbeing of the community.

Long Lamai has an egalitarian community structure. This means that in foundation, everyone is equal within the community. There is no social or economic status. Decisions are made collectively. Long Lamai has a chief - Wilson - but this chief is more like a facilitator rather than a leader. He cannot make decisions by himself. Everything first has to be accepted by the entire community. This community structure roots from the Penan's nomadic background: they lived in small groups together. In these groups there was no leader. Decisions were made with the entire group. This still remains, even though the group has grown to around 600 people.

There are different types of 'leadership' in the community related to five different pillars. Leadership means, in this case, to bring an issue to the broader community in order for the community to decide. The chief is in charge of bringing the general community issues to the group. The reverend is head of the church issues. The telecenter manager (Garen) is manager of the telecenter and broader research issues. There is a women's representative as well as a youth's representative. There is also someone in charge of bringing transport issues to the broader community. Some of the pillars have their own space in which issues are sorted: e.g. community hall, church and telecenter. This means for example that issues that are concerned with research will only be dealt with in the telecenter.

Below I will introduce a fictional day in Long Lamai, seen from my perspective. Figure 4.3 shows an annotated portfolio (Gaver & Bowers 2012), in which I highlighted characteristics of the community that I deemed important. I provide these insights, because I consider it important to show the differences between the communities, because it were those differences that played a role in the success of the respectful design process in each community.

A day in Long Lamai

I wake up from the church 'bells'. It is around 5 o'clock in the morning I assume. The church service of this morning will start soon. I do not want to step out of bed yet, and I listen to the sounds around me. In the room next to my bedroom, many children sleep. It is the weekend and therefore they sleep in the village, rather than at school. They have woken up as well. I hear them first quietly whispering, soon they are fully awake and playing. The orchestra of the morning has started: children playing, chickens and

roosters, dogs, someone mowing the communal grass patches because it is his duty this week and voices of people going to the farms. I decide that there is no sense in staying in bed. I walk to the kitchen, there is breakfast for me on the table. After breakfast, I walk to the telecenter. There I find some of my friends. They are using the computers to look at Facebook. They say that it is a community day, which means that everyone together will be working on something to improve the village. This time they will be working on the micro hydro. My friends are in charge of making lunch for the people who are working. They ask me if I want to help them collect vegetables for this. We leave the village and go into the forest. We are searching for a specific type of wild vegetable. While searching, we come across the water pipe for the village. There appears to be a problem with it: a leak. We accidentally touched the twig blocking the leak and water is squirting everywhere. Where I am slightly surprised by the events, my friends immediately come into action. They find a slightly bigger twig and position it in the leak to prevent the water from squirting out. After this, we continue our search for vegetables. Then we go back. My friends start preparing lunch for the people working. I go back home to have lunch there. After lunch I write out my scratches into diary entries. Around four, the kids come in and ask me whether I want to join them. They will go swimming in the river. I change and together we all run to the river. We play for a bit. Then I have to wash my clothes. After a while one of my friends comes and joins me. While doing the washing, I ask some questions about things that I experienced and she tries to answer them. Our communication is sometimes a bit difficult. I would like to chat much more, but the language barrier prevents this. On my way back to the house, I see that Garen, the telecenter manager, has returned from the farm. I wanted to ask him something. I change and go to see him. We talk about the Penan culture and about ideas that he has about the project. Then one of my friends appears. She asks whether I want to join for volleyball. All the youngsters and children have gathered by now around the school. A group of guys are playing football. My friends have gathered around the net for volleyball. Some people just came to watch. For a while we play, until it gets dark. Then we return to the village. When I reach home, dinner is waiting for me. After dinner I go to the telecenter. There I find one of my friends. She asks me if I want to join for church service this evening. I join. After church, when I reach home, I find the entire living room packed with people. Everyone wants to watch the television for the football game between the Malaysian team and FC Barcelona. The atmosphere is enthusiastic. Many cheers and laughs come from the audience. After the game is finished I go to bed.

4.4.1 Long Lamai: Access & Acceptance

I arrived in Long Lamai with Tariq Zaman and another researcher from UNIMAS. During the first days, there was not much contact between me and the community. It seemed as if they were collec-



There are no roads in Long Lamai. The houses are built on stilts



All the youngsters gather at the end of the day to play volleyball and football



The river is of great importance - people use it to wash in, play in, fish in and it is the connection to the surrounding communities

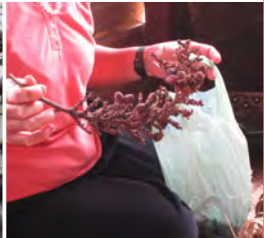


Church is very important in Long Lamai. There are services every-day. Sometimes twice a day



Through their crafts, the Penan still show a strong connection to the forest, as material are collected in the forest

They still have a connection to the nomadic Penan culture. It is seen by the elders as the ultimate



The community has community-days during which everyone helps to improve the village



In the village there are plants that are important to the Penan culture



There are many children in the community. During the week, they sleep at the school. In the weekends they are in the village



There is a clear pattern in what is going on each evening: Monday free, Tuesday band repetition, Wednesday church, etc.

At the end of my stay, a party was organised. Everyone was cooking and eating collectively



Everything is deciding together. Everyone has a say

The forest is used for collecting food



They are innovative in finding solutions

Long Lamai

Figure 4.3 - An annotated portfolio on my perspective on Long Lamai.

tively waiting for the moment at which me and my intentions got accepted by the community. Only after that, individuals knew that it was okay for them to interact with me. On the third day, following Tariq Zaman's advice, I introduced my intentions to Garen, who got excited about my previous work: StoryBeads. Garen saw value in creating something new and technological for the community. For him, it seemed very important that they were the only ones that were attempting such a project. That evening, a community meeting was organised by the chief (Wilson). Multiple topics were discussed. The aim of the meeting in relation to my visit was for the community to decide whether they were interested in collaborating with me. I showed my intentions, previous work and the design probes.

Garen translated my intentions to the rest of the community. Then Wilson (the chief) asked people to vote either for or against the project. Everyone voted in favour of the project. From that moment on, I was allowed to stay and do the things I wanted to do.

I met several girls, all of whom spoke (a small bit of) English. They served as guides for me within the community. They showed me around, introduced me to people and they translated for me when needed. Those girls also became local designers as they helped me to do the design probe exercises. Garen also helped to find people. He furthermore provided me with explanations in cases where I did not fully understand what had happened or what was meant.

The day before I left, we had another community meeting during which I thanked everyone and showed all the data that we had collected (see Figure 4.4). We also agreed to keep contact during the months that I would not be there. Before I left, a farewell party was organised. Everyone gathered and we cooked together and ate.



Figure 4.4 – Community meeting during which we co-reflected on all the different probes created.

4.4.2 Long Lamai: Reflections on Use and Responses towards the Design Probes

Figure 4.5 shows an overview of the constellation of design initiatives as it was shaped in Long Lamai. I will highlight the important observations that can be made within this constellation. All the design probes were used, except for the envelope probe, which was too much focussed on language. As can be seen, all the design initiatives contain different colour wedges. These wedges represent people. For every person involved, there is a separate colour. As can be seen in Figure 4.5, many different people were involved in the different design initiatives. My participation is represented as a black wedge. As can be seen in figure 4.5, there were some design initiatives in which I did not take part. The local designers also came up with their own ways of communicating what was important for them. For example; As a reaction to the “Scenario”-probe, drawings were introduced that underlined a similar concern the elders have: the youngsters do not know the traditional knowledge anymore. Important in the Penan culture is Oroo’. Oroo’ is the mode of communication used by the tradi-

tional nomadic Penan, to communicate between different groups of nomads in the rainforest. Oroo' uses materials from the rainforest to convey a message (e.g. a combination of branches, twigs and leaves can tell community members that someone from their community passed by a few days ago). Through the use of the probes it was highlighted that the community found this part of their culture as something important for them to keep and towards which to direct a project to. In order to communicate to me what Oroo' entails, they let one of the community members draw different types of Oroo' (see Figure 4.6).

This corresponds with Figure 4.5, where you see that I am not the only one introducing design seeds. The seeds that I introduce have a yellow border, the ones the community introduces have a blue border. For some seeds that I introduced it was expected that local designers would respond to it by introducing their own design seeds. This is for example the case in the 'remember' probe, because it asks to take pictures of things the local designers want their great-grand children to know about. Or in the case of the photo book, in which the local designers included pictures to tell about life in Long Lamai. In other situations it was however less expected. In the case of Oroo', for example, which was initiated completely by the local designers. In the case of the scenario-probe, Garen highlighted the worry that was addressed in the scenario by introducing drawings that the youngsters had made about the Penan culture. Here, the introduction of the local designer's design seeds was also unexpected. During the conversations and the probe exercises, the community came up with project directions they thought were important. They came up with ways to communicate clearly to me what those directions involved. Due to this, the project could be shaped in order to make it beneficial for the community. In addition to directions, people also began to articulate ideas, concepts and possible materials for use in the project, which can be seen in Figure 4.5 as a reaction to StoryBeads. Community members initiated this, which was a valuable dynamic for a co-creative design process to evolve from.

4.4.3 Long Lamai: Conclusion

Managing expectations in this community was more complex than I had expected. There was no way to keep the approach casual, as I had intended in my approach. The initial focus of the project on cultural heritage preservation appealed to the community. This resulted in the community members saying, during the community meeting, that they wanted to go completely for the project or not. They said that they had been disappointed by a lot of different researchers making promises, but never starting anything and they really did not want that. They had decided that they were interested in the general topic of the project and wanted to join in the explorations into finding a beneficial project direction for them. They committed at this point in the project to the continuation of the project, as they stated that after the explorations they also wanted to be sure that the project would continue with them. Defining this at this stage had not been my intention, but I realised this was how it would be. At the moment they decided they wanted to start, they wanted the same commitment from me. I

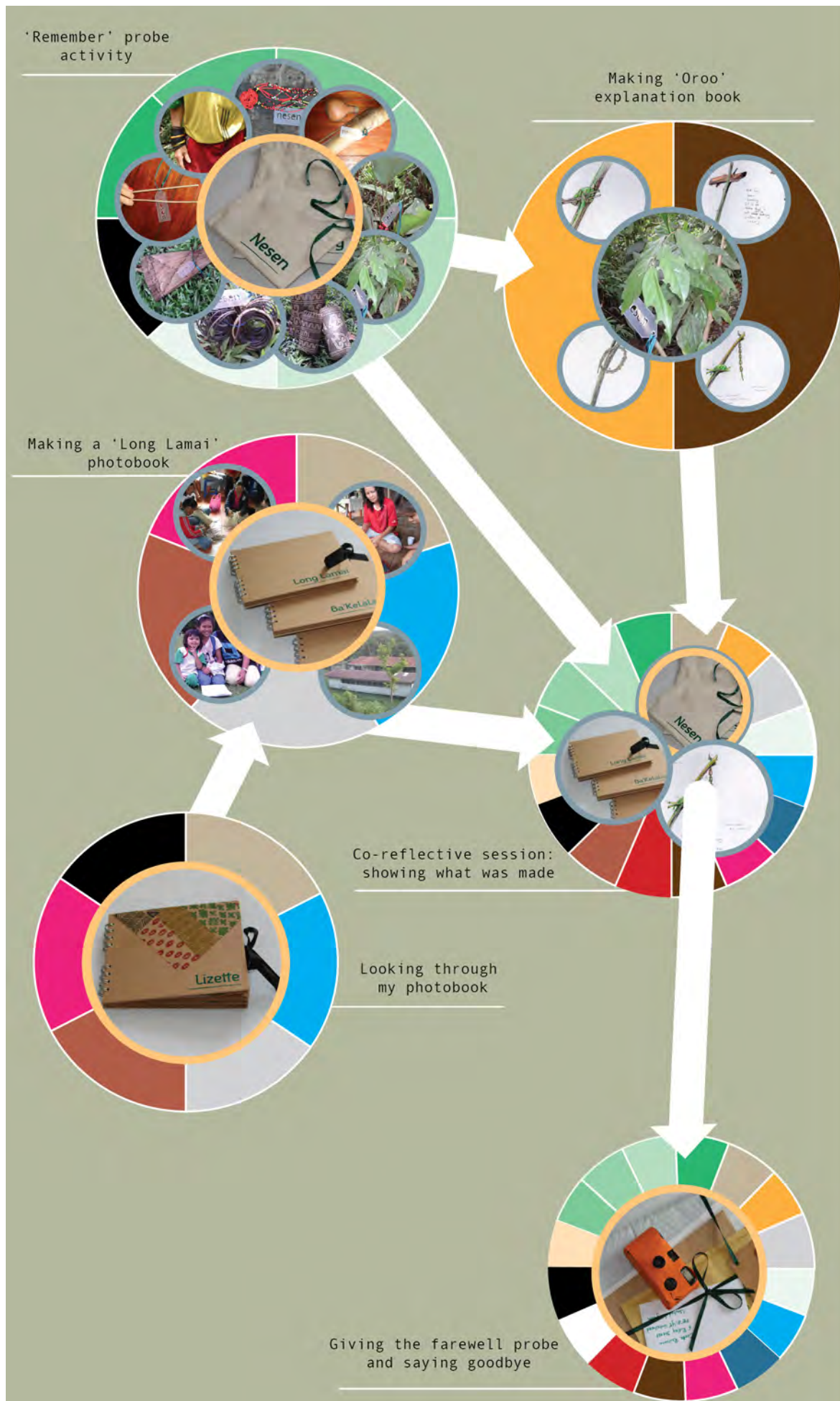


Figure 4.5 - The constellation of design initiatives of Long Lamai.



Legenda:

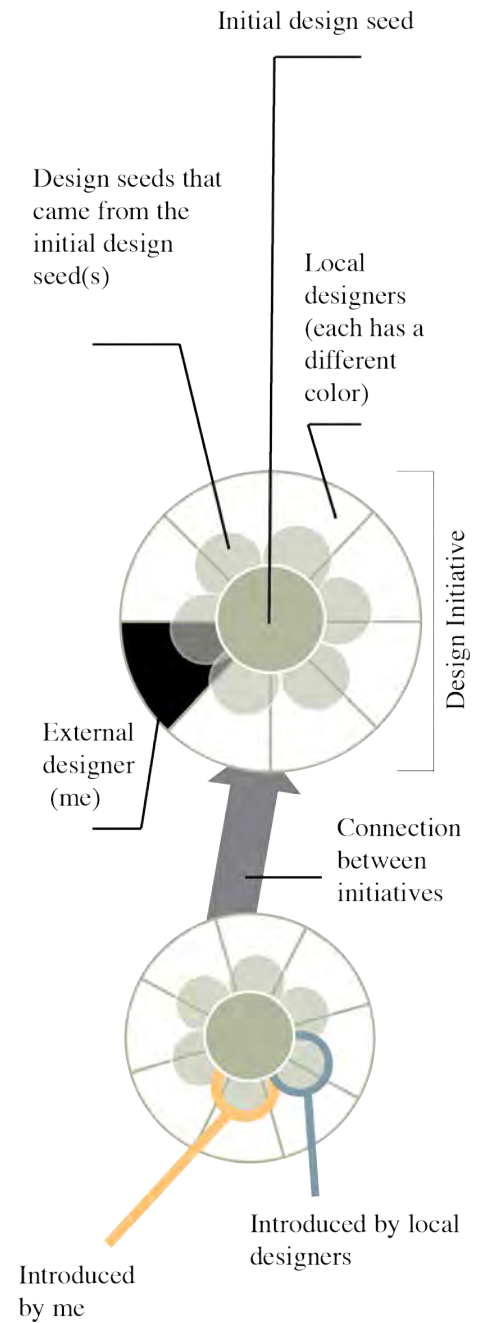


Figure 4.5 (continued) - The constellation of design initiatives of Long Lamai.



Figure 4.6 - An example of drawings that were made to explain Oroo' to me. The left drawing shows an Oroo' warning people for stinging bees and the right drawing shows an Oroo' saying that they went fishing and that they are with two people.

decided to commit. I however also decided to continue my visit to the other communities as planned, 1) in case Long Lamai decided to step out of the project, 2) to have the opportunity to run multiple projects at the same time and 3) to explore future possibilities.

4.5 Experiencing Ba'Kelalan & Long Bawan

Ba'Kelalan is a Lun Bawang community at the border of Malaysia and Indonesia. The population consists of approximately 1500 people. However, in total 8000 people call Ba'Kelalan their home. Ba'Kelalan is built up of nine different villages in the Bario Highlands. Each of the nine villages has its own chief. Two of the nine villages have three chiefs instead of one, because of their size. Above those nine chiefs stands a paramount chief. The Lun Bawang culture has a strong hierarchical structure. Traditionally there were three hierarchical layers: 1- the nobles, 2- the middle class and 3- the slaves. Even though these layers do not cause a division as strong as they used to with slaves ceasing to exist, the nobles still have most power.

The Lun Bawang culture and the Kelabit culture, which is the culture of the third community visited (Bario), are strongly related. The Lun Bawang culture has its own language. Older people in the community often only speak Lun Bawang and Malay. Younger people speak English as well.

Access to outside the community is offered through an airport (connecting Ba'Kelalan to Lawas and Miri). The community members keep the flights restricted to three times a week in order to control who and what is entering the community. Access to more local places is provided by road, connecting

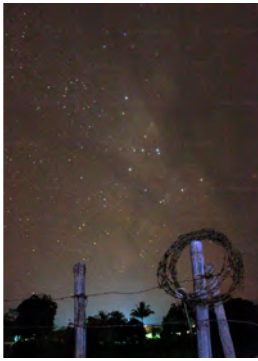
Ba'Kelalan to Lawas and Long Bawan (Indonesia). Because of this access to other places, there is a lot of trade, especially between Long Bawan and Ba'Kelalan. The population of Long Bawan is also Lun Bawang.

The community has a telecenter, providing the community members with access to the Internet. The manager of the telecenter Edwin, functions together with one other member of the community as a research advisor. They advise the chiefs and the paramount chief on research related projects.

Below I will introduce a fictional day in Ba'Kelalan, seen from my perspective. Figure 4.7 shows an annotated portfolio in which I highlight characteristics of Ba'Kelalan that I observed and deemed important. I have added this in order to provide a deeper understanding of the encountered differences between Ba'Kelalan and the other communities visited during the preliminary visit. This is important to understand how the decision was made for continuing the project with one of the communities.

A day in Ba'Kelalan

I wake up and go to the kitchen. The table is already set. I stay in Edwin's aunts house, which is next to the house where Edwin lives with his parents and brothers. Edwin's aunt says that Edwin will join me soon for breakfast. Our communication is a bit difficult, since I do not speak her language, and she does not speak English. I thank her and make some coffee. After a while, Edwin walks in. We have breakfast. He says that he was thinking of first going to one of the shops, to show me some typically Lun Bawang artefacts. I agree. We go to the shop. The shop is at the airport. We go there with Edwin's moped. Edwin talks to the shopkeeper, who is also in charge of the communication for the airport with other airports. Soon Edwin says good-bye and he starts showing me the artefacts. I ask questions and he answers them. Sometimes he does not know the answer and then he asks the shopkeeper in his own language. Edwin then explains to me what the answer is to the question I asked. After a while he suggests to get a coffee. We go to one of the coffee shops in the village. This is something you will not find in Long Lamai. It is busy, since people are packing their mopeds and four-by-fours with goods to trade in either Long Bawan or Lawas. Edwin talks to people he knows and then returns to me. He has to pick up his nephew from primary school. The school is in another village. I cannot join him because he will not be able take everyone back on the moped. Edwin drops me at home, where his aunt has already prepared lunch. We try to start a conversation and laugh a bit. I take my photo book and start showing her pictures of my life in the UK. We don't talk much, but it seems as if we both are enjoying each other's company. Then Edwin and his nephew walk in. We start lunch. After lunch, Edwin states that he will start doing some work. We can meet later in the afternoon, to go to the farm? While Edwin is working, I play with Edwin's nephew. He is only six years old, and very clever. He teaches me Lun Bawang words, and I teach him English words. After a while,



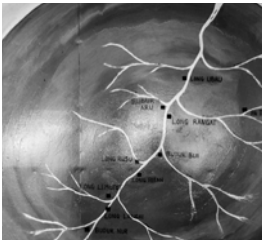
Edwin takes me to take photographs of the stars and of insects



Ba'Kelalan is famous for its rice. They are proud that they do not use any not organic tonics



Church is important in Ba'Kelalan



Ba'Kelalan exists out of many (smaller) villages. To get from one place to another, it is normal to use a mopped or a car

They tame wild buffalo's to help them in the fields



It is located close to the border of Indonesia



Important cultural places in Ba'Kelalan became cultural sites



Ba'Kelalan has several salt mines and is famous for its salt



The family collects orchids to protect them from extinction

Ba'kelalan



They live in close connection to the rainforest. They use fruits, vegetables, meat, etc. from the rainforest like in the past



Many objects in Ba'Kelalan still are reminders of the olden days.



Edwin bought a micro-hydro to get his own energy. Edwin's uncle is building a house using black windows to keep the new house cool



The telecentre is like an internet cafe, you have to pay to use it



They had a bad experience with a project, started by people from outside. After building it, it did not work and it has never been repaired



Eating together (traditional dishes) seems to be important in Ba'Kelalan

Figure 4.7 - An annotated portfolio on my perspective on Ba'Kelalan.

Edwin's nephew goes back home, and I start writing out my scrap notes. I sleep for a bit and then I wash my clothes in the bathroom that lies behind the house. While I am hanging out my clothes, Edwin joins me. We drive on Edwin's moped to the farm. Here we collect sugar cane and pineapples and eat them. Edwin explains me that Ba'Kelalan is an example for the rest of the world in terms of sustainable farming. They only use natural and organic products to enhance the growth. He laughs and says: 'such as cow dung'. He shows me the collections of orchids that the family is creating at the farm. They all are afraid that the rainforest around Ba'Kelalan will disappear soon. The family keeps the orchids to show Edwin's nephew and other children that those magnificent flowers really existed in the wild. He also shows me the new micro hydro that he has recently purchased for his family. Edwin says it is important to be self-sustainable and that by using the micro hydro they do not use energy that is harmful for the environment. When dusk sets in, we go back home. Edwin's aunt has prepared dinner: snails. Edwin, his aunt and his brother laugh, because I have never eaten them before. My attempts to get the snail out of their shells appear to be amusing. After dinner, Edwin and me go into the fields to take photos of the Milky Way. This is one of Edwin's hobbies. Back in the village we go to the telecenter to look at the photos. I also send an email to my family to tell them about the last couple of days. After this, I wish Edwin a good night. I am going to sleep; he will perform his duties as telecenter manager for a few hours more.

4.5.1 Ba'Kelalan & Long Bawan: Access & Acceptance

Tariq Zaman introduced me, before my visit to Ba'Kelalan, to Edwin, the manager of the telecenter and one of the research advisors there. He became my gatekeeper within this community. As one of the research advisors of the community, Edwin could introduce me to the people deciding on whether to let research projects take place. Besides that, he knows everyone in the community and is therefore able to introduce me to the right people. Because of his position he also has an understanding of research. Edwin and his family took me in as if I was part of their family. I stayed with them.

The actual exploration started at the moment that I was introduced to the second research advisor. This introduction was important, since both research advisors had to agree on the project before the explorations could be started. Since both research advisors were positive about starting the explorations, the second advisor signed the consent forms for the entire community. Bigger projects have to be signed by the paramount chief. They would inform the paramount chief that they accepted this research project.

Throughout my stay, Edwin introduced me to a few people, all considered by him to be knowledgeable about the Lun Bawang culture. He introduced me to Windy and her mother. Both are experts on the traditional beadwork. Windy's mom is one of the makers of the traditional beadwork. Edwin also introduced me to a chief of one of the smaller villages of Ba'Kelalan (Edwin's uncle). Most explorations were done together with Edwin himself.

Throughout the explorations, it became apparent that the Lun Bawang culture already had a way to preserve their heritage. A Cultural Field School (CFS), in Long Bawan, the neighbouring village in Indonesia, facilitated this preservation. Edwin therefore decided that it would be valuable for me to visit the Lun Bawang CFS in Indonesia. This would give me an idea of how the Lun Bawang culture approached preserving their culture. That is why I went to Long Bawan. The manager of the CFS was someone of the Lun Bawang culture. His approach to the preservation was to involve people in the culture by making them use actual artifacts and let them engage in cultural activities. He let people play the musical instruments that were traditionally used within the Lun Bawang culture and join dances. His enthusiasm was contagious. The CFS was quite actively used for gatherings. People would hang out there during the weekends to play the traditional instruments and to dance. Without the CFS manager it would probably be a less inspiring environment.

4.5.2 Ba'Kelalan & Long Bawan: Balancing Access and Acceptance

Even though I was granted access to the community and accepted to do research there, I sometimes felt restricted in accessing people myself. Edwin introduced me to people. They would help me to get the information I 'needed'. This was tricky as the respectful design approach that I aimed to take required me to let the decision about the type of information 'needed' come from the participants instead of defining the information I needed myself. It might have been the way that Edwin got involved in the process, that he was asked to help me, that resulted in him making so much effort to provide me with the 'right' information. It might also have been the normal way that Edwin would deal with researchers. This might have been a reflection of such a process, in which Edwin and the community became information-providers. I also think that I could have been more engaging towards other people. I had a very strong connection to Edwin and his family and this might have made me take the easy route by letting them be my bridge between people. Maybe introducing probes on different topics, or allowing more time for the community to individually engage with the probes, would have given a different result.

During the stay in Long Bawan, I took another approach. Even though Edwin's brother came with me as a guide, he did not really know what my research was about. Edwin had mentioned to his brother which people would be good to introduce me to. But since he had limited knowledge on what I was doing, I had to introduce myself. I started putting more effort in engaging with other people. This however did not result in the community defining beneficial design directions for a future project. This was because their focus lay on the 'remember' probe. This probe helped them to document important Lun Bawang material culture, which was seen as a beneficial project in itself.

4.5.3 Ba'Kelalan & Long Bawan: Reflections on Use and Response Towards the Probes

Figure 4.8 shows an overview of the constellation of design initiatives that shaped in Ba'Kelalan and Long Bawan. As can be seen in the figure, most of the initiatives had to do with the 'remember' probe. Early on, the choice was made to place the pictures taken for the 'Remember' probe in the

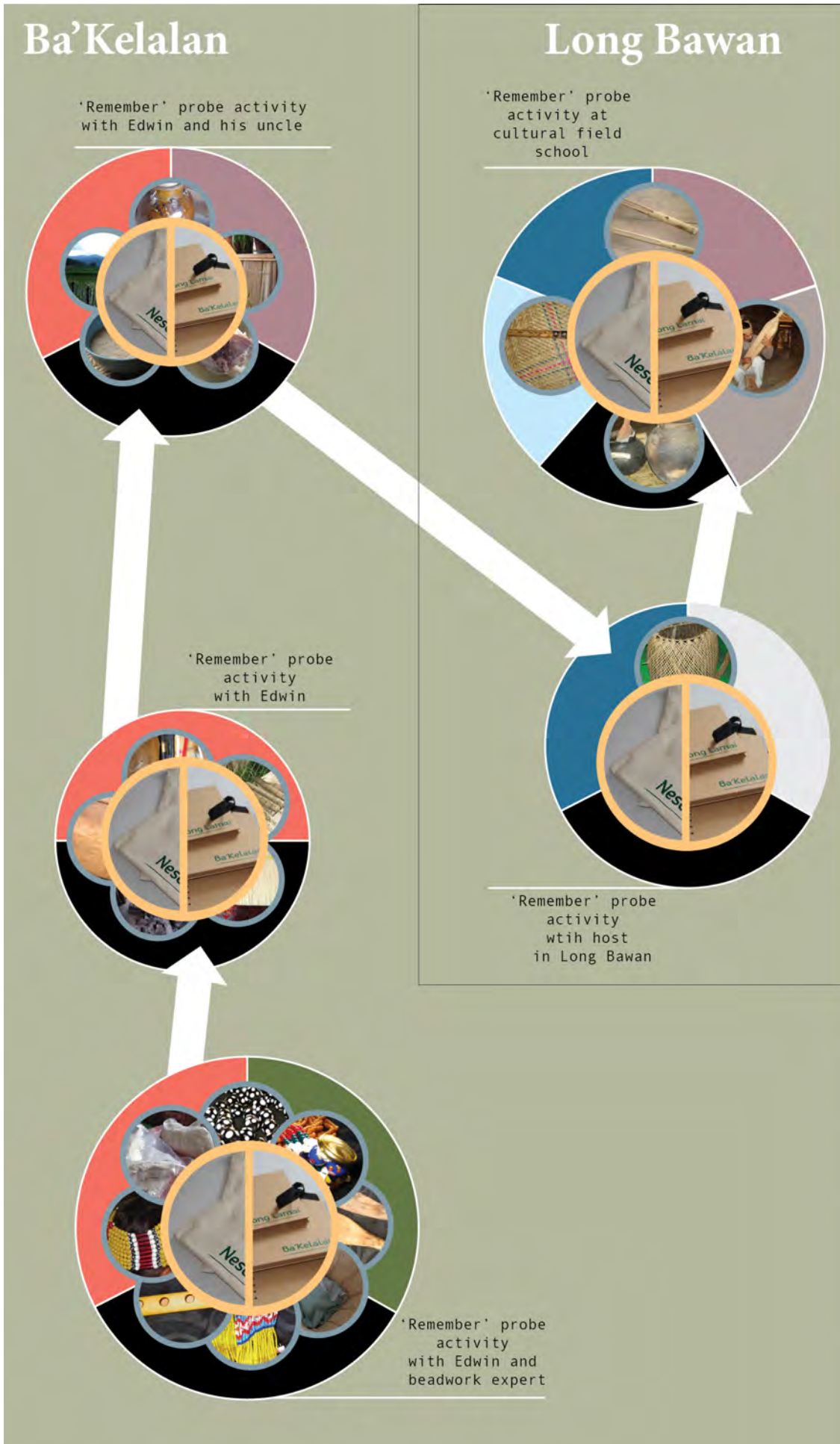


Figure 4.8 - The constellation of design initiatives of Ba'Kelalan.



Legend:

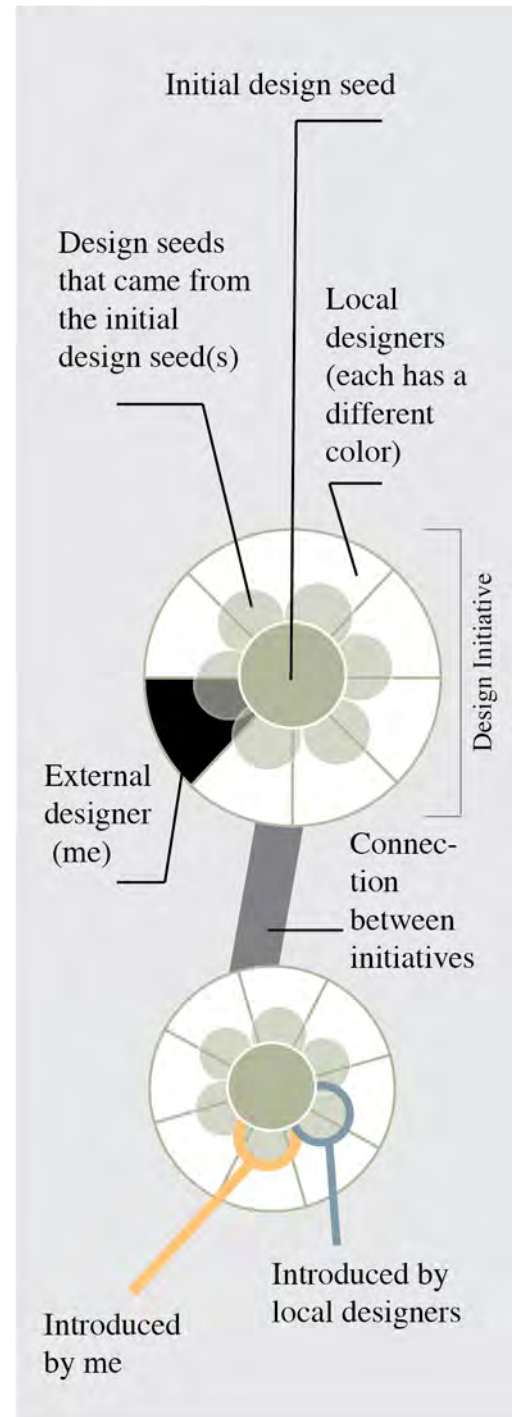


Figure 4.8 (continued) - The constellation of design initiatives of Ba'Kelalan.

photo book, as a collection of Ba'Kelalan cultural heritage. Edwin and I made this decision. The word I had used on the “remember” probe (e.g. Neraway) turned out to be a word that did not exist within the Lun Bawang language. It should have been a different word instead. I consider this one of the reasons why there was such a different reaction towards the “Remember” probe, comparing it to the reaction of the Long Lamai community. For this reason, Edwin and I decided on changing the probe towards creating a photo book rather than using the bags. The bags only led to confusion. Where in the Long Lamai community, there was enthusiasm by the participants: e.g. they came with all sorts of objects important to the culture, in Ba'Kelalan, every object either had to be suggested by me (“Ow, is that also something typically for your culture...”) or by Edwin (“Show Liz the costumes worn during the rituals...”). Due to the dynamics described in the previous section, I did not really engage with the people Edwin introduced me to, the initiative as mentioned before lay either with Edwin or me, instead of with the other local designers. Due to this, I also became the person responsible for the completion of the book, which was different in the other two communities.

In Long Bawan a different response towards the probes could be noted. At the moment I introduced the “Remember”-probe, they said they would love to get a copy of it, since it would help them to communicate what was important to the Lun Bawang culture to younger generations. In the cultural field school and at the home of my Long Bawan host, I got full experience demonstrations of all the things they considered important to remember. For example, the manager of the cultural field school introduced different types of musical instruments. Instead of only showing, he taught me, and the people I was with, to play those instruments. Together, we played different instruments. In the house of the host, I was dressed up in different traditional costumes.

The other probe that was used in Ba'Kelalan was the photo book about my life. I used this to engage with people.

4.5.4 Ba'Kelalan & Long Bawan: Conclusion

The local designers were very friendly and helpful towards me. However, looking back at it, I had the idea that this resulted from pleasing Edwin and me rather than from a genuine interest in the project. They did not contribute with reflections or design suggestions. Neither did they see a benefit for participating as a neighbouring village already had a cultural field school, where community members can visit to learn more about their culture. However, some of the local designers expressed that they saw benefit in doing the ‘Remember’ probe, since it provided them with a documentation of the Lun Bawang material culture. For this community, there was therefore direct benefit in me translating the data into photo books that they could keep.

4.6 Experiencing Pa'Lungan

In order to get from Ba'Kelalan to the next village on my planning (Bario), I walked through the rainforest for two days, with a guide and a porter (Figure 4.9 gives an impression). This was done in order to get a sense of what ‘rainforest’ entails. For me, the things that stood out most in this experience

was the scale of the forest. It is possible to walk for two days and not see anyone. I would not be able to navigate in the forest, since I lost track of direction and because there was no clear route. I learned from my guide about some of the plants that were used for eating and medicines. This information made me aware how much knowledge lies within the rainforest. We walked through virgin rainforest, which was easy to walk through as the trees were tall and the ground was clear. The parts where the forest was not virgin was more difficult to walk through as smaller trees and bushes grew on the forest floor. Whether you were walking in Malaysia or Indonesia was unclear: only a small stone marked the border. During our walk, my guide made me aware of the messages that were placed by other people like: “Do not go here!” or “We have walked here”. Sleeping in the forest was an interesting experience as there were so many sounds of animals that I had not seen during the day. My guide could tell, without looking at his watch, what time it was depending on the sounds he could hear.

The first village we entered after these two days was Pa’Lungan. Instead of visiting Bario, I decided to stay in Pa’Lungan. Pa’Lungan, like Bario, has a Kelabit population. I chose to stay in Pa’Lungan, since in Pa’Lungan the project was greeted with enthusiasm. In Ba’Kelalan, I had heard that Bario was very similar in its structure to Ba’Kelalan and that it would be difficult to find people that were truly interested in participating in explorations on a project about cultural heritage. It was for this reason that I did not dare to take the chance to walk further to Bario when Pa’Lungan seemed such a good possibility for doing explorations with. An elderly married couple hosted me: the woman, Supang, was originally from the community (and of noble descent) and her husband was Chinese. Pa’Lungan is a Kelabit community. The Kelabit culture is related to the Lun Bawang culture of Ba’Kelalan. Both cultures have the same type of hierarchical structure. The Kelabit culture has its own language. Besides Kelabit and Malay, some people seem to be able to speak English as well. Pa’Lungan is part of the Kelabit highlands, like 13 other villages. The main village of these 14 villages has an airport. The main village (Bario) is reachable by foot from Pa’Lungan, in one day. It takes a two-day hike through the rainforest to get to Ba’Kelalan. Bario has a telecenter. Pa’Lungan does not. The only mode of communication to outside the community is through a mobile telephone connection. There is a signal for this connection in most houses, but only on very specific locations. Most people do not have electricity, only some do. The electricity comes from generators. The place where I stayed had a generator.

Below I will introduce a fictional day in Pa’Lungan, seen from my perspective. Figure 4.10 shows an annotated portfolio in which I introduce characteristics that I observed and deemed important to introduce Pa’Lungan.

A day in Pa’Lungan.

I have never been to a place where it is as quiet and serene as it is here. There are no sounds here, except for wild birds and chickens. Occasionally, you hear a fish jumping up from the water next to the house. Unlike in Long Lamai or Ba’Kelalan you do not hear any children playing, because there are no children living here. There is no



Figure 4.9 - an impression from my hike through the rainforest.

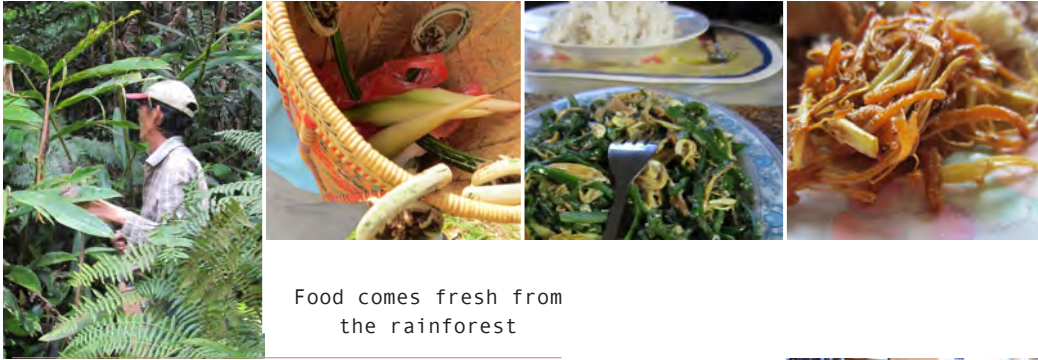
school, so there is no reason for children to be here. I go downstairs and meet Supang there. She is talking with her neighbour. She invites me to join them, but states that the neighbour does not speak English. I have my breakfast and they are surprised when I say a sentence that I had learned from Edwin's nephew in Ba'Kelalan: can I get something to drink? Lun Bawang and Kelabit are very similar. Supang changes the sentence slightly to make it Kelabit. We all laugh. After breakfast, Supang asks me whether I want to join her in the 'family museum'. I can do some bead working there, she says. She also needs to finish something. Two days ago, Supang came up with the idea for me to adapt the time capsule probe bag, to make it fit to the Kelabit culture. She showed me typical Kelabit designs, and I am now re-creating one of those with beads on the bag. Supang talks about guests that stayed in the lodge. She also talks about how, in the past, it sometimes was difficult for her to be accepted in the city, because of where she came from. She started believing that she was lesser. Now she is proud again of who she is and where she comes from. Boney M. plays in the background. Supang sings along. After a while, Supang leaves to make lunch. We have lunch together. Supang is a very good cook. We enjoy eating together and talking. Our lunches can easily last for more than an hour. Half way through, Supang's husband joins us. He has been at the farm the whole morning. After lunch, Supang and me go back to the beadwork. Around dusk, we suddenly hear voices near the entrance of the house. Supang stands up to see who it is. There are two tourists who came walking from Bario. They ask whether they can stay at the guesthouse. Supang welcomes them in. We all have dinner together. We tell each other stories and we talk about the Kelabit culture. It is getting quite chilly by now. After a few hours of talking, Supang stands up and wishes us all a good night. I go to bed as well, and am again amazed just how quiet it is here.

4.6.1 Pa'Lungan: Access & Acceptance

Supang seemed to have an important say in what happens in the community. Her parents were of noble descent and thus had a powerful position within the Pa'Lungan community, which Supang inherited. Supang runs a guesthouse where she accommodates many tourists. Her English is of a high level.

At the moment of arrival, I looked into the bookshelf of Supang. I found a book about beadwork and started reading it. Supang was so enthusiastic about my interest for beadwork that she showed me her beadwork collection. This beadwork collection was stored in a room full of the traditional family heirlooms of the Kelabit culture. She called this room her family museum.

Supang asked me what I was doing in Borneo and I explained the type of work I do, showed her my previous work - StoryBeads - for her to get an understanding of what it is that I am doing as well as the design probes. Supang got so enthusiastic about the project that she asked me to stay and do my preliminary visit for the Kelabit culture in Pa'Lungan instead of in the main village. I agreed because of her enthusiasm and her strong connection to her culture.



Food comes fresh from the rainforest



Similar material culture to Lun Bawang culture



One room in the house is dedicated to the Kelabit culture: a museum



Famous for their rice



My host in Pa'Lungan



Tourist destination



Church is important

The interest of my host in beadwork made me stay in this community



Very isolated. There are no roads going to Pa'Lungan

Pa'Lungan



A serene and quiet place - hardly any people around



Making things is central to Dayangs life



Many researchers have visited for rare species and archeological finds

Figure 4.10 - An annotated portfolio on my perspective on Pa'Lungan.

4.6.2 Pa'Lungan: Local Designers and Design Probes

From the start, Supang and her husband were enthusiastic about the project. They liked the idea of preserving knowledge about the culture of Supang for future generations (specifically their grandchildren). They mentioned how the culture disappears, because people don't realise how important it is to know about your own background. It is for this reason that she started the 'family museum' with all the heirlooms of her family. She finds it important that her grandchildren see this and that they learn about their cultural heritage.

The "remember"-probe was introduced when I introduced my intentions. The next day, Supang referred back to this probe and said that she liked it since it was in her language. She however, wanted to also adapt the design of the bag to represent her culture. She proposed to adapt it by adding a local design. She explained to me what she had in mind. We decided to add an "arup", made of beads. She would teach me how to make the beadwork; I would design and make the arup. Figure 4.12 shows

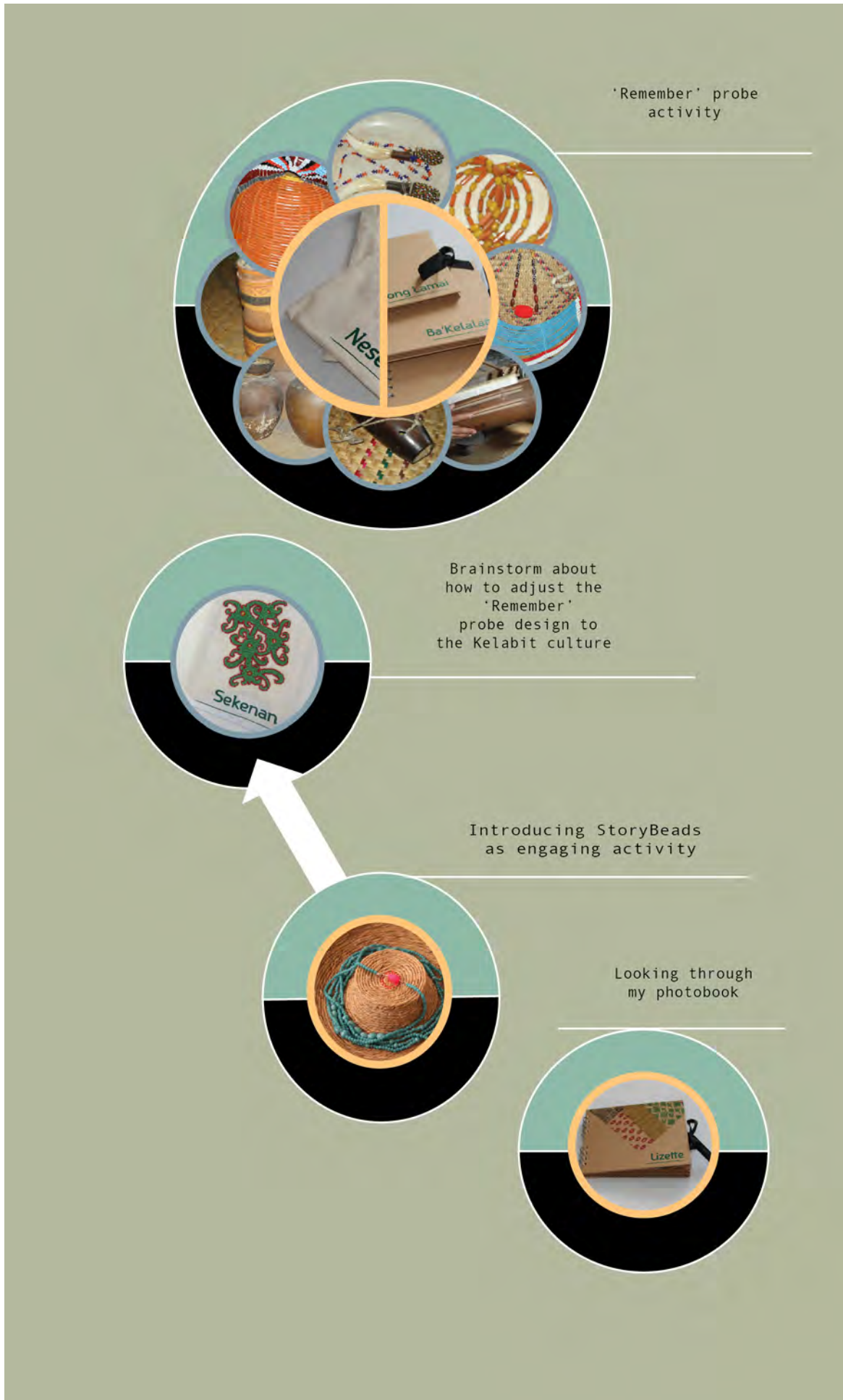


Figure 4.11 - The constellation of design initiatives of Pa'Lungan.



Legend:

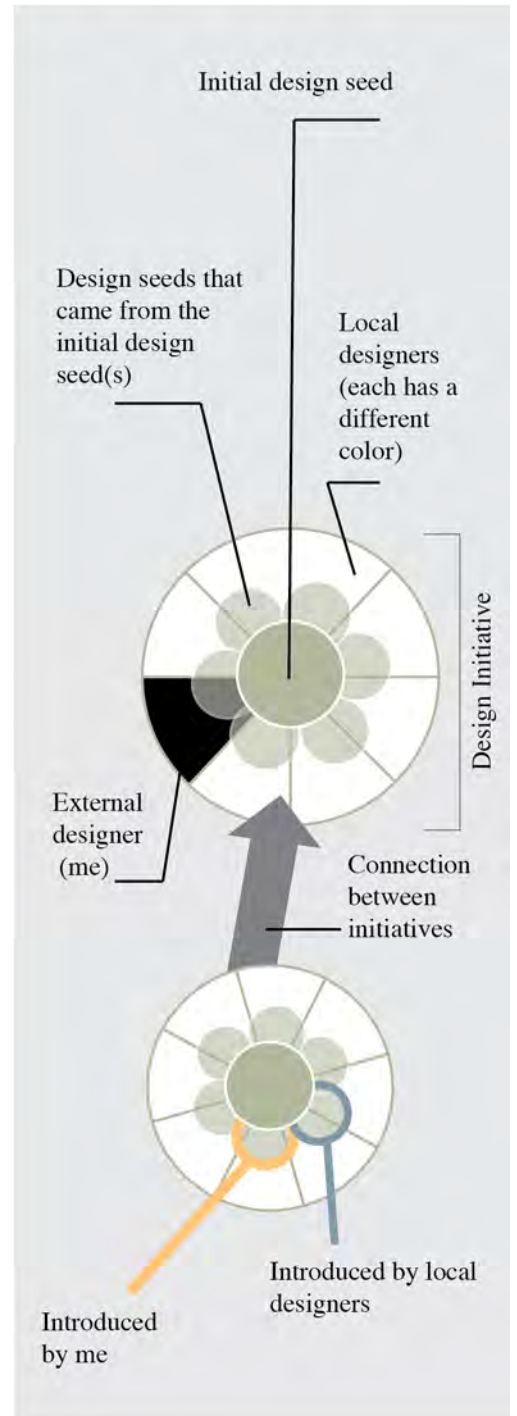


Figure 4.11 (continued) - The constellation of design initiatives of Pa'Lungan.

the arup that I created. While I made the beadwork, she worked on her own beadwork. We spent days talking and making the beadwork.

The last day, we made a photo collection of important heirlooms that represented the culture. Together with Supang and her husband, I placed the photos in the photo book. The photos were accompanied by the story of the objects.

After the photo book exercise, Supang mentioned that she would love to receive a copy of it, so that she could show it to her grand children. Because of this, the preliminary visit in itself became relevant for Supang.

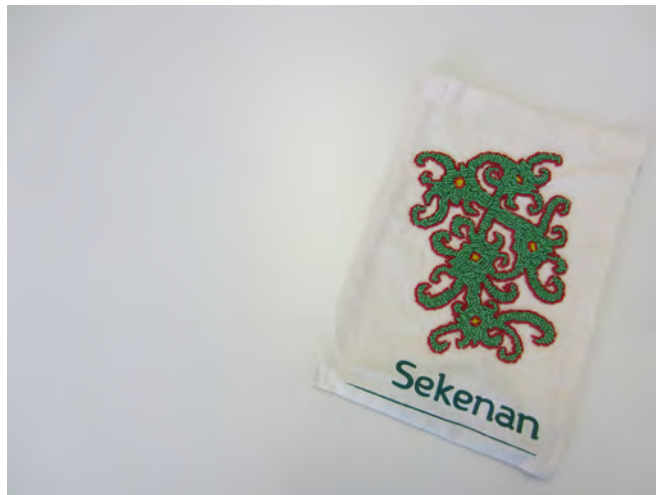


Figure 4.12 - The 'arup' design.

Even though Supang would be a good local designer, during my stay, I only engaged with her and her husband. So, as a case for respectful design within the context of an indigenous community, Pa'Lungan, at this point in time, was not ideal. I did not know whether there was a possibility in the future to engage with other people in the community, in order to explore the potential of starting culture-based innovation.

4.7 Deciding on a Community

As mentioned before, I had made a commitment to Long Lamai during their acceptance process. So, obviously, I would start my project there. Intuitively I also knew that Long Lamai, even without taking the commitment in mind, was the best option of the three. Ba'Kelalan seemed to be doing well in the preservation of their culture and therefore were not interested in a project focussing on this theme. In Pa'Lungan I did not meet enough people to be able to guarantee a community-based project. Both communities considered my preliminary visit as beneficial in itself, since they saw a documentation of their material culture of great value. The 'remember' probe gave them this opportunity. I kept contact with the other communities and I have sent each of them a photo book containing the collection of the 'remember' probe. I have continued working with Supang to make a more complete

overview of the Kelabit crafts and artefacts. This project will, however, not be described further in this thesis, because it is outside the scope of this work.

When I started to shape the constellations of design initiatives for each of the communities, I realised that also the way the constellation of design initiatives was shaped in Long Lamai made Long Lamai stand out. Figure 4.13 shows an overview of the constellation of design initiatives for each community.

When you look at the differences between the constellations, it can be seen that in Long Lamai, there are many different wedges, with many different colours. This means that in Long Lamai more people joined than in the other communities. What can also be seen is that I am not involved in all design initiatives in Long Lamai. I am represented as a black wedge. Not all circles contain a black wedge. In the other two communities, I am always involved. In those communities, there are no design initiatives (circles) without a black wedge (me). It can also be seen that both in Long Lamai and Pa'Lungan local designers have introduced their own design seeds. The colour of the design seed in the centre of a design initiative defines who introduced the circle. A blue circle means that the local designers introduced the design seed. In Long Lamai this happens twice and in Pa'Lungan, this happens once. Different from the other two communities is that in Long Lamai, all initiatives were presented to more people during a co-reflective session. This can be seen in the constellation as the initiative in which all arrows come together. Then it can be noted that Long Lamai and Ba'Kelalan have a different quantity of design initiatives, compared to Pa'Lungan. Long Lamai has eight initiatives, Ba'Kelalan has seven. Pa'Lungan only has four. Five of the seven design initiatives in Ba'kelalan use the 'remember' probe. It reflects the specific aim to give a complete picture about Ba'Kelalan material culture rather than a broad exploration on what kind of project can be done.

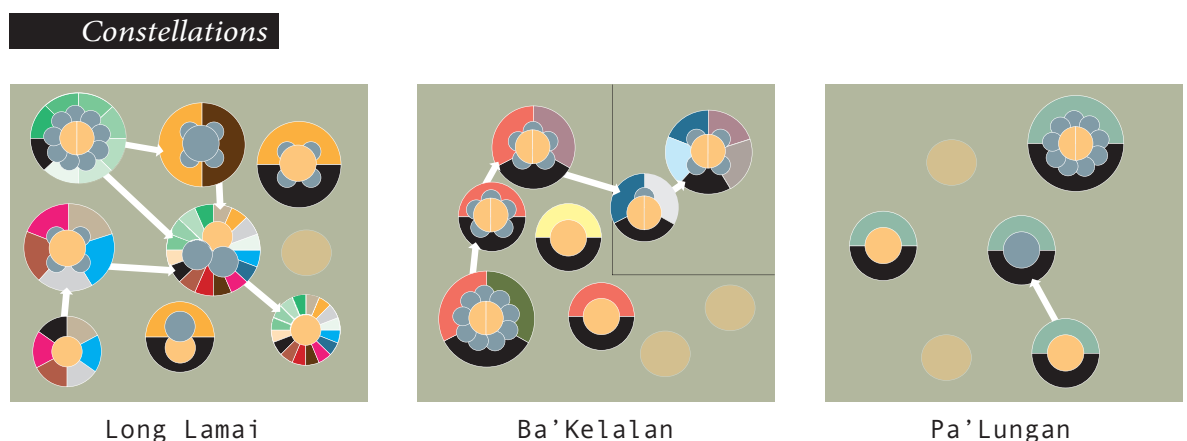


Figure 4.13 - An overview of the constellation of design initiatives for each community.

4.8 Conclusion

To summarise, this chapter introduced how Long Lamai became the focus of the co-creative encounters. They wanted me to commit to a project with them, in order for them to commit to me. This I did, and it therefore made them the choice for the community. However, it was not only this agreement that made them the community of choice, also their enthusiasm, interest, initiative and pro-active ideas for a project made them a good choice. The design direction that came from the visit at Long Lamai resulted in a focus on stimulating intergenerational conversations about Penan identity through design initiatives. The design initiatives will get a technological character in order to facilitate the community's wish to implement technology to make the youngsters of the community proud to be Penan.

Five | Empirical Case Description Co-Creative Encounters

In this chapter I introduce the design direction that became the starting point for the co-creative encounters. Subsequently, I describe how I used this design direction in my preparation for these encounters. After that, I will detail the flexible design tools that arose from this design direction consisting of design probes, technology probes and design initiatives. I used these design tools throughout the co-creative encounters. After that, I describe the actual events of the co-creative encounters and their outcomes. For each encounter I created a constellation of design initiative diagram. Section 5.9 gives an overview of those constellations of design initiatives.

5.1 Defining Design Direction

In order to find a design research direction relevant to the Long Lamai community, I studied the collected data. The collected data came from the fieldwork diary notes. I used content analysis in order to find theoretical concepts that could function as possible design research directions. Figure 5.1 gives an overview of this analytical process. In Appendix 1 I go into more detail of some of the stages of the process. The project direction that was used as starting point for the co-creative encounters arose from this analytical process. The theoretical coding showed that there is a difference between what it means to be Penan according to the youngsters and the elders of the community. The theoretical coding discussed in Appendix 1 indicated that the elders are proud of their Penan identity, in contrast with the youngsters. There is also a different perspective on what digital technology can do between elders and youngsters. For youngsters it is a means to connect to a world they would like to belong to. For the elders, technology is seen as a means to give the Penan culture a more positive image, therefore stimulating the youngsters to become more proud of where they are from. From the community there was one important cultural aspect that they wanted to focus the project on and that was Oroo'. Oroo' is the mode of communication used by the traditional nomadic Penan, to communicate between different groups of nomads in the rainforest. The aim is to explore the relationship between Oroo' and Penan identity, from the perspective of the elders as well as of the youngsters. Methods that will be used for this exploration will focus on communicating through design, rather than through spoken or written language. It is for this reason that design seeds will be used. Since digital technology seems to be of interest for both the generations, the design seeds will have a technological character.

5.2 Personal Preparation

During the time between the preliminary visits (until October 2012) and the co-creative encounters

(from July 2013), I kept in contact with the girls that I had met in Long Lamai. They updated me about what was happening in their lives and in Long Lamai. I also continued my conversations with Tariq Zaman. He helped me with the practicalities of preparing the co-creative encounters. With Dr. Peter Sercombe, I reflected on the design seeds that I planned to introduce during the co-creative encounters. He gave me some insights into whether he considered it to fit the Penan culture. This enabled me to slightly adjust the seeds, to make them more appropriate.

5.3 Constellations of Design Initiatives

In July 2013 I went to Sarawak, Borneo, for the second time. I had planned to undertake four visits to the community, each of two weeks over a period of four months. In reality, it became three visits ranging from one week to 33 days.

The aim was to present the co-creations that resulted from these visits at the eBario knowledge fair, an event organised by ISITI. This knowledge fair is organised every two years and it is aimed to bring together the communities that have a telecenter. During the fair, issues, concerns, approaches and future plans for the telecenters are discussed. Besides that, the knowledge fair provides a space to celebrate each indigenous culture.

My initial plan for the co-creative encounters was the following: I had come up with the idea of designing the design seeds and the design initiatives according to three different themes. The aim was

1. Reading through the research diary repeatedly and taking notes.
2. Dividing research diary notes into days, separating data in:
 - Actions undertaken;
 - Probe outcomes;
 - My observations;
 - Community reactions;
 - My reflections.
3. Reading through the timeline repeatedly. Highlighting codes and deriving coding categories.
4. Writing out the aspects that stand out to make sure that codes that do not form a category still get noticed.
5. Formulating coding schemes by defining how coding categories interact.
6. Placing codes in the coding scheme.
7. Exploring contradictions, similarities and causes and effects between codes in different categories.

Figure 5.1 - An overview of the content analysis process of the preliminary visits.

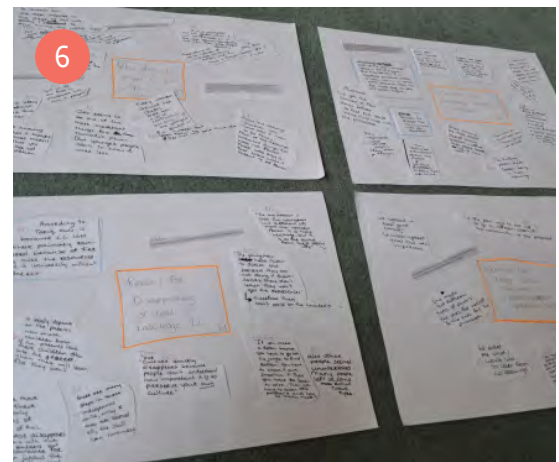
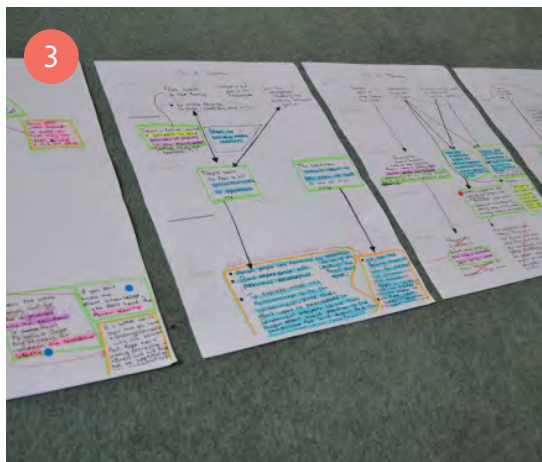
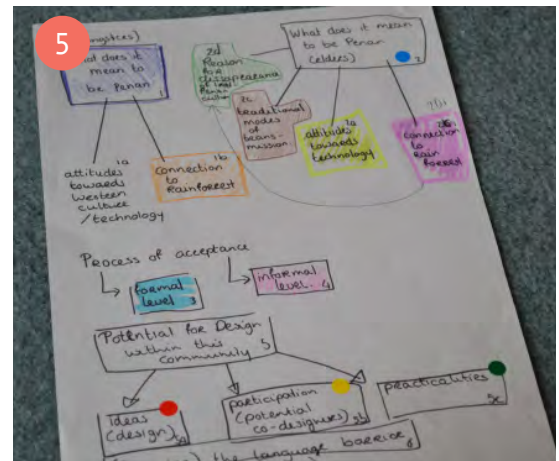
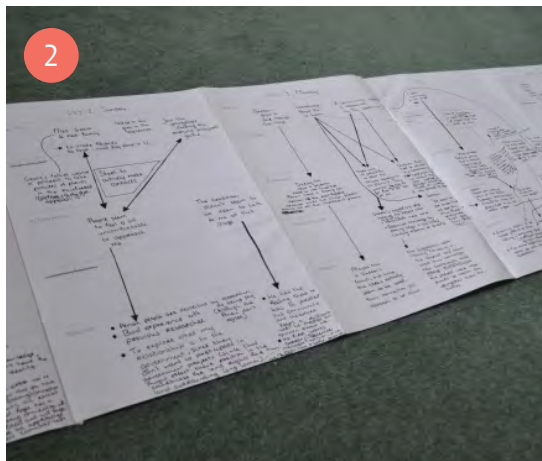
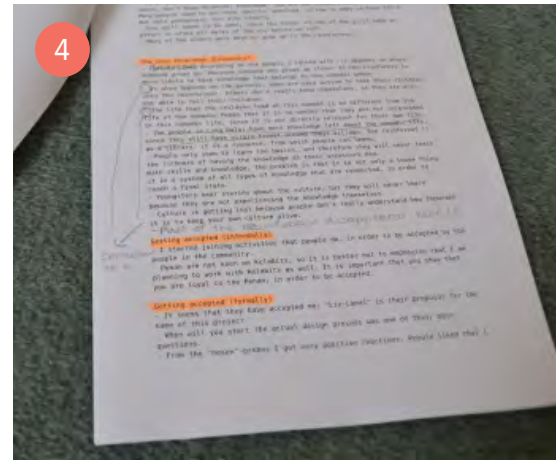
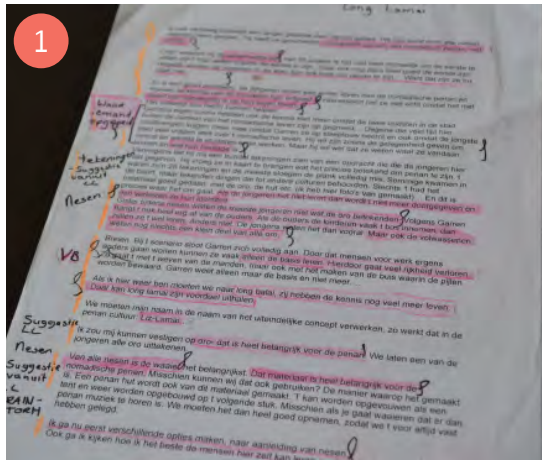


Figure 5.1 (continued) - An overview of the content analysis process of the preliminary visits.

to create a different constellation of design initiatives around each theme. The themes came from the design direction that I had defined.

The first theme was about Penan identity and it focussed on starting discussions about Penan identity between different generations. The second theme was about Oroo' and making the youngsters enthusiastic to learn more about it. The third theme was about bringing the discussions about Penan identity together by translating new understandings into contemporary Oroo's. During each of the first three visits, I would introduce a theme and the design seeds and design initiatives to support this. In the last visit, I planned to bring everything together and prepare the exhibition for the eBario knowledge fair. As can be read in Section 5.3, 5.4, 5.5 and 5.6, this initial plan changed considerably due to negotiations with the Long Lamai community during the visits. Not one of the themes was relevant. The theme about intergenerational discussions on Penan identity touched on a taboo. Oroo' had become the focus of other researchers since I had left.

5.3.1 Design Seeds

The design seeds that I designed in order to explore and facilitate the dialogical spaces of the themes existed out of two different type of probes. Firstly, I created "traditional" design probes like in the preliminary visits and I created technology probes. All the probes, which were prepared for the co-creative encounters, are described in the upcoming sections.

5.3.1.1 Design Probes

The design probes focused on reflecting on identity from different perspectives. Figure 5.2 shows an overview.

The probe set contained: '*Proud to be Penan*' – boxes (Figure 5.2-6) - which aimed to stimulate reflection on different aspects of the Penan culture. The transparent part of the probe was meant to exhibit aspects of the culture that the local designers are proud of. Within the wooden part of the boxes the local designers could place aspects of the culture they wanted to disconnect from. Furthermore, the probe set contained '*What makes ... so different...*' – frames (Figure 5.2-7). The frames were based on the famous collage of Richard Hamilton (1956): *Just what is it that makes today's homes so different, so appealing?*. The probe frames aimed to compare the life in the community with another place or another time. They questioned what made those times or places different, even appealing. Thirdly, the set contained '*the perfect Penan*' – moviemaking kits (Figure 5.2-2). These kits are based on the '60's movie *The Perfect Human* (Det Perfekte Menneske 1967), which is about giving an abstracted perspective on human behaviour. The cards that the movie making kit contains ask questions such as: 'What does he or she look like?' 'What does he or she drink?' or 'How would he or she dress?' By making The Perfect Penan – movie, the community has to emphasise on clichés and stereotypes about the Penan community that they think other people might have. An example of stereotypes people outside the Netherlands hold about the Dutch culture: Dutch people are direct and frugal. I would include these clichés in The Perfect Dutch movie. Furthermore, the set included

a *'through the looking glass'*- probe (Figure 5.2-3). These mirrors could be used to reflect on the current identity (of a person or of the community) and an ideal identity. It asked questions like: 'How would you like to see yourself in 5 years?' 'How would you like to see Long Lamai in 5 years?' and 'What do you think you will look like in 5 years' and 'What do you think Long Lamai will look like in 5 years?'. The *'Welcome to Long Lamai'* – banner (Figure 5.2-1) could be used to reflect on aspects of Long Lamai that the local designers wanted to use to advertise the community. Call-outs (Figure 5.5-5) can be connected to objects to highlight or comment on aspects of these objects. Finally, the *'A day in my life'* – diaries could be used to record, through photos, a day in a life (Figure 5.2-4). It could be used to compare personal identity with communal identity.

5.3.1.2 Technology Probes

The technological probes were included in the probe set because of the wish of the community to use technology as a way to express who they are. The probes introduced basic technological functionality developed as a website, a musical instrument and lights. The aim of these probes was to help the local designers reflect on potential technological concepts, thereby stimulating their interest without requiring from them that they would understand the technology behind the probes. I prepared the probes so that they could be adapted by me, and appropriated to the cultural aesthetics of the local crafters.

I chose to use Arduino as the vehicle for the technology, its flexibility enabled me to make changes in situ in order to respond to the ideas of the community. However, my own knowledge about Arduino was limited. It is for this reason that I developed the probes, prior to the visit to Malaysia, with the help of Bastiaan Ekeler, an expert on programming and electronics. I envisioned the technology concepts. The concepts that I had come up with, were based on the idea of slow technology, as introduced by Hallnäs and Redström (2001). Unlike most types of technology, slow technology is not meant to be efficient in performance. Instead it is about providing a space for reflection of 'use'. It is slow in that it requires time to learn how it works, to discover why it is working the way it works or to find out what the consequences of use are. This intentional slowness in learning, understanding and presence is comparable to a work of art, as is the focus on aesthetics. In order to encourage people to reflect and think about the digital technology, technology in slow technology is clearly visible.

Together, Bastiaan and I transformed the concepts that I had come up with, into technology probes that contained the basic functionality that I had envisioned. I kept contact with Bastiaan throughout my stay in Sarawak. He helped me to adjust the programming codes to the ideas of the local designers. The electronics I had to adjust myself, but he gave me advice on how to do this.

We created a website that would support a reflective process on the intergenerational co-creative process, since it would ask local designers to reflect on the creation of the probes and on conversations that arose due to those creative processes.

This website was supported by two technology probes that were both based on slow technology.



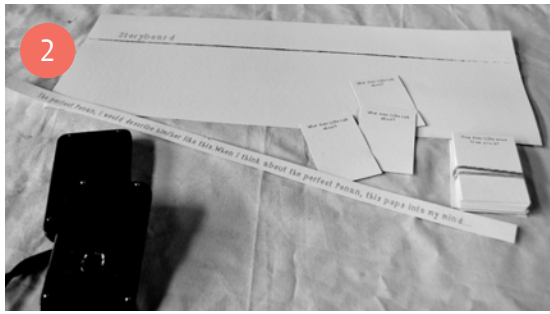
Design Probes Co-Creative Encounters



Welcome to Long Lamai.

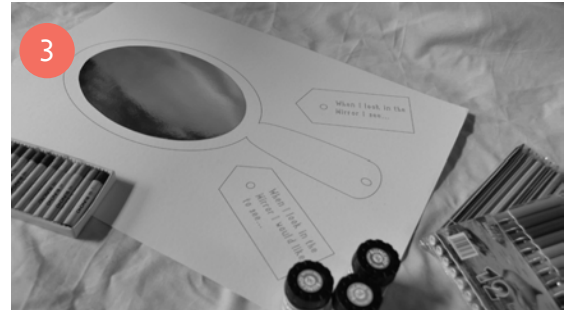
This banner can be used to reflect which aspects of the community, the people in Long Lamai would like to use to advertise their community.

Figure 5.2 - The design probe for the co-creative encounters.



The perfect Penan.

Based on the '60's movie 'The Perfect Human' which abstracts human behavior and translates it into stereotypes and cliches. By making 'The Perfect Penan' the community has to emphasize on cliches and stereotypes about being Penan that they think other people might describe them with



Through the looking glass...

These mirrors can be used to reflect on the current identity (of a person / of the community) and the preferred identity.



A day in my life.

These photo diaries can be used to record a day in a life of someone. It can be used to compare personal identity with communal identity.



Callouts!

These callouts can be used to highlight things or to comment on things, such as the objects they value or the objects they see as truly representing the Long Lamai culture.



Proud to be Penan.

These boxes aim to reflect on the aspects of the Penan culture that people are proud of. Within the wooden part of the boxes people can place aspects of the culture that people feel ashamed of.



What makes ... so different...

Based on the famous collage of Richard Hamilton (1956), this aims to compare Long Lamai with another place/ another time or something else that emphasizes on things that people are desiring. It is kept flexible, just to be able to adjust it to the reality of the community.

Figure 5.2 (continued) - The design probe for the co-creative encounters.

They were created to make the activity on the website visible in the village. This, I considered to be important, to prompt people to start using the website.

The first probe was designed to be transformed into a musical instrument that would start playing a tune every time someone would access the website (See Figure 5.3). The second probe was designed as lights that would start glowing every time a new post was posted on the website (See Figure 5.4).

Introducing slow technology in Long Lamai, which has a low technological density, means that the technology can be a learning and reflective process for everyone, not just for those who have experience in using technology. Hearing the musical instrument play can make someone curious about what is going on, even though they are not directly involved in using the Internet. Seeing the lights glow can enable someone who does not use the Internet to ask someone else to tell them what the new message is about. The probes were the foundations, only containing the functionality. During the stay in the community, these probes could be adjusted to fit the material culture or visions of the community.

5.3.2 Design Initiatives

The design initiatives that I planned for the co-creative encounters can be divided into the three themes around which I was planning the dialogical space. There are the design initiatives that result

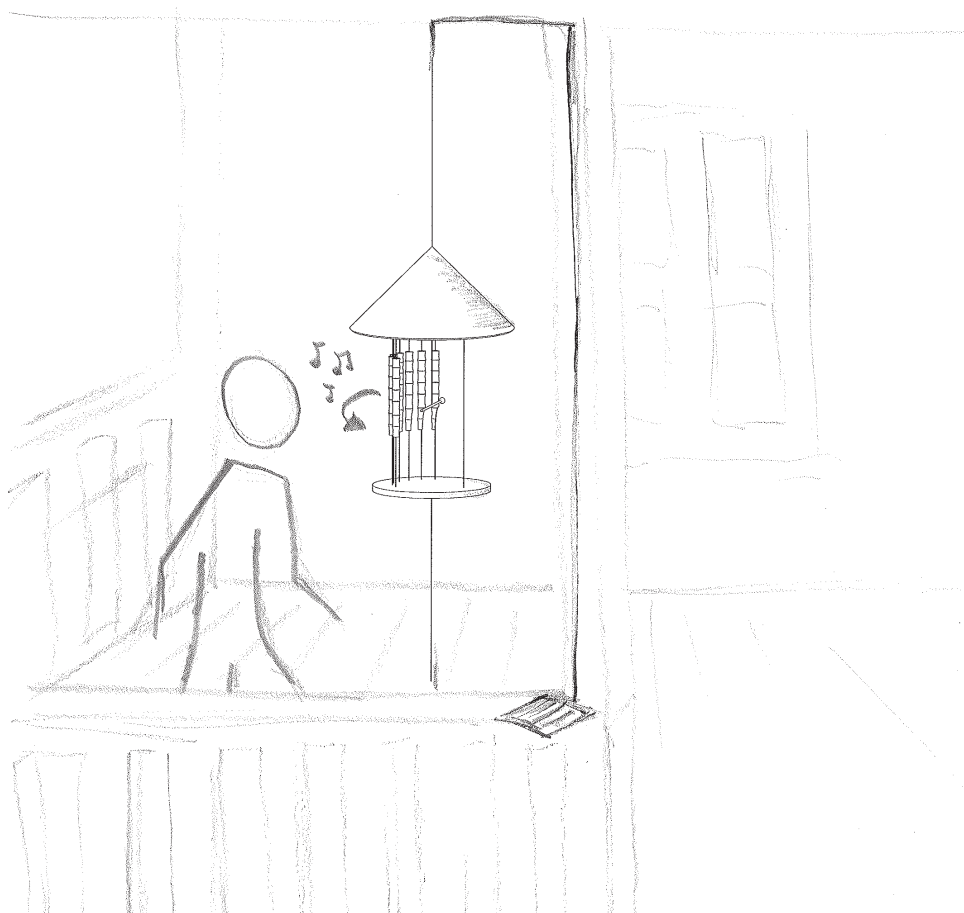


Figure 5.3 - The concept sketch of the musical instrument.

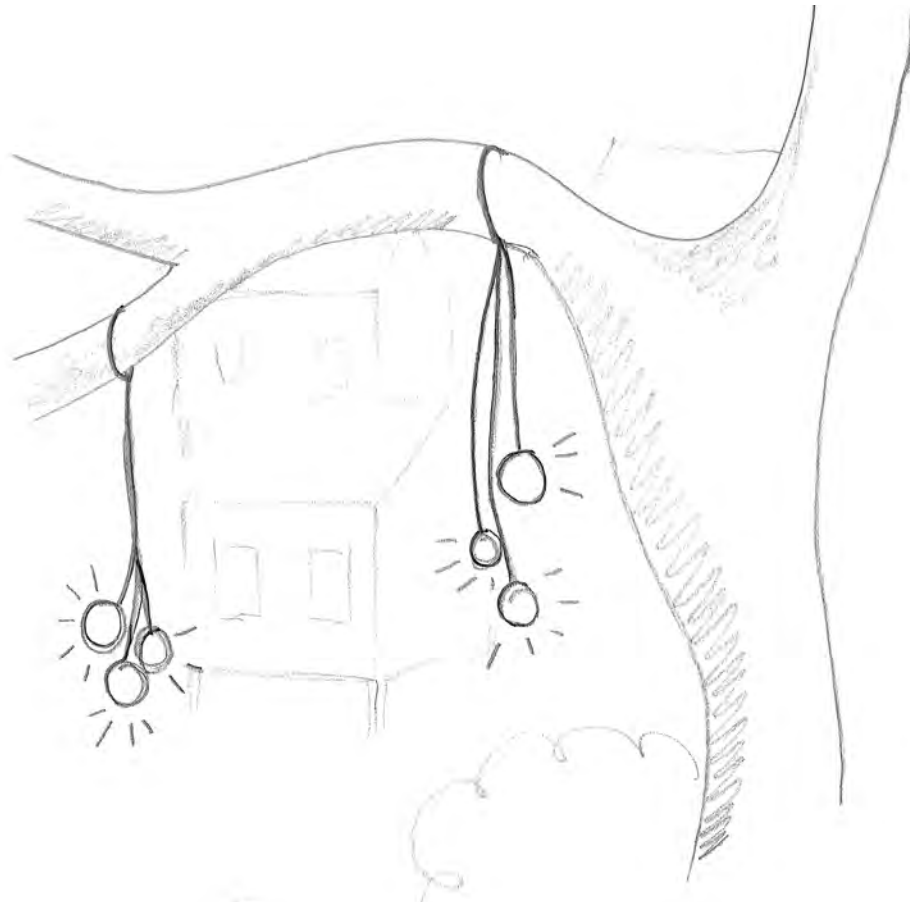


Figure 5.4 - The concept sketch of the lights.

directly from introducing a design seed: such as design probe activities or brainstorms. I did not plan these design initiatives beforehand, but did plan some extra initiatives. As with the design seeds, none of those initiatives had to be performed, nor did they have to be performed the way I had prepared them. This attitude was chosen to keep the design initiatives as flexible as the design seeds. For the theme on Penan identity I prepared a workshop about the website, which was one of the technological probes. I prepared a movie-night during which the movie that had resulted from the ‘Perfect Penan’ movie making kits could be shown. For the Oroo’ theme, I prepared an Oroo’-quest, which I would set up with the elders in the forest surrounding Long Lamai. The youngsters could then do this quest, which was educational as well as entertaining. While setting up the Oroo’ quest, I would record movies about Oroo’ with the elders. These movies then served as the foundations of the next design initiative, which was an Oroo’ quiz night. Another design initiative that I had prepared was a workshop about what the ideal documentation system for Oroo’ would look like. In the third theme I prepared another workshop. This was about exploring what contemporary Oroo’ could look like, bringing together different perspectives on Penan identity. Since Oroo’ is a messaging system, the workshop aimed to explore what messages would be important nowadays in order to reflect contemporary Penan identity.

Since none of the themes were relevant to the community at the time of my visit most of the pre-prepared design initiatives were not performed. Only the workshop about the website became reality.

5.4 First Co-creative Encounter

In this section and in the following sections I will describe my stays in detail in order to communicate the trust growing process as this laid the foundation for our encounters and the final outcomes. The co-creative encounters started with a fifteen-day visit. This first co-creative encounter was about setting the foundation for the project. It was about defining the type of design participation and about adjusting the focus of the project to make it suitable and relevant for the community. Because of the community's agreement with me, at the start of the project during the preliminary visit, I expected that I could start the co-creative encounters without any problem, but this was not the case. This entire visit was eventually dedicated to the community to understand my expectations, and to make these fit to theirs.

Tariq Zaman accompanied me on the first days of the visit. On his request I had created a research agreement. This is a new strategy that Tariq and the community had agreed on, since more and more researchers are interested in doing a project in the Long Lamai community. Before I could start I needed to negotiate a final agreement that needed to be signed by Wilson (the chief of the village).

Throughout my visit it turned out that the focus - on intergenerational conversations about Penan identity - as I had envisioned, appeared to be inappropriate, since it would mean to break a taboo of the community. This resulted in a reluctance of the community to embrace the design probes. The focus on Oroo' seemed less relevant now, since also other researchers had started projects about this theme. I had designed the technology probes as tools to motivate the community members to use the website that I had created to reflect on the intergenerational conversations that the probes had facilitated. Even though the purpose of the website did not seem appropriate or relevant, the community embraced the technology probes. I had created them to be adapted by me, and to be adjusted to the cultural aesthetics of the community by local crafters. However, the technological concepts now got a new role that facilitated the reflective process of how these technological probes could be adjusted to represent the communal identity for people from outside, to learn more about the community.

I learned throughout this visit that there is a clear generational distinction within the community. There are the youngsters, who are generally under 30 years old, with or without children. Then there are the 'parents', who are generally above 30 years old, with or without children. Finally, there are the elders. This is a self-selected group of around six people, who have experienced both the nomadic and the settled life. The elders have an important position since they make the final decision about everything that happens within the community. Before anything can be presented outside the community, the elders have to agree to it first.

Throughout this visit I felt very insecure. Prior to the visit I had worked so hard to finish everything on time. In my head I had thought coming back to the community would be a smooth process. I al-

ready met those people before. I made the assumption that we could just start off where we had left since the last visit. However, when I arrived I felt reluctance from the community. They were very nice to me personally, but I could sense that they would not allow me to do the things I had in my mind, in the pace that I had in mind. I had no idea what I was waiting for. Coming from my life in the United Kingdom, where everything is organised around deadlines and work efficiency, made it difficult for me to switch to the pace of the community. I felt pressured, and just wanted to start. I however did not understand whether this was accepted or not.

After the analytical process (as described in Chapter 6 and 7), I realised that the approach I had taken was problematic. In order to have had a smoother process it probably would have been good to shorten the time between the preliminary visit and the first co-creative encounter. Now this period was eleven months.

Another thing that I realised only after the analytical process was that by defining the design direction I unconsciously made the design participation innovative (Lee 2009). I had not been aware of this because this was the normal way I would approach a design project, based on how I had learned it during my bachelor and master education. I now feel, however, that this approach did hinder the respectful design process. Instead I should have invited the community to define the design direction.

5.4.1 Detailed Description of my Stay

Figure 5.5 shows the timeline of my stay. I arrived in Long Lamai on the 28th of July, together with Tariq Zaman and Garen, the telecenter manager.

The next day, Tariq and Garen started mapping out the research activities in the community. I was amazed by how many researchers were attempting to start a project in Long Lamai. I joined their meeting and afterwards, they wanted me to show the things I had prepared. I introduced my preparations to Garen and Joy (the wife of the chief). They seemed to have problems understanding what I precisely wanted to do. However, Garen suggested me to place the technology probes in the telecenter.

All the friends that I had met during my preliminary visit had left, so the first days in the community I spent meeting new people. Last time the community had organised a community meeting for me to present my work and to provide an opportunity for the people to accept or reject the proposed project. This time this did not happen, and I was not sure whether I was waiting for approval or whether I could just start.

On the 2nd of August I had a conversation with Wilson, the chief, during which I proposed the project as I envisioned it. He made the remark that I had taken a different focus from last time. However, he was open to the technology probes.

The next day I started to make sketches for the musical instrument and the lights. I did this in order to be able to show the crafters of the community what I wanted the designs to look like. My aim was to quickly start with this, in order to motivate the community to reflect on the intergenerational

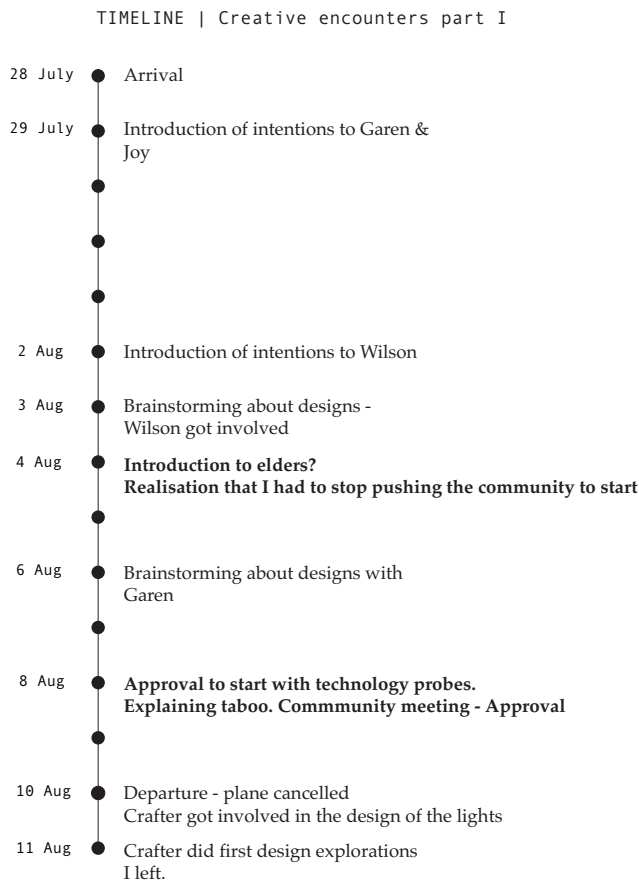


Figure 5.5 - The timeline of the first co-creative encounter visit (the actions in bold were of greatest importance for the project).

conversations that the design probes might stimulate. Wilson started to make remarks on the ideas I had about the instrument.

The next day was Sunday. Every Sunday the elders of the community meet in order to plan the week and to discuss urgent issues. These meetings are closed for non-elders. My project, from what I understood, was going to be introduced to the elders of the community during this meeting. This way, the elders could decide whether or not I could start. Garen was not feeling well; else he would have guided me in this process. Now, Sasha (Garen's wife) asked her brother in law (one of the elders) to introduce my project during the meeting to the other elders. There was also a meeting for the elder ladies. Sasha mentioned that the elders might want to see my work. So, I asked her if it would be a good idea to have my designs ready. She agreed to this and I went to the telecenter. I waited, and then I started to think that I might have misunderstood what they expected of me. Did they know where I was? Were they expecting me to come to them? As a result of these doubts, I went to find the group of the elder ladies. I walked in. Joy (Wilson's wife) was very surprised to see me. When I explained what I came to do, she seemed confused. I realised that I completely made the wrong decision by going there.

On the 6th of August, I talked to Garen. He told me that he had heard from Wilson that I was attempting to make the instrument of bamboo. We then started brainstorming about what the musical

instrument could look like. In order to get a more thorough idea about our ideas and whether they matched, we went into the forest surrounding Long Lamai. There we collected bamboo. This process helped to make our ideas tangible. It also made Garen take charge of the brainstorm, since he had more knowledge about bamboo. Afterwards, I introduced the idea that I had for the lights. I asked Garen and his wife Sasha, how I could best describe to the crafters what I had in mind. In the evening, a meeting was organised during which I was supposed to show my plans. However, it was cancelled, because of the rain and because people were too busy with planting the rice. Instead, I only talked to Garen and the youth representative of the community. Garen explained to me the community's process of letting people from outside in. Then Garen asked me to explain to the youth representative what I had in mind. I showed the design probes.

On the 8th of August, Garen told me that I could start with creating the technology probes, but that I had to wait until a community meeting was arranged before Wilson could sign the agreement. We had a long conversation, during which Garen explained that the direction I had chosen for the project touched on a taboo. Elders cannot talk about their identity with the youngsters. This is because the knowledge connected to his or her identity cannot be shared with everyone. The transfer of knowledge is a delicate process. Depending on the youngster, only certain knowledge can be shared. For example, some knowledge can only be shared when a youngster meets a certain age. Since my arrival I had had the intuitive feeling that something was wrong, but I could not determine what it was. When Garen told me about the taboo, I realised that it was this major issue that stood in between the community and me. I said that the project did not need to have the direction I proposed. Garen said that it was fine for me to keep working on the technology probes. In the evening, Wilson had organised a community meeting. During this meeting, Garen translated what I was saying. The main focus was on the technology probes. I did introduce the design probes, but I introduced them as tools to think about how the community wanted to present themselves to people from outside. Then it was time for the community to ask questions. After this, Garen told me that it was okay. The community had agreed that I could start. Wilson signed the agreement. The next day I talked to Wilson about when I best could go back for my next visit. We agreed on the end of August, for a week.

On the day of my departure, one of the crafters came to see me. She asked what it was that I wanted to have made for the lights. I explained it to her and gave her my drawings. My plane was cancelled and so I came back to the community for another night.

The next morning the crafter was there again. She showed me what she had made, following from my explanations the previous day.

I made a constellation of design initiatives diagram of this visit, which can be seen in Figure 5.6. As can be seen, there is only one design initiative in which I do not take part. This initiative is situated in the musical instrument category. The initiatives in the design direction activity lead to an initiative in which a broader group of the community is involved. This was the meeting at the end of my stay, during which it was decided that the project could start. In the musical instrument design activity and

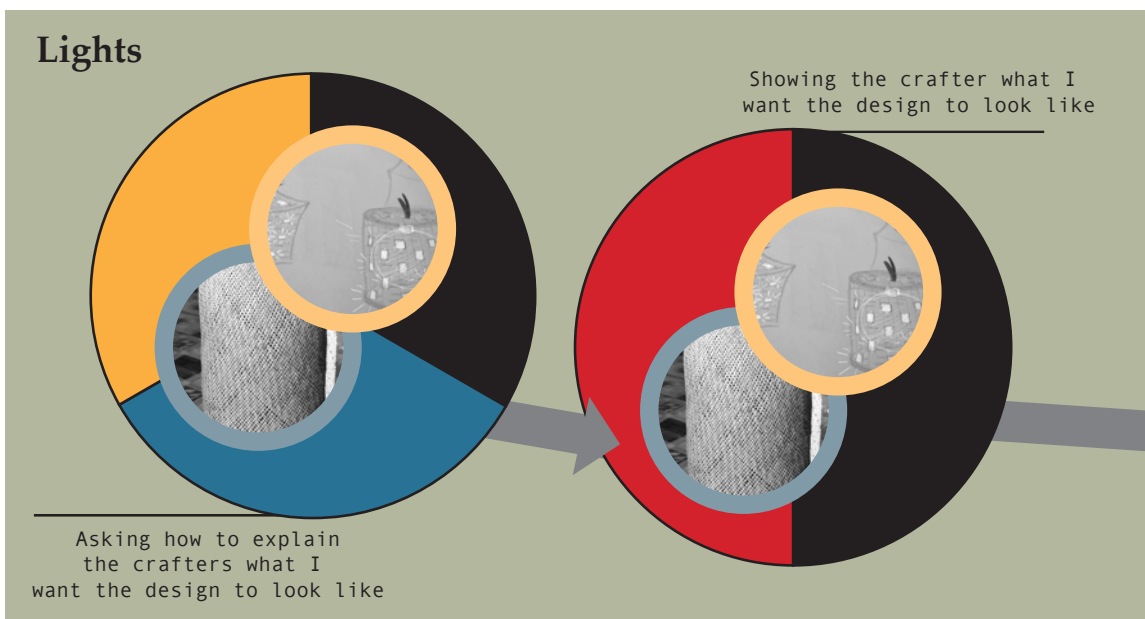
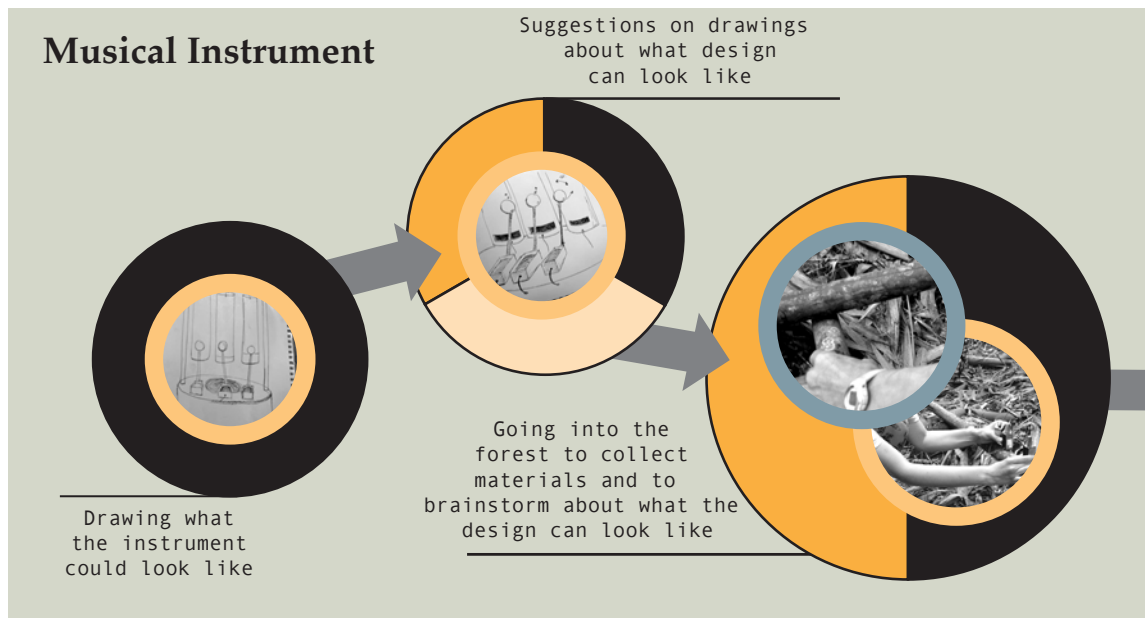
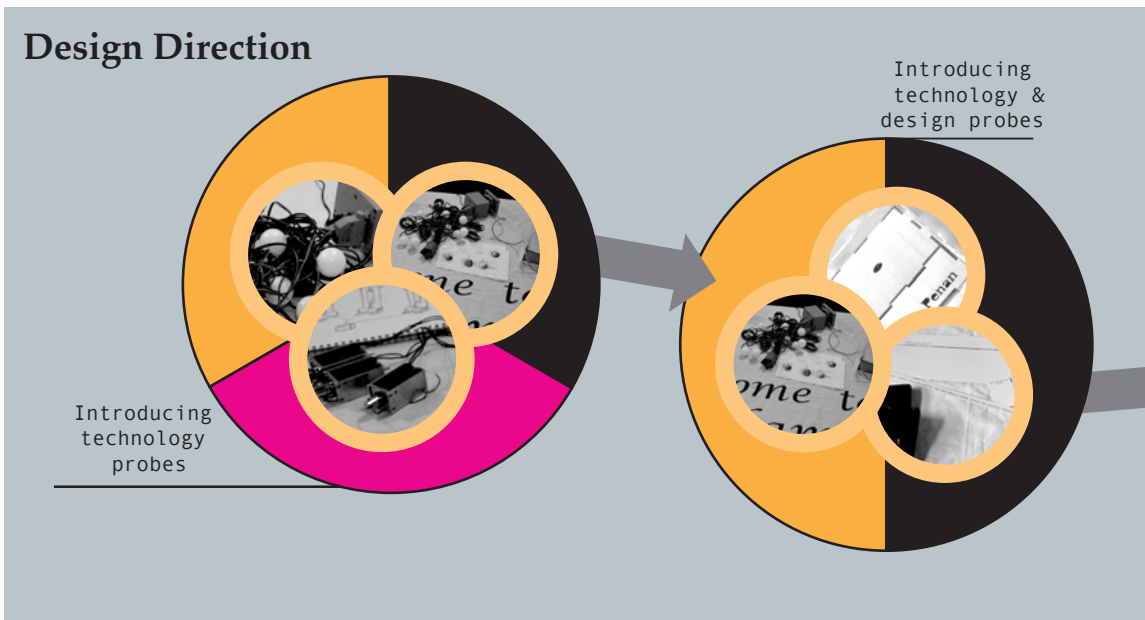
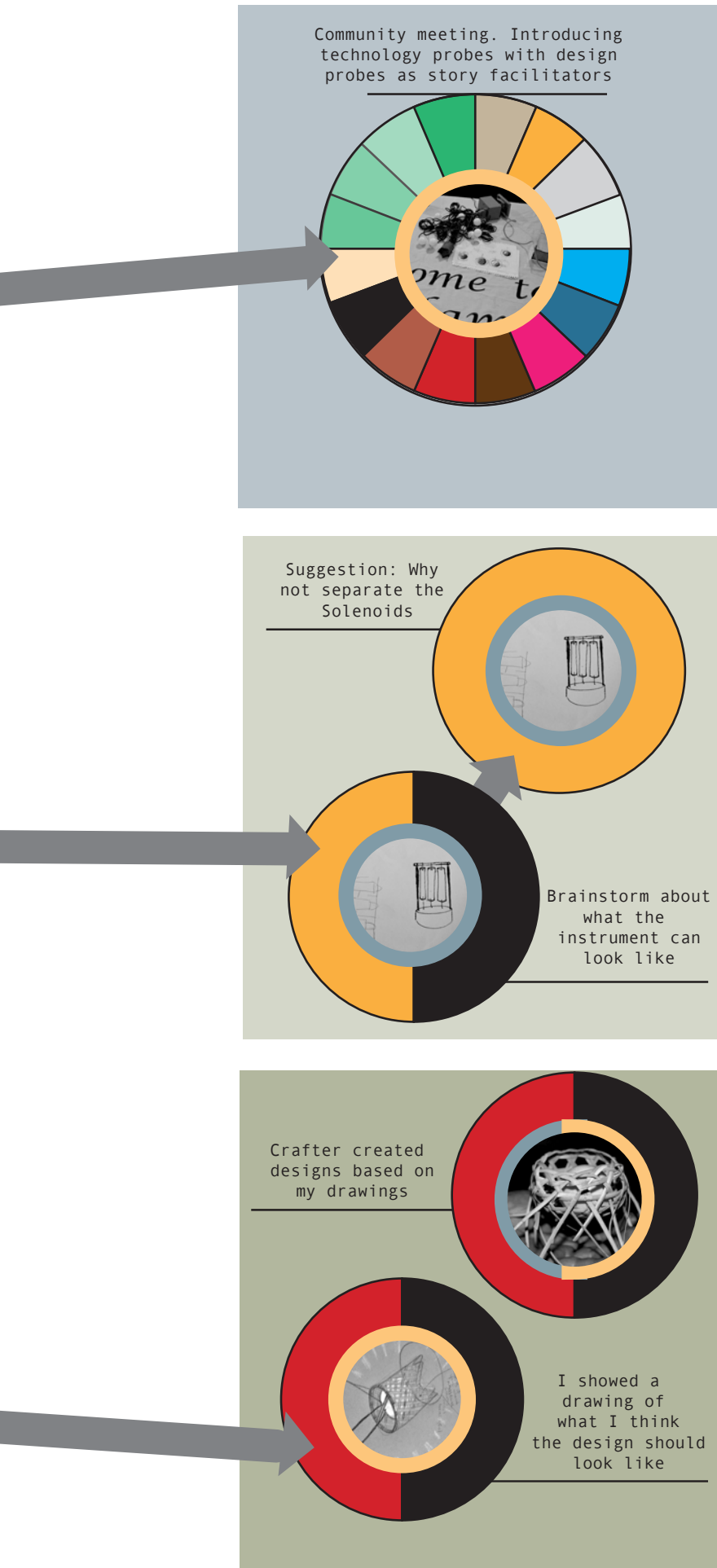


Figure 5.6 - Constellation of Design Initiative Diagram- First co-creative encounter.



Legend:

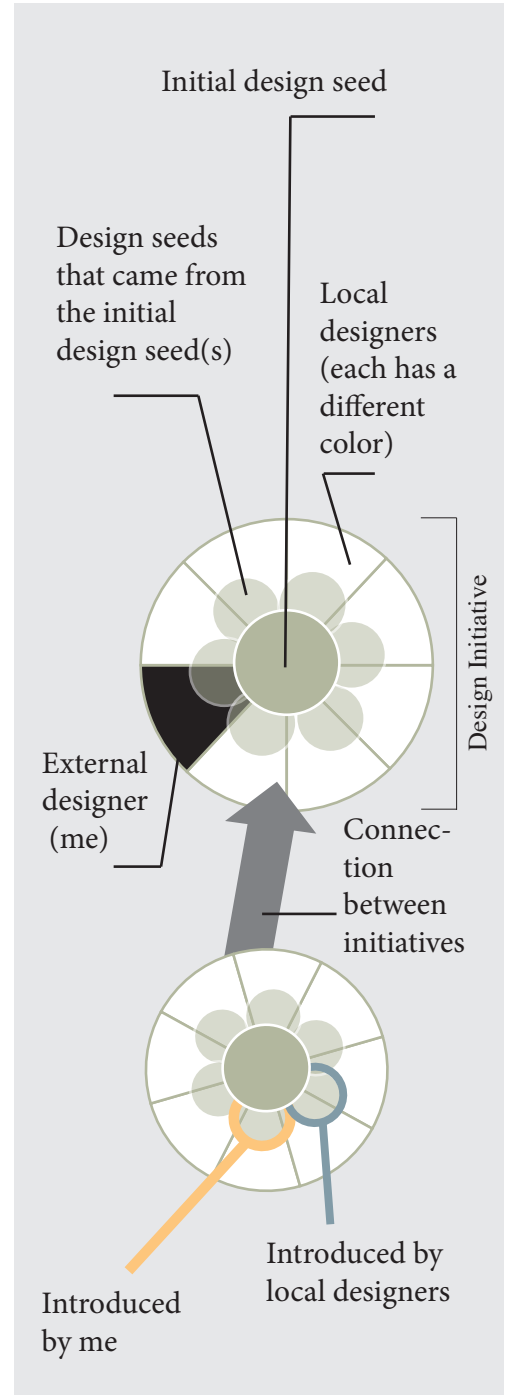


Figure 5.6 (continued) - Constellation of Design Initiative Diagram- First co-creative encounter.

in the lights design activity, both the local designers and I introduce design seeds. The lights design activity resulted in a design seed that was a consequence of interactions between my design seeds and the local designer's design seeds. In the design direction design activity, only my design seeds were used.

5.5 Second Co-creative Encounter

The second co-creative encounters visit was short, only seven days. For me, the visit was about showing my face again. In addition, I needed to fix some of the electronics in one of the technology probes, since something broke and I wanted to be sure it was working again before I engaged in a longer visit. My partner joined me, and we experienced the touristic side of staying in the community. This time, the attitude of the community towards the project seemed to be different to the previous visit. While I could feel a reluctance of the community for the project in the previous visit, this time they seemed to embrace the project. I realised through this visit that the previous visit had been all about defining boundaries and agreeing on the design direction.

Although it was short, I think this co-creative encounter was of major importance for the total project. Since it was casual and since the local designers had time to think about possibilities for the design, they came up with a lot of proactive ideas in order for the design of the musical instrument to fit better to the culture. The community started taking ownership of the design process.

During this visit I got permission to start giving workshops to the youngsters to teach them how to use the website and to start creating stories for this website through design (probe) activities. I held one workshop during which the youngsters wrote stories about the Penan culture and during which they got an introduction on the website.

5.5.1 Detailed Description of my Stay

In Figure 5.7 I introduce the timeline of my stay. On the second day of the visit I repaired the electronics of the lights. Garen came in and suggested to give my partner and I a tour around the village.

The next two days, Bili (a community member) took us on a hike through the rainforest, and we stayed in the rainforest for the night.

On Thursday, Garen asked me about the status of the project. I told him that Connie, the crafter, was working on the baskets. I told him that I was experimenting with the design of the musical instrument and that I hoped that I could give a workshop to the youngsters about how to use the website. Garen asked one of the youngsters to invite a group of youngsters for the workshop the next day. Together with Garen, I went to Connie, who showed us the different designs she had created. We placed the lights in each of the designs and compared which of the baskets gave the nicest pattern. The choice we made can be seen in Figure 5.8.

After this decision, Connie left to make ten of those baskets in total. I started experimenting with

the design of the musical instrument. Then Garen walked in and he started talking about traditional Penan instruments. This resulted in one of the most important moments in the entire project, where Garen suggested using a Pagang (a traditional Penan musical instrument) as the foundation for the design. Figure 5.9 shows a pagang being played.

That same day, Garen sent me into the forest, with Bili, to collect the bamboo for the pagang. Then I took on the task to ensure that the electronics could be implemented in a pagang. In order to make this work, I discovered that we needed a platform for the electronics to rest on, and to play the pagang from. I informed Garen about this, after which he started to brainstorm about what this platform could look like. He came up with the idea to use types of woods that were important for the Penan and to use the Bornean rhino in the design.

An important turning point in the engagement of the community was the next day. Garen engaged Bili and his brother, Gajut (an artist), in a brainstorm about the platform. Bili would collect the materials for the platform, I would pay him for this. It was this moment that I started to become nervous. I had no idea how things were valued within the community and I found it difficult to judge how much I should pay. I talked about this with Garen. He then suggested taking the role of dividing the money and the tasks within the project. I agreed to this. From this moment on, Garen was the project manager. After this, we talked about the website and the workshop I was going to involve the youngsters in. It was this conversation that Garen opened up to the idea of having the design probes as tools for the youngsters to create stories with for the website. Seven youngsters took part in the workshop. I first explained to them how the website worked, how they could create an account, how they could post a story and how they could comment on other stories. After this, we held a brainstorm about topics for stories that could be placed on the website. All the stories were about the Penan culture. Some were about different aspects of the material culture; others were about how Penan identity is connected to the environment and specific locations.

I created a constellation of design initiatives diagram for this encounter, which can be seen in Figure 5.10. Most initiatives take place in the musical instrument design activity (9 out of 12). Seven of those nine were initiated through the community's design seeds. I was only involved in three of the nine initiatives in the musical instrument design activity. In the design probe activity there is only one activity, this is the meeting with the youngsters. In the design activity of the lights, we decided on a final design.

5.6 Third Co-creative Encounter

The third part of the co-creative encounters took 31 days in total. This stage of the co-creative encounters started with me having a conversation with Garen and Tariq about the aims of the project. It was then that I realised that the focus had shifted to:

To explore the identity the Long Lamai community wants to present to people from outside.

Timeline

Co-creative Encounter 2

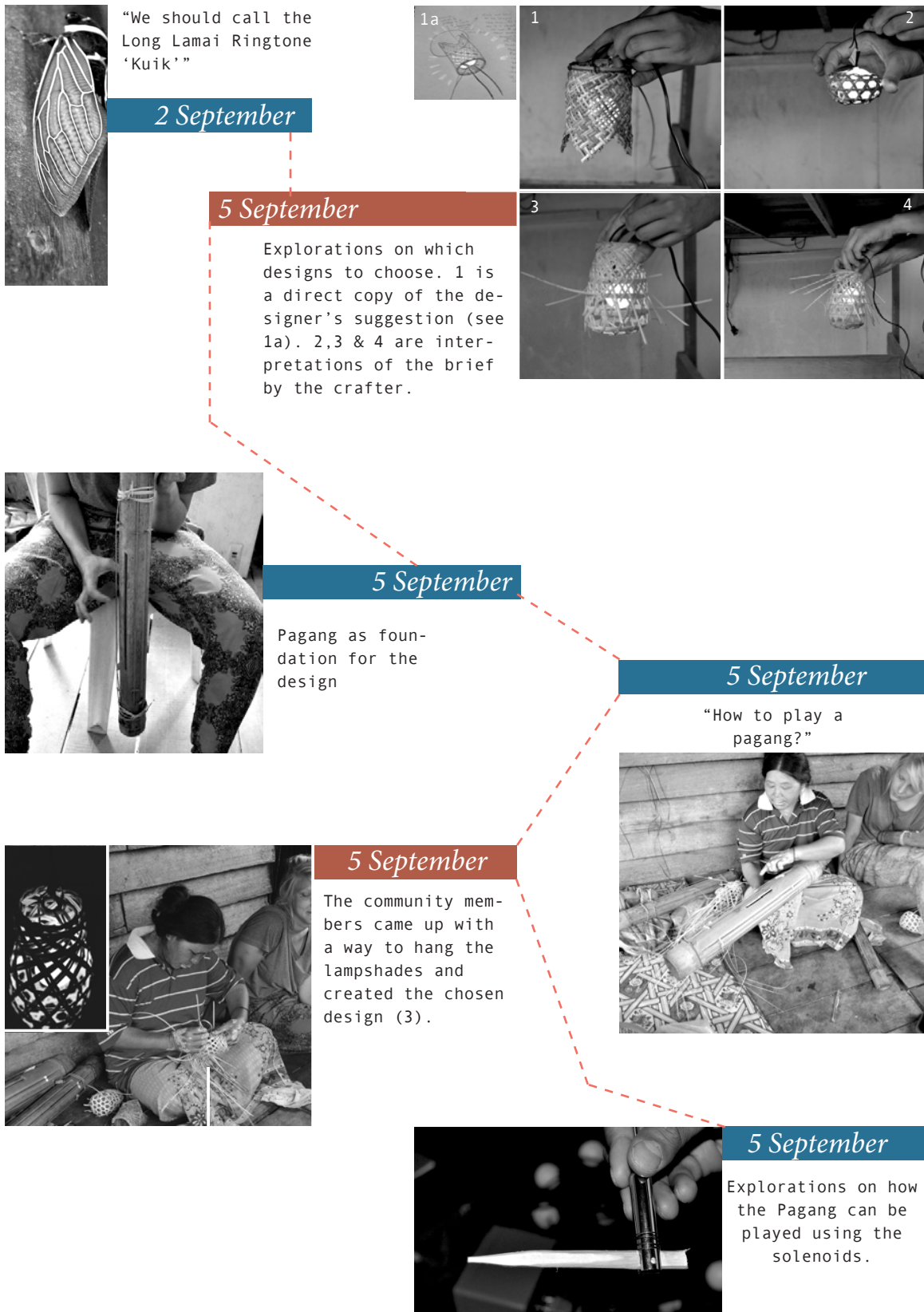


Figure 5.7 - The timeline of the second co-creative encounter visit.

Legend: **Lights** Musical Instrument **Design Probes**

5 September

They wanted to use wood that was meaningful for them for the platform



They wanted to cut the wood according to their traditions and use their symbolism.



5 September

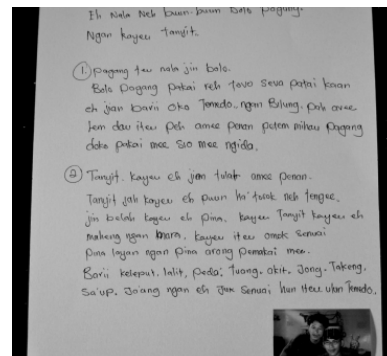
Their brainstorm on how the design should look - a Rhino from hard wood on which the pagang can rest.

6 September



They started collecting wood for the design they wanted to make.

6 September



6 September

I organised a workshop in which the youngsters were creating stories about important things in their community. Most stories were about the material culture of

6 September

My interpretation of what I thought they meant (they asked me to make this drawing)



Figure 5.7 (continued) - The timeline of the second co-creative encounter visit.



Figure 5.8 - This design made by Connie is the design that we choose because it had the most beautiful pattern.



Figure 5.9 - Playing the pagang.

In this, technology is a bridge to bring different generations together. The elders contribute to the project by connecting traditional stories to the project. The youngsters and parents actively think about the identity they would like to tell to people from outside.

The consequence of this new direction was that suddenly the design probes fitted very well to the project, because they could serve as tools to create stories with. It was for this reason that we agreed together that the *welcome to Long Lamai* -banner, the *proud to be Penan* -boxes and whatever else seemed appropriate to tell a story with, should be part of the project as well. We agreed that I would organise four workshops in total with the youngsters to perform the design probe activities.

For the technology probes, this stage of the co-creative encounters was mainly about building and finishing the technology probes for exhibiting them at the eBarrio Knowledge fair. In Figure 5.11 I introduce the timeline of my stay.

For the musical instrument, a lot of work still needed to be done. I took on the role to get the electron-

ics working in order to play the traditional pagang electronically and mechanically. All the aesthetic decisions were made by the local designers. The local designers collected materials and cultivated them. I implemented the electronics in the design that they made. I got help in creating the platform for the electronics.

With the lights it was a very different story. It was only the implementation of the electronics that still needed to be done. This also became my role.

I held a workshop every week during my stay with a group of youngsters. During these workshops, we would explore and co-create design probes.

From our explorations about the role of the pagang in the Penan culture came that Garen considered it important to record the traditional pagang songs with their poetical lyrics. From this, ideas about a musical evening and about teaching the young girls (and me) to play the pagang arose, as well as the idea of recording the songs. It seemed as if Garen wanted me to initiate the recording of the songs and I asked some of the girls to help me. However, I experienced resistance in this process. I do not know whether this resistance was caused by people not being interested, or whether it was inappropriate for me to do be involved in the recording. It might have been that I got too enthusiastic about this, that I took the initiative, while this was not fitting to the ways of the community. Meanwhile, Garen had started his own initiative of recording the lyrics of the songs.

The constellation of design initiatives for this encounter can be seen in Figure 5.12. There are many different design activities in this stage: design probe activities, the musical instrument, the lights and recording the pagang stories. Most initiatives take place in the musical instrument category. Many people are involved in this activity. Four of the initiatives are initiated through the community's design seeds. In the design probe activity there are also many local designers involved. All initiatives result from my design seeds or from an interaction between the community's and my design seeds. I am the only one involved in the lights design activity.

5.7 Outcome

The co-creative encounters led to a series of co-designed objects. The emphasis during those encounters was placed on the technology probes. Those probes were a website, the musical instrument technology probe that would play every time someone accessed the website and light bulbs that would start glowing every time a new message was posted on the website. To explain the exhibits and the process of creating them, a movie was created. Together, they became the exhibits for the eBario knowledge fair.

The lights became Batu'Nue, which means: fireflies in the Penan language. Figure 5.13 shows the

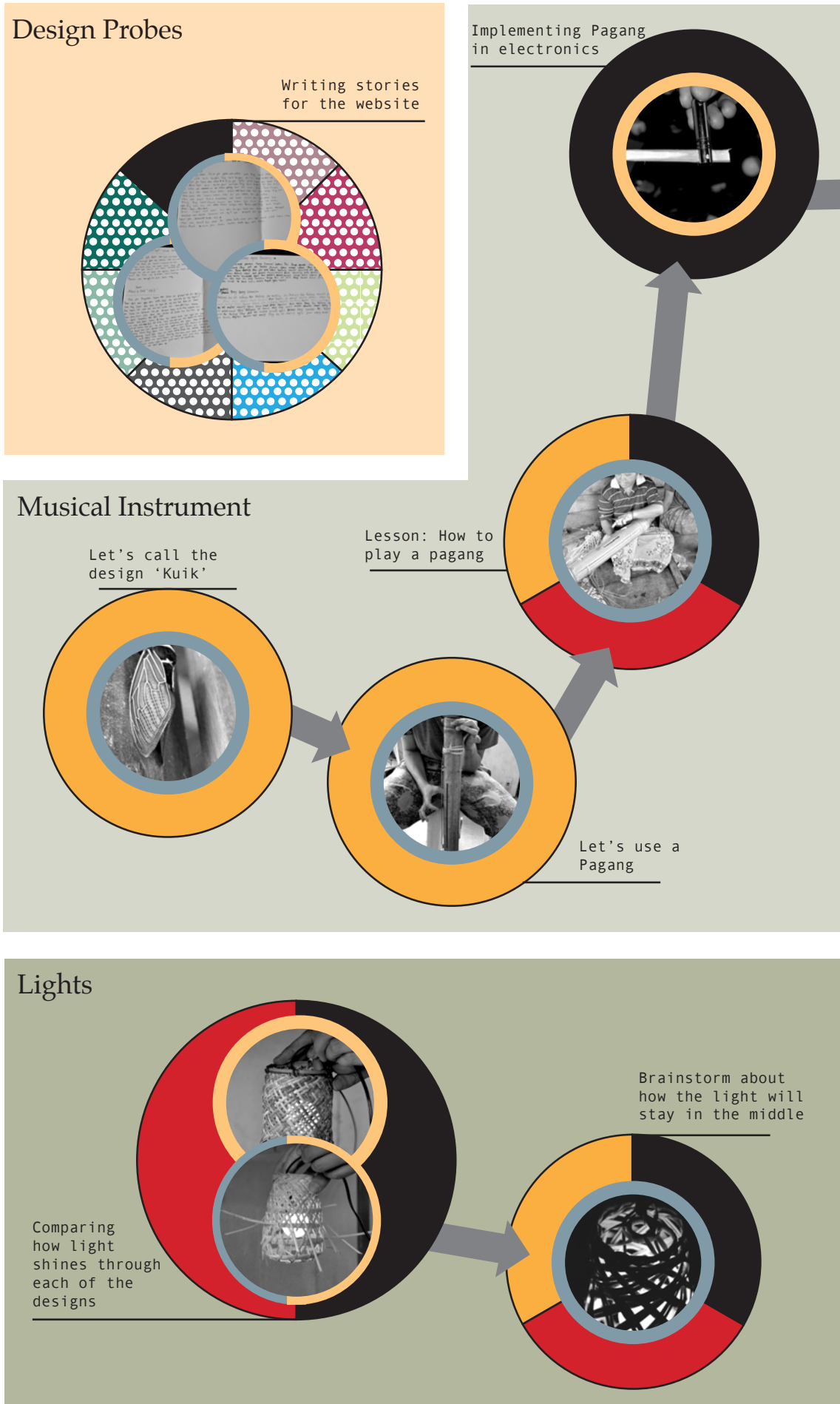
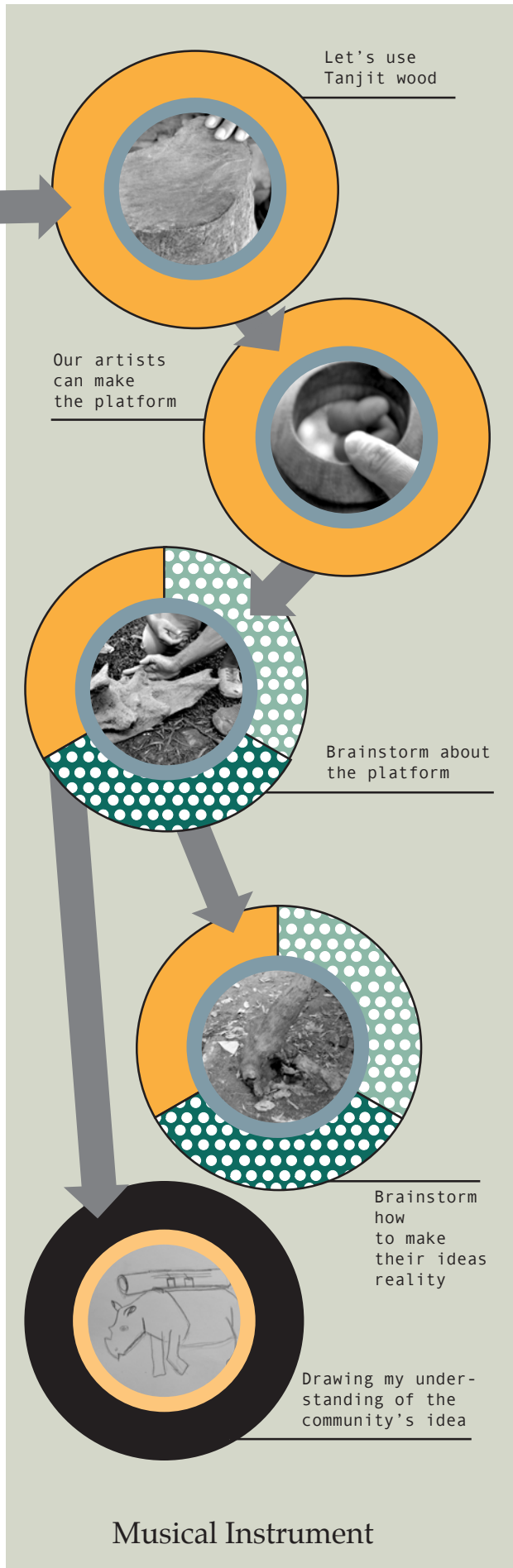


Figure 5.10 - Constellation of Design Initiative Diagram - Second co-creative encounter.



Legend:

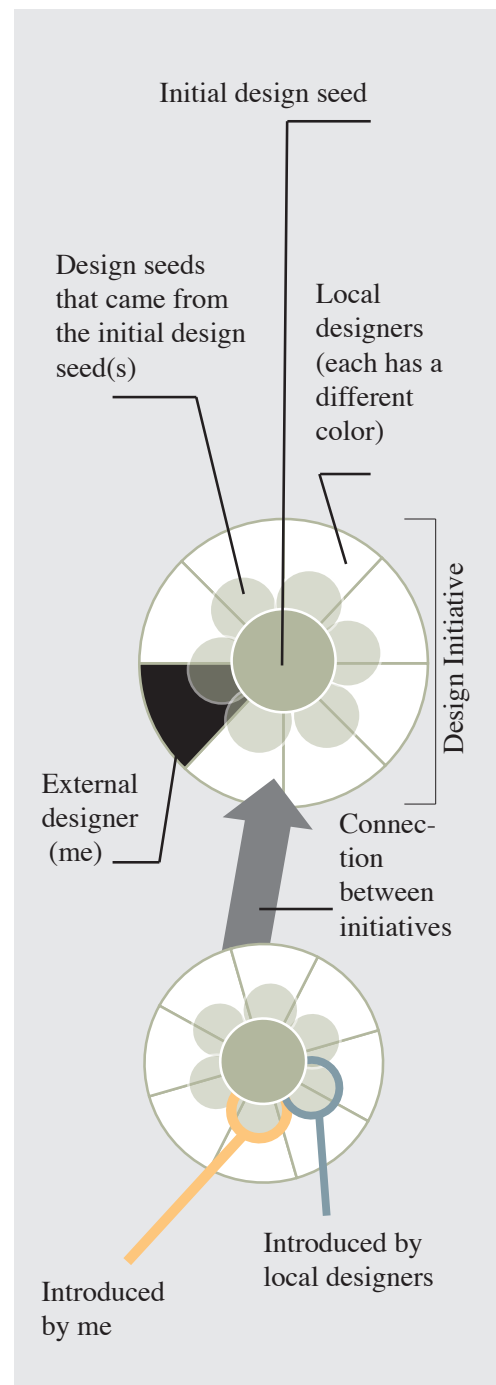


Figure 5.10 (continued) - Constellation of Design Initiative Diagram - Second co-creative encounter.

Timeline

Co-creative Encounter 3

Legenda

- Lights
- Musical Instrument
- Design Probes

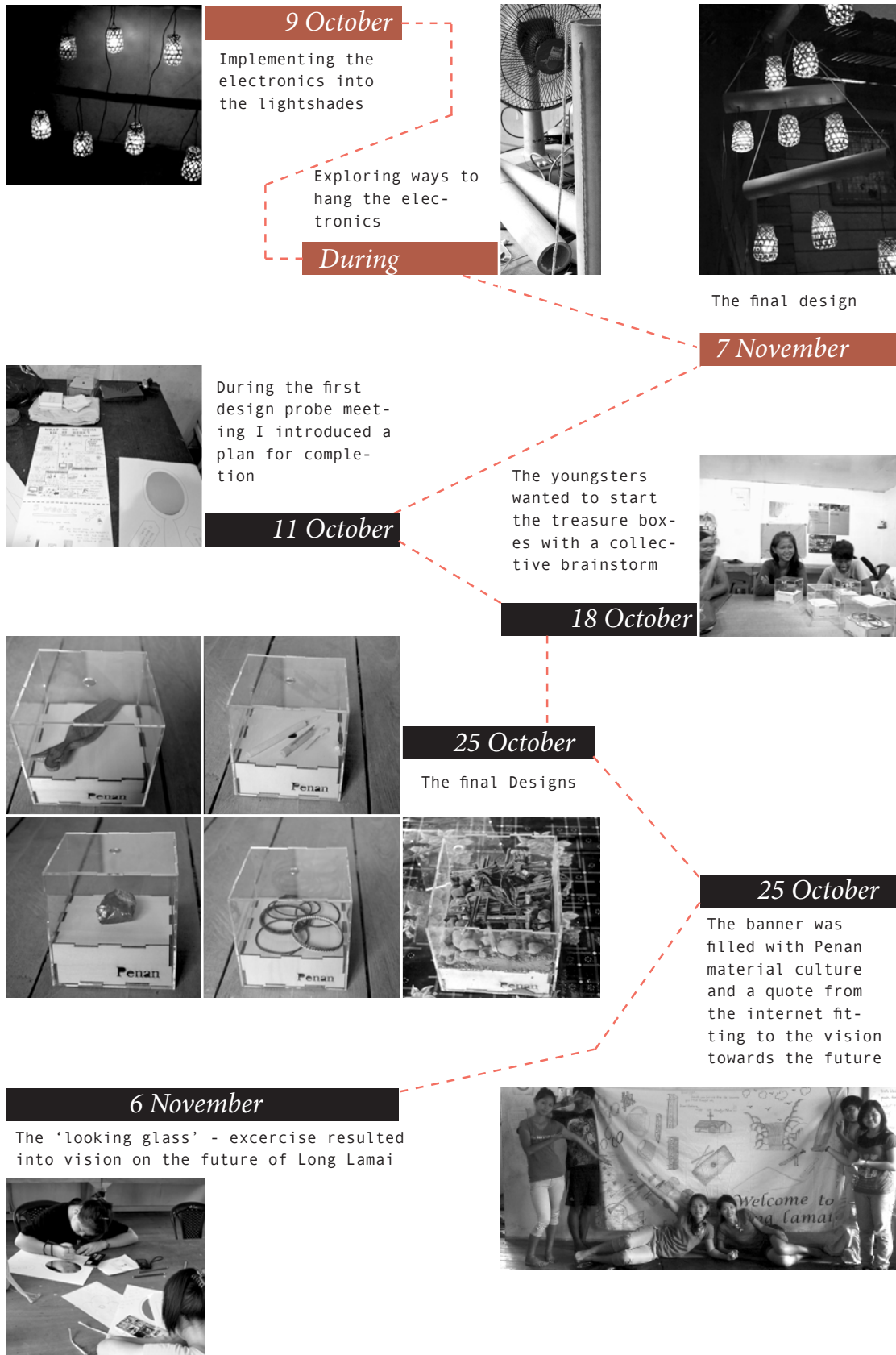


Figure 5.11 - The timeline of the third co-creative encounter visit.

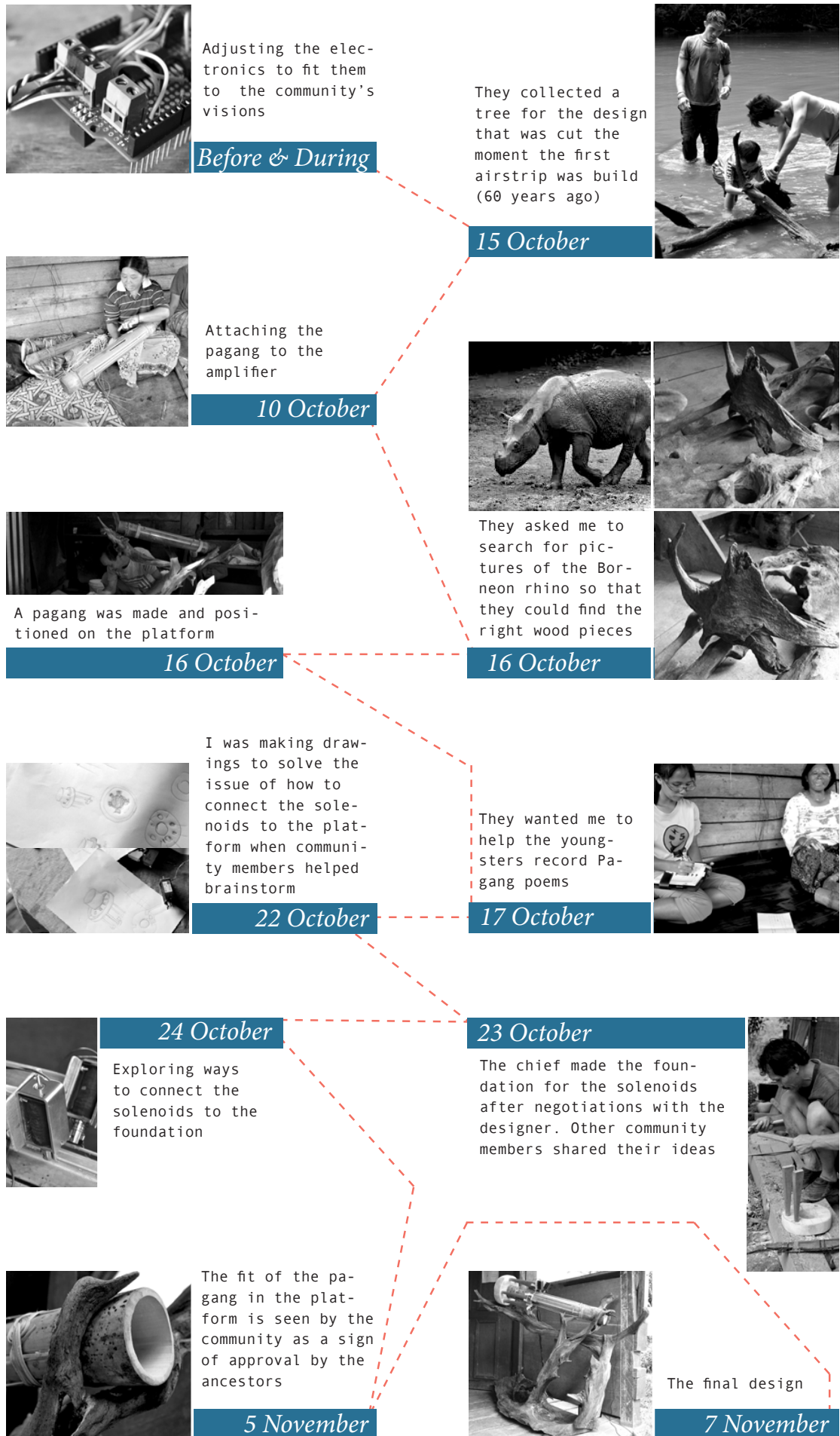


Figure 5.11 (continued) - The timeline of the third co-creative encounter visit.

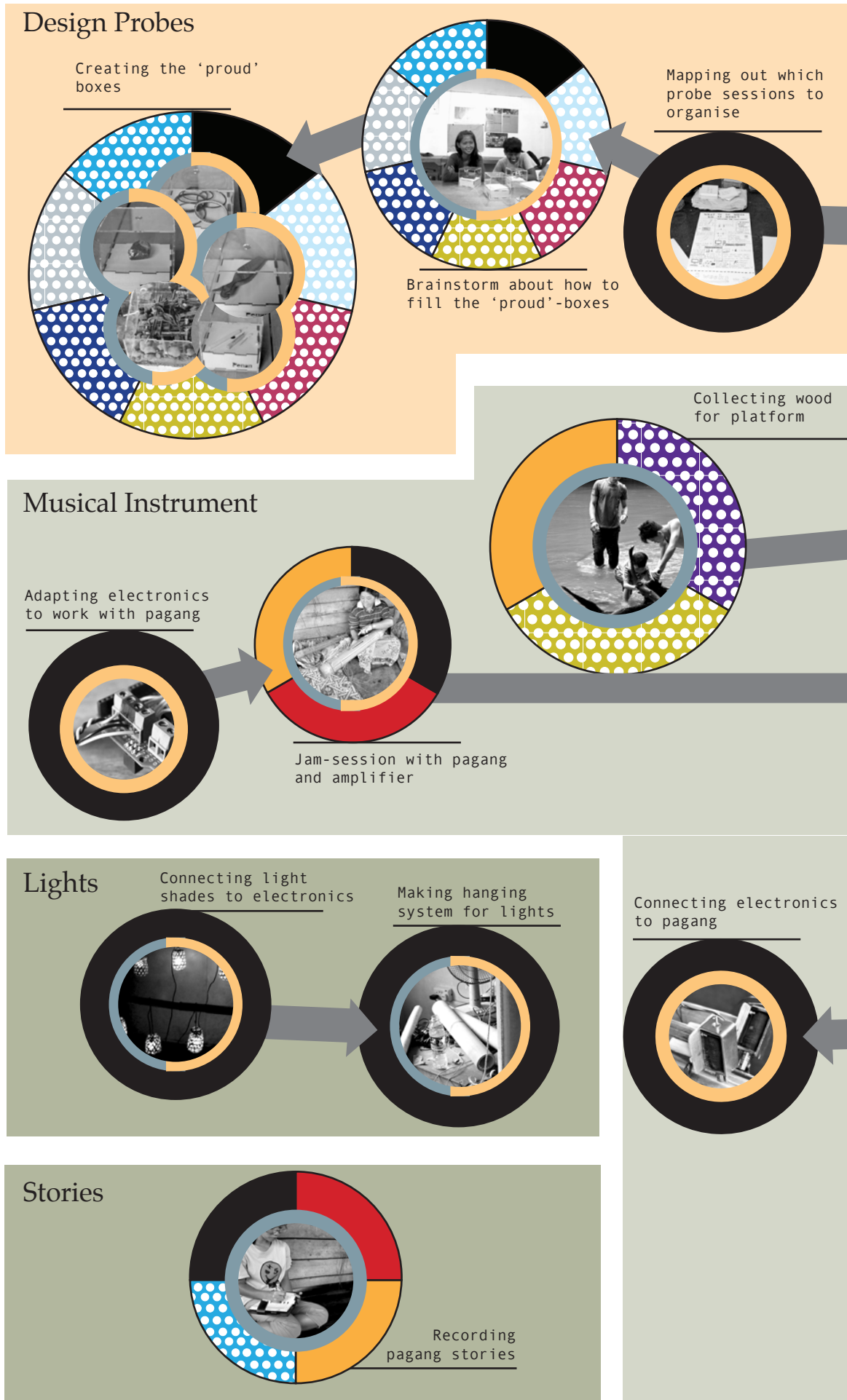


Figure 5.12 - Constellation of Design Initiative Diagram - Third co-creative encounter.

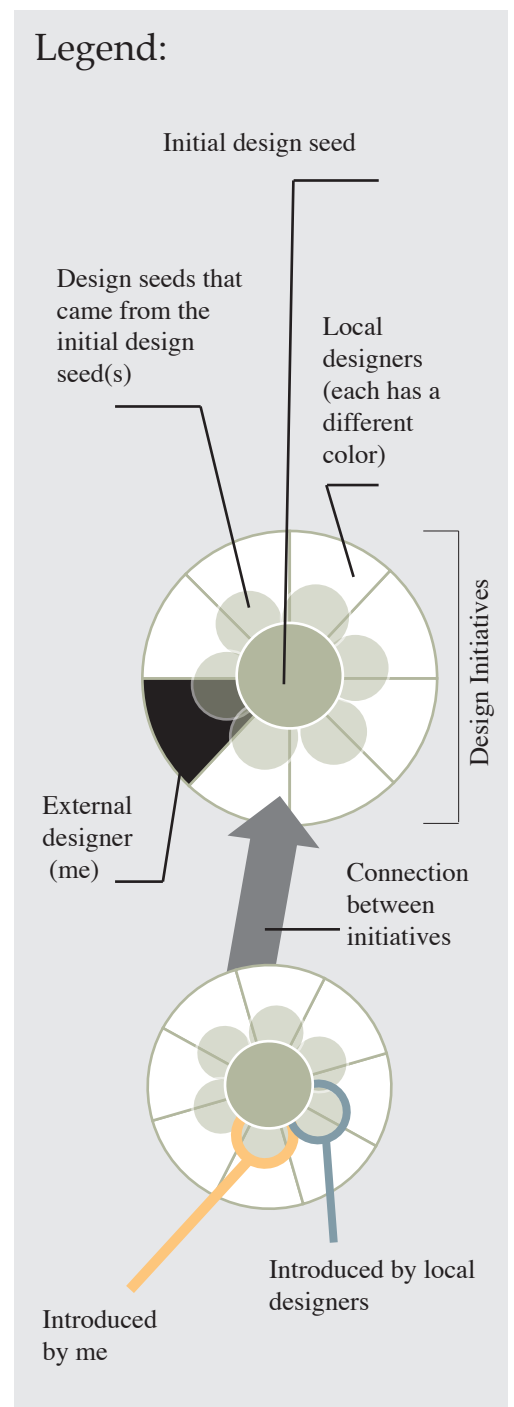
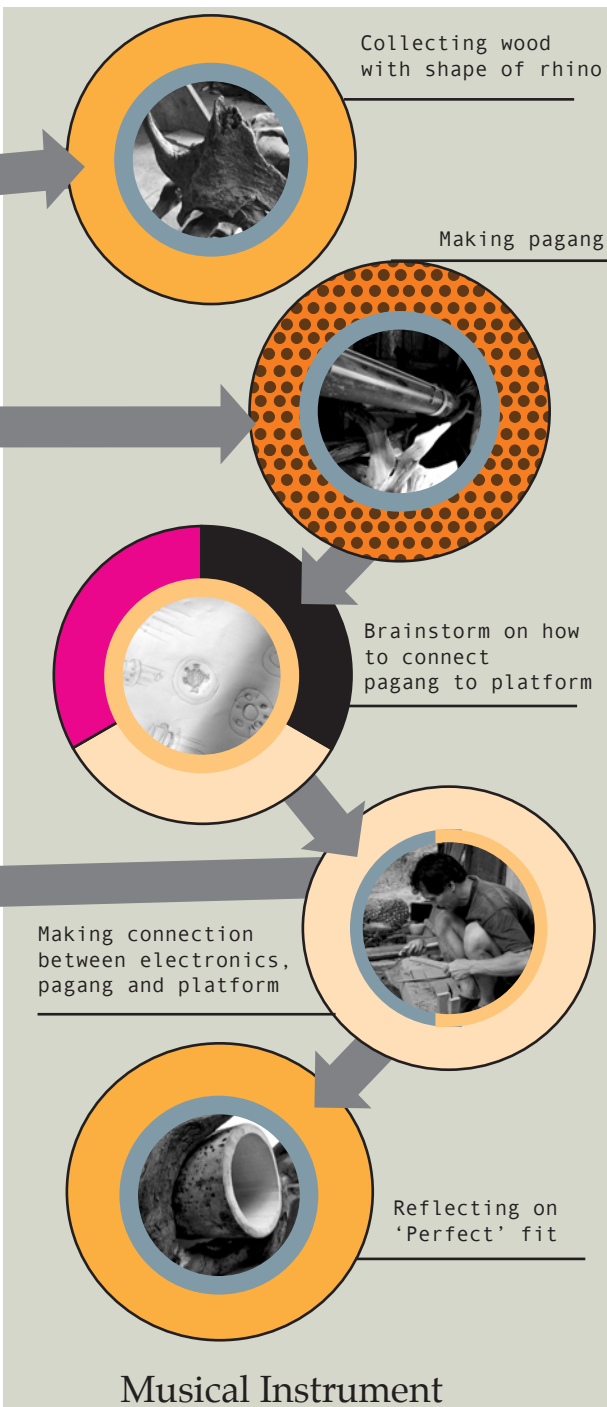
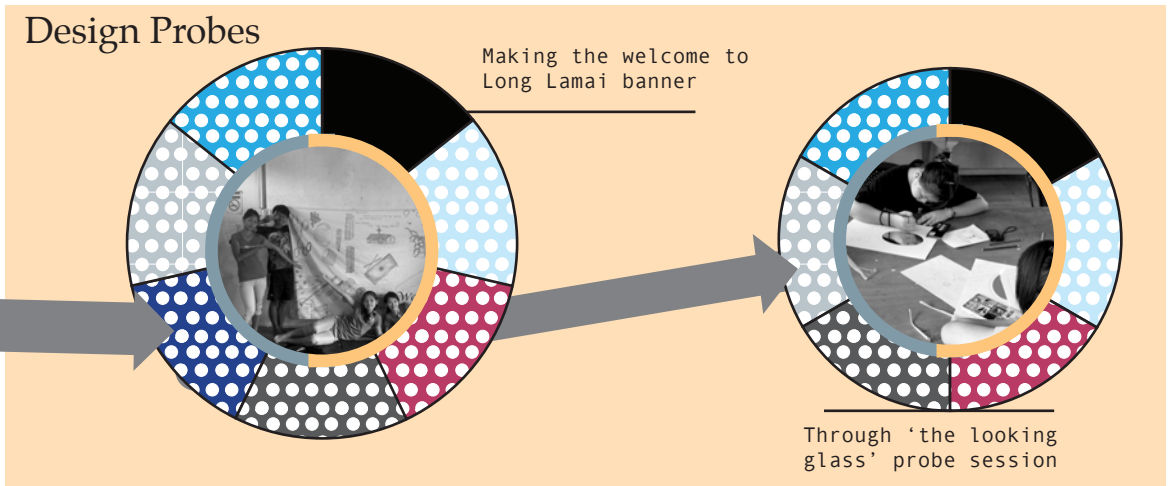


Figure 5.12 (continued) - Constellation of Design Initiative Diagram - Third co-creative encounter.

final design. The baskets reflect traditional basket-making techniques. The Penan are famous for their basket making. The lampshades were novel, but based on traditional baskets. The materials directly represent the Penan's vivid relationship to the rain forest.

The musical instrument exhibit became 'Lakat Tesen' (the name of the king of the cicadas), see Figure 5.14. In the technological transformation of the Pagang, the community wanted to show that they are open to change, but that they will take life lessons from their ancestors.

This is the story that was placed on the website:

We are Long Lamai. We are a Penan community, in the heart of Borneo, Malaysia.

We would like to introduce ourselves to you, because we have a story to tell.

Our ancestors, and some of our elders lived the nomadic life. They lived in and from the rainforest. They moved from place to place depending on what the rainforest had to offer them.

Times have changed and we are now living in a village called Long Lamai.

We abandoned our nomadic life in 1945, and started a settled life. The oldest house that you will find in Long Lamai is the longhouse that was build during the settlement of the village.

We are surrounded by beautiful landscapes and have a waterfall close by. This waterfall is called Bateu Petutup. It is a beautiful place to swim and have a picnic.

During a normal day, we spend a lot of time outside, either on the farm where we farm rice, our main food, or in the forest, were we go to hunt (using both traditional and modern techniques) or to collect vegetables. Also our materials that we use for our handicrafts come from the forest.

In the way we live, we embrace the motto:

Dear Past, thank you for all the life lessons you have taught us. Dear Future, we are ready now!!

We are creative, we embrace traditions but also look to the future to innovate our ways, in order to make them fit better to the times we live in. This can be seen in our handicrafts, which are made with care and craftsmanship, embracing traditional techniques, but also looking at current trends. Also in the way we hunt (some of us still use blow-



Figure 5.13 - Batu' Nue – The light shades.



Figure 5.14 - Lakat Tesen – the Pagang is resting on the platform.

pipes, just like our ancestors – and we will always use things from our past) and in the mode of transport that we have adapted to fit our new lives and its environment. We live near the river and because of that, we use boats, made in the community, as our main mode of transport.

While we still have a strong connection to the rainforest and the life our ancestors lived in there, we also have a strong connection to the outside world. We have Internet, through a Telecenter provided by UNIMAS (Universiti of Malaysia Sarawak). We embrace technology and look at what it can offer us.

At the moment that you opened this website, within Long Lamai, a traditional instrument started playing, using electronics and new technologies to operate the instrument. For us, this is what Long Lamai is about. Through innovation, and embracing technology, while still keeping to our traditions as the foundation of who we are, we make sure that we learn from the past, while being ready for the future.

Not all the design probes were used. None of the extra design initiatives that I had prepared prior to my visit to Sarawak, Borneo, were performed. The design probes that were used, were used in design probe workshops with a group of youngsters. The youngsters created the proud to be Penan - boxes. The final results can be seen in Figure 5.15.

Those boxes are now exhibited in the community's museum that has been started after I left. The - *welcome to Long Lamai* - banner was also used during one of the workshops. The story above is a result of the topics introduced in this probe activity. From this probe also came the motto: '*Dear Past, thank you for all the life lessons you have taught us. Dear Future, we are ready now!!*'. Figure 5.16 shows the result.

We also explored the '*through the looking glass*'- probe, the '*What makes ... so different...*' – Frames and '*A day in my life*' diaries. However, they were not selected for the exhibition and they were not evaluated by the elders. Therefore, I will not introduce them here.

5.8 Exhibitions

During this stage, the design probes and the technology probes resulting in the musical instrument and the fireflies (lights) were presented.

There were three presentation moments. One was a co-reflection with the youngsters during which



Figure 5.15 - The *Proud to be Penan* -boxes. Resin from a tree is placed in the first box. This resin is used to make fire and was very important for the nomadic Penan. The second box displays a blowpipe. The third photo shows the blowpipe in close up, in order to show the detail and precision of it. The third box shows typical Penan bracelets. The fourth box shows a nomadic Penan hut. The fifth box shows a Sapé, an instrument used by several indigenous Sarawakian cultures.



Figure 5.16 - The *welcome to Long Lamai* -banner.

we talked about the designs they had created, the process of creating the design probes and the value of those for the community. Another was a co-reflective pilot-exhibition with the community members. This event was prior to the eBarrio knowledge fair in order to collectively decide what to present at the fair and how to present it. The final presentation moment was the eBarrio knowledge fair.

During the pilot exhibition, the community came up with narratives for the exhibits, taking their investment in production of the artefacts to a new level. However, it were not only the people who had taken part in the production of the artefacts, but also other people, who - until that point - had had nothing to do with the project that appropriated the designs. This appropriation into the local culture happened spontaneously as people were considering how to account for their work. They took ownership of the exhibits, which surfaced during the final exhibition at the eBarrio knowledge fair. The community took responsibility for setting up the exhibition and exhibits and for introducing it to the audience. Reactions from the audience were enthusiastic, appreciative of the community for having started the project. At the end of the exhibition, the community representatives approached me to let me know how proud they were of the exhibits and how important it had been for them to show their community in a positive light.

Figure 5.17 shows the design constellation diagram of this design stage. As can be seen, many people got involved through the pilot exhibition. After that, I am not involved anymore in any of the design initiatives.

5.9 Constellations of Design Initiatives - an Overview

In Figure 4.6 (Chapter 4.4.2), I have presented the constellation of design initiatives for my preliminary visit to Long Lamai.

As can be seen in Figure 5.5 (Section 5.4.1), Figure 5.9 (Section 5.5.1), Figure 5.11 (Section 5.6) and Figure 5.16 (Section 5.8), I also created a constellation of design initiatives for all of the other stages in the design process. Each of the constellations of design initiatives I created using the steps as introduced in Chapter 4.3.6

The preliminary visits were all about defining the design direction and about the technology probes (as this was the explored design direction). It is thus that I reflect on the preliminary visits as fitting within the design direction and technology probes design activity. Highlights from this constellation are, as introduced in Chapter 4.4.7:

- 1) Many different people were involved in the design initiatives
- 2) I am not involved in all design initiatives
- 3) Local designers have introduced their own design seeds
- 4) All initiatives were presented to more people during a co-reflective session
- 5) There are relatively a lot of design initiatives

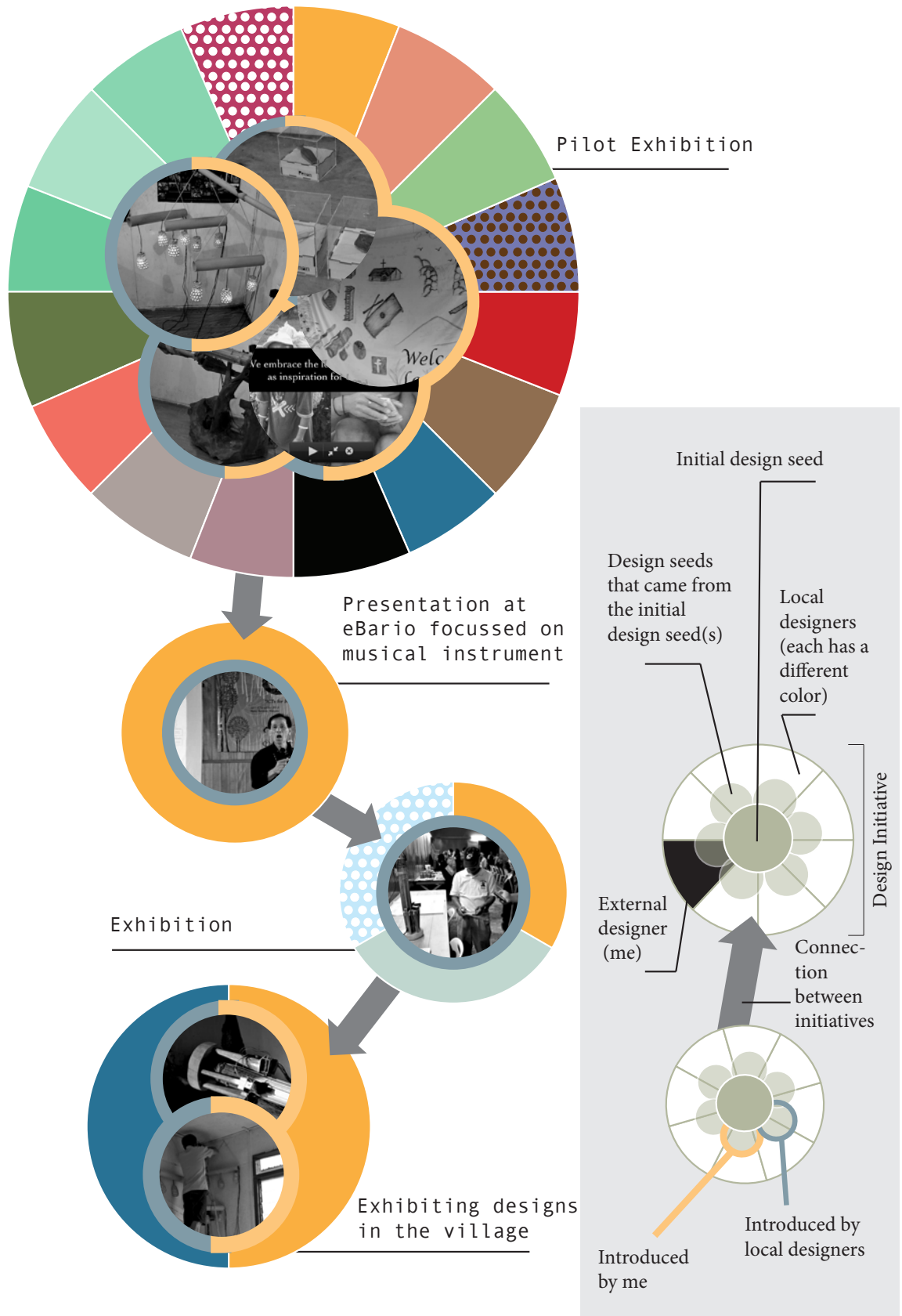


Figure 5.17 - Constellation of Design Initiative Diagram - Exhibitions.

I brought the stages of the co-creative encounters together in an overview of constellations of design initiatives, which resulted in Figure 5.18.

Highlights in this overview are:

- 1) In the musical instruments many design seeds are introduced by the community (visualised by the blue circles in the design initiatives).
- 2) Only in the musical instrument design activity, the community takes sole initiative of the design activity. This can be seen by looking at the different initiatives. I am represented as the black wedge. Only in the musical instrument design activities there are initiatives (12) without a black wedge, which means that I was not involved in those initiatives.
- 3) The musical instrument has, compared to other design activities (design direction: 3, Design probes: 6, Lights: 8, Stories: 1) many design initiatives (23).
- 4) In the design direction, design probe and in the musical instrument design activity, many different people are involved, compared to the other design activities (by counting the different wedges in the initiative circles: design direction: 15, musical instrument: 8, design probes: 7 in comparison to lights: 3 and stories: 3)
- 5) The design direction and the exhibition stage (combining design probes, musical instrument and the lights) result in co-reflective sessions, in which a broader group of the community is involved in the deciding on accepting or rejecting the design activity.

5.10 Conclusions

In this chapter I have described each of the co-creative encounters. I also described the exhibition phase that came from the co-creative encounters, as well as the outcome of the co-creative encounters. My role in this was that of an external designer. The descriptions of the encounters are important to understand the sensitivities of this case study and the effects these had on my understandings of dynamics of a respectful design space. Since I used a research-through-design approach in which the research is informed by the experience of designing. I have provided an overview of the different constellations of design initiatives. I will come back on this in Chapter 8.1.5, where I will combine the insights of the constellations of the design initiatives with the insights retrieved through the analytical process. In the upcoming Chapters (6 and 7) I will describe the analytical process.

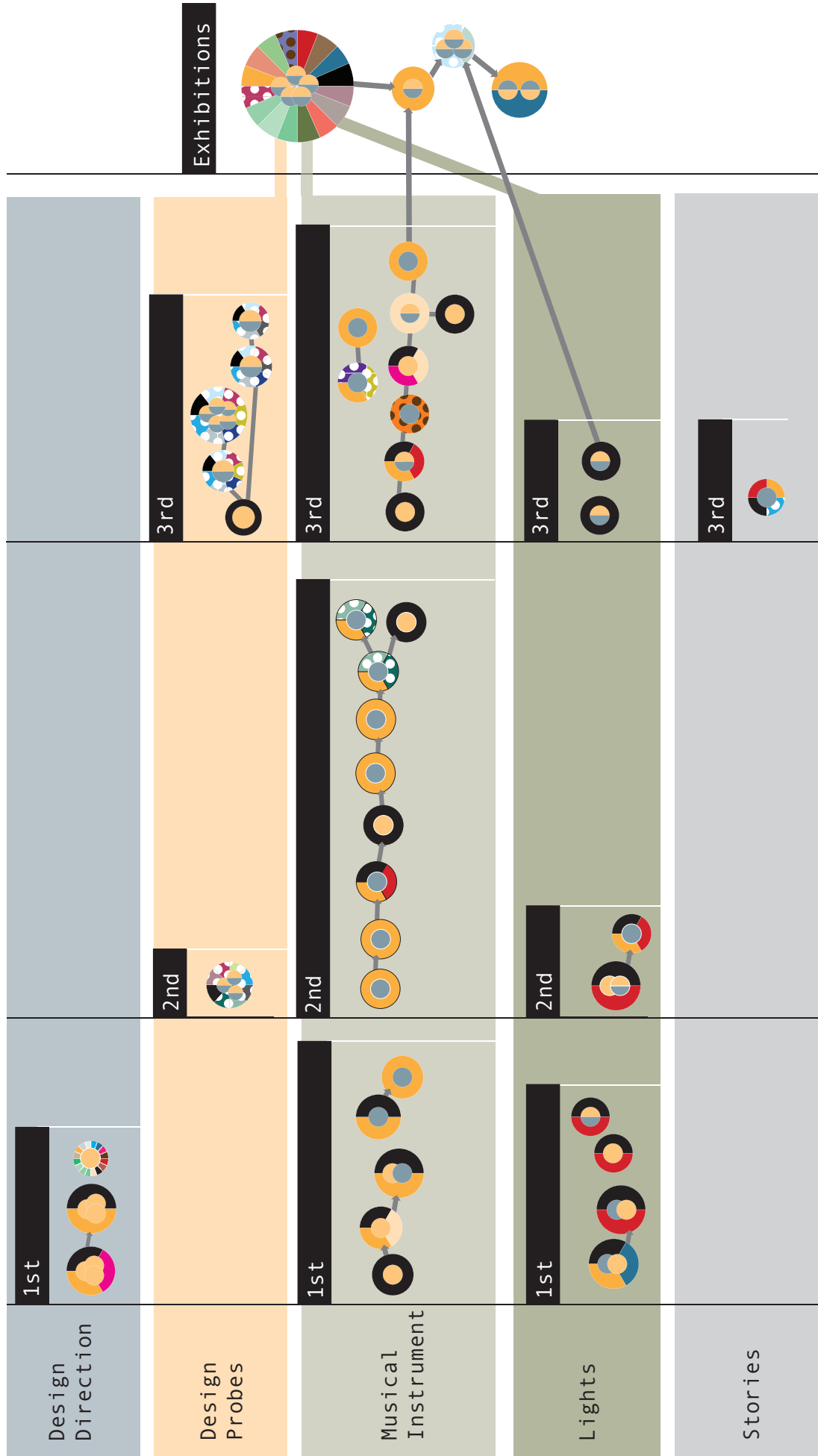


Figure 5.18 - An overview of the constellations of design initiatives of the co-creative encounters.

Six | Roles - Interpretation Part 1

The following two chapters focus on the research process through which I aimed to understand the dynamics of a respectful design space. Furthermore, it focuses on understanding the attitudes a respectful design researcher should adopt in order to facilitate such a space.

As outlined in Chapter 3, the research diaries, visual research diaries, timelines, annotated portfolios and pattern sheets shaped the virtual worlds in which I performed a reflection-in-action process. Figure 3.15 and Figure 3.16, in Section 3.4.4 gave an overview of those virtual worlds. In Figure 6.1 I have presented which of those virtual worlds are discussed in this chapter and how they contributed to the aims of understanding the dynamics of a respectful design space and attitudes that should be adopted to provide such a space.

The data that informed the research process came from the design case study as described in the previous chapters (4 & 5). This data consisted of research diaries and visual diaries. From those research diaries and visual diaries I subtracted codes through annotation and content analysis. These I positioned in timelines (for the written research diaries) and annotated portfolios (for the visual research diaries). The codes arose from the coding concepts, as introduced in Chapter 3. Those coding concepts were:

- Ownership:
 - Design participation;
 - Indicators of Ownership;
- Novel Expression;
- Design Seeds;
- Indigenous Knowledge glimpses.

These coding concepts reflect different lenses through which respectful design can be understood. From these annotations and timelines I created pattern sheets. These pattern sheets gave an overview per coding concepts. This overview showed the appearance and intensity of the codes for each of the coding concepts within the design process. Through these pattern sheets, I determined dynamics of a respectful design space.

The structure of this chapter will be as follows: I firstly focus on the annotated portfolios and time-

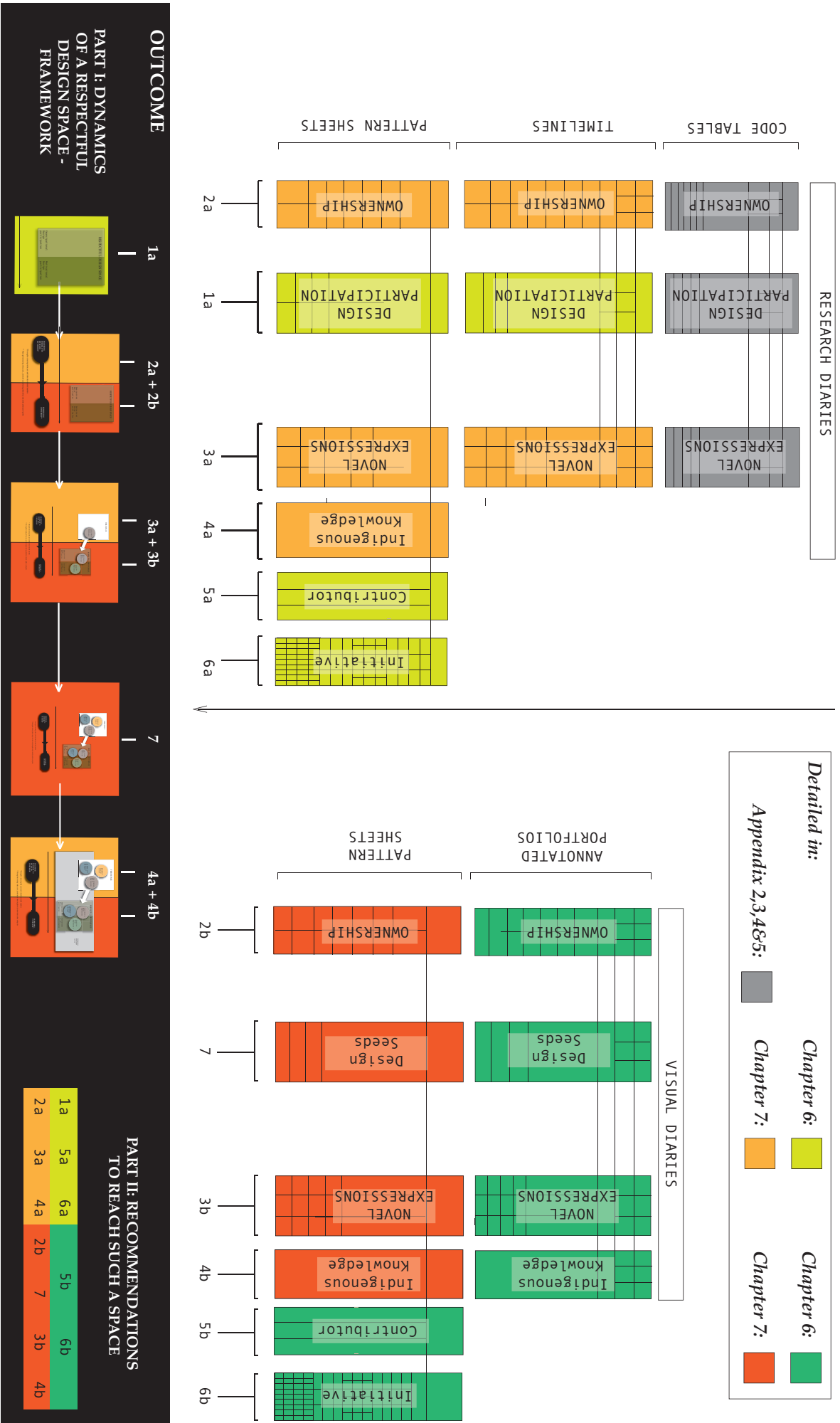


Figure 6.1 - The virtual worlds that are discussed in this chapter and in Chapter 7.

lines that I subtracted through annotation and content analysis from the research and visual diaries (Section 6.1). I then will go into detail of who took initiative in the design process. After this, I will introduce the pattern sheets for the design participation coding concept. In the next chapter I will focus on the other coding concepts: indicators of ownership, insights into the indigenous knowledge system, the design seeds and novel expressions. From this I will synthesise dynamics of a respectful design space and recommendations on how to reach those dynamics. I will conclude this chapter by providing an initial respectful design space framework. In the next chapter (Chapter 7) I will extend this framework and I will focus on the attitudes that supported respectful design spaces to emerge.

6.1 The Annotated Portfolios and Timeline Sheets

In this section I will present the annotated portfolios and timeline sheets that arose from the coding through the content analysis and the annotating. I made a timeline and an annotated portfolio for each of the stages of the design process. This meant that there is a timeline and an annotated portfolio for the preliminary visit, the first co-creative encounter, the second co-creative encounter, the third co-creative encounter and the exhibition stage.

The timeline of the research diary is vertically divided in three different sections. These sections represent the coding concepts that resulted from literature (e.g. design participation, indicators of ownership and novel expressions). The hexagons on the timeline represent codes of these concepts. A light blue hexagon for example represents an increasing value ownership code. In each coding concept section there is also a distinction made between the design activities. For example, the light orange row represents the design probe design activity. When a hexagon (code) is positioned on this design probe design activity, it means that this code arose during a design probe related activity. The horizontal axis of the timeline shows the dates. Each column represents a day.

The annotated portfolio shows the material culture that played a role in this part of the project. In Figure 6.2 I explicate the annotated portfolios.

Each annotated portfolio includes photos that show something the community or I introduced, something that was created or something that was used to communicate a certain aspect. The annotated portfolios are also timelines. Above each photo, the date during which the photo was taken is shown. The dotted line connects the moments the photos represent in a chronological order. Above each moment - in the bar that contains the date - is clarified to which design activity this entity is connected. For example, a light orange bar represents a design probe design activity. Following from the reflection-in-action process, the annotated portfolios are annotated using three different coding concepts: indicators of ownership, novel expressions and design seeds. Design participation is not included, as it did not appear to be expressed through material culture directly. Information about the initiator (e.g

**FRAGMENT OF ANNOTATED
PORTFOLIO WITH EXPLANATIONS.**

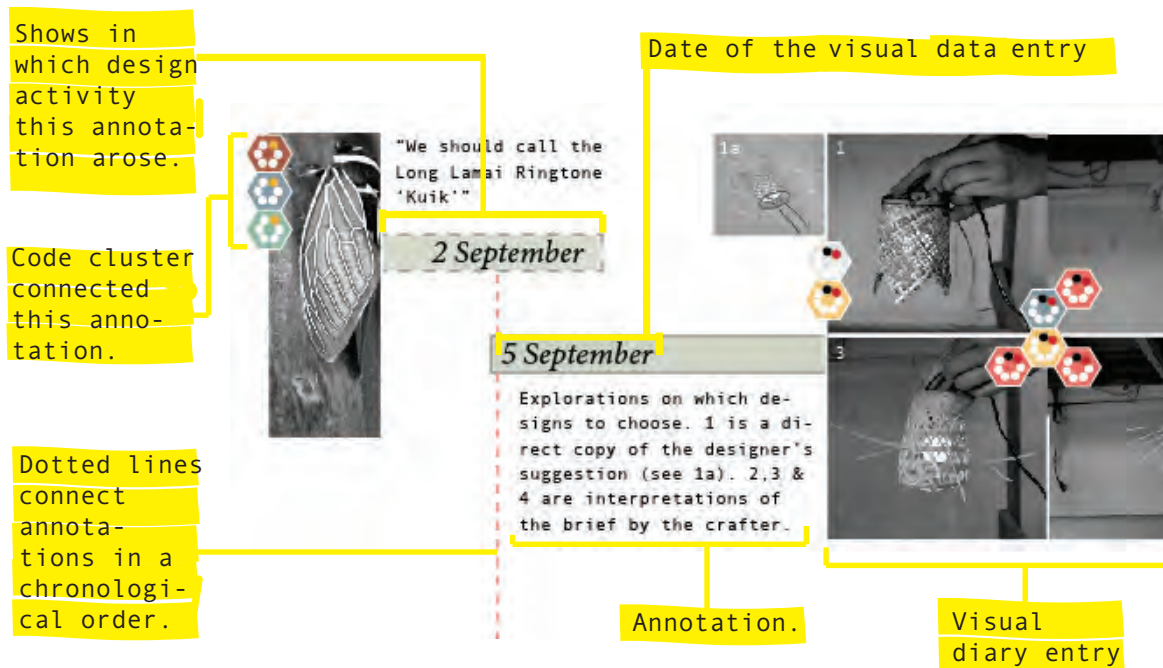


Figure 6.2 - The annotated portfolios explained.

the community, through an interaction between the community and me or solely me) and the specific contributor is connected to each annotation. Each of the photos can contain multiple annotations and thus multiple hexagons. Annotations can shape different clusters (e.g hexagons can be connected). This means that those annotations are related.

In the following sections, I will summarise each stage of the design process: the preliminary visit, the first, second and third co-creative encounters, and the exhibitions. For each, I will provide the timeline and the annotated portfolio.

6.1.1 The Preliminary Visit

The preliminary visit was my first introduction to the Long Lamai community. As explained in Chapter 4, the preliminary visits were undertaken a year before the co-creative encounters took place. I only focus on my encounters with Long Lamai, as this was the community I focused the project on. The visit to Long Lamai was ten days. The focus lay on exploring whether the community perceived benefit in starting a project with me. Through the use of design probes, we collectively explored design directions. Figure 6.3 shows the annotated portfolio of this visit. Figure 6.4 shows the timeline from the research diary for this visit.

6.1.2 First Co-Creative Encounter

The first part of the co-creative encounters was a visit of fifteen days. As mentioned in Chapter 5.4, this first part of the creative encounters was mostly focussed around establishing what the project should be like. It was about determining what we were going to do and in which way. Albeit it was

never framed like this, there was a resistance from the community to engage in the project as I proposed it. This resistance arose most probably due to the project direction, as I had proposed, being taboo (I outline the nature of this taboo later in the chapter). Additionally, it is possible that the type of design participation that I was pushing contributed to the resistance. The resistance, combined with my own reflections on the design participation made the project shift direction. Due to the taboo, the design probes that I introduced were temporarily set aside by me, with the thought that maybe they could be useful later on. Unlike the design probes, the technology probes were embraced by the community. Already during this stage, we (local designers and me) started to work on the musical instrument and the lights. Figure 6.5 shows the annotated portfolio of this visit. Figure 6.6 shows the timeline from the research diary for this visit.

6.1.3 Second Co-Creative Encounter

This eight-day-visit, was completely different from the previous. Unlike in the previous co-creative encounter now the community showed enthusiasm and initiative towards the project. Especially the musical instrument received a lot of attention. The community gave input and came up with ideas for what the musical instrument should look like. Furthermore, there was a decision made on the final design of the light shades and I gave a workshop on the potential of the website. It was decided that the design probes could be used as inspiration for stories. The youngsters could make those stories, although they would need to be checked by the elders before placing them on the website.

Perhaps the most important thing that happened was that one of the community members, the research manager, Garen, offered to take over the management role of the project from me. With that, the community became more directly involved. Figure 6.7 shows the annotated portfolio of this visit. Figure 6.8 shows the timeline from the research diary for this visit.

6.1.4 Third Co-Creative Encounter

During this longer visit of 31 days, the focus was on building the concepts that we had envisioned during the previous visit. The community already had performed the work for the lights - the only thing that still needed to be done was to implement the electronics into it. I thus focussed on implementing the electronics in the lights. For the musical instrument, the last visit had been about envisioning what the musical instrument could be like, now our task was to make it reality. Since the community took charge of the design process of the musical instrument, I was not really involved in deciding on the final design. Instead, my focus lay on getting the electronics to work with the designs they came up with. Through this shift in responsibility, the type of design participation changed towards a more community-driven participation. The aim was to finish the lights, the musical instrument and some of the probes before the eBarrio conference. I held design probe sessions, together with a group of youngsters, during which we would collectively address the design probes. These probes were used to shape a story about Long Lamai for the conference as well as for a wider audience outside the community that we hoped to reach through the website. Figure 6.9 shows the annotated portfolio of this visit. Figure 6.10 shows the timeline from the research diary for this visit.

Annotated Portfolio Preliminary Visit

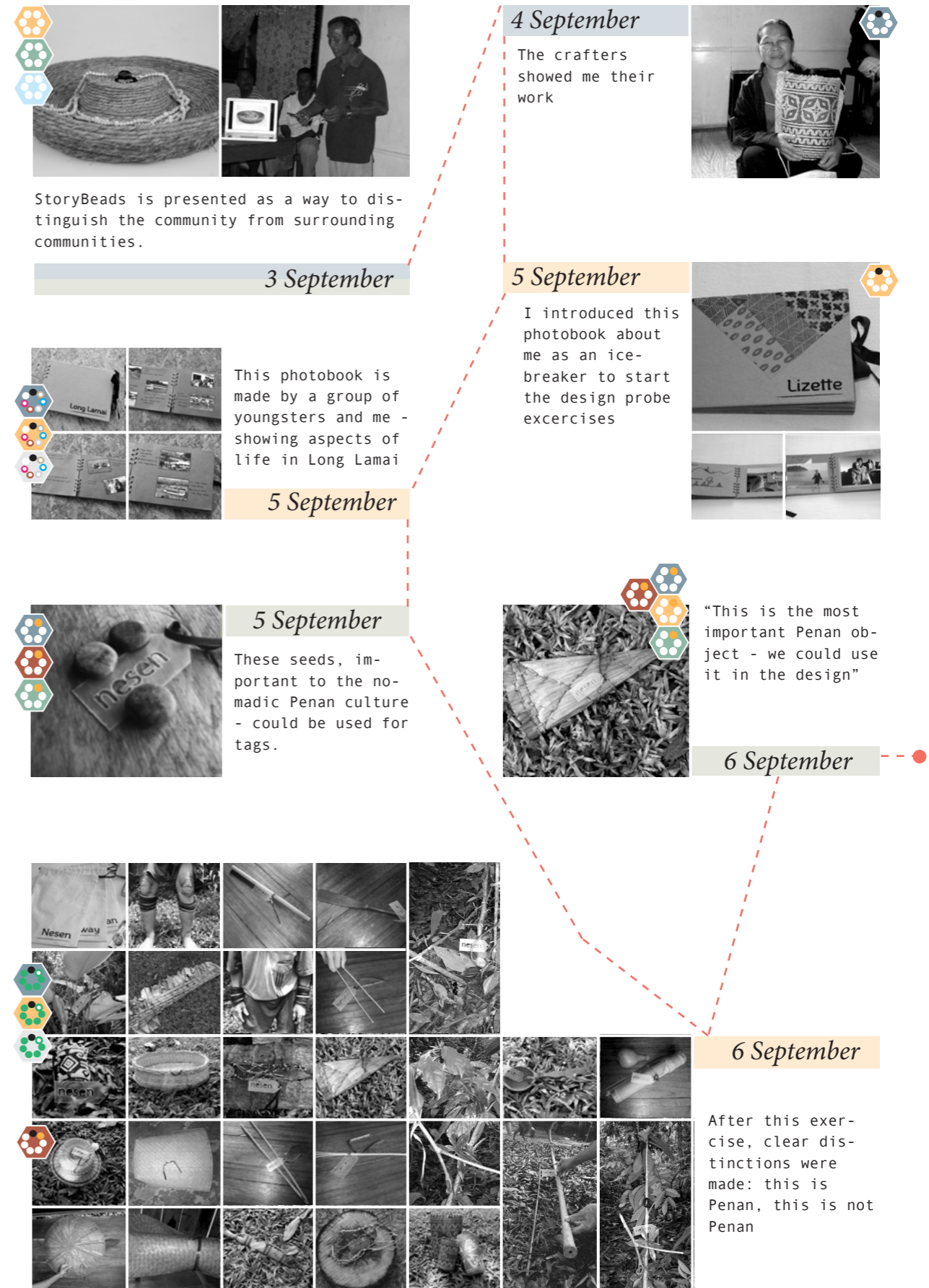
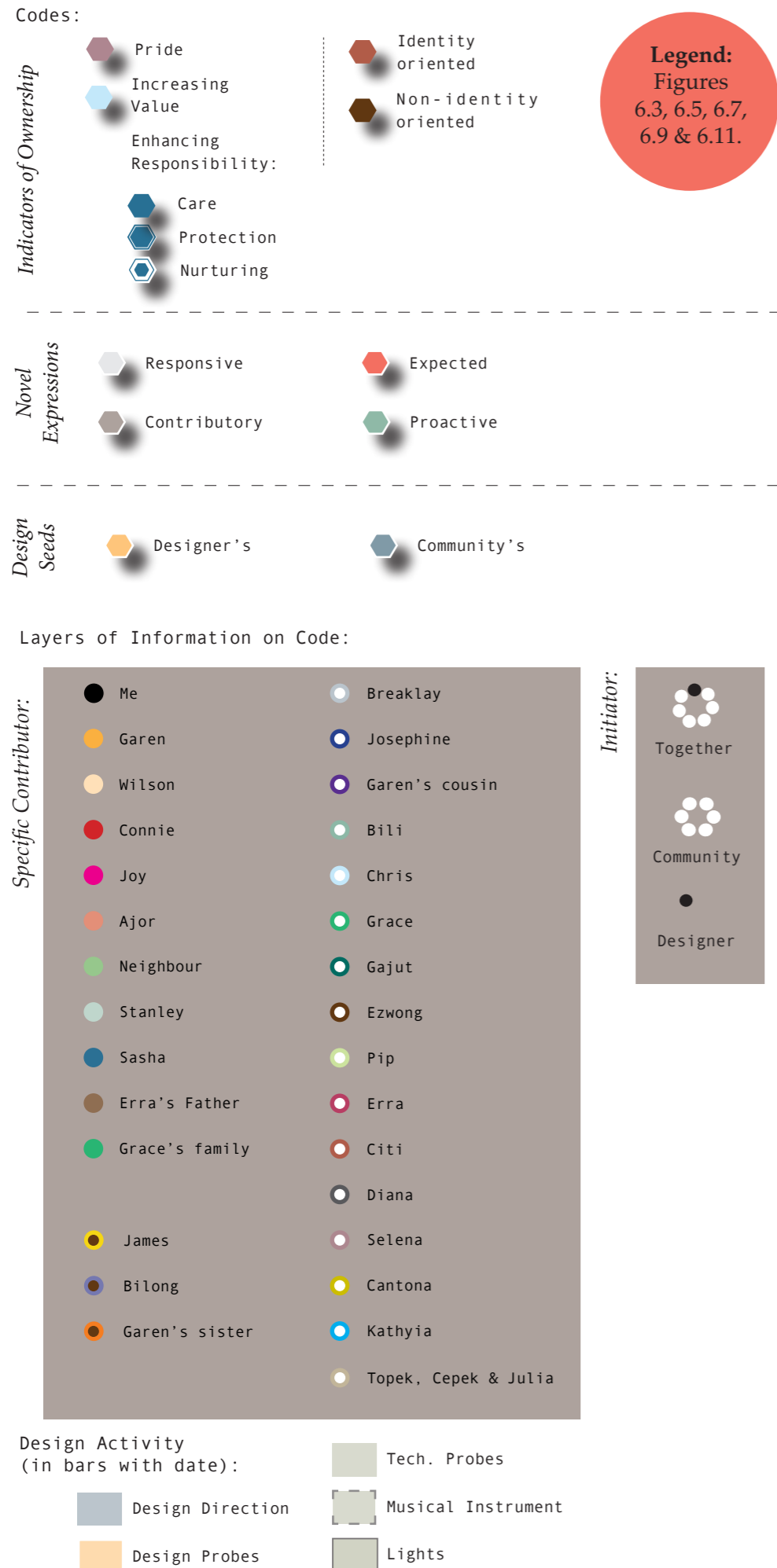


Figure 6.3 - The annotated portfolio of the preliminary visit to Long Lamai. Legend can be found on the left.

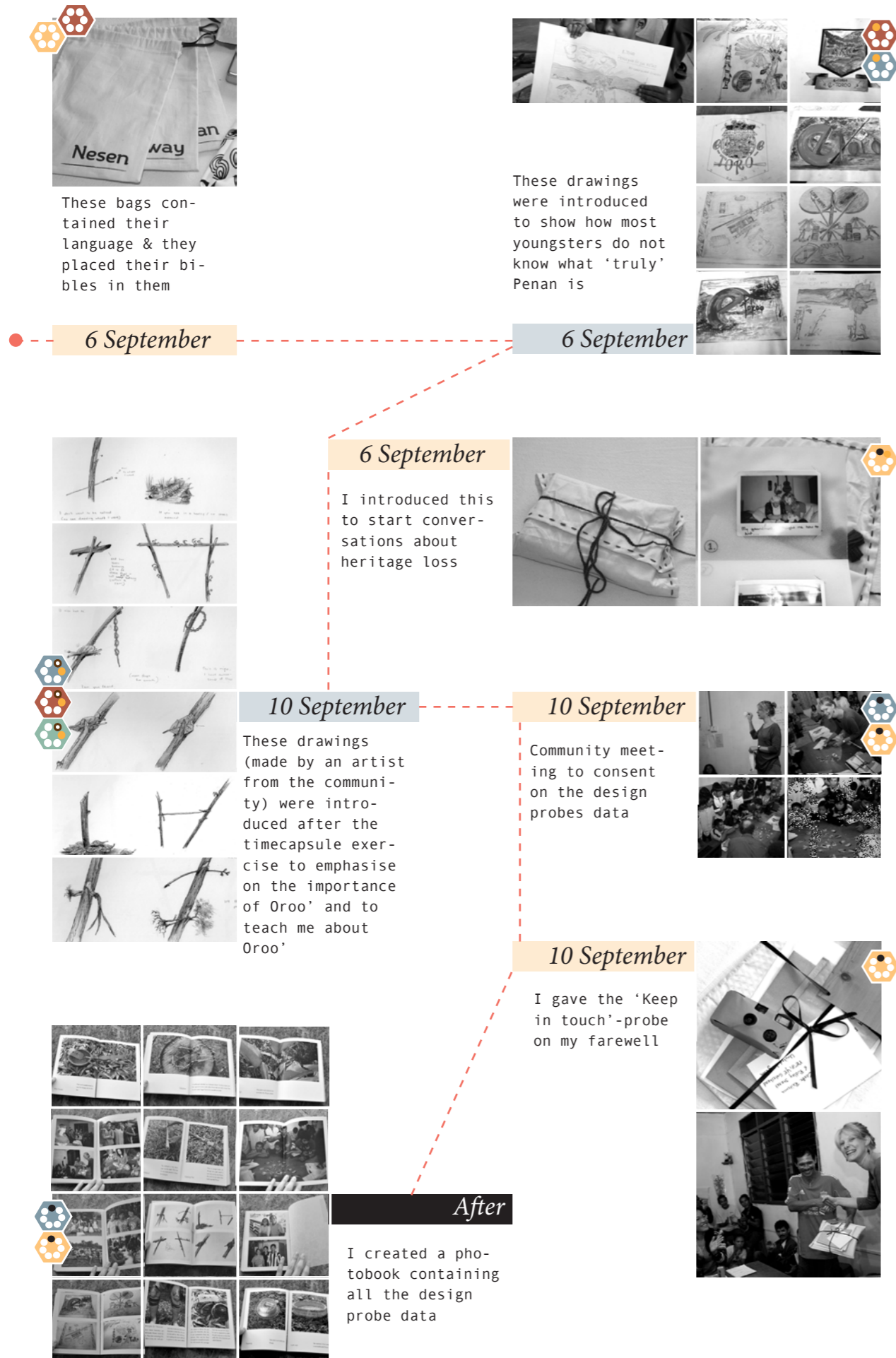


Figure 6.3 (continued) - The annotated portfolio of the preliminary visit to Long Lamai. Legend can be found on page 154.

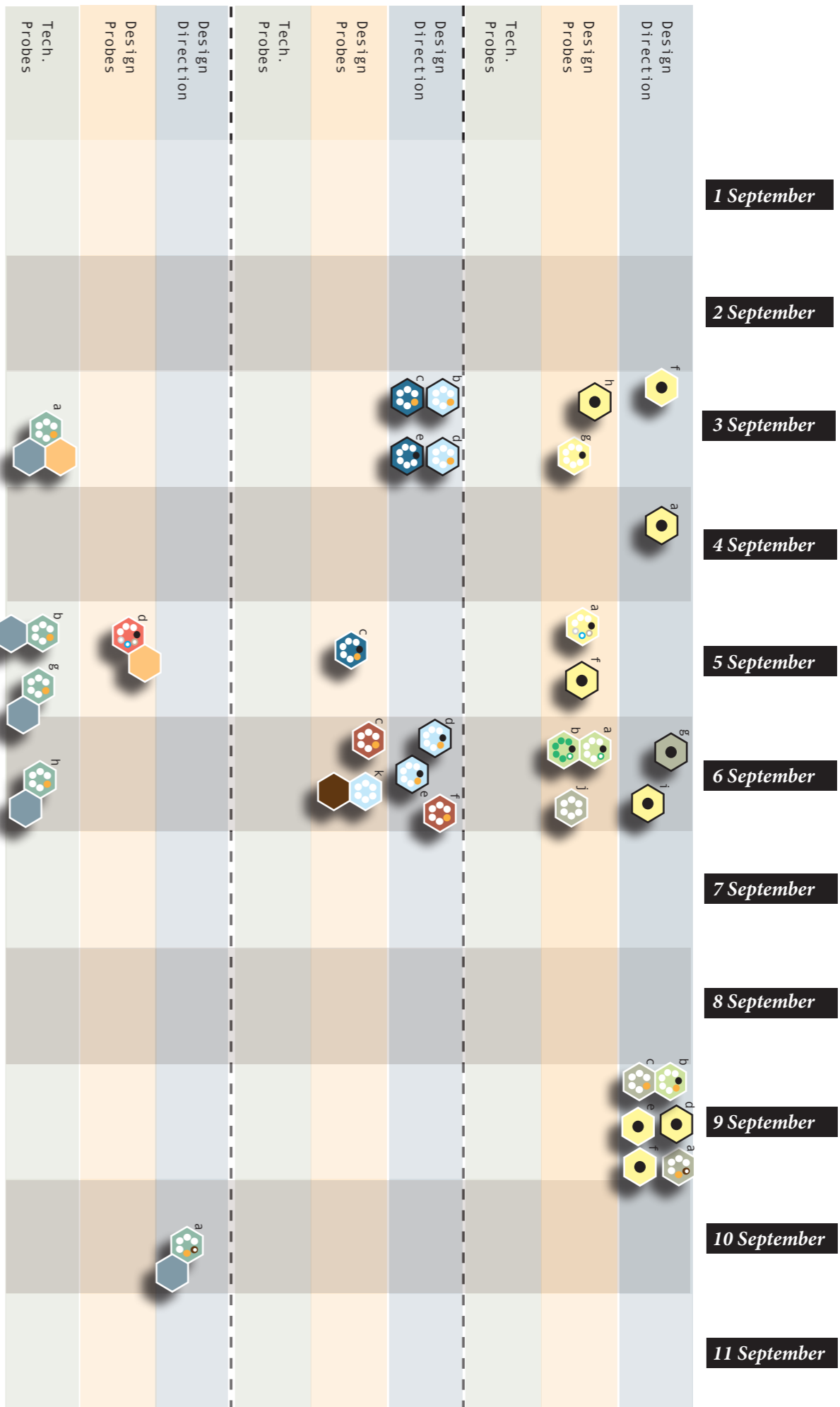


Figure 6.4 - The content analysis timeline of the preliminary visit to Long Lamai. Legend can be found below.

Codes:

Design Participation

- Innovation Designer only
- Collaboration Designer-driven
- Emancipation Community-driven
- Motivation Community only

Indicators of Ownership

- Pride
- Increasing Value
- Enhancing Responsibility:
- Care
- Protection
- Nurturing
- Identity oriented
- Non-identity oriented

Layers of Information on Code:

Borders:

- Reflection
- Action
- Enquiry
- Expression
- No Ownership
- No Ownership (reflection)
- Reflection
- Legal Ownership

On Codes

Initiator:

- Together
- Community
- Designer

Specific Contributor:

- Me
- Garen
- Wilson
- Connie
- Joy
- Ajor
- Neighbour
- Stanley
- Sasha
- Erra's Father
- Grace's family
- Breaklay
- Josephine
- Garen's cousin
- Billi
- Chris
- Grace
- Gajut
- Ezwoong
- Pip
- Erra
- Citti
- Diana
- Selena
- Cantona
- Kathya
- Topek, Cepek & Julia
- James
- Bliong
- Garen's sister

Design Seeds

- Designer's
- Community's

Novel Expressions

- Responsive
- Contributory
- Expected
- Proactive

Legend:
 Figures 6.4, 6.6, 6.8, 6.10 & 6.12.

6.1.5 Exhibitions

The aim of the project became for the community to present the designs (e.g. The musical instrument, the lights and the website) at a research event in a neighbouring community. This research event was the eBario knowledge fair, organised by ISITI, of the University of Malaysia Sarawak. It was this research event that we were working towards. The exhibition stage of the project, as presented within this section, came after the designs had been created. In total this phase took seventeen days. The focus lay on the preparation for the research event by means of two co-reflective sessions, the eBario knowledge fair and the week after the fair, which was the wrap-up phase of the project. Especially the co-reflective sessions were of major importance for the broader community to get to know the designs and to appropriate them. Before, only a selective group worked on the project. Through the co-reflective sessions, the project was presented by this dedicated group to a broader audience within the community. Through the co-reflective sessions, the elders could decide how and whether they agreed on the designs being presented at the knowledge fair. They were positive and a broader group saw value in the project. Thus, we went to the knowledge fair to present the designs in the way that was agreed on. I went to the knowledge fair with two community representatives: Garen, the research manager, and his son Chris. The three of us, and a community member of Long Lamai who happened to be in the neighbouring community where the knowledge fair was held, prepared the exhibition. Together we presented the work. After the knowledge fair, we went back to Long Lamai, where we talked about the fair and the project. The designs were positioned in spaces where they would be visible for everyone.

Figure 6.11 shows the annotated portfolio of this visit. Figure 6.12 shows the timeline from the research diary for this visit.

6.1.6 Pattern Sheets

I created pattern sheets to be able to compare the appearance of the code concepts between each of the stages for each design activity. I made pattern sheets for each of the analytical concepts as well as for the division of initiative and involvement. This meant that I created the pattern sheets as presented in Figure 6.13.

The code concepts in the pattern sheets for design participation, indicators of ownership, novel expressions and design seeds can be compared by the size of the elements representing the codes. A stage is a stay in the community as introduced in the previous sections (6.1.1-6.1.5) of which I made a separate annotated portfolio and content analysis timeline. Thus, there is a preliminary visit stage, a first co-creative encounter stage, etc. Each of the stages was of a different length. I was not able to make each stage of the same length due to the dynamics of the community, my travel schedule, costs of travelling and weather conditions (since it is not always possible to reach or leave the village due to bad weather). In order to be able to compare each stage (for design participation, ownership, novel expressions and design seeds), I divided the codes by the length of the stay in days. This gave me the

Annotated Portfolio

Co-creative Encounter 1

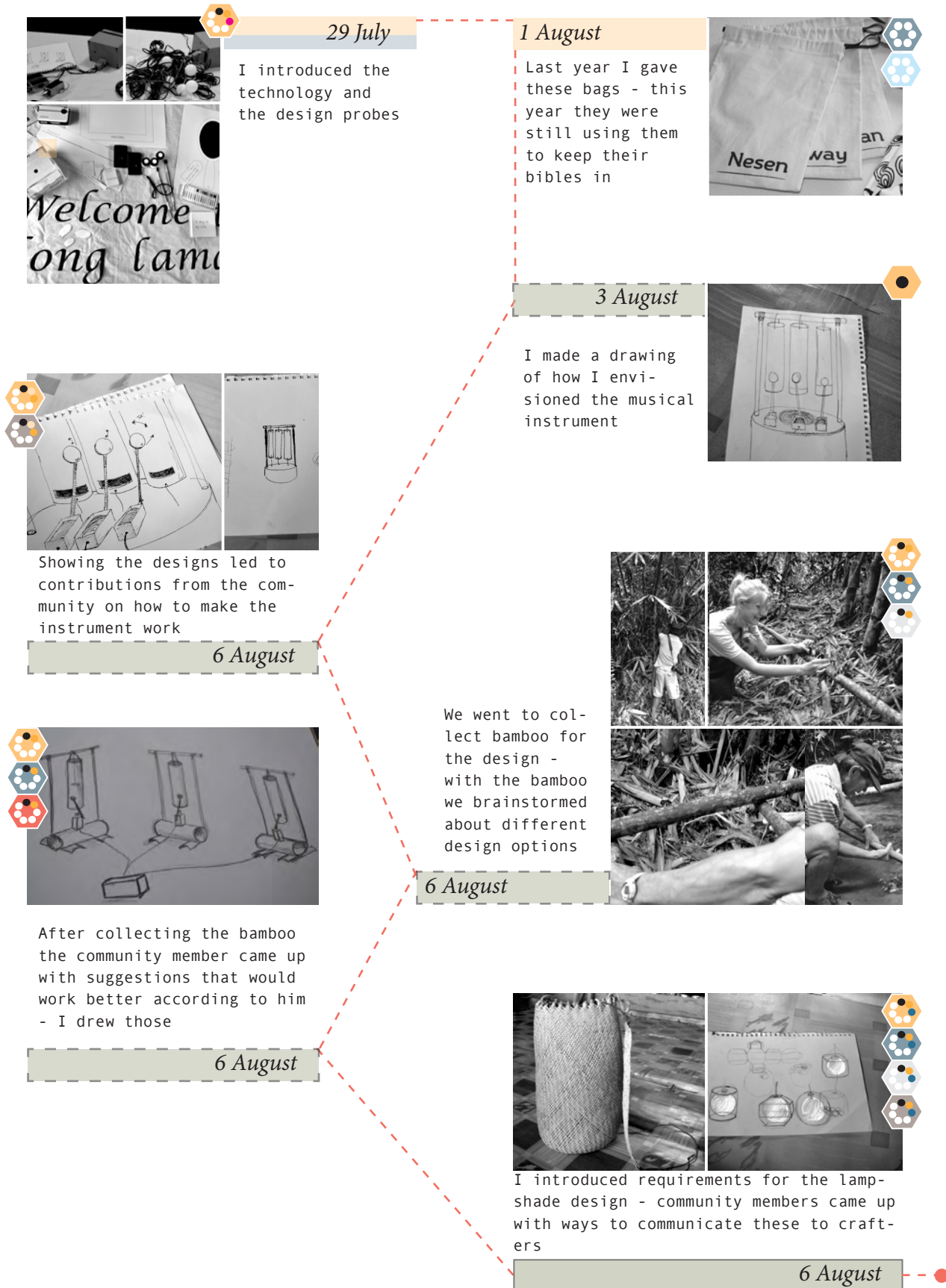


Figure 6.5 - The annotated portfolio of the first co-creative encounters.
Legend can be found next to Figure 6.3.

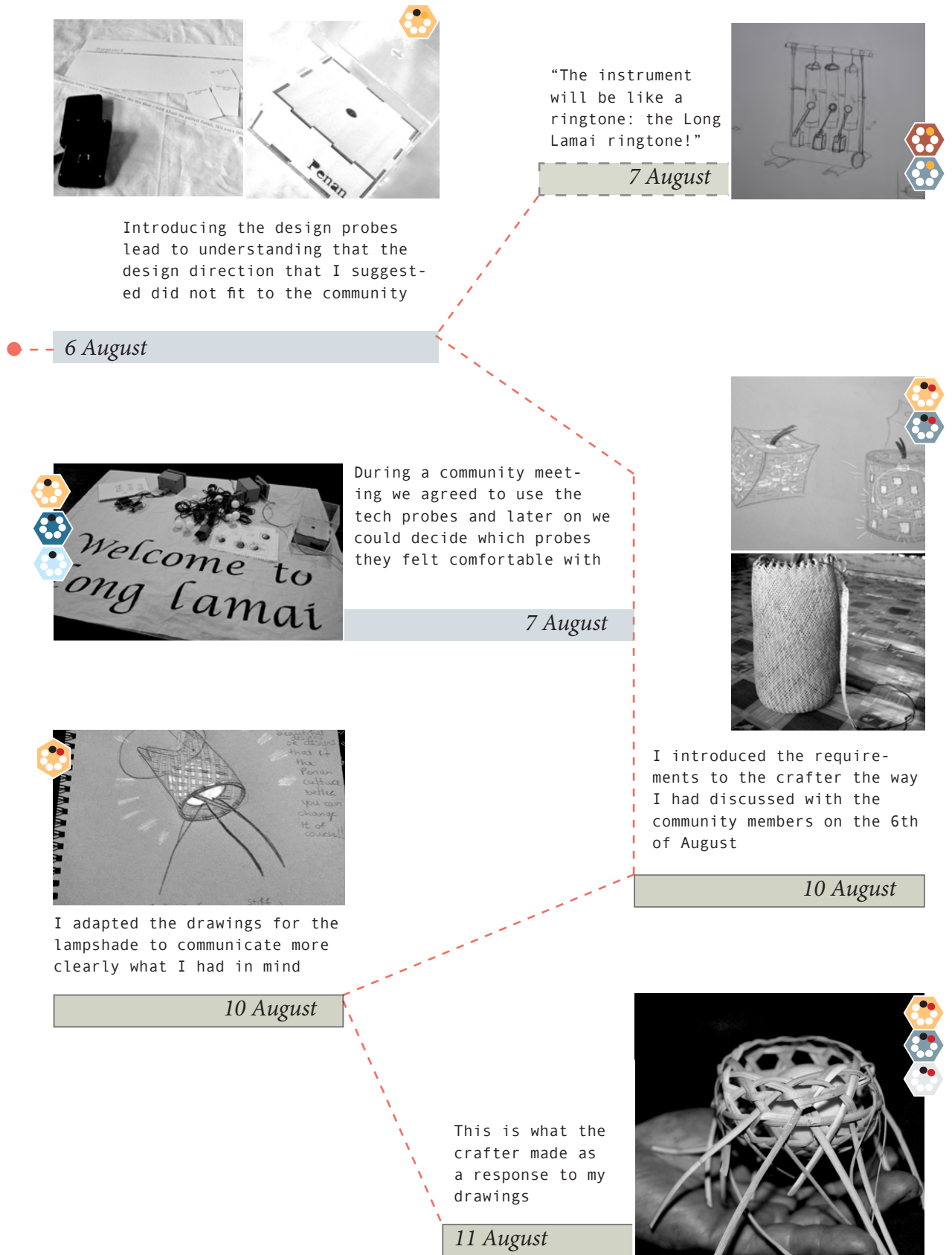
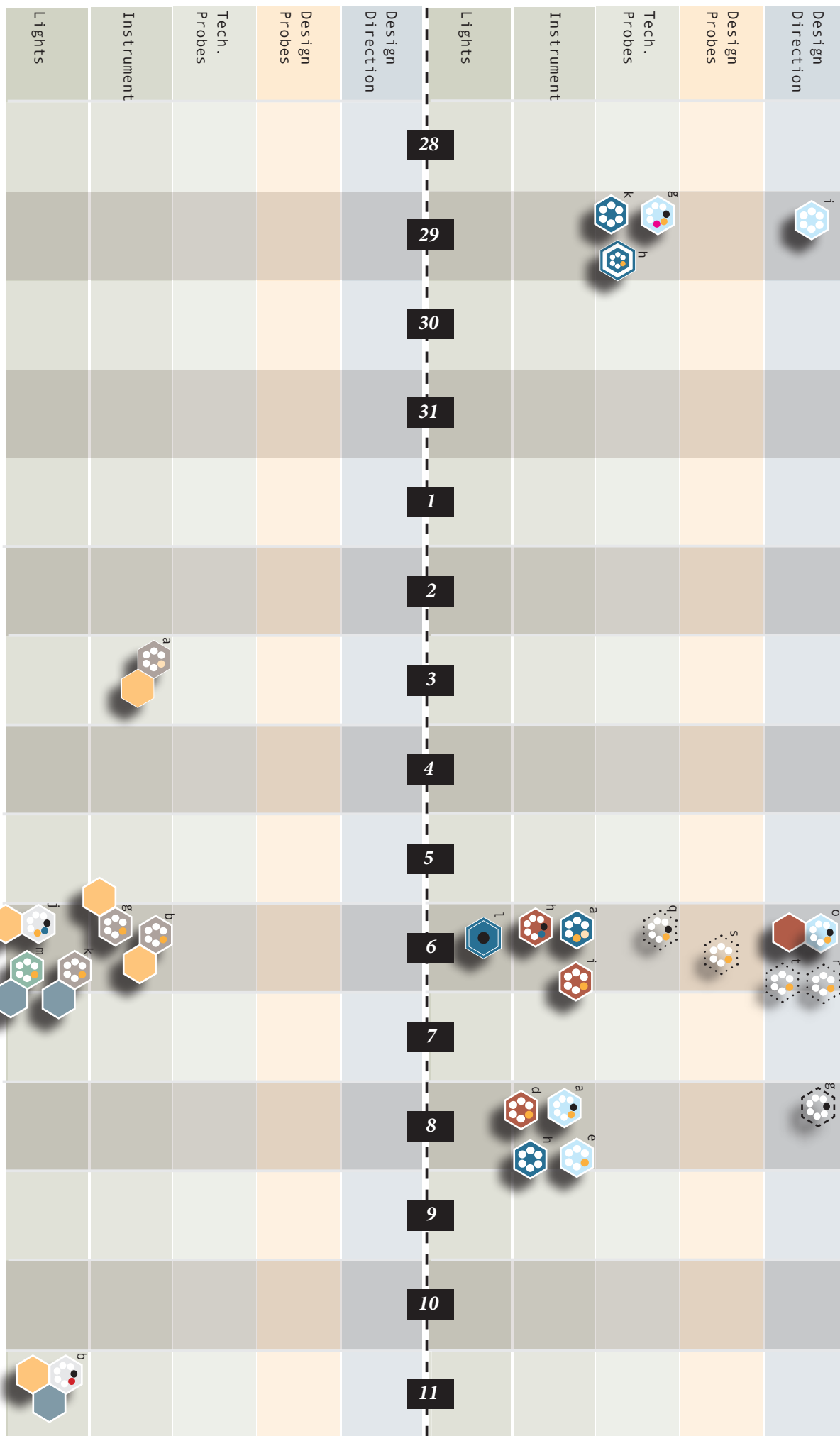


Figure 6.5 (continued) - The annotated portfolio of the first co-creative encounters. Legend can be found next to Figure 6.3.



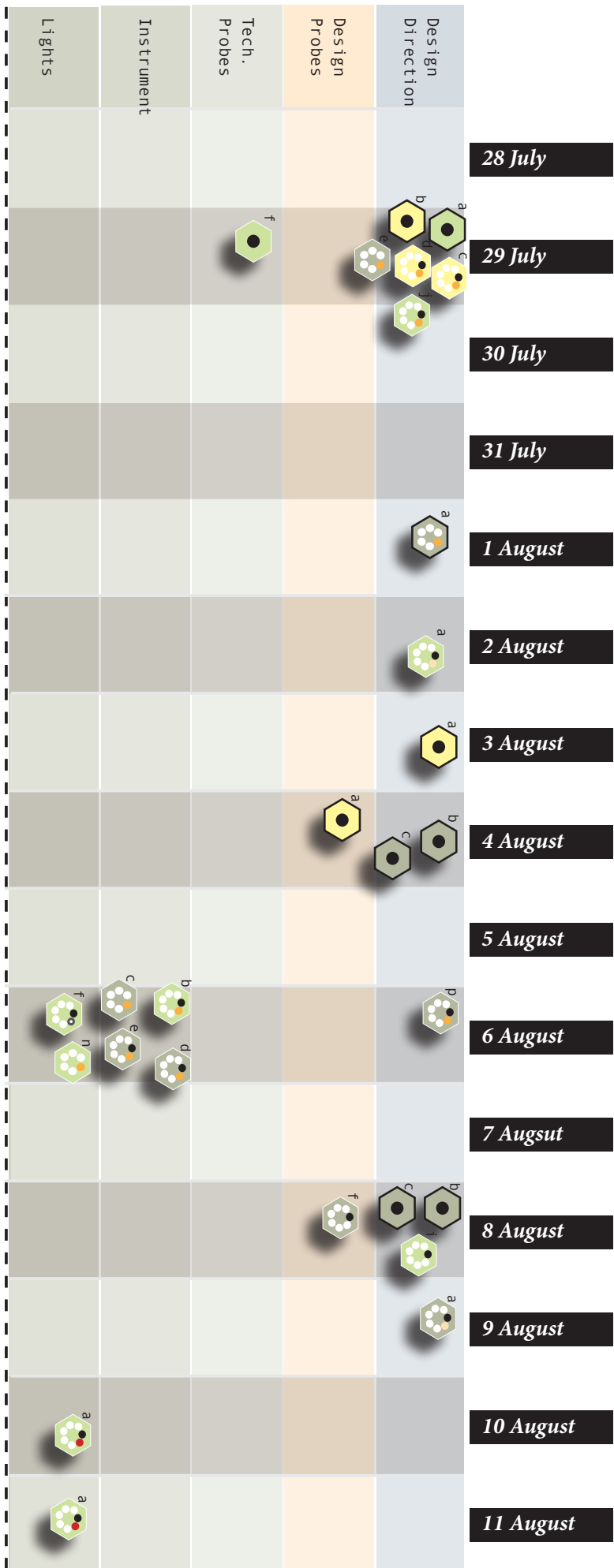


Figure 6.6 - The content analysis timeline of the first co-creative encounters. (Legend below Figure 6.4)

Annotated Portfolio

Co-creative Encounter 2

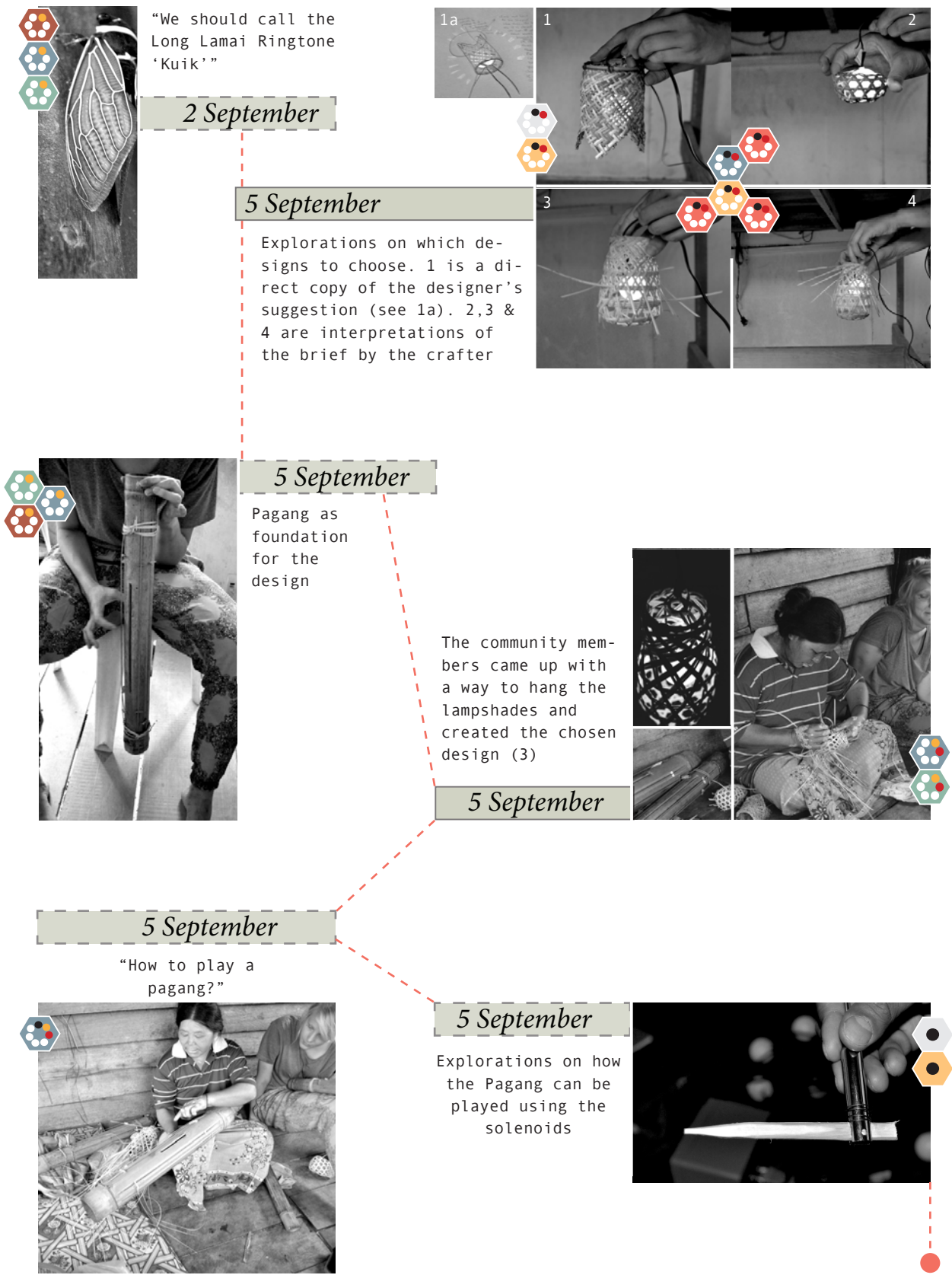


Figure 6.7 - The annotated portfolio of the second co-creative encounters. (Legend left to Figure 6.3).

5 September

They wanted to use wood that was meaningful for them for the platform



They wanted to cut the wood according to their traditions and use their symbolism



5 September



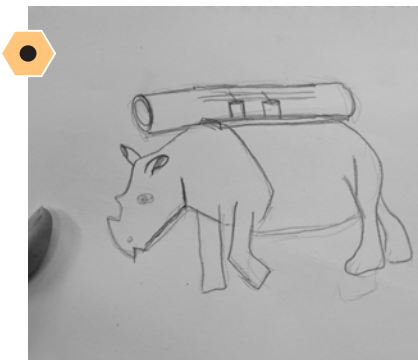
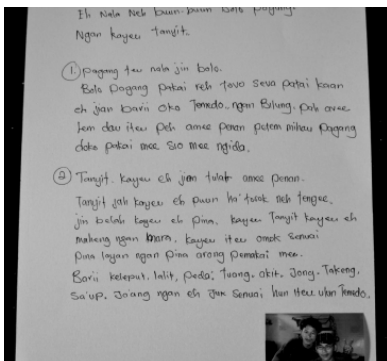
Their brainstorm on how the design should look - a Rhino made from hard wood on which the pagang can rest.

6 September



They started collecting wood for the design they wanted to make.

6 September



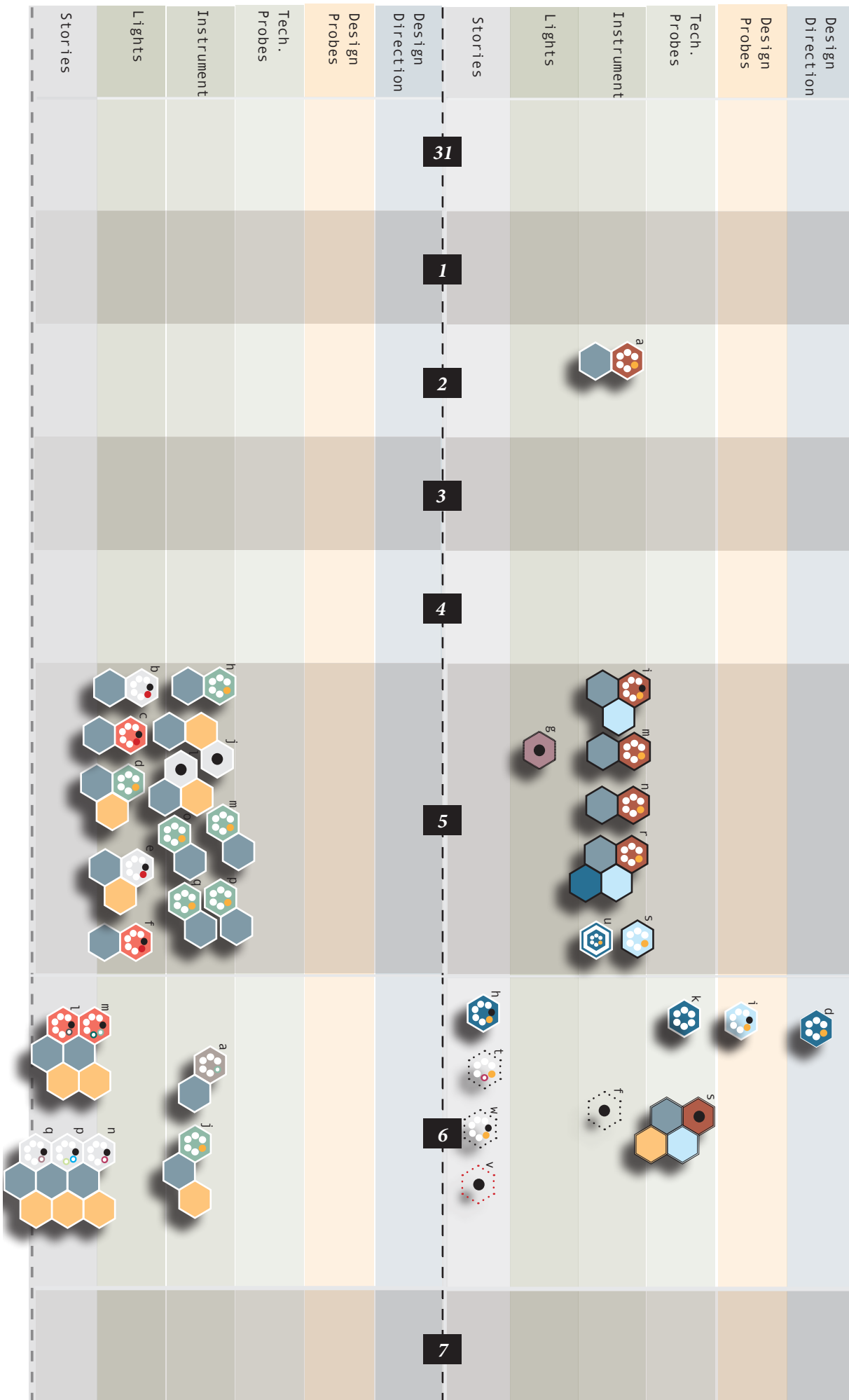
6 September

My interpretation of what I thought they meant (they asked me to make this drawings)

6 September

I organised a workshop in which the youngsters created stories about important things in their community. Most stories were about the material culture of the Penan

Figure 6.7 (continued) - The annotated portfolio of the second co-creative encounters. (Legend left to Figure 6.3).



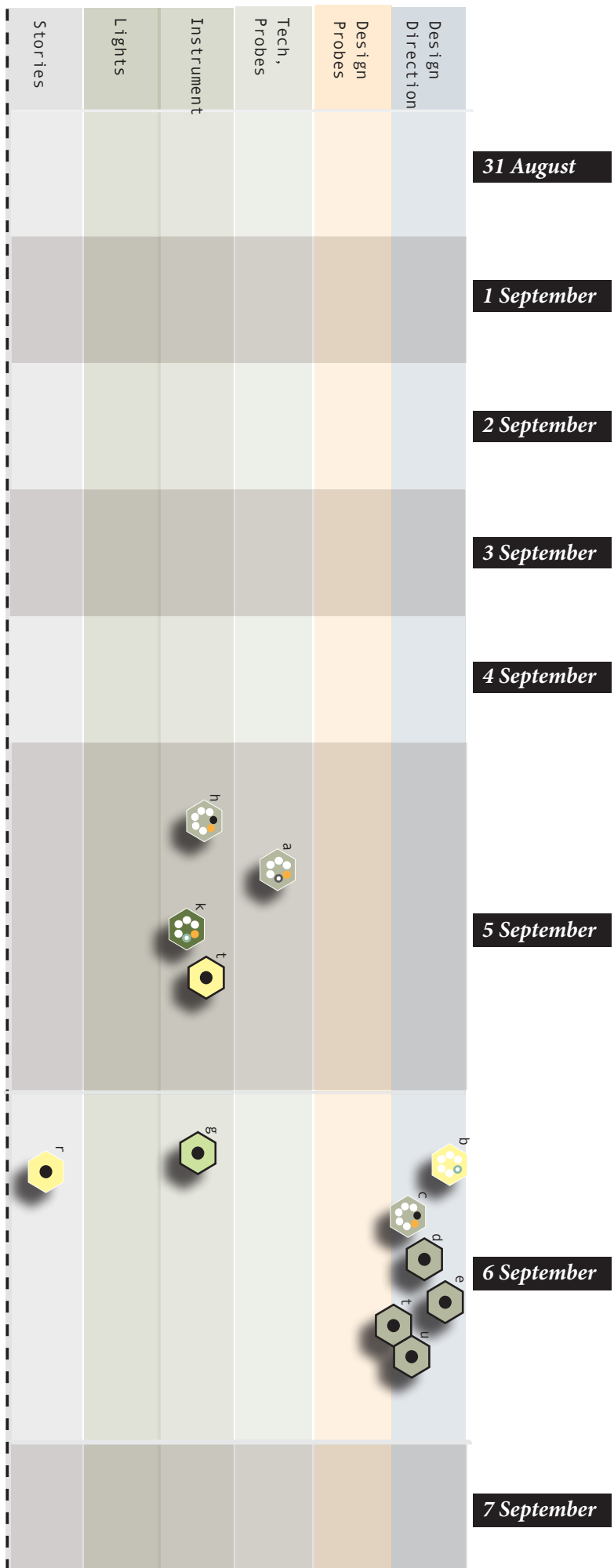


Figure 6.8 - The content analysis timeline of the second co-creative encounters. (Legend can be found below Figure 6.4)

Annotated Portfolio Co-creative Encounter 3

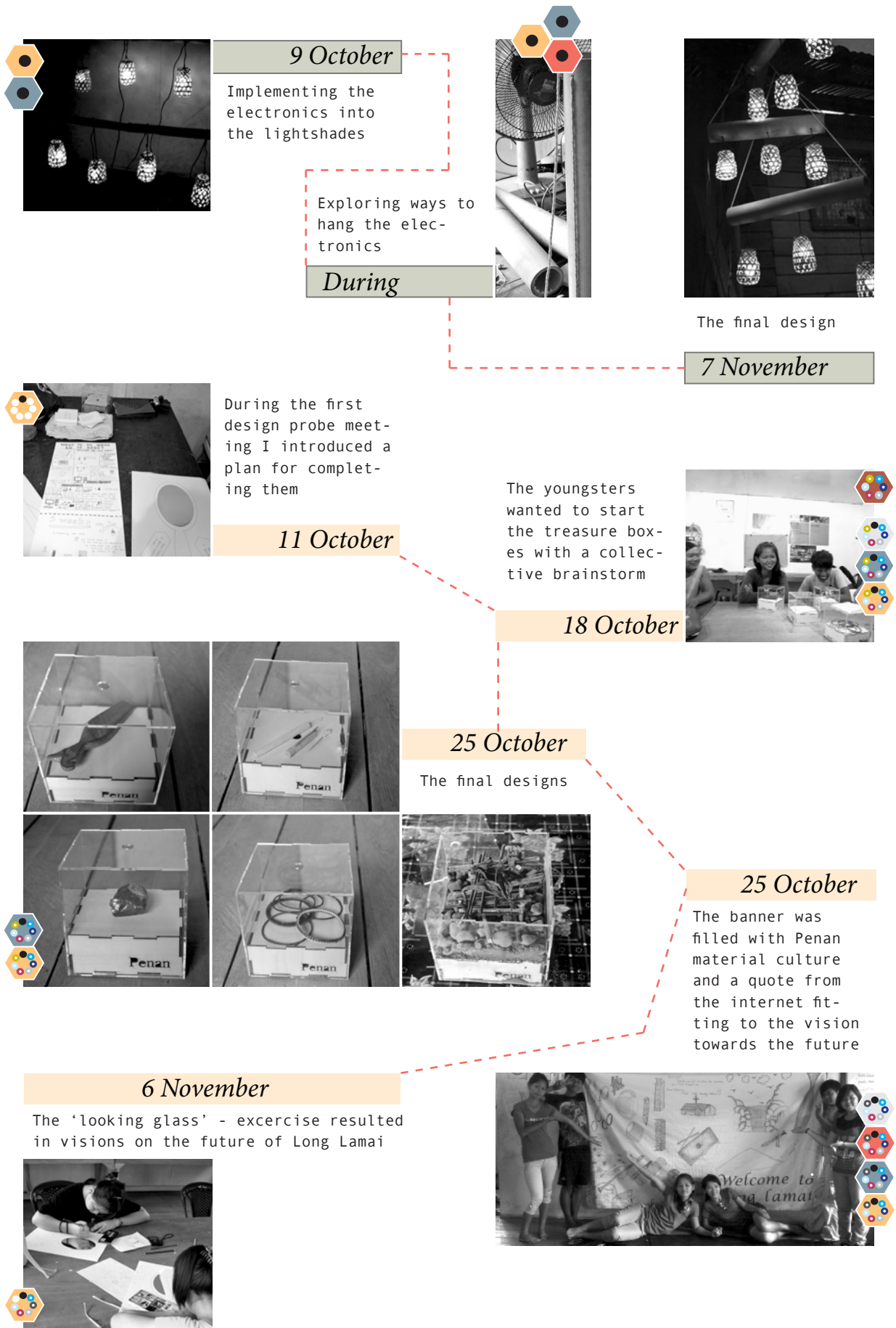
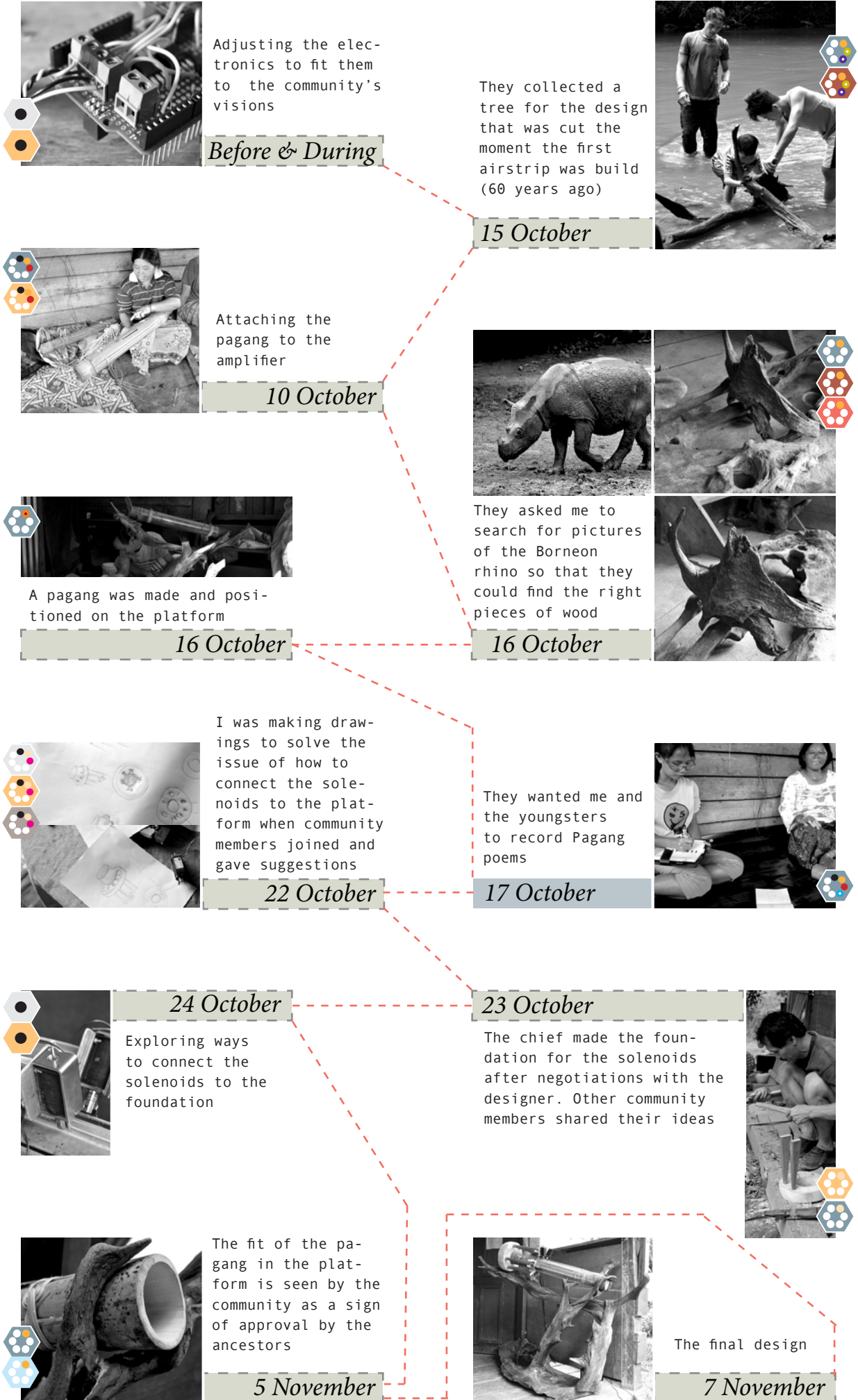
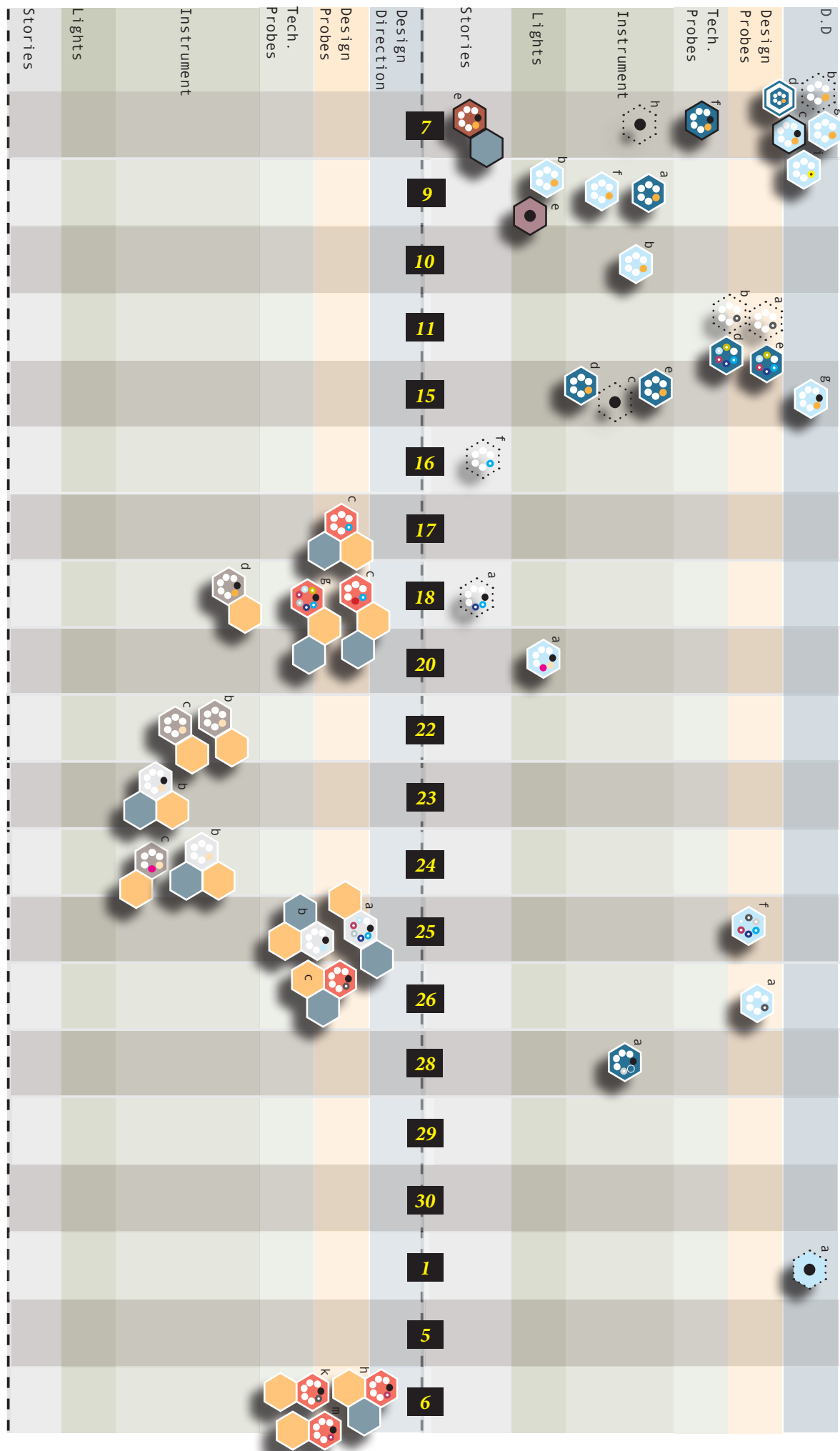


Figure 6.9 - The annotated portfolio of the third co-creative encounters. (Legend can be found left to Figure 6.3)





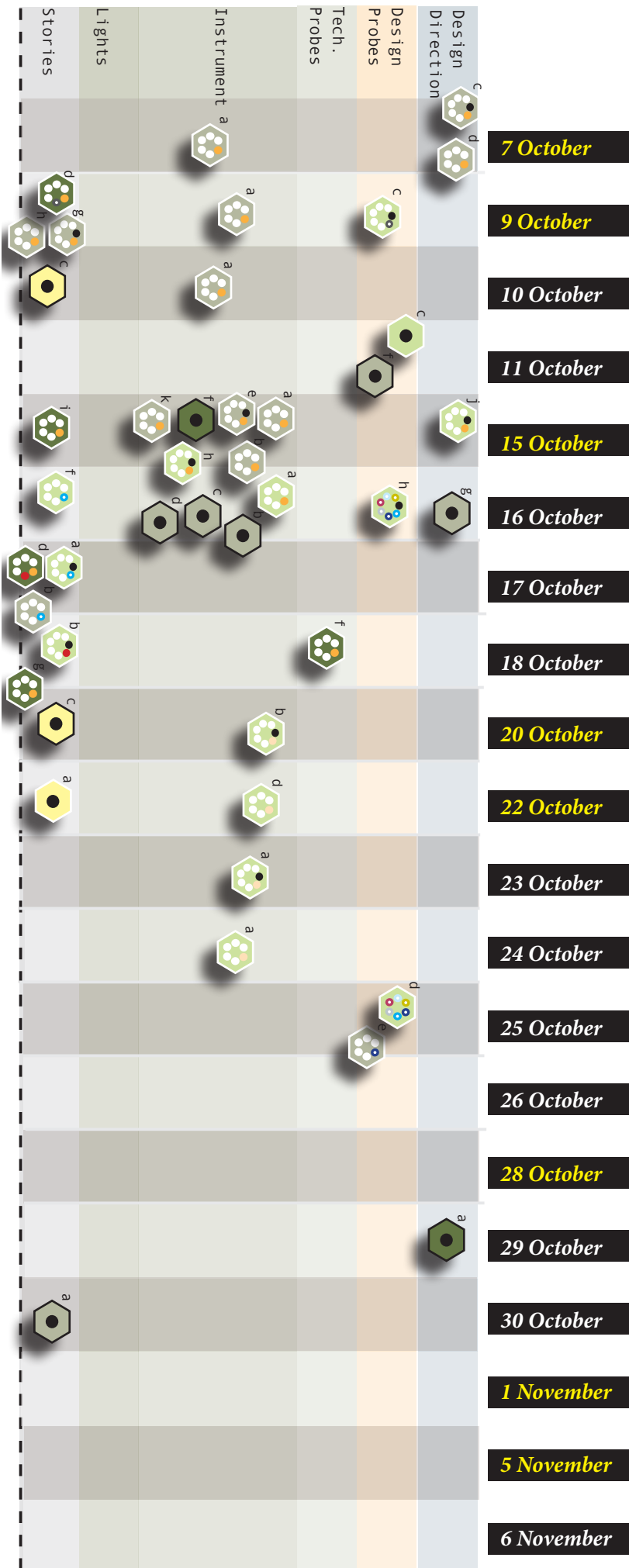


Figure 6.10 - The content analysis timeline of the third co-creative encounters. (Legend below Figure 6.4)

Annotated Portfolio Exhibitions

'Pilot' exhibition (7 November)



I created - together with community members an 'pilot' exhibition containing the light shades, the musical instrument, the design probes and a movie containing the narrative of the designs.



The community members who were involved in the design process took charge of explaining to other community members what was created.



People took pictures of the musical instrument.



Everytime the instrument played, they showed pride that people were interested in their website.



Conversations were about how the musical instrument and the banner fitted the Penan culture.



The treasure boxes were divided in: 'Penan' and 'not-specifically Penan'



Only the novel designs could be adopted by Long Lamai, because no one else already owned the designs.

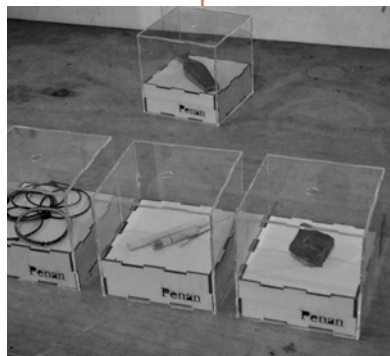


Figure 6.11 - The annotated portfolio of the exhibition stage.
(Legend left to Figure 6.3)

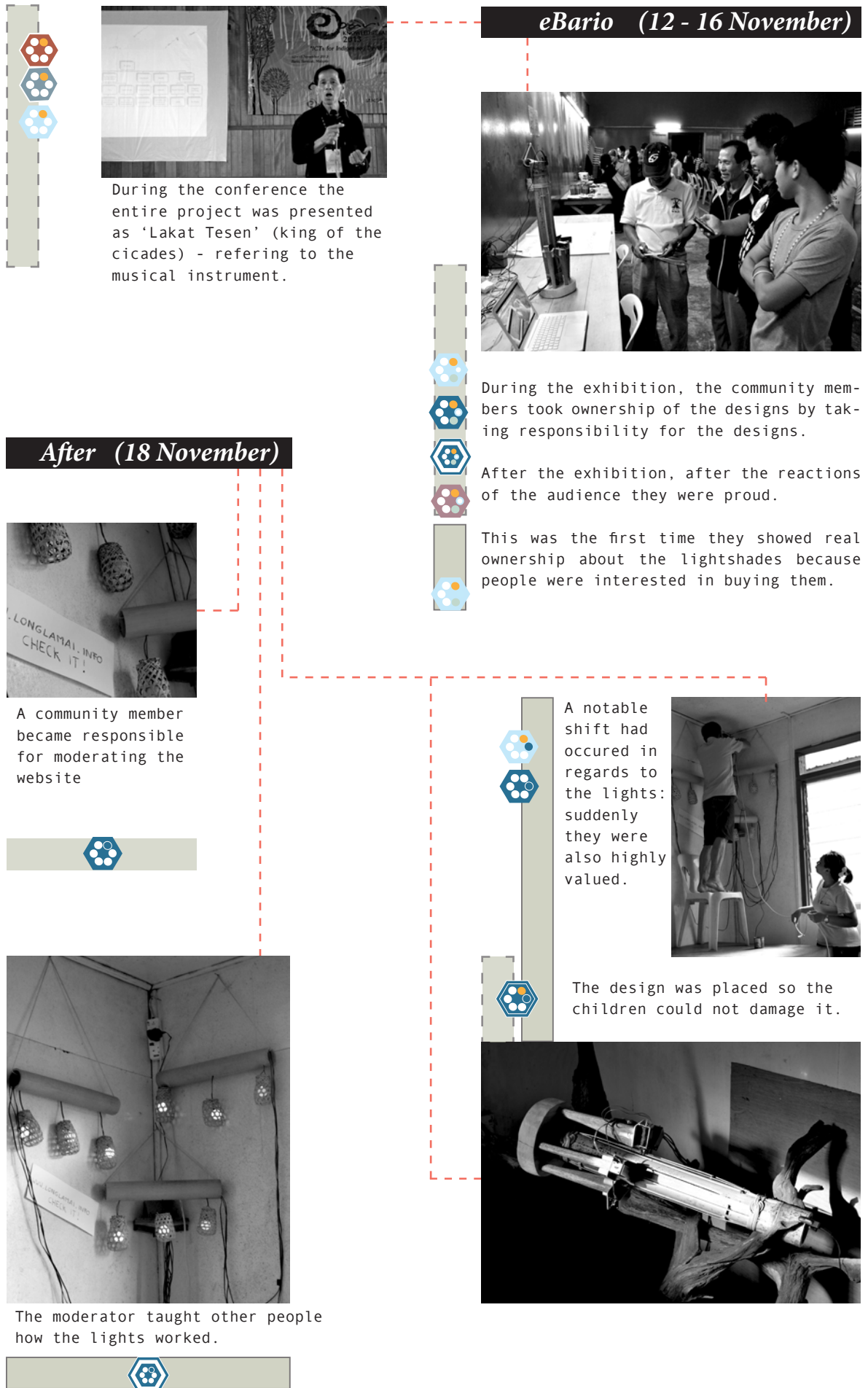
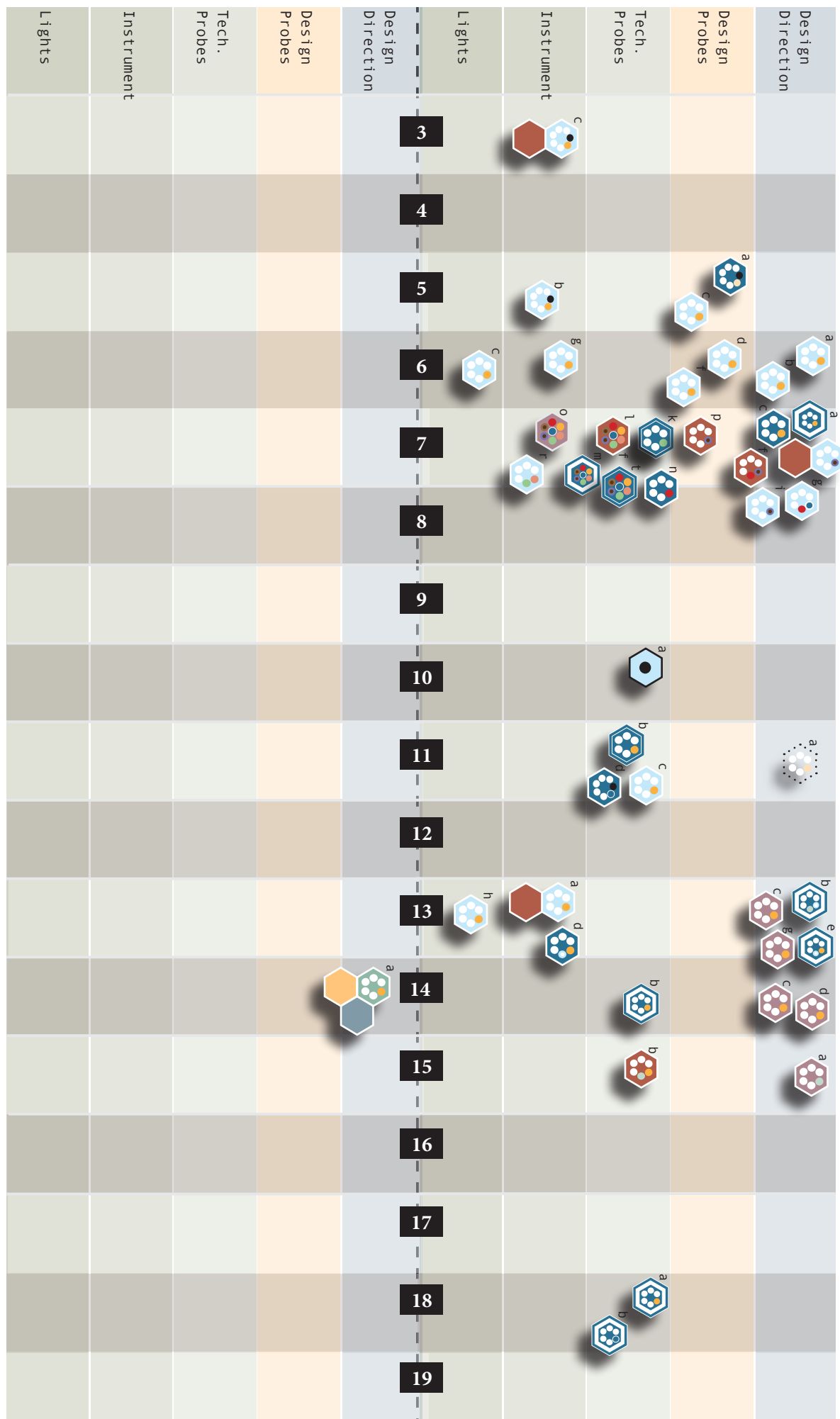


Figure 6.11 (continued) - The annotated portfolio of the exhibition stage.
(Legend left to Figure 6.3)



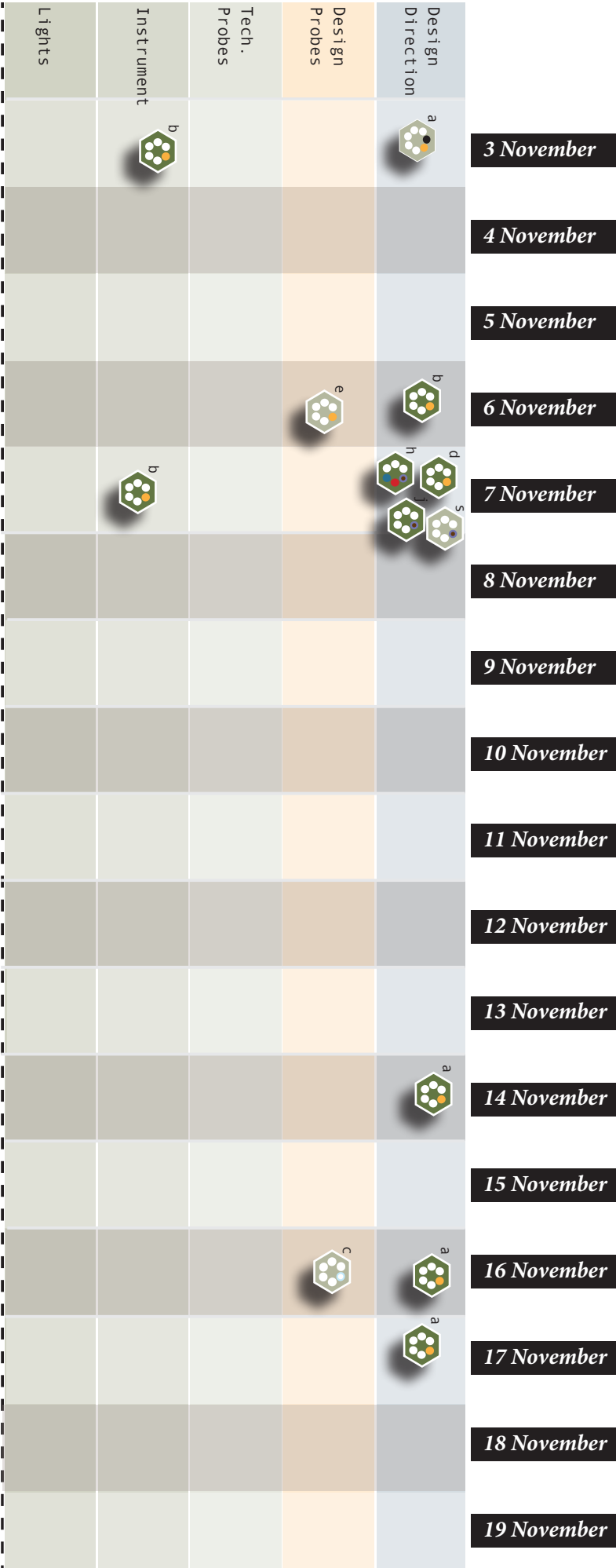


Figure 6.12 - The content analysis timeline of the exhibition stage. (Legend can be found below Figure 6.4)

intensity of codes, as it showed the codes per day. I am aware that the longer the period, the more accurate this number is. Figure 6.14 shows an overview of length of each stay. In my code tables (see Appendix 2,3 and 4), I created an overview of the codes for each coding concept. In the quoted codes in this chapter I refer to for example: A2 - which is Appendix 2.

The pattern sheets for the division of initiative, involvement and the indigenous knowledge glimpses are built up differently. These pattern sheets show all the codes that occurred in a certain stage and are thus not divided by the length of the stage.

Each pattern sheet played an important role in my understanding about what dynamics are important in a respectful design space. Reflecting on those dynamics gave me an understanding of how such dynamics can be facilitated.

	Design Participation	Ownership	Novel Expressions	Design Seeds	Indigenous Knowledge Glimpses	Initiative	Contributor
Content Analysis Timeline				X			
Annotated Portfolio	X						

Figure 6.13 - The pattern sheets (an overview).

	Preliminary visit	1st co-creative encounter	2nd co-creative encounter	3rd co-creative encounter	Exhibitions
Length of Stage	11 days	15 days	8 days	31 days	17 days

Codes and/or annotations were divided by length of stage to create pattern sheet for:

- Design Participation;
- Novel expressions;
- Ownership;
- Design Seeds;

Figure 6.14 - The length of each stage of the design process.

6.2 Design Activities

I realised through the reflection-in-action process that it is important to understand the design activities in relation to each other. Looking at the design activities helped me to understand the coding concepts, the density of the codes within the coding concepts and the meaning of this for understanding a respectful design space.

Both Sheehan (2011) and Tunstall (2011) state in their respectful design and culture-based innovation approaches, that creating benefit for the community is one of the important intentions. I therefore consider it important to provide space for the community to explore what could be beneficial for them prior to engaging in the project. It is for this reason that I organised the preliminary visits. Once

the design direction was defined, brainstorming sessions could be held about what the designs could look like, following into creating the envisioned designs.

These phases of establishing, exploring and creating were all active parts of the process, during which intentions and goals were set for each design activity. These phases were convergent: it got more specific with each transition to the following design activity. The design direction became more focussed and transitioned to technology probes. Those technology probes became specified as being the light probe, the musical instrument probe and the website probe (intended to share stories on). Those probes then resulted in final designs. In order to understand whether the intentions that had been set at the outset of the project have been reached, it can be expected that design activities would be reviewed, subsequent to the active phase, within a reflective phase. Such a reflective stage is divergent: starting from the specific designs to the overall outcome of the technology probes and ending by concluding whether the overall design direction has been reached as intended.

I anticipated that in case of respectful design, there is the pattern as introduced in Figure 6.15, where each building block of the process (e.g. design direction, technology probes, instrument, lights and stories) has the potential to be developed into a respectful design space.

In the next sections I will explore, through the pattern sheets whether such a respectful design space actually was developed for each of the design activities. I will reflect on which dynamics appear to be important to respectful design spaces. Consequently, I will be able to explore why in some cases a respectful design space arose, while in other cases this did not happen. From these reflections, I will be able to draw recommendations in order to reach a respectful design space.

It can be noticed that the design probes are not in the overview. This is because the role of the design probes changed throughout the design process. First they served as tangible tools to explore benefi-

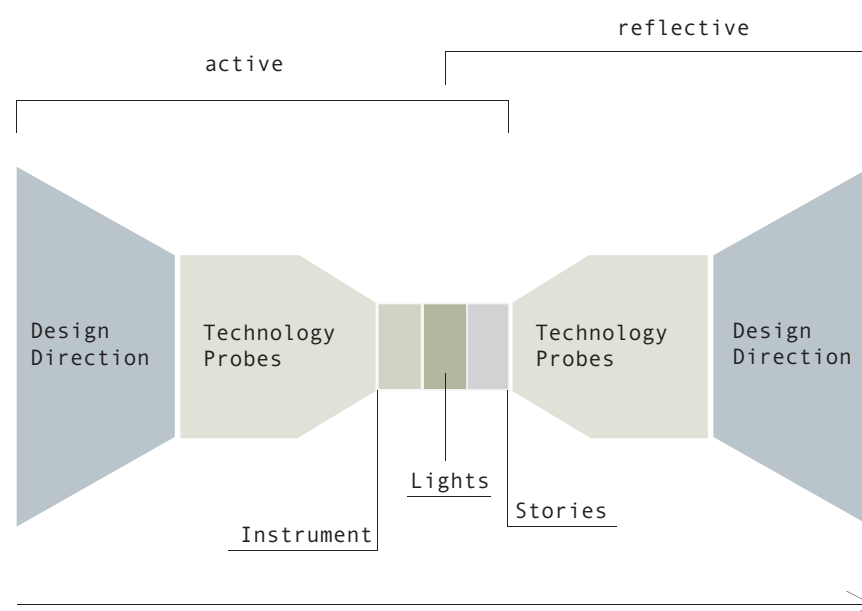


Figure 6.15 - An overview of the role of the design activities in the design process.

cial design directions. Later they served as inspiration for the stories on the website. In the end, they served as an appropriation of the entire project. They did not necessarily mark respectful design spaces. However, they had the ability to serve as triggers for the community to start initiating respectful design spaces. I will reflect on this in the next chapter.

6.3 Initiative

Both Sheehan (2011) and Tunstall (2011) state that in order for respectful design or culture-based innovation to arise, the external designer should take a step back by not directing the process. This way, the community can define in which direction they want to take the project. In order to understand whether design activities have reached a respectful design space, it is therefore important to understand who took initiative throughout the design processes of the diverse design activities. Design activities in which initiative is taken by the community thus have the potential to be positioned within a respectful design space.

In order to understand who the main initiator was at each stage of the process, I mapped out all the codes for each of the phases. The codes came from my diaries and are thus from my perspective. This resulted in two pattern sheets, one for the research diary and one for the annotated portfolios. I have divided the total amount of codes into which of the design activities they arose in. This way, I was able to compare the different design activities. In this section I will look at both pattern sheets and highlight the remarkable aspects per sheet. After that, I will compare the highlights of the pattern sheets.

At the end of this section I will predict which design activities have provided a respectful design space and which did not, following from the data from my diary. Within the following sections, through the pattern sheets for each of the coding concepts, I will evaluate this prediction to understand whether the activities that were predicted to have taken place within a respectful design space also appear in a respectful design space within the other coding concepts.

6.2.1 Initiative: Research Diaries

Figure 6.16 shows a pattern sheet of the division of initiative based on the codes resulting from the research diary.

The upper row contains circles in which all the codes for each of the stages are placed. The lines show the division between different types of initiative. Those different types are codes initiated by me, by the community or through an interaction between the community and me. The lines can be compared by the angle they make, independent of the length of the stay and the amount of codes that were contributed. The colours match the colours of the code concepts, in order to understand the type of code concepts that can be connected to the initiative types. In the next section I will focus on the specific contributors. Below the general overview for each stage, a division is made for the codes in each of the different design activities. When looking at the pattern sheets a few things stand out:

1) The community as main initiator

When looking at the type of initiative of each stage in general, the community is the main initiator in all but one stage. This one stage - the first co-creative encounter - is mainly initiated together (*see Figure 6.16-1*). When looking at the character of this stage, this was to be expected. During this stage, the main focus was on establishing a design direction and a type of design participation. This negotiation made most initiative come from an interaction between the community and me.

2) Focus-shifts throughout the process.

By comparing the amount of codes between the different design activities, the focal point of the stage can be deduced (*see Figure 6.16-2*).

During the preliminary visit, the main focus lay on the design direction activity. In the first co-creative encounter, the emphasis lay again on the design direction activity. In the second co-creative encounter, the focus lay on the musical instrument. This was the same in the third co-creative encounter. In the exhibition stage, most emphasis lay on the design direction. When looking at the prediction for a respectful design space (*Figure 6.15*), you would expect a converging focus within the defining and making process and after the designs have been made a divergent focus. This is what seems to be happening: The first two stages are about establishing the design direction (which resulted in a focus on the technology probes). The second two stages are about making specific designs fitting to this design direction. The last stage is about reflecting whether the goal of the project has been reached, thus putting emphasis back on the design direction. This fits to the prediction of *Figure 6.15*.

3) Differences between design activities in initiators

In the overview it can be seen that in some of the design activities, the main type of initiative is the result of a shared interaction between the community and me. In others, most of the initiative comes only from the community or me. In the case of the musical instrument, the main initiator is always the community (*see Figure 6.16-3*). This is the only activity that, throughout the design process, always has the same main initiator. Additionally, in this stage a lot of activity is taking place. When comparing this to the lights, a difference can be seen. There are not many codes in the lights design activity - 9 at the most (with an average of around 5). This compared to 31 at the most in the musical instrument design activity (with an average of 20). The lights design activity results in codes that mostly come from interactions between me and the community. Only in the last stage of the process, which is the exhibition stage, do most codes come from the community.

In the other design activities (i.e. design probes, technology probes and website stories) there are not such clear patterns to distinguish. However, for each of the design activities, the community was the main initiator in the last stage of the design process. This last stage was the exhibition stage.

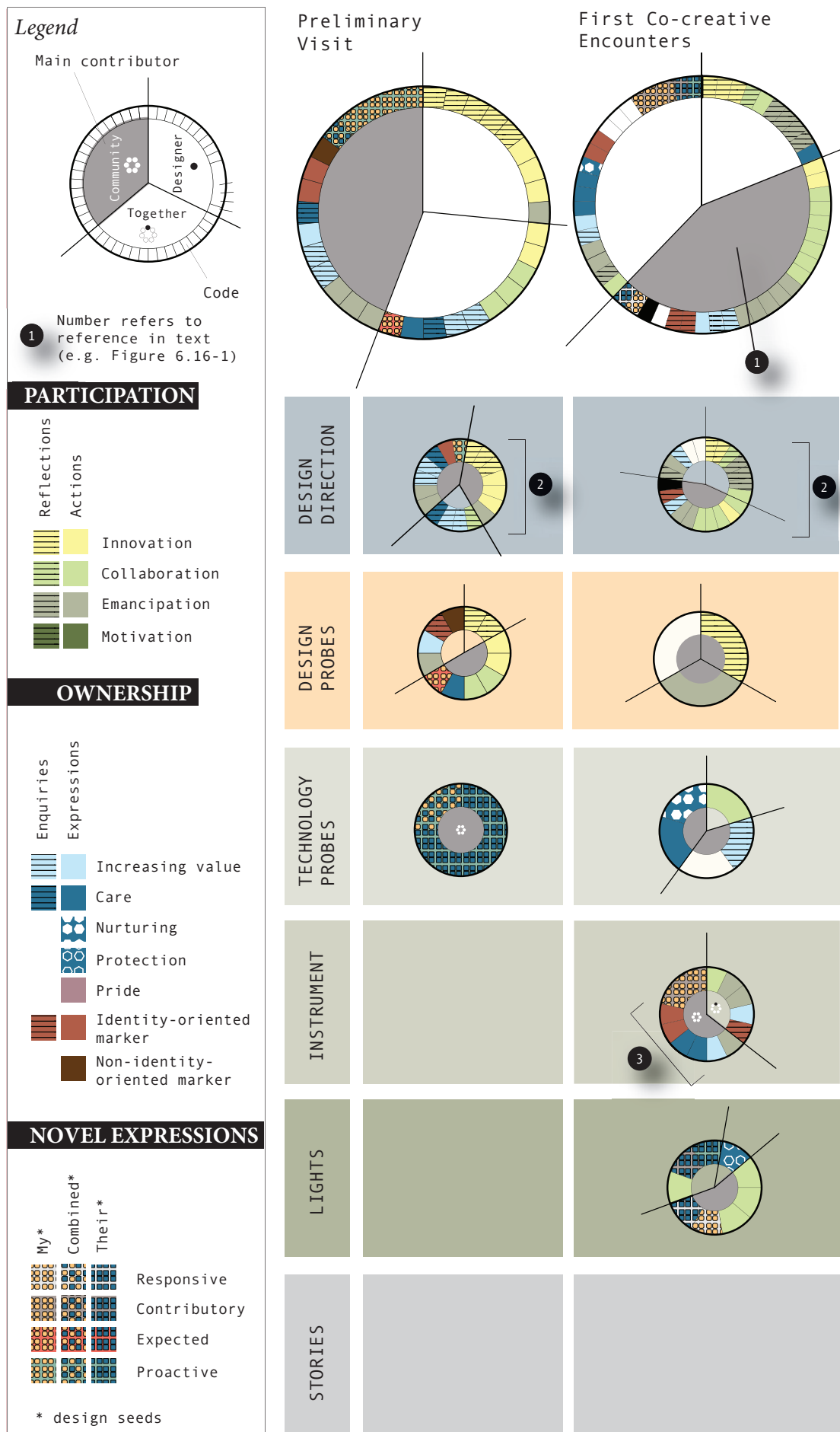


Figure 6.16 - The pattern sheet for the division of initiative in the research diaries. (The numbers are referred to in the text)

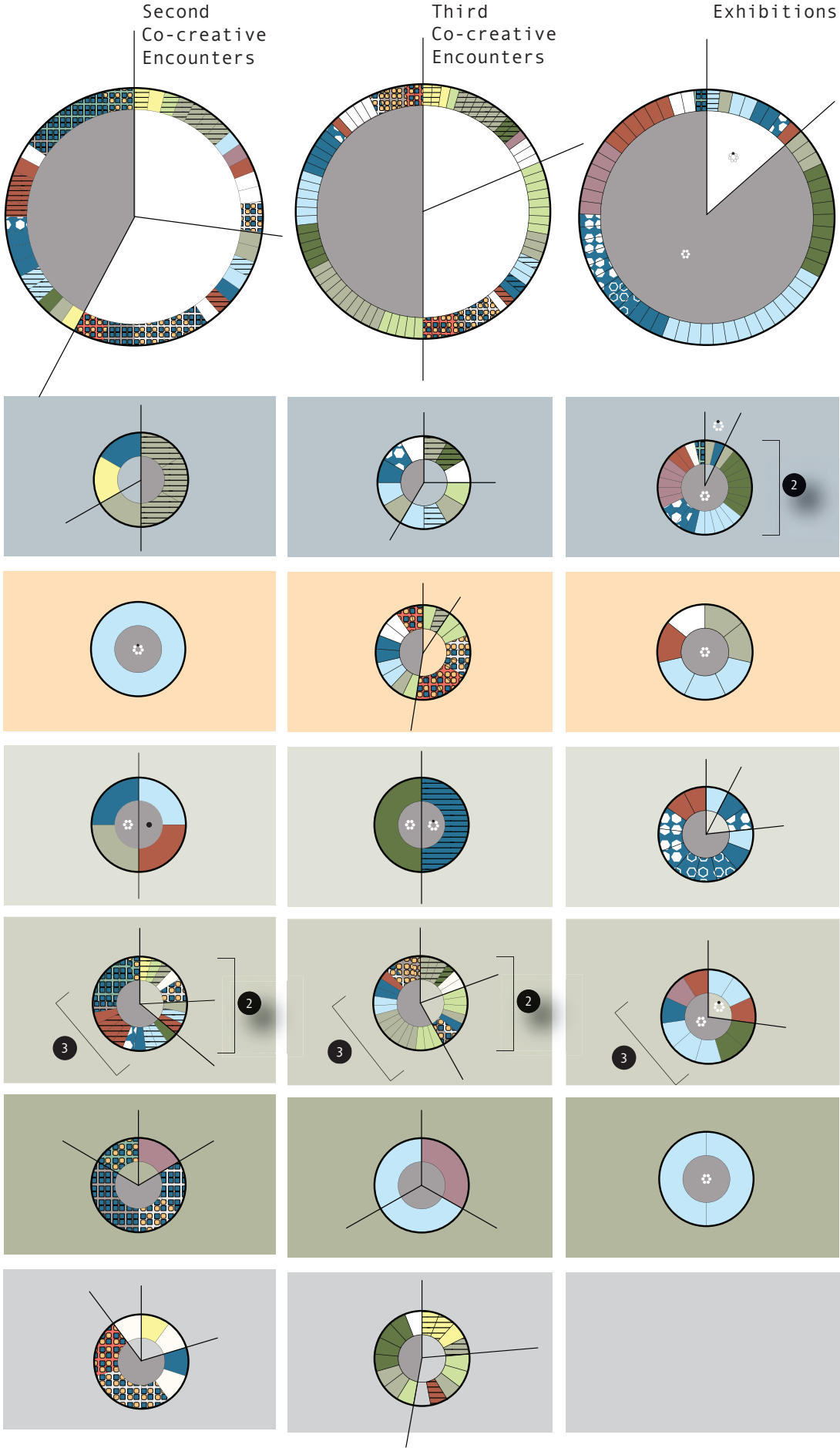


Figure 6.16 (continued)- The pattern sheet for the division of initiative in the research diaries. (The numbers are referred to in the text)

6.2.2 Initiative: Annotated Portfolios

For the annotated portfolio, I also created a pattern sheet for the division of initiative. This sheet can be seen in Figure 6.17.

1) Stages in which the most initiatives were taken together.

Like in the research diary pattern sheet, the annotated portfolio sheet shows that most codes in the first co-creative encounter were initiated together. In the third co-creative encounter, also most codes were a result from an interaction between the community and me (see Figure 6.17-1). This is unlike in the pattern sheet of the research diary. Many co-initiated codes within the third co-creative encounter had to do with the design probe activities which I held with the youngsters. This indeed was a collaborative process and showed more through the photos taken during the process than in my research diary, since in my research diary I did not put much emphasis on this.

2) Focal design activities (see Figure 6.17-2)

During the preliminary visit, the design probe activity shows most codes. This was because the design probes were the tool to explore the design direction and therefore it had been the main focus. For the first co-creative encounters, the main focus lay on the instrument - even though it comes close to the amount of codes for the lights. The second and third co-creative encounters, as well as the exhibition stage, show the musical instrument as the focal point.

There is a difference between the annotated portfolio pattern sheet for the initiative division and the timeline pattern sheet. The amount of codes for the design direction and the technology probe activity differs: the timeline shows many codes, the annotated portfolio only few. The design direction and the technology probes mainly seem to be about expressions and negotiations rather than about objects and tangible discussions and therefore do not have as many codes as the other design activities (e.g. 18 for the design direction and 8 for the technology probes). Expressions and negotiations appear/are recorded in the research diary rather than in the annotated portfolio.

The instrument has by far the most codes (70), followed by the design probes (40) and then the lights (25). Corresponding to the pattern sheet for the research diary, the amount of codes for the lights design activity are in amounts not comparable to those of the musical instrument, therefore it can be concluded that this activity was not positioned within a respectful space.

6.2.3 Consequences of Initiative Division for Respectful Design Space

As I deduced from both Sheehan (2011) and Tunstall's (2011) notion of a respectful design space/community-based innovation, design activities in which initiative is taken by the community is one factor comprising a respectful design space.

From both the research diary pattern sheet and in the annotated portfolio pattern sheet it can be concluded that the design activity of the musical instrument has most codes in most stages of the design process. Additionally, in both sheets, in the musical instrument design activity, the community is the

main initiator. With this information, I consider the design activity of the musical instrument as one that took place in a respectful design space. On the other hand, I would label the design activity of the lights as not being positioned in a respectful design space. In the research diary pattern sheet the lights had a significantly low amount of codes compared to the musical instrument design activity. In the annotated portfolio pattern sheet the lights also had a relatively low amount of codes. Even though the amount of codes were also low for the design direction and the technology probes, I believe that the reason for this was that these activities were less involved with material culture and more with expression (hence the higher number in the research diary pattern sheet).

As mentioned in the previous section, I expected that there would be a reflective moment after the active stages of the design process. In such a reflective stage, intentions set at the active stage, are evaluated in order to understand whether those have been reached successfully. The research diary pattern sheet showed a synchrony to this expectation (see Figure 6.15): Most codes could be connected to the design direction in the earlier stages of the design process, and to the exhibition stage (exhibitions). This suggests the importance of a reflective stage such as reached through the exhibitions. The exhibition stage was not only important for the design direction. In each of the other design activities (except for the stories which did not occur in this stage), the community was the main initiator during the exhibition stage. This suggests that this stage was community-driven.

In the first co-creative encounter most codes were initiated through an interaction between the community and me, in both the pattern sheets. This reflects the feeling that I had that this stage was mostly about negotiating the design direction and the type of design participation.

6.4 Involvement

From the initiative sheets, I created involvement sheets. These sheets show more specifically who was involved and in which way they were involved. I created one for the research diaries and one for the annotated portfolios. Figure 6.18 shows the pattern sheet for the research diaries. Figure 6.19 shows the one for the annotated portfolios.

The design of the visualisations is comparable to the design for the initiative sheets. The colours in the circle sectors represent contributions made by specific people. In some cases, a code was contributed by multiple people, in that case, every person is represented as an individual contribution.

There is a clear distinction within the community between the different generations. There are the ‘youngsters’, who are under 30 with or without children. They are represented with a white dotted pattern. Then there are the ‘parents’, who are above 30 with or without children. Their contributions are represented as solid colours, without pattern. Then there are the elders. This is a small group in the community that is self-selected. The members of this group have experienced both a settled and

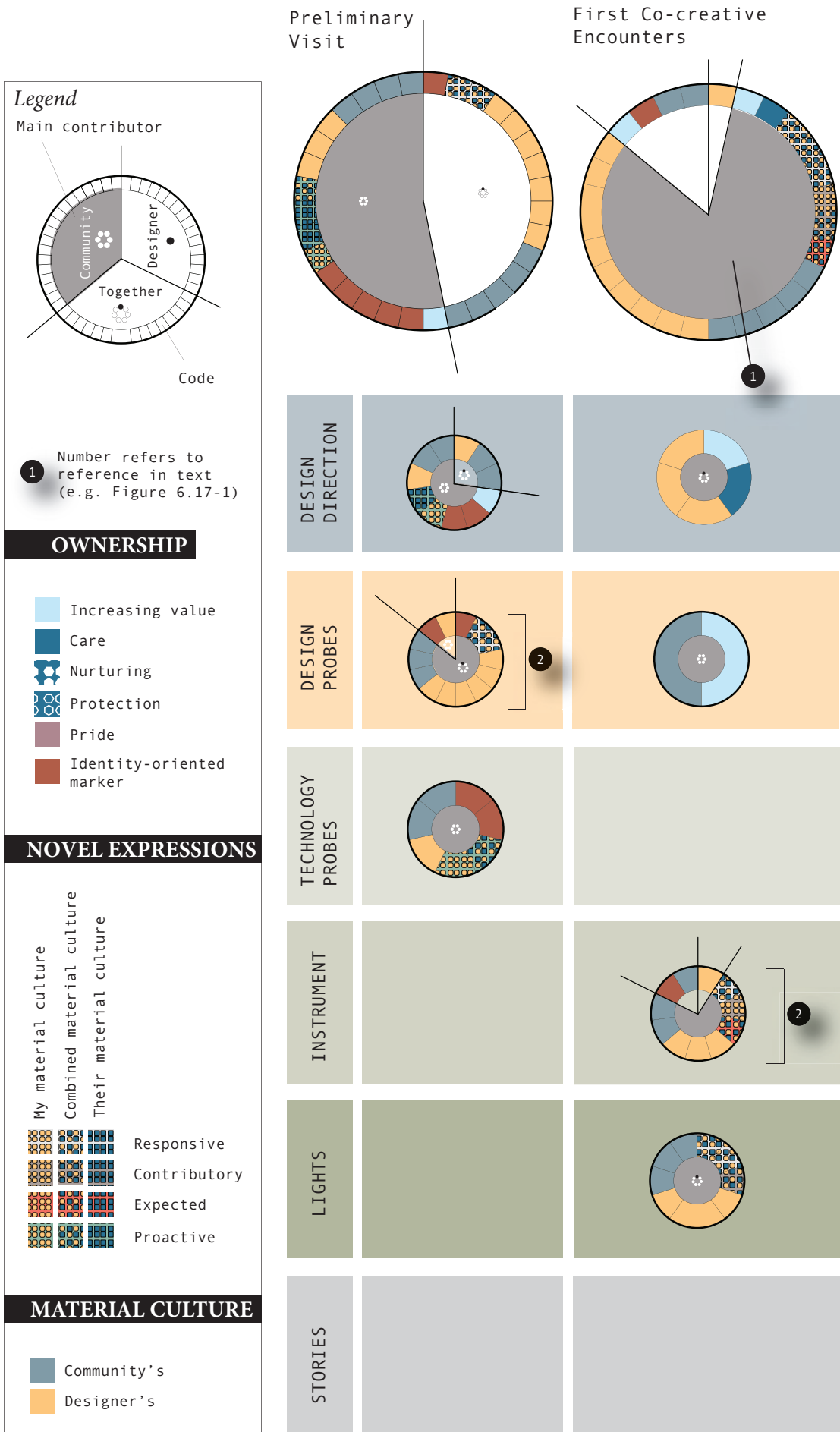


Figure 6.17 - The pattern sheet for the division of initiative in the annotated portfolios. (The numbers are referred to in the text.)

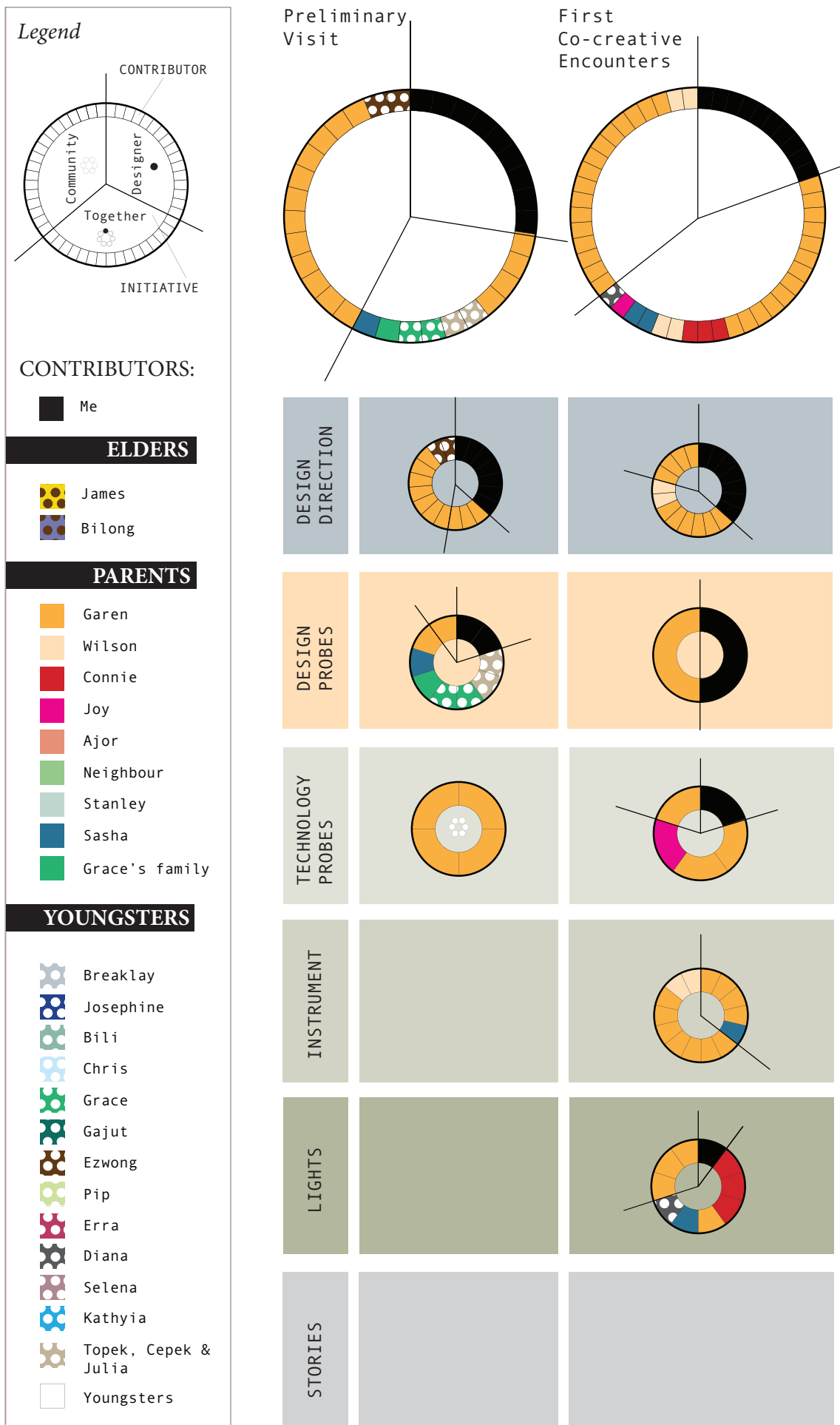


Figure 6.18 - The involvement pattern sheet for the research diaries.

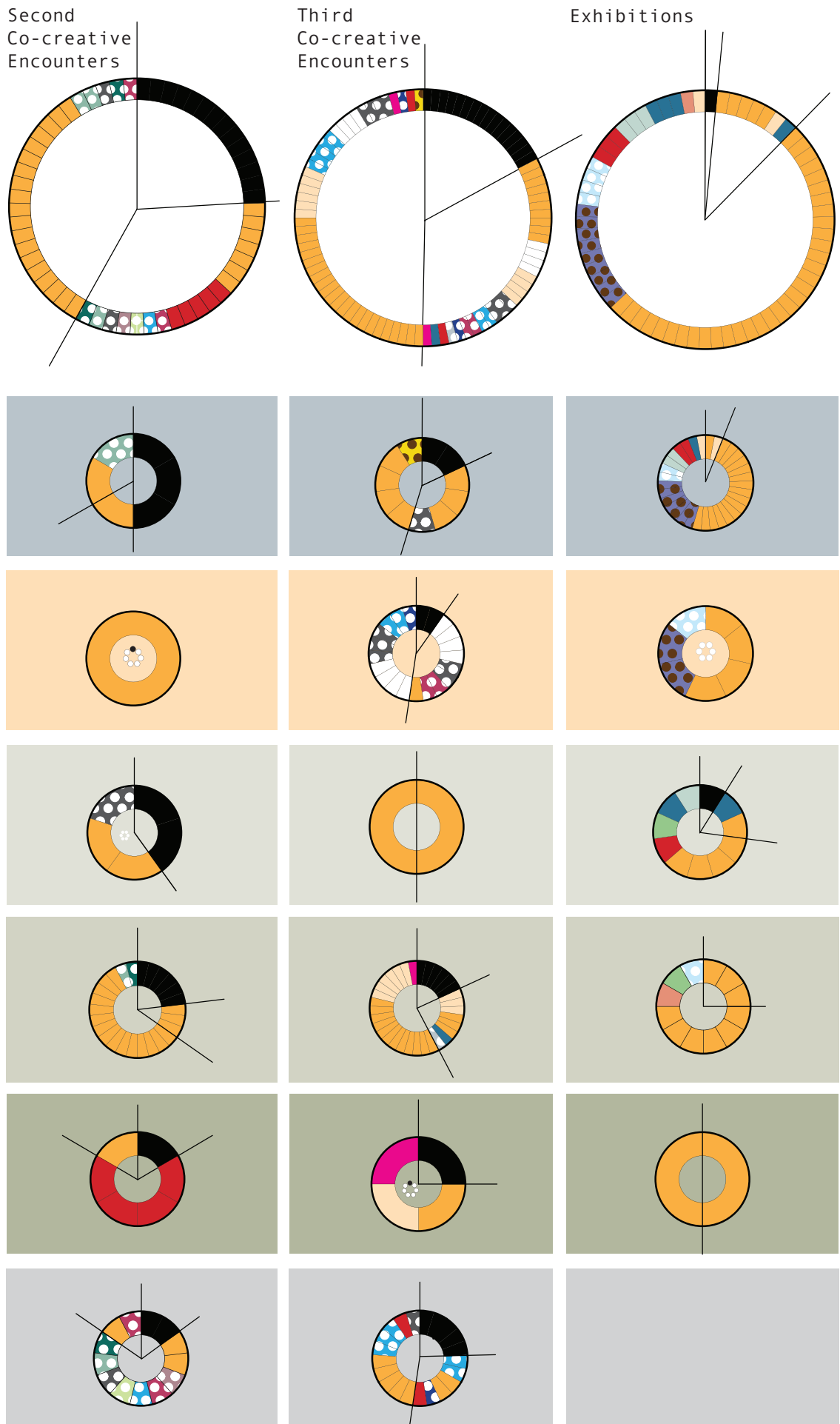


Figure 6.18 (continued) - The involvement pattern sheet for the research diaries.

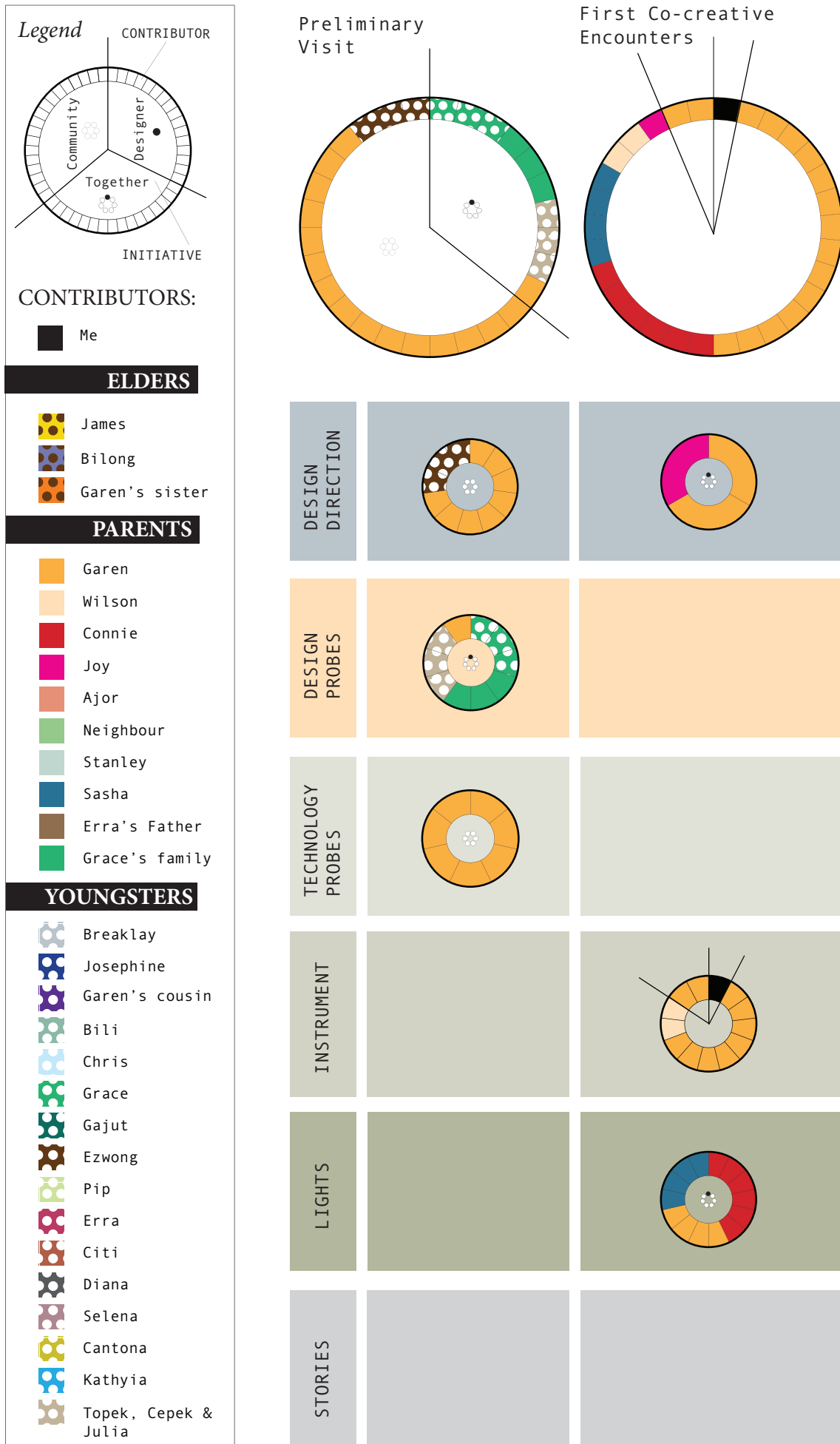


Figure 6.19- The involvement pattern sheet for the annotated portfolios.

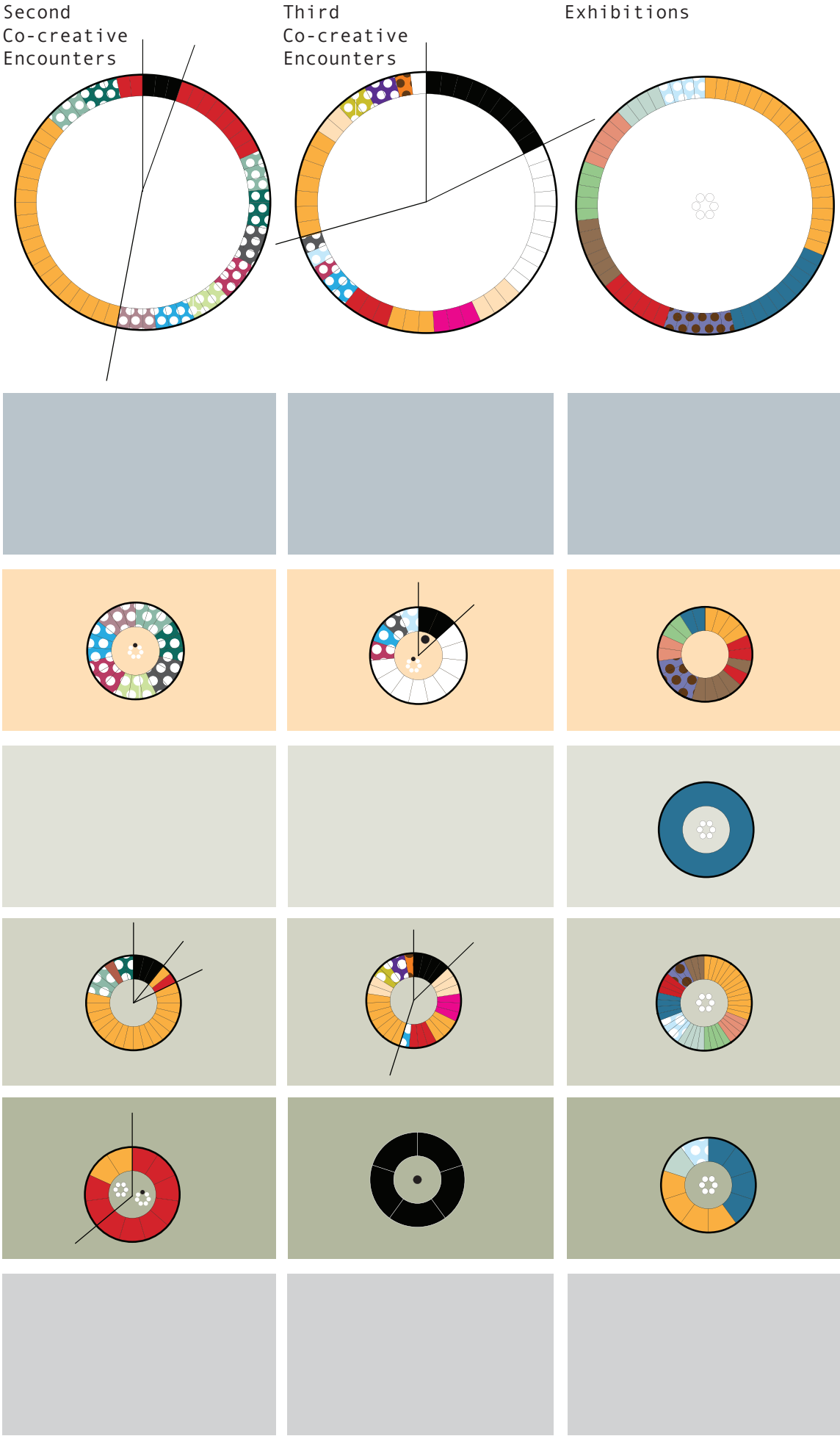


Figure 6.19 (continued) - The involvement pattern sheet for the annotated portfolios.

a nomadic life. These elders have the final say in everything that happens in the community and their position is thus of great importance. Their contributions are represented as dark brown dotted patterns.

When looking at the involvement pattern sheets for the research diary and for the annotated portfolios, it can be seen that the main contributor is Garen, the research manager (who is represented as yellow).

Garen is always the main contributor within the musical instrument design activity. In other design activities, Garen also makes most contributions, for example in the design direction activity and the technology probes activity. The activities where Garen does not make the majority of the contributions are the design probes, the stories and the lights. In the previous section, these activities have been described as being positioned outside a critical respectful design space. This suggests that either Garen became most involved in activities because they were positioned within a respectful design space, or it suggests that without Garen there might not have been a respectful design space.

Below, I will go into detail of what each generation contributed. I will start with the parents, followed by the youngsters and concluded with the elders.

6.4.1 Garen and Other Parents

In every stage of the design process, Garen has a key role:

- During the preliminary visit, it was Garen who got enthusiastic about StoryBeads and, with that, in a project focussing on technology and the community's identity. He was the first one who came up with suggestions about what the project could look like and which materials we could use. He translated my intentions to the wider community. It was Garen who came up with the idea to focus on Oroo' (the communication system used to communicate in the rainforest by the (nomadic) Penan). He assigned a community artist to make drawings in order to explain Oroo' to me.
- During the first co-creative encounter, it was Garen who served as a bridge between me and the community. He helped me understand the dynamics of the community structure and introduced me to the taboo that the design direction I introduced touched upon.
- During the second co-creative encounter, Garen introduced the idea of using a pagang as the musical instrument probe. After I failed to understand the dynamics within the community, it was Garen who became the project manager. He was in charge of appointing people. He was also in charge of the budget.
- In the third co-creative encounters, Garen became the crafter who made the final design for the musical instrument. He appointed people to help him. He, for example, appointed an elder, who made the pagang and youngsters to help him collect the materials.

- During the pilot exhibition, Garen became the facilitator who introduced the exhibition pieces to the audience. For the eBarrio knowledge fair, Garen became the main representative of the community. His son joined him. During this conference, Garen took the role of project representative, while I became more like a technician to ensure that the exhibits were working and to help in setting up the exhibits.

Other parents who were involved in the project throughout the process are Wilson (the community chief), his wife Joy, Connie (a crafter), Sasha (Garen's wife). With Wilson, I negotiated project logistics, such as when to plan my next visit and what I intended to do. He also contributed to the design of the musical instrument by giving suggestion on how to improve the design. He was the person who made the platform for the electronics for the musical instrument in order for it to work. Connie was mainly involved in the design activity of the lights. She was the main contributor in some stages. Following from my sketches she created light shades from rattan. Together we chose a final design, which she then executed. Interactions with Joy were mainly about hearing her opinion. Sasha was involved in the same way. However, in the last stage she had a more active role, taking responsibility for the website by becoming the moderator. She also introduced the designs to people who were curious to learn about them.

In the exhibition stage, other parents became involved, like Stanley, who joined us at the eBarrio knowledge fair, Ajor, Erra's father (Erra is one of the youngsters) and the neighbour, who attended the pilot exhibition. They showed appreciation towards the designs.

6.4.2 Youngsters

During the preliminary visits, I connected with a group of girls who helped me to find people to do the design probe activities with and who joined in the design probe activities themselves. These girls were Citi, Topek, Grace, Cepek and Julia. Ezwong became involved through Garen. Ezwong is an artist. Garen had asked him to make the drawings about Oroo' mentioned previously.

During the first co-creative encounter, no youngsters took part except for Diana, who I consulted for help, like I had done with the group of girls during the preliminary visits.

In the second co-creative encounter, more youngsters took part in the process. Garen had asked Diana to bring together a group of youngsters for me to conduct a workshop with. This group comprised Diana, Pip, Erra, Kathyia, Selena, Bili and Gajut. I gave them an introduction into how to use the website. Together, we brainstormed about the type of stories that could provide the content for the website. Bili and Gajut were also involved in brainstorms about the musical instrument. Garen had Gajut in mind to create the design for the musical instrument, since he is one of the community's artists.

In the third co-creative encounter, I held four design probe meetings. In total, seven youngsters took part in the design probe activities: Chris, Josephine, Cantona, Kathyia and Erra took part in the first one. The second design probe meeting was attended by Chris, Cantona, Josephine, Breakley, Erra and Kathyia. Chris, Josephine, Breakley, Erra, Kathyia and Diana took part in the third meeting and Chris, Erra, Kathyia and Diana took part in the last meeting. Kathyia became responsible for helping me collect the stories about the Pagang. Kathyia involved Josephine in helping her. When looking at the third co-creative encounter, it can be seen that within the design probe design activity, the youngsters have most contributions. The same is true for the second co-creative encounter in the stories design activity. This reflects what Garen indicated: the youngsters can help to collect 'data' - or create stories, but what they create has to be approved by the elders.

6.4.3 Elders

There are not many codes that come from elders. It seems as though the elders stand above the project, and that they only take part in it, when things have to be approved. This corresponds with Garen's explanation about the community's decision-making process: everything has to be approved by the elders before it can be made public. An example of this can be seen in the third co-creative encounter, when a community meeting was held. Here, the project, with the idea of using the pagang as the instrument for the musical instrument probe, was introduced by Garen to the wider community. He, however, seemed to focus his attention solely on the only elder attending the community meeting:

It seems important that James gets enthusiastic about the concept, since Garen focusses his attention during the translation solely on James. [Third Co-creative Encounter]

I think that this community meeting was especially important since the approval of James would mean that we could start building the design for the musical instrument.

During the pilot exhibition in the exhibition stage, something similar happens when Garen introduced all of the designs to the elder who was attending. Again, Garen focussed his attention solely on this elder.

The elder responded positively:

Yes! This is the Long Lamai of the future. Because no one else has it, we can claim it and call it truly from Long Lamai. And because of this, technology can represent us. These are new creations of the community made through co-operation. [A3- Exhibition 7g]

And:

Elder: I am very happy to see this project since it is for and by the people here. It has been an exploration on what aspects are important for our culture. We also involved the youngsters in this – they learned more about our culture. [A3 - Exhibition 7i]

With his approval, we could present the project at the eBario knowledge fair.

6.4.4 Consequences of Involvement for a Respectful Design Space

In order for a respectful design space to arise, you need people who take initiative - like Garen. Without them, there will be no chance to establish a respectful design space. He took the role of project manager, after I had consulted with him over the problems that I was experiencing with understanding some of the dynamics of the community. Even though someone like Connie was intensively involved in creating the lampshades, she was always adhering to my ideas. It might also be that I did not provide her with the opportunity to give novel suggestions.

Long Lamai decided as a community that they wanted to participate in the project. Everyone agreed through voting in the community meeting. Thus, when I talk about community, it is the community of Long Lamai of which the members collectively agreed to take part. When I speak of local designers it is those people who became involved in the project directly through their own initiatives. Through this they became the representatives of the wider community. As such a representative, Garen had a major role, which could be reflected on as a role more similar to mine, in which he tried to make this project happen. However, the expertise that he brought to the project was local, which put him in a perfect position to stimulate this project to reach respectful design. This is a tricky position because of the power that he obtained throughout the project. What if he would have misused his position? This could have resulted in tensions such as those described by Light *et al.* (2013). The researchers only noticed those tensions when the people started asking help from the researcher directly. However, I was not afraid that this would happen due to the community structure: Garen was always supervised by the elders, so if any friction had emerged, the community structure would have dealt with this. Furthermore, Garen is a very humble and genuine person who broached cases where he considered unfair divisions of opportunities had arisen among his fellow community members in relation to the project. However, it is always important to be aware of the power that those who take initiative can practice.

Adhering to the community structure is important in order for community to make the design space theirs. In this case this meant that the youngsters were collectors of information and performers of probe activities. The elders were the ones who needed to approve the created and collected information. This is visible through the involvement of the elder at the approval stages of the project.

6.5 Design Participation

In Section 6.3.3, I concluded that in order to reach a respectful design space, the initiative should lie with the community. This was the case in the design activity of the design direction as well as in the design activity of the musical instrument.

As mentioned in Chapter 3.4.3.1.1, Lee (2006) distinguishes between designer-driven types of design participation and community-driven (or as she calls it: user driven) design participation. The designer-driven types of design participation are *innovation* and *collaboration*. The community-driven types of design participation are *emancipation* and *motivation*. In community-driven design participation, the initiative lies with the community. This means that as introduced in Section 6.3.3, one can expect that in the design activity in which the community showed most initiative, the type of design participation is community-driven. Thus, it would be either *emancipation* or *motivation*. Design activities that are designer-driven or result from an interaction between the community and me, most probably will reflect this by involving mainly designer-driven design participation, i.e. *innovation* and *collaboration*.

Figure 6.20 shows the pattern sheet for the design participation coding concept. This coding concept was only applied on the research diary, because during the coding process I realised that this coding concept became apparent mostly through expressions rather than through the visual data I had collected. It has to be noted that those codes, like all other codes, came from my research diary and are thus my perspective on the situation.

The upper row of the pattern sheet shows the total of design participation codes for each of the stages. The rows below show the division of codes as they appear in each of the design activities for the separate stages. Since not all stages were equal in length, it is impossible to directly compare them. It is for this reason that I divided the codes for each stage and for each design activity within this stage by the amount of days that the stay lasted. This meant that the amount of codes for the preliminary visits was divided by eleven days, the first co-creative encounter codes by fifteen, the codes for the second co-creative encounter by eight, the codes for the third co-creative encounter by 31 and the codes for the exhibition stage by seventeen. It must be noted that the more days there are to divide the codes by, the more accurate the data is.

As mentioned within the previous section - I reason that the design activity of the musical instrument has been conducted within a respectful design space. This is in contrast to the lights design activity which appears to have taken place within a design space that had not become respectful yet. When looking at the pattern sheet for the design participation it can be deduced that again there is a difference between the musical instrument activity and the light activity. Whereas the musical instrument is the focal point (see Figure 6.20-1) of the design participation codes for two stages of the process: e.g. the third co-creative encounter and the second (although shared with the design direction activity), the lights design activity only has codes during the first co-creative encounters (see Figure 6.20-2). These codes are all collaborative, which means that the typical design participation within this activity is designer-driven. Within the musical instrument design activity, the design participation codes are mostly emancipatory. The average of the design participation codes show that in each

stage, the design activity of the musical instrument is community-driven (see Figure 6.20-3). For the design activity of the stories, the main driver is less easy to distinguish. Even though the average makes it mainly community-driven, the difference between that and designer-driven is small (Figure 6.20-4).

In the overall overview, it can be seen that the first two stages of the design process had a predominantly designer-driven design participation (Figure 6.20-5). In the stages after this, something changed: the design participation shifted towards being community-driven (Figure 6.20-6).

In the overall overview, it can be seen that the main type of design participation, within the preliminary visits, is *innovation* (Figure 6.20-7). In the second stage - the first co-creative encounter - the main type of design participation is *emancipation* (Figure 6.20-8). *Emancipation* remains the dominant type of design participation within the second and third co-creative encounters (Figure 6.20-8). This means that the design participation is community-driven, suggesting respectful design. Only in the exhibition stage, the main type of design participation shifts towards *motivation* (Figure 6.20-9). This means that the community is fully in charge of the design participation, which suggests that they have taken ownership of the process.

I predicted in Section 2.8.3 that the good enough designer follows a hierarchical pattern through the design participation tactics. This shows within the design participation pattern sheet: a hierarchical pattern within the process can be seen: from *innovation* to *emancipation* leading to *motivation*. In the next paragraphs, I will detail each of the steps, in order to understand what it took to reach *motivation*. Through this process I also acknowledge that it might not only have been the type of the design participation that developed towards motivational design. I might also have been that the way I kept my research diary shifted throughout the process. For example, it can be that my account keeping became more open or sensitive towards the community's input.

6.5.1 Innovation

In the first stage of the design process, the preliminary visit, the *innovation* concept contains most codes, as can be seen within the pattern sheet. Half of those codes are reflections, the other half are actions. Examples of innovative reflections are:

Tomorrow or the day after I really have to start with the design probe exercises, else I will not be able to finish it. I need to arrange this this evening with Wilson or Garen.

[A2 - Preliminary visits 3h]

Or:

I will first make different options, following from Nesen (e.g the time capsule probe), I will also look at how I best can teach the people here to maintain the designs. How they will fix it if it is broken or how they will use it to record stories. This is one of the most important aspects of the entire design. [Ap 2- Preliminary visits 6i]

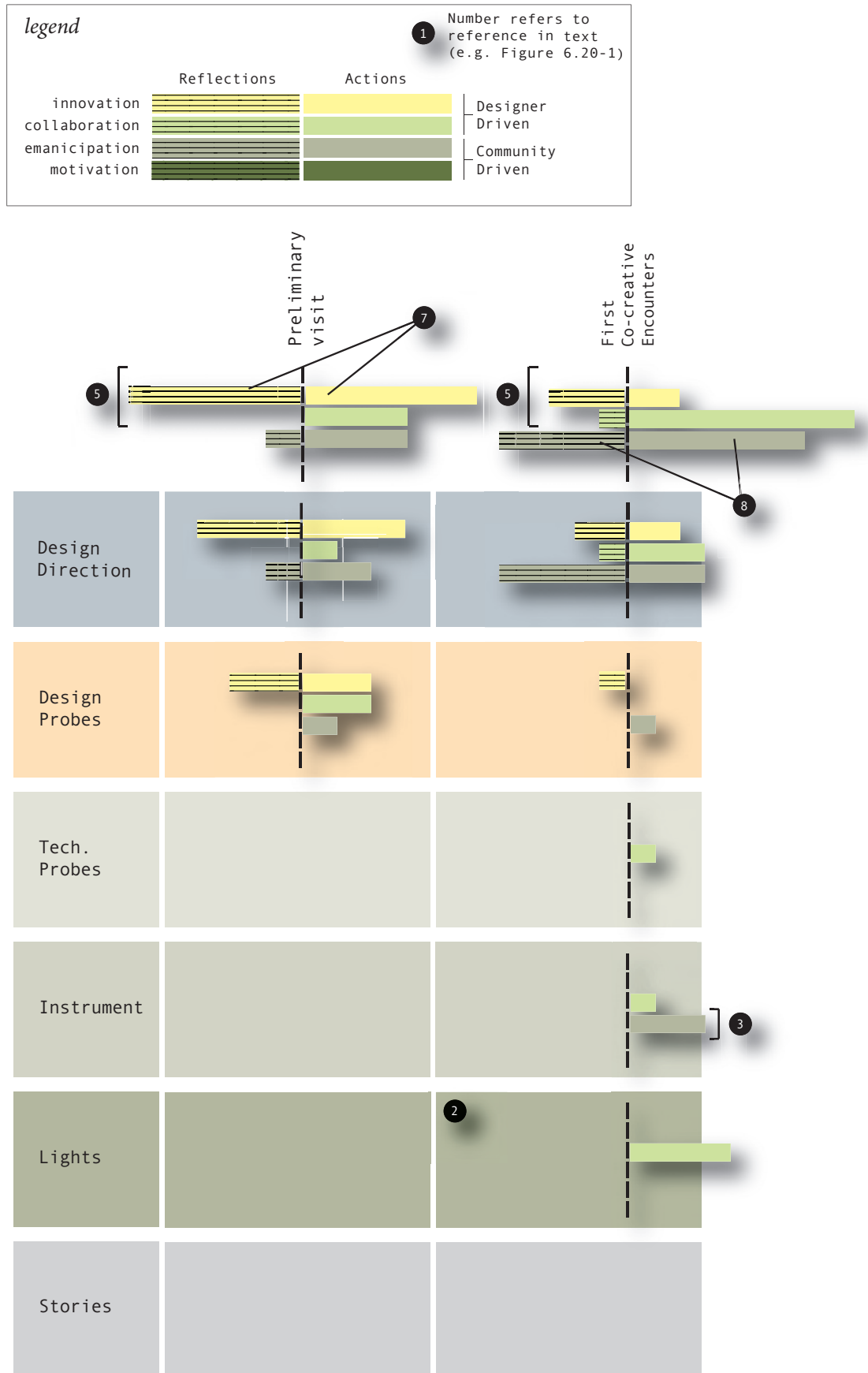


Figure 6.20- The pattern sheet for design participation. (The numbers are referred to in the text).

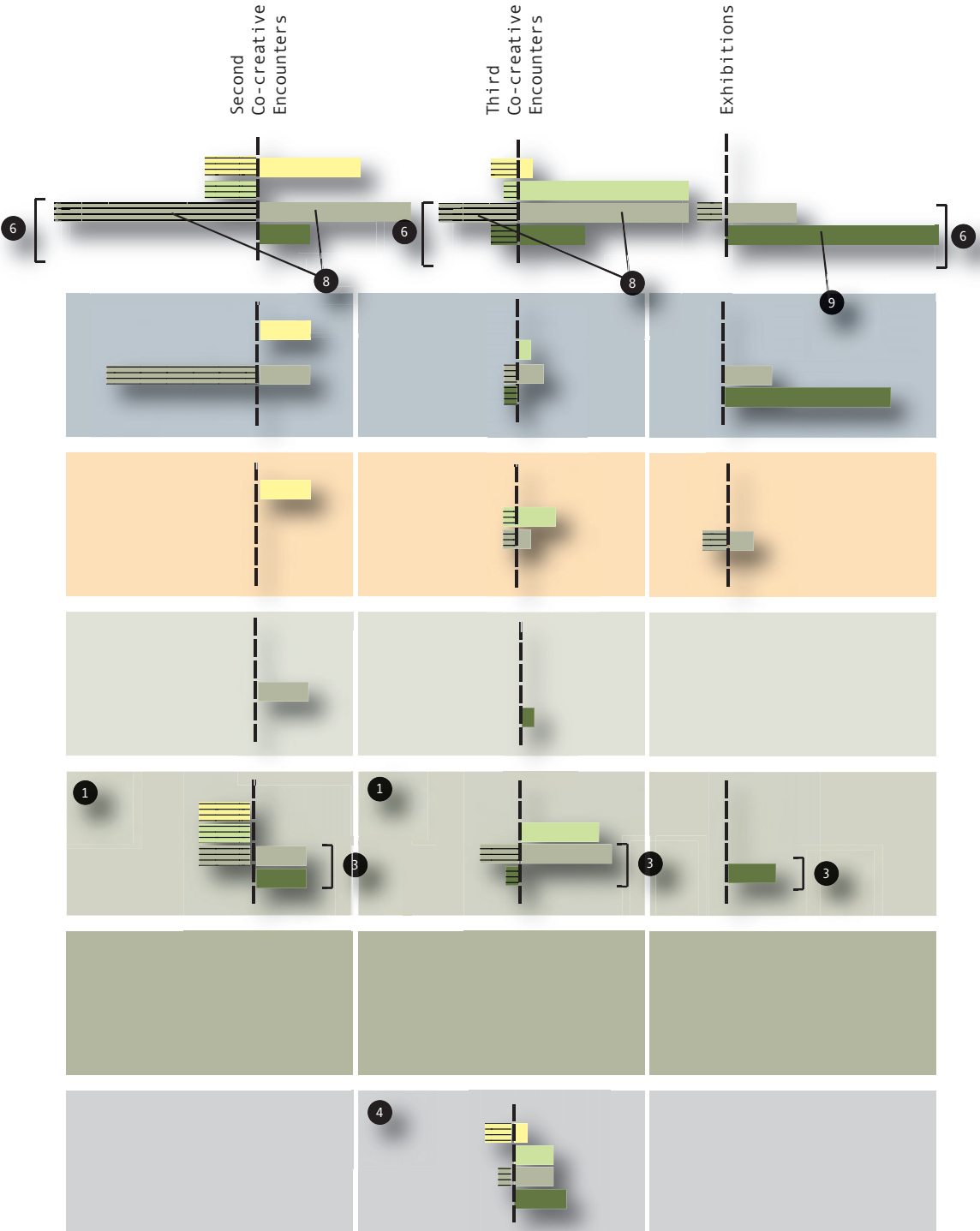


Figure 6.20 (continued) - The pattern sheet for design participation. (The numbers are referred to in the text).

Those innovative reflections are likely a consequence of my design education. As introduced in the Introduction Chapter, I did both my bachelor and master education at the Eindhoven University of Technology. Here, I learned to take the role of innovator as a designer. Even though I did involve ‘users’ in my work, the encounters with them were short and aimed to provide an understanding of a certain context and inspiration for the continuation of the project. I had never embarked on a real co-creative project and this showed in the role I gave myself and the community. I did not realise I naturally took this attitude before I started this project. By not reflecting on this, I remained unaware of this attitude and was therefore not able to change it directly.

The attitude of the community towards my role also seems to be founded in the idea that I should be the innovator. Probably for the community this is the normal way of working together with researchers. Before me, an anthropologist and a few linguists stayed in the community. It might be that they had a set of data they wanted to collect. The community then took on the role of providers of that knowledge. This might have resulted in the understanding that the role of the community is to provide the researcher with the required information. They, for example, asked me during the community meeting what type of help I required:

They asked me when I would return and what kind of help I needed at this stage. We agreed that they would bring me in contact with four adults and three youngsters. [A2-Preliminary visits 3g]

However, also cultural assumptions that are connected to who I am and what I look like might have influenced how the community responded to me. I am a white researcher, coming from Europe. Subconsciously, due to the history of colonialism, such characteristics can result in being seen by the community as ‘the expert’. Through trust growing and relationship building such subconscious power structures should be diminished in order for respectful design to arise.

To sum up, not only my previous experiences guide the design participation, also the community had built up an approach towards research that might not necessarily provide for a community-driven approach. It therefore seems important to understand, before embarking on a co-creative project, what experience might have influenced the community’s approach towards research. During the co-creative project, a designer should critically reflect on her own design participatory attitudes.

6.5.2 Changing Attitudes

When looking at the timeline of the design participation codes within the preliminary visit (Figure 6.4), it can be seen that initially only innovative codes surface. However, within time also other types of design participation appear: *collaboration* and *emancipation*. I will look closely at a few transitions, starting with the first transition on the sixth of September. The innovative reflections and actions of the earlier days, all suggest that the type of design participation will be fitting to the *inno-*

vation coding concept but the actions on the day that I met Grace for a design probe activity (sixth of September) shows differently. In the time-capsule design probe exercise for example, I made a plan of how to do it based on a more innovative type of design participation:

Today I went to Grace. Her father and mother were also there. I showed them the book and asked whether Grace could help to do the nesen-activity. I proposed to give her three bags, with which she then could go to different people in her own time. [A2- Preliminary visits 6a1]

But on the actual moment of doing the design probe activity, the actual design participation became more like the *collaboration* type through negotiation with Grace:

She however proposed to do it together, this afternoon. That seemed to be a good plan. Her parents also helped. The first thing they wanted to photograph was a tube for the darts... [A2 - Preliminary visits 6a2]

I intended to take the position of authority - expert. But in this case, in my behaviour I became more like a facilitator. This probably can be mostly assigned to Grace. She did not directly agree with my proposal, instead she proposed a way that would work for her. I did not push my idea at all, and therefore the exercise was done the way Grace proposed. This might have had a positive effect on the actual activity, because the way it was done invited Grace's family to take part. My own character also might have meant that this exercise naturally switched to a different kind of design participation. In general, I tend not to push my own ideas strongly and I do not tend to take the lead, especially not in a situation in which I am not completely sure what the best idea would be. The flexibility of the probe- no strict idea how the exercise should be done, or by whom and no clear definition of what specific type of data should be collected- also provided space to easily switch and take on a different type of approach.

Another interesting situation occurred in regard to establishing the type of design participation. This situation was different from the situation described above. It was a situation in which both the community and I took different attitudes towards design participation. While the community was already exploring the emancipatory design participation, I was still stuck both in the *innovation* and the *collaboration* type of design participation. This caused, in the last days of the visit, the intentions of the participation to switch between *innovation* (my reflections), *collaboration* (my actions) and *emancipation* (the community's initiative). The negotiation process started on the 6th, after I introduced the outcomes of the time-capsule probe to Garen:

We start talking about something else. Then Garen says: "You could focus your project around Oroo', since it is very important for the Penan. I'll ask one of the younger artists to draw some of the Oroo' for you to understand it." [A2 - Preliminary visits 6g]

I agreed to this and Garen asked Ezwong the artist to visualise Oroo' for me in a way to help me

understand it:

Ezwong will draw Oroo' for me – following from Garen's idea to help me to understand Oroo', so that we can focus on it for the project. [A2 - Preliminary visits 9a]

Both codes, coming from my diaries and, thus, my perspective, have a design participation with an emancipatory character. This caused me to then reflect:

I will first make different options, following from Nesen, I will also look at how I best can teach the people here to maintain the designs. How they will fix it if it is broken or how they will use it to record stories. This is one of the most important aspects of the entire design. [A2 - Preliminary visits 6i]

This reflection is important since it shows that I still fall back on my innovative role as a designer. The community however, wants to remain in charge of the decision process. After that I gave a suggestion on how we could implement Oroo' in the project. This suggests innovative design participation. However, then Garen redefines the focus, to make it again more beneficial for the community. This gave the design participation an emancipatory character:

I told him my idea of how we can focus the project on Oroo'. Garen seemed to understand it and he also seemed positive about the idea. {Innovation}[A2 - Preliminary visits 9b]

Resulting in Garen's reaction:

Garen wants me to focus also on the Penan music and maybe on the crafts or the nomadic life of the Penan {Emancipation}. [A2 - Preliminary visits 9c]

I respond to this by reflecting how I - as the expert designer - can do this:

I am thinking of making a concept that fits to eTOroo' [Tariq Zamans project in the community]. I will first make this concept visible and then communicate it to the community. {Innovation} [A2 - Preliminary visits 9d]

At no stage of this preliminary visit was I aware of my attitude being contradictory to the attitude taken by the community. Nor was I aware of the consequences this had for providing space for design participation with a community-driven character. Looking back at it now, I realise that I should have reflected more critically on this aspect. It would have been good to connect reflection, interaction and actions and explore whether there was a match between my own actions and reflections and the actions and interactions with the community, such as I have done in this section. This way, I think I would have been able to prevent falling into unintended behavioural patterns.

6.5.3 Negotiating Design Participation

The first of the co-creative encounters seemed to be predominantly about settling the type of design

participation for this project. Both the community and I seemed to struggle with this. I intuitively felt reluctance from the community, but did not understand where this came from. It might be that the community knew what they wanted but they seemed to find it difficult to express their dilemma with the perspective I proposed for the project.

When looking at the timeline of establishing the design direction, it can be seen that there is a shift from innovative design participation towards emancipative design participation. Figure 6.21 provides a chronological account of the codes in establishing the design direction.

When looking at the timeline for the design participation codes, a shift can be sensed between the beginning of the visit to my departure. The first codes (reflections and actions) have a more innovative character. On the fourth of August, something changes, especially in my reflections. After the fourth, most codes tend more towards an emancipative character. This is what happened:

In the first days of this visit, my attitude and the connected reflections can be seen as innovative:

I want to do this by organising different activities. [A2 - First co-creative encounter 29b]

Equally, the community responds to my proposal of the project in a way that suggests innovative design participation. They give suggestions that indicate that they consider themselves as providers of data, rather than as equal partners in the project.

He [Garen] immediately started to consider who could help me. [A2 - First co-creative encounter 29c]

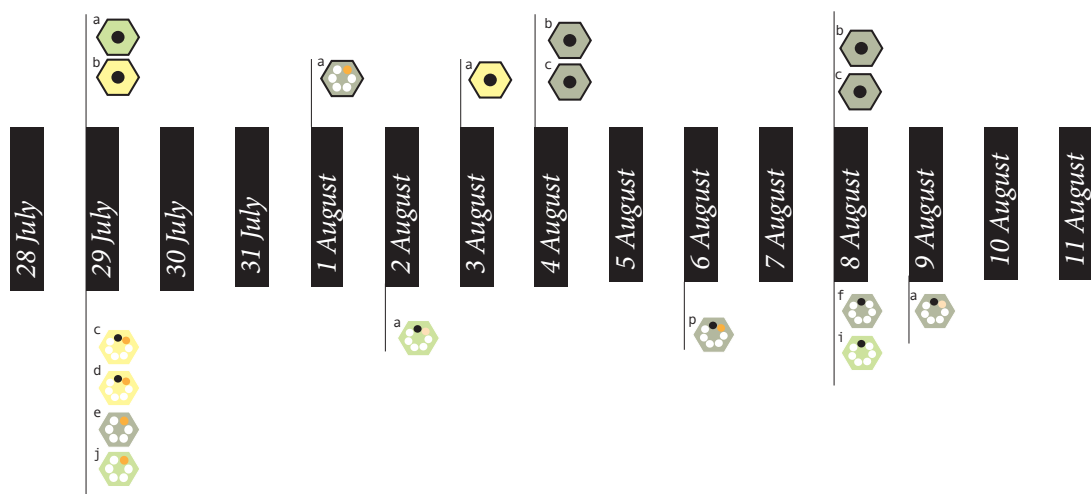


Figure 6.21 - The timeline for establishing the design direction during the first co-creative encounter.

And:

He [Garen] delegates tasks to ensure I get useful information. [A2 - First co-creative encounter 29d]

However, I do feel reluctance from the community to really engage with the project. I am waiting for the community to change their attitude, but I do not fully understand what I am waiting for. This feeling of not understanding the community makes me impatient. It makes me wonder whether they expect me to take initiative. This results in me having more reflections that suggest innovative design participation, like:

During church I thought that it might be the best thing to just work together with parents and their children. Like last time, the exercise that worked best was when I personally asked Grace and her father to help me. Especially with the individual tasks, but then they can motivate each other to do it. And I can be there as a facilitator. [A2 - First co-creative encounter 4a]

Then I shift from having reflections that suggest innovative design participation into taking innovative actions. It is during my first initiative that I realise that I am acting in an inappropriate way:

I was a bit nervous for when they came over. I didn't know what to expect. I also didn't know when they would come around. So, I didn't feel comfortable to leave the telecenter, just in case. But then I thought, I do not know whether they know that I am here... so, I need to make sure that I can see them coming back from the meeting. And then I thought: "Maybe Sasha meant that I could go to the ladies meeting to introduce my work." So, I went there and they were praying. I thought: "Ok, let's go back, this is not the good moment." I decided to sit on the porch instead. But I had that feeling that it was me who had to make sure that they at least considered my project. So, I went back once more to the ladies' meeting. They were not praying anymore, but an older lady was talking. The ladies waved to me that I could enter. And Joy looked very surprised that I was there. This surprise made me realise that this was probably not the way it should be. [First co-creative encounter]

I felt really awful after this happened, I felt as I had disrespected the ways of the community. From that moment on I started reflecting on my own attitude and how I could make the project fit better to the ways of the community:

Who did I think I was thinking that my project was so important. It might be important for me, but it might not be important for anyone else. If they just help me out, without being interested that is not the way I want things to go. [A2 - First co-creative encounter 4b]

And:

I know that I have to take things slow in order for them to work fine. So I need to give them time to even become interested. [A2 -First co-creative encounter 4c]

These new reflections suggest a change in my attitude in regard to the design participation. The most important change is that I realised that whatever happens has to come from the community and that the design participation should be community-driven. With that newly obtained awareness, the overall design participation changes to emancipatory.

Looking back now, I realise that my stress level influenced my patience and flexibility from the beginning of the visit. Prior to the visit, I had worked very hard to finish everything on time. Other preparations, such as moving out of my house in the UK, put me also under pressure. I went straight to Malaysia, without a break in between. The time between arriving in Malaysia and being in the community was only a few days. This made me hurried and without realising, I assumed that the community would follow my pace. Storming into the meeting of the elder women was a mistake. I was lucky in this case that it had no further consequences for the continuation of the project. However, I probably needed this moment to start reflecting more critically on what I was doing and on the pace that I expected the project to have. It opened my eyes and made me more mindful about what it was that I was doing. It interrupted my own pace that I had worked on prior to the visit, and made me slow down.

6.5.4 Acceptance is followed by Patience

During the preliminary visit, I had not been aware of the community structure. I was not introduced to it, and since the process of engaging people happened so smoothly, I did not realise that the structure of Long Lamai differs significantly from communities that I have previously engaged with. The second visit, the first co-creative encounter, made me realise that I had no understanding whatsoever about how the community made decisions. I was told that the community was egalitarian. This means that everyone has the same power when a communal decision needs to be made. I saw this in action during the community meeting of the preliminary visit. This time, there was no community meeting organised for me. I was lost as to what to do. For me it was unclear how this process normally would be, which made it difficult for me to wait, since I had no idea what I was waiting for. This changed when Garen started to give me insights in the process, like in the following conversation:

He said that I was an ideal researcher, because I really listened to the guidelines that they had set up. I said that I did not fully understand how the decision making process worked. He started drawing a circle with names. You have to interest at least one of the community representatives (e.g the research manager (Garen), the chief (Wilson), the women's representative, the youth representative, the church representative or the person who decides on transport matters. If you do that, they can help you to get to the centre (the community) to make sure that your project will get support. The elders will make the final decision. If you try to do it without this technique, then you will not succeed. You will get resistance. Many researchers who came here experienced that and they complain that Long Lamai is not co-operative. Garen said that because I am so careful and so considerate, I was doing very well. I respected their ways of doing and their cultural protocol. I think this is a very important point. [A2 -First co-creative encounters 6p]

I was very surprised by what he said. I did not feel like the ideal researcher after I had stormed into the meeting of the elder ladies on the fourth of August. I am still puzzled as to why he said this. However, I realise now that Garren might have tried to help me, to explain that I had to wait. This conversation might have been a direct consequence of what I did on the fourth. This introduction to the acceptance process given by Garen was of great importance for me. It helped me to find the peace to patiently wait until the project had been accepted by all the community representatives. I realised at this moment by looking at the previous days, that Garen was helping me to introduce the project to the appropriate people. He is the research matters representative and he championed the project. I had introduced the project on the first day to Joy, the women's representative. On the second of August, I had introduced the project to Wilson, the chief, because Garen told me to. On the sixth of August I had introduced my intentions to the youth representative. Although I never introduced it to the elders, Garen mentioned them as part of the decision making process:

We talked for a long time. He said that I do not have to worry about anything. I am already in phase 2, almost in phase 3. He couldn't see a reason for the community to not accept me to continue to phase 3. He said I have to talk to Wilson. Wilson has to sign the agreement. Sunday, the elders have a meeting during which they talk through the week. Together with Garen I will try to be there. Garen also will organise a meeting for the youngsters. During this meeting I can introduce myself. I do not know whether this will be effective, but we shall see. [A2 -First co-creative encounter 1a]

That I did not personally introduce the project to the elders does not mean that they did not talk about it and decide on it. It might be that Garen did this without me knowing. It might have been this that resulted in Garen telling me that the elders (and parents) could not talk about their identity to the youngsters since this would be a taboo in the dynamics of the community. The community opened up to me by explaining me that they could not engage in the design probe activities at this stage, since it touched on a taboo:

It turned out that elders cannot and will not talk about their identity, since they want to stay low profile. The things they know are directly related to their identity. So, if they share parts of their identity, they share things they might not want to expose. For example, about certain plants or trees. Their knowledge can be used by companies, but that would not be good. So, they have to keep their secrets. They might not trust me with those things either. He did not say this directly but this is probably also the case. Furthermore, not everything about Penan life can be shared with everyone, not even with everyone from the same culture. Depending on age and character some things might be shared, while others cannot. So, there is no one Penan identity, but several segments. But those different segments cannot be shared with people in different segments. It is probably for this reason that many people started to become a bit silent when they did hear about this part of the project. I'd mistaken this silence for misunderstanding. Or lack of interest, because they continued immediately towards the technological designs and how important those were. It is not that I have to ditch everything immediately, it might be that later on those things are less delicate. [First co-creative encounter]

So, the meeting was cancelled. The main part of my project: "What role can design play in facilitating intergenerational conversations regarding Penan Identity?" also seemed not to be possible. [A2 -First co-creative encounter 8b]

Before I left the community, a community meeting was organised during which we agreed to start the project focussing on the technology probes. During this community meeting, the church representative, the chief, the youth representative and Garen, for research matters were present. We signed the research agreement.

To conclude, Garen provided me with an insight into the community's acceptance process. By presenting me with this insight, the community provided me with an appreciation of the community's indigenous knowledge system in regard to some of the community's processes that then enabled me to take a more sensitive approach. However, the community did not directly provide me with an insight into the acceptance process. I was taking part in it, without realising, which, as a respectful design researcher, was challenging. Adhering to the community structure of decision making turned out to be very important and it required patience from me. It enabled the community to make a more community-driven approach: I could start the project, but only on their terms. They decided the project direction and rejected the proposal I had given.

6.5.5 Towards Motivational Design Participation

When looking at motivational design participation within the pattern sheet (Figure 6.21), there are a few things that stand out. As can be seen, the first motivational codes appear within the second co-creative encounter.

Garen send us to collect material for the Pagang with Bili. [A2 -Second co-creative encounter 5k]

This code shows that I became a co-worker, rather than a facilitator or motivator. I however do not think that this is the most important code when it comes to motivational design participation to flourish. I consider another example of a code more important in this process. Even though the following example is not labelled as 'motivational' but given an 'emancipatory' label, I consider what happened here to be a catalyst for motivational design participation to appear:

Now Garen is in charge of the budget: He will receive 1000 ringit, which he will divide. He will decide who can help with what and he will give the assignments. Garen will also be better able to judge who is capable of performing a task. [A2 -Third co-creative encounter 6c]

This shift of project management from me to Garen meant that he could adjust the process in such a way that it would fit to the dynamics of the community.

During the third co-creative encounter it becomes more apparent that Garen took charge. He, for example, reframes the design direction. Although we both realised that the direction I had introduced

during the first co-creative encounter was not appropriate for Long Lamai, we did not specifically state what the new design direction should be. Garen changes this by saying that it should be about:

*“Novel technology with traditional culture to show what Long Lamai has to offer.” [A2
-Third co-creative encounter 7c]*

Later on, he showed that he had taken charge of the project even more strongly by saying to me, after I had taken a day of rest:

He said: “Ow, you don’t really have time to take a break...” I was a bit shocked. Did he think I was not doing enough? [A2 -Third co-creative encounter 18f]

Through this statement Garen showed that I was working for him or for the community. Thus, during this stage I became more like a crafter than a facilitator or a co-designer.

It was not only Garen who suggested motivational design participation. I also started behaving in this way:

*I need to do so much work still! Last night I spend the whole evening working. [A2
-Third co-creative encounter 29a]*

Garen had left the community for two weeks. During this period I really pushed to finish everything before Garen came back. It is possible that I wanted to impress him, or that I felt obliged to finish my part of the project, as if he were my boss.

This attitude both from Garen and me might have started due to me taking responsibility of only the electronics. By working every day to finish the electronics of the exhibits I may have stimulated the community to take initiative in the process and to also work towards finishing the designs. The task I chose was a supporting task. The more directing tasks I left to the community. In doing this I did not pressure the community to do something and this may have resulted in a model of community-driven design participation, in which I was a crafter rather than an initiator.

It is not only the rise of motivational codes within the third co-creative encounter that stands out: the rise of collaborative codes within this stage also draws attention. When looking more closely at those codes though, it shows that those collaborative codes appear because they are a result of the community overall moving to motivational design participation. I become more like a crafter (motivational) - but since I was working together with other people who I instructed, the type of design participation was collaborative. In order to make the electronics work, I needed a platform for around the pagang on which the electronics could rest. Since I did not have any tools to do this, I asked Wilson to help me:

Then he [Wilson] went out to find a piece of wood of that size. He said that he had already realised that he would not be able to find bamboo of the size I wanted to have. It would not be strong enough, which would result in that we still needed, even after finding the right size of bamboo, material that would strengthen the bamboo. That would be inefficient. [A2 -Third co-creative encounter 22d]

And:

Wilson is now making the platform. From time to time he comes by to discuss aspects of the design, or to let me check whether it is ok. [A2 -Third co-creative encounter 23a]

Thus, in order to understand the true dynamics of the design participation, I realised that it is important to look at the entire context, rather than at the separate design participation codes. The context shows that I was working for the community - the main design participation was community-driven. But in order to fulfil my duties as crafter within this motivational process, I needed to engage in collaborative design participation. I drove this *collaboration*, but looking at the bigger picture of the project, it was the community who drove the overall project.

6.5.5.1 Motivational Design Participation as Ownership Marker

When looking at the exhibition stage in (Figure 6.20-9), it can be seen that the main type of design participation is motivational. This is interesting since not much is made or designed within this stage. It appears that the abundance of motivational codes are appropriations of the project by the wider community. The pilot exhibition, especially, was important in this. The motivational codes represent reflections of looking back at the project:

Long Lamai has an idea, but does not know how to make this idea reality. By combining skills (technology- Liz) we become inventors. [A2 -Exhibitions 7h]

And:

It was an idea that we had in our head, but only with the help from outside were we able to make this idea reality. [A2 -Exhibitions 7j]

In this looking-back manner, the motivational type of design participation seems to be strongly connected to ownership. In this way, it seemed as if the pilot exhibition was very important for taking final ownership of the entire process.

6.5.5.2 Pagang Stories and Motivational Design Participation

There was one design activity that started from a motivational design participation. But, oddly enough, it changed, with my contributions, into an innovative design participation. The stories about the pagang were actually initiated by the community:

Then Garen said that he thought it was important that we would record the poems and pagang melodies. The poem would need to be written down. [A2 -Third co-creative encounter 15i]

I assumed the we that he mentioned was him and me. Garen had already mentioned before that it would be good to record the pagang stories, and I had seen this as an invitation to do it. I took the initiative to start the collection of those stories. This caused an *innovation* design participational reflection:

I think that I have to go with Diana to Connie (or with Kathyia). She will be able to learn and write down the story and I can record the melody. After collecting different stories and melodies we can organise a quiz night during which those stories can be in the centre of the attention. [A2 -Third co-creative encounter 10c]

I asked Kathyia whether she could help me and she had agreed to help me collect the stories. After mentioning this to Garen, he did not say that I could not do it, and therefore I started. This resulted in design participation according to the *innovation* type:

She [Connie] only knew 3 stories and said that other people might know more. She suggested that they might have time in the evening. We agreed to have a meeting with ladies who knew more stories in the evening. [A2 -Third co-creative encounter 18b]

And:

On Tuesday I will ask Joy whether she knows women who can play the pagang stories. [A2 -Reflection Third co-creative encounter 20c]

And:

The first thing I did today was going to Joy and ask her whether she could help me to find people to record the pagang stories with. She said she would ask Wilson. [A2 -Third co-creative encounter 22a]

So, even though it started as a motivational design participation, it soon turned it into an *innovation* design participation. I became very interested in those songs and I considered it important to create a database of them. As mentioned before, I experienced resistance from the community. Both Kathyia and Josephine did not seem interested to participate. Connie only shared one story. Joy said that she would have to ask Wilson. It was as if they kept the door closed for me.

It can be that they do not want me to do this. Or that they really do not know about those stories. However, I think that in any case it will be better if it is completely supported by the community. [Third co-creative encounter 30a]

This reflection made me realise that it would be better for me to stop being involved in this part of the project.

Looking back at it now, it might be that Garen took recording the Pagang stories on and I had misunderstood my role in this:

After the meeting Kathyia called me back and said that she had talked to Connie. Connie had told her that Garen had already visited her and that he had already written down three stories. I was confused... Did we not agree that I would be the one doing this? [A2 -Third co-creative encounter 17d]

I decided to pull out of this part of the project, because I felt that they did not mean to have me involved. It might be that this idea resulted in the community starting their own database of pagang stories for their community museum. It might have continued after I left. This design activity in itself thus had the potential to be respectful and community driven. However, only without me having a role in it.

6.5.6 Design Participatory Dynamics in a Respectful Design Space

In order for a design activity to be positioned within a respectful design space, it is important that the community is the main initiative taker. This means that the design participation should be community-driven. Both *emancipation* and *motivation* are community-driven design participation types. Reaching a motivational design participation, even as a reflection by the community on the overall project, suggests that a community has taken ownership of the project. This does however not mean that there is no space for designer-driven design participation as it might be needed to fulfil a task within a bigger community-driven project. In Figure 6.22 it can be seen what this means for a respectful design space.

In order to reach a community-driven design participation model I have found, through the pattern sheet and the reflections on it, the following recommendations:

- Be aware not only of your own background when it comes to design participation, but also of what experience might have influenced the community's approach towards research.
- Be aware of your own character; does it stimulate or hinder specific types of design participation.
- Reflect critically on your reflections, interactions and actions and explore the community's actions, reflections and interactions.
- Be humble and patient and try to let the community guide the process.
- Choose a task that helps to make the visions of the community a reality (such as working on the electronics) and work on this with dedication, to stimulate the community in a subtle way to also invest in the process.
- Take a break between preparing and introducing the probes, in order to create some distance from the probes and the design direction. This may help to respond patiently and

flexible to the community's responses.

- Try to transfer the project management to someone in the community. Make sure that this person has the ability to pull the process towards a respectful design space. People that suit this role are people coming up with proactive or contributory novel expressions (e.g because they define a problem or because they take initiative to become involved) and who express value and other degrees of ownership towards the project.
- Be aware of the power that those who take initiative can practice.
- Reflect on your own connection to the design activities. Being overly interested in a certain activity might cause you to take ownership and pull design participation towards innovation- or designer- led design participation.
- Make the probes and your attitudes towards them flexible in order to switch to different types of design participation easily. Try not to build up a strict idea of how or by whom the exercise should be done. Try not to shape a clear definition of what specific type of data should be collected.

6.6 Conclusions

Within this Chapter, I looked at the dynamics of connections between design activities, initiative, involvement and design participation. Each of those provided insights into characteristics of a respectful design space. The connections between design activities taught that there is a need for action and reflection stages within a respectful design space. Within this respectful design space, the community should be the main initiator. In order to reach this, it is important to find key-people who can drive and shape the project in order for it to become relevant and beneficial for the community. Those



Figure 6.22 - Design participation implemented in a respectful design space.

key-people can help to make the project reach out to the broader community. They can help to bridge cultural misunderstandings and provide insights into how to accomplish things. Another important dynamic for the community becoming the main initiator, is that the design participation should be community-driven. Both *emancipation* and *motivation* are community-driven design participation types. Reaching a position where *motivation* is self-reinforcing by the community can reflect that the community has taken ownership of the project. In order to reach community-driven design participation the external designer should reflect critically on the type of design participation in order for it not to be guided by the ego, interest or background of the designer.

These insights lead to a preliminary respectful design space, which can be seen in Figure 6.22. In the next chapter, this framework will be extended.

Through my increased understanding of the dynamics of a respectful design space I am able to distinguish between ideal respectful design spaces and those design spaces that did not reach this level (yet). I consider the design direction (in combination with the technology probes) and the musical instrument to be ideal respectful design space. This is in contrast with the design space of the lights and the stories, which I consider not to have reached a respectful design space. In the next chapter, I will go into detail as to what attitudes influenced this.

Seven | Material Culture – Interpretation Part 2

Chapter 4 and 5 focused on the design process of the design case study as described in this thesis. This chapter, together with Chapter 6, presents the interpretations that resulted from this design process.

I recorded the process through written and visual research diaries. I analysed this data through content analysis (written research diaries) and annotations (visual research diaries). The coding concepts that I used for the content analysis and annotations were as described in Section 3.4.3: ownership: design participation, indicators of ownership, novel expressions, design seeds and indigenous knowledge glimpses. These coding concepts were shaped after the case study, thereby not influencing my account taking. They were based on highlights I found in my visual diary and combined with my understanding of respectful design as described in Chapter 1 and 2. It should be kept in mind that both the codes and the annotations are from my perspective on the process and they result from my research diaries and visual diaries. For each stage of the design process I created both an annotated portfolio and content analysis timeline. I have presented those in Section 6.1. The stages of the design process are: the preliminary visits; three co-creative encounters; and the exhibition stage. I translated the annotated portfolios and content analysis into pattern sheets, as described in 6.1.6. In Chapter 6 I have presented the pattern sheets for design participation, involvement and initiators. This resulted in an initial respectful design space framework, as presented in Figure 6.23 in Section 6.5.6.

In this chapter, I will focus on how the pattern sheet of indicators of ownership, novel expressions, types of design seeds and indigenous knowledge glimpses lead to a deeper understanding of the dynamics of a respectful design space. In Figure 6.1 I have presented which virtual worlds were focused on in this chapter and how those virtual worlds were shaped.

I will build upon the initial respectful design space as introduced in Figure 6.23 in the Section 6.5.6. At the end of this chapter I will introduce the unabridged respectful design space model. Throughout this chapter I will frame recommendations of how to reach such a respectful design space based on reflections of the research diaries and the annotated portfolios. In Section 7.5 I will focus on the reflection-in-action process and how this led to my understandings.

7.1 Indicators of Ownership

As presented in Chapter 3.4.3.1, ownership is an important dynamic of respectful design. Ownership is essential when aiming for the potential to bring transformational societal change for the contributor (Light et al. 2013). The contributor in this case of respectful design is the indigenous community. Without the local designers or community experiencing ownership, there is no foundation for respectful design. Thus, ‘reading’ ownership helps to inform external designers to which extent the project is moving towards respectful design. It is for this reason that I created the coding concept: indicators of ownership. Those indicators I defined through literature, as described in Section 3.4.3.1.2. The indicators of ownership that I used in this project were: *increasing value*; *enhancing responsibility* (surfacing as *care*, *protection* or *nurturing*); *pride*; and *connections to identity*. In my content analysis I made use of the framework (Figure 3.12), which contains a broad variety of related terms for each of the indicators. When I thought I had found a certain indicator in my text, or in my visual diaries, I started reasoning why this code could be defined as a certain type of indicator. I recorded this reasoning in my coding tables (Appendix 2-4 (The quoted codes refer back to either appendix 2 (A2), Appendix 3 (A3) or Appendix 4 (A4)), not only for the indicators of ownership, but also for the other coding concepts.

In order to get a sense of the appearance of ownership codes throughout the process, I created pattern sheets for this coding concept. Since ownership codes appeared both in the research diaries and in the annotated portfolio, I created a pattern sheet for both. There is an important difference between both pattern sheets: in the research diary sheet, a difference is made between enquiries and expressions of ownership. This is not the case in the annotated portfolio, where I labelled all codes without making this distinction. I did this because enquiries are difficult to distinguish as such because they are often not made tangibly.

As in the initiative and design participation pattern sheet, the pattern sheets for ownership indicators each first provide an overview of all codes in each design stage. Below this overview I distinguish between each of the design activities. In order to be able to compare the different stages, I have divided each stage by the total days the stage took.

In the following section, I will first focus on the pattern sheet for the research diary. After that, I will focus on the annotated portfolio pattern sheet. I compare the two and provide an adjusted respectful design space model, adapted to the new insights.

7.1.1 Indicators of Ownership: Research Diaries

The pattern sheet for the research diaries is shown in Figure 7.1. Through my reflection-in-action process, during which I was performing content analysis of the research diaries, I found that there

are different types of indicators of ownership: those that express ownership (as I expected) and those that enquire about the possibility of connecting ownership to the project (which I only discovered through the reflection-in-action process). It is for this reason that the pattern sheet of the research diaries shows a distinction between those two types of ownership indicators. In the upcoming section, I will reflect on the appearances of enquiries and expressions throughout the process, as presented through the pattern sheet.

Something else that can be noticed from the pattern sheet is that *pride* (see Figure 7.1-3b) mainly arises at the exhibition stage of this project, as do *nurturing* and *protection* (see Figure 7.1-2). Other things that stand out are the abundance of no-ownership codes - especially in the stories design activity. In the upcoming sections I will explore these highlights (see Figure 7.1-4a-d).

7.1.1.1 Enquiries and Expressions as Indicators of Ownership

When looking at the ownership pattern sheet for the research diary, it can be seen that in the first three stages (the preliminary visits, and the first and second co-creative encounters) the presence of enquiries of ownership can be noticed (see Figure 7.1-1a). These enquiring ownership indicators appear as *increasing value*, *care* and as *connections to identity*. The pattern sheet shows that there were only few ownership indicators during the second and third stage of the project. The last stage - exhibitions - shows an explosion of expressions of ownership (see Figure 7.1-1b). In this section, I will present the reflections that I made about this pattern that arose from my analysis of the research diary.

Enquiries

In the first stages of the design direction exploration activity the *increasing value*-indicators are mainly enquiries about the possibility to establish ownership.

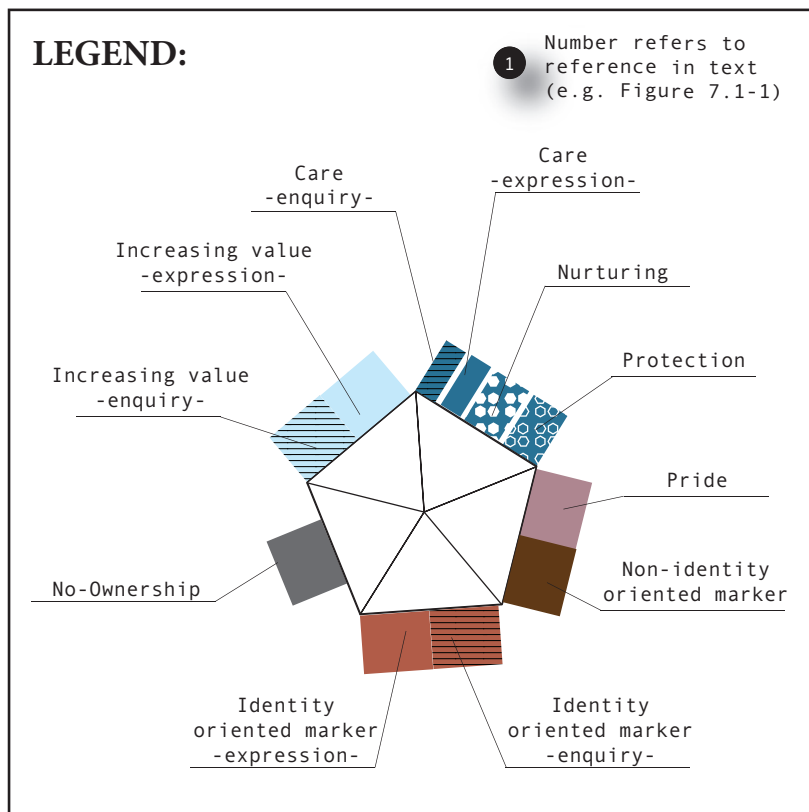
They enquire about this by reasoning how the project could be beneficial for the community:

There is a problem: the youngsters live a different life than the nomadic life and even though the knowledge of the nomadic Penan is their heritage, it does not interest them, because it is not directly applicable to their life. The project might help in this. [A3 - Garen: Preliminary Visits 6e]

Other enquiries that suggest *increasing value* are those that focus on defining demands that have to be met before the community is interested to participate:

About why they want to be the first with this project: "Is it not very human to want to be the first? We don't want to be only the first, but we want to be a good first. Hopefully it will help the youngsters in the city to become proud to be Penan... because often they are not... [A3 -Preliminary Visits 6d]

Besides *increasing value* enquiries, also *enhancing responsibility* enquiries surface in the first stages of the design process. These enquiries involve questions about for example payment and supply of materials, which suggest *care* (*enhancing responsibility*):



Ownership in Research Diaries

- DESIGN DIRECTION
- DESIGN PROBES
- TECHNOLOGY PROBES
- INSTRUMENT
- LIGHTS
- STORIES

Figure 7.1 - The indicators of ownership pattern sheets for the research diaries. (the numbers are referred to in the text)

Figure 7.1 (continued) - The indicators of ownership pattern sheets for the research diaries.

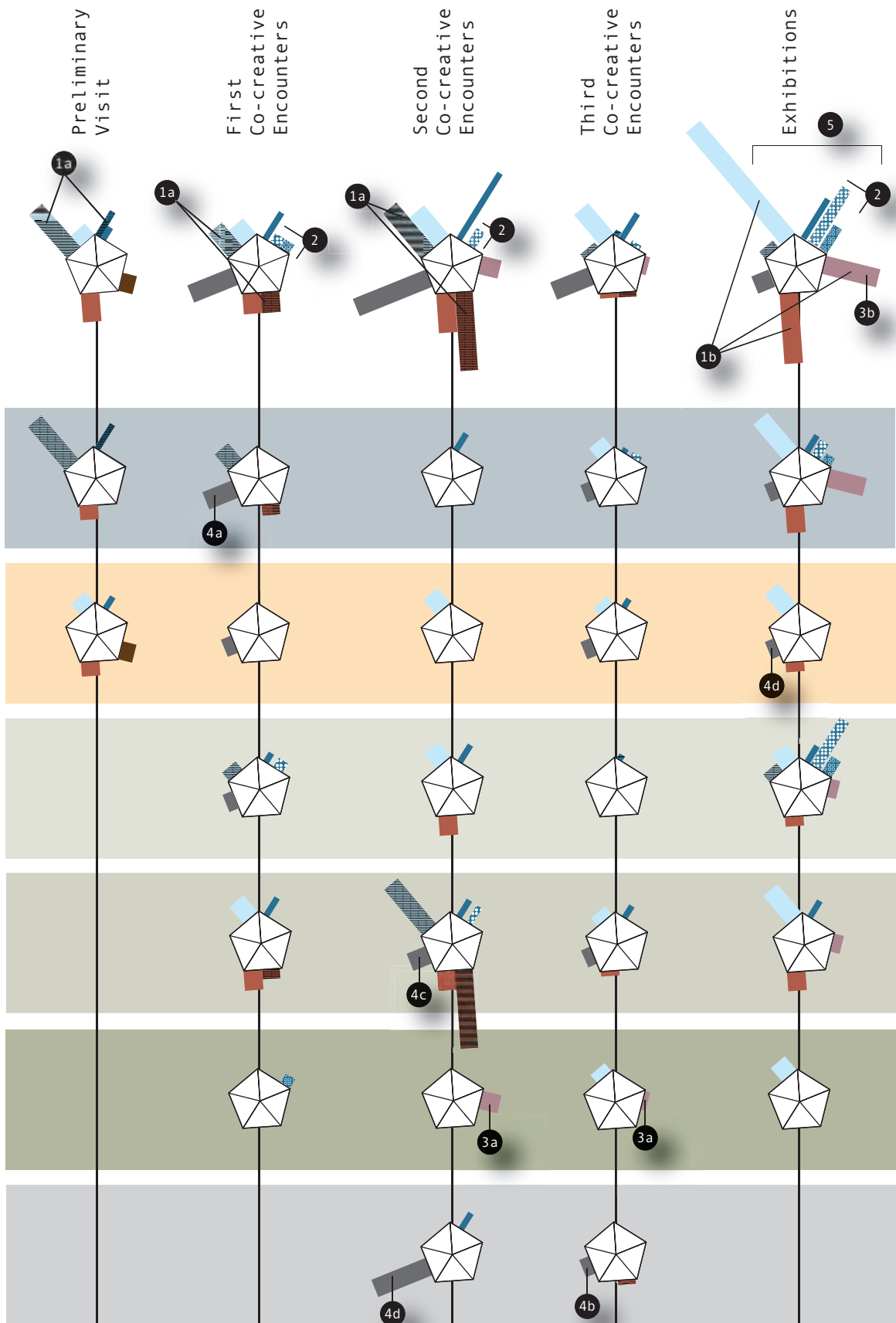


Figure 7.1 (continued)- The indicators of ownership pattern sheets for the research diaries. (the numbers are referred to in the text)

*Garen asked Tariq things about the project like: "Do we have to pay for this project?"
[A3 - Preliminary Visits 3c]*

Thus, prior to engaging directly in the project, the community - through Garen - made enquiries of the possibility to establish ownership towards the potential project that I introduced. This was done through enquiring about issues that are necessary for the maintenance or creation of something (suggesting *enhancing responsibility - care*), the perceived value of the project and defining demands that increase the perceived value of the project.

Furthermore, there are also enquiries that explore the potential to establish ownership by connecting identity markers to aspects of the project. This happens mainly in the musical instrument design activity during the second co-creative encounter. Examples of this are:

He [Garen] mentioned that it would be better to use a pagang [a traditional Penan musical instrument]— because this is typically Penan. [A3 - Second Co-creative Encounter 5i]

And:

Then Garen said we should make the platform of different types of wood. Each of these types should be chosen according to its relevance to the Penan culture. [A3 - Second Co-creative Encounter 5m]

In the case of the musical instrument design activity, I went along with such suggestions and ideas. Because of this, the final design incorporated elements of Penan material culture, which enabled the local designers to take charge and to take ownership of this design. In Section 7.3.3.1 I will go into detail about the lights design activity, in which I did the opposite; I did not stimulate the local designers to connect ownership to the design, because I was not open to their suggestions.

Expressions

There is a stage with a prevalence of ownership codes: the exhibition stage (see Figure 7.1-5). In this stage, for the design direction, all of the codes are expressions. An example of such an expression of *increasing value* is:

Garen wanted to show the project in order to show that it is very important for indigenous groups to have ideas. Those ideas can bring you further. It might be that you will not be able to make those ideas reality but this does not mean that you should give up. By means of co-operation with someone who understands your idea, you can make this idea into something real. Through ideas, you can focus on the future. [A3 - Exhibitions 6a]

This code came from contributions made by Garen, who was a local designer. Other codes show that people who were not involved in the design process also connected ownership to it. This happened during the pilot exhibition. An example of an expression of *increasing value*:

Yes! This is the Long Lamai of the future. Because no one else has it, we can claim it and call it truly from Long Lamai. And because of this, technology can represent us. These are new creations of the community made through co-operation. [Elder: Exhibitions 7g]

As concluded from the design participation pattern sheet, it is important to have a reflective stage after the active creation stage. The ownership pattern sheet suggests this as well as most ownership expression codes appear in the exhibitions design stage. Those ownership expressions can be seen as reflections of the success of the different aspects of the project. Successful aspects show many expressions; less successful cases - those that did not reach a respectful design space - show only a few, or even none.

Pattern

As can be seen in the pattern sheet, the design direction activity started with enquiries by the community of the possibility to establish ownership. It seems important to explore during this exploration phase whether the community feels there is a possibility to connect ownership in a later phase. This is followed by a phase with few ownership codes; the creation phase, during which the things that were envisioned during the enquiry phase are implemented. After that, there is a moment where ownership expressions bloom. Not only the involved local designers expressed ownership, also community members who were not involved in designing were able to connect ownership to the project in this reflective stage. I consider this especially important in cases where the broader community initially agreed to start the project, but where only a few community members became involved as local designers - as was the case in this project. This reflective stage communicates back to the broader community what the local designers did. This can then result in explorations on whether it can be supported by the wider group that initially agreed to the project. By having co-reflective sessions, the wider community still is involved in decided whether they see benefit in participating or having participated.

When looking at the other design activities, it can be seen that there are more activities that show a similar pattern to the design direction activity. I have looked at the process patterns from the ownership pattern sheet and positioned them together in Figure 7.2. Here it can be seen that the technology probe design activity and the musical instrument design activity show a similar pattern to the design direction activity. The light design activity does show that expressions were made, however, there are no enquiries. The stories design activity shows no enquiries and no expressions. This activity only has few ownership codes, of which most express no-ownership.

7.1.1.2 Nurturing and Protection as Indicators of Ownership

Increasing value, enhancing responsibility care, and connections to identity are important in the ownership category throughout every stage of the process, be it in the shape of enquiries or expressions. The other categories of *enhancing responsibility - nurturing* and *protection* (see Figure 7.1-2),

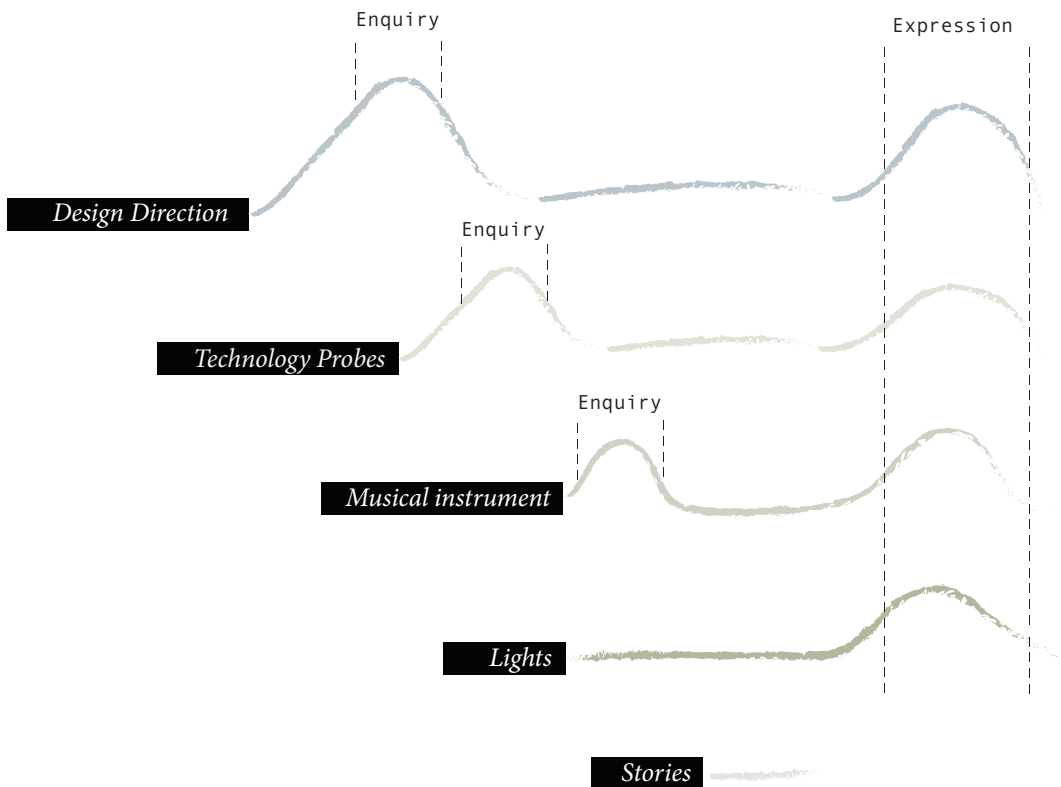


Figure 7.2 - Patterns of enquiry and expression phases within the design process as they arose from the indicators of ownership pattern sheet.

are not as widely distributed. For example, in the first co-creative encounter, there is only one *nurturing* expression and one protective expression. This *nurturing* expression is made by Garen:

Garen proposed to already start exhibiting the technology probes in the telecenter. I agreed. This way, Garen said, the youngsters can get used to the technology and can spread stories about it to the elders. This way it will spread throughout the community and this will make it easier to provoke interest. [A3 -First co-creative encounter 29h]

In the second co-creative encounter there is only one *nurturing* expression, made by Garen:

He [Garen] even offered to cut the tree near his farm for the project – this means something since these trees are valuable: they are often hundreds of years old. [A3 -Second co-creative encounter 5u]

In the last stage of the design process, the exhibition stage, more *nurturing* expressions are made. Significantly, those *nurturing* expressions are also made by people other than Garen:

We have to place it somewhere where everyone can see it. [A3 -Group decision during pilot exhibition - Exhibitions 7m]

And:

Sasha explained to her son what the lights were. She explained how you could post a message. She also helped to place the lights in their final position. [A3 -Exhibitions 18b]

When looking more deeply into the protective expressions, it can be seen that I made the first of those:

However, I don't know whether I would really like that. Two lights in one basket does not seem like the best idea, because I think by spreading the effect would be bigger. [A3 -First co-creative encounter 6l]

This is an important code as it shows that I do not intend to provide space for the community's suggestion in light design activity, as I already have a set idea of what the design should look like. In Section 7.3.3.1 I will go into this more deeply.

However, the community also makes protective expressions. During the pilot exhibition, the community collectively expressed *protection* through the designs like:

Everyone helped to place the designs back safely. [A3 -Exhibitions 7t]

And:

"We must place it somewhere where the children cannot touch it"[A3 -Exhibitions 7k]

It might be that both *protection* and *nurturing* naturally arise at later stages in the design process. To me it suggests a higher level of *enhancing responsibility*, showing a stronger connection; that other people who were not involved in the design process could show protective and *nurturing* expressions suggests that they were able to connect ownership to the things the local designers created. This implies that the aspects of the project that the broader community could connect ownership to were positioned within a respectful design space also for this wider community.

7.1.1.3 Pride as an Indicator of Ownership

From my reflection-in-action process I learned that when looking at the *pride* codes within the process, it is important to understand whom those codes came from. As this section will show, you can already understand many dynamics of a respectful design space by looking at those expressions of *pride*.

I'm so proud! (see Figure 7.1-3a)

The first time a *pride* expression is made is in the lights design activity. This happens in the second co-creative encounter, and again in the third co-creative encounter. When looking at those *pride* codes within the design activity of the lights, it turns out that all of those codes are my own contribution. For example:

I went to Garen, full of enthusiasm about my success in creating the fireflies [this was the name I gave the lights prior to introducing them to the community] and about how beautiful they looked. [A3 -Third encounter 9e]

Maybe the fact that I was the only one who was showing pride towards the lights suggests that there was no ownership of this part of the project from the community. This might have resulted from the design processes not being positioned within a respectful design space. From the start I had had a vision about what the light should be like; I envisioned them as fireflies. The fact that I gave a name to this design suggests that I had already connected ownership to the probe in the preparation stage prior to the co-creative encounters. I was focused on what they could look like and how using basketry, traditional to the Long Lamai community could enhance this idea. My emphasis on what I considered to be 'beautiful' as I had been taught at university might have prevented to be truly open to the input of the community.

"We are so proud of what Long Lamai has achieved" (see Figure 7.1-3b)

Only after the community, through the elders, had shown approval of the designs during the pilot study, people started to express pride towards the project. However, the majority of the *pride* codes appear after the exhibition at the eBario knowledge fair. The audience had shown interest and they had told the community representatives that they were impressed by what Long Lamai had achieved. After this, the different community members expressed their pride towards the project:

Garen continued expressing how proud he was. He was proud that Long Lamai had done this. They had created something new, which the people who normally would look down on the Penan culture wanted to have. [A3 - Exhibitions 14c]

And:

Garen said that he was really happy with the project. At first (during the exhibition) he was happy with what we had accomplished. Now, after last night's dinner, he was proud that he could show with the design what Long Lamai had to offer. He said Long Lamai showed more innovation than any of the other communities. This was because of the communal spirit in Long Lamai: If you want to go fast go alone, if you want to go further, go together. What if something happens? If you are with more people they can carry you if needed... [A3 - Exhibitions 14d]

And:

In the morning Stanley said that he was very proud of Long Lamai after seeing the designs. [A3 - Exhibitions 15a]

From this, it can be concluded that pride only appears in the reflective stages of a project. It is enhanced when people from outside express themselves positively about the project. First the elders, who had not directly been involved in the project, did this. Later, the representatives of other community's at the eBario knowledge fair did this.

7.1.1.4 The role of No-ownership to Understand Ownership

When looking at the general overview in the pattern sheet (Figure 7.1), it can also be noted that there are many expressions of the no-ownership category (Figure 7.1-4a-d). This raises the question what

this means and what the roles are of such codes within the design process. Below I will introduce different types of no-ownership.

No-ownership as project-establishing marker (Figure 7.1-4a)

The first co-creative encounter was about establishing a project direction that worked both for the community and for me. In this stage, all of the no-ownership expressions were made during the conversation I had with Garen during which he explained me about the procedures of the community. I could have learned from these expressions of no-ownership, since these expressions gave insights into which aspects of the project the community did not connect to. Instead, these expressions made me feel insecure. This shows in a conversation we had about existing projects in the community; Garen made an overview, explaining in which area each of the projects contributed.

I was however nowhere in the project overview with the project we were doing. [A3 - First Co-creative Encounter 6r]

I consider the no-ownership expressions in this stage of the project as a reflection of the community still trying to enquire about the possibility to establish ownership. This resulted in enquiries but also in expressions of no-ownership. It might be the combination of those two ways of exploring the project, that the community was able to define their wishes, motivations and drivers for the project. It is for this reason that it is also important to keep track of expressions of no-ownership as well as enquiries for understanding relevant design directions.

Pushing the stories activity (Figure 7.1-4b)

I could have learned, through expressions of no-ownership, early on that the stories design activity was positioned outside a respectful design space. The majority of all the ownership indicators within this activity suggest no-ownership:

Kathyia wanted to talk with the other youngsters about how we best could collect the pagang stories. Because of the responses of the other youngsters I notice that Kathyia is less motivated to help in collecting stories. [A3 -Third co-creative encounter 16f]

And:

Kathyia asked me whether we could let Garen record the stories, I said: No! Garen is already busy and he is the one who gave us the assignment. I thought: Ow no! This is not good. She really doesn't want to do this. I especially notice this when she talks to the other youngsters. [A3 - Third co-creative encounter 18a]

I could have learned by reflecting on this design activity that I was pushing the concept. It suggests that the initiative came from me, not from the community. I also put Kathyia in a position that she did not want to be in. The responses of the other youngsters de-motivated her even more.

Designer's no-ownership (Figure 7.1-4c)

There are also no-ownership expressions made by me. These arise only in the design activity of the musical instrument:

I cannot get my head around what their ideas actually are. [A3 -Second co-creative encounter 6f]

And:

I was a bit scared to explain the pagang and rhino idea to the entire community – I thought maybe our enthusiasm made us choose an inappropriate direction. However, the idea seems to be supported by a wide range of the community. [A3 - Third co-creative encounter 7h]

And:

Garen constantly asks how I would like the design to be. However, I cannot follow what they have in mind. I thought they wanted to create a copy of the rhino but it seems as though they have been talking about creating an abstract rhino from the start. For this reason it takes longer to collect the material. If I understand it correctly, making the actual design will take less time, because if they find the right pieces, they will not have to cut it in the right shape. [A3 - Third co-creative encounter 15c]

My no-ownership expressions show that I do not connect to the design direction in which the musical instrument design direction is going. This might have been important in that it might have helped me not to take charge, and to not give contributions, resulting in that the musical instrument becoming the community's by being positioned in a respectful design space.

No-ownership when not connected to identity (see Figure 7.1-4d)

Then there is the no-ownership that is connected to identity. The community is very strict in deciding whether something can be or is part of the community's identity. If not, it cannot be taken ownership of. For example:

Erra started writing about the baskets. According to Garen those baskets were, however, not truly Penan. [A3 - Second co-creative encounter 6t]

And:

My proposal to not only post stories about the Penan culture – but also about cultures that co-exist in this community – was not an option according to Garen. [A3 - Second co-creative encounter 6w]

And:

The elder clearly placed the sapé treasure box to the side because it also was part of neighbouring cultures material culture. [A3 - Exhibitions 7p]

A connection to the community's identity is thus of major importance. When no-ownership is expressed, this is often related to something that does not connect to the community's identity.

7.1.2 Indicators of Ownership: Comparing Research Diaries and Annotated Portfolios

When comparing the research diary pattern sheet to the annotated portfolio pattern sheet (Figure 7.3) for indicators of ownership, it can be seen that, like in the research diary, there is an abundance of ownership indicators in the exhibition stage of the annotated portfolio pattern sheet (Figure 7.3-1). Like in the research diary, the widest variety of indicators can also be found during the exhibition stage. Within the exhibition stage, *nurturing*, *protection* and *pride* appear for the first time.

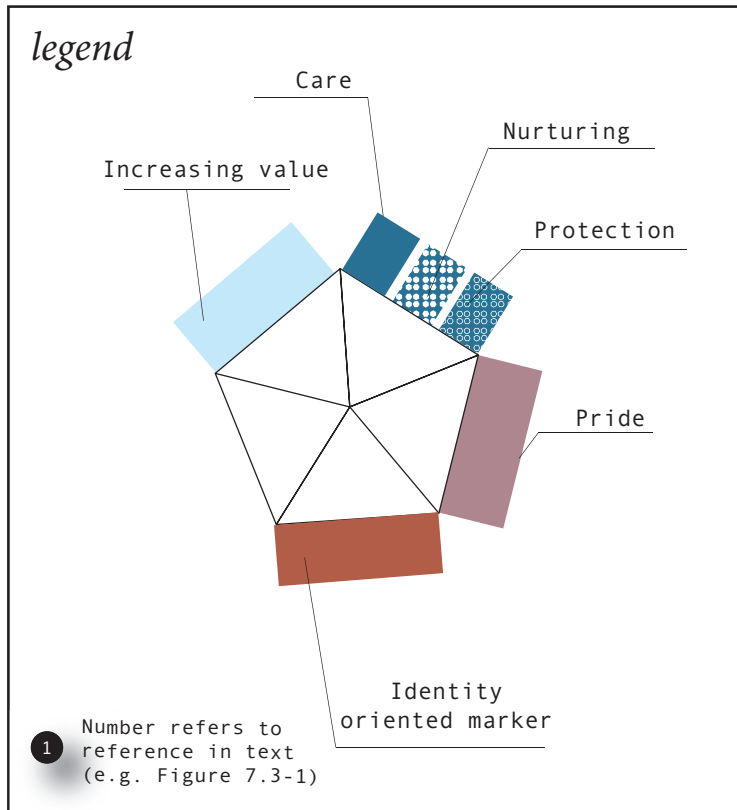
Like in the research diary pattern sheet, there is not much activity in the third co-creative encounter (Figure 7.3-2). As I have reflected on before, this might be because it was a ‘making’ phase during which the designs were executed as was decided during the second co-creative encounter. The musical instrument design activity resulted, like in the research diary pattern sheet, in most indicators of ownership (see Figure 7.3-3).

By far, *connections to identity* are the most important and prevalent in the pattern sheet for the annotated portfolio. This can be seen in Figure 7.3 where the bars that represent the identity-oriented markers are the longest. The identity-oriented markers appear to be important, particularly in the phases during which designs or design directions were explored (mainly during the preliminary visit and the second co-creative encounter) (Figure 7.3-4). In the section about novel expressions, I will explore this in more detail.

7.1.3 Positioning Indicators of Ownership in Respectful Design Space Model

Within the pattern sheets of the research diary the importance of both expressions and enquiries manifests. Without providing space for enquiries to arise, the community cannot take charge of the process. They might not even feel the need, since they have not explored why an activity could be beneficial, or how it could be adjusted to make it beneficial. Since both the respectful design approach as introduced by Sheehan (2011), and the culture-based innovation as introduced by Tunstall (2011) suggest benefit as a main dynamic for respectful design, these enquiries are of major importance for a respectful design space. The activities that fail to provoke enquiries thus could be expected to encounter difficulties reaching a respectful design space. Expressions of ownership are important to validate whether a respectful design space has been reached. Even people who were not directly involved in the creative process can make those expressions, thereby accepting it to be part of the wider community. *Pride* predominantly appears in presentation phases, as do *nurturing* and *protection*.

Taking all these dynamics into account, the respectful design space, will look like that presented in Figure 7.4. Prior to a respectful design space to arise, there is an enquiry stage needed in order for the community to explore the possibility to establish ownership. These enquiries take place in a third space, where external and local designers meet. These enquiries can be shaped as *increasing value*



Ownership in Annotated Portfolio

- DESIGN DIRECTION
- DESIGN PROBES
- TECHNOLOGY PROBES
- INSTRUMENT
- LIGHTS
- STORIES

Figure 7.3 - The indicators of ownership pattern sheets for the annotated portfolios.
(the numbers are referred to in the text)

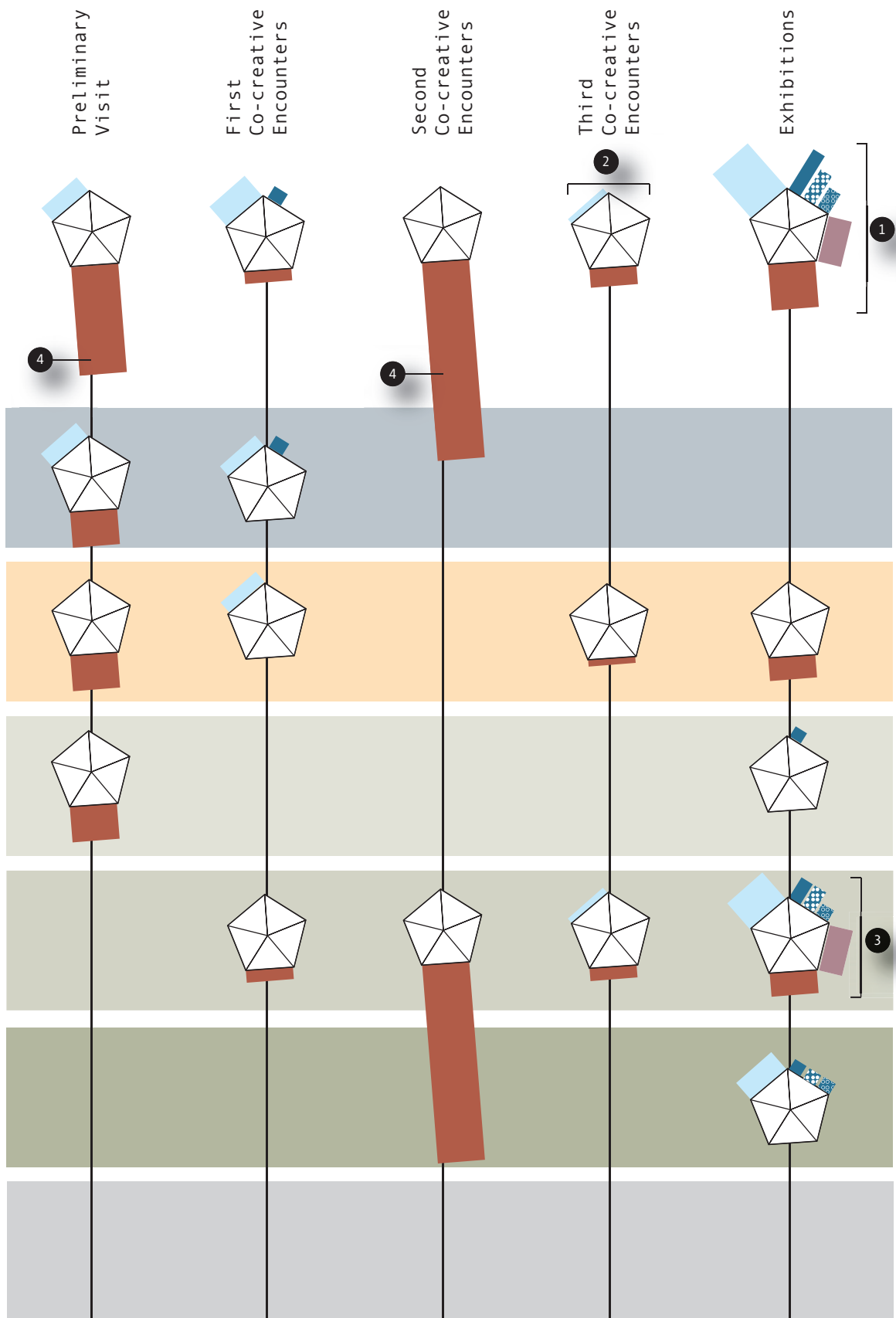
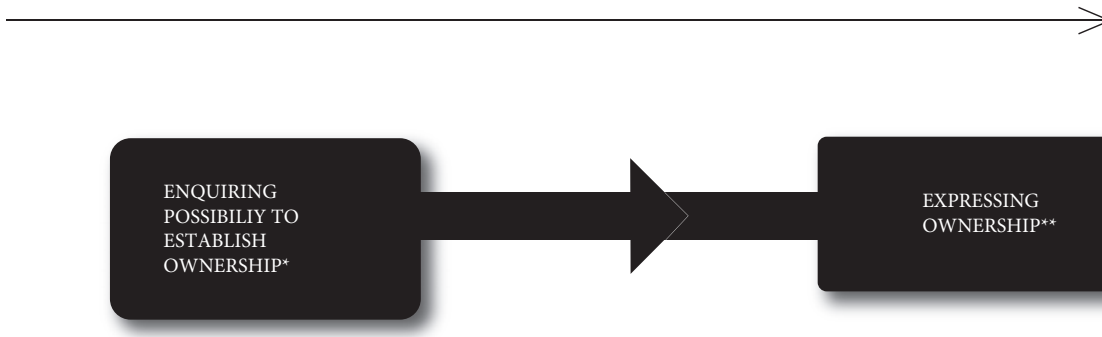
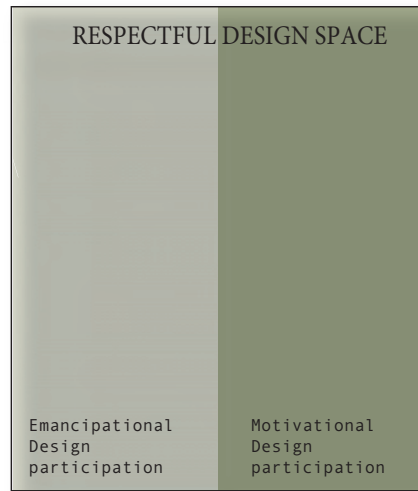


Figure 7.3 (continued) - The indicators of ownership pattern sheets for the annotated portfolios. (the numbers are referred to in the text)



* Through increasing value, care and identity-oriented markers

** Through increasing value, care, protection, nurturing, identity oriented markers and pride.

Figure 7.4 - Indicators of Ownership implemented in a respectful design space.

enquiries, *care* enquiries and enquiries about the project’s *connections to identity*. After the active stages of the design process within a respectful design space, ownership is marked by expressions: *increasing value, care, protection, nurturing, pride* or *connections to identity*.

In order to reach these dynamics some attitudes can help:

- Reflect on who expresses pride; is it you? It might be that the community is unable to take ownership, suggesting that there is no respectful design space.
- Reflect also on no-ownership expression. Such expressions can help to understand that: (1) the community tries to define boundaries of a design direction; (2) you are pushing activities, thus pressuring the community; (3) you feel no-ownership, which can suggest that the community has taken charge of the project, thus reflecting a respectful design space; or (4) whatever is suggested does not connect to the community’s identity.
- Provide exploration time for the community: what would they like to do?
- Introduce a casual way to explore benefit for the community, for example through a flexible

design probe toolkit.

- Provide reflection time for the community through co-reflective sessions such as a pilot exhibition.
- Be aware, throughout the process, of your own motives and values. Do they hinder a respectful design space? This might be the case with values such as beauty (from your perspective). Who defines what is beautiful? Should the design be about (your) aesthetics?

7.2 Novel Expressions

The case study as presented in this thesis is a co-creative process. To appropriate whether the process is positioned within a respectful design space it has to be understood where the novel ideas and suggestions come from. This understanding will lead to an additional perspective (besides design participation and ownership indicators) on who directs the design process.

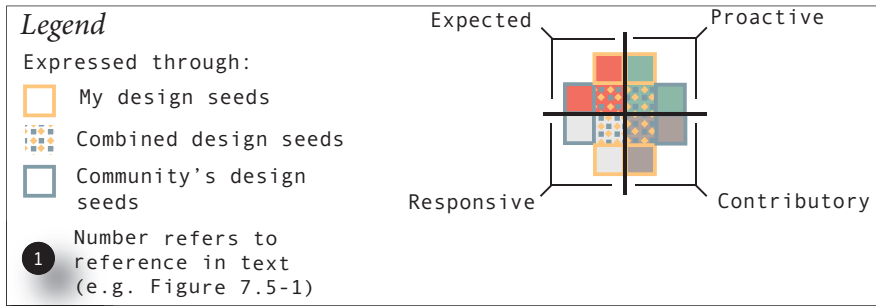
There are four different types of novel expressions (see Figure 3.13). Those expressions are classified depending on who the driver is. This is either an external driver (e.g. me) or an internal driver such as the local designers. In a respectful design process, the local designers should guide the process. Thus, emphasis should be on novel expressions with an internal driver. Both proactive and contributory novel expressions have such a driver.

Figure 7.5 shows the pattern sheet for the novel expressions that I found by analysing my research diary. Like in the previously introduced pattern sheets, the novel expression sheets show the total codes for each stage separately. The bigger the squares, the greater the number of codes isolated. This way, those stages can be compared. In each stage, there is also a division made for each of the design activities. Similar to the ownership pattern sheets, the amount of codes was divided by the amount of days of the stay for each of the stages. This way, the visits could be compared.

7.2.1 Proactive Novel Expressions

As can be seen in the pattern sheet, the majority of the novel expressions in the design direction activity, technology probes activity and the musical instrument activity have an internal driver (being either proactive or contributory) (Figure 7.5-1). These activities thus are positioned within a respectful design space, unlike the design probe, lights and stories design activities. This matches with what I found for the coding concepts reflected on in the previous section and chapter.

When looking at which point those internally driven novel expressions are made, it can be seen that they are made during the active stages of a project. There are many proactive novel expressions in the preliminary visits and in the second co-creative encounter (Figure 7.5-2). These stages, as explained in the previous chapter, are explorative (active) stages that were important for the local designers to start directing the process. During the preliminary visit the focus was on shaping a design direction.



Novel Expressions - Research Diaries

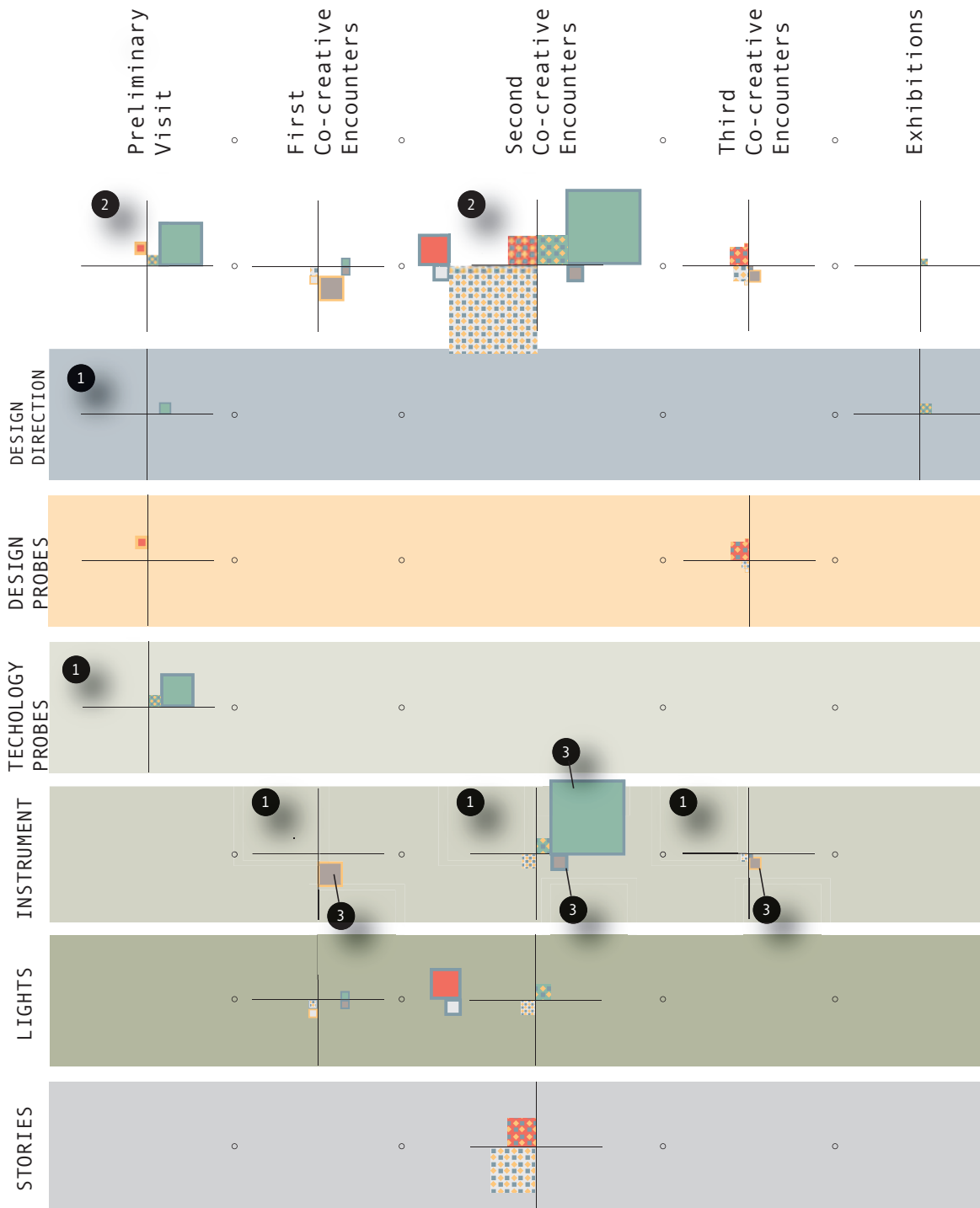


Figure 7.5 - The novel expressions pattern sheet for the research diary. (the numbers are referred to in the text)

Through proactive novel expressions, the focus on technology was introduced. During the second co-creative encounter, the local designers came up with proactive novel expressions of what the musical instrument should be like.

Thus, proactive novel expressions seem to be especially important in the exploration stages during which the direction for the design is determined. There is however one exception that has novel expressions stages other than the active stage of the design process. This is the design direction activity, which has expressions in the first and in the last stage of the design process. All expressions in this activity are proactive. The proactive novel expressions within the exhibition stage of the design direction activity is the following:

Long Lamai wants to make tags with the names, logo, and crafting process story of the designs. [A4 - Exhibition 14a]

This expression arose after the eBarrio knowledge fair. During the fair, several people showed interest in the lights. They ordered the lampshades. From this success, Garen started to look at the possibility to start producing them to sell. He came up with another idea: to connect the story of Long Lamai to the designs so that they would become more valuable. He also started brainstorming about other potential projects. This brainstorming suggests the potential for exploring the next projects, but does not add to the design process as described in this research. That the community raises this potential suggests an empowerment that might be a result of the design process in which I was involved.

By looking at and reflecting on my research diary I hoped to obtain an understanding of how I could help generate proactive novel expressions. I discovered the following attitudes:

During the second co-creative encounter, I took the role of stimulator rather than that of facilitator, shifting the design participation to emancipation. This change happened because Garen suggested making the design of the musical instrument to be relevant to the Pagang culture:

He [Garen] said: "It would be better to use the Pagang, but this might not be what you had in mind..." [A4 - Second co-creative encounter 5h]

I started stimulating his thought process, without directing him, by brainstorming about how I could make his ideas work with the electronics that I had:

...Garen was very enthusiastic about the idea of using a Pagang. I therefore started to make drawings on how a pagang could be used (to stimulate the idea) [A3 - Second co-creative encounter 5i]

From that moment on, many of the creative processes within the design activity of the musical instrument were either responsive (me responding to the community e.g. by planning how the electronics can work in connection to a Pagang), or proactive (initiated by the community members). Even

though I considered Garen to be in charge of the design process of the musical instrument, he put me back in charge by asking me:

He [Garen] asked me to make drawings of how I wanted the design to look. He made suggestions. He knows much better how he can make it look beautiful, because I never made anything like this. [A2- Third co-creative encounter 16b]

Therefore I came up with the following idea:

So, instead of making drawings, I searched for pictures of the Borneo rhino on the Internet, which I took to show him [Garen]. I thought, this way he can follow his own interpretation rather than me saying what it is that he should do. [A2- Second co-creative encounter 16c]

And:

The problem is that I do not really understand what it is that they have in mind...but in order not to stop the thought process and the motivation, I will remain very enthusiastic about their suggestions and if they ask me for advice I will just repeat their thoughts. [A2- Second co-creative encounter 16d]

Stimulating Garen's ideas and letting him make the choices resulted in a slight change in the design participation. This resulted in him making all of the design decisions regarding the platform of the musical instrument. I provided Garen with inspiration instead of giving direct suggestions, repeating his ideas instead of coming up with my own, and coming up with suggestions to make his ideas work. In this process, responsive and expected novel expressions have an important role, as they can come from the external designer who can support the ideas of the local designers by building on their suggestions with those types of novel expressions.

7.2.2 Contributory Novel Expressions

The musical instrument design activity is the activity with most novel expressions. Most of them are proactive (Figure 7.5-3). This is followed by contributory expressions. The difference between contributory and proactive novel expressions is the type of 'problem' they relate to. Proactive novel expressions have an open problem type, meaning that there is a broad area for exploration. Contributory novel expressions have a closed problem type, which means that the problem area is more restricted. Since contributory novel expression codes arise within the musical instrument design activity, which I consider to have been positioned in a respectful design space, it is valuable to understand their role in the process. The following contributory novel expressions were made in the first co-creative encounter:

I started making drawings about the designs and Wilson asked me why I would use bamboo and not wood instead (which would be better for the sound). [A4 - First co-creative encounter 3b]

And:

I showed my drawings and through that he [Garen] started brainstorming and giving suggestions. After a while we had designed a new version. – I did not expect that I would start a brainstorm with the drawings I made. With the drawings I just wanted to show my thoughts, but I hadn't introduced the drawings with the intention of receiving input from him. [A2 - First co-creative encounter 6b]

I had not expected these novel expressions to arise; I had not planned to let the community members design the technology probes. Instead, I had the notion that I would define what these probes should be like and the crafters of the community would then execute my ideas. However, while I was drawing what the designs should be like, both Wilson and Garen engaged in what I was doing by giving contributory novel expressions. Without this engagement, it might be that the musical instrument would never have reached a respectful design space.

In the second co-creative encounter, contributory novel expressions were made by a community member, who up until that point was not involved in the process:

Bili: "What if we let the entire pagang rest on the spine of the wooden rhino?" [A4 - Second co-creative encounter 6a]

In the third co-creative encounter I was put in charge of the electronics and for that I needed a platform to go around the pagang, to be able to let the instrument be played electronically. In the construction of this platform, Wilson became involved through contributory novel expressions. I did not ask him, he just came to offer his ideas to solve my problem:

Wilson came to have a look and he asked me to explain what it was that I was trying to do. [A4 - Third co-creative encounters 22b]

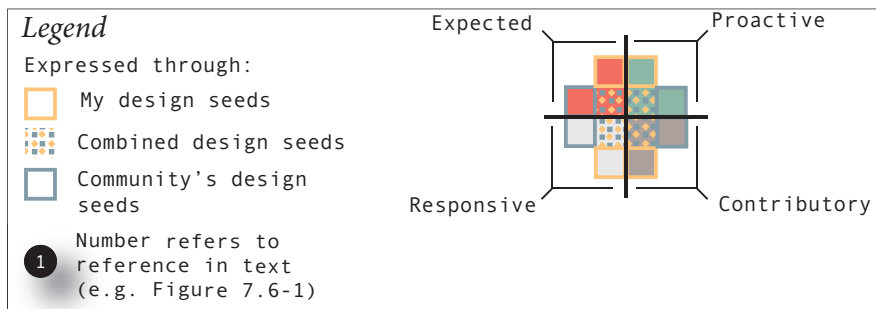
This expression led to the following contributory brainstorm:

By means of the drawings we had discussions about possible solutions. Step by step we got a clearer idea of what the other meant. If I had to explain something, I drew it out. Wilson did the same. Wilson also used the solenoids [electronics] to check whether we had the same idea. [A4 - Third co-creative encounters 22c]

I thus consider contributory novel expressions as important, as they enable engagements from the community on their terms. Those engagements are casual, non-committal and without having to take the lead. By stimulating those expressions, the contributor might feel valued and thus more open to contribute more. Moreover, such engagements can trigger further interest. It is thus valuable to stimulate such expressions as they might lead to respectful design spaces.

7.2.3 Design Seed Types and Novel Expressions

Figure 7.6 introduces the novel expressions pattern sheet for the annotated portfolios, based on the



Novel Expressions - Annotated Portfolio

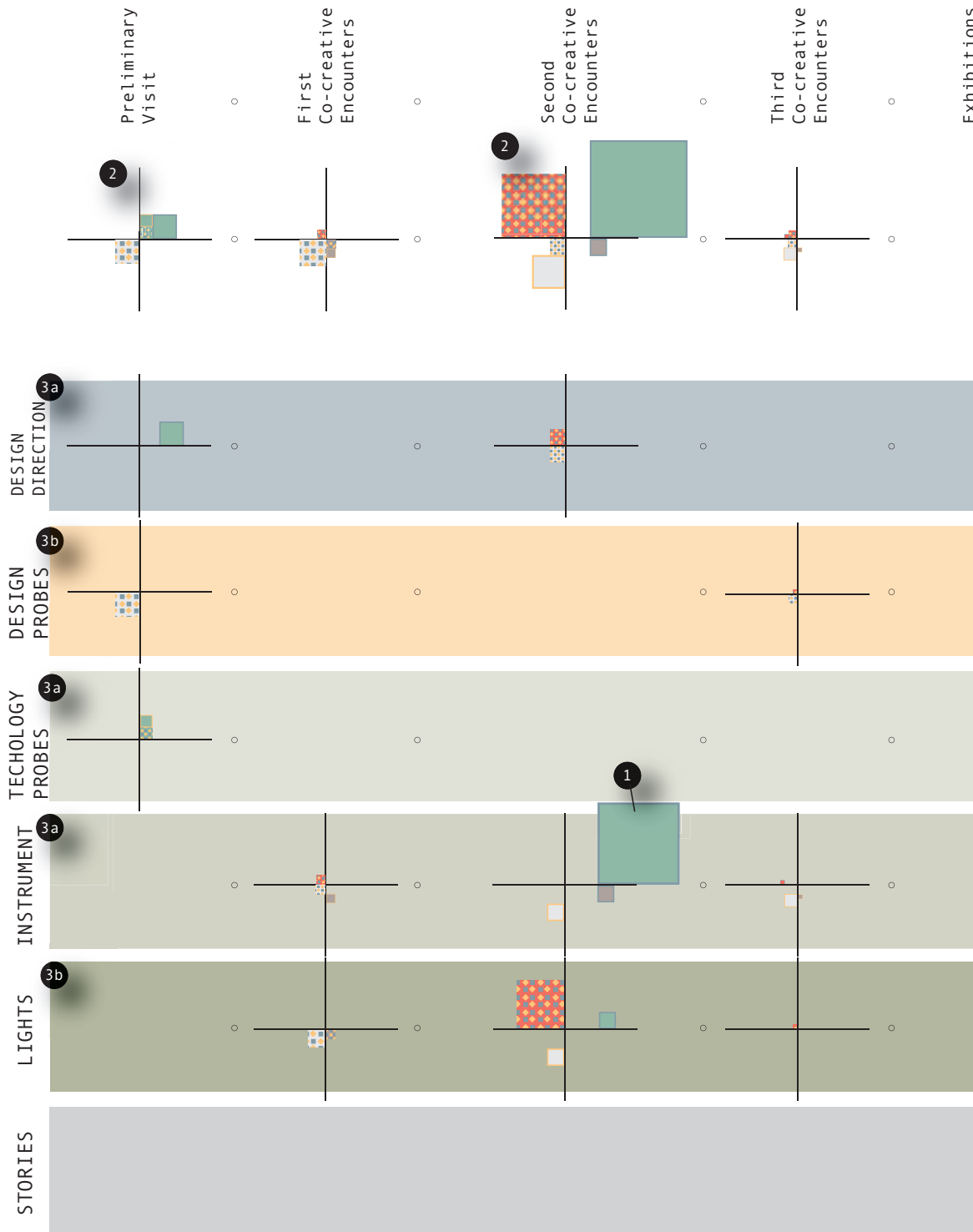


Figure 7.6 - The novel expressions pattern sheet for the annotated portfolio. (the numbers are referred to in the text)

novel expressions that I found by creating annotated portfolios from my visual diaries.

Similar to the research diary pattern sheet, the annotated portfolio sheet shows that the musical instrument has most proactive novel expressions (Figure 7.6-1). Like in the research diary sheet, the novel expressions appear in the active stages of the design process (e.g. the preliminary visits and the second co-creative encounter) (Figure 7.6-2). Furthermore, the design direction, technology probes and musical instrument design activities have a mainly internal driver (Figure 7.6-3a). The other design activities (the lights and the design probes) have an external driver Figure 7.6-3b).

For the novel expressions I distinguish how the expression was made: through the community's design seeds; the design seeds I introduced; or an interaction between both our design seeds. I considered this important because design seeds played an important role in the communication, as there were linguistic challenges at the core of this project. Designing by showing became the main method in our co-creation. I made this distinction both in the pattern sheet for the research diary, as well as in the pattern sheet for the annotated portfolio.

In order to understand how the novel expressions were made for each type, I made an overview containing information about the type of design seed it was expressed through. This information comes from the annotated portfolios. Figure 7.7 shows this overview. The overview represents the novel expressions framework, with a division between design seed types for each type of novel expression. As can be seen, most expressions are made through a combination of the community's design seeds and the design seeds that I introduced. Responsive and expected novel expressions show similar patterns: they have roughly the same amount of novel expressions, of which most expressions fall in the combined design seeds category. In those categories, no novel expressions are made solely through the community's material culture. This is different for the proactive novel expressions. In this type of novel expression, it appears as though the community's design seeds are the most important tools for expression. I will go into this in more detail in the next section: design seeds.

7.2.4 Novel Expressions' Position in a Respectful Design Space

In the previous chapter I concluded that there is a distinction between design activities that were positioned within a respectful design space (e.g. design direction, including the technology probes) and the musical instrument), and those that failed to reach a respectful design space (e.g. the lights and the story design activity).

When looking at the novel expressions pattern sheets, the design activities that I consider to have been positioned within a respectful design space, e.g. the design direction (including the technology probes) and the musical instrument mainly have internally driven novel expressions (e.g. proactive and contributory novel expressions). In order for proactive novel expressions to arise, it seems to be important to provide space for the community to use their own material culture. Contributory novel

Legend:

My design seeds	Community's design seeds	Combined design seeds
-----------------	--------------------------	-----------------------

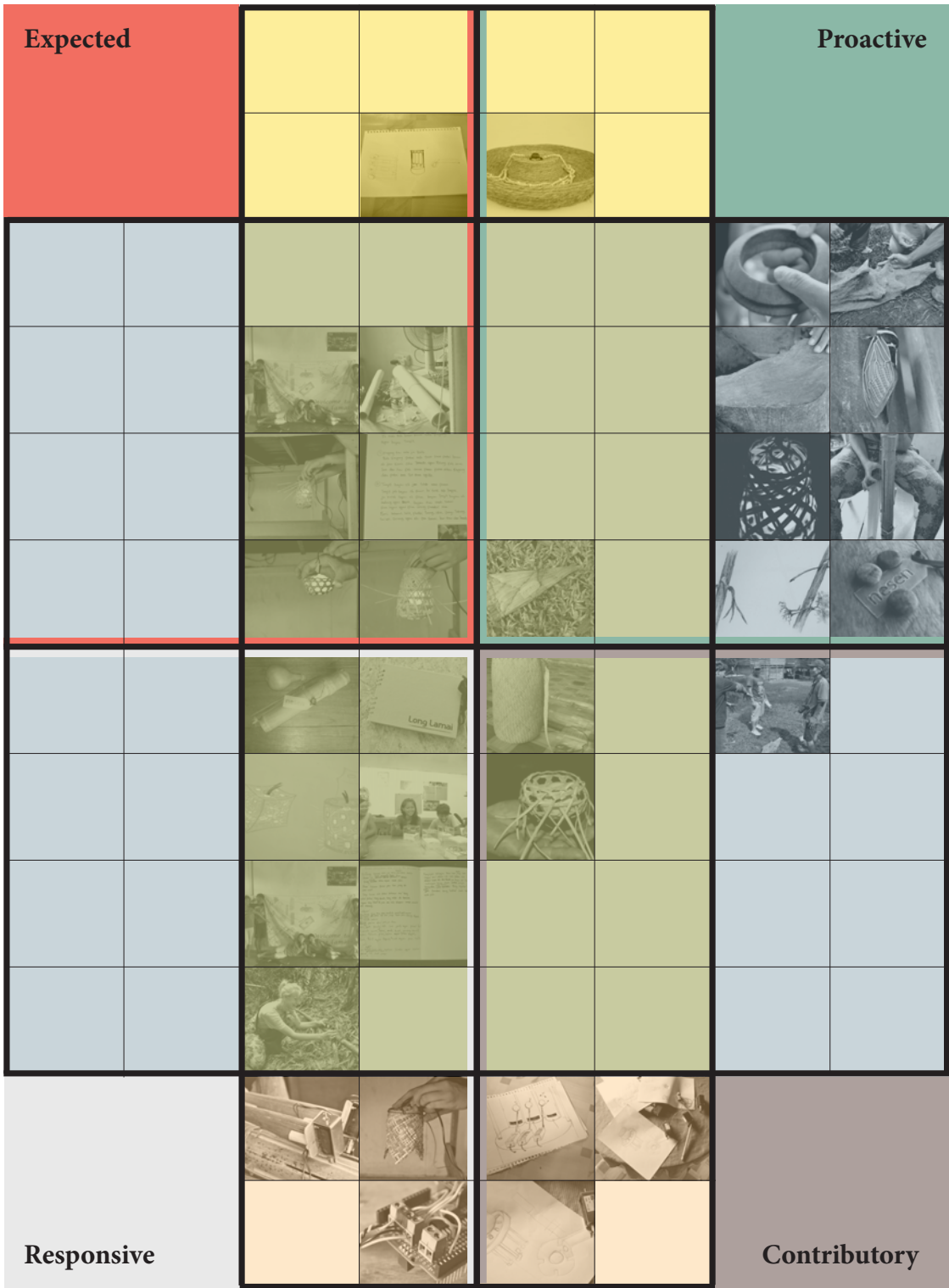


Figure 7.7 - The design seeds that were connected to the novel expressions pattern sheet of the annotated portfolios

expressions are important for respectful design because the community makes these on their own terms. Stimulating those expressions is of great importance since they can lead to a shift in the design process towards a respectful design space.

The design activities that failed to reach a respectful design space (the lights and the stories) mainly have expected and responsive novel expressions. The design probes solely have expected and responsive novel expressions. This however was to be expected since they introduce a closed brief; they ask a certain question, and unless someone decides to completely step away from this set brief, whatever comes out will naturally be a responsive or expected novel expression.

In the previous chapter I have determined that there is a difference between active and reflective stages within the process. The exhibition stage is the reflective stage. There are no novel expressions that can be connected to the design process in the exhibition stage. From this, it seems that novel expressions only appear in the active stages of the design process.

These insights gave the following input for the respectful design framework: both proactive and contributory novel expressions are important within the active stage of the project. These additions can be seen in Figure 7.8.

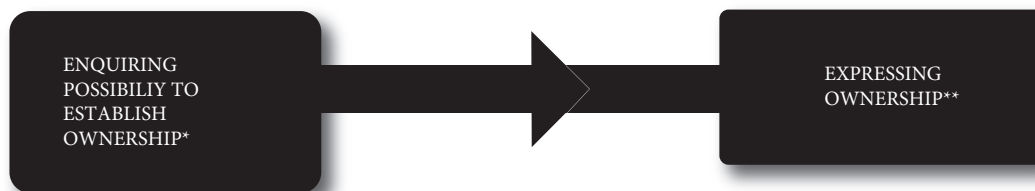
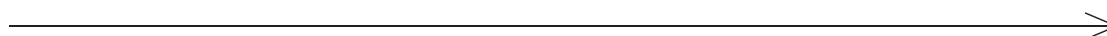
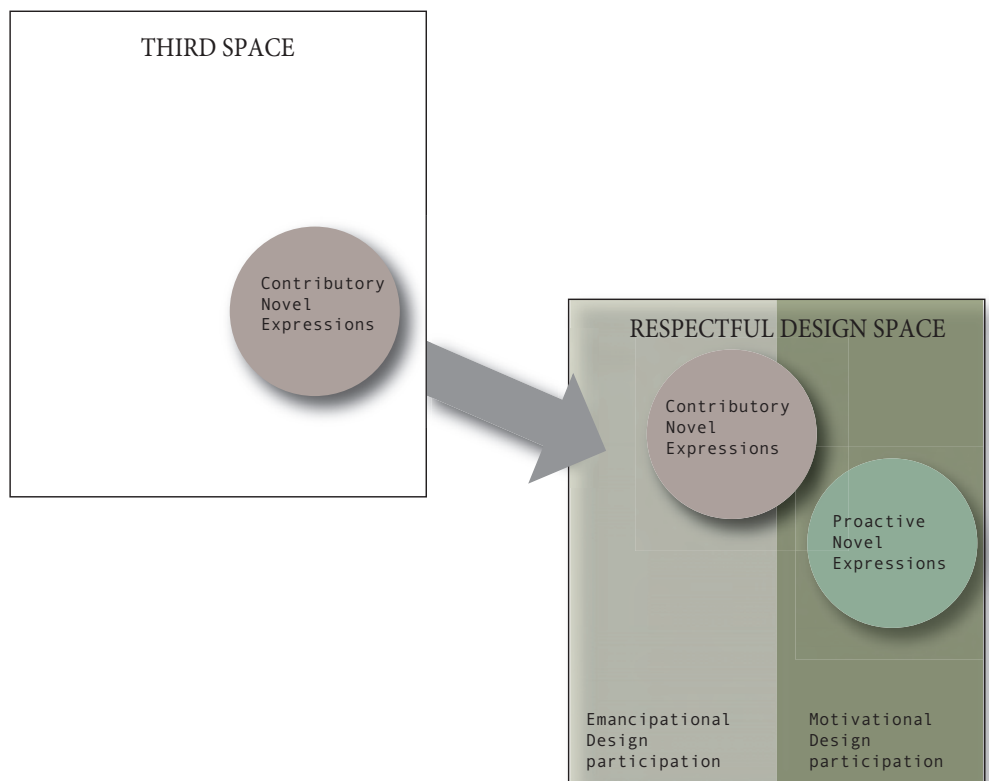
In order to reach these types of novel expressions, it appears to be important to stimulate the community to use their own material culture. In order to make a contributor feel valued, their (contributory) expressions should be welcomed with enthusiasm and openness.

7.3 Design Seeds

The previous section already introduced the important role of the community's design seeds within the design process.

In this section, I will look more deeply into the role of the community's and my design seeds within the process. The pattern sheet as introduced in Figure 7.9 shows the design seeds patterns for the annotated portfolio.

There is no pattern sheet for the research diary, as I only distinguished between types of design seeds in the annotated portfolios. I differentiated between the design seeds that: I had designed and chose to introduce; the community's design seeds; and a combination of the two. I made a general overview for each stage and an overview for each design activity in each stage. Again, since the length of the stays was variable, I divided all codes for each stage by the amount of days that this design stage took.



* Through increasing value, care and identity-oriented markers

** Through increasing value, care, protection, nurturing, identity oriented markers and pride.

Figure 7.8 - Novel expressions implemented in a respectful design space.

7.3.1 The Community's Design Seeds

As can be seen in the general overview, for the second part of the co-creative encounters most codes represent the community's design seeds (Figure 7.9-1). They appear mostly in the design activity of the musical instrument. In this section I will look at what role the community's design seeds played in the design process. Firstly, there is the role of embedding novel expressions, and with that the designs, in the material identity of the community. Secondly, the emphasis on the community's material cultural helps me to disconnect from the technology probes. Thirdly, the community's design seeds help the community to explore novel concepts.

7.3.1.1 Embedment

When looking at the annotated portfolio for the second co-creative encounter (Figure 6.7 in Section 6.1.3), it can be seen that the community’s design seeds has nine codes (not counting the codes that have shared design seeds). Of those nine codes, seven are in a cluster. There are three types of clusters: five are clusters of the community’s design seeds, a connection to identity and proactive novel expressions. These clusters match with clusters that appear in the research diary. For example, the community started coming up with proactive suggestions - all of them were identity oriented:

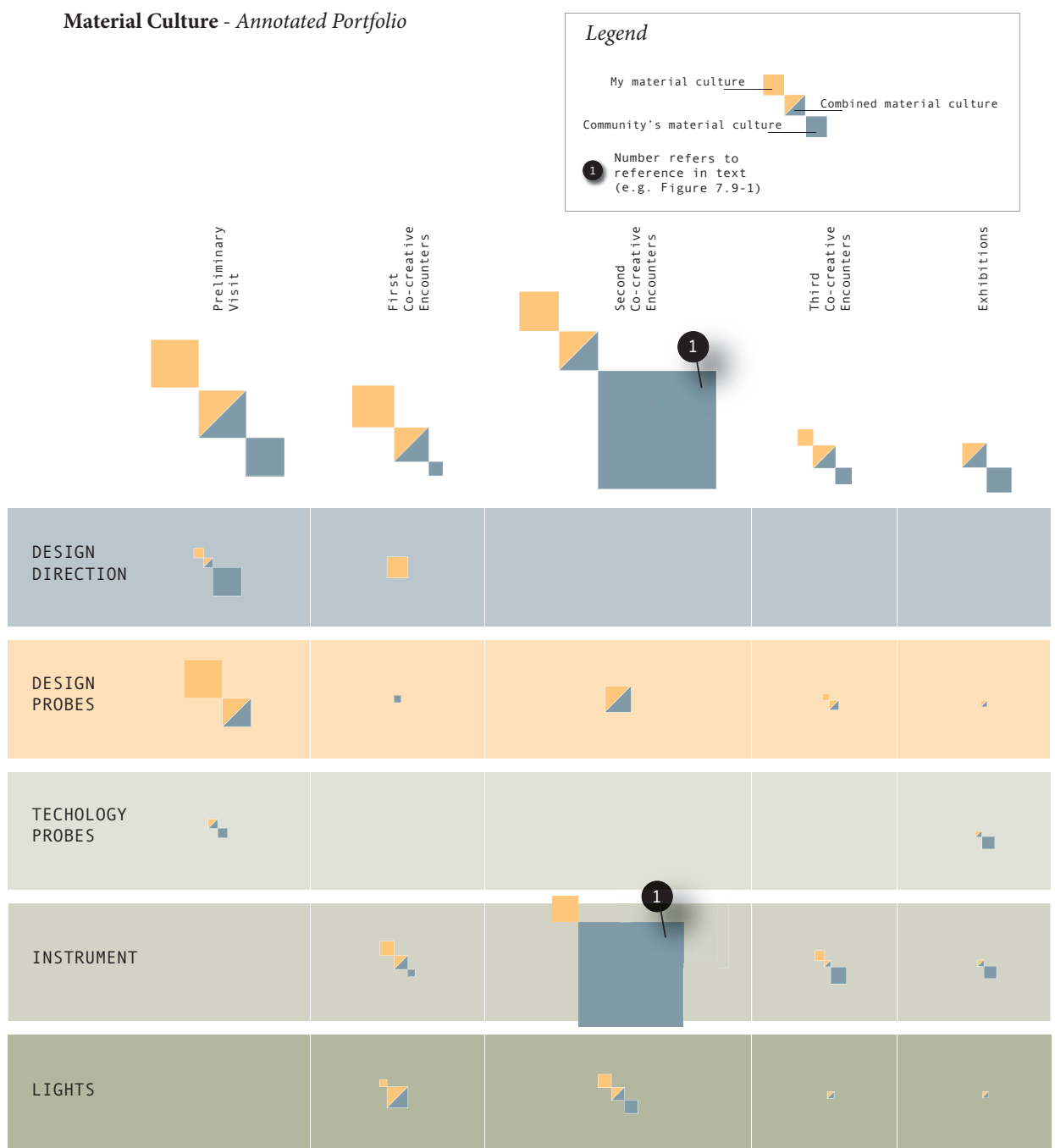


Figure 7.9 - The design seeds pattern sheet for the annotated portfolios. (the number is referred to in the text)

Then Garen said we should make the platform of different types of wood. Each of these types should be chosen according to its relevance to the Penan culture. [A3- Second co-creative encounter 5m]

And:

He [Garen] then came up with the idea that we should use symbolism to tell the story about the Penan. Artists in the community who can cut the wood could do this. A 'Kuik' [a cicade, only living around Long Lamai] could be cut for example. [A3 -Second co-creative encounter 5n]

Offering space for proactive novel expressions through *connections to identity* by using the material culture of the community seems to be important for the building of ownership. It seems as though the combination of those three provides the community with the ability to embed their 'identity' in the project and thus to make it their own.

7.3.1.2 Disconnection

The moment that the community started introducing their design seeds, I lost connection with the probes that I had introduced. Since their material culture gives the community a sense of what designs should look like and what they should represent, their connection grows. The local designers started adding symbolic and aesthetic layers that I did not understand. This meant that I disconnected from these designs because I did not understand the depth of those layers. This manifests most strongly during the design activity of the musical instrument when Garen introduces the importance of implementing a Borneon Rhino in the design. Those rhinos appear to be of great significance for the Penan.

Garen started to talk about the connection between the rhino and the pagang. Other things that were also important to the Penan such as the blowpipe and different types of wood also seem to be strongly connected to the rhino:

Even though he [Garen] didn't push his opinion, you could notice that he really wanted the design to contain a reference to a rhino. He suggested that there could be a rhino engraved in the platform. [A4 - Second co-creative encounters 5o]

And:

Garen came up with the idea to make the rhino of different types of wood [A4 - Second co-creative encounter 5p].

Garen explained that in the past, when the elders of the community were still nomadic, the rhino influenced many things, resulting in many traditions connected to the rhino. For me, it was unclear what these connections were; I did not know how the pagang was related to the rhino or how the types of wood were connected. I also did not have an idea what types of traditions the rhino influenced. I however, decided not to ask too many questions at this stage, in order not to look too critical or inquisitive about their suggestions. I decided that if they wanted to, they would explain those

things to me at a later stage. I thought it would be important for them to connect to the project, and to take ownership of it. Since I would not be able to add to the symbolical level of the design but they had the required knowledge, they took charge. Instead I decided to focus on the electronics to support any direction the community came up with. Only at the end of the project did I get an insight into the significance of the rhino. This was during the pilot exhibition when the elder told me a story about the Rhino and its relation the pagang:

It is not only the pagang that is important, since the pagang is interwoven in an event. In the olden days, whenever a rhino was killed, we would play the pagang (also keringot) and we would dance. We would celebrate! This was important because we believed that the rhino had a soul. By celebrating, you bring harmony to the soul, and the soul of the rhino will not disturb you.

It would be an elaborate celebration, starting during the day, continuing into the night. People will play the atui, make sprout and sang nerui (last two are both decorations) - sang nerui are young yellow leaves, that are cut in such a way that they will curl.

In the evening the keringot and pagang would be played. People would dance.

The pagang is also used in the leisure time. The songs come straight from the hearth. They are about love. They are written as poems.

The first use of pagang is not used anymore. We don't believe in this anymore. The second use of the pagang is still relevant. However, the first one is still very important for our history and people from our culture should learn about this.

7.3.1.3 Exploring Novel Concepts

Garen seemed to be attracted to the idea of having digital technology in the project right from the start. After I introduced StoryBeads as a means to introduce the type of work I had done before, he immediately came up with ideas to use technology in beneficial ways for the community. This proactive creativity was for me completely unexpected:

He considered this as an opportunity to make their handicrafts special. He also saw potential in it for teaching tourists about the botanical knowledge – by placing tags next to the trees important for the Penan. [A4 - Preliminary visits 3a]

The quote above suggests that Garen does not seem to have a problem with brainstorming about possibilities for technology by connecting it through the community's own material culture to his reality:

Garen showed me different objects that we could use in the designs: e.g. seeds or a wildboar tusk could be used to place the tags in. [A4 - Preliminary visits 5b]

And:

We could let Penan music start playing the moment that you start waving the traditional Penan fan. [A4 - Garen: Preliminary visits 6h]

The aesthetics of StoryBeads (adjusted to the South-African BaNtwane culture) seemed to invite Garen to think about how technology could be adjusted to the Long Lamai community. He thought about this on two different levels: (1) conceptual e.g. by making the handicrafts of the community more interesting for tourists by adding tags, or to create guided tours through the rainforest for tourists by tagging important plants and trees with the connected botanical knowledge; and (2) on an aesthetic level: using the material culture of the Penan to implement the tags.

Thus, Garen does not seem to have a problem to use the community's own material culture to brainstorm about technological concepts in order to make it directly relevant for the community in a proactive manner.

7.3.2 Combinations

It is not only the material culture of the community that is valuable. Combining material cultures, as I did in the design of some of the design probes, can serve as a way to express effort and interest. Besides that, it shows that you make an approach towards the community by meeting them instead of them needing to meet you. It also shows that you are open to their material culture or design seeds as input for the design. An example of such a design probe is the time capsule probe. This probe was a bag, with written on it the word *nesen*, which means 'remember' in the local language. Examples of responses to this probe:

They were very positive about nesen. They said it showed that I had adapted myself to them. They kept continuing to emphasise on this. [A2 - Preliminary visits 6j]

And:

It is also the second time that someone wants to have a nesen bag to place their bible in. [A2 - Preliminary visits 6k]

Interactions between both the community's material culture and the material culture that I introduce are of great importance to negotiate a collective understanding. This can be seen in an interaction between Garen and me. We did a brainstorm about what the musical instrument could look like. To



Figure 7.10 - Interactions between our design seeds to support a brainstorm about the musical instrument.

understand the ideas of the other, we showed each other, both with our own material culture, what we meant - see Figure 7.10.

In this way, combining material cultures becomes a process of making the shared third space visible and negotiable.

7.3.3 My Design Seeds

The combination of design seeds not only supports negotiations of a third space; I discovered that the design seeds that I introduce could also stimulate and trigger negotiations. For example, during the first co-creative encounter, I introduced the design probes created to stimulate intergenerational conversations about what it means to be Penan. I think that the design probes - even though they did not seem to fit in the culture - helped the community express the boundaries of what I could and could not do. Introducing the probes and showing the example of the probe that I had made about my own culture helped them understand what it was that I was aiming for. Through this, I prompted a response from the community even without realising it. I explained at several occasions the different design probes. I explained the perfect Penan movie assignment and showed an example that I had made: the perfect Dutch. They seemed to be shocked by this - talking about your culture in prejudices did not seem to be an option. Maybe this was the understanding that needed to arise for them to definitely say: we cannot do this; it does not fit in our culture.

In this way a design probe can help to trigger responses of what the boundaries are of the third space for the community.

Design probes can also trigger further explorations of beneficial design directions. In this, it is not only the outcomes of design probes that are used to define what a project should be like; instead the outcomes themselves trigger further explorations, leading to deeper reflection of what would be truly beneficial for the community. For example, the time capsule probe (*nesen*) invited the community to reflect on their own design seeds and on which aspects of it were important to keep. The exercise itself only resulted in responsive novel expression - since I specified the brief. However, reflections on the exercise stimulated Garen to think about the potential to focus on Oroo' for the continuation of the project. As a result of the time capsule outcome, I had the following conversation with Garen:

We looked at the nesen pictures. Garen explained that Oroo' is very important for the Penan. I mentioned to Garen that I noticed that yesterday during the nesen-exercise, most youngsters seem to be learning about Oroo' - like me. Garen explained this by telling me that the youngsters often don't have much knowledge about Oroo'. However, this really depends on their parents. If the parents take their children to the rainforest often, they will learn. Unfortunately often adults only know a small amount of the Oroo' knowledge...

We start talking about something else. Then Garen says: "You could focus your project around Oroo', since it is very important for the Penan. I'll ask one of the younger artists to draw some of the Oroo' for you to understand it." [A2 - Preliminary Visit 6g]

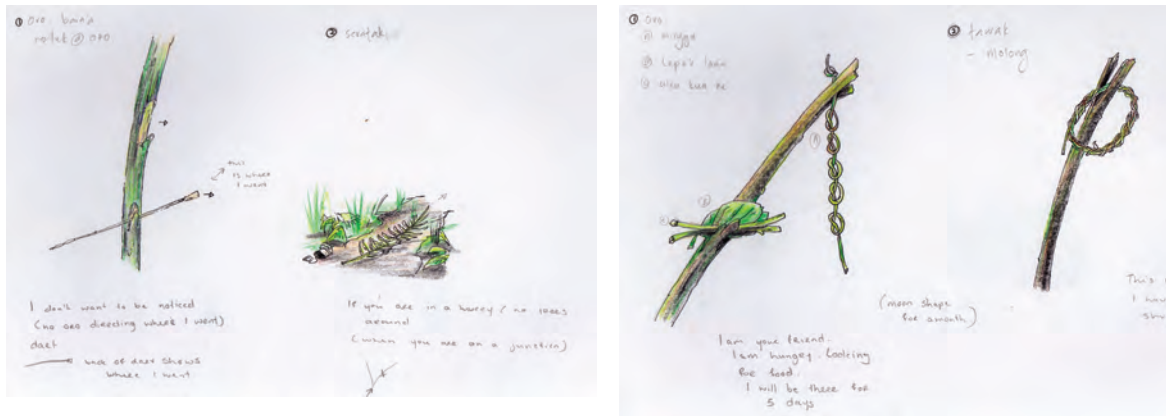


Figure 7.11 - Drawings about Oroo'.

This resulted in the drawings that I later received (Figure 7.11), in order for me to get an understanding of what Oroo' is about.

7.3.3.1 Considerations

I realised that there is an important consideration to be made before introducing your material culture as an external designer. This consideration is about your connectedness towards the triggers you introduce. In order to let design probes function as triggers, you should have a certain distance towards them. When looking at the technology probes, I had a strong connection to the lights and a looser connection with the musical instrument. Due to my lack of expertise and knowledge about musical instruments and bamboo, I was open for the community to share their thoughts:

I showed my drawings and through that he started brainstorming and giving suggestions. [A2 & A4 - Garen: First co-creative encounters 6b]

I consider the distance that I had from the outset of the design activity of the musical instrument as an important factor to be able to provide space to move the design participation towards emancipation. I actively stimulated the community members to contribute their thoughts and valued their proposals:

He constantly asked my opinion, but I noticed quickly that he had a much better understanding of the design, so I would often ask: ...what do you think? [A2 - First co-creative encounter 6d]

This resulted in Garen getting a stronger opinion about the design. He had the feeling that his contributions were valued:

Garen said: "No that would not look nice. What I was thinking was... and then he started cutting the bamboo and showing me what he thought." [A2 - First co-creative encounters 6e]

The musical instrument invited expressions of ownership, by the community, right from the start:

He [Garen] came up with the idea that this instrument could be a Long Lamai ring-tone. He got really excited about this idea. [A3 - First co-creative encounters 6i]

And:

I realised that even before I had started to talk about the technological designs, Garen was already talking about the community ringtone. [A3 - First co-creative encounter 8d]

This suggests the value attached to the musical instrument by the community. Garen gave major importance to the musical instrument in his explanation during the community meeting. The other parts of the project were only talked about very briefly. This suggests that the community attached, from the start, most value to the musical instrument.

I could already continue with the instrument, because there was no harm to that and Garen seemed to think that that was the most important anyway. [A3 - First co-creative encounter 8a]

The community accepted the instrument at that point in the process. Both Garen and Wilson became involved in the design process of the musical instrument. I consider this as an important factor for this design activity to be accepted. Garen's and Wilson's involvement might have caused them to become personally interested and to feel valued through their contributions.

This was different for the lights. The design participation of the lights process remained in the contributory design participation space. Reflecting on this made me conclude that this was mainly caused by me taking ownership of the process and not allowing any creative input from the community:

Garen came up with the idea to place the lights in between two baskets. However, I don't know whether I would really like that. Two lights in one basket does not seem like the best idea, because I think by spreading, the effect would be bigger. [A2 - First co-creative encounter 6n]

The lights did not provoke any expressions of ownership from the community - only from me. I became protective of the concept of the lights that I had in my mind; I had a clear idea about what the lights should look like, thus I did not create space for the community to alter the design of the lights to something relevant to them. This meant the design participation remained designer-driven. As a result the main type of novel expressions seems to be responsive:

However, I wanted to explain that they just needed to make the design such that the light could go through it. Sasha suggested that I could ask them to weave less tight. Garen suggested to show a basket made in that way. [A4 - First co-creative encounter 6j]

And:

It was her own interpretation - which was much better than my own and which showed that she understood the idea, but also the task that if she wanted to do it differently, more suitable to the culture, she could change the design as long as the light could come through it nicely. [A4 - First co-creative encounter 11b]

When looking at the effect of those differences more closely, and the dynamics of the coding concepts that caused these differences, some observations can be made. For the lights, I had a very strict idea about what the final design should look like. I had already given the design a name and I had considered the concept beautiful even before I started creating the probe. I had worked with basketry before and I had developed my own assumptions of what would look nice. I had connected ownership to this design even before the design process had started. By connecting ownership to the design, I was unable to provide a creative space for the community. This effected the design participation; by denying the community to take initiative in the creative space, I prevented the design participation becoming community-driven. This resulted in the lack of ownership expressed by the community. At no point in the design process of the lights did the community make enquiries about the possibility to establish ownership.

For the musical instrument this was very different. Due to my lack of expertise in creating and playing an instrument, I was unable to define an idea prior to the design process. I was open for input from the community, and I even stimulated it. Through this, the type of creativity became more contributory. By stimulating this, the design participation got a community-driven character. Through their contributions, the community started to develop ownership, and signalled this through expressing value.

I learned from this that understanding your attachment as a designer to the probes you introduce is very important, as it can direct the entire development of a project. Being aware of this attachment helps to force you, if needed, to take a step back and allow for flexibility in the creative space. In my case, it helped to create probes that did not touch on previous experience or expertise. This way, you need to find people who can take an expert role to fill the gap that you cannot. This invites community-driven design participation and the possibility for the community to attach ownership to the design. The openness of the musical instrument also provided more possibilities than the relatively closed character of the lights. The musical instrument could be any type of percussion or string instrument; the lights only provided the option to add a lampshade.

7.3.4 Design Seeds: Dynamics of a Respectful Design Space

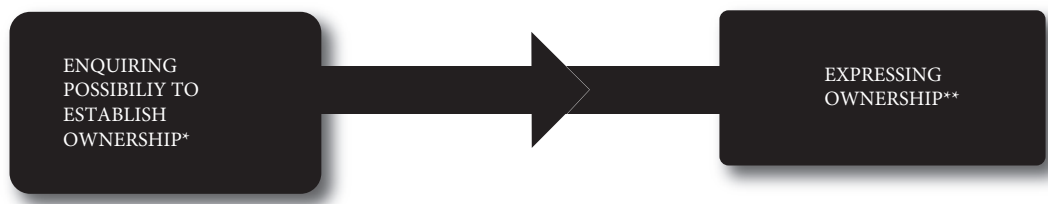
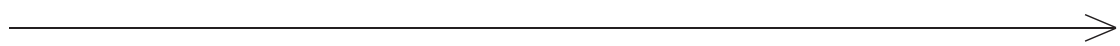
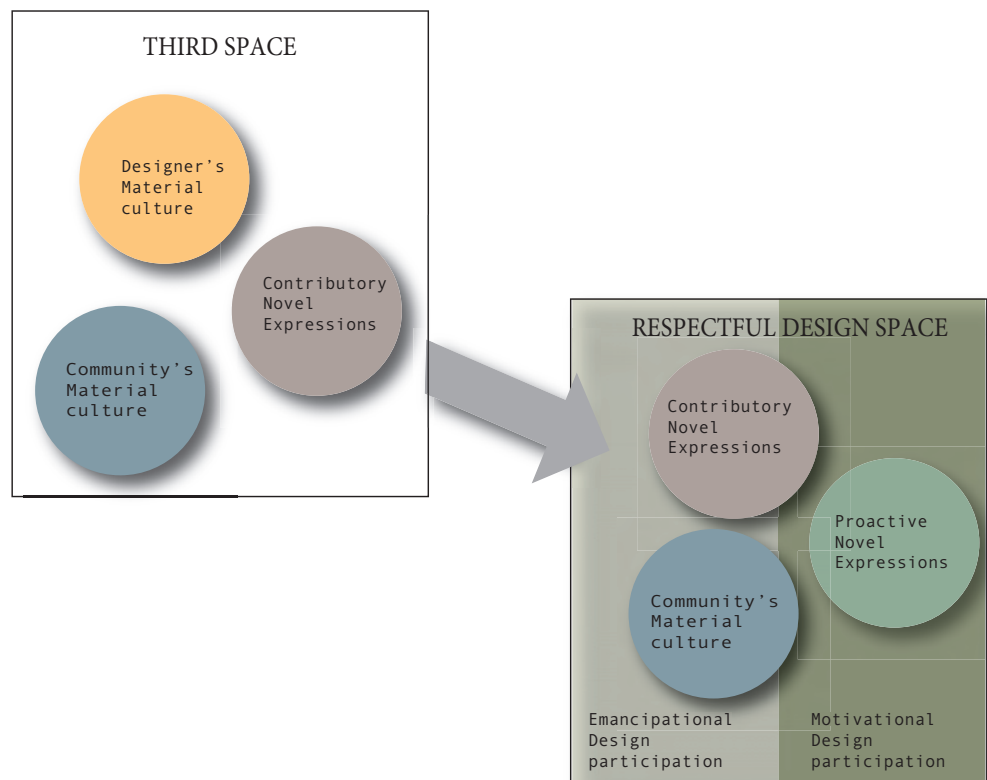
From this section, it can be concluded that each type of design seeds has its own role within a respectful design process.

The use of the community's design seeds seems to stimulate proactive creativity. It facilitates ownership of the design, because it enables the design to become an identity-oriented marker. And thus, it enables embedding the project in the culture. Furthermore, by focusing on the community's design seeds, the community becomes the expert. This can result in the external designer disconnecting from the probes and the process, which ultimately can lead to a community-driven process. Lastly, by positioning novel and foreign concepts into the community's design seeds, those concepts can be

discussed and relevance and value can be explored.

The use of combined design seeds provides the ability to negotiate third spaces. Furthermore by implementing combined design seeds in design probes, you approach the community and show with that that you are open for them to use their design seeds as input.

The external designer's use of design seeds can help to define what the project boundaries are. Furthermore, it can serve as a trigger not only for direct responses, but also for reflection beyond those responses. By introducing design seeds, the community has a frame to start explorations. The explorations can take place within this frame, or the design seeds can trigger explorations outside this frame.



* Through increasing value, care and identity-oriented markers

** Through increasing value, care, protection, nurturing, identity oriented markers and pride.

Figure 7.12 - Design seeds implemented in a respectful design space.

These insights lead to a revised respectful design space framework. This framework can be seen in Figure 7.12.

In order to stimulate and trigger respectful design spaces through your design seeds, you should:

- See the design probes as triggers. Design a wide variety of them, so that there is a greater chance that there is a trigger. They may lead to the community undertaking further exploration and support the design participation to become community-driven.
- Introduce a broad range of design probes that convey what you think the third space is about. This might be conflicting with the understanding of the community but it will help them express whether their understanding matches yours and what their boundaries are.
- Show examples of your responses to the design probes to help the community understand how you interpret the probes. Keep these examples open and not directly relevant so that there is still space for the community to explore their own interpretation.
- Be critical to the ownership you connect to the designs you introduce. Being protective of the probes you introduce will hinder the community's engagement with them.
- Consider designing probes that lie outside the scope of your expertise, so that you can co-explore together with the community, instead of having a set idea of what the design should look like.

7.4 Connection to Indigenous Knowledge

As stated by Sheehan (2011), respectful design is informed by indigenous knowledge. Indigenous knowledge is a layered understanding containing different streams of knowledge that interrelate nature and culture. To respect indigenous knowledge is to acknowledge that our perspective on things is always incomplete and that we therefore should show care and awareness when identifying, exploring and assessing meaning.

Thus, in a respectful space, there should be a space for the indigenous knowledge of the community to function as input on different levels. In order to understand whether there is a question of an ideal respectful design space, hints towards the indigenous knowledge might provide a clue. In the case of this project, there were eleven glimpses into the indigenous knowledge. There were even more when considering the community's design seeds presented in Section 7.3. I did not include these, since I have already discussed those separately. I did not understand what those glimpses meant most of the time, but I sensed that they were essential for the community in order to make decisions, appropriate their choices and embed the designs in their rich culture. Figure 7.13 shows those glimpses. They are written down from my perspective, of what I comprehended. I am aware that my descriptions are limited, as are my understandings.

I want to highlight two stories that I consider important to make clear what those glimpses meant and how I dealt with them.

This morning Garen said that we might want to buy a pagang that was already made, instead of asking one of the crafters to make one especially for the project. I did not understand why this was but I agreed. Then Garen explained that there is a problem when collecting the materials for the pagang now. We collected the wrong type of bamboo and therefore we need to collect new bamboo before we can make a pagang. However, only around the 28th of the month it would be the right time to cut bamboo, else it will not last long because the insects will attack it. I still did not fully understand it and he did not clarify any further.

Another example arose when we were admiring the perfect fit of the pagang within the platform (see Figure 7.14). We had not measured the pagang and the platform before we assembled them. I was very surprised. Garen dedicated this to the following:

Garen told me about a dream he had had, the night after he had cut the pieces of wood. The man who had cut the tree, which we used in the design, in the 60's was in this dream. At first he stood behind the crowd that was standing around the design (in the dream the man was a young guy – which was interesting since he had died when he was a really old guy). Garen was working (in the dream) to finish the design – the man looked at what he was doing in an appreciative way. Garen seemed to attach special meaning to this. Might this have been motivation for Garen to take part in the design process?

I realised that these contributions were valuable, as it were these dynamics that I did not understand that were directing the choices of the community. I became humble towards these expressions. Whenever they were made, I would show interest, but I would not push, since I wanted them to share only those things that they wanted to share. I accepted suggestions related to the indigenous knowledge without questioning them or asking for thorough explanations. This reflects to something that Paul Spencer Sochaczewski (2012) expressed in his book, *An Inordinate Fondness of Beetles*.

Sultan Hamengkubuwono IX told me stories that challenged my Western, Cartesian, left-brain way of looking to the world. When I expressed skepticism he told me not to ask a Western question in the context of a Javanese situation. "You either believe it, or you don't," he explained. "Sometimes it doesn't pay to be too analytical." (Sochaczewski 2012 : 285)

This acceptance without questioning might have been important for the community to take owner-



Figure 7.14 - The perfect fit of the Pagang on the platform.

Glimpses of Indigenous Knowledge

Legend:

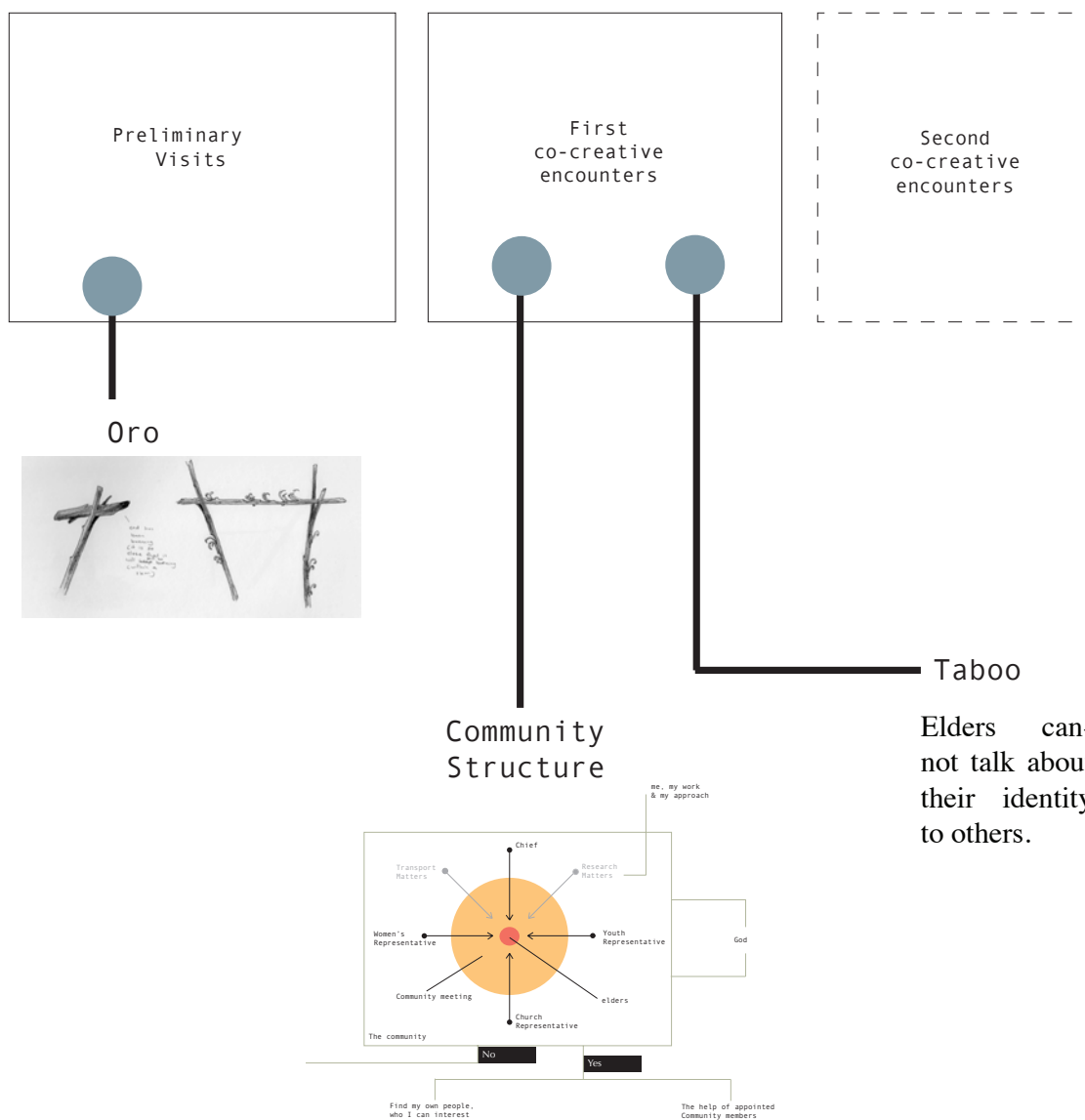
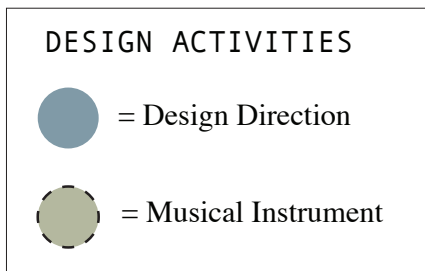
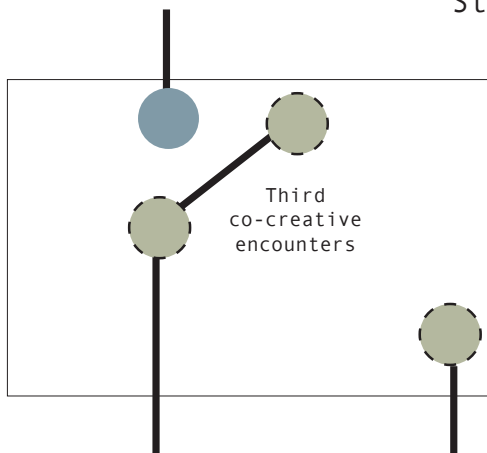


Figure 7.13 - Glimpses of Indigenous knowledge throughout the process.



In the workshop for the youngsters there should be representatives from each part of the village.

Representatives

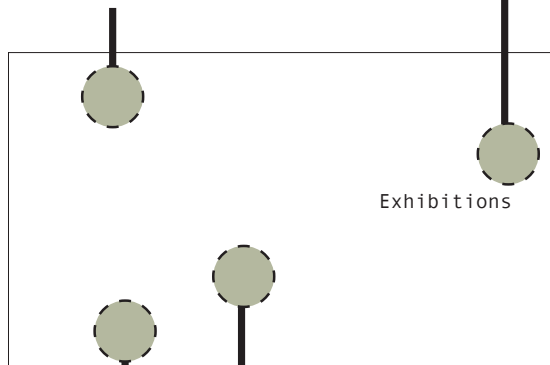


Bamboo

The bamboo that I had cut before was not right. It was not cut on the right date. Now insects will attack it. We should either cut the bamboo on the 28th of the month or get a pagang that is already made.

During the pilot-study, the elder told me the story about the pagang.

Story of pagang



Garen's Dream

The perfect fit of the Pagang was according to Garen related to a dream he had had: the man who had cut the tree had shown Garen in a dream that it was ok.

Pagang & Relationships

Only when your relationship with the person making a pagang for you is good, the pagang will sound good. If your heart is good, it will be fine.

Pagang poems

Connie started playing and singing for me. Garen translated the poem. It was a poem the musician would play for her man. It was about a beautiful tree her man found. This type of tree is used to make blow-pipes. She plays the song to remind her man to make a stool for her from this tree so that she can sit on it and play music.

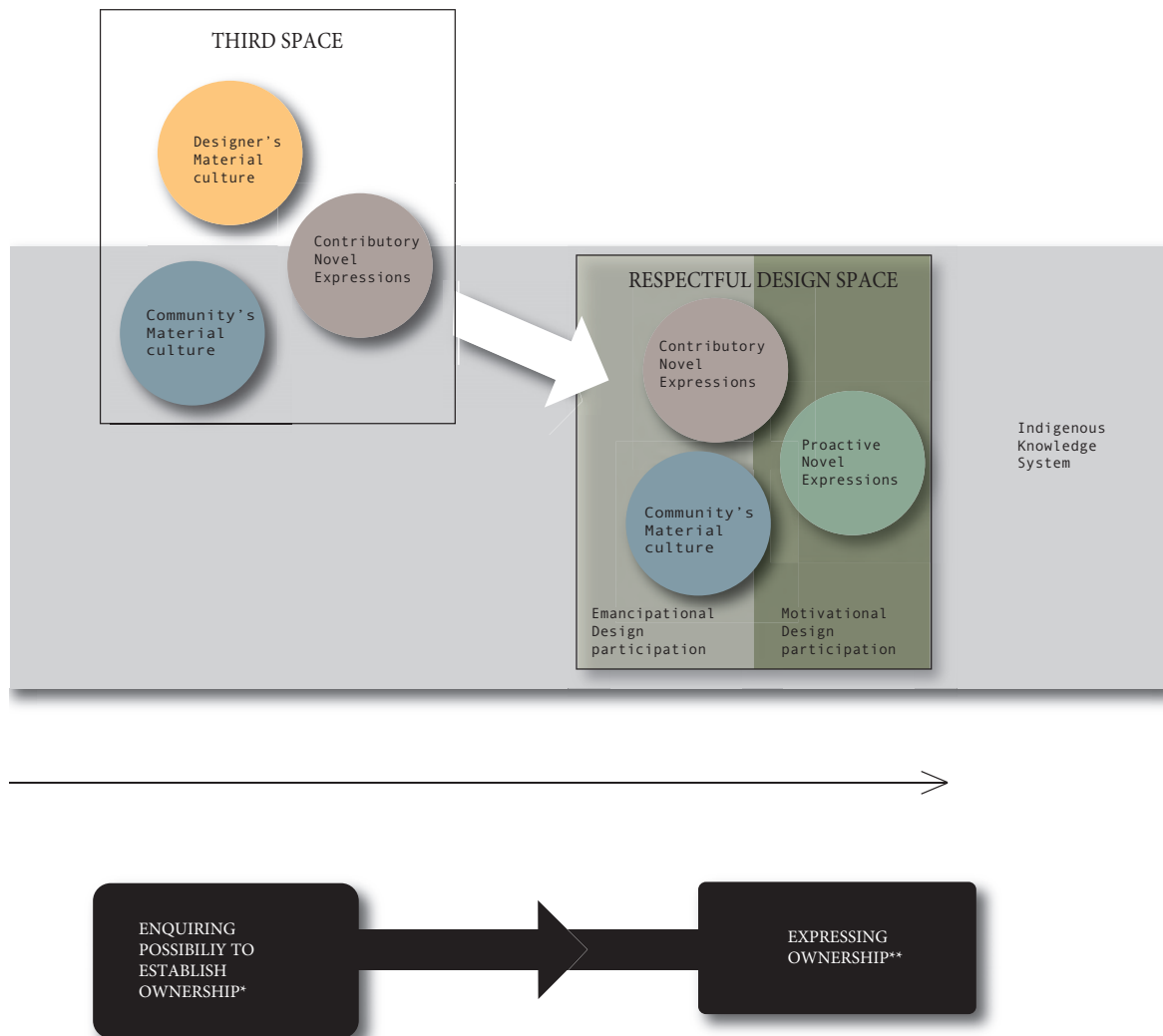
Pagang myths

A man who plays the pagang will be attacked by a wild animal. Before a girl plays for the first time she has to put a piece of nail in a bowl with ash. If the girl can find the nail, she will be a good pagang player.

Figure 7.13 (continued) - Glimpses of Indigenous knowledge throughout the process.

ship of the design since it created space for them to embrace their indigenous knowledge as a driving force. Thus the indigenous knowledge became a layer under the entire project. Only sometimes the community would express the connection to this layer. I would try to show openness to those expressions. Only in the design direction and musical instrument activity the local designers would make such expressions - maybe because I was more open to the expressions of the community in general in these activities. The lack of connection to the indigenous knowledge layer suggests that the other activities did not (yet) succeed in reaching a respectful design space.

I came to realise the importance of accepting the community's indigenous knowledge to serve as a (for the external designer often hidden) layer, which drives the entire respectful design space and all dynamics within it. This recognition led to an adjusted framework; this framework, with the implemented indigenous knowledge is the final framework. It can be seen in Figure 7.15.



* Through increasing value, care and identity-oriented markers

** Through increasing value, care, protection, nurturing, identity oriented markers and pride

Figure 7.15 - The respectful design space framework.

7.5 Reflection in Action - Learning Iterations

For me, this was the first co-creative design project I embarked on. In this section, I emphasise the reflective nature of the data analysis that helped me understand the development I had made. I consider this particularly important for researchers who – like me – are new to co-creative processes, because it will help to become critical of attitudes, informed by background and experiences, which hinder co-creativity and respectful design.

In reflection-in-action, you spiral through stages of appreciation, action and re-appreciation. One should aim to continue this spiralling until a satisfactory outcome is reached, or until further exploration is framed. At the core of reflection-in-action lies experimentation to explore “what if...?” Schön (1983) distinguishes between exploratory experiment, move testing experiments and hypothesis testing. Exploratory experiments aim to discover that there is something there. Move testing is about deliberate action undertaken with the end in mind. The outcome either affirms or negates whether you like what you get from the action, and its consequence as a whole. Hypothesis testing is about trying to alter the situation, in order to prove or reject a hypothesis.

During the data analysis, I kept track of: my reflections; which virtual worlds I made them in; and how they resulted in further explorations. I translated this into reflection-in-action schematics. In Figure 7.16, I present part of the schematics, to give an example of reflections that arose from the actual visualisation process. In these schematics, the design features that sparked reflection are pointed out and I will go into detail about what the reflection entailed. The totality of the schematics can be understood as the development I made in becoming a good enough designer and can be found in Appendix 5.

For me, going through my own diary entries was painful from time to time, because it highlighted my naive thoughts and misunderstandings. However, it were these painful entries that often gave me insights in my actual development as a good enough designer. I translated the insights I got from the reflection-in-action process, into recommendations, which can be seen in Figure 7.17. I have sorted the recommendations and divided them into five categories - three main categories and two subcategories. Those five categories are: 1) stimulating community-driven dynamics; 2) benefit and value; 3) how co-creative activities can stimulate the creation of third spaces; 3a) connecting to the community’s indigenous knowledge through the inclusion of the community’s design seeds; and 3b) evaluating the designer’s connectedness to elements of the design process.

7.6 Conclusions

Within this chapter, I have looked at the dynamics of indicators of ownership, novel expressions, design seeds and the community’s indigenous knowledge. Each of those dynamics provided charac-

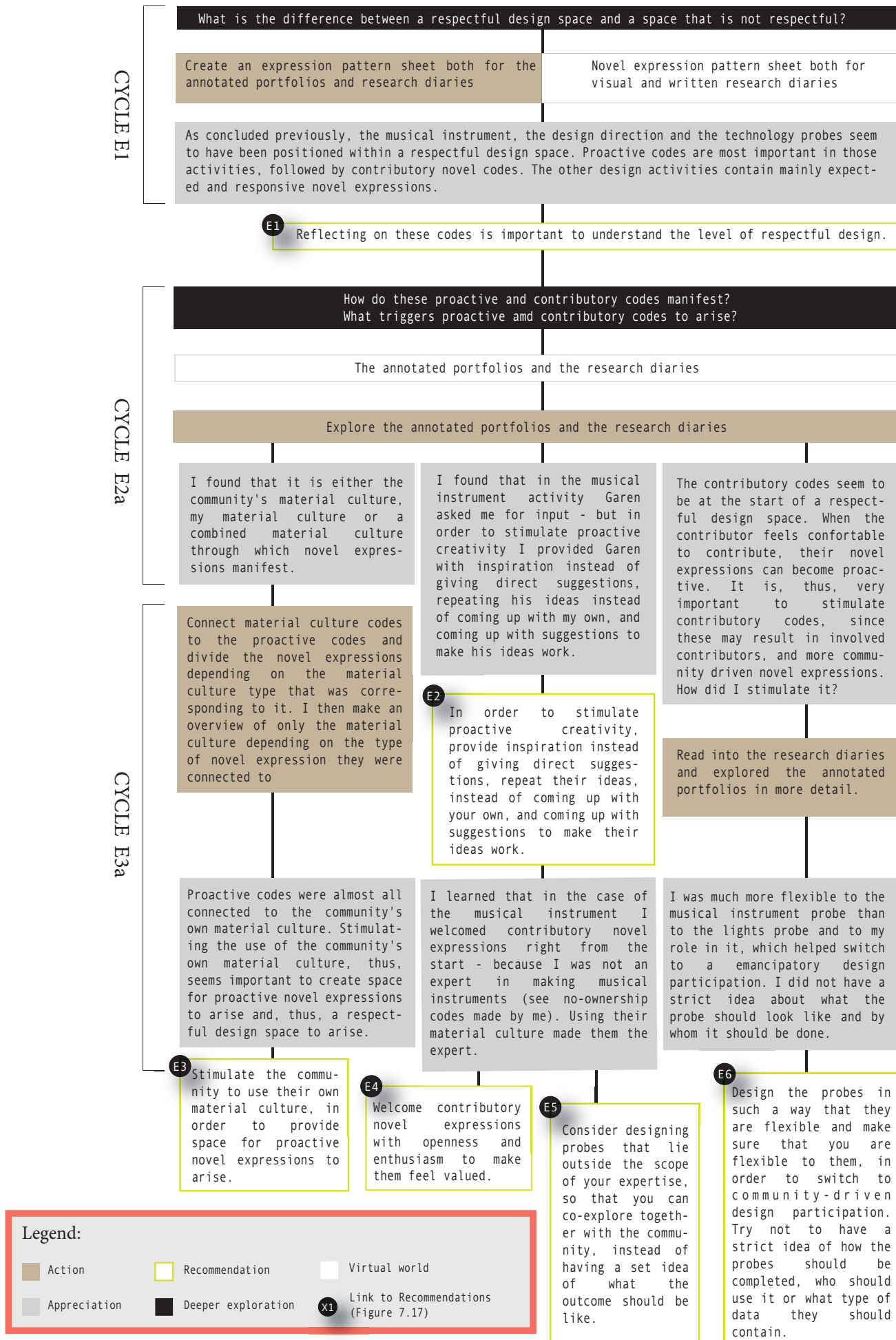


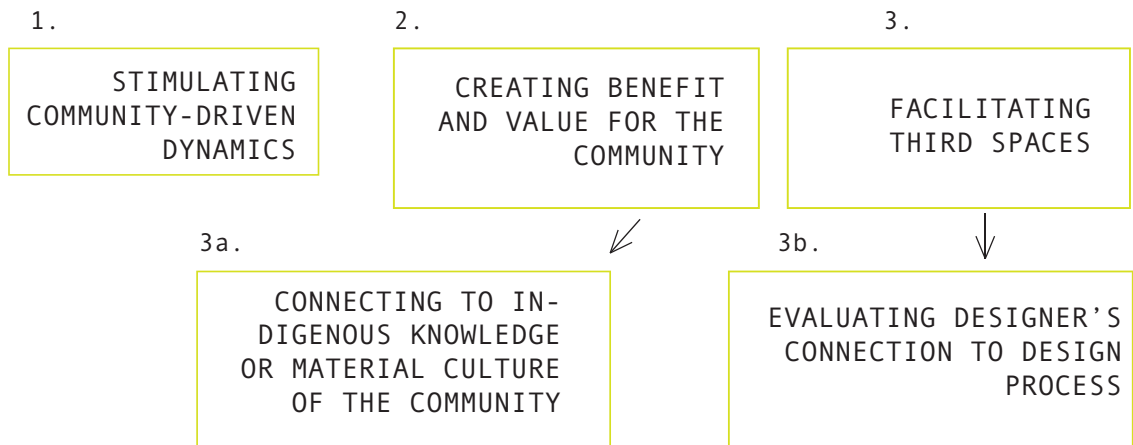
Figure 7.16 - The reflection-in-action process of this research project.

Legend:



Origin of the recommendation as can be found in the reflection-in-action schematics (Appendix 5).

OVERVIEW:



1.

STIMULATING COMMUNITY-DRIVEN DYNAMICS

D1 Try to transfer the project management to someone in the community. Make sure that this person has the ability to pull the process towards a respectful design space. People that suit this role are people coming up with proactive or contributory novel expressions and enquiries and expressions of ownership.

G4 Be humble and patient and try to let the community guide the process.

H1 It is very important to adhere to the community structure, else, there will be resistance. It will help to let the community be in charge to involve the 'right' people - since they will understand better who can do what.

B2 Choose a task that will help you to make the visions of the community reality and work on this with dedication, to stimulate the community in a subtle way to also invest in the process.

C1 Be aware of the background of the community when it comes to research. What is their norm?

B3 Reflect on motivational codes since these can suggest ownership taken by the community.

E2 In order to stimulate proactive creativity, provide inspiration instead of giving direct suggestions, repeat their ideas, instead of coming up with your own, and come up with suggestions to make their ideas work.

G1 Reflect on no-ownership codes made by the community that help to define boundaries of a design direction. Listening to and reflecting on such expressions helps stimulate a respectful design space.

E8 Be open to lens concepts outside the respectful design space, they can provide information that indicates motivational design participation, valuable to shift your attitude. Codes outside the respectful design space can be valuable but make sure that they work to stimulate instead of hinder respectful design spaces. Critical reflection is thus needed.

E4 Welcome contributory novel expressions with openness and enthusiasm to make them feel valued.

2.

CREATING BENEFIT AND VALUE FOR THE COMMUNITY

A3 B4 Provide space for co-reflection since it appears that this is important for motivational design participation to arise.

B1 See the design probes as triggers. Design a wide variety of them, so that there is a bigger chance that there is a trigger. They may or may not lead to the community exploring further and taking initiative. Furthermore, they can support the design participation to become community-driven.

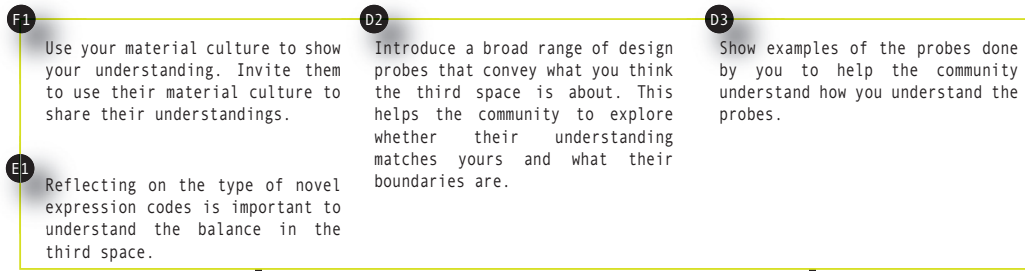
E6 Design the probes in such a way that they are flexible and make sure that you are flexible towards them in order to switch to community-driven design participation. Try not to have a strict idea of how the probes should be completed, who should do it or what type of data they should contain.

A2 Introduce a casual way to explore benefit for the community prior to them making a commitment to the project

A1 Provide exploration time - by making a non-committal visit - so that the community can explore what would be beneficial for them and for them to make a choice in whether or not to accept taking part in the project and on what terms.

Figure 7.17- The recommendations divided into five categories.

FACILITATING THIRD SPACES



CONNECTING TO INDIGENOUS KNOWLEDGE OR MATERIAL CULTURE OF THE COMMUNITY

EVALUATING DESIGNER'S CONNECTION TO DESIGN PROCESS

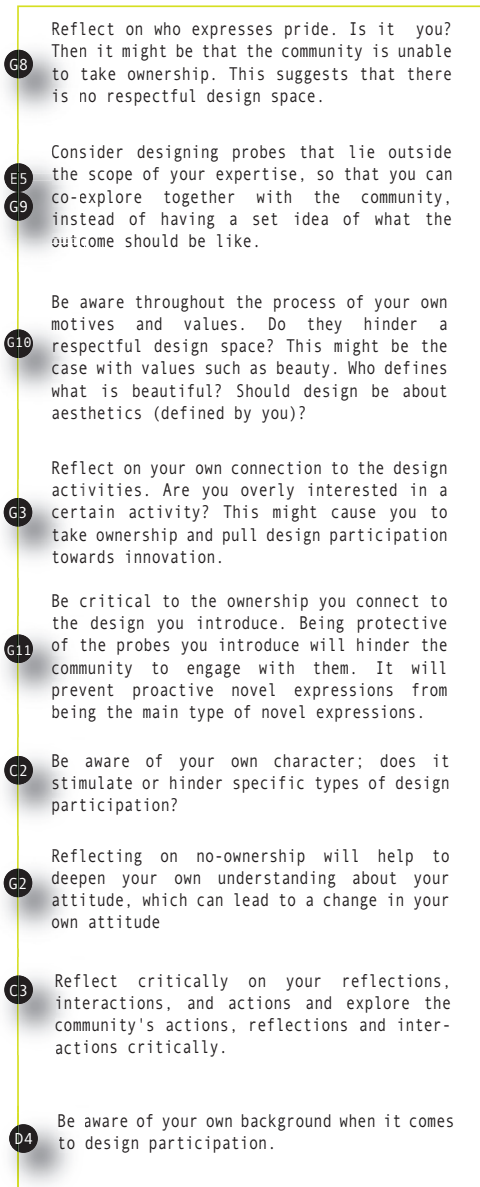


Figure 7.17 (continued) - The recommendations divided into five categories.

teristics for the respectful design space.

Indicators of ownership imply respectful design spaces. Those indicators should manifest both during the actions and reflections stages. How it manifests depends on the stage. During the active stages, ownership indicators manifest as enquiries about *increasing value*, *care* and *connections to identity*. In the reflective stages, ownership indicators manifest also as expressions of *pride*, *nurturing*, *protection* and *connections to identity* markers. It is important to provide spaces for enquiries, such as through the preliminary visits. It is also important to provide a space for reflections, such as through the pilot exhibitions.

Proactive and contributory novel expressions arise in design spaces that are respectful. Proactive novel expressions help, when stimulated, to make the design process community-driven and to increase the sense of ownership. Contributory novel expressions are important for respectful design, because the community makes these on their own terms. Stimulating those expressions is of great importance since they can lead, when stimulated, to shift a design process into a respectful design space.

The use of the community's design seeds seems to stimulate proactive creativity. It embeds the design in the culture by enabling the design to become connected to identity. Furthermore, using the community's design seeds makes the community the expert, thus providing space for the design process to become community-driven. The community's design seeds can also help the community to put foreign and novel concepts into a context to which they can relate. The use of the design seeds of the community is not only important in a respectful design space; combined design seeds can for example provide the ability to negotiate third spaces. By introducing your own design seeds, boundaries of the project can be expressed. Furthermore, the design seeds of the designer can trigger reflections and explorations.

Building on Sheehan (2011)'s notion of respectful design, respectful design should be informed by indigenous knowledge. An ideal respectful design space accepts the indigenous knowledge that drives the respectful design space from an (for the designer often) invisible layer. Only sometimes the influence of the indigenous knowledge will surface, but this does not mean that it only informs those aspects of the design.

These insights resulted in the respectful design space framework (Figure 7.15) as introduced in Section 7.4.

As a concluding note, it is important to consider that providing a respectful design space does not mean to obstruct all other dynamics. I would even say that the opposite is true; responsive and expected expression might stimulate or trigger other intentions, and other types of design participation

are needed to make something a reality. However, at any time in the process, one should make sure that the balance of the dynamics lies within the respectful design space. The respectful design space framework should be understood as a process; a design space will need to grow to become respectful, first going through a third space.

As I explicated in the previous section, I reached my understandings and insights of a respectful design space through a reflection-in-action process. These understandings and insights resulted in the respectful design space framework and in the recommendations that I listed in Figure 7.17.

Eight | Conclusion

With more and more designers embarking on projects with indigenous communities, questions have arisen on how such projects can be performed in an ethically respectful manner.

I noticed a focus of the design community on such communities from events such as: the *Bridging the Divide: developing and applying design methodologies for cross cultural collaboration symposium and workshop* (AHRC in March 2014); the Indigenous Knowledge and Technology Conference - IKTC'11; and the Rediscovery Conference organised by Icoграда (the International Council for Communication Design). Other communities that would not be termed as typically indigenous, such as the communities of the *curios* project of the dot.rural lab in Aberdeen from the Hebrides or Portsoy (both in Scotland), do have characteristics that might suggest them being indigenous, based on the characteristics of indigenous knowledge (Section 1.5.1). For example, the knowledge that connects them is: local, dynamic and flexible; socially segmented; holistic and respectful to the environment; it has been build up through generations; their knowledge connects to the spiritual world; it serves as a collective memory; it used to be oral based with a focus on narrative; and it vocalises through oral history, rituals, crafts and activities. The use of design in such contexts raises concerns. Because of the aim to 'improve' lives and the emphasis on innovation, design approaches are likely to colonise. This aim is linked to the assumption that indigenous communities do not have their own solutions. As designers, we have to find ways to deal with such concerns.

As indigenous cultures have their indigenous knowledge system lying at the heart of their culture, this system should have a place within the design process in order to meaningfully connect with them. As far as I am aware, only respectful design, as introduced by Sheehan (2011) and culture-based innovation, as introduced by Tunstall (2011), acknowledge this specifically. Essentially, these approaches are similar, in that they both require the designer not to direct the process. Instead, the designer should offer a space and the resources for the community to define the direction they want to take the project. This way, it should be about co-creating innovation of which the community is the direct beneficiary. Indigenous communities are, as Tunstall (2011) states, often very resourceful. It is for the designer to come up with ways to stimulate and spark this resourcefulness. Both respectful design and community-based innovation state that the designer should take a step back and be humble about what design can be like in such situations. Both respectful design and culture-based innovation

are strongly intertwined, through dialogue, with indigenous knowledge. However, neither Sheehan nor Tunstall state in pragmatic terms what the dynamics of such a dialogical space are. It is for this reason that I directed this research to finding dynamics for a respectful design space which is intertwined with the indigenous knowledge of the community. In this respectful design space, the role of the designer becomes to stimulate and spark the community to use their resourcefulness, to create innovations of which they will benefit. This shaped the following research aims:

To explore the dynamics of a respectful design space in co-creative and co-reflective encounters with indigenous communities.

To obtain an understanding of what those dynamics mean for attitudes to be taken in order to reach a respectful design space.

In order to reach those aims, I undertook a research-through-design case study. During this case study I collected data, through visual and written research diaries. I used both types of data in the data analysis, to facilitate triangulation in order to increase rigour. The data is data that has been recorded by me, and thus only presents events from my perspective rather than from other actors in the research process. I chose this perspective to: surpass cultural and linguistics barriers; to make it non-interpretative; manageable in a fieldwork context; deployable by a sole researcher (me); and that would provide the ability to embed accounts on personal attitudes taken. In order to avoid spoken accounts as the communication focus, I implemented methods that focus on communication through making. Due to cultural and linguistic barriers, such a focus was most appropriate, trustworthy and more comfortable for the communities and me. I kept both research diaries and visual diaries throughout the process.

In this concluding chapter, I will explore whether the research aims have been reached and how these lead to new contributions to knowledge. I then reflect on the research and on implementations for future work that arise from this research.

8.1 Dynamics of a Respectful Design Space

The first aim that I had set for this research was to explore the dynamics of a respectful design space in co-creative and co-reflective encounters with indigenous communities. The second aim was to obtain an understanding of what those dynamics mean for attitudes to be taken in order to reach such a respectful design space.

In the upcoming sections I will detail how, through the objectives that I had set for the research aims, I achieved those aims.

8.1.1 Design Process: Co-reflective and Co-creative Encounters

The research was undertaken as a research-through-design case study. The first part of this case study was a design process. The second part was a research process. In each of the two processes I had a different role. In the design process I was the external designer. I will shortly summarise this design process in this section.

In order for me not to impose the project upon an indigenous community, the design process started with preliminary visits to three indigenous communities in Sarawak, Malaysia. During these visits I introduced flexible design seeds through which we co-creatively explored beneficial design directions. This was done in a casual, noncommittal manner, in order for the community to explore whether they were interested to participate and on which grounds. One of the three communities, Long Lamai, became particularly interested in co-operating in a design project.

I then translated the design seeds, and my observations through my research diary, into what I had perceived to be a beneficial design direction. I translated this understanding into design seeds. With those design seeds I aimed to stimulate intergenerational conversations about Penan identity. Through technology probes that I designed, I aimed to stimulate the contributors of those conversations, to reflect on their perceived connection to their cultural identity.

I went back to Long Lamai, a year after the preliminary visits, to start the co-creative encounters. I stayed in the community for three different co-creative encounters, each of a different length. I introduced the design direction that I had synthesised from the observations and design seeds of the preliminary visits, through new design seeds. The design direction, however, was considered to be taboo. Since I had introduced the design seeds as having the design direction embedded in them, they could not be used. Since the community contributed value to the technology probes, these probes got a central role in the design process. The design direction changed, through negotiations to: *Creating technological exhibition pieces to introduce Penan identity to people from outside the community*. The technology probes became the technological exhibition pieces. After the three co-creative encounters, we presented the exhibits at the eBario knowledge fair. This event is organised by the Institute of Social Informatics and Technological Innovations of the Universiti of Malaysia Sarawak. Its aim is to bring together the indigenous communities that they are working with, in order to provide space for dialogue between them.

For each of the stages of the design process I created a constellation of design initiatives, bringing together all the design initiatives, contributors, design seeds and design activities. In Section 8.1.5 I go into more detail about how creating and understanding those design constellations can help shape respectful design spaces.

8.1.2 Identifying Coding Categories for a Respectful Design Space

After the design process, I started the research-through-design process. My role changed to that of a design researcher. During the design process I kept a research diary and I created a visual diary by making photographs throughout my stays in the communities. In order to explore the dynamics of a respectful design space through this data, I created a visual timeline of the visual diary. I performed an open coding content analysis of this visual timeline. Through this process, I marked moments that I considered significant in contributing to a respectful design space. I brought those markers together and defined the coding categories: *ownership – through process (design participations) and as indicators of ownership and novel expression*. These I explicated by embedding them in literature. For each I created a framework that I used as my foundation for coding.

8.1.3 Reflection-in-action Process

I performed a content analysis on the written research diaries and attached annotations to the visual diaries. I then created timelines and annotated portfolios for each stage of the design process. These timelines and annotated portfolios subsequently became the foundation of a reflection-in-action process. This process both shaped the further analysis process and deepened my learning process towards co-creative respectful design. Through the process, I gained insights into which other layers of information should be attached to the initial coding, in order to obtain a deeper understanding of the dynamics of a respectful design space. I discovered two other coding categories that appeared to be significant to understand a respectful design space: *initiator of design seeds and glimpses of indigenous knowledge*. My new insights also led me to reformulate the coding frameworks. In order to discover patterns between the different analysis categories, the different stages of the design process and the different design activities, I created pattern sheets. These pattern sheets focussed on each coding category separately, and provided an overview of the entire design process. In these pattern sheets, design activities were separated in order to be able to contrast them. These characteristics provided me with the ability to analyse the dynamics of a respectful design space. This shaped the foundation for the understanding of a respectful design space and led to the development of the respectful design framework. In order to deepen my understandings, I compared the pattern sheets with the timelines, annotated portfolios and research and visual diaries, through reflection-in-action cycles. These cycles led to recommendations on how to reach a respectful design space. They also provided me with a deeper understanding of which attitudes are important to become the type of designer that is able to provide a respectful design space in co-creative encounters with indigenous communities. This reflection-in-action thus was of great significance for my learning.

8.1.4 Outcome

In the upcoming sections, I will detail the conclusions that arose from the research aims. I will connect those conclusions to established literature and explore whether the conclusions I have found confirm existing knowledge, or whether they build upon existing knowledge.

8.1.4.1 Ownership of Process: Design Participation

Both Sheehan (2011) and Tunstall (2011) state in their description of their approach that the designer does not direct the process. Within Lee's (2006) design participation tactics, this will mean that the design space should be community-driven, which suggests either emancipatory or motivational design participation. Through the analysis process, I was able to confirm that design participation in an ideal respectful design space is indeed emancipatory or motivational. However, reaching such community-driven design participation is not instant. It requires a reflective, negotiating process, in which they can be switched between different design participation types. Between design activities, there can also be a difference in the type of design participation. Reaching a motivational design participation suggests strong ownership. This affirms Rudmin and Berry (1987)'s definition of ownership, in which ownership means the ability to control. Since motivational design participation is as Lee (2006) describes completely positioned within the people's space, the designer is disconnected from it. The community consequently exercises all control.

8.1.4.2 Indicators of Ownership

As I found through the analytical process, ownership is an important dynamic to identify a respectful design space. From my findings, I can conclude that evaluating expressions of ownership can give an indication about whether or not a respectful design space has been reached. As Ellwood (1927), Furby (1978) and Prelinger (1959) have stated in their work, the more control that is exercised over an object, the more it will be experienced as part of the self. As stated before, a respectful design space is community-driven. In such a case, the community can control the design space and thus can be expected that they are more likely to experience the project as being part of the self. What I found is that providing reflective space, for example, through co-reflective sessions, can help to even result in expressions from people from the community that did not contribute to the process directly. Expressions manifest as *increasing value, enhancing responsibility through care, nurturing and protection, pride and connections to identity*.

Equally important are enquiries of the potential to establish ownership, since prior to investing in a process, someone has to perceive value in putting effort in it or connect a sense of responsibility towards the project. Evaluating the manifestation of enquiries thus provides an insight on whether there is potential for a respectful design space to arise. As Lewis and Brook (1974) and Seligman (1975) state, something that cannot be controlled does not provide space to take ownership of it. Through enquiries it can be explored whether there is potential to control the development of the project. It is thus essential for a respectful design space. Facilitating an explorative, enquiring stage at the start of the project is consequently of major importance. I provided such a stage through the preliminary visits. Enquiries manifest as *increasing value, enhancing responsibility through care and as connections to identity*.

Design processes in which enquiries of ownership appear both at the defining stages of the process, and expressions at the reflective stages of the project, are likely to be positioned within a respectful design space.

Interestingly, as Light *et al.* (2013) state in their work, there has not been much focus on ownership in co-creative technological design projects. Besides Light *et al.* (2013), who highlight this point, and Rijn and Stappers (2008) and ten Böhmer *et al.* (2012), this has not been a focus in research. While it is the norm to evaluate ownership in other fields such as development studies, this topic appears to be neglected in co-creative design, despite the multiple actors involved and the societal change that projects might cause. In the respectful design space model, ownership is at the centre of the evaluation in order to understand the success of the co-creative design participation.

8.1.4.3 Novel Expressions

Through the pattern sheet of the analytical process, I found that proactive and contributory novel expressions are the type of novel expressions that are important in order to reach a respectful design space. Both arise at different stages of the process and thus a distinction should be made between the spaces in which each of those types of novel expressions appear.

Through the analytical process I found that contributory novel expressions function as triggers to make the project transcend into a respectful design space. They help trigger resourcefulness and help engagement. Their appearance should thus be facilitated in a dialogical space preceding a respectful design space. Such a dialogical space should be a third space, as introduced in Chapter 2, in which there is no dominant identity, or in which the dominant identity is not the external designer's. These dynamics are important to help to balance power. In such a third space, each actor brings in different attributes. Attributes can be communicated through different media. However, in this project, due to the linguistic barriers, material culture, instead of spoken channels, became the core of the attributes. As stated by Miller (2011), Csikszentmihalyi and Rochberg-Halton (1981) and Csikszentmihalyi (1993), the creation and introduction of objects can serve as a method to order the mind and to connect need, constraints and personal assets to it. The use of design seeds can thus facilitate third spaces. In order to provide a third space, I created design seeds prior to the visits. Through these seeds I aimed to trigger reflections and explorations. I held the notion that these seeds would suffice as elements to build a third space. Through the analytical process, I came however to understand that in order to facilitate a third space there should also be space for the community's material culture. Combining and letting my design seeds interact with the design seeds of the community provides a space for negotiations. By introducing one's own material culture, each actor has the ability to express boundaries of the shared third space - and to let the other actors explore the boundaries they connect to the third space through it. As I found through the analytical process, the community's design seeds furthermore has the ability to put foreign and novel concepts into a context to which they can relate. This enables the potential to encourage contributory novel expressions. The inclusion of the commu-

nity's design seeds should thus be stimulated, in order to reach a third space that potentially can lead to a respectful design space. By including the community's material culture, the final design has the ability to become an identity-oriented marker. The community will already have a stronger connection towards their own design seeds than towards mine. This is because through their design seeds a community can define themselves. As Sartre (1969) stated: '*I am what I have*'. Another characteristic of ownership that is supported through the use of one's own material culture is that the more information and deeper knowledge you have about an object, the stronger your relationship with an object can be (Weil 1952). Thus, potentially, the use of the community's own material strengthens their relationship with whatever it is implemented in. Furthermore, by encouraging the inclusion of the community's design seeds proactive novel expression is stimulated. Because proactive novel expressions are community-driven, they are of major importance for a respectful design space. By letting the design process be guided by such expressions, the community controls the process. The use of the community's design seeds makes the community the expert. Expertise is an important dynamic of ownership, as it stimulates taking control (Pierce *et al.* 2003; 2004). Such control then enforces the experience of ownership, confirming Ellwood (1927), Furby (1978 a, b) and Prelinger's (1959) notion of ownership. It thus suggests a respectful design space.

I found by exploring existing literature, that little research has focused on how co-creative activities can stimulate the creation of third spaces in which there is no dominant cultural identity, or where the dominant cultural identity is not that of the designer. The role of the designer within a respectful design space is, according to Tunstall (2011) is to stimulate the resourcefulness of the community. It is for this reason that there is a need for a third space preceding a respectful design space to have a dialogical space in which resourcefulness can be stimulated. The role of the designer in such a third space is to adopt an open attitude and create design seeds that spark and invite resourcefulness. Furthermore, the role of the designer is to stimulate the use of the community's material culture. It is this emphasis on encouraging inclusion of the design seeds of the community in co-creative explorations, in order to reach a third space, that can contribute to new knowledge and understanding.

8.1.4.4 Indigenous Knowledge

Sheehan (2011) described respectful design as design informed by indigenous knowledge. A respectful design space is thus a design space informed by indigenous knowledge. Indigenous knowledge involves layered understandings that contain streams of knowledge that interrelate nature and culture. For an outsider, these streams of knowledge are complex to comprehend, especially because of their spiritual component. My experiences within the project confirm this. It taught me that as an external designer, in order to provide a respectful design space, it is of great importance to take a humble stance, because our understanding of the indigenous knowledge system will always be incomplete. Both Sheehan (2011) and Tunstall (2011) state that a respectful design space will aim towards an outcome that is beneficial for the community. This requires design conversation and engagement, but

since the designer will not have a complete understanding, the community should be in charge of the design space in order to guide it towards their direct benefit. Such a division of roles, in which the community is in charge, will not appear instantly, it is a process that will take time, reflection and negotiation. This connects to Thorpe and Gamman's (2011) idea of a 'good enough designer'. In the first stages of the process, the designer will be strongly involved in the process and will co-explore with the community what the design space could look like. These stages are about negotiating a third space. During the negotiation of such a third space, the good enough designer will try to encourage the other actors to develop their own capacities and spark their resourcefulness. By stimulating the community's own resourcefulness, the good enough designer aims to stimulate a transition in the process, resulting in the community taking control of the design space. When this happens, the community has the ability to embed decisions and the concept in the indigenous knowledge that lies at the core of the community's culture and thereby positioning it in a respectful design space. The good enough designer is in this way not responsible for the final designs, but for the infrastructures to trigger the resourcefulness of the community and to initiate a third space.

8.1.4.5 Respectful Design Space

My understanding about the dynamics of ownership of process (design participation), indicators of ownership, novel expressions, initiator of design seeds and indigenous knowledge, lead to the respectful design framework as I proposed in the previous chapter in Figure 7.15.

Following on from this, I propose that the community's perceived gains of participating in the project can be understood by reflecting on whether the process was situated in a respectful design space. The respectful design space framework has the ability to facilitate such an evaluation. By reflecting on the design process, through the use of the respectful design space framework, it can be understood which aspects of the project were perceived by the community as beneficial, and in what way. Using the respectful design space as an analysis tool does not rely on language or interview techniques; such modes of communication might be difficult in the cross-cultural context of this project. The literature review performed in Chapter 2 highlighted how rarely research considered the participants' perception of the gains of a participatory design project. Such a lack of focus on this part of a participatory design project is, as Balka *et al.* (2010) emphasised, 'remarkable', since one of the foundations of participatory design is to make the participants the direct beneficiary of the project. I also found that tools that do not rely on language as the main way of obtaining information about the benefits, were even more rare. It is in this area that the respectful design space framework can contribute to new knowledge and understanding.

8.1.4.6 Recommendations

Through the research process, I aimed to obtain an understanding of what kind of attitudes are important to take on as a designer to facilitate dynamics of a respectful design space to manifest. Ideally, a designer within a respectful design space should adhere to the concept of a good enough designer.

As I was not taught how to be, or how to become a good enough designer, I explored techniques to provide me with a deeper understanding. I found by exploring established research that little emphasis has been put on reflective processes that can help the development towards a good enough designer or other types of co-designers.

Research diaries are seen as tools for reflection on one's attitude throughout the process, such as in Rodil's (2011) work. However, such tools are often used as what Dewey (1965) refers to as a record of *primary experiences*. These are experiences that result from a minimum of incidental reflection and that occur through practice. I did use research diaries to reflect on my own attitude, but I found that this method did not provide me with a holistic understanding of how my attitude influenced the respectful design space. As stated by Dewey (1965), in order to obtain practical knowledge, one should focus on secondary experiences. Such experiences are a consequence of continued and regulated reflective inquiry (Dewey 1965). Schön (1983) introduced the reflection-in-action process. Such a process exists out of multiple cycles of appreciations, actions and re-appreciations. These cycles are positioned within virtual worlds; a virtual world enables you to experiment leisurely, since moves are reversible.

I incorporated the idea of a reflection-in-action process in the foundation of my analysis process. The foundations of this analysis process were in the annotated portfolios (Gaver & Bowers 2012) and timelines resulting from content analysis (Urquhart 2013). Through appreciative cycles I developed layers of understandings on top of this foundation. These layers all served as virtual worlds. The virtual worlds interacted as I compared and positioned appreciations from one world into others. This process I have detailed in Chapter 7 and Appendix 6 gives a full overview.

Looking at my development as a good enough designer, this analytical process was of major importance. I see the analytical process as a fundamental tool that helped develop my understanding of my own attitudes and develop my learning. Reflective inquiry was facilitated by the flexible virtual analytical worlds that through appreciative cycles were developed. It is this notion of a reflective analytical process that this research contributes to new knowledge and understanding.

Through the reflective analytical process, I developed an understanding of which attitudes were important to adopt to: 1) facilitate a third space; and 2) encourage the design process to transcend into a respectful design space. I also learned attitudes that prevented these spaces to manifest, which lead to a set of recommendations. The complete overview of recommendations has been provided in Figure 7.17 in the previous chapter. Those recommendations, together with the respectful design space, shape the foundation of the contributions to knowledge and understanding that this research brought. The recommendations can be divided into three main themes, two of which are important throughout the entire process. Those themes: *stimulating community-driven dynamics; benefit; and*

value, have been pointed out by Sheehan (2011) and Tunstall (2011) to be essential to respectful design space and culture-based innovation. The third main theme is about how co-creative activities can stimulate the creation of third spaces in which there is no dominant cultural identity, or where the dominant cultural identity is not that of the designer. As stated before, in Section 8.1.4.3, this is an area that has received little attention in the established research. In this main theme, I found two sub-themes that both provided important insights into how co-creativity can stimulate the creation of third space. The first theme is about connecting to the community's indigenous knowledge through the inclusion of the community's material culture. This corresponds with the finding that the inclusion of the community's material culture is of great significance to reach a respectful design space. The second theme is about the importance of evaluating the designer's connectedness to elements of the design process. As I learned through my reflection-in-action process, when a designer exercises strong connection to the elements in the design process, this prevents the community from being able to manifest themselves in the third space. Thus, too much connectedness from the designer should be avoided. As I found, there are mechanisms that can be put in place to prevent the designer from connecting to tools, activities and other elements of the design process. These mechanisms are listed as recommendations. These can be found in Figure 7.17. This insight and understanding I contribute to knowledge.

8.1.5 Design Constellations

I created the design constellations by using the following step-by-step approach:

- 1) From the visual diary select photos of design seeds that were used in a design initiative;
- 2) Map out for each initiative who were involved, who introduced the design seeds, how one design initiative led to another;
- 3) Separate the initiatives, depending on in which design activity they arose.

When looking at the design constellations (Sections 4.7 & 5.9), it can be seen that they show different characteristics depending on whether or not a respectful design space has been reached within a design activity. As concluded in Section 6.2, the design activity of the musical instrument has been positioned within a respectful design space, as were the design direction and the technology probes. The lights, the design probe and the stories design activities were not positioned within a respectful design space. In the activities that I found to have reached a respectful design space, the design constellations show the following characteristics:

- Many design seeds introduced by the community;
- Many initiatives in which no external designer is involved;
- Many activities;
- Many different people involved;
- Moments of feedback to the wider community.

This means that in order to get a grasp of whether a respectful design space has been reached, making a design constellation overview will give valuable insights. This is more manageable by a sole designer occupied in the design process, than performing a deep reflection-in-action process as I have introduced in the research process of this project. Making the design constellations overviews took me a few days in total, while the analytical process of the research took me a few months. I only made the design constellations after my visits, but I can imagine them being part of the research diary, supporting the reflection-in-action process in situ. Although Manzini and Rizzo (2011) introduced the notation of design constellations, they did not reflect on how this notion could be used practically. The notion of design constellations to visualise the process to understand respectful design spaces is thus a contribution to knowledge of this work.

8.2 Contributions to New Knowledge & Understanding

The outcomes of this research led to contributions to new knowledge and understanding. I have highlighted those in the previous section, but will provide an overview here:

1) Respectful design space framework & recommendations.

This research is based on the respectful design by Sheehan (2011) and the culture-based innovation by Tunstall (2011) as approaches towards designing with indigenous communities. Both approaches prioritise value for the community as the main driver for such encounters. In order to reach this value, they both position a dialogical space between community and designer at the core of the approach. However, neither approach stated in pragmatic terms what such a dialogical space looked like. The work presented in this thesis contributes to and extends the theoretical work of Sheehan and Tunstall by introducing:

- *Dynamics of respectful design*
The dynamics found through this research were: 1) ownership through the type of design participation, 2) indicators of ownership, 3) the type of novel expressions made and 4) the type of material culture introduced.
Through my explorations of literature connected to design participation, indicators of ownership and novel expressions, I shaped frameworks (in case of the ownership indicators) or adapted an existing framework (from Unsworth's matrix of creativity types (2001) for novel expressions and from Lee's design participation tactics (2006)) in order to be able to code and annotate for respectful design;
- *The respectful design space framework based on the dynamics of respectful design (Figure 7.15);*
- *The idea and importance of breaking the dialogical space as introduced both by Sheehan and Tunstall into two separate spaces: 1) the respectful design space (as the ultimate goal to reach) and 2) the third space (before reaching a respectful design space in*

order to spark the resourcefulness of the community so that they can steer the project into a respectful design space).

- *The central role of ownership as a dynamic to understand respectful design.*
As remarked by Light et al. (2013), there are surprisingly few research accounts within co-creative design that acknowledge the importance of ownership in co-creative processes. The work presented in this thesis adds an account, as I found that ownership is embedded in a respectful design space. It serves as the marker to evaluate the potential for starting a respectful design space and as a marker to evaluate the success of the respectful design space. In other dynamics, such as dynamics of ownership of process (design participation), novel expressions and type of material culture ownership also lies embedded within the successful concepts that appear in a respectful design space (motivational design participation, proactive novel expressions and the use of the community's own material culture).
- *The role of the designer as that of the good-enough-designer in order to stimulate the resourcefulness of the community.*
As I found, the notion of the good enough designer connects very well to Lee's (2006) design participatory tactics. Combining those two ideas provides a clear pattern to take on as external designer in order to help the community reach a respectful design space. This pattern correlates with Tunstall's (2011) idea of the role of the external designer within a respectful design space: that of encouraging resourcefulness of the community members to start shaping their own innovation.

Furthermore, this work complements the theoretical contributions by providing practical insights into how respectful design can be facilitated:

- *Recommendations on how to reach a respectful design space (see Figure 7.17).*
- *The idea of using the framework as a tool to assess whether a respectful design space has been reached, or not.*

Through the literature review performed for this research, I found that neither Tunstall (2011) nor Sheehan (2011) have given an indication on how to understand whether a respectful design space, or culture-based innovation has been reached. There are few examples of work that do focus on analysing the success of design participatory project. These are insightful and give different perspectives on how such analysis can be performed. However, to my knowledge, a tool that is not affected by challenges as dealt with within this research, such as linguistic barriers, has not been presented in existing work. There is thus a need for analysis methods of the failure or success of creating a respectful design space, in which the community's contributions are not affected by challenges of working in a cross-cultural context. During this research, I have devised

the respectful design space framework. Through my analysis, I used this framework as a tool to evaluate the failure or success of a respectful design space, and what caused this.

2) Constellations of design initiatives and Respectful design spaces

Manzini and Rizzi (2011) introduced the notion of constellations of design initiatives in relation to co-design. The flexibility that is suggested by these constellations that can be created depending on the situation and context through design initiatives, design seeds and contributors, is one that fits to my idea of respectful design and building third spaces. However, Manzini and Rizzi (2011) have only introduced constellations of design initiatives as an abstract concept without practical use. In the work described in this thesis, I have presented a step-by-step approach to shaping constellations of design initiative schematics. I see these schematics as a valuable tool for a sole designer subjected to time limitations to grasp whether design activities have the potential to move towards respectful design spaces.

As I found, the design activities that stood out in the analytical research process as being positioned in a respectful design space, also stood out in the constellations of design initiatives. What made them stand out was: 1) many design seeds introduced by the community; 2) many initiatives in which no external designer is involved; 3) many activities in general; 4) many different people involved; and 4) moments of feedback to the wider community. These insights can give a designer guidance in situ to focus on attitudes adopted in different activities through a reflection-in-action process.

Besides the use of constellations of design initiative schematics to reflect on respectful design, I also regard this method as a valuable contribution to the wider field of design. I consider those schematics valuable to both design researchers and practitioners, as it can be an effective and appropriate tool to shape descriptive frameworks (as introduced by Dorst (2008)) in which process, actors, objects and contexts are brought together to facilitate reflection and re-appreciation.

3) Insights into how an external designer can encourage the shaping of third spaces through the use of (the community's) material culture.

I found by exploring established literature, that little research has focused on how co-creative activities can stimulate the creation of third spaces in which there is no dominant cultural identity, or where the dominant cultural identity is not that of the external designer. Within this research I found three important mechanisms that can help the external designer to encourage the creation of third spaces. I found that the indigenous material culture, when actively and encouragingly supported by the designer, had a key role in developing a third space, that could potentially lead to a respectful design space (Reitsma *et al.* 2014). The role of the external designer is that of stimulator of the resourcefulness of the community by introducing probes that trigger the community to introduce their indigenous material culture. Another important mechanism for the external designer in order to provide for a third space is for the designer to be careful not to connect too strongly to probes and

design activities introduced.

Through the slow technology probes I introduced, I invited the local designers into the actual making of the final designs. Through this, I have reshaped not only the notion of technology probes as introduced by Hutchinson et al. (2003) (e.g. to field-test new technology, to explore needs and wishes of users and let researchers and users explore new technologies) and Madden et al. (2014) (who through the technology probes invite users to take part in the design process and to steer the future of the project) but also the broader notion of design probes by positioning them as the final outcome, rather than sources of information and inspiration.

In this research, I have used the notion of design probes as design seeds to describe the methods used. Design seeds, as used in this research, suggest democracy as they can be introduced by each actor in the design process. This notion of what the characteristics of co-design methods can add to the conversation about (re-) defining the role of design probes in relation to respectful design.

4) The flexible analytical processes as a reflection-in-action process to develop the researcher's attitude towards co-design/respectful design

Through exploring existing research, I found that very little research is done on the reflective process that helps the development of the researcher's attitude towards respectful design. In order to reflect on my attitude as an external designer, I used the analytical process to holistically explore the dynamics of the respectful design spaces in relation to my attitude. This analytical process was kept flexible, which helped to add new layers of understanding. My contribution to knowledge is an account of this reflection-in-action process provided by the flexible analytical process.

8.3 Future Work

As described in Section 1.7, this research has its limitations. These limitations could be focused on in future work. For example, the sole designer-researcher in this study meant that the research stage was only at the end of the design process. Some understandings of a respectful design space only arose through a holistic reflection-in-action process, as described in Chapter 6 and 7. This prevents the external designer from changing direction throughout the process if needed. I have introduced the notion of constellations of design initiative as a guidance towards understanding respectful design spaces throughout the design process for the external designer. It would be interesting to explore this notion further and to get a deeper understanding of its relevance for designers while actually being in the community they are engaging with. In a subsequent study in which constellations of design initiatives are implemented, the focus could be on whether the constellations help designers change attitudes, in order for respectful design spaces to arise.

Another interesting study would be to aim to perform respectful design, in an indigenous community,

with a group of designers led by a co-ordinator. The role of the co-ordinator can be to make sure the design process is still moving towards a respectful design space. For this aim, the respectful design space framework could be used in a directive manner. By using the respectful design space framework in a directive manner, they can be focused on the consequences of applying the framework, in order to alter attitudes to facilitate respectful design spaces.

The research as described in this thesis resulted in the respectful design space framework. It was used as a way to evaluate whether and how the community perceived gain from participating in the project. It would be interesting to explore such an evaluative use of the respectful design framework further. I have started this during an internship at the dot.rural research hub of Aberdeen University. During this internship, I had the opportunity to shape my own project within one of the existing projects at dot.rural. I was interested in projects in which the design that is created is a result from an interaction between community and researchers and in which the final outcome is for the community to use. It is for this reason that I became interested in the *curios* project that has been performed by dot.rural, because of its community character and the emphasis on creating a database for the community to use. The *curios* project is about providing communities with Internet databases on which they can store and present their cultural heritage. Most people who are interested and involved in this do not necessarily have much experience with digitising data. Throughout this internship, I aimed to provide tangible tools for the communities to explore what it means when you digitise data. The tangible tools that I introduced were design probes that through their physicality provided space for reflection.

I worked with two different groups, both of which were situated in Scotland. Although neither group would be termed as typically indigenous, looking at characteristics of indigenous knowledge (Section 1.5.1) both groups come from communities that do seem to draw from indigenous knowledge. Their knowledge is: local; dynamic and flexible; socially segmented; holistic and respectful to the environment; it has been build up through generations; their knowledge connects to the spiritual world; it serves as a collective memory; it used to be oral based with a focus on narrative; and it vocalises through oral history, rituals, crafts and activities.

The first group was from Portsoy, the second group from the Hebrides. This group from the Hebrides was Hebridean connections - a group dedicated to preserve the isles cultural heritage. I chose to work with these groups since they were both at a different stage in the design process. The Hebridean connection group had finished the design process of the website and it was just before the launch that I met them. I was interested to see whether they expressed ownership towards the project and what the dynamics were that were important for this. I made use of the respectful design space framework in an evaluative manner. The outcome of this resulted in reflections into the communities' perception of ownership towards the project. I posit the evaluative use of the framework as being useful as a foundation of workshops focusing on research impact. I would be interested to organise more of these type of workshop to explore their applicability further.

I also explored the predictive use of the framework; in my encounters with the Portsoy community I held a co-reflective session to explore value in participating. Portsoy is in what I refer to as the enquiry stage. In this stage, in the case of a respectful design space, the community will explore and enquire about the possibility to connect value and care to the project. The suggestions given by the contributors of the sessions implied that there was no foundation for the project to become sustainable within this group. This resulted in the researchers taking the decision to stop pressuring the group to participate. I hypothesise that the predictive use of the framework would also be valuable to apply during preliminary visits, to explore whether there is potential to start a project with a respectful design space. Further studies would be valuable to explore this application of the framework further.

This research has been performed in co-operation with communities that can be termed indigenous. The community of Long Lamai of which the cultural background is very different from my own and the Scottish Hebridean and Portsoy community, whose backgrounds were more related to my own. In further research it would be interesting to explore whether the respectful design space model could be relevant in other types of communities. It would be interesting to explore whether the knowledge systems that lay at the foundations of those communities should receive a similar position as the indigenous knowledge system at the centre of the space. By doing this, the relevance for the broader field of co-design can then be explored.

Appendix One | Content Analysis for Design Direction

PART A - Content Analysis

Selective C-oding

The theoretical memos were used to make an initial coding scheme (Urquhart 2013). This was done through an iterative process.

This resulted in the following categories:

Youngsters & being Penan

1 What does it mean to be Penan, from the perspective of the youngsters of the community?

1.1 The connection to the rainforest, from the perspective of the youngsters of the Community.

1.2 Attitudes towards technology, from the perspective of the youngsters of the Community.

Elders & being Penan

2 What does it mean to be Penan, from the perspective of the elders of the community?

2.1 The connection to the rainforest, from the perspective of the elders of the Community.

2.1.1 the reason for the disappearance of Traditional Knowledge.

2.1.1.1 Traditional modes of Transmission of Traditional Knowledge.

2.2 Attitudes towards technology, from the perspective of the elders of the community.

Process of acceptance

3.1 Process of Acceptance, formal level;

3.2 Process of Acceptance, informal level.

Potential for Design within this community

4.1 Potential for Design, participation (potential local designers);

4.2 Potential for Design, ideas (design ideas);

4.3 Potential for Design, practicalities.

(Crossing) the language barrier

5.1 Problems when crossing the language barrier;

5.2 Methods for crossing the language barrier.

The codes were placed into the fitting categories. This resulted in the following diagram, which can be seen in

Figure [A].1.1 All codes placed in the categories

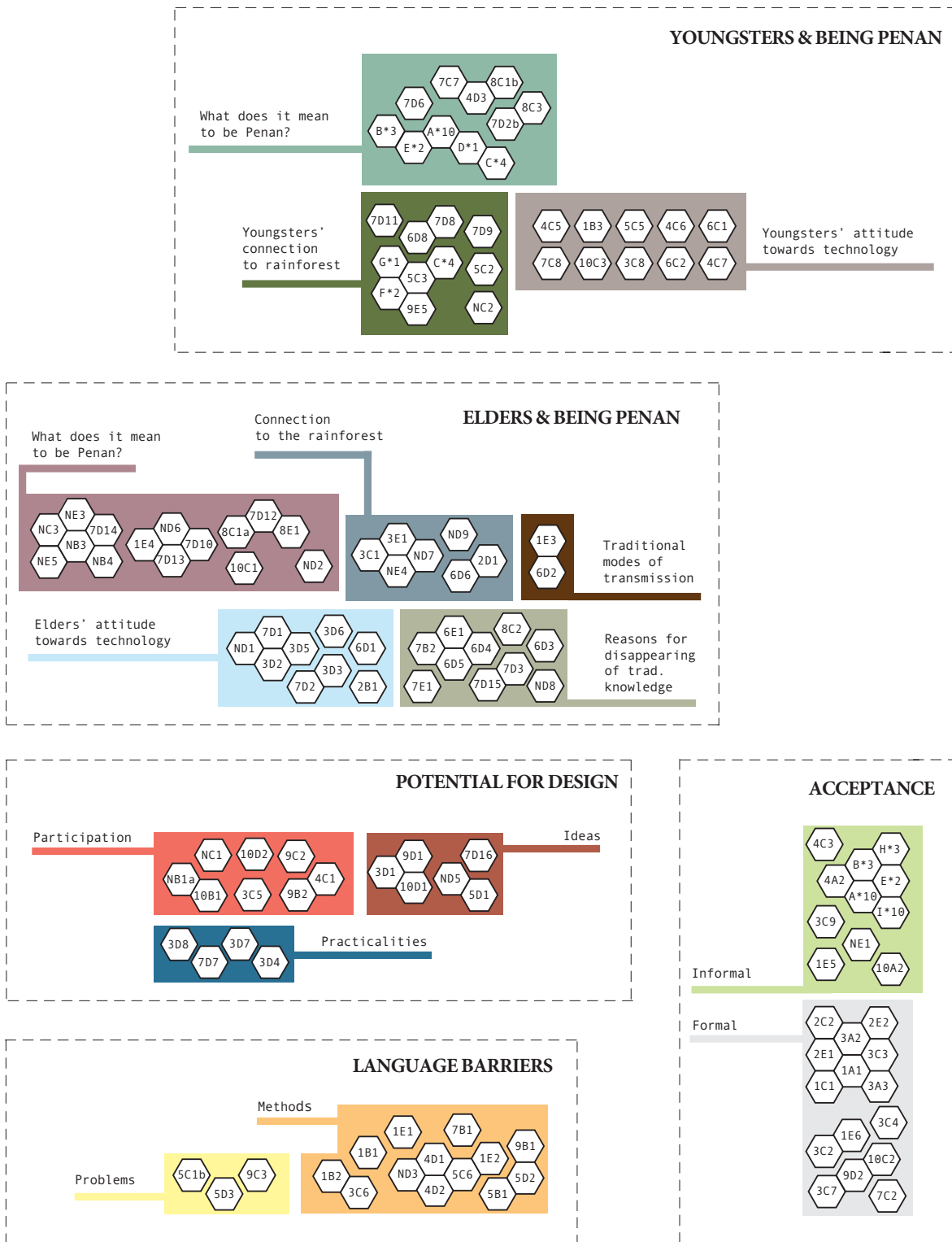


Figure [A].1.1.

In Appendix 1B all codes are listed. Every code has a corresponding number, which can be found in the list in the appendix.

Theoretical Coding

I used the diagram that was created through the selective coding (Figure [A].1.1) to look at the relationships between the different categories. I focused in this exercise on the similarities, contradictions and causes and effects between codes.

Similarities

Figure [A].1.2 shows multiple clusters of similar codes.

While doing this exercise, I only looked at categories that were relevant for the design direction, which meant that the categories acceptance and language barriers were not taken into account. Both those categories were about the dynamics of respectful design instead. I only acknowledged clusters that contained 4 or more codes. An example of a cluster of similar codes is cluster 1, existing out of 7 codes. This cluster contained codes such as:

“There is an important difference between the objects on the photographs; some are nomadic Penan, other objects are Penan, but only used after settling and few of them are not Penan all. It is important to place the objects you found in the right category.” [NE3]

And:

About the drawings: “The question was: what does it mean to be Penan? Most of the drawings contained things that were not Penan. There was only one youngster that showed through his drawing what it means to be Penan.” [7D14]

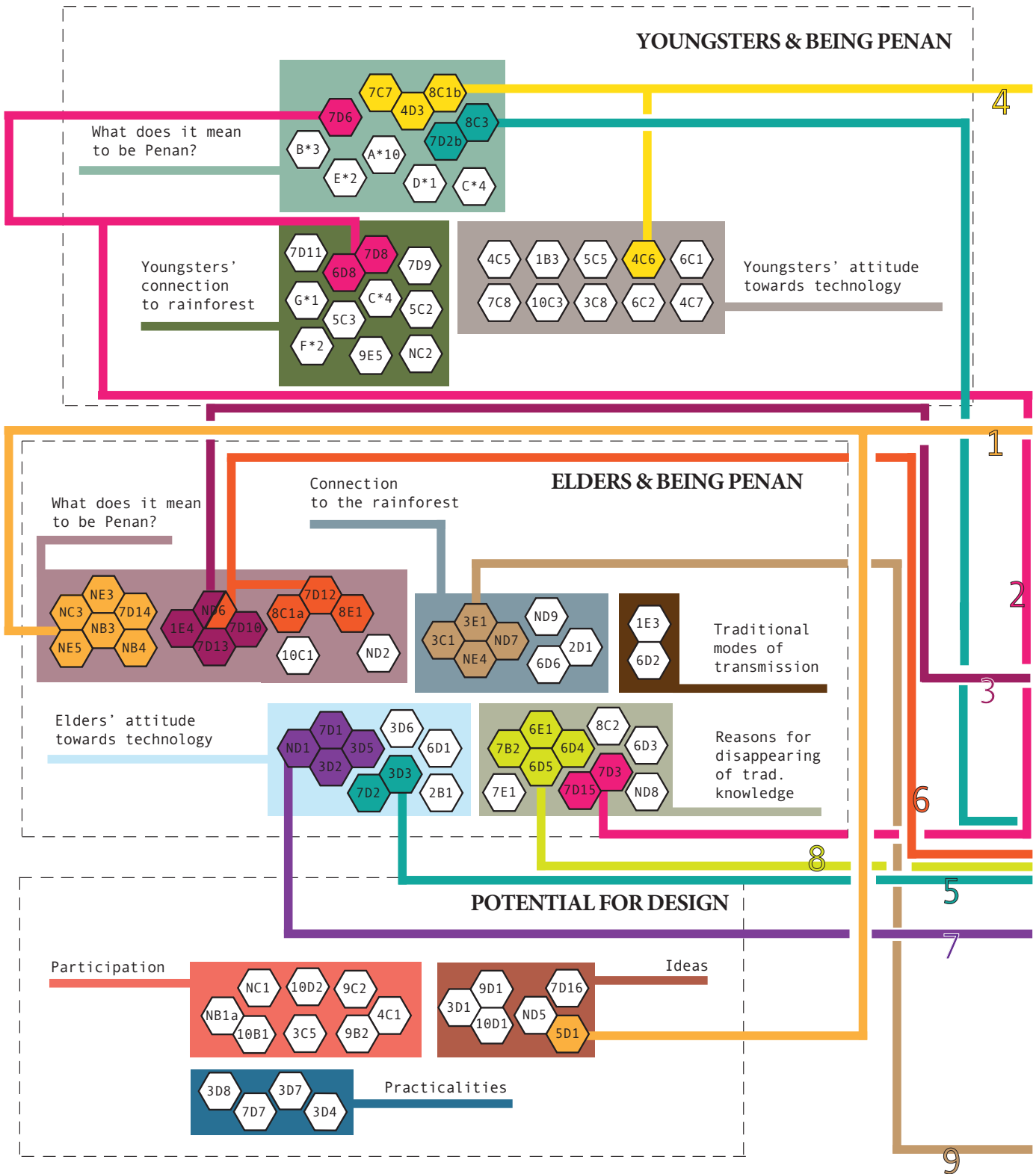
These code clusters then resulted in a quantitative understanding of the codes, which can be seen in figure 5.3 as part b. As you can see, the cluster mentioned before is the biggest cluster. This cluster is about the elders having a strong idea about what proper Penan should be like. The second largest cluster is about the influence of where you were raised on your connection to traditional Penan culture. An example of codes that this cluster contained:

“My oldest 2 sons grew up in the city and they have lesser knowledge about the nomadic life than my sons who grew up in here [in the community]. This is because I am taking my youngest sons to the jungle.” [7D3]

Then there are seven clusters that all contain four codes. As can be seen in Figure 5.3 part b, these are:

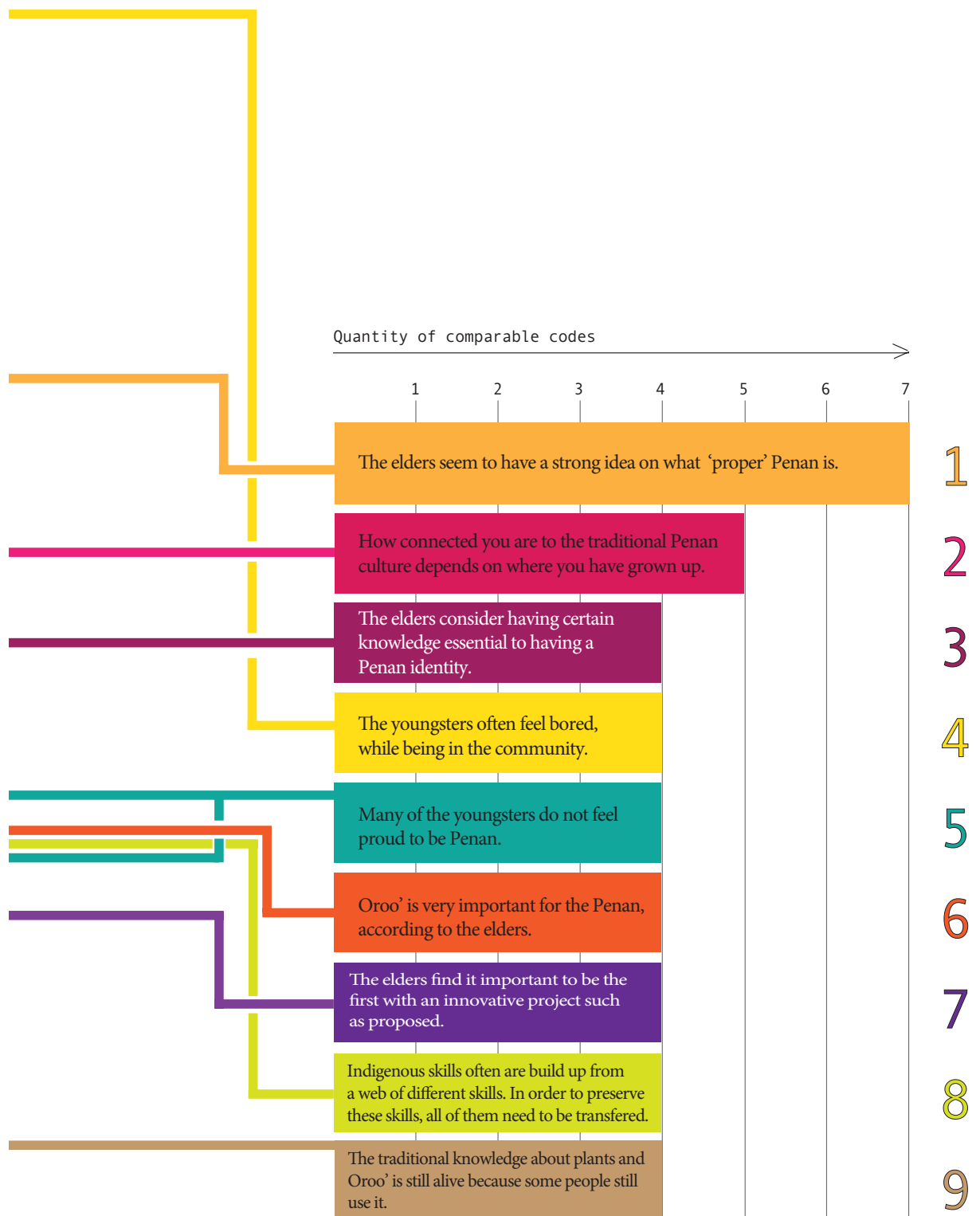
The elders consider having certain knowledge essential to having a Penan identity. An example of such a code is:

Figure [A].1.2 Codes that show similarities



Part A

Figure [A].1.2 [continued] Codes that show similarities



Part B

"...Not knowing what it means almost means that you are not Penan." [7D13]

The youngsters feeling bored while being in the community. An example of such a code is:

"This is quite a boring place, there is nothing to do for us..." [4D3]

The lack of pride experienced by the youngsters about their culture. A code that raises this topic is for example:

One of the girls told me that she rather not tell her friends from Bario that she is Penan. [8C3]

The importance of Oroo' (the communication system that is used by the (nomadic) Penan to communicate in the rainforest) as experienced by the elders. An example of such a code is:

"Oroo' is one of the most important things for the nomadic Penan. But younger people seem to not to know. Also do they not seem to care." [8E1]

The importance of an innovative project as experienced by the elders.

"We want to be sure that we are the only or at least the first telecenter that gets this technology..." [3D2]

The web of skills that all need to be transferred in order to keep indigenous skills alive. Examples of such codes are:

There are many steps in those indigenous skills, only if they are learned all, the skill can life on. [6E1]

Or:

"If you make a Rattan basket, you have to go into the jungle to find rattan. You have to clean it and smoothen it. Then you have to learn to dye. Then you have to learn the patterns and how to make those." [6D5]

The traditional knowledge about plants and Oroo' still being alive. An example of such a code:

Inside the village, the telecenter manager shows us all the important plants. [3E1]

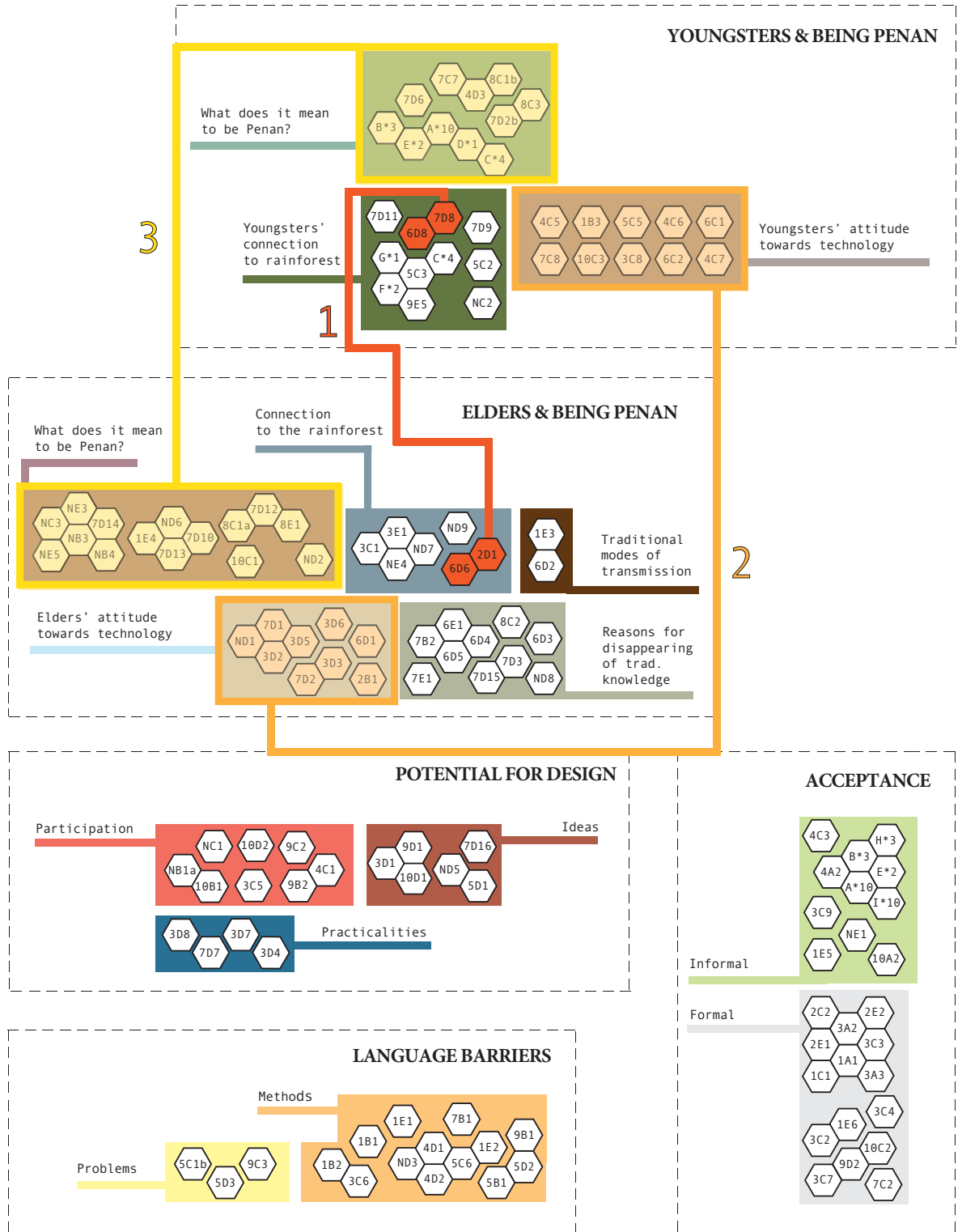
Or:

The Oroo' needed to be carefully dismantled to be sure not to confuse people. [NE4]

Tensions

The exercises of exploring the relationships between the categories also resulted in an understanding of the tensions between different categories. These tensions can be seen in Figure [A].1.3. Below I give an overview of those tensions, supported by the codes that show those tensions.

Figure [A].1.3 Codes that show contradictions



1. Connection to the rainforest - Elders vs. Youngsters

Most elders were born in the rainforest. They were taught how to survive in the rainforest.

"I grew up in the jungle. I know how to survive there." [6D6]

The youngsters, on the other hand were born, either in the city, or in Long Lamai. They did not have to learn how to survive in the rainforest. The rainforest is not their place.

"My sons didn't grow up in the rainforest. It is not their place. They don't know how to survive there." [6D8]

2. Attitude towards technology - Elders vs. Youngsters

Youngsters use the technology as a means to be part of the "modern world" (Facebook, modern music and mobile phones).

The girls in the telecenter all gathered around one computer. One of the girls was looking at photos of a journey one of her friends (from the UK) had on his profile. The other girls didn't know this person. [4C5]

The elders have a very different attitude towards technology. They see technology as an opportunity to strengthen the Penan identity for the outside world as well as to make their youngsters feel proud about being Penan again.

"Hopefully this [technology] can have the effect that the youngsters in the cities will become more proud to be Penan. Now they are not proud." [7D2]

3. Elders & Being Penan vs. Youngsters & Being Penan

The elders seem proud to be Penan. They value the traditional Penan cultural things, such as Oroo' and the traditional crafts. This is very different among the youngsters. The youngsters often feel ashamed of being Penan. This might be a result from that the Penan culture is often seen by other cultures as backward and primitive. Tension can be seen in the code clusters that show similarities between the codes. The cluster about the youngsters showing a lack of pride about their culture contradicts with the clusters about the elders' idea about what 'proper' Penan is and what knowledge you should have to have a Penan identity.

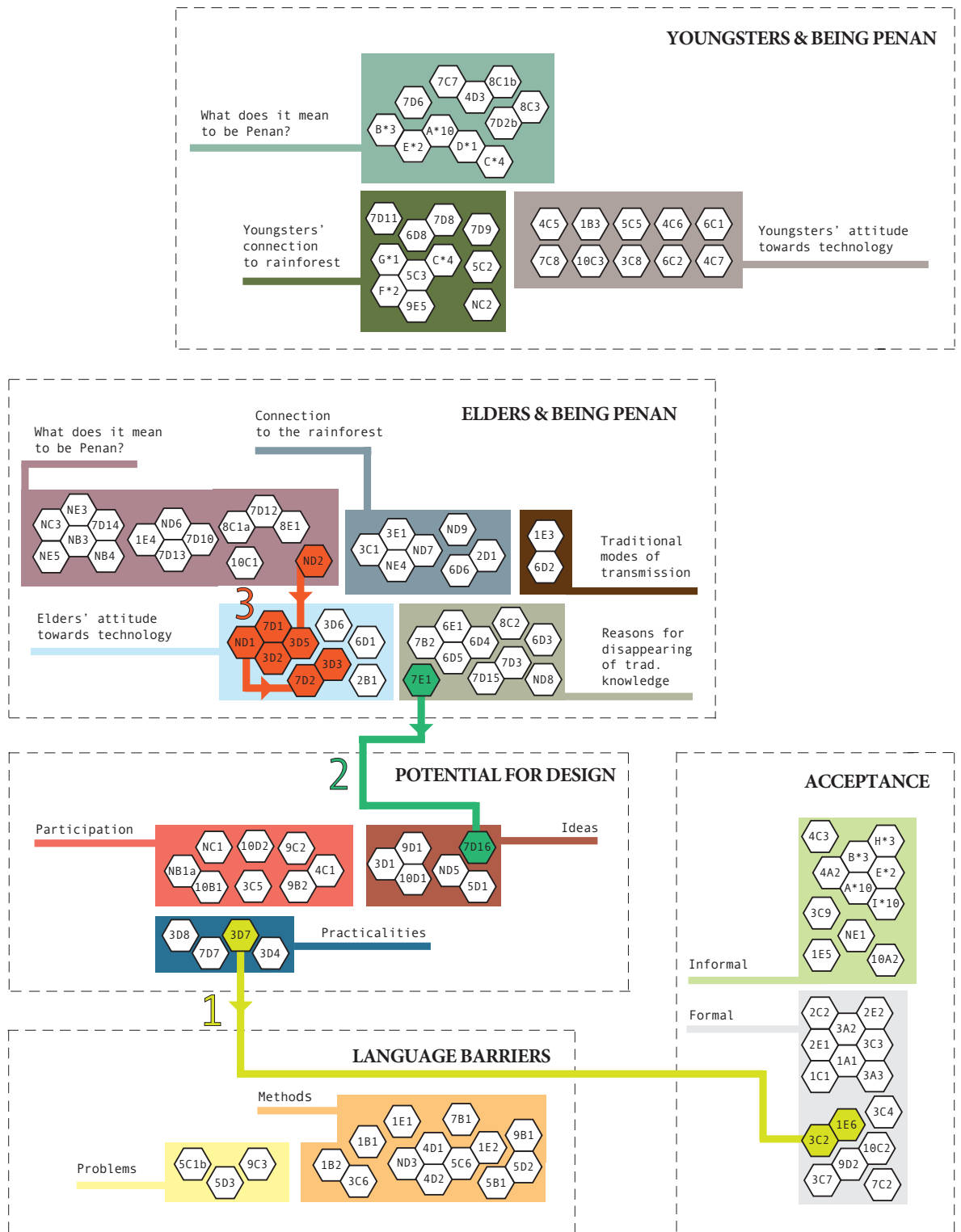
Causes and Effects

The exercises of exploring the relationships between the categories, also resulted in an understanding of the causes and effects between (different codes of) categories. Figure [A].1.4 shows an overview of the connections. Below, I have summarised those connections. In this case, I have included all categories, because it provides a clearer understanding of why people suggest the things they suggest.

1. Loss of primary rainforest resulted in loss of indigenous knowledge

The primary rainforest surrounding Long Lamai has disappeared because of a fire. People have therefore lesser knowledge about the rainforest than Long Lamai's neighbouring community (code 7E1). To add more information to the project, there is suggested to co-operate with the neighbouring community (code 7D16).

Figure [A].1.4 Codes that show causes and effects.



2. Due to previous disappointments, the community wants commitments before accepting new projects

Because of previous disappointments with projects that were proposed but never started (code 3C2 & 1E6), they want to be sure that before starting and putting time and effort in, that there really is a plan from my side to start/continue the project (code 3D7).

3. Due to primitive image IT is embraced to obtain an innovative image

The Penan culture is by the government and other cultural groups seen as being lesser compared to other cultures (code ND2). It is for this reason that the elders in Long Lamai attach so much value to being the first with proposed innovative projects (codes ND1, 7D1, 3D2 & 3D5). They hope that by implementing new technology during a project, the youngsters will feel more proud to be Penan (code 3D3 & 7D2).

PART B - Content Analysis Codes

<i>Qnt.</i>	<i>Nr.</i>	<i>Code</i>
10	A	Meeting in the Telecentre.
4	B	Play volleyball.
4	C	Swimming in the River.
1	D	Church Band Repetition.
2	E	Watching American + Wrestling with a big part of the community.
2	F	Collecting vegetables
1	G	Collecting snails in the river
3	H	Having lunch with someone (host- the girls)
10+	I	Hanging out with people
	1A1	I tried to introduce my project to the chief- but he could only decide when I had talked to the telecenter manager as well.
	1B1	There are good illustrators in Long Lamai. It would be a good tool to use to ask them to explain something.
	1B2	Show previous work through a movie- so that they can learn what it is I am doing.
	1B3	All the youngsters have mobile phones (even though the community does only have connection at one place in the village).
	1C1	Only when both the telecenter manager and the chief agree with my plan - I can start.
	1E1	Between the villages they communicate through Facebook.
	1E2	Most of the community members speak a bit of English. But they are shy. It is therefore sometimes better to work without a translator- because it seems as if they feel freer to try to speak English and you get more inspirational conversations.
	1E3	"Toroo' is when the whole family will go for a journey into the rainforest. The aim for this is to hunt and to collect sago. It is also meant to teach the children about the traditional lifestyle."
	1E4	"If you don't know the plant knowledge- you don't have the Penan identity."
	1E5	It is better not to show that you have a strong connection with the Kelabit. The other researcher who travels with us has a strong connection with the eBario telecenter. It is for this reason that people seem to approach him less enthusiastically.
	1E6	According to one of the researchers- many people visited this community- introducing possible projects and leaving and never coming back.
	2B1	The father of one of the girls wanted to have a polaroid camera so that he could take pictures of plants in the rainforest.
	2D1	"I was born in the jungle... I don't know where exactly. Probably the place is not there anymore because of the logging."
	3C1	The trees actually seem to be used (for medicine or poison for blow darts)
	2C2	The chief does not seem to be keen to talk to me at this stage...
	2E1	It might take time before you get accepted: Penan people are described by researchers as being shy (Although the Penan do not agree with this); They have had bad experiences with a previous researcher. (second part of this code has been taken out of this list, since it contains information the community does not want to share)

<i>Qnt.</i>	<i>Nr.</i>	<i>Code</i>
	2E2	"The fact that the chief was ignoring you - and that he acted as if he did not speak English can be caused by: He might have the feeling that he has to protect his community and therefore keeps a distance until he shaped an opinion about you. He first wants the opinion of the telecenter manager- who only arrives on Monday. He might see the telecenter manager as more able to judge whether or not this project is of value for the community."
	3A2	Introducing project idea to telecenter manager.
	3A3	A community meeting is organised by the chief
	3C2	There was no possibility to keep the casual approach as planned. They wanted me to go for it completely or not at all...
	3C3	The telecenter manager first had to consult the chief and the chief first had to consult the community. Only after this process a decision could be made on whether or not I was allowed to stay to do my research.
	3C4	When we asked the other researcher to join us- he refused. Later it turned out that he stayed behind so that the telecenter manager could ask him questions about my project.
	3C5	During the community meeting- we tried collectively to find people who could help me at this stage- but people seemed a bit reluctant to stand up in front of the entire community to say: 'I will help!'. We agreed to find people the next day.
	3C6	After showing the movie people started asking questions- before that people seemed not to take part.
	3C7	The whole community voted for this project. From that moment I could start the project.
	3C8	One of the elders complained that many youngsters couldn't hear well because they listen to hard music.
	3C9	People seem to feel a bit uncomfortable approaching me.
	3D1	After hearing the project idea- there was said that it could focus on: 1) Giving handicraft more value; 2) Botanical knowledge (by placing tags in the trees) (aiming mainly at tourists).
	3D2	"We want to be sure that we are the only or at least the first telecenter that gets this technology..."
	3D3	People are looking down on the Penan. Through technological innovation- we [the Penan] can show that they are worth more.
	3D4	"Do we have to pay for this project?"
	3D5	"Will we be the first in Malaysia with such a project?"
	3D6	"This technology is like magic!"
	3D7	"When will you come back to start the actual project?"
	3D8	"Where will the material for this project come from?"
	3E1	Inside the village- the telecenter manager shows us all the important plants.
	4A2	I went to the different craft makers of the community and they showed me their crafts. I bought some.
	4C1	I asked for a customized basket- and discovered that the craftswomen are quite flexible and that I could discuss with them about the design that I wanted. A few days later they had made exactly what it was that I had asked for.
	4C3	All the girls sat around me and gave me books to sing with them.
	4C5	The girls in the telecenter all gathered around one computer. One of the girls was looking at photos of a journey one of her friends (from the UK) had on his profile. The other girls didn't know this person.
	4C6	If the youngsters are bored- they go to the telecenter.
	4C7	One of the big events in the village- for the youngsters- is watching American show wrestling.

<i>Qnt.</i>	<i>Nr.</i>	<i>Code</i>
	4D1	"Next time- you should learn some Malay- so that we can chat."
	4D2	They translated for me what they were singing. I had to sing with them- in either Malay or Penan (they gave me a songbook to do so).
	4D3	"This is quite a boring place- there is nothing to do for us..."
	5B1	I introduced both my own photo book and the empty Long Lamai photo book and asked them to create a photo book about Long Lamai.
	5C1b	Her English is very basic- so a lot of things are lost in translation.
	5C2	While collecting vegetables- one of the girls killed a snake that was on the path. She said this was to be sure that the snake would bite none of the other community members. She never had killed a snake before- but she learned that she should whenever it might cause danger for other people.
	5C3	The girls are very good in spotting the vegetables in the forest.
	5C5	The mobile phones the youngsters use can make pictures and have music on them.
	5C6	There are some people who speak English. They stand up and act as a translator for me.
	5D1	"You could use traditional objects to place your tag in (seeds/wild boar tusks) or other material valuable for the Penan. For example Bamboo. Bamboo is used to store valuable things. Or you could use the leaf that I showed you before."
	5D2	They were really enthusiastic about my photos. They got their photos to show their lives to me.
	5D3	They liked doing the photo book exercise by means of the polaroid camera- but through communication problems and enthusiasm regarding the polaroid camera they forgot the aim of the exercise.
	6C1	Most youngsters use the computers only for Facebook. Only one of the girls used the internet also to search for jobs and to book flight tickets.
	6C2	The youngsters seem to listen to the same type of music as I am listening to.
	6D1	"Also in villages without telecenter- the knowledge is disappearing."
	6D2	"There are Toroo's to the jungle where the entire family goes into the jungle to hunt but also to teach what it means to be Penan."
	6D3	"Our culture quickly disappears because people don't understand how important it is to preserve your own culture."
	6D4	"The youngsters hear/listen to stories by because they are not doing it themselves they won't learn. They won't get the experiences. Therefore they cannot pass on the knowledge."
	6D5	"If you make a Rattan basket- you have to go into the jungle to find rattan. You have to clean it and smoothen it. Then you have to learn to dye. Then you have to learn the patterns and how to make those."
	6D6	"I grew up in the jungle. I know how to survive there."
	6D8	"My sons didn't grow up in the rainforest. It is not their place. They don't know how to survive there."
	6E1	There are many steps in the indigenous skills- only if they are learned all- the skill can life on.
	NB1a	My plan was to ask her to go to different elders of the community by herself. Instead she proposed that it would be good if I could join.

<i>Qnt.</i>	<i>Nr.</i>	<i>Code</i>
	NB3	"Only this pattern is truly Penan."
	NB4	"There is only one real nomadic traditional Penan in the village- he is my uncle. I would like to have a picture of him- because it is important to remember."
	NC1	First only the girl who helped me in the "Nesen" exercise and her parents took part in the "Nesen" activity. But soon people came from outside to bring objects for "Nesen".
	NC2	During the 'Nesen'-activity- most of the youngsters and some of the elders- did not know how to make the Oroo'.
	NC3	There was a strong discussion about what is Penan and what isn't.
	ND1	"I would like to have a radio station because Kayan and Kenyah don't have it." Only after this remark- he asked me for what purposes they could use the radio.
	ND2	(taken out of this list, since it contains information the community does not want to share)
	ND3	"You chose the perfect word: "Nesen". It is exactly what you want to do- you want to make people think about what to remember. It showed that you put effort in your preparation and that you put effort in adjusting to us."
	ND5	"Maybe we can use this material? Maybe if you wave it- you start hearing Penan music?"
	ND6	"If the children don't learn about the Oroo'- they will loose their identity."
	ND7	"The Oroo' is not done right...- now it is confusing..."
	ND8	"I'm happy that you are here to record the culture- else it will disappear quickly."
	ND9	The cutlery they use- that is made out of a branch of bamboo is made on the spot by one of the community members to show me what it looks like.
	NE1	Several people placed their Bible into the 'Nesen'-bags.
	NE3	"There is an important difference between the objects on the photographs; some are nomadic Penan- other objects are Penan- but only used after settling and few of them are not Pennant all. It is important to place the objects you found in the right category."
	NE4	The Oroo' needed to be carefully dismantled to be sure not to confuse people.
	NE5	There seems to be a mixture of cultures- because people said "No this is Kayan/ Kenyan."
	7B1	The "knitting" design probe made one of the community members bring in drawings that the youngsters made. The drawings were on "what it means to be Penan."

<i>Qnt.</i>	<i>Nr.</i>	<i>Code</i>
	7B2	From the “knitting” design probe: Because people move away from their village they only learn the basics of skills. Because of this- a lot of richness disappears. This is what happens with the weaving of the baskets but also with the container for the darts: “I only know the basic of making these containers- that is all. I won’t reach the level of my ancestors.”
	7C2	“We should call this project: Liz-Lamai!”
	7C7	“I’m bored! ‘Let’s go to the Telecenter.
	7C8	They loved the polaroid cameras: they made photos for themselves on which they posed.
	7D1	“Is it not only normal to want to be the first with this type of technology?”
	7D2	“Hopefully this [technology] can have the effect that the youngsters in the cities will become prouder about being Penan. Now they are not proud.”
	7D2b	“The youngsters in the city or not proud to be Penan.”
	7D3	“The big problem is that the youngsters live a different life then the nomadic Penan. It is their heritage- but it is so far away from their daily life.”
	7D6,	“It depends on where you grow up...”
	7D7	“We need to be able to keep the technology working- so we need skills to do so.”
	7D8	“My oldest 2 sons grew up in the city and they have lesser knowledge about the nomadic life than my sons who grew up in here [in the community]. This is because I am taking my youngest sons to the jungle.”
	7D9	“One of my sons is really interested in learning more about in the life in the rainforest.”
	7D10	“If the youngsters do not learn- than it will not be passed on to the next generation and then they loose their identity.”
	7D11	“I want my sons to have education in the city but still know where they came from...”
	7D12	“Oroo’ is very important for the Penan.”
	7D13	“...Not knowing what it means almost means that you are not Penan.”
	7D14	About the drawings: “The question was: what does it mean to be Penan? Most of the drawings contained things that were not Penan. There was only 1 that knew what it means to be Penan.”
	7D15	“It really depends on the parents how much children know. If the parents take their children often into the forest then they will learn. Else they won’t.”
	7D16	“If you come back- we have to go to Long Balai. They have much more living knowledge. We should profit from that.”
	7E1	Long Lamai lost their primary rainforest because of a fire. They miss the resources to teach their children. It is as a university without library.

<i>Qnt.</i>	<i>Nr.</i>	<i>Code</i>
	8C1a	In church- an old men stepped on the stage to tell his story. This story was about Oroo' o'- and was meant to teach people the importance of Oroo'.
	8C1b	" He is talking about Oroo'- but I am bored...Let's go to the Telecenter..."
	8C2	Also other people seemed uninterested [to listen to stories about Oroo']. Many people rolled their eyes.
	8C3	One of the girls told me that she rather not tell her friends from Bario that she is Penan. In Bario the Penan are more traditional and do not wear cloths.
	8E1	"Oroo' is one of the most important things for the nomadic Penan. But younger people seem not to know. Also do they not seem to care."
	9B1	Photo book: One of the girls got the camera a few days before- so that she could make/continue with the photo book.
	9B2	He asked me what I would like to learn from his drawings.
	9C2	She made two different types of photos: The ones for herself and the ones for the photo book.
	9C3	I thought he didn't speak English...it turned out he did. He was just shy.
	9D1	"I would suggest three different directions: 1) Penan music; 2) Crafts; 3) Nomadic life of the Penan."
	9D2	The telecenter manager will give the consent form to the chief.
	9E5	"The forest is for us our supermarket. It is were we get our food from"
	10A2	They organized a farewell party for me. Everyone gathered and we ate and cooked the whole day.
	10B1	The girl had already started making a part of the photo book without me being present.
	10C1	Every woman showed her crafts. There are many crafts woman- but none of them is of the younger generation.
	10C2	We signed the consent form but the chief thought it was strange to sign something since they already said they would participate during the previous community meeting through the votes they gave for the project.
	10C3	I saw many youngsters walking around with headphones on to listen to music.
	10D1	"We would like to focus on: 1) Oroo'; 2) Traditional music; 3) Crafts (for tourists)."
	10D2	We agreed to keep in contact- to keep on designing over a distance. The chief mentioned that keeping contact was important.

Design Participation codes per design stage. The design participation codes are: Innovation, Collaboration, Emancipation and Motivation.

Table A | Preliminary Visit codes:

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Specific Contributor	Design Activity	Main Initiator
3f	I said that I would arrange that	Innovation	<i>I am arranging it. Which makes it designer driven. I do not involve anyone else in the task.</i>	Action		Design Direction	me
3g	They asked me when I would return and what kind of help I needed at this stage. We agreed that they would bring me in contact with four adults and three youngsters.	Innovation	<i>They ask me what I need</i>	Action		Design Probes	Together
3h	Tomorrow or the day after I really have to start with the design probe exercises, else I will not be able to finish it. I need to arrange this this evening with Wilson or Garen	Innovation	<i>I decide what I need. There is no negotiation</i>	Reflection		Design Probes	me
4a	I find it difficult to envision how to continue my project	Innovation	<i>I see it as 'my project' – going there to gather information to create a design</i>	Reflection		Design Direction	me
5a	I gave Topek- Cepek and Julia the assignment to make a photobook for me.	Innovation	<i>I decided that they had to be the one doing it.</i>	Action	Topek, Cepek & Julia	Design Probes	Together



Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Specific Contributor	Design Activity	Main Initiator
5f	Ct. seems more suitable to do the assignment	Innovation	<i>Like probe study – were the designer is not actively involved in the reflective process of creating the probes</i>	Reflection		<i>Design Probes</i>	<i>Me</i>
6a	Today I went to Grace. Her father and mother were also there. I showed them the book and asked whether Grace could help to do the nesen-activity. I proposed to give her three bags, with which she then could go to different people in her own time. She however proposed to do it together, this afternoon. That seemed to be a good plan. Her parents also helped. The first thing they wanted to photograph was a tube for the darts...	Collaboration	<i>I engaged Grace in the process of negotiating the design participation</i>	Action	<i>Grace</i>	<i>Design Probes</i>	<i>Together</i>
6b	At a certain moment- multiple people joined us in collecting objects for nesen.	Collaboration	<i>It is still designer driven but the community have turned into co-workers</i>	Action	<i>Grace + Family</i>	<i>Design Probes</i>	<i>Together</i>

▶
A

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Specific Contributor	Design Activity	Main Initiator
6g	We start talking about something else. Then Garen says: "You could focus your project around Oroo', since it is very important for the Penan. I'll ask one of the younger artists to draw some of the Oroo' for you to understand it."	Emancipation	<i>Even though I suggest that we have to do this- I did implement Garen's interest for this topic</i>	Reflection		<i>Design Direction</i>	<i>Me</i>
6i	I will first make different options, following from Nesen (e.g the time capsule probe), I will also look at how I best can teach the people here to maintain the designs. How they will fix it if it is broken or how they will use it to record stories. This is one of the most important aspects of the entire design.	Innovation	<i>I decide- there is no negotiation.</i>	Reflection		<i>Design Direction</i>	<i>me</i>
6j	They were very positive about nesen. They said it showed that I had adapted myself to them. They kept continuing to emphasise on this	Emancipation	<i>I adapted to their ways</i>	Action		<i>Design Probes</i>	<i>Community</i>
9a	Ez. Will draw Oroo' for me – following from G.'s idea to help me to understand Oroo' - so that we can focus on it for the project	Emancipation	<i>Suddenly a shift occurred: the community comes up with beneficial directions and acts accordingly</i>	Action	<i>Ezwoong + Garen</i>	<i>Design Direction</i>	<i>Community</i>

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Specific Contributor	Design Activity	Main Initiator
9b	I told him my idea of how we can focus the project on Oroo'. Garen seemed to understand it and he also seemed positive about the idea	Collaboration	<i>I take back the collaboration by acting as if the idea came from me.</i>	Action	Garen	<i>Design Direction</i>	<i>Together</i>
9c	Garen wants me to focus also on the Penan music and maybe on the crafts or the nomadic life of the Penan	Emancipation	<i>the community comes up with beneficial directions and acts accordingly</i>	Action	Garen	<i>Design Direction</i>	<i>Community</i>
9d	I am thinking of making a concept that fits to eTOroo' [Tariq Zamans project in the community]. I will first make this concept visible and then communicate it to the community.	Innovation	<i>Again I take control – make it again designer driven.</i>	Reflection		<i>Design Direction</i>	<i>Me</i>
9e	The plan is now that I will make it (back in the UK) and then I will communicate about the outcomes with the community. I agreed with G- that it is important that we communicate in the period that I am away.	Innovation	<i>I define what is important</i>	Action		<i>Design Direction</i>	<i>Me</i>
9f	I also said that Citi- Topek and Grace could help me. I think that it would also be a good idea to include the artist – and maybe Suzan	Innovation	<i>I decide how to do it</i>	Action		<i>Design Direction</i>	<i>Me</i>

Table B | First Co-creative codes:

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
29a	After this. I decided to talk with G. whether it is ok for me to also be here around that time. I can offer to help.	Collaboration	I am exploring whether I can proceed with my plan.	Reflection	Design Direction	Me	Me
29b	I want to do this by organising different activities	Innovation	The role of the community is suggested to be to provide me with the information I need.	Reflection	Design Direction	Me	Me
29c	He immediately started to consider who could help me.	Innovation	The role of the community is suggested to be to provide me with the information I need.	Action	Design Direction	Garen	Together
29d	He delegates tasks to ensure I get useful information	Innovation	The role of the community is suggested to be to provide me with the information I need.	Action	Design Direction	Garen	Together

▼
B

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
29e	G. stated that he now understood what I had in mind. However- before I could start- I first have to talk to the elders so they can decide whether I can start.	Emancipation	He mentioned that in order for the design participation to start it first has to be agreed on by the elders. This makes it more community-driven than designer driven: they set the conditions for collaboration.	Action	Design Direction	Garen	Community
29f	I mentioned that I considered to collaborate with the craftsmen.	Collaboration	The design participation suggests the role of the community as co-crafters.	Action	Technology Probes		Me
29j	G. said: "They will help you- but they have to completely understand what you want from them." I reacted to this by saying that I wanted to discover whether these activities resulted in conversations about identity.	Collaboration	This code suggests that the crafters need to get precise instructions from me – designer driven.	Action	Design Direction	Garen	Together

▼
B

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
1a	<p>We talked for a long time. He said that I do not have to worry about anything. I am already in phase 2- almost in phase 3. He couldn't see a reason for the community to accept me to continue to phase 3. He said I have to talk to W. W has to sign the agreement. Sunday the elders have a meeting during which they talk through the week. Together with G. I will try to be there. G. also will organise a meeting for the youngsters. During this meeting I can introduce myself. I do not know whether this will be effective- but we shall see.</p>	Emancipation	<p>He mentioned that in order for the design participation to start it first has to be agreed on by the elders. This makes it more community-driven than designer-driven: they set the conditions for collaboration.</p>	Reflection	Design Direction	Garen	Community

►
B

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
2a	I asked W. whether I could introduce to him what I would like to do. He said: yes- when? I said: Whenever suits you. He said: now. So- I gathered my things and introduced everything- step by step. He concluded that I now had a different focus than I had last time. I explained that I saw that there were many projects aiming to preserve cultural heritage- but that one of the main reasons for the disappearance of the cultural heritage: no connection to Penan identity is not addressed. He agreed with this point. Then I explained about the technological probes and the website. He said: it is important that our people also learn how to do this. I explained that I wanted to give workshops about how to use the website and that I wanted to make the designs together with the craftsmen and the youngsters. He saw value in this.	Collaboration	I am exploring whether I can proceed with my plan.	Action	Design Direction	Wilson	Together
3a	I made a plan.	Innovation	The role of the community is suggested to be to provide me with the information I need.	Reflection	Design Direction		Me

B ▼

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
4a	During church I thought that it might be the best thing to just work together with parents and their children. Like last time- the exercise that worked best was when I personally asked Gr. and her father to help me. Especially with the individual tasks- but then they can motivate each other to do it. And I can be there as a facilitator.	Innovation	The role of the community is suggested to be to provide me with the information I need.	Reflection	Design Probes		Me
4b	Who did I think I was thinking that my project was so important. It might be important for me, but it might not be important for anyone else. If they just help me out, without being interested that is not the way I want things to go.	Emancipation	In order for the design participation to start it first has to be agreed on by the elders. This makes it more community-driven than designer driven: they set the conditions for collaboration.	Reflection	Design Direction		Me
4c	I know that I have to take things slow in order for them to work fine. So I need to give them time to even become interested.	Emancipation	In order for the design participation to start it first has to be agreed on by the elders. This makes it more community-driven than designer driven: they set the conditions for collaboration.	Reflection	Design Direction		Me

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
6b	I showed my drawings and through that he started brainstorming and giving suggestions.	Collaboration	Because I made the drawings- the design participation is at this stage designer-driven.	Action	Musical Instrument	Garen	Together
6c	G. said that we would need to collect bamboo and make sure that the dimensions look nice together.	Emancipation	G. took over the process. He become more like an aesthetic advisor.	Action	Musical Instrument	Garen	Community
6d	He constantly asked my opinion, but I noticed quickly that he had a much better understanding of the design, so I would often ask: ...what do you think?	Emancipation	Even though he asked me for my opinion- by me taking a very passive role the design participation became user driven- in which G. took the role as co-designer.	Action	Musical Instrument	Garen	Together
6e	Garen said: "No that would not look nice. What I was thinking was... and then he started cutting the bamboo and showing me what he thought."	Emancipation	The design participation became user driven- in which G. took the role as co-designer.	Action	Musical Instrument	Garen	Together
6f	I thought it would be good to ask craftswomen today- to see if they could make the designs for the fireflies. I decided to ask D. if she could ask her grandmother. Unfortunately her grandmother was not around since she was at the farm.	Collaboration	The role of the community seems in this code to be most about being co-workers/crafters/builders	Action	Lights	Diana	Together

B



Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
6n	G. came up with the idea to place a light in between two baskets. However- I don't know whether I would really like that. Two lights in one basket does not seem like the best idea- because I think by spreading- the effect would be bigger.	Collaboration	I don't seem to allow creative input from the community at this point – only allowing the community to take the role of co-workers/crafters/builders	Action	Lights	Garen	Community

▼
B

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
6p	<p>He said that I was an ideal researcher, because I really listened to the guidelines that they had set up. I said that I did not fully understand how the decision making process worked. He started drawing a circle with names. You have to interest at least one of the community representatives (e.g the research manager (Garen), the chief (Wilson), the women’s representative, the youth representative, the church representative or the person who decides on transport matters. If you do that, they can help you to get to the centre (the community) to make sure that your project will get support. The elders will make the final decision. If you try to do it without this technique, than you will not succeed. You will get resistance. Many researchers who came here experienced that and they complain that Long Lamai is not cooperative. Garen said that because I am so careful and so considerate, I was doing very well. I respected their ways of doing and their cultural protocol. I think this is a very important point.</p>	Emancipation	<p>In order for the design participation to start it first has to be agreed on by the elders. This makes it more community-driven than designer driven: they set the conditions for collaboration.</p>	Action	Design Direction	Garen	Together

▶
B

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
8b	So- the meeting was cancelled. The main part of my project: "What role can design play in facilitating intergenerational conversations regarding "Penan identity?" also seemed not to be possible.	Emancipation	In order for the design participation to start it first has to be agreed on by the elders. This makes it more community-driven than designer driven: they set the conditions for collaboration.	Reflection	Design Direction		Me
8c	Also do I need to adjust my plan to their plan- because this way- I am not helping at all in the trust building process- because I am just annoying? Let them be in charge. I will only be the facilitator if they are ready for it. Keep taking this very flexible approach and react towards them also in this same relaxed way- even if things are not as I hoped they would be. Since I don't have a full understanding of the context yet- introducing my plan is not how it should be. Instead it has to be a constant negotiation with the community about my plans- their plans etc.	Emancipation	In order for the design participation to start it first has to be agreed on by the elders. This makes it more community-driven than designer driven: they set the conditions for collaboration.	Reflection	Design Direction		Me

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
8f	I introduced them as tools for thinking about how they want to present themselves to the outside world. They did seem to be ok with this.	Emancipation	In order for the design participation to start it first has to be agreed on by the elders. This makes it more community-driven than designer driven: they set the conditions for collaboration.	Action	Design Probes		Together
8i	Then the question came whether I needed the help from people in LL. I said that I needed the help of mostly the youngsters in the design activities. Since it would be good if they could think about how they would like to see and present LL. After the previous point I thought it would be good to also invite them in the making of the crafts and the website. Together with craftspeople.	Collaboration	The role of the community seems in this code to be most about being co-workers/crafters/builders	Action	Design Direction		Together

▼
B

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
9a	I said that I understood that they were very busy with the rice and that later this month the people from peninsular Malaysia came. W. suggested me to come after that. I asked whether it was ok for us to come at the 31st of August. That was ok.	Emancipation	In order for the design participation to start it first has to be agreed on by the elders. This makes it more community-driven than designer driven: they set the conditions for collaboration.	Action	Design Direction	Wilson	Together
10a	Then she started talking about the design that I would like to make. She asked to explain it more clearly. So- I showed her the electronics and the drawings that I made.	Collaboration	The crafter is following my assignment: she wants to be sure she understands what I envision the design to be.	Action	Lights	Connie	Together
11a	Then C. showed up and she had already made a design. It was her own interpretation - which was much better than my own and which showed that she understood the idea- but also the task that if she wanted to do it differently- more suiting to the culture she could change the design as long as the light could come through it nicely.	Collaboration	The role of the community seems in this code to be most about being co-workers/crafters/builders	Action	Lights	Connie	Together

●
B

Table C | Second Co-creative codes:

Nr.	Translated Code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
5a	Then he asked D. whether she could organise a workshop for the next day.	Emancipation	G. takes charge of arranging the process.	Action	Technology Probes	Garen + Diana	Community
5h	Then he started talking about the Pagang and the Keringot. He said: "It would be better to use the Pagang- but that might be too difficult"	Emancipation	He makes sure the project is relevant for the community. This makes the design direction community-driven.	Action	Musical Instrument	Garen	Together
5k	G. send us to collect material for the Pagang with B.	Motivation	We became co-workers rather than facilitator or motivator. Garen became an initiator.	Action	Musical Instrument	Garen	Community
5t	Maybe I have to figure out what the meaning of the Rhino is for the Penan.	Innovation	I seem to position the community as source of design information.	Reflection	Musical Instrument		Me



Nr.	Translated Code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
6b	(this code has been taken out of this list since it contains information the community does not want to share) – This is about how much money I should pay to people contributing to the project.	Innovation	-	Action	Design Direction	Bili	Community
6c	Now G. is in charge of the budget: He will receive 1000 ringit- which he will divide. He will decide who can help with what and he will give the assignments. G. will also be better able to judge who is capable of performing a task.	Emancipation	The project management became community driven	Action	Design Direction	Garen	Together
6d	(this code has been taken out of this list since it contains information the community does not want to share) By paying people to do a task we hindered the normal division in the community. G. will help me to manage this part of the project.	Emancipation	We are working according to how the community is working. It is community driven (even though I made a mistake beforehand by involving Billy)	Reflection	Musical Instrument		Me

Nr.	Translated Code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
6e	Daniel and I have constant discussion about how to continue the project – We are constantly talking about what to do if B. again asks too much. However- this all seem unnecessary since G. has taken these responsibilities from me. It maybe should be more like an impression of a rhino rather than a copy. Maybe B. is not the right person to do this. G. proposed Ezw. He seems to have more talent.	Emancipation	We are following the way the community is working. They are in charge of the project management now	Reflection	Design Direction	Me	Me
6g		Collaboration	I see the community members as co-crafters rather than as the initiative takers.	Reflection	Musical Instrument	Me	Me
6r	I suggested her to interview her father (the one who makes blowpipes) about how he makes a blowpipe.	Innovation	I see the community members here as design informants.	Action	Technology Probes	Me	Me



Nr.	Translated Code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
6t	<p>I should try to avoid making lists of things that I still need to do (this probe then- this probe then). The initiative has to come from then and not from me. If this project would be about: this is what I came up with- this is how I precisely did it- this is the result. This however would never fit to the community as a flexible process can.</p>	Emancipation	<p>I am reflecting on how I can make the process more emancipatory</p>	Reflection	Design Direction	Me	
6u	<p>I think it is much more important that you are flexible (not the probes necessarily)</p>	Emancipation	<p>I am reflecting on how I can make the process more emancipatory</p>	Reflection	Design Direction	Me	



Table D | Third Co-creative codes:

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
7a	The plan is to divide the tasks between subgroups. One group will be responsible for making the pagang. One group will be responsible for making the platform and one will be responsible for collecting the materials. Every group will have a co-ordinator. This person manages the money and the tasks.	Emancipation	This idea came from Garen	Action	Musical Instrument	Garen	Community
7c	"Novel technology with traditional culture to show what Long Lamai has to offer."	Emancipation	This idea came from Garen	Action	Design Direction	Garen	Together
7d	Even though there will be someone responsible for each of the different aspects of the project- it is also important that 1 person can present the entire project.	Emancipation	This is what Garen introduced and it is about enabling the project to be performed in a way fitting to the ways of the community	Action	Design Direction		Community

D ▼

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
9a	This morning Garen said to me that we might have to buy a pagang and that we will decide the price according to which I like. There is a problem with the pagang: we collected the wrong bamboo. Only around the 28th (when it is full moon) it would be a good moment to collect new bamboo- because else it will not last (insects will eat it). He acted a bit strange.	Emancipation	Garen defined the design process based on the ways of the community.	Action	Musical Instrument		Community
9c	During the church service Diana told me that she already found 5 people to participate in the workshop. It looks like they are all girls. I don't think that that is a problem- as long as they are interested. Diana would inform with her contacts what time they would prefer to have the meeting.	Collaboration	Diana searched for people to participate in the workshops after I had asked her to.	Action	Design Probes	Diana	Together

D ▼

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
9d	<p>Garen came to speak to Diana. He said that he also wanted to contribute to telling the story about the history of Long Lamai. That seems like a good idea- because then different age groups mix a bit more. Garen also stated that it was important to write a story about the importance of the rhino. I guess that that is something we should focus on during the workshops. Garen said that the rhino is important for the Penan (killing the rhino has special meaning) and because we use the rhino in the design (or does he mean that he wants a story instead of the design?)</p>	Motivation	They define what is important. The project is community driven. We have to feature this in the stories	Action	Technology Probes / stories	Garen & Diana	Community

D ▼

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
9g	Together with Garen I came up with the idea to organise a music evening. During this evening- the older ladies can teach me (because I need to learn how to play the pagang in order to understand how to program it – Garen wants me to use a traditional Penan melody) and other girls to play the pagang. The guys can then learn to play the keringot. Most likely it will not immediately become popular- but this can change if we do it with enthusiasm.	Emancipation	Community driven	Action	Technology Probes / stories	Garen	Together
9h	Garen would discuss it with Diana.	Emancipation	Community driven	Action	Technology Probes / stories	Garen	Community
10a	This morning I was supposed to meet Garen to find a pagang. However- he already found one for now and he had given the women the assignment to make the most beautiful pagang.	Emancipation	Community driven	Action	Musical Instrument	Garen	Community



Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
10c	I think that I have to go with Diana to Connie (or with Kathyia). She will be able to learn and write down the story and I can record the melody. After collecting different stories and melodies we can organise a quiz night during which those stories can be in the centre of the attention.	Innovation	I start planning again on how to do it- without discussing it	Reflection	Technology Probes / stories	Me	Me
11c	This afternoon I had made an overview of what should be done in the upcoming 5 weeks. In total 6 activities and collecting pagang stories.	Collaboration	I provide an overview of what I had agreed with Garen to finish. This I present to the workshop participants	Action	Design probes / stories	Me	Me
11f	Garen said that I needed to involve a youngster from each part of the village. This is important to give a good representation of the village and because this is how things are kept fair here. By involving someone from each part- I make sure that no part of the village feels ignored. I am not sure whether I have a good division.	Emancipation	Following the community's ways	Reflection	Design probes	Me	Me

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
15a	I asked Garen about the platform. He told me that this might be difficult since both Gajut and Ezwong are not in the village. He told me that he had an idea for now. He said he could make a temporary design. Later they then can make a final design in their own pace. It scared me a bit since I thought that that would mean that it will not be done.	Emancipation	How it would work for the community. Garen takes charge of managing how to do it.	Action	Musical Instrument	Garen	Community
15b	I asked him what his plan was. He showed me a piece of wood: Tanjitt. This is the hardest type of wood that exists. This type of wood is used to make blowpipes of. The idea is to use that type of wood as the material for the platform.	Emancipation	Garen takes charge of the design process	Action	Musical Instrument	Garen	Community

D ▼

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
15e	When I went back home- Garen showed up again to show me some other pieces of wood. He took the big piece of wood that he had showed me before and he positioned the smaller pieces on it. It was now that I finally understood what he had in mind. He wanted to use wood that already had the shape of the things he wanted to make (for example a rhino). He did not want to change and process the wood. Also the others- Bili and Gajut seemed to have the same idea.	Emancipation	Garen comes to me for approval- however it is community driven	Action	Musical Instrument	Garen	Together
15f	How can you manage something if you do not completely understand that what you have to manage.	Motivation	The initiative lies completely with them – They want me to give my opinion- but I cannot because I do not understand what they want.	Reflection	Musical Instrument		Me
15h	He asked me whether I was ok with involving children and youngsters to collect the wood. The children then will get a few ringit for their effort.	Collaboration	He asks me whether I agree with a decision he makes- it is a negotiation between him and me	Action	Musical Instrument	Garen	Together
15i	Then Garen said that he thought it was important that we would record the poems and pagang melodies. The poem would need to be written down.	Motivation	He decided and this is what we should focus on now. I became a collector of information.	Action	Technology Probes / stories	Garen	Community

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
15j	I told that I planned to interview the youngsters and the elders with 5 questions. That was not a problem. Garen thought that I did not need to use a translator because most people's English was good enough. I was not sure about that.	Collaboration	I need info and I negotiate how to get it	Action	Design Direction	Garen	Together
15k	After a few hours Garen came in- this time his shoes were wet. What is happening? It turned out that he had collected wood that he thought was good for the platform.	Emancipation	He decides but still seeks approval	Action	Musical Instrument	Garen	Community
16a	After a while Garen came in with the message that the Pagang was finished and that I should have a look how the design should look.	Collaboration	They suggest that I am still in charge of the design.	Action	Musical Instrument	Garen	Community
16b	Then he asked me to make a drawing of how I wanted the design to look. He made suggestions. He knows much better how he can make it look beautiful, because I never made anything like this.	Emancipation	I give charge to the local designers	Reflection	Musical Instrument		Me



Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
16c	So, instead of making drawings, I searched for pictures of the Bornean rhino on the Internet which I took to show him [Garen]. I thought, this way he can follow his own interpretation rather than me saying what it is that he should do.	Emancipation	This is a reflection on how I can make sure that they will take charge.	Reflection	Musical Instrument	Me	Me
16d	The problem is that I do not really understand what it is that they have in mind...but in order not to stop the thought process and the motivation, I will remain very enthusiastic about their suggestions and if they ask me for advice I will just repeat their thoughts.	Emancipation	This is a reflection on how I can make sure that they will take charge.	Reflection	Musical Instrument	Me	Me
16f	Kathyja wanted to talk about it with the other youngsters how we best could record the Pagang stories. I have the feeling that the youngsters do not think it is very interesting. That will result in Kathyja also getting annoyed by having to do it.	Collaboration	Discussing how best to collect the information as asked for	Action	Technology Probes / Stories	Kathyja	Community

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
16g	My rule is that I will not force anyone to do things and everything has to come from them rather than from me.	Emancipation	Reflection on how to deal with resistance.	Reflection	Design Direction	Me	Me
16h	I asked whether it was ok for them to think about it together...YES!	Collaboration	Negotiation on how to collect information that is asked for.	Action	Design Probes	Youngsters	Together
17a	I had agreed with Kathyja because she had told me that she wanted to collect stories after she had finished doing something else.	Collaboration	How to collect information? The type of information is already decided	Action	Technology Probes / Stories	Kathyja	Together
17b	She said that she had already made a list of songs. This list was based on the songs that she could remember from when she was younger and when her grandparents were playing it for her. She also had asked her parents- but they did not know. In total she had come up with 6 titles.	Emancipation	She took charge by already starting.	Action	Technology Probes / Stories	Kathyja	Community
17d	After the meeting Kathyia called me back and said that she had talked to Connie. Connie had told her that Garen had already visited her and that he had already written down three stories. I was confused... Did we not agree that I would be the one doing this?	Motivation	It shows that Garen took a motivational approach to collecting the stories.	Action	Technology Probes / Stories	Garen + Connie	Community

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
18b	She [Connie] only knew 3 stories and said that other people might know more. She suggested that they might have time in the evening. We agreed to have a meeting with ladies who knew more stories in the evening.	Collaboration	Collecting information for the sake of helping me.	Action	Technology Probes / Stories	Connie	Together
18f	He said: "Ow- you don't really have time to take a break... I was a bit shocked. Did he think I was not doing enough?"	Motivation	Through this statement Garen showed that I am working for them.	Action	Technology Probes	Garen	Community
18g	He stated that because we are working to collect cultural heritage- we should know for sure that the information that we collect is correct.	Motivation	They are the experts	Action	Technology Probes / Stories	Garen	Community
20b	The other was the pagang. I introduced my problem: I needed bamboo; but I am not able to cut this myself. Wilson asked me for the dimensions. I said that I still needed to measure it. He asked me: how much feet. I told him I had no idea. Then he got a ruler. He showed me how much a feet is. I said that I thought it should be 8inch. However- I said that I still needed to measure it.	Collaboration	Wilson has become a co-creator. I am in charge.	Action	Musical Instrument	Wilson	Together

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
20c	On Tuesday I will ask Joy whether she knows women who can play the pagang stories.	Innovation	I start planning again how to get the information I want	Reflection	Technology Probes / Stories	Me	Me
22a	The first thing I did today is ask Joy whether she could help me to find people to record the story with. She said she would ask Wilson.	Innovation	I executed the plan that I had made for today	Action	Technology Probes / Stories	Me	Me
22d	Then he went out to find a piece of wood of that size. He said that he had already realised that he would not be able to find bamboo of the size I wanted to have. It would not be strong enough- which would result in that we still needed- even after finding the right size of bamboo- material that would strengthen the bamboo. That would be inefficient.	Collaboration	Wilson became a co-creator. Due to the task of problem solving it remained collaboration	Action	Musical Instrument	Wilson	Community
23a	Wilson is now making the platform. From time to time he comes by to discuss aspects of the design- or to let me check whether it is ok.	Collaboration	Wilson became a co-creator. Due to the task of problem solving it remained collaboration	Action	Musical Instrument	Wilson	Together

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
24a	Wilson said that it would be hard to find bamboo with the right size for the holes. I said that it did not really matter what material we use as long as it is strong and sturdy and not flexible. Wilson left and came back with a stick made of wood. He just made it. It was very pretty. I said that we definitely could use this.	Collaboration	Wilson became a co-creator. Due to the task of problem solving it remained collaboration	Action	Musical Instrument	Wilson	Community
25d	Someone would mention what he or she would draw. Then sometimes they would ask for approval from me- but most of the time they would just start.	Collaboration	They want to make sure that they are doing something that fits within my idea.	Action	Design Probes	Youngsters	Community
25e	Josephine stated that in order for me to get the 'right' information I should also ask other people like Garen. They seem to base their story according to what they consider to be the 'right' story.	Emancipation	Fitting to the ways of the community- the suggestions of the youngsters need to be checked.	Action	Design Probes	Josephine	Community
29a	I need to do so much work still! Last night I spend the whole evening working.	Motivation	I feel like I need to finish my tasks	Reflection	Design Direction		Me

Nr.	Translated code	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
30a	It can be that they do not want me to do this. Or that they really do not know about those stories. However, I think that in any case it with be better if it is completely supported by the community.	Emancipation	This is reflection on decided whether or not to continue.	Reflection	Technology Probes / Stories		Me

D ●

Table E | Exhibition stage codes:

Nr.	Translated Codes	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
3a	I said that I wanted to have a meeting with the entire village - during which we could assess the designs. I mentioned that I had encountered problems to find women playing the pagang - but Garen did not seem to find this a problem.	Emancipation	I wanted to make the process fit to the community's ways by introducing it to the wider community	Action	Design Direction	Garen	Together
3b	He meant that he wanted to have a story about the significance of the pagang in which all elements (rhino - clouded leopard - sprout - alui and keringot would feature).	Motivation	He gave me the assignment to do this	Action	Musical Instrument	Garen	Community
6b	We have an idea and that is what we want to create. We however do not know how to do this. By collaborating we will be able to reach this. We are the first ones that did this and this enables us to signal that if we can do it (as a marginalised culture) than others will also be able to do it. We have created a bridge between past and present through the design. Garen wants to use the project as an example for the orang asli. The highlights would be the collaboration processes and how Long Lamai has brought it to the end result.	Motivation	They state that the project was their initiative from the start. They had the idea. I was needed to make it possible	Action	Design Direction	Garen	Community

Nr.	Translated Codes	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
6e	Then Garen said that it really must have come from the heart (the quote on the welcome to Long Lamai banner). The other things they probably came up with because that kind of is the standard story that is told about the Penan culture. However - the quotation is different because it never has been used before. Garen wants the youngster to look to the future. Before they never seemed to do that - but the quotation suggests that this might have changed. He hoped that these youngsters would be able to motivate also other youngsters to look at the future.	Emancipation	They highlight what is important to them - rather than to me.	Action	Design Probes	Garen	Community
7b	He asked me whether I could let the pagang play. He wanted this to support his story.	Motivation	I became a worker - rather than the facilitator or leader	Action	Musical Instrument	Garen	Community
7d	This way Garen made the project a project started by Long Lamai. I was only a small part of it. I was not the leader or the facilitator	Motivation	They state that the project was their initiative from the start. They had the idea. I was needed to make it possible	Action	Design Direction	Garen	Community

E ▼

Nr.	Translated Codes	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
7h	Long Lamai has an idea - but does not know how to make it reality. By combining skills (Technology – from Lizette) we (the community) become inventors	Motivation	They state that the project was their initiative from the start. They had the idea. I was needed to make it possible	Action	Design Direction	Garen	Community
7j	It was an idea that we had in our head - but only with the help from outside were we able to make this idea reality.	Motivation	They state that the project was their initiative from the start. They had the idea. I was needed to make it possible	Action	Design Direction	Elder	Community
7s	After this the elder said goodbye to me and he thanked me for the beautiful project that we did together.	Emancipation	It is seen as a shared effort	Action	Design Direction	Elder	Community
14a	Long Lamai wanted to make tags with their own name and logo and a story about how the design in made.	Motivation	They have an idea that they want to start	Action	Design Direction	Garen	Community
16a	Garen said that if I gave him a few minutes - he could already come up with several new designs. He asked me to come back to develop those ideas with them. They wanted help with how they could make sure the designs would be sold - how they could make the labels and how they could collect the materials. They wanted to produce cheap products and sell them for much more.	Motivation	They have an idea that they want to start. I become a worker to make this reality	Action	Design Direction	Garen	Community

Nr.	Translated Codes	Type of Design Participation	Rational	Action / Reflection	Design Activity	Contributor	Initiator
16c	Chris asked me when we could meet. Tomorrow? I said: rather Monday. Chris said: I'll arrange it!	Emancipation	It is started and initiated by Chris rather than by me	Action	Design Probes	Chris	Community
17a	Garen came up with different ideas for products that the community could make.	Motivation	They have an idea that they want to start. I become a worker to make this reality	Action	Design Direction	Garen	Community

●
E

Appendix Three | Indicators of Ownership Codes

Expressions of ownership codes per design stage. The Expressions of Ownership codes are: Increasing Value, Enhancing Responsibility (Care, Nurturing, Protection), Pride, Identity oriented markers.

Table A | Preliminary Visit codes:

Nr.	Translated code	Expressing ownership	Rational	Project stage	Design activity	Specific contributor	Main initiator
3b	G. wanted to be sure that they would be the first/only community of the telecenter communities that would get this project	EXPRESSING OWNERSHIP Increasing value	They wanted to be the first with this project- that in itself was already an expression of an aspect of the community that they connected value to	Enquiry of possibility for establishing ownership	Design Direction	Garen	Community
3c	G. asked Tariq things about the project like: "Do we have to pay for this project?"	EXPRESSING OWNERSHIP Enhancing responsibility (care – the provision of what is necessary for the maintenance of something)	By asking this question they showed that they considered how this project could become theirs	Enquiry of possibility for establishing ownership	Design Direction	Garen	Community
3d	G. asked again whether they would be the first of Malaysia with this project	EXPRESSING OWNERSHIP Increasing value	They wanted to be the first with this project- that in itself was already an expression of an aspect of the community that they connected value to	Enquiry of possibility for establishing ownership	Design Direction	Garen	Community

▶
A

Nr.	Translated code	Expressing ownership	Rational	Project stage	Design activity	Specific contributor	Main initiator
3e	It was asked where the materials for the project would come from	EXPRESSING OWNERSHIP Enhancing responsibility (care – the provision of what is necessary for the maintenance of something)	They were exploring the responsibilities that this project required	Enquiry of possibility for establishing ownership	Design Direction		Together
5c	G. was very enthusiast as was his wife about the things I had done already	EXPRESSING OWNERSHIP Enhancing responsibility (care – to feel concern or interest; attach importance to something)	They showed with their enthusiasm that they were interested in whatever it was I was doing	Expression of ownership	Design Probes	Garen & Sasha	Together
6c	He divided the nesen photos in categories: nomadic Penan- not nomadic Penan- not Penan	OWNERSHIP MARKER Identity oriented	Based on the material cultural aspects of each objects he decides on their relation to the Penan culture	Ownership Marker	Design Probes	Garen	Community
6d	About why they want to be the first with this project: "Is it not very human to want to be the first? We don't want to be only the first, but we want to be a good first. Hopefully it will help the youngsters in the city to become proud to be Penan... because often they are not..."	EXPRESSING OWNERSHIP Increasing value	They wanted to be the first with this project- that in itself was already an expression of an aspect of the community that they connected value to	Enquiry of possibility for establishing ownership	Design Direction	Garen	Together

▼
A

Nr.	Translated code	Expressing ownership	Rational	Project stage	Design activity	Specific contributor	Main initiator
6e	There is a problem: the youngsters live a different life than the nomadic life and even though the knowledge of the nomadic Penan is their heritage, it does not interest them, because it is not directly applicable to their life. The project might help in this.	EXPRESSING OWNERSHIP Increasing value	Interesting the youngsters with this project – to encourage them to learn more about the Penan culture	Enquiry of possibility for establishing ownership	Design Direction	Garen	Together
6f	Liz-Lamai	SHARED OWNERSHIP MARKER Identity oriented	This remark shows that they see shared ownership in this project and want to express this	Expression of ownership	Design Direction	Garen	Community
6k	It is also the second time that someone wants to have a nesen bag to place their bible in.	EXPRESSING OWNERSHIP Increasing value OWNERSHIP MARKER Non-Identity Oriented	The fact that they place something as important as their bible in these bags shows that they value the bags. By placing their bible in the bag- they show that it is owned by them. A bible is a very personal object	Expression of ownership	Design Probes		Community

●
A

Table B | First Co-creative codes:

Nr.	Translated code	Expressing ownership	Rational	Project stage	Design activity	Specific contributor	Main initiator
29g	G. and J(W) were very enthusiast about this. They valued the idea of the website as a place on which all the information about the cultural heritage could be stored.	EXPRESSING OWNERSHIP Increasing value	Website as cultural heritage data base	Enquiry of possibility for establishing ownership	Technology Probes	Garen & Joy	Together
29h	G. proposed to already start exhibiting the technology probes in the telecenter. I agreed. This way- G. said- the youngsters can get used to the technology and can spread stories about it to the elders. This way it will spread throughout the community and this will make it easier to provoke interest	EXPRESSING OWNERSHIP Enhancing responsibility (nurturing: 2 help or encourage the development or cherish (a hope- belief- or ambition)	G. suggested this to increase the interest for this project by the community.	Expression of ownership	Technology Probes	Garen	Community
29i	Exclusivity seems to be one of the most important elements to accept or not accept this project	EXPRESSING OWNERSHIP Increasing value	They wanted to be the first with this project- that in itself was already an expression of an aspect of the community that they connected value to	Enquiry of possibility for establishing ownership	Design Direction		Community

Nr.	Translated code	Expressing ownership	Rational	Project stage	Design activity	Specific contributor	Main initiator
29k	I think people appreciated the technology. They constantly looked at what I was doing. When I tested the technology they would make "Ooo!" sounds . I think this is a good sign. But maybe they were just curious because it was something new.	EXPRESSING OWNERSHIP Enhancing responsibility (care – to feel concern or interest; attach importance to something)	They showed that they were interested in whatever it was I was doing	Expression of ownership	Technology Probes		Community
6a	G. came down and told me that he had heard that I was considering to make the instrument of bamboo.. I had only told this to W. so they must have talked about this- I said yes- and that I had made some drawings.	EXPRESSING OWNERSHIP Enhancing responsibility (care – to feel concern or interest; attach importance to something)	They were talking about it even though I wasn't there.	Expression of ownership	Musical Instrument	Garen & Wilson	Community
6h	Then S(G) said that the instrument looked like an instrument from Java. Is she from there? Is it a problem that the instrument does not look like a Penan instrument?	OWNERSHIP MARKER Identity Oriented	The issue was raised whether they were happy to have a non-Penan instrument for the instrument	Enquiry of possibility for establishing ownership	Musical Instrument	Sasha	Together
6i	He came up with the idea that this instrument could be a LL ringtone. He really got excited about this idea	OWNERSHIP MARKER Identity Oriented	Long Lamai Ringtone	Expression of ownership	Musical Instrument	Garen	Community
6l	However- I don't know whether I would really like that. Two lights in one basket does not seem like the best idea- because I think by spreading the effect would be bigger.	EXPRESSING OWNERSHIP Enhancing responsibility protectiveness	I seem to have an idea that I seem to guard.	Expression of ownership	Lights		Designer

Nr.	Translated code	Expressing ownership	Rational	Project stage	Design activity	Specific contributor	Main initiator
6o	I expected that G. was not really interested in having someone else mingling again in the Oro (we came to this point because we were talking about the visit of the 15 people- who will have their own Oro quest). I explain what I was planning to do an that that might be stupid since the yought probably had a lot of knowledge about those things... But G. was enthusiastic about the idea of having an Oro quest with the youngsters – since he talked that the yought did not have much knowledge about Oro anymore. Making it cool- an event- would be good because it gives them the possibility to learn more and to become interested.	OWNERSHIP MARKER Identity Oriented EXPRESSING OWNERSHIP Increasing Value	By focussing on Oro- which is deeply embedded in Penan identity- the youngsters can learn more about it – thus increasing the value of the project	Enquiry of possibility for establishing ownership	Design Direction	Garen	Together
6q	I showed how it worked and he waved it a bit away.	NO OWNERSHIP no interest & no perceived value	No Expression of ownership.		Technology Probes – website	Garen	Together
6r	I was, however, no where in the overview with the project we were doing.	NO OWNERSHIP	Why am I not in the project overview?	No Expression of ownership	Design Direction	Garen	Community
6s	G. said that he even didn't understand the box	NO OWNERSHIP	He didn't understand it and couldn't value it for that reason	No expression of ownership	Design Probes	Garen	Community

B ▶

Nr.	Translated code	Expressing ownership	Rational	Project stage	Design activity	Specific contributor	Main initiator
6t	HOWEVER- this understanding might have caused pulling out on Sunday.	NO OWNERSHIP	By understanding the concept they could judge that it didn't fit in their Indigenous knowledge system.	No expression of ownership	Design Direction	Garen	Community
8a	I could already continue with the instrument- because there was no harm to that- an G. seemed to think that was most important anyway.	EXPRESSING OWNERSHIP Increasing Value	Instrument is seen as most important part of the project	Expression of ownership	Musical Instrument	Garen	Together
8d	I realized that even before I had started to talk about the tech designs- G. was already talking about the community ringtone	OWNERSHIP MARKER Identity Oriented	He introduced the Long Lamai ringtone on his own initiative – he obviously sees this as most important	Expression of ownership	Musical Instrument	Garen	Community
8e	So probably he was over enthusiast about that part of the project- and because he might not yet understand the full relevance of the rest of the project.	EXPRESSING OWNERSHIP Increasing Value	He introduced the Long Lamai ringtone on his own initiative – he obviously sees this as most important	Expression of ownership	Musical Instrument	Garen	Community
8g	I mentioned that everything I created was for the community. They would keep all the originals- I would only take copies. Especially the pastor seemed to think this was important. He nodded.	LEGAL OWNERSHIP	The designs are legally theirs (the copies are mine) – through signing our research contract.	Expression of ownership	Design Direction		Together

▼
B

Nr.	Translated code	Expressing ownership	Rational	Project stage	Design activity	Specific contributor	Main initiator
8h	Quite a fierce discussion ending with the conclusion: we will use glue. The youngsters (5 guys) took part in this discussion. To me that was really good news. They are interested!	EXPRESSING OWNERSHIP Enhancing responsibility (care – to feel concern or interest; attach importance to something)	People seemed to be interested to talk about how to make it.	Expression of ownership	Musical Instrument	Community (+ 5 youngsters)	Community

●
B

Table C | Second Co-creative codes:

Nr.	Translated code	Expressing ownership	Rational	Reflection?	Project stage	Design activity	Specific	Main contribution
2a	During this tour, hij decided that the ringtone should be named 'kuik' – referring to a cicada that only lives around Long Lamai and that makes a typical sound.	OWNERSHIP MARKER Identity Oriented	Kuik – only around LL	No.	Expression of ownership	Musical Instrument	Garen	Community
5g	Maybe we should write a story about her, in order for her to feel more appreciated. (looking back at this statement I realize that this does not fit to the cultural ways)	EXPRESSING OWNERSHIP Pride	By writing a story about the crafter, she will become more proud about her work – thus taking stronger ownership of the designs.	Reflection	Expression of ownership	Lights		Designer
5i	He [Garen] mentioned that it would be better to use a pagang [a traditional Penan musical instrument] – because this is typically Penan.	EXPRESSING OWNERSHIP Increasing value OWNERSHIP MARKER Identity Oriented	By using the pagang (=typically Penan) the youngsters can learn more about the culture		Enquiry of possibility for establishing ownership	Musical Instrument	Garen	Together



Nr.	Translated code	Expressing ownership	Rational	Reflection?	Project stage	Design activity	Specific	Main contribution
5m	Then G. said we should make the platform of different types of wood. Each of these types should be chosen according to its relevance to the Penan culture	OWNERSHIP MARKER Identity Oriented	Using types of wood important to the Penan culture reflect the Penan identity		Enquiry of possibility for establishing ownership	Musical Instrument	Garen	Community
5n	He [Garen] then came up with the idea that we should use symbolism to tell the story about the Penan. Artists in the community who can cut the wood could do this. A 'Kuik' [a cicade, only living around Long Lamai] could be cut for example.	OWNERSHIP MARKER Identity Oriented	Using Penan symbolism will reflect the Penan identity		Enquiry of possibility for establishing ownership	Musical Instrument	Garen	Community



Nr.	Translated code	Expressing ownership	Rational	Reflection?	Project stage	Design activity	Specific	Main contribution
5r	He became even more enthusiast – and with each idea he emphasised on the value for it to the Penan culture. It needed to become a piece that truly represented their identity. Everything has meaning to the Penan and according to him this was important	OWNERSHIP MARKER Identity Oriented Increasing Value Care (expression)	Using Penan symbolism will reflect the Penan identity		Enquiry of possibility for establishing ownership	Musical Instrument	Garen	Community
5s	This way, the youngsters can also learn from it.	EXPRESSING OWNERSHIP Increasing value	It is important for them that the youngsters can learn from the design about the Penan culture		Enquiry of ownership	Musical Instrument	Garen	Community
5u	He even offered to cut the tree near his farm for the project – this means something since these trees are valuable: they are often hundreds of years old.	EXPRESSING OWNERSHIP Enhancing responsibility (nurturing: 2 help or encourage the development or cherish (a hope, belief, or ambition)	By offering the tree he helps nurture his vision of using materials that are valuable to the Penan		Expression of ownership	Musical Instrument	Garen	Community



Nr.	Translated code	Expressing ownership	Rational	Reflection?	Project stage	Design activity	Specific	Main contribution
6d	<p>By doing this we stopped the dynamics of the communal process ... by talking to this with G. we understood this. But by then we could not stop B. anymore, since that also would not fit to the ways of the community. We agreed that G. would take charge of engaging the community because he has a better idea of how to best do this.</p>	<p>EXPRESSING OWNERSHIP Enhancing responsibility (care – 1 the provision of what is necessary for the health, welfare, maintenance, and protection of someone or something)</p>	<p>The process will now be in hands of the community</p>	<p>Reflection</p>	<p>Expression of ownership</p>	<p>Design Direction</p>	<p>Garen</p>	<p>Community</p>



Nr.	Translated code	Expressing ownership	Rational	Reflection?	Project stage	Design activity	Specific	Main contribution
6f	I cannot get my head around what their ideas actually are.	NO OWNERSHIP	The design decisions can no longer be made by the designer, because she can not contribute to the process, since she doesn't know what they actual envision			Musical Instrument		Designer
6h	In the conversation with G. about the website and about whether I should pay the youngsters for contributing stories to the platform, he said that he thought it was a good idea to let the youngsters write the stories for the website. However, the elders will need to check to see whether they agree with what the youngsters are writing.	EXPRESSING OWNERSHIP Enhancing responsibility (care – 2 the provision of what is necessary for the health, welfare, maintenance, and protection of someone or something)	To facilitate the normal decision making dynamics, the stories need to be checked by the elders before they can be posted on the website.		Expression of ownership	Stories	Garen	Together



Nr.	Translated code	Expressing ownership	Rational	Reflection?	Project stage	Design activity	Specific	Main contribution
6i	This was the first moment on which I spoke to G. about using the probes as foundations for the stories. (Eventhough I still talk about internal identity) G. appreciated the value the probes could have for the community: The probes could serve as exhibits at the community museum	EXPRESSING OWNERSHIP Increasing value	Using the design probes as exhibits in the community museum		Expressing ownership	Design Probes	Garen	Together
6k	Some of the girls showed enthusiasm about taking part in the workshop. The brother of B also seemed very interested	EXPRESSING OWNERSHIP Enhancing responsibility (care – to feel concern or interest; attach importance to something)	They seemed to be interested to participate		Expressing ownership	Technology Probes	Youngsters	Community
6t	Er. Started writing about the baskets. According to G. those baskets were, however, not truly Penan	NO OWNERSHIP OWNERSHIP MARKER Identity Oriented	The baskets are not part of the Penan's material culture		Expressing ownership	Stories	Erra + Garen	Community

Nr.	Translated code	Expressing ownership	Rational	Reflection?	Project stage	Design activity	Specific	Main contribution
6w	My proposal to not only post stories about the Penan culture, but also about cultures that co-exist in this community, was not an option according to G.	NO OWNERSHIP OWNERSHIP MARKER Identity Oriented	They are very strict on keeping the project about the Penan culture		Enquiry of possibility for establishing ownership	Stories	Garen	Together
6s	It seems more and more that the technology functions as probes. I didn't think about them like probes before – I did not design them with this in mind. However, they seem to fit very well within the community – since it fits to their goal of creating something innovative. They saw this possibility right from the start, but now they also start expressing their identity through the design of the technology probes.	EXPRESSING OWNERSHIP Increasing value OWNERSHIP MARKER Identity Oriented	The technology seems to fit to the aim of the community to create something that no one has ever created before. Their identity is reflected in the design (of the instrument)	Reflection	Expressing ownership	Technology probes	Me	Designer



Nr.	Translated code	Expressing ownership	Rational	Reflection?	Project stage	Design activity	Specific	Main contribution
6v	It is possible that the youngsters will not write the stories for the website. This might have to do with that they are not used to taking initiative.	NO OWNERSHIP EXPRESSING OWNERSHIP Enhancing responsibility (care – to feel concern or interest; attach importance to something)	They do not yet feel responsible for the project and they will not take initiative to do the work when I am not there. They need me as a motivator/facilitator	Reflection	Expressing ownership	Stories	Me	Designer



Table D | Third Co-creative codes:

Nr.	Translated code	Expressing ownership	Rational	Project stage	Design activity	Specific	Main contribution
7b	G. never mentions the project we are doing as an example. Does he understand the project?	NO OWNERSHIP	He doesn't seem to attach special value to the project.	Expressing ownership	Design Direction	Garen	Community
7c	"New technology combined with the traditional culture- to show what LL has to offer" = NEW PROJECT DIRECTION	EXPRESSING OWNERSHIP Increasing value	By adapting the design vision to the wish of the community, they could take ownership.	Enquiry of possibility for establishing ownership	Design Direction	Garen	Together
7d	Although we should find a responsible person for each of the different parts of the project, it is also important that we have one person who can present everything for a competition.	EXPRESSING OWNERSHIP Enhancing responsibility (nurturing)	Garen takes responsibility of making it continue after I have left.	Enquiry of possibility for establishing ownership	Design Direction	Garen	Community
7e	He kept checking whether we would use the Penan language on the website	OWNERSHIP MARKER Identity Oriented	Having it in the Penan language makes the website accessible for the community members	Enquiry of possibility for establishing ownership	Stories	Garen	Together
7f	G. had some concerns: what if the technology breaks? I promised to make a guide that explains each of the designs. If something fails to work they can let someone from UNIMAS fix it (who can use the guide to understand the designs)	EXPRESSING OWNERSHIP Enhancing responsibility (care – the provision of what is necessary for the maintenance of something)	They wanted to be sure that they were able to fix it if it broke	Enquiry of possibility for establishing ownership	Techn. Probes	Garen	Together

Nr.	Translated code	Expressing ownership	Rational	Project stage	Design activity	Specific	Main contribution
7g	Like, this morning G. said that technology is able to bridge the gap between elders and youngsters – but this time he used my project as an example.	EXPRESSING OWNERSHIP Increasing value	He saw technology as a way to bridge the gap between different generations	Expressing ownership	Design Direction	Garen	Community
7h	I was a bit scared to explain the pagang and rhino idea to the entire community – I thought maybe our enthusiasm made us choose an inappropriate directions. However, the idea seems to be supported by a wide range of the community	NO OWNERSHIP	Because I did not entirely understand the design plans, I was unsure about whether it would be appreciated. I think I lacked ownership at that point	Expressing ownership	Musical Instrument		Designer
7i	At the end of the community meeting, he thanked me.	EXPRESSING OWNERSHIP Enhancing responsibility (care – the provision of what is necessary for the maintenance of something)	The elder was interested and saw value in the project.	Expressing ownership	Design Direction	James	Community

D ▼

Nr.	Translated code	Expressing ownership	Rational	Project stage	Design activity	Specific	Main contribution
9a	This morning G. told me we maybe had to find a Pagang to buy. According to which I like, we can decide on the price.	EXPRESSING OWNERSHIP Enhancing responsibility (care – the provision of what is necessary for the maintenance of something)	Garen wants to make sure that we can continue to make the design	Expressing ownership	Musical Instrument	Garen	Community
9b	Fireflies: Now that he saw them working, he became enthusiastic and he finally seemed to understand their purpose.	EXPRESSING OWNERSHIP Increasing value	He admired the design	Expressing ownership	Lights	Garen	Community
9e	I went to G, full of enthusiasm about my success in creating the fireflies and about how beautiful they looked.	EXPRESSING OWNERSHIP Increasing value Pride	I was proud about what I had accomplished	Expressing ownership	Lights		Designer
9f	For some reason it seemed important for G. that the pagang would get the status of professional world-music	EXPRESSING OWNERSHIP Increasing value	The pagang to be valued as a world instrument	Expressing ownership	Musical Instrument	Garen	Community
10b	When I attached the pagang to the amplifier G became very enthusiastic. He wanted one of the woman to play.	EXPRESSING OWNERSHIP Increasing value	He was interested in te possibilities the amplifier brought to accomplish his dream (making the pagang a world instrument)	Expressing ownership	Musical Instrument	Garen	Community
11a	D. got the assignment, but she does not seem interested at all.	NO OWNERSHIP - no interest	She doesn't seem to be interested.	Expressing no ownership	Design Probes	Diana	Community

Nr.	Translated code	Expressing ownership	Rational	Project stage	Design activity	Specific	Main contribution
11b	Around 10 I managed to get a group of 4 youngsters together. D. refused to take part. She seemed annoyed.	NO OWNERSHIP - no interest	She doesn't seem to be interested.	Expressing no ownership	Design Probes	Diana	Community
11d	About the 'what makes.. so different, so appealing' I received excited reactions: "South Korea! For Chris!! Hahaha" This exercise I definitely want to do. They were enthusiastic and the atmosphere was good. It felt as if they were saying "Let's do this!"	EXPRESSING OWNERSHIP Enhancing responsibility (care - to feel concern or interest; attach importance to something)	They were interested in the exercise	Expressing ownership	Design Probes	Chris, Cantona, Erra, Josphien, Kathiyia,	Community
11e	Soon the proud boxes became 'treasure boxes'	EXPRESSING OWNERSHIP Enhancing responsibility (care - to feel concern or interest; attach importance to something)	They named the boxes: treasure boxes	Expressing ownership	Design Probes	Chris, Cantona Erra, Josphien Kathiyia	Community
15b	He showed me a piece of wood: Tanjit. It is the hardest wood that exists. The Penan use it to make blowpipes. Garen's idea is to use this piece of wood as the platform.	EXPRESSING OWNERSHIP Enhancing responsibility (care - to feel concern or interest; attach importance to something)	He wants to make sure that the platform is made of something that plays a role in the culture and that is seen as strong and beautiful.	Expressing ownership	Musical Instrument	Garen	Community

Nr.	Translated code	Expressing ownership	Rational	Project stage	Design activity	Specific	Main contribution
15c	G. constantly asks how I would like the design to be. However, I cannot follow what they have in mind. I thought they wanted to create a copy of the rhino but it seems as though they have been talking about creating an abstract rhino from the start. For this reason it takes longer to collect the material. If I understand it correctly, making the actual design will take less design, because if they find the right pieces, they will not have to cut it in the right shape.	NO OWNERSHIP	I do not understand their plan – that is why they take the decisions. This way they can make it their own.		Musical Instrument		Designer
15d	G. wants to use different types of wood (Belian, tanjit – all used to make blowpipes)	EXPRESSING OWNERSHIP Enhancing responsibility (care – to feel concern or interest; attach importance to something)	He wants to make sure that the platform is made of something that plays a role in the culture and that is seen as strong and beautiful.	Expressing ownership	Musical Instrument	Garen	Community
15g	The idea of having an exhibition seems to be very important – even though we had agreed that in the case we will not be able to make it in time for the exhibition it would not be a problem – G. really really wants to push the work to be able to present the designs at the conference.	EXPRESSING OWNERSHIP Increasing value	The exhibition was really important for them	Expressing ownership	Design Direction	Garen	Together

Nr.	Translated code	Expressing ownership	Rational	Project stage	Design activity	Specific	Main contribution
16f	K wanted to talk with the other youngsters about how we best could collect the pagang stories. Because of the responses of the other youngsters I notice that K is less motivated to do this.	NO OWNERSHIP	They did not take ownership of the process – they seemed to be reluctant to attach to it.		Stories	Kathiyia	Community
18a	K asked me whether we could let G. record the stories, I said: No! G. is already busy and he is the one who gave us the assignment. I thought: Ow no! This is not good. She really doesn't want to do this. I especially notice this when she talks to the other youngsters.	NO OWNERSHIP	They did not take ownership of the process – they seemed to be reluctant to attach to it.		Stories	Kathiyia + Josephine	Together
20a	I showed them the photos of the lights" "Djann!!" ("Nice!!/Good!!")	EXPRESSING OWNERSHIP Increasing value	The expressed appreciation of the lights.	Expressing ownership	Lights	Joy & Wilson	Together
25f	When they had finished, they wanted me to take a picture with them and their design. They also wanted to expose the banner in the telecenter – soon they started placing it on the wall.	EXPRESSING OWNERSHIP Increasing value	They valued the thing they had created	Expressing ownership	Design Probes	Diana, Breakley, Kathiyia, Josephine, Chris, Erra	Community
26a	D. changed her facebook wall to the picture taken after creating the banner	EXPRESSING OWNERSHIP Increasing value	She values the picture	Expressing ownership	Design Probes	Diana	Community

Nr.	Translated code	Expressing ownership	Rational	Project stage	Design activity	Specific	Main contribution
28a	When the kuik worked, I first showed it to Br. And S(G). They were very enthusiastic about the result.	EXPRESSING OWNERSHIP Enhancing responsibility (care – to feel concern or interest; attach importance to something)	They showed interested and where happy that it was working	Expressing ownership	Musical Instrument	Breakley, Sasha	Community
1a	It is about the humble understanding that my project is far from the most important thing for the community members	LIMITED OWNERSHIP EXPRESSING OWNERSHIP Increasing value	The project is not the most important thing – I should appreciate it in that way		Design Direction		Designer

●
D

Table E | Exhibition stage codes:

Nr.	Translated Code	Expressing Ownership	Rationale	Design Activity	Project Stage	Specific	Main Contributor
3c	We would write the stories both in Penan and in English. We would make sure that we had the complete story in both languages, The narrative of the design will tell the story the community connects to the design.	OWNERSHIP MARKER Identity Oriented EXPRESSING OWNERSHIP Increasing value	Use of own language. The narrative about the Penan expressed through the designs will be written down for the youngsters to learn about it	Musical Instrument	Expressing ownership	Garen	Together
5a	W. will organize a community meeting during which the designs can be showed to the entire community prior to the exhibition at the conference. W.'s attitude towards the project has changed: he is warmer and more positive about the project. I told him that I thought it was important for me that everyone in the community knew what was created. As a reaction to this he said: "Jian!" (good!), and he laughed encouragingly.	EXPRESSING OWNERSHIP Enhancing responsibility (care – the provision of what is necessary for the maintenance of something)	W. took responsibility to facilitate these dynamics	Design Direction	Expressing ownership	Wilson	Together
5b	He was very impressed. He asked who made the platform. I explained that it was W. G. said that he really liked it and that he had had a similar idea of how to connect the solenoids to the pagang.	EXPRESSING OWNERSHIP Increasing value	He admired what we had created	Musical Instrument	Expressing ownership	Garen	Together
5c	G. was touched by the quote.	EXPRESSING OWNERSHIP Increasing value	He treasured the quote and the meaning attached to it	Design Probes	Expressing ownership	Garen	Community

E ▼

Nr.	Translated Code	Expressing Ownership	Rationale	Design Activity	Project Stage	Specific	Main Contributor
6a	G. wanted to show the project in order to show that it is very important for indigenous groups to have ideas. Those ideas can bring you further. It might be that you will not be able to make those ideas into reality but this does not mean that you should give up. By means of co-operation with someone who understands your idea, you can make this idea into something real. Through ideas, you can focus on the future.	EXPRESSING OWNERSHIP Increasing value	He sees the project as an example for other indigenous groups	Design Direction	Expressing ownership	Garen	Community
6b	We have an idea. And we want to make this idea reality – however we do not know how. We were the first to do such a project and through that we showed to other cultures: ‘If we (a community with a low status in society) can do it, you can do it’. We bridged the gap between past and future. G. wanted to use this project as an example for the orang asli. Especially the importance of co-operating and how LL managed to create the result as they did.	EXPRESSING OWNERSHIP Increasing value	He sees the project as an example for other indigenous groups	Design Direction	Expressing ownership	Garen	Community
6c	I had placed pictures of the process of both designs in the movie. G. suddenly asked whether the design process of the fireflies was also shown in the movie because he said: “that is important!” Then I thought: “He does attach value to the fireflies!”	EXPRESSING OWNERSHIP Increasing value	He showed that he thought the fireflies were important as well	Lights	Expressing ownership	Garen	Community

Nr.	Translated Code	Expressing Ownership	Rationale	Design Activity	Project Stage	Specific	Main Contributor
6d	I talked with G. about the banner., He said that he was really touched by it, especially by the phrase: 'Dear future, we are ready now!' He said: "It must really have come from their hearts [the quote]. The other things on the banner were there because it seems to be the standard story that with each design probe exercise is told. The quote was different and this made it very important!! He wanted the youngsters to look to the future. Before, they never did this, now they did – which can be seen from the quote.	EXPRESSING OWNERSHIP Increasing value	He treasured the quote and the meaning attached to it	Design Probes	Expressing ownership	Garen	Community
6f		EXPRESSING OWNERSHIP Increasing value	He treasured the quote and the meaning attached to it	Design Probes	Expressing ownership	Garen	Community
6g	G. told me about a dream he had had, the night after he had cut the pieces of wood. The man who had cut the tree, which we used in the design, in the 60's was in this dream. At first he stood behind the crowd that was standing around the design (in the dream the man was a young guy – which was interesting since he had died when he was a really old guy). G. was working (in the dream) to finish the design – the man looked at what he was doing in an appreciative way. G. seemed to attach special meaning to this. Might this have been motivation for G. to take part in the design process?	EXPRESSING OWNERSHIP Increasing value	He treasured the dream and the meaning he attached to it	Musical Instrument	Expressing ownership	Garen	Community

Nr.	Translated Code	Expressing Ownership	Rationale	Design Acitivity	Project Stage	Specific	Main Contributor
7a	G. did the tours and explanation about the deisgns. He showed an elder (the one who improvingly nodded when G. announced the 'pilot' exhibition) what we did.	EXPRESSING OWNERSHIP Enhancing responsibility (nurturing: 2 help or encourage the development or cherish (a hope, belief, or ambition)	He made sure that the other people were explained about the designs to cherish them	Design Direction	Expressing ownership	Garen	Community
7c	This way, G. took ownership of the project as belonging to LL. I became a small contributor – not the leader or the facilitator.	EXPRESSING OWNERSHIP Enhancing responsibility (care – the provision of what is necessary for the maintenance of something)	They took full responsibility for it	Design Direction	Expressing ownership	Garen	Community

▼
E

Nr.	Translated Code	Expressing Ownership	Rationale	Design Acitivity	Project Stage	Specific	Main Contributor
7e	It was the elder who answered that they could identify with the designs. The design they could identify most with was the blowpipe, followed by the pagang. The blowpipe symbolizes the livelihood of the Penan. The Pagang is important as the symbol of harmony. The feeling that you get when you play in you leisure time the intstrument.. And to get into harmony again with the soul of the pagang after killing it.	OWNERSHIP MARKER Identity Oriented EXPRESSING OWNERSHIP Increasing value	They clearly indicated which designs they identified with and from which they distintiate themselves. They expressed why these identity oriented ownership markers were valuable to them	Design Direction	Expressing ownership	Elder	Community
7f	The sape is of all the surrounding cultures. LL can therefore not say that it is truly theirs. The other treasure boxes did reflect the Penan culture.	OWNERSHIP MARKER Identity Oriented	They clearly indicated which designs they identified with and from which they distintiate themselves	Design Direction	Expressing ownership	Connie + Elder	Community
7g	Yes! This is the Long Lamai of the future. Because no one else has it, we can claim it and call it truly from Long Lamai. And because of this, technology can represent us. These are new creations of the community made through co-operation.	EXPRESSING OWNERSHIP Increasing value	This is why they value the technology	Design Direction	Expressing ownership	Sasha, Connie & Elder	Community
7i	Elder: I am very happy to see this project since it is for and by the people here. It has been an exploration on what aspects are important for our culture. We also involved the youngsters in this – they learned more about our culture	EXPRESSING OWNERSHIP Increasing value	He expressed why this was important to him: for the youngsters to learn about the culture	Design Direction	Expressing ownership	Elder	Community

Nr.	Translated Code	Expressing Ownership	Rationale	Design Activity	Project Stage	Specific	Main Contributor
7k	“we must place it somewhere where the children cannot touch it”	EXPRESSING OWNERSHIP Enhancing responsibility (protective)	They wanted to make sure nothing could damage the designs	Technology Probes	Expressing ownership	Neighbour	Community
7l	The designs will be named: Lakat Tesen and Batu’Nue	OWNERSHIP MARKER Identity Oriented	Referring to animals important in the Penan culture.	Technology Probes	Expressing ownership	Everyone	Community
7m	We have to place it somewhere where everyone can see it.	EXPRESSING OWNERSHIP Enhancing responsibility (nurturing: 2 help or encourage the development or cherish (a hope, belief, or ambition)	They wanted everyone to benefit from the designs	Technology Probes	Expressing ownership	Everyone	Community

E ▼

Nr.	Translated Code	Expressing Ownership	Rationale	Design Activity	Project Stage	Specific	Main Contributor
7n	How will the maintenance be? Response: UNIMAS + guides. The youngsters are in charge of the website. The elder seem to be happy with this. Everyone agreed to the proposed maintenance method	EXPRESSING OWNERSHIP Enhancing responsibility (care – the provision of what is necessary for the maintenance of something)	They wanted to make sure they could maintain it.	Technology Probes	Expressing ownership	Connie	Community
7o	They did understand the connection between the website and the designs. Every time the pagang started to play, the people in the room would react to it in a triumphing way.	EXPRESSING OWNERSHIP Pride	Their self-esteem increased everytime the pagang started playing	Musical Instrument	Expressing ownership	Everyone	Community
7p	The elder clearly placed the sapé treasure box to the side because it also was part of neighbouring cultures material culture.	NO OWNERSHIP OWNERSHIP MARKER Identity Oriented		Design Probes		Elder	Community
7r	Two people took their mobile phone to make a picture/ movie of the playing pagang. This was a very important signal that they appreciated it. They also stayed around the pagang for a long time. Everyone was intrigued by how well the Pagang was working	EXPRESSING OWNERSHIP Increasing value	They admired the pagang playing – even wanted to record it	Musical Instrument	Expressing ownership	Neighbour & Ajor	Community
7t	Everyone helped to place the designs back safely.	EXPRESSING OWNERSHIP Enhancing responsibility (protective)	They wanted to make sure nothing could damage the designs		Expressing ownership	Everyone	Community

Nr.	Translated Code	Expressing Ownership	Rationale	Design Acitivity	Project Stage	Specific	Main Contributor
10a	Only the people from outside that contribute to the website to make it more interesting can make the website a success – without them there will not be enough input.	EXPRESSING OWNERSHIP Increasing value	Requirement for the website to make people be interested in it	Technology Probes	Enquiry		Designer
11a	He does connect the project to me rather than to the project of LL (unlike the people at the exhibition)	NO OWNERSHIP?		Design Directions		Wilson	Community
11b	G. came by to come up with ways to safely transport the designs.	EXPRESSING OWNERSHIP Enhancing responsibility (protective)	He wanted to make sure the designs would not break	Technology Probes	Expressing ownership	Garen	Community
11c	I read the front page story to G.. HE was very satisfied with it. He was even a bit touched. I also let him listen to the pagang story. He seemed to be satisfied about this story as well. He seemed surprised how well I had incorporated all the facts that he taught me about the pagang. I had to print the last sotry (and include my name) so that they could transfer it into a book for the nursery. I think this is a positive sign	EXPRESSING OWNERSHIP Increasing value	He treasured the story	Technology Probes	Expressing ownership	Garen	Community

E ▼

Nr.	Translated Code	Expressing Ownership	Rationale	Design Activity	Project Stage	Specific	Main Contributor
11d	I asked S(G) today whether she wanted to be the moderator of the website. She responded positively to this.	EXPRESSING OWNERSHIP Enhancing responsibility (care – the provision of what is necessary for the maintenance of something)	She took responsibility for the website	Technology Probes	Expressing ownership	Sasha	Together
13a	I said that I first wanted to see G.'s presentation. Before, my project did not have a place in the project overview of LL – now it appeared as 'Lakat Tesen' – referring to the instrument	OWNERSHIP MARKER Identity Oriented EXPRESSING OWNERSHIP Increasing value	Lakat Tesen – reflecting Penan identity He attached special value to the instrument	Musical Instrument	Expressing ownership	Garen	Community
13b	When we came back, we prepared the exhibition. I did not do this by myself, but with the voluntary help of Ch. And S.	EXPRESSING OWNERSHIP Enhancing responsibility (nurturing: 2 help or encourage the development or cherish (a hope, belief, or ambition)	He wanted to introduce it in an appropriate way – cherishing his vision	Design Direction	Expressing ownership	Stanley & Chris	Community
13c	Then G. joined, he was full of pride.	EXPRESSING OWNERSHIP Pride	They were proud of their accomplishment	Design Direction	Expressing ownership	Garen	Community

Nr.	Translated Code	Expressing Ownership	Rationale	Design Activity	Project Stage	Specific	Main Contributor
13d	When G. and Ch. Arrived something interesting happened: without hesitating they took a torch and shined so that I could see what I was doing while repairing the design. Ch. Finished the poster. They took responsibility. They saw it as theirs – not as mine	EXPRESSING OWNERSHIP Enhancing responsibility (care – the provision of what is necessary for the maintenance of something)	They took responsibility in the maintenance of the design	Musical Instrument	Expressing ownership	Garen & Chris	Community
13e	When it worked they gave me a high five. When people arrived they explained them about the project and the designs.	EXPRESSING OWNERSHIP Enhancing responsibility (nurturing: 2 help or encourage the development or cherish (a hope, belief, or ambition)	He wanted to introduce it in an appropriate way – cherishing his vision	Design Direction	Expressing ownership	Garen & Chris	Community
13g	G. was so proud. He was showing it constantly. I was also satisfied with the reactions. Then dr. Jacey came to order 12 lightshades. This was followed by two others who wanted to buy the entire installation. At the end of the night G. and I agreed to talk about the possibilities of selling the lights. This would be a big impact for LL – they would be able to make money through the designs.	EXPRESSING OWNERSHIP Pride	They were proud of their accomplishment	Design Direction	Expressing ownership	Garen	Community
13h		EXPRESSING OWNERSHIP Increasing value	The Designs got more value because they could give the community income	Lights	Expressing ownership	Garen	Community

Nr.	Translated Code	Expressing Ownership	Rationale	Design Acitivity	Project Stage	Specific	Main Contributor
14b	G. asked me whether we could show the designs again during dinner. He wanted to explain more people about them. In the morning someone had asked G. about the designs.	EXPRESSING OWNERSHIP Enhancing responsibility (nurturing: 2 help or encourage the development or cherish (a hope, belief, or ambition)	He wanted to introduce it in an appropriate way – cherishing his vision	Technology Probes	Expressing ownership	Garen	Community
14c	G. continued expressing how proud he was. He was proud that LL had done this. They had created something new, which the people who normally would look down on the Penan culture wanted to have.	EXPRESSING OWNERSHIP Pride	They were proud of their accomplishment	Design Direction	Expressing ownership	Garen	Community
14d	G. said that he was really happy with the project. At first (during the exhibition) he was happy with what we had accomplished. Now, after last nights dinner, he was proud that he could show with the designs what LL had to offer. He said LL showed more innovation than any of the other communities. This was because of the communal spirit in LL: If you want to go fast go alone, if you want to go further, go together. What if something happens? If you are with more people they can carry you if needed...	EXPRESSING OWNERSHIP Pride	They were proud of their accomplishment	Design Direction	Expressing ownership	Garen	Community

Nr.	Translated Code	Expressing Ownership	Rationale	Design Activity	Project Stage	Specific	Main Contributor
15a	In the morning S said that he was very proud of LL after seeing the designs.	EXPRESSING OWNERSHIP Pride	They were proud of their accomplishment	Design Direction	Expressing ownership	Stanley	Community
15b	There was decided to call the designs: Batu'Nue-Liz and Lakat Tesen-Liz	OWNERSHIP MARKER Identity Oriented	Batu'Nue – Liz	Technology Probes	Expressing ownership	Stanley + Garen	Community
18a	In the afternoon I asked G. where to place the designs. He said he would come along soon. He already had some ideas	EXPRESSING OWNERSHIP Enhancing responsibility (nurturing: 2 help or encourage the development or cherish (a hope, belief, or ambition)	He wanted to introduce it in an appropriate way – cherishing his vision	Technology Probes	Expressing ownership	Garen	Community
18b	S(G) explained her son what the lights were. She explained how you could post a message. She also helped to place the lights in their final position.	EXPRESSING OWNERSHIP Enhancing responsibility (nurturing: 2 help or encourage the development or cherish (a hope, belief, or ambition)	She taught how the lights worked. They wanted the designs to mark who made made it.	Technology Probes	Expressing ownership	Sasha	Community

Novel Expressions codes per design stage. The novel expressions codes are: Responsive, Contributory, Expected and Proactive.

Table A | Preliminary Visit codes:

Nr.	Translated code	Based on / linked to	Brief specified / discovered	Initiated by	Specific Contributor	Design activity	Novel Expression type
3a	He considered this as an opportunity to make their handicrafts special. He also saw potential in it for teaching tourists about the botanical knowledge – by placing tags next to the trees important for the Penan	Designer's design seeds (Storybeads) & community/design seeds	Discovered brief: He searched for opportunities to enrich the handicrafts and tourism.	Initiated by Community	Garen	Technology Probes	Proactive
5b	G. showed me different objects that we could use in the designs: e.g. seeds or a wildboar tusk could be used to place the tags in.	Community's design seeds	Discovered brief: How can we adapt that what the designer introduced in 3b to fit the Penan culture?	Initiated by Community	Garen	Technology Probes	Proactive
5d	It might be that they do not understand my intention for the photo-book since they started making photos for them to keep rather than photos that fit to the assignment	Designer's design seeds (photo book probe)	Discovered brief: This assignment gives us the opportunity to make photos that we can keep	Initiated by designer	Topek & Cepek	Design Probes	Expected



Nr.	Translated code	Based on / linked to	Brief specified / discovered	Initiated by	Specific Contributor	Design activity	Novel Expression type
5g	He also suggested that we could use material that was of major importance in the Penan's nomadic life: e.g the leaf used for covering the shed or a bamboo tube (traditionally used to place valuable things in)	Community's design seeds	Discovered brief: How can we adapt that what the designer introduced in 3b to fit the Penan culture?	Initiated by Community	Garen	Technology Probes	Proactive
6h	We could let Penan music start playing the moment that you start waving the traditional penan fan.	Community's design seeds	Discovered brief: How can we adapt that what the designer introduced in 3b to fit the Penan culture?	Initiated by Community	Garen	Technology Probes	Proactive
10a	I received the sketch book that G. had asked me to give to one of the artists. It was full of drawings of Oro	Community's design seeds (Oro drawings)	Discovered brief: We want to focus on Oro	Initiated by Community	Ezwong & Garen	Design Direction	Proactive

●
A

Table B | First Co-creative codes:

Nr.	Translation	Based on/ linked to	Brief specified / discovered	Initiated by	Specific	Design activity	Novel expression type
3b	I started making drawings about the designs and W. asked me why I would use bamboo and not wood instead (which would be better for the sounds).	My design seed (drawings)	Specified brief: How can I make a working instrument?	Initiated by Community	Wilson	Musical instrument	Contributory
6b	I showed my drawings and through that he started brainstorming and giving suggestions.	My design seed (drawings)	Specified brief: How can I make an bamboo instrument that fits the electronics I had created	Initiated by Community	Garen	Musical instrument	Contributory
6g	Then G. came with the suggestion to separate the three chimes to three separate instruments. That way- there will not be a problem with the bamboo pipes touching each other	Designer's design seed (drawings)	Specified brief: How can I make an bamboo instrument that fits the electronics I had created	Initiated by Community	Garen	Musical instrument	Contributory

B ▼

Nr.	Translation	Based on/ linked to	Brief specified / discovered	Initiated by	Specific	Design activity	Novel expression type
6j	However, I wanted to explain that they just needed to make the design such that the light could go through it. Sasha suggested that I could ask them to weave less tight. Garen suggested to show a basket made in that way.	Designer's design seed	Specified brief: Let lights shine through lampshades fitting to the material culture of the Penan	Together	Sasha & Garen	Lights	Responsive
6k	G. came up with the idea to place a light in between two baskets.	Community's design seed (baskets)	Specified brief: Let lights shine through lampshades fitting to the material culture of the Penan	Initiated by Community	Garen	Lights	Contributory
6m	We also talked about the closing for the design. G. came up with the importance of it and suggested to make a ring at the foundation of the basket. This ring would then serve as a lock- since you would be able to knot rattan through it in such a way that the light would remain in the basket.	Community's design seed (rattan)	Discovered brief: We have to find a way to close the design so that the light will stay in the basket.	Initiated by community	Garen	Lights	Proactive

►
B

Nr.	Translation	Based on/ linked to	Brief specified / discovered	Initiated by	Specific	Design activity	Novel expression type
11b	It was her own interpretation – which was much better than my own and which showed that she understood the idea- but also the task that if she wanted to do it differently- more suitable to the culture- she could change the design as long as the light could come through it nicely.	Community's material culture through Designer's material culture (drawings)	Specified brief: Let lights shine through lampshades fitting to the material culture of the Penan	Together	Conny	Lights	Responsive

●
B

Table C | Second Co-creative codes:

Nr.	Translated code	Based on / linked to	Brief specified / discovered	Initiated by	Specific contributor	Design activities	Novel expressions type
5b	C. made something new- using the guidelines that I introduced and traditional Penan methods	Community's design seeds (explorative prototypes)	Specified brief: Let lights shine through lampshades fitting to the material culture of the Penan	Initiated through an interaction between local designers and me	Connie	Lights	Responsive
5c	I made drawings to give suggestions of possible designs- however- the choice for the final design is based on C's own interpretation of the guidelines	Community's design seeds (explorative prototypes) Ownership	Discovered brief: How can I made it fit to the material culture of the Penan	Initiated through an interaction between local designers and me	Connie	Lights	Expected
5d	G. gave suggestions on how we could close the baskets	The final design (mixing community's and designer's design seeds)	Discovered brief: how can we let the lightshades hang straight	Initiated by Community	Garen	Lights	Proactive



Nr.	Translated code	Based on / linked to	Brief specified / discovered	Initiated by	Specific contributor	Design activities	Novel expressions type
5e	C. had made direct copies of my drawings – she had created exactly what I had drawn	Community's design seeds (explorative prototypes) through Designer's design seeds (drawings)	Specified brief: Let lights shine through lampshades fitting to the material culture of the Penan	Initiated through an interaction between local designers and me	Connie	Lights	Responsive
5f	She had done experiments with colours – which was her own initiative – resulting in designs with orange patterns	Community's design seeds (baskets and colorings)	Discovered brief: How can I made it fit to the material culture of the Penan	Initiated through an interaction between local designers and me	Connie	Lights	Expected
5h	He said: "It would be better to use the Pagang- but this might not what you had in mind..."	Community's design seeds (traditional instrument)	Discovered brief: How can we make the instrument relevant to us?	Initiated by Community	Garen	Musical Instrument	Proactive
5j	With the Pagang in our hand we started brainstorming – we created drawings explaining our ideas	Community's design seeds (traditional instrument) for implementation in Designer's design seeds (tech probe + drawings)	Specified brief: How can we ensure the pagang can be used for the design?	Initiated by designer	Designer	Musical Instrument	Responsive



Nr.	Translated code	Based on / linked to	Brief specified / discovered	Initiated by	Specific contributor	Design activities	Novel expressions type
5l	We said that the pagang needed to rest on a platform	Designer's design seeds (tech probe + drawings) + Community's design seeds	Specified brief: How can we ensure the pagang can be used for the design?	Initiated by designer		Musical Instrument	Responsive
5m	Then Garen said we should make the platform of different types of wood. Each of these types should be chosen according to its relevance to the Penan culture.	Community's design seeds (different types of wood)	Discovered brief: How can we make the instrument relevant to us?	Initiated by Community	Garen	Musical Instrument	Proactive
5o	Even though he [Garen] didn't push his opinion, you could notice that he really wanted the design to contain a reference to a rhino. He suggested that there could be a rhino engraved in the platform.	Community's design seeds (rhino & engravings)	Discovered brief: How can we make the instrument relevant to us?	Initiated by Community	Garen	Musical Instrument	Proactive
5p	G. came up with the idea to make the rhino of different types of wood.	Community's design seeds (wood & rhino)	Discovered brief: How can we make the instrument relevant to us?	Initiated by Community	Garen	Musical Instrument	Proactive

Nr.	Translated code	Based on / linked to	Brief specified / discovered	Initiated by	Specific contributor	Design activities	Novel expressions type
5q	Then G. said: "Maybe we can let the pagang be carried by a rhino?"	Community's design seeds (pagang & rhino)	Discovered brief: How can we make the instrument relevant to us?	Initiated by Community	Garen	Musical Instrument	Proactive
6a	B: "What if we let the entire pagang rest on the spine of the wooden rhino?"	Community's design seeds (pagang & rhino)	Specified brief: How can we use types of wood and symbolism of the rhino?	Initiated by Community	Bili	Musical Instrument	Contributory
6j	G. suddenly suggested we could use the pagang in a cultural show for tourists (if we could amplify the pagang)	Community's design seeds (pagang) made possible through Designer's design seeds (amplifier)	Discovered brief: He searched for opportunities to enrich the handicrafts and tourism.	Initiated by Community	Garen	Musical Instrument	Proactive
6l	D. had written about the bracelets. Afterwards it turned out that she had written a poem.	Community's design seeds (bracelets) probed through identity story – exercise introduced by designer	Discovered brief: Find a way that in which I can tell a story about the bracelets	Initiated through an interaction between local designers and me	Diana	Stories	Expected

Nr.	Translated code	Based on / linked to	Brief specified / discovered	Initiated by	Specific contributor	Design activities	Novel expressions type
6m	B. and Gaj. Wrote a story about me and the pagang	Community's design seeds (pagang) in relation to designer's interest probed through identity story – exercise introduced by designer	Discovered brief: Create a story relevant in this context	Initiated through an interaction between local designers and me	Bili & Gajut	Stories	Expected
6n	E. started writing a story about the baskets. However- according to G. these baskets were not truly Penan	Community's culture (baskets) probed through identity story – exercise introduced by designer - No ownership	Specified brief: Write a story for the internet platform about Long Lamai	Initiated through an interaction between local designers and me	Erra	Stories	Responsive
6p	Cat. Wrote a story about a certain place in the rainforest – identity and location are connected. P. also wrote a story about a certain place	Community's culture (location) probed through identity story – exercise introduced by designer	Specified brief: Write a story for the internet platform about Long Lamai	Initiated through an interaction between local designers and me	Katyyia & Pip	Stories	Responsive

Nr.	Translated code	Based on / linked to	Brief specified / discovered	Initiated by	Specific contributor	Design activities	Novel expressions type
6q	An other girl wrote a story about blowpipes	Community's culture (baskets) probed through identity story – exercise introduced by designer	Specified brief: Write a story for the internet platform about Long Lamai	Initiated through an interaction between local designers and me	Selena	Stories	Responsive

Table D | Third Co-creative codes:

Nr.	Translated code	Based on / linked to	Brief specified / discovered	Initiated by	Specific contributor	Design activity	Novel expression type
17c	On our way to J(W)- K. said that she already had an idea for the treasure box: the bracelets – at this moment however she did not have one that was beautiful enough to place it inside. Therefore she wanted to ask her uncle to make one for her.	Community's design seeds (bracelets) made possible through Designer's design seeds (treasure boxes)	Specified brief: Which objects make you proud to be Penan?	Initiated by Community.	Kathiyia	Design Probes	Expected
18c	After this- K. asked C. whether she could make a mini pagang for the treasure box.	Community's design seeds (resin-traditional cutlery- a long boat- sapé- a hut- bracelets) made possible through Designer's design seeds (treasure boxes)	Specified brief: Which objects make you proud to be Penan?	Initiated by Community.	Kathiyia + Conny	Design Probes	Expected
18d	He changed the plan by suggesting to use a bamboo knot	Designer's design seeds (drawings)	Specified brief: How can we connect the electronics?	Together	Garen	Musical Instrument	Contributory

Nr.	Translated code	Based on / linked to	Brief specified / discovered	Initiated by	Specific contributor	Design activity	Novel expression type
18g	They preferred to come up with objects to place in the treasure boxes as a group. By means of a brainstorm they came up with the following objects: C- resin (traditionally used to make fire) Z(w) – Cutlery for Nao (or a boat) J – a house E – sapé Br – blowpipe Cat – bracelets	Community's design seeds (resin-traditional cutlery-a long boat- sapé- a hut- bracelets) made possible through Designer's design seeds (treasure boxes)	Specified brief: Which objects make you proud to be Penan?	Together	Chris Cantona – Josephien Erra Breakley Kathiyia	Design Probes	Expected
22b	W. came to have a look and he asked me to explain what it was that I was trying to do	Designer's design seeds (drawings)	Specified brief: How can we connect the electronics?	Initiated by community	Wilson	Musical Instrument	Contributory
22c	By means of the drawings we had discussions about possible solutions. Step by step we got a clearer idea of what the other meant. If I had to explain something- I drew it out. W. did the same. W. also used the solenoids to check whether we had the same idea.	Designer's design seeds (drawings)	Specified brief: How can we connect the electronics?	Initiated by community	Wilson	Musical Instrument	Contributory
23b	It often seems like the idea gets stuck when I propose a material that they don't have. However- then W. responds to this by coming up with an ingenious other idea using local materials	Community's design seeds through Designer's design seeds (the materials I propose)	Specified brief: How can we make this...	Together	Wilson	Musical Instrument	Responsive

Nr.	Translated code	Based on / linked to	Brief specified / discovered	Initiated by	Specific contributor	Design activity	Novel expression type
24b	He came back with a stick that he had made. It was very nice. I told him that I agreed that it would work.	Community's design seeds through Responsive	Specified brief: How can we make this...	Initiated by Community	Wilson	Musical Instrument	Responsive
24c	After this- he asked how we should connect the solenoids. I said that I didn't know yet. J(w) became involved- she suggested solution (e.g. to wrap something around the pipes in order to connect it)	Designer's design seeds (drawings + tech probe)	Specified brief: How can we connect the electronics?	Initiated by Community	Joy + Wilson	Musical Instrument	Contributory

D ▼

Nr.	Translated code	Based on / linked to	Brief specified / discovered	Initiated by	Specific contributor	Design activity	Novel expression type
25a	<p>After I had explained that we would make a banner to advertise LL- E- Cat- J- and B started immediately. C. needed to think about it. He was searching for inspiration (by walking around). They started asking questions like: "how big would you like it to be? – as big as you want- use the space" . Some interesting things happened: 1. They started copying the telecenter's wall drawing. E- B and K started drawing things that they had placed in their proud boxes before. E. – blowpipe- B – a bamboo pipe- Cat- a sape. Then Cat. Said that she was not a good drawer. J said that she wanted to make a longhouse – is that ok? J immediately took one of the baskets and started copying.</p>	<p>Community's design seeds through Designer's design seeds (Welcome to LL - banner)</p>	<p>Specified brief: Which aspects of LL would you use to advertise it to people from outside?</p>	<p>Together.</p>	<p>Erra- Breaklay- Kathyja- Josephine- Chris.</p>	<p>Design Probes</p>	<p>Responsive</p>
25b	<p>C. asked whether it was ok if he made a facebook sign- since that was an important part of LL according to him (he got inspiration from B. who was using facebook)</p>	<p>Community's design seeds through Designer's design seeds (Welcome to LL - banner)</p>	<p>Specified brief: Which aspects of LL would you use to advertise it to people from outside?</p>	<p>Together</p>	<p>Chris</p>	<p>Design Probes</p>	<p>Responsive</p>

Nr.	Translated code	Based on / linked to	Brief specified / discovered	Initiated by	Specific contributor	Design activity	Novel expression type
25c	<p>When D. came in- she said that she could not draw. I suggested she could use other ways to communicate her thoughts. She interpreted this as searching for quotes on the internet that were relevant to LL. She first found one that was about a person- which she then adapted to make it about a community: Dear Past- thank you for all the life lessons you have taught us. Dear Future- we are ready now!!</p>	<p>Community's design seeds through Designer's design seeds (Welcome to LL – banner)</p>	<p>Discovered brief: How can I communicate the aspects LL I would advertise to people from outside</p>	<p>Together</p>	<p>Diana</p>	<p>Design Probes</p>	<p>Expected</p>

D ▼

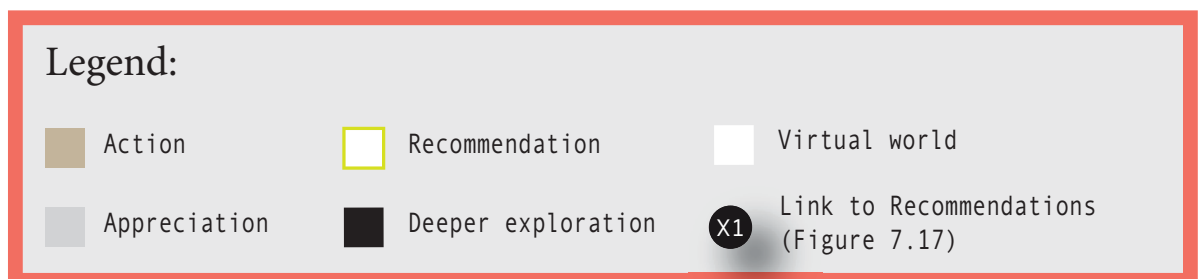
Nr.	Translated code	Based on / linked to	Brief I specified / discovered	Initiated by	Specific Contributor	Design activity	Novel Expression type
6h	<p>She clearly wanted to show her creative side. The others had used photos about how they worked on the farms and how they collected vegetables. I was happy to see someone giving their own input. She thoroughly considered the things and the way she wanted to show these things. In her case it was about her personal identity rather than about a generic identity of LL (which might have been the case in the case of the others). Maybe the exercise made them feel uncomfortable?</p>	<p>Community member's design seeds through Designer's design seeds (a day in my life - probe)</p>	<p>Discovered brief: How can I present what is important to me?</p>	<p>Together</p>	<p>Erra</p>	<p>Design Probes</p>	<p>Expected</p>
6k	<p>It took a while before they started. D. started quickly on the mirror. She first asked for some inspiration. I helped her by saying: How would you reach LL 10 years from now. She answered: BOAT! And what would the houses look like?</p>	<p>Designer's design seeds (through the looking glass and what makes.. so different- so appealing.. probe)</p>	<p>Specified briefs: Through the looking -glass- probe: What is your vision about LL 10 years from now? What makes....so different- so appealing - probe: Where do you desire to go?</p>	<p>Together</p>	<p>Diana</p>	<p>Design Probes</p>	<p>Responsive</p>

Nr.	Translated code	Based on / linked to	Brief I specified / discovered	Initiated by	Specific Contributor	Design activity	Novel Expression type
6m	<p>Only E. drew the mirror- the others used words to describe their visions. For the other exercise everyone used drawings.</p>	<p>Designer's design seeds (through the looking glass and what makes.. so different- so appealing.. probe)</p>	<p>Discovered briefs: Through the looking glass-probe: What is your vision about LL 10 years from now? – How can I communicate this?What makes...so different- so appealing – probe: Where do you desire to go? – How can I communicate this?</p>	<p>Together</p>	<p>Erra</p>	<p>Design Probes</p>	<p>Expected</p>

Table E | Exhibition stage codes:

Nr.	Translated code	Based on / linked to	Brief specified / discovered	Initiated by	Specific Contributor	Design activity	Novel Expression type
14a	LL wilde tags gaan maken met een eigen naam en een logo en een verhaal over hoe gemaakt is aan de tag.	LL wants to make tags with the names- logo- and crafting process story of the designs	Tags created by the community	Discovered brief: How can we take ownership of the designs when they are exhibited	Initiated by community	Garen	Proactive

Appendix Five | Reflection-in-Action Schematics



Cycle A – About enquiries vs. expressions

Cycle B – Respectful vs. not respectful

Cycle C – Actions vs. reflections

Cycle D – What caused a respectful design space to ?

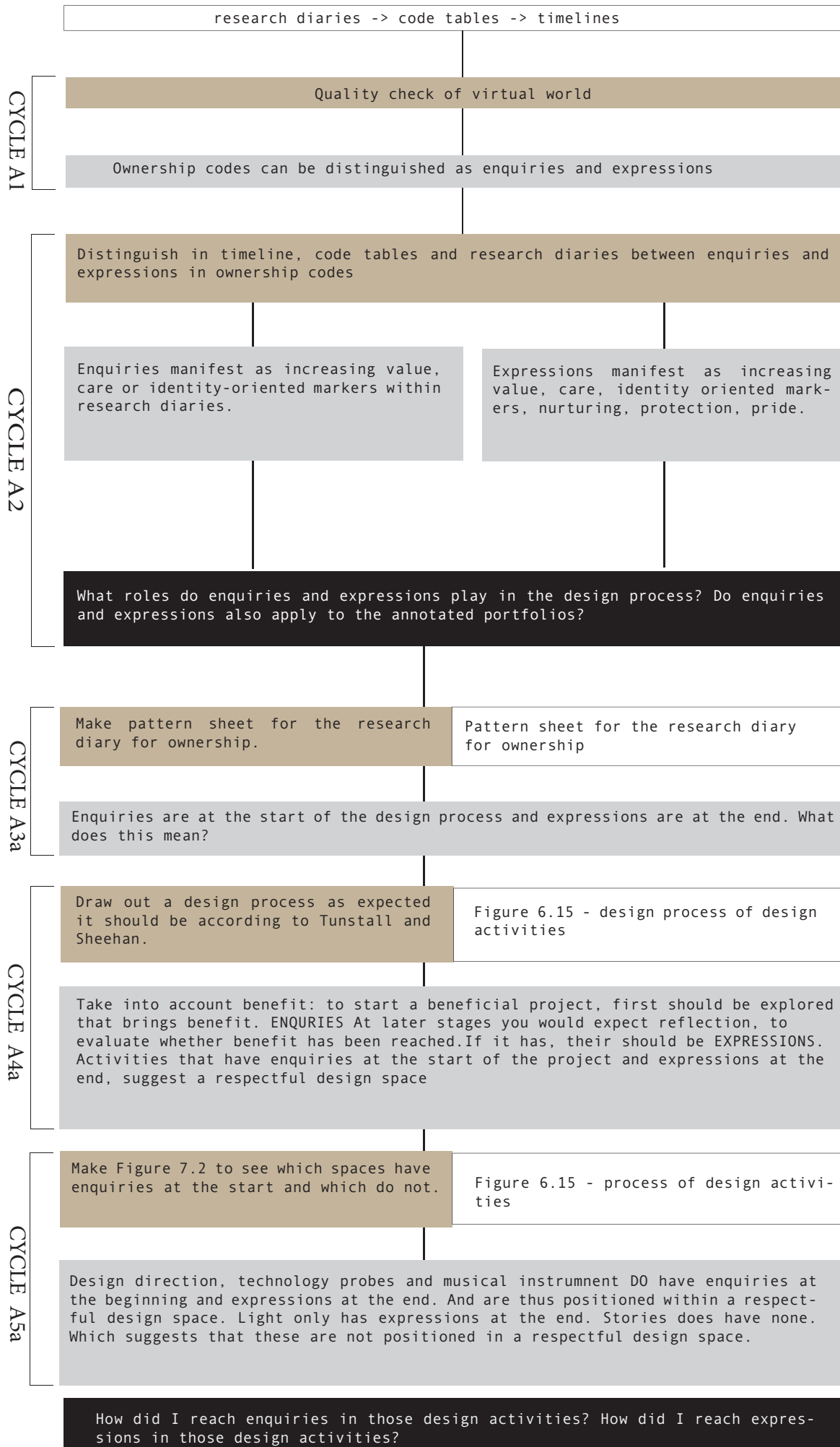
Cycle E – Novel expressions (in research diary)

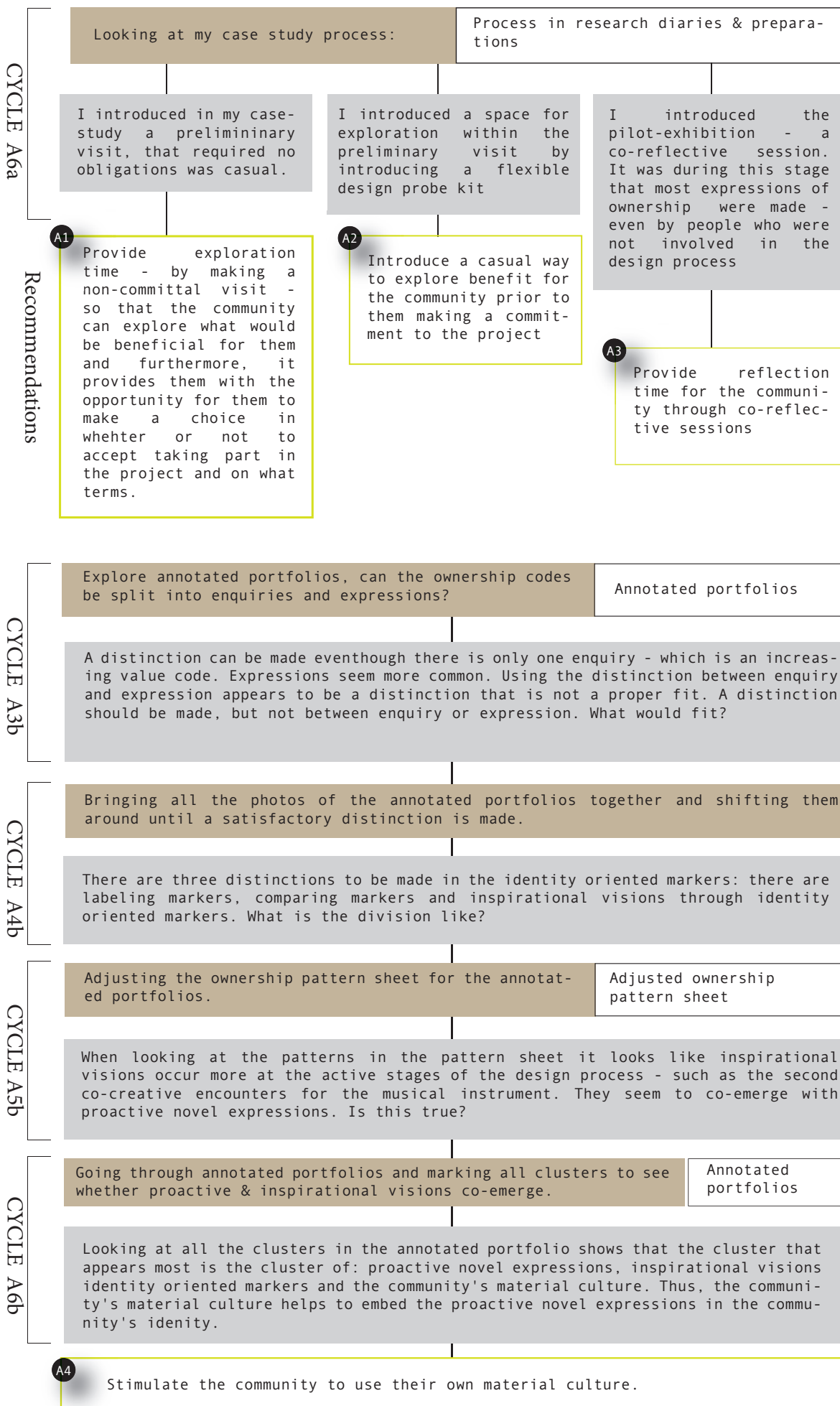
Cycle F – Novel expressions (in annotated portfolio)

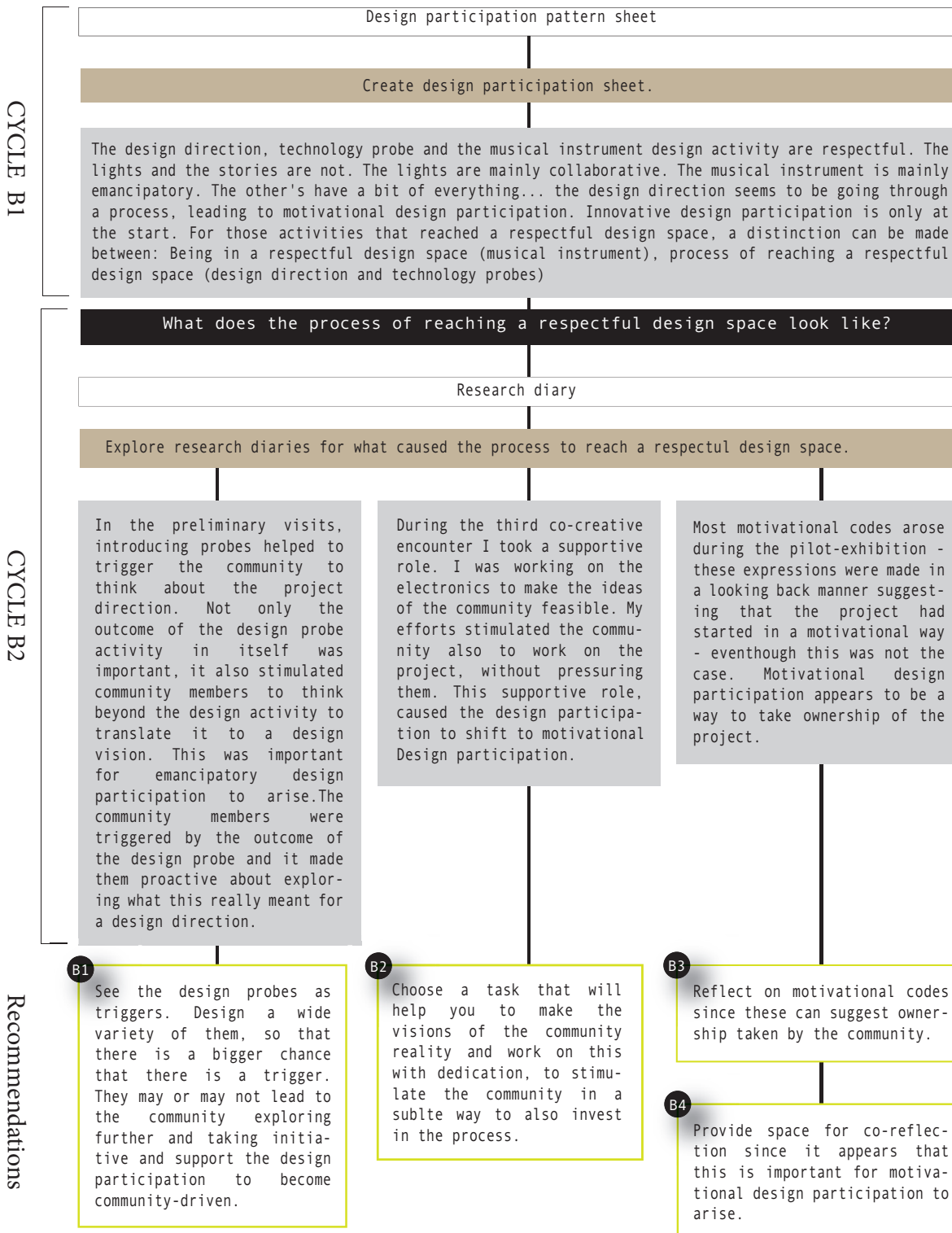
Cycle G – No ownership

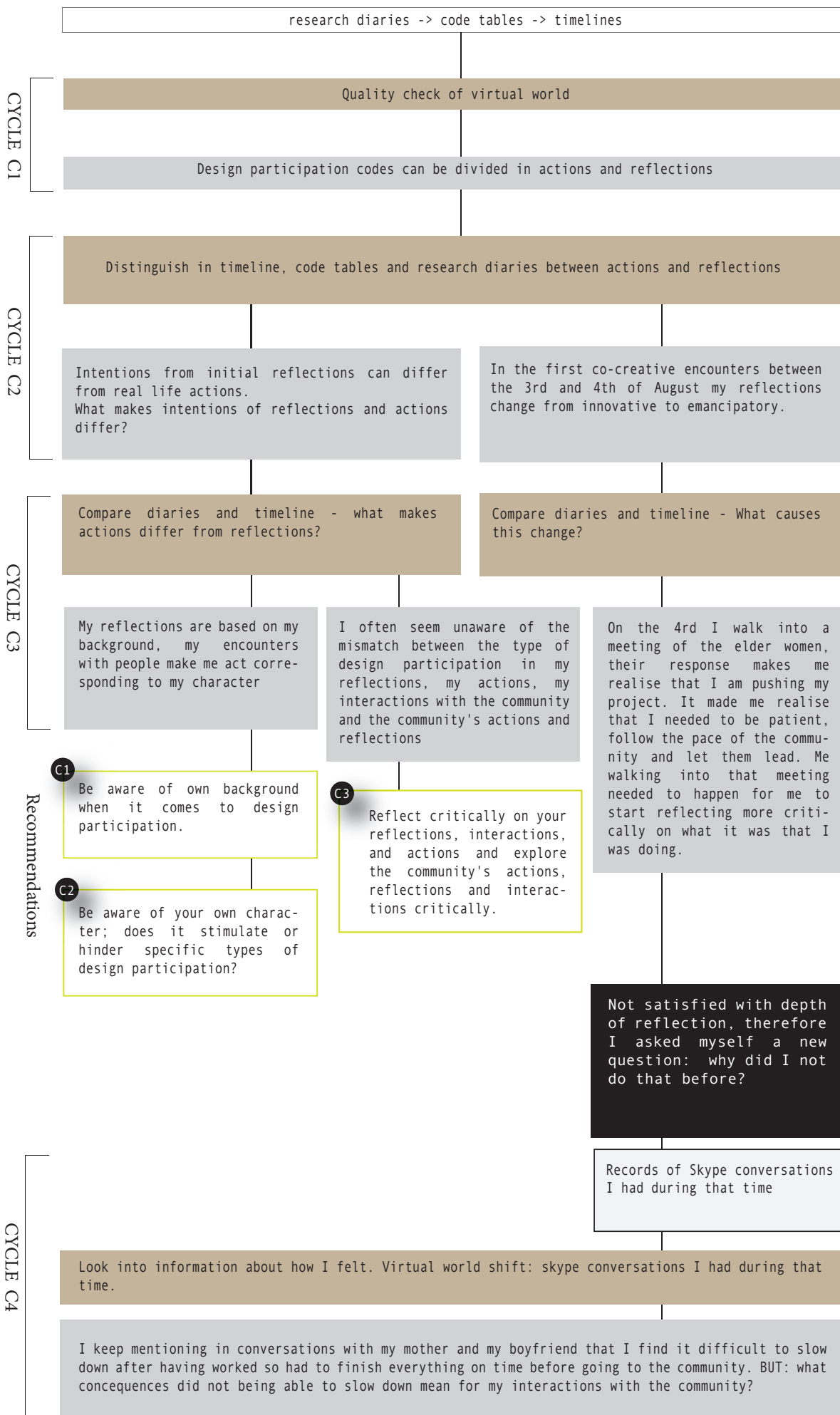
Cycle H – Community structure

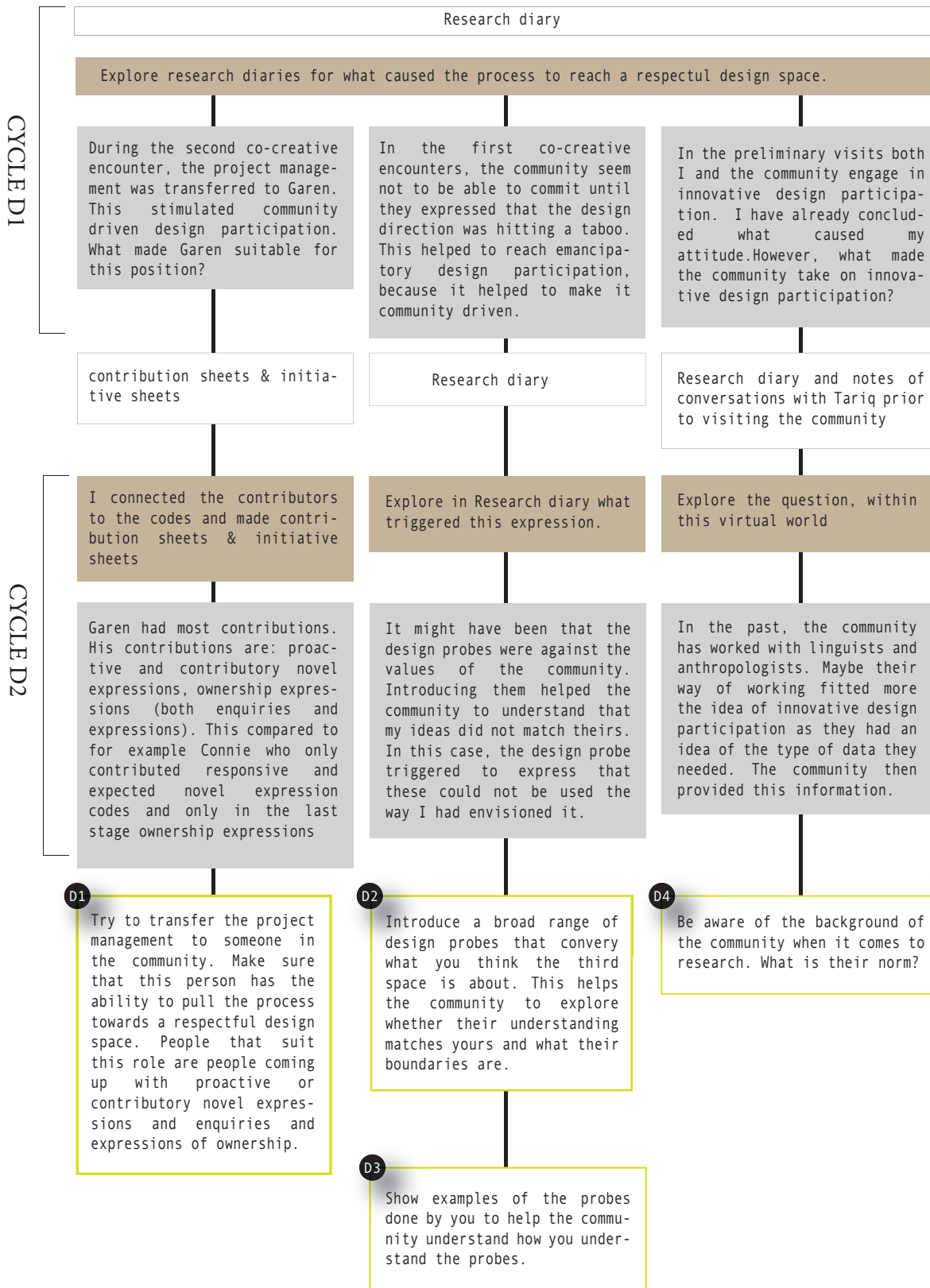
The cycles can be found on the next pages.

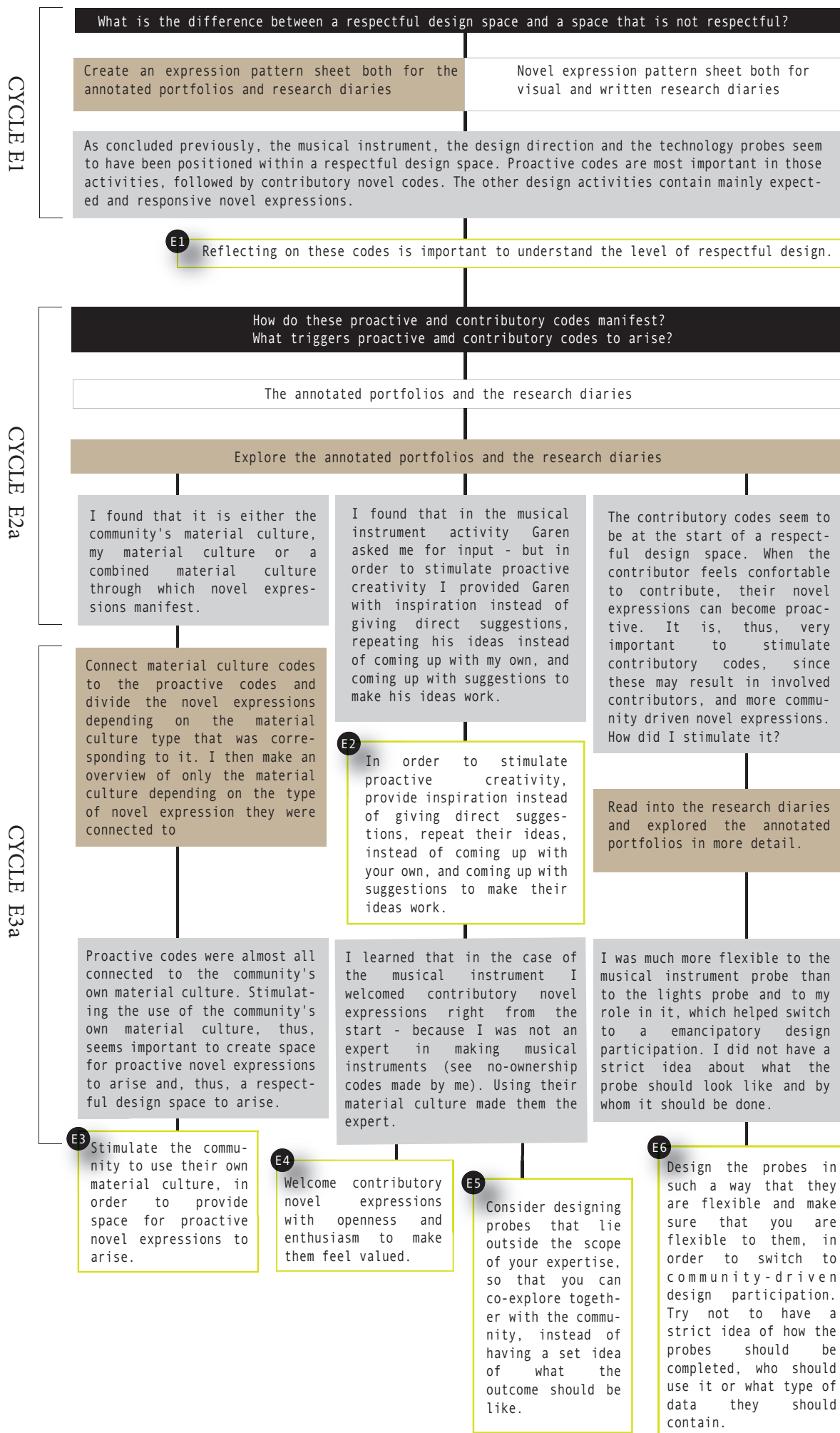


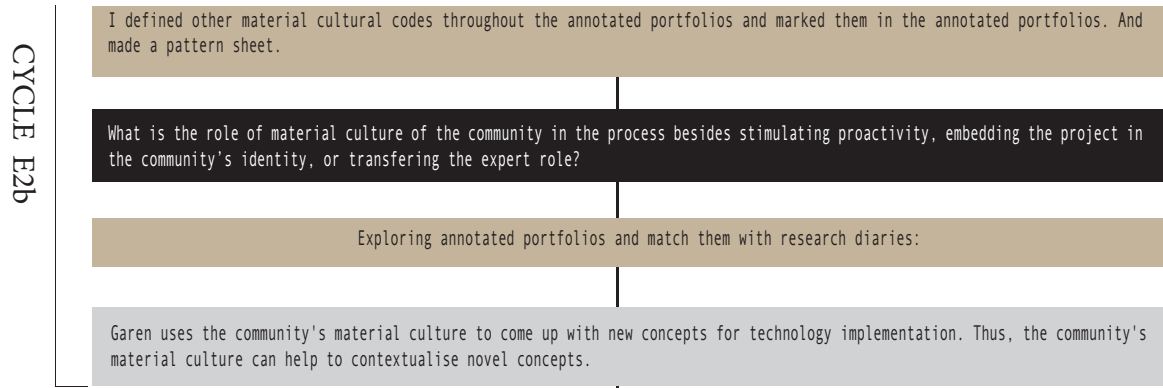




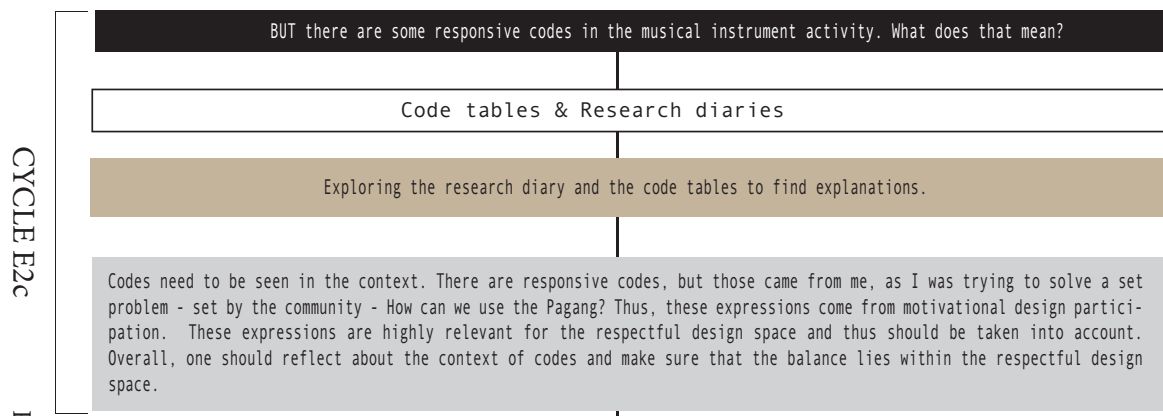




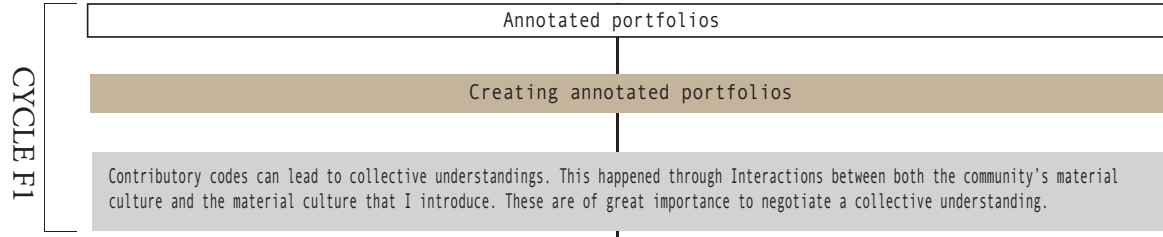




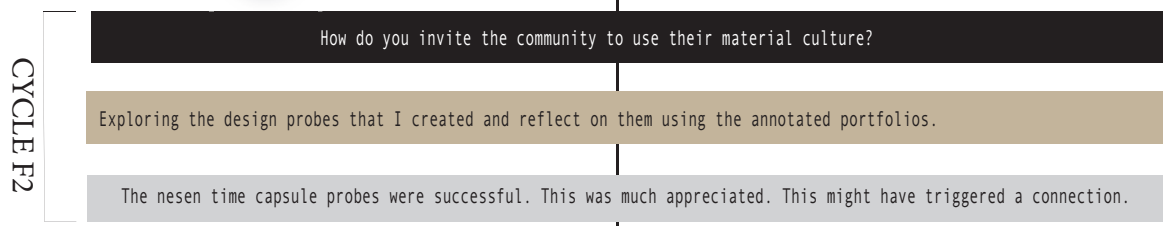
Recommendations **E7** Stimulate the use of the community's material culture as it might help to contextualise novel concepts.



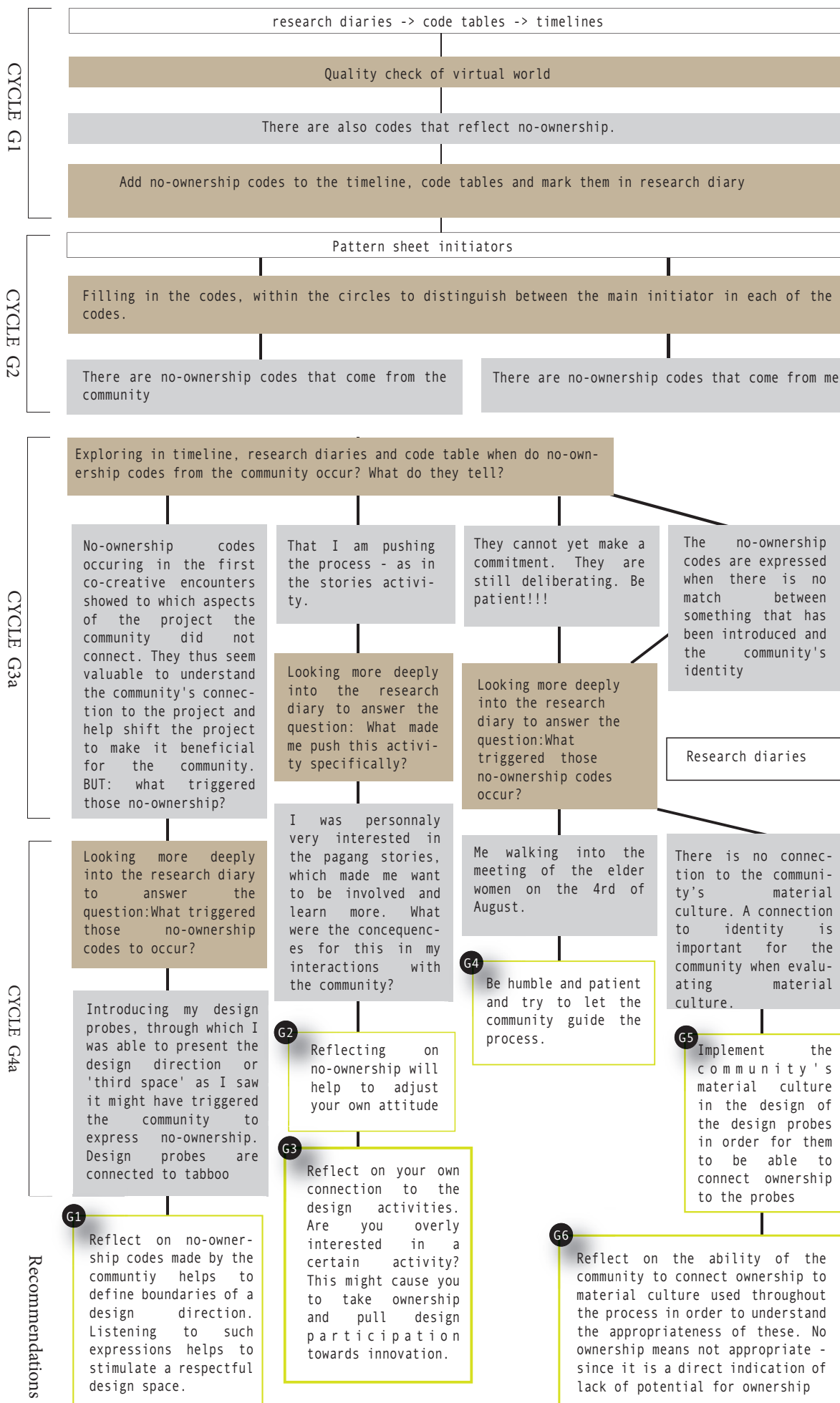
Recommendations **E8** Be open to lens concepts outside the respectful design space, they can provide information that indicates motivational design participation, valuable to shift your attitude. Codes outside the respectful design space can be valuable but make sure that they work to stimulate instead of hinder respectful design spaces. Critical reflection is thus needed.

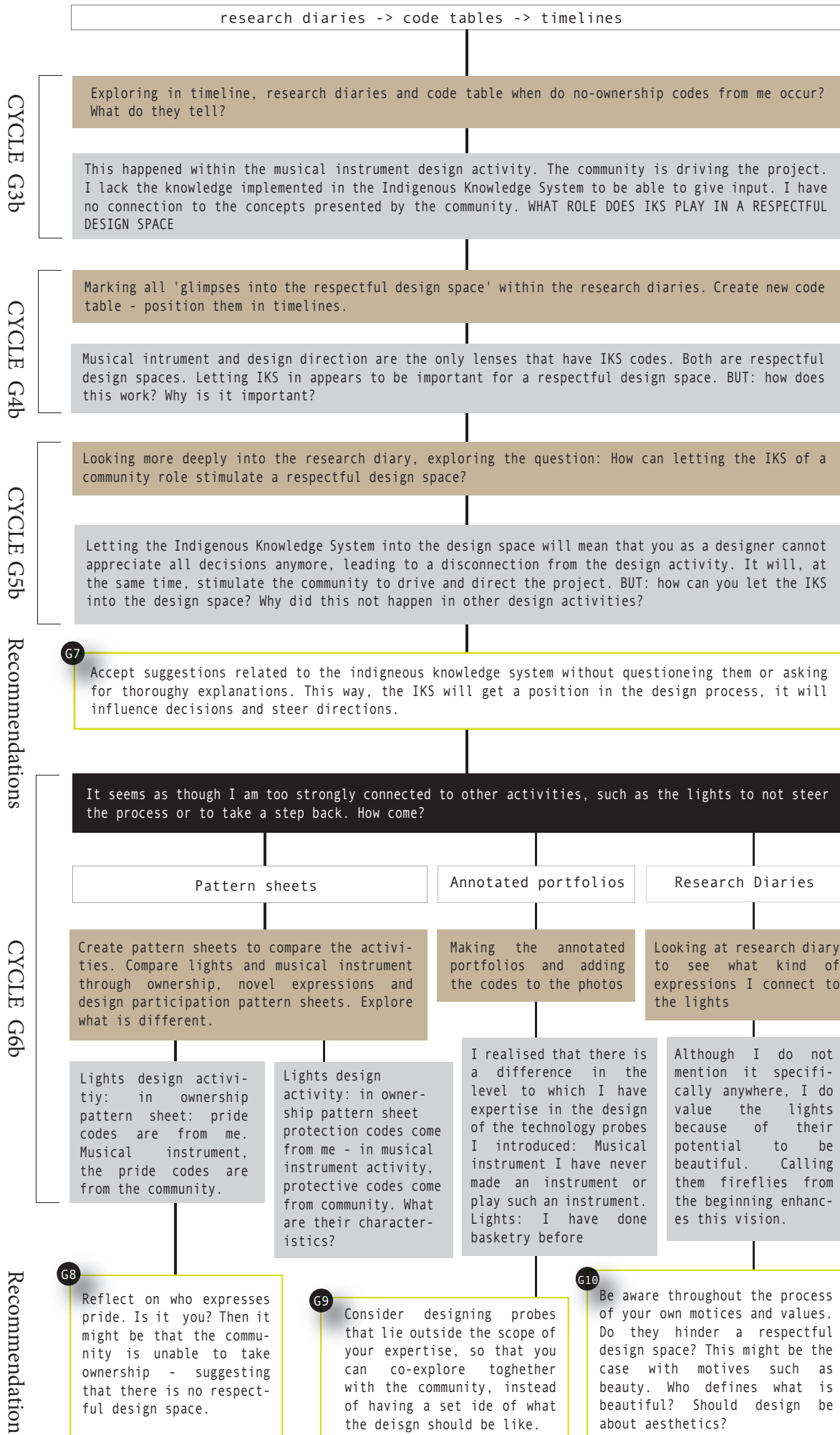


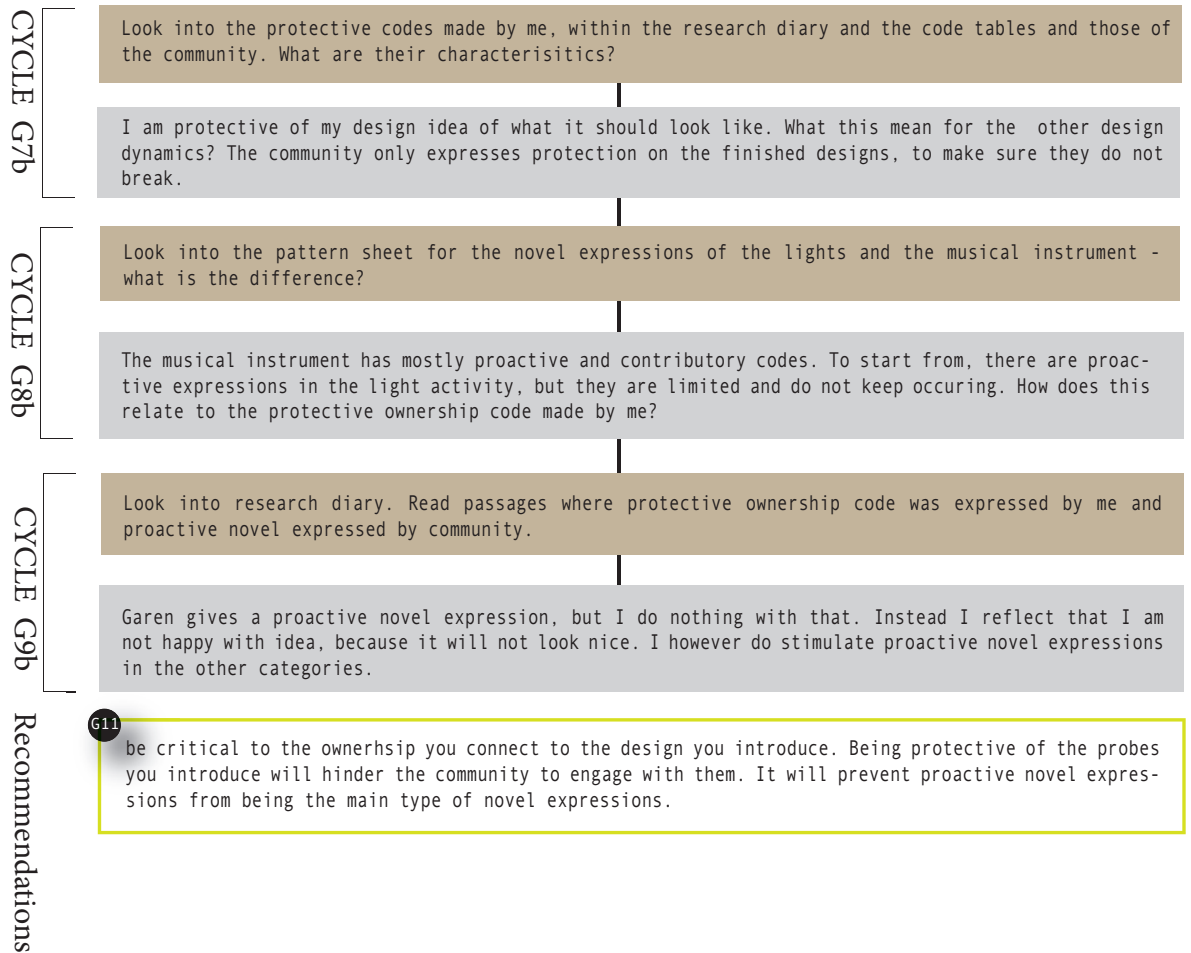
Recommendations **F1** Use your material culture to show your understanding. Invite them to use their material culture to share their understandings.

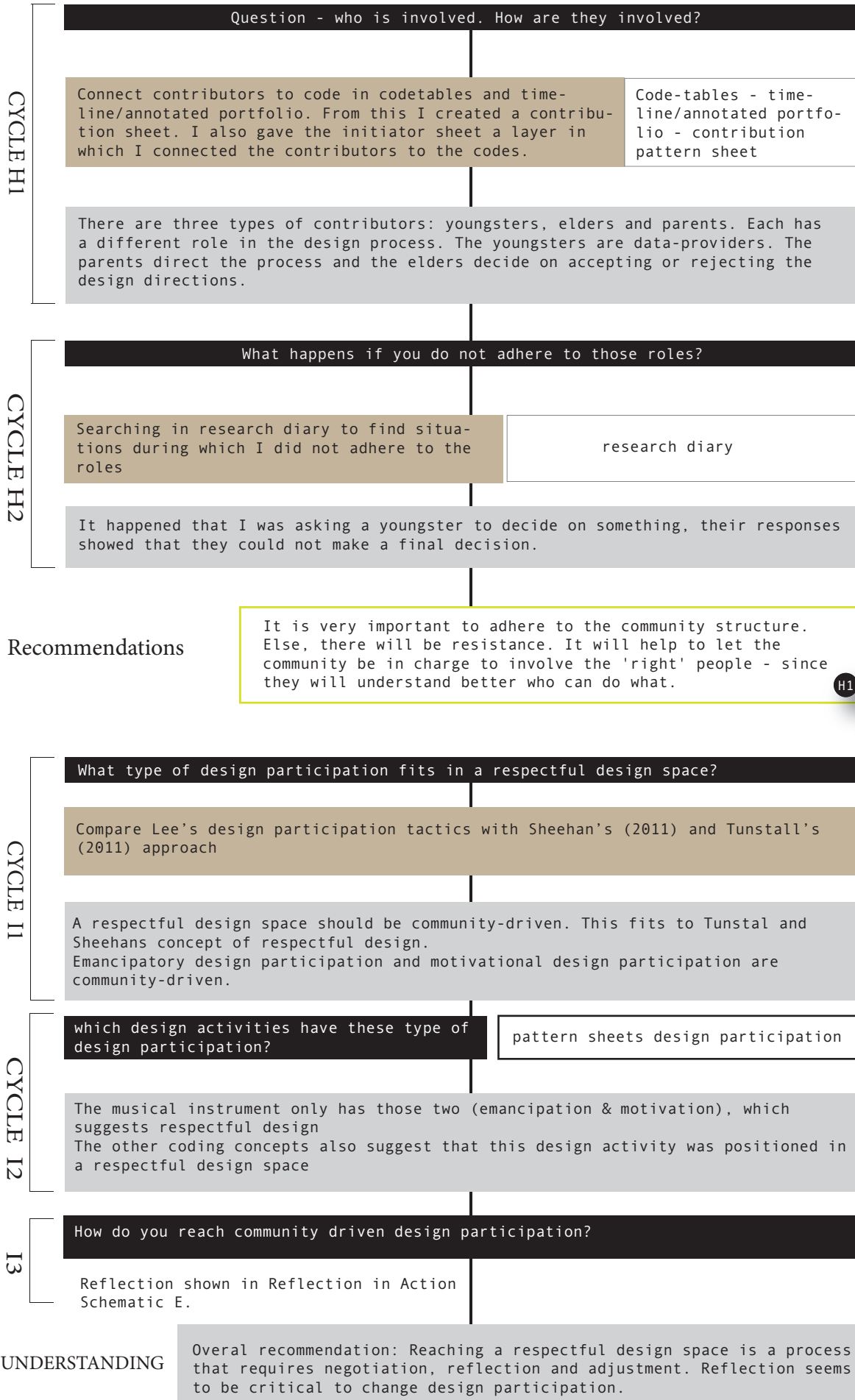


Recommendations **F2** Implement their material culture in the design of the probes to show that you are open for them to use their own material culture as input.









Northumbria University Ethics Approval

Ethics procedures were at the core of this research project. Indigenous communities are classified, in Northumbria University's Ethics Guidelines, as "vulnerable" participants. This means that the procedure I went through to obtain ethical approval from the ethics committee was stricter than for projects with "less vulnerable" participants. However, I found that in the NU ethics system, there is not much acknowledgement for working with indigenous communities. What the NU ethics system does not facilitate is:

- Oral consent. When going through the consent with the communities it was not always understood why a written consent had to be signed, when there was already orally agreed to participating.
- Community-consent (it is always individual consent).
- Ways to deal with cultural sensitive topics.
- Guidance on dealing with wanting to be acknowledged – The university's guidelines suggest anonymity to guarantee meeting the data protection act. Although this is relevant when collecting and storing data, it might not be relevant for the presentation of data as participants might want to be acknowledged for their work (as was the case in this project).

Cultural Protocol

Conform the rules set by UNIMAS in correspondence to requests from the indigenous communities, both community and researcher sign a cultural protocol when deciding they want to co-operate. This cultural protocol urges the researcher to respect the cultural traditions when going through ethical consent procedures.

Adjustment of Northumbria Ethics Approval Form

My understandings of the preliminary visit led to deciding to adjust the NU ethics form to fit better to the communities' decision process. For example, I decided in the case of Long Lamai to only let the Chief sign the agreement, as a representative of the wider community. This fits better to the community structure, in which there is collectively decided whether or not to consent to a project.

I used the cultural protocol as an addition to the NU ethics form to fill in the gap of acknowledging and dealing with cultural sensitive topics within the NU ethics form.

I held co-reflection sessions at the end of my stays. During these sessions it was decided as a community whether or not I could take the collected information with me when I left.

Free, Prior and Informed Consent Certificate and Research Agreement.

During the co-creative encounters, the community had introduced, with the help of Tariq Zaman an-

other addition to the cultural protocol: a Free, Prior and Informed Consent Certificate and Research Agreement. I was asked to formulate an initial version of this agreement prior to my visits. During my stays, we based our discussions about the consent procedure on this form. From this, we shaped an oral agreement that was consented by all the parties (Long Lamai, ISITI, and I).

As an extra procedure, representatives went through the final thesis to see whether they agreed with what I had written.

The learning points that I got from this ethics procedure are:

- The consent procedure should be a flexible process of co-shaping the agreement. This means that it should not only lie with the researcher, but that the community (and other parties) create an agreement that each of the parties feels comfortable with. This is important because each party brings different objectives and aims to the project.
- When working with communities it is important to create consent procedures that are broader than just the individual consent. There should be space for communal agreement as well.
- Although it seems to go against the data protection act, it might be important for the actors to be acknowledged for their effort within the presentation of the project.

Attachments:

1. DSEC
2. Cultural Protocol
3. Free, Prior and Informed Consent Certificate and Research Agreement (initial form created by me - on which we based our oral discussions on (leading to an oral agreement)).

- 1. Design School Ethical Approval Form -

Ethical Approval Form v6

School of Design, Northumbria University

<p>Applicant: Elizabeth Simone Reitsma</p> <p>Contact details: elizabeth.reitsma@northumbria.ac.uk</p> <p>Programme Leader/Supervisor details: Paul Rodgers, Jayne Wallace and Trevor Duncan</p> <p>Project Title: Exploring the role of design interventions to facilitate cross-generational conversations about conflicting viewpoints on indigenous identity.</p> <p>Date application made: 29-05-'13</p>
--

Through completing this form, you *either* indicate that all identified ethical issues can be managed without guidance from DSEC, *or* that DSEC advice is required. If you are unclear about any ethical issue that could arise from your proposed project, you must seek guidance from your Programme Leader (or nominee)/PGR Supervisor/Research Grouping Lead/ DSEC member. You must *not proceed* with any research until required approval has been obtained from your Programme Leader (UGs/PGTs)/Principal Supervisor (PGRs)/DSEC (staff/other research requiring DSEC advice).

You must complete both Section A and B, and with this form you must submit all required supporting materials, for example, Informed Consent form(s). For each question in Section A please tick the appropriate box.

SECTION A.

You *will* complete and submit the School's Standard Informed Consent form, which will make clear to participants their Right to Withdraw, and Confidentiality of information.

		Yes	No	N/A
1	RECRUITING. When recruiting participants known to you could there be concerns over your power relationship that may influence their responses?		x	
2	DECEPTION. Will you deliberately deceive participants, and hide this deception from them?		x	
3	DISTRESS OR DISCOMFORT. Is there any realistic/conceivable risk of any participants experiencing either physical or psychological distress or discomfort?		x	
4	ANIMALS. Does your research involve animals?		x	

Only in exceptional circumstances will you be permitted to use deception in your research. If you have answered **Yes** to Questions 1-4 you must describe how you will address associated ethical issues in SECTION B.

		Yes	No	N/A
5	DEBRIEFING. Will you give participants the opportunity to be debriefed and/or invited to any public presentation of the study and its outcomes/results?	x		
6	INTERNATIONAL. Where data collection or presentation of outcomes occurs outside of the UK, are relevant legal and ethical practices of these other countries understood?	x		

- 1. Design School Ethical Approval Form -

7	<p>VULNERABILITY. Do any of your participants fall into any of the following “special” aka “vulnerable” groups?</p> <ul style="list-style-type: none"> • Children (under the age of 18) • People who are taking part in your research because they are patients or seeking specific medical treatment • People who are frail or with communication or learning difficulties (includes “the elderly” and people from overseas for whom English is not their primary language) • People part in your research because they engage in illegal activities (e.g. under aged drinking or drug taking) • People undertaking activities that might be seen as provocative or morally unacceptable (e.g. promoting disruptive or anarchic activities) • People over whom you are in a position of superior power or for whom you have responsibility • People whom others could regard as vulnerable or who might feel that they are unable to, freely, give consent 	x		
8	<p>LEGALITY. Might others believe there to be any legal, contentious or sensitive issues involved in this research method or in presentation of the research outcomes?</p>		x	
9	<p>FUNDING. Does the project involve external funders (financial or “in-kind”) or collaboration with others outside the School of Design (e.g. elsewhere in the University or beyond, and, particularly including the NHS), who may wish to direct your research?</p>		x	

If you have answered **Yes** to any of Questions 7-9 you will must describe how you will address associated ethical issues in SECTION B.

*If you have answered **Yes** to Questions 7 or 8, DSEC approval may take longer, especially if proof of UK CRB clearance or similar is required.*

SECTION B.

List all attachments here, (e.g. questionnaire designs, interview schedules, observation plans)

Attachments:

- *Consent form for the initial visit;*
- *Consent form for the case study;*
- *Contract for Translator;*
- *Risk analysis;*
- *Cultural Protocol.*

The project will take place in Malaysia, Sarawak.

The communities

The communities to which I have access are communities that are already taking part in research performed by the ISITI-CoERI (The Institute of Social Informatics and Technological Innovations-Centre of Excellence for Rural Informatics) institute of the UNIMAS (Universiti Malaysia). This institute has build up relationships with these communities already for several years. This has made the communities aware of their right when participating in research. Also did the communities bring their own translators, guides

- 1. Design School Ethical Approval Form -

and representatives forward, who they trust to work with. I will perform the ethics according to the UK data protection act, which will result in more protection for the participants that will take part in my study than offered by the ethics procedure of UNIMAS. However, the process of retrieving consent will be conform cultural traditions in each of the communities.

The initial visits and the correspondence phase have already taken place. This ethics approval focuses on the ethical aspects of the case-study. Conform the cultural traditions, some aspects of consenting to participate have changed throughout the initial visit and will be dealt with in the same way during the case study:

- Conform the rules set by UNIMAS in correspondence to request from the indigenous communities they are working with, both community and researcher sign a cultural protocol (see attachment) when deciding they want to co-operate. This cultural protocol urges the researcher to respect the cultural traditions when going through ethical procedures.
- As a result the consent procedure had to change.

Community 1: In order to consent to start research in community 1, the cultural traditions state that prior to the research, a community meeting has to be held during which the entire community has to vote (by raising their hand) in order to consent to the research. During the meeting the researcher has to introduce her intentions. The community is invited to ask questions. After this, there is voted. This community is an egalitarian community: everyone has equal power. In the case of one of the community members giving a negative vote, the research cannot be started. Since everyone voted positively, the community approved the research. After this, the chief of the community signed the consent form (see attachment). However, they thought this was unnecessary, since they had already consented formally.

Community 2: In order to consent to start research in community 2, the cultural traditions state that the two research managers, appointed by the community, sign the cultural protocol with the researcher if they see the research appropriate and agree with how it is aims to be performed. They can only do this after both consulting possible participants (only those people will take part in the research if consented) and the chief of the community. After consulting both parties they can either sign or reject to consent. Since both parties and the research managers were positive about the research, both cultural protocol and consent form were signed. All of the possible participants and the chief got a copy from the research manager of the consent form. The people that were contacted outside the consulted community filled in an individual consent form.

Community 3: Only one person participated. She signed an individual consent form.

Community 1 saw benefits in participating in the continuation of the project. The research is directed to issues that were explored during the initial visit together with the community and that were stated by the community to be relevant to research. It is for this reason that the case study focuses solely on community 1.

The project has three different phases:

Phase1: Initial visit (with all communities)

The first phase is a visit to Malaysia (in August 2012) aiming to meet participants interested to participate in the project. This will be very informal. The introduction will take place

- 1. Design School Ethical Approval Form -

through people from the Institute of Social Informatics and Technological Innovations-Centre of Excellence for Rural Informatics (ISITI-CoERI) from the university of Malaysia (UNIMAS) who have had previous contact with possible participants. This introduction will start with a short introduction of myself, during which I will explain that I am doing research about cultural knowledge preservation. After that I will introduce the things that I am planning to do and introduce the community to the consent form of this part of the study. We will go through the consent form and after this, if they are interested to join, they will be asked to sign the consent form. The idea is to participate in the daily life of the people of three different communities and to introduce design probes that will, in a casual way introduce the researcher to the community and vice versa. I will bring a range of different design probes and different activities, but during the visit I will decide on the ones I will use and the ones I will skip. The idea is to start building a relationship through these activities. Every design probe activity is introduced to the community and people can decide for themselves whether they are interested to participate (the initial visit plan contains more detail on the different activities and design probes). The day before I leave, I will organise a group discussion about the idea of the project.

Phase 2: The correspondence phase (with all communities)

The second phase of the case study will take place over a distance; while the researcher is back in the UK, messages are posted to the participants. These messages are meant to continue building the relationship between researcher and participants, needed for the empathic design. Each of the communities receives a hand-made photo book containing all the data they collected during the initial visit. They are invited to make alterations to the data, if they do not agree with it.

Phase 3: The actual case study (with community 1)

The third phase will be the actual case study, in community 1, in Sarawak, Malaysia and will take place from July 2013. This case study will be a co-reflective design process, existing out of design activities (creating things with the community and individual design probes), (group-) dialogues, discussions on the Internet platform (which will be accessible only by the participating community members) and a co-crafting process (in which the researcher together with the participants will craft designs).

Although the community has already shown an interest to participate, we will go through a separate consent phase for the case study, similar to the description of the consent procedure during the initial visit as mentioned above. My intentions for the research during the case study will be communicated through a movie, prior to the consent procedure.

1. Recruiting.

The first visit to Malaysia, that will be undertaken, has as its aim to find participants for the study.

The actual case study will be performed with community 1, already visited during the first visit.

- i. ***Finding people.*** The people from the ISITI-COeRI will help me to find communities that fit to the research and that are willing to participate. They will also introduce me to those communities. Since it is often difficult to approach a community their help as gatekeepers is very valuable. The aim is to make this project beneficiary for the participants as well, so I am clearly aiming to find

- 1. Design School Ethical Approval Form -

people who value the goal of the project and see it as something important in which they want to participate.

- ii. **Power relation.** There will be cultural differences between the researcher and the participants. This may cause power relations to appear. To reduce the power relations there will be implemented an empathic design process through which the gap between researcher and participants will be reduced. The idea is to build up a relationship during phase 2 with the participants through a correspondence in which I step by step introduce myself. The aim is for them to understand who I am and how I translated the exploration on what would make the research relevant for them into a research project. Phase 3 is a co-reflective design process in which the participants have the roles as experts on their knowledge.
- iii. **Translator.** The translator will be someone nominated from the community that already works as a translator for them. This is also how the ISITI-COeRI it does. The community trusts this person, which is very important. It is also important that I feel comfortable with this person. It is for this reason that I will try to meet him/her already on my first visit. We will have to talk about our expectations and the rules to which we have to live up to. The translator, when agreeing to help in the research will need to sign a contract, in which privacy and care will be articulated. After every session I will ask him/her to sit and talk about what has been said and analyze whether the thing I understood matches with what was actually said. This person will also help to code the data. In this, we have to agree that the information that he/received from the participant will be kept private and not spread around to other people. This will also be stated in the contract mentioned above.
- iv. **Data collection by others.** If there are other people involved other than myself and the translator, I will make sure that those people agree on beforehand, on the terms set to collect data for this project. They have to sign a contract comparable with the contract directed to the translator regarding issues such as the privacy of the participants.
- v. **Introduction visit.** During the introduction visit I will introduce myself as well as the aim of my project, to several communities (which are the communities ISITI-CoERI already works with, which are: Long Lamai, Bario and Ba'Kelanan). With this I hope to invite people to participate. I want people to be truly interested when they participate. They should have the feeling that by being involved in the project they also gain something. Once they show interest I will go through the consent form (see next section) with them, making sure that they have understood everything and agree with the points. If they agree, they will be asked to sign and after this our collaboration starts. After the visits, there is decided with the communities with which community the actual case study will be done. When the researcher arrives in the community for the case study, the consent procedure will be repeated.
- vi. **Consent form.** Everything about the rights of the participants, the goal of the research and the methods used, will be made clear at the outset of the research in the consent stage. This will be told and written in the consent form. I will make sure that the participants fully understand that what the consent is consenting. The communities have representatives who speak English at an advanced level. The

- 1. Design School Ethical Approval Form -

consent procedure will always go via them, to decide whether or not the consent gives enough protection. Those people will be invited to help the participants to decide on whether they want to consent or not. The consent will both be written and spoken. The written version will be created in the English language, and in the case of the cultural protocol there will be a copy in the community's own language. The spoken version will be both done by the researcher as well as through the translator. After this, the representatives can advise the participants whether or not to join. The consent form is complimented by a cultural protocol and introduced in a culturally appropriate way to the community (see procedures in introduction).

vii. Location (and risks). The research will take place in the communities (the Long Lamai community, the Bario community and the Ba'Kelalan community (the case study will only focus on Long Lamai)). The location where the research will take place will carry some risk with it. One of the risks is the isolation of the places, but I will make sure that there is always someone from the UNIMAS around or an agent chosen through the Northumbria office of KL. Also will I keep the both parties updated on my plans. Other risks are on catching diseases that are common in the area (Sarawak). To minimize this risk I will consult the KL office, the NHS and the university in Sarawak. I will make sure I get the important vaccinations and take malaria pills. Also will the foreign & commonwealth office website (<http://www.fco.gov.uk/en/>) be checked regularly to keep the awareness of possible risks up-to-date. More information can be found in the attached risk assessment, which gives an overview of the risks of traveling to Sarawak, Malaysia, how to minimize the risks and the risk level after have taken the precautions as suggested. The foreign & commonwealth office gives the following advice: **No restrictions in this travel advice**

viii. Anonymising data.

Types of data:

1. *Video footage.* The first type of data that will be obtained will be digital video footage. This video footage will be used in the translation process and is necessary to look back at the different sessions together with the translator to fully understand what has been said. This data will be used for the transcription process. Approval will be asked, from the participants, before starting the video recording.
2. *Pictures.* Also, will there be pictures taken. Pictures are either taken by the researcher or the participants. The pictures taken by the participants are meant to introduce themselves to the researcher, during probe activities. There will be tried to give the participants an analogue picture of every picture they took. The pictures the researcher takes are meant for explanation during presentation purposes of the work what has been done. Also will it serve to visualize cultural concepts, such as the crafts that the communities make. The pictures will be digital and analogue (polaroid pictures). The consent form will make clear that the participants can request the photographing to stop at any time and that approval will be asked before taking pictures. Also will it state that the participants can withdraw certain pictures after the research session, from the data set (the researcher will look into the pictures together with the participants to decide upon this in a session after the research session).
3. *Design probes.* There are two different types of probes that result from the initial visits and the case study: the ones that are made as a group (also as a co-operation between researcher and community) and the ones that are created individually. The researcher will introduce the probes to the participants. They can then decide if they are interested to take part. When the design probes are created with a group, often people join in throughout the process. They can also step out anytime they want. Before the

- 1. Design School Ethical Approval Form -

researcher leaves, during the debriefing, the researcher re-introduces all the probes and discusses them with the community. The community can share at this moment whether they are happy for the researcher to use the information collected in the probe for the continuation of the research. If they are: the researcher aims to either leave the original probes in the community, taking a copy (as a way to keep the original data in the community) or take the original probes and send the information back in a format useful for the community. If they are not, the probes that they are not willing to share remain behind in the community.

4. *Blog discussions.* Data will be gathered through discussions on the community's blog. The people who participate in the research are the only ones who have access to this blog. When using the blog they will be reminded that this is part of the research and that the information they post might be used for the research. In the consent procedure this aspect will also be highlighted. Placing something on a blog is people's own initiative, they will not be asked to blog.
5. *Correspondences.* The aim is to start a correspondence with the participants after the first visit. This is meant to built up a relationship with the participants. The idea is that I will send interesting messages to the community and hope to receive something back. This is not asked from them, so it will be their own initiative to send something back. The data of this correspondence will be hard copy. The data for this will be used to analyze how a relationship is established between participants and researcher.

The participants will be made aware of the three types of data and the reasons why these types of data will be used, within the consent form.

Anonymizing data:

I will make sure that the collected data is anonymized to pursue the participants privacy. This will be done in the following way:

1. *Video footage.* I will transcribe the data as soon as a session has finished. I will do this partly together with the translator (for the reason mentioned above). In transcribing the data, I will work with two lists: one index list (which connects the participants to the reference I will use for them) and the working list, which only will contain the references and link them to the data. Both lists will be kept, but separate from each other.
2. *Pictures.* When the pictures are presented they will be adjusted to make the participants (if on the pictures) anonymous.
- 3., 4. & 5. *Probes.* This data will be transcribed by the researcher, using the same lists as mentioned in 1.

x. Storage. I will make sure that the data is stored and transported in a secure manner.

The data will be stored in the following manner:

1. & 2. Directly after each session the footage from the camera and the photo camera will be copied to my laptop, after which I will make a copy to an encrypted folder on my laptop as well as place a copy on an encrypted USB-stick. The footage will then be deleted from the camera and photo camera and also from the unprotected space on my laptop.
3. In case of the data being hard copy (in the case of the originals), I will arrange a locker, in which I can store this information both during my stay in Malaysia as well as on return in the UK. In the case of the data being a copy (in the case when the original probe is left in the community), the data will be stored like in the case of 1&2.
4. The data will after the case study be downloaded and safely stored like in the case of 1&2.
5. Since this data is hard copy, and send to me to the UK, I will arrange a locker, in which I can store this information.

- 1. Design School Ethical Approval Form -

xi. Retention and disposal.

The data I collect, I will keep until the end of my project after which I will dispose the “raw footage” and keep the transcribed data. I will keep all the data until the end of my project since the video footage will give me insight, when comparing the footage from before a design intervention was designed, and the situation after. The correspondences I will not be able to throw away, since the people who have send this have done this with care and to build up a relationship with me, I will keep them secure though (in the place mentioned in the previous section). The pictures I will use for presentation purposes (as mentioned in the anonymising data section)

I will make sure my data is stored (safely as mentioned in the previous section) until 5 years after my research is completed, unless someone withdraws at an earlier stage. I will keep track of the time and make sure that it is destroyed after that period. Since I am, after the research, not the owner of the data, I will hand it over to the university and make sure that is stored in a secure place. This to make sure that the data is still available if needed, but only through the university.

The participants can ask for access to the information they have provided. This can be done by submitting a ‘subject access request’ to the university. The university then needs to provide this information within 40 days.

When a participant decides to withdraw his/her consent to participate in the study, this needs to be processed within 15 days. The data that is collected from this participant will be disposed, and not be used at any further stage of the project. When this is done, a confirmation will be send to the participant. Withdrawal can only be done until the results of the study are published. This will be clearly communicated to the participants, in the consent form. Also if there is decided to publish the work, the participants will first be updated about this.

2. Debriefing.

After the research is performed, a debriefing session will be given for all the participants, in which I will repeat the consent that was stated clearly at the outset of the case-study and I will explain what my further intentions are (if I have any). Those further intentions are an invitation to the participants to participate further. If they are interested in this, a new consent-procedure needs to be started. We will go through the collected data to see if they agree for me to use data. What I will do with the data gathered during the case-study is already explained in the consent stage, but will be repeated, since the participants still have the opportunity to withdraw. Also will I make clear that the participants have the opportunity to withdraw until the work is published. The procedure for this will again be repeated during the de-briefing session. Also will I give the participants the opportunity to ask questions about the research. When the participants sign the consent form, they will receive a copy of the consent form. In this consent form I will clearly indicate how they can reach me, if they have further questions, and who they can contact for help.

3. Deception.

This project will not make any use of deception. Everything that is done will be done transparently and everything will be clearly communicated to the participants.

4. Distress or Discomfort.

There are three phases in the process. The initial visit and the actual case both take the approach described below. The arrangements of preventing or releasing participants from

- 1. Design School Ethical Approval Form -

distress or discomfort in the case of the second phase (e.g. the correspondence phase) are describes in the section below this section.

The initial visit will contain activities (as mentioned before) and design probe activities (as mentioned before).

This case study will be a co-reflective design process, existing out of design activities (creating things with the community and individual design probes), (group-) dialogues, discussions on the Internet platform and a co-crafting process (in which the researcher together with the participants will craft designs). Also will there be an evaluation session during which the participants are invited to reflect on the design probes created.

In all situations, the steps that are described below are implemented to prevent or release participants from distress or discomfort. Also will at the start of each session be highlighted that the participants have the right to withdraw at any time.

- i. ***Discomfort.*** If there is any feeling of discomfort experienced the participant can either tell me, the translator, a contact person from the UNIMAS. During the research (so, in (group)-dialogues, during the internet discussions, during the co-crafting, during the activities or during the design probe activities) the participants also have the possibility to use an on forehand-decided sign that will signal to the researcher that this person is not feeling comfortable. This to make it an easier step, because telling to someone that you don't feel comfortable sometimes might seem a difficult step to take. Whenever this happens, the research will be paused (in case of only one participant), without any questions asked or the participant can step out without any questions asked (in case of multiple participants)
- ii. ***Action after experienced discomfort.*** Together with the participants there will after this be looked at whether they feel comfortable to proceed the research. They are also made aware on their right to withdraw. Also will there be explored whether they feel the need to talk about what happened, with either the researcher, the translator, a contact person from UNIMAS. All the information that is shared with this person will remain strictly confident unless legal action needs to be undertaken. The wellbeing of the participant will be regularly checked after they have experienced discomfort to explore whether there is any other help needed.
- iii. ***Withdraw from project.*** When the participants decide to withdrawal from the project, this can be done at any time during the phase in which the research is undertaken. The end of one phase will be clearly communicated, so the participants are aware until when they have the right to withdraw. This approach is chosen because contacting someone in the UK might be problematic for the participants (and therefore a difficult step to take). So, before the researcher leaves the process of withdrawal will be repeated clearly. To withdraw, they can mention this to me, the translator, a contact person from the UNIMAS. All of this will be made clear in the consent form and highlighted during the explanation about the consent form. What will happen if someone decides to withdraw: All their data will be destroyed. No data of the person who withdrew will be used at any stage of the project. There will be informed whether they need some sort of support to overcome their experience.

The contact over a distance. The approach taken in this phase is slightly different from the approach taken during the other phases. The big difference is that the participants and the researcher are not in the same space.

- i. ***Discomfort.*** If the participant feel uncomfortable by receiving correspondences from the researcher from the UK, they have the ability to send back a simple (pre-written) letter which states that they are not interested to participate anymore. Another option on this pre-written letter is to mark that they are interested to continue to participate, but that they felt uncomfortable with the previous received

- 1. Design School Ethical Approval Form -

letter. Stamps and envelope are already included to this message, so they only need to post it.

- ii. **Action after experienced discomfort.** Together with the participants there will be looked at whether they feel comfortable to proceed the research via the contact of the University of Malaysia, in the case where the participants said they wanted to continue with the correspondence but felt uncomfortable because of a previously received message. They are also made aware on their right to withdraw. Also will there be explored whether they feel the need to talk about what happened, with either the researcher, the translator, a contact person from the UNIMAS or a contact person from Northumbria university. All the information that is shared with this person will remain strictly confident unless legal action needs to be undertaken. The wellbeing of the participant will be regularly checked after they have experienced discomfort to explore whether there is any other help needed.
- iii. **Withdraw from project.** When the participants decide to withdrawal from the project, this can be done at any time during the correspondence phase, by means of the pre-written letter on which they can mark that they do want to withdraw. Such a pre-written letter will be send to the participants with each correspondence, so they can stop the correspondence at any time. What will happen if someone decides to withdraw: All their data will be destroyed. No data of the person who withdrew will be used at any stage of the project. There will be informed whether they need some sort of support to overcome their experience.

5. Animals. N/A

6. International The research will be performed in Sarawak, Malaysia. To learn about the rules, laws and customs regarding doing research there I have several informants: The UNIMAS, The Kuala Lumpur office of Northumbria University and the community where I will be performing the research.

- i. **Legal issues.** The legal issues concerning doing research in Malaysia were explored through contact with the Kuala Lumpur office of Northumbria University and in negotiation with UNIMAS. During my visits in Sarawak, I will be a visiting student of UNIMAS. By means of an invitation letter written by my contacts at UNIMAS, I will be able to apply for a student visa.
- ii. **Ethics awareness among participants.** According to the UNIMAS, the people from the communities they work with are very aware of their own ethical rights. For this reason they have a cultural protocol to which all the visiting researchers need to life up to.
- iii. **Cultural issues.** I will explore the cultural issues concerning doing research in the community I am working with through conversations with the researchers from the ISITI-COeRI who have done research within those communities. To explore what a researcher can expect within this community, literature on previous/similar projects will be read. I will make sure that I am aware of the cultural issues before I start the actual project.

7. Vulnerability.

i. Characteristics of Participants

This case-study knows two types of participants: the younger people who life in the cities and speak English. Then there is the second type of participants who life in the

- 1. Design School Ethical Approval Form -

communities, although the UNIMAS has mentioned that also those people speak English, they may not speak English at the highest level.

ii. To reduce vulnerability

The first type of participants is not a vulnerable group.

According to the UNIMAS, the people of the communities they are working with, and with whom I will also work, are very aware of their ethical rights. They are working on their own declaration of ethics, which they want visiting researchers to live up to. I will also look into these ethical statements and adjust my approach to those.

Also do the communities point out their own translators with whom they feel comfortable to work with. A researcher needs to live up to this. Due to these translators, the participants will be able to speak in their own language. The researcher and the translator together will look at the translation afterwards.

Those communities also have representatives who speak English at an advanced level. The consent procedure will always go via them, to decide whether or not the consent gives enough protection. Those people will be invited to help the participants to decide on whether they want to consent or not.

The consent will both be written and spoken. The written version will be created in the participants local language. The spoken version will be both done by the researcher as well as through the translator. After this the representatives can advise the participants whether or not to join.

As mentioned before, they can withdraw from the project at anytime, not only by mentioning so, but also by giving a sign directly to me, that says that they want to withdraw from that part of the study.

8. Legality. This research is about preserving Indigenous Knowledge. This might seem to be a sensitive topic, since many project concerning this have taken over the knowledge from the Indigenous people and made it their own. This will not be the case in this research. There will be clearly stated within the consent form, that the indigenous knowledge will remain that of the community and that it will not be used in any other situation than the project and that whenever this information is used during the project, the participants will be consulted about this.

9. Funding. UNIMAS is partly funding this research. However, this will not have an effect on the direction of the research.

In submitting this form, you accept the obligation upon you to bring to the attention of the DSEC (or nominee) any ethical issues that may not be covered by the above questions.

If ethically relevant circumstances of your research change, you must bring this to the immediate attention of the responsible party (Programme Leader/Supervisor/ACoP Research Lead/DSEC). For major changes of research plan or implementation, you must submit a new application for ethical approval. If the DSEC becomes aware of any problematic issues associated with your project, approval may be immediately revoked, with conditions imposed that must be met before new approval will be given.

- 1. Design School Ethical Approval Form -

I, the researcher/designer, have fully described in Section B how I will manage all ethical risks highlighted in Section A, and have sought DSEC advice and approval for all significant ethical implications. I will *not proceed* with this project until approval has been obtained from DSEC/Programme Leader (UGs/PGTs)/Principal Supervisor (PGRs).

Signed and dated by the applicant:

Programme Leader (or nominee)/Supervisor - countersigned and dated to confirm all details above and approval of research:

For DSEC Use where application requires DSEC advice and approval	
Date application received:	Date response made:
Outcome: Approved / Approved with Conditions / Referred to UREC / Returned for Revision (circle, date, initial & status (PL/Chair DSEC/etc))	

- 2. Cultural Protocol -

ISITI-CoERI and eLamai's Guidelines for Researchers.**Why?**

Indigenous peoples and many local communities have unique protocols, procedures, rules, and regulations that regulate their interactions within and between communities and with the resources and areas upon which they depend. Protocols provide clarity to community members about rights, responsibilities, and appropriate behavior. Respecting and acting according to community protocols helps and ensure social cohesion and reinforces customary laws, values, and decision-making processes.

Indigenous peoples and local communities are increasingly engaging with external actors such as government agencies, researchers, companies, and non-governmental organizations (NGOs). However, external actors often do not understand customary protocols and governance systems because they are codified in ways specific to each community, culture, and location. Failing to respect community protocols, whether intentional or not, can lead to conflict, deterioration of otherwise constructive relations, and negative impacts on the environment.

How?

To address this issue, Indigenous peoples and local communities have begun to document and develop their protocols into forms that can also be understood by others. They are using them to ensure that external actors respect their customary laws, values, and decision-making processes, particularly those concerning stewardship of their territories and areas. They are actively seeking recognition of customary systems of governance and management, including traditional knowledge and practices, and their roles in the conservation and sustainable use of biological diversity and ecosystem adaptation. Many are referring to these instruments as 'biocultural community protocols'.

What?

The cultural protocols comprised of the guidelines for community and researchers and the Free, Prior and Informed Consent Certificate. The guidelines will facilitate the engagement process between the community and researcher. If the researchers want to work on a collaborative project with the community, he need to develop a Free, Prior and Informed Consent Certificate that will help the stakeholders of the project to understand their roles and responsibilities. The certificate needs to be signed by the representatives of each stakeholder, on behalf of the parent organization or community.

Where?

The cultural protocols are specifically designed for the researchers from Universiti Malaysia Sarawak and their collaborators (hereinafter referred to as the "researcher or researchers") working with the Penans community of Long Lamai (hereinafter referred to as the "community"), Upper Baram, Miri Sarawak.

Who?

The protocols are mainly binding for the signatories (in this case the researchers and the community).

The Guidelines

Article 1 The researcher should understand and respect indigenous world views, including responsibilities to the people and culture that flow from being granted access to traditional or sacred knowledge. These should be incorporated into research agreements, to the extent possible.

The first principle of these guidelines is premised on a need for researchers to understand and respect indigenous world views, particularly when engaging in the sphere of sacred knowledge, and the corresponding responsibility that possession of such knowledge entails. Researchers should understand the broader senses of accountability in order to understand the responsibility they have when entering into a research relationship with the community.

Article 2 The community's jurisdiction over the conduct of research should be understood and respected.

- 2. Cultural Protocol -

The researcher should comply with any by-laws, policies, rules or procedures adopted by the community. It is not necessary to be in the same domain but there could be possibilities where the communities are engaged in other research areas.

Article 3 The community should be given the option of a participatory-research approach.

Genuine research collaboration is developed between researchers and the community when it promotes partnership within a framework of mutual trust and cooperation. Participatory research enables a range of levels and types of community participation while ensuring shared power and decision-making. Such partnerships will help to ensure that research proceeds in a manner that is culturally sensitive, relevant, respectful, responsive, equitable and reciprocal, with regard to the understandings and benefits shared between the partners (the researchers and the community).

Article 4 The researcher, who proposes to carry out research that touches on sacred knowledge of the community, or on community members as indigenous people, should consult the community leaders to obtain their consent before approaching community members individually. Once community consent has been obtained, the researcher will still need the free, prior and informed consent of the individual participants.

A process to obtain the free, prior and informed consents from both the community affected and its individual participants should be undertaken sufficiently in advance of the proposed start of research activities and should take into account the community's own legitimate decision-making processes, regarding all the phases of planning, implementation, monitoring, assessment, evaluation and wind-up of a research project. The requirement for community consent is distinct from the obligation of researchers to obtain individual consent from research participants. For Free, Prior and Informed Consent agreement please see http://www.culturalsurvival.org/files/guidetofreepriorinformedconsent_0.pdf

Article 5 Concerns of individual participants and the community regarding privacy and confidentiality should be respected, and should be addressed.

The researcher, the individual participants and the community should have a clear prior understanding as to their expectations with regard to the extent to which research data and results will remain confidential to the researcher. If confidentiality is not possible, or if there are necessary limitations, these should be clearly communicated.

Article 6 The research agreement should, with the guidance of community knowledge holders, address the use of the community's indigenous and sacred knowledge.

Article 7 The community retains their inherent rights to any indigenous and sacred knowledge, and cultural practices and traditions, which are shared with the researcher. The researcher should also support mechanisms for the protection of such knowledge, practices and traditions.

Any research involving Indigenous people will involve the sharing of some cultural knowledge, practices and/or traditions even when these are not the subjects of the study, as they provide necessary context. The recording of knowledge, practices and traditions in any form (written notes, audio, video, or otherwise) should only be done with explicit permission and under mutually-agreed terms that are set out in advance of the research with the guidance of appropriate elders and knowledge holders. All uses and wider dissemination of cultural knowledge, practices and traditions should also be by permission.

Article 8 Community and individual concerns over, and claims to, intellectual property should be explicitly acknowledged and addressed in the negotiation with the community prior to starting the research. Expectations regarding intellectual property rights of all parties involved in the research should be stated in the research agreement.

To respect the intellectual property rights of each party is the joint responsibility of the researcher and the community involved. Research with explicit commercial objectives and/or direct or indirect links to the commercial sector should be clearly communicated to all research partners.

Article 9 Research should be of benefit to the community as well as to the researcher.

A research project should lead to outcomes that are beneficial to the participating community and individual community members. Benefit sharing vis-à-vis a community should be interpreted from the community's perspective. This may include tangible and intangible benefits, including those arising from altruism.

Article 10 The researcher should support education and training of the community, including training in research methods.

Researchers should work to foster capacity building among the community members to enhance their participation in research projects and improve the overall interactions between the communities and public educational institutions.

- 2. Cultural Protocol -

Article 11 The researcher has an obligation to learn about, and apply, indigenous cultural protocols relevant to the community involved in the research.

Article 12 The researcher would share the research plan, methodology and results with the community representatives and get their consent on the reporting process.

Article 13 The researcher should ensure that there is ongoing, accessible and understandable communication with the community.

Indigenous communities often have cultural protocols involving interactions within the community. It is important that researchers learn about these and respect them. When providing a research project report to the community, the researcher should provide it in the language of the community unless the community has expressly waived this. The reports or other communications of results should use language and terminology that are readily understood by the community.

Article 14 The researcher should recognize and respect the rights and proprietary interests of individuals and the community in data and information generated or taken in the course of the research.

Article 15 Transfer of data and information, gathered during the research activities, from one of the original parties to a research agreement, to a third party, requires consent of the other original party(ies).

Article 16 Secondary use of the research data requires specific consent from the community and the researcher.

These guidelines set out basic principles for the collection, disclosure, use and transfer of data. The details of safeguards protecting the privacy and confidentiality of data should be negotiated as part of the research process and specified in a research agreement. Subject to the community's views on sacred knowledge, co-ownership of data between researchers and communities is recommended because the community and the researcher are both integral to the production of data.

If there is a transfer of research data to a third party, this should be done only with the consent of the researcher, the individual participants and the community. If the third party is to engage in secondary use of the transferred data, then a further consent to that use must be obtained. The consent should address how confidentiality and privacy will be respected.

In any case, secondary use of data and esp. sacred knowledge requires a new consent unless such use is specifically agreed to in the research agreement. Notwithstanding the above, individuals retain the right to access data about themselves.

Article 17 The product of each party activities should be considered "on loan" to the other party unless otherwise specified in the research agreement.

Article 18 An Indigenous community should have an opportunity to participate in the interpretation of data and the review of conclusions drawn from the research to ensure accuracy and cultural sensitivity of interpretation.

Research involving Indigenous people is susceptible to misinterpretation or misrepresentation when information about the group is analyzed without sufficient consideration of other cultural characteristics that make the group distinct.

The opportunity for review of research results by the Indigenous community should be provided before the submission of research findings for publication, to ensure that sensitive information is not inappropriately divulged to the public and that errors are corrected prior to wider dissemination.

This should not be construed as the right to block the publication of legitimate findings; rather, it refers to the community's opportunity to contextualize the findings and correct any cultural inaccuracies.

Article 19 The community should, at its discretion, be able to decide how its contributions to the research project should be acknowledged. Community members are entitled to due credit and to participate in the dissemination of results. Publications should recognize the contribution of the community and its members as appropriate, and in conformity with confidentiality agreements.

- 3. Free, Prior and Informed Consent Certificate and Research Agreement -

Exploring the role of design interventions to facilitate cross-generational conversations about (contemporary) Penan identity in Long Lamai, Sarawak.

Free, Prior and Informed Consent Certificate and Research Agreement

Tuesday, July 9, 2013

The main researcher: Elizabeth (Liz) Reitsma from the Northumbria University (Newcastle upon Tyne, UK), Institute of Social Informatics and Technological Innovations-Center of Excellence for Rural Informatics (ISITI-CoERI) Universiti Malaysia Sarawak (UNIMAS) and Long Lamai Community, upper Baram, Miri Sarawak agree to conduct the named research project with the following understandings:

Introduction.

1. The purpose of this research project is to explore the role design interventions* can play in order to facilitate conversations about (contemporary) Penan identity between different generations in order to enhance the self-image and pride of younger community of being part of the Penan culture.

* Design interventions, created through group-based co-reflections and explorations, are designed to 'disrupt' the current context, in order to gain a deeper understanding of that context or to trigger different behavior. An example of a design intervention is a one created for a South-African community: *StoryBeads* which enabled people to record stories on tangible beads, in order to preserve the cultural beadwork. The design intervention helped to explore the role beadwork played in this community, as well as capturing aspects of the cultural heritage in a tangible and meaningful way for the community.

By creating design interventions with the participating community, this research aims to evaluate and enrich understanding of the context of cultural heritage loss. This study will use an empathic approach that is respectful of the indigenous knowledge of the community, and is meaningful for both community and researcher.

This project may result in an exhibition about what it means to be Penan in order to introduce a richer and truer picture to neighboring cultures about the Penan culture. The researcher will try to arrange an exhibition at the eBario knowledge fair.

The design interventions that will be used to try to stimulate cross-generational conversations about Penan identity and that can be used for the exhibition on the ebario knowledge fair are:

1. An internet platform (www.longlamai.info) on which stories about the Long Lamai community can be recorded (e.g. history, examples of the crafts, news messages, etc). The internet platform www.longlamai.info will contain the following parts:
 - a. A general part, which is open to everyone – meant to advertise and inform people about Long Lamai and the Penan culture. This part of the website will be in English (the researcher can help in writing this part).
 - b. A part only accessible for the community (and the researcher for the duration of her PhD (until November 2014)) that is meant to create a database of stories about Long Lamai (e.g its history, the Penan culture, events, crafts etc). This part of the platform is comparable to Facebook since people of the community can share written stories, photos, movies, etc. and other community members can comment on those stories. This part of the platform is in the language the community members decide to use.
2. Two technological designs to motivate people to use the internet platform, and to engage people who are not using the internet platform. The creation of those designs will be done together with the community, so that the designs reflect the Penan culture. The two designs are:
 - a. "Kuik" – a Pagang that can be played digitally, everytime someone accesses www.longlamai.info, so that people within the community will get a sense of how many people are using the platform.
 - b. "Fireflies" – lights that start glowing everytime a new story is added to www.longlamai.info.

- 3. Free, Prior and Informed Consent Certificate and Research Agreement -

3. An Oro quest and Oro Quiz night to let the youngsters of the community learn more about Oro.
4. Design activities to let the youngsters reflect on aspects of the Penan culture:
 - a. Boxes in which objects can be placed of which Long Lamai is proud - such as craft objects or drawings of the local artists. The stories about those objects can be recorded and placed on the internet platform. The boxes can be placed in a communal space and serve as museum pieces.
 - b. Creating a banner to advertise Long Lamai to the outside world.
 - c. Individual photo diaries for the youngsters to record a day of their lives.

Scope.

2. The scope of this research project, as discussed with and understood in this community, is: the initial partnership between the main researcher (Elizabeth (Liz) Reitsma) from Northumbria University, ISITI-CoERI from UNIMAS and Ngerabit eLamai (Telecentre) from the Long Lamai community. The main researcher will assist the Ngerabit eLamai and Long Lamai community by facilitating designs and design activities to facilitate cross-generational conversations and discussions about Penan identity. Also will she help in developing a ICT based data collection method and content management system for stories regarding the Penan culture and the Long Lamai community and ways to easily collect those stories. Also will she design technological designs that will help promote the digital documentation system and expose the activity on the documentation system to members of the community who do not use the internet. Ngerabit eLamai will provide the services of the telecentre. The Long Lamai community will arrange activities and provide potential local human resource for assisting in the research, training, data collection and IK database management.

Structure of the Project: Roles and Actions.

3. The development of this project is based on sincere and empathic communication between community members and the main researcher. All efforts will be made to incorporate and address local concerns and recommendations at each step of the project.

Training, Data Collection & Recording and Content Management.

4. The methods for creating designs, exploring contexts, training, data collection and content management to be used, as agreed by the researchers and the community, are:

The design activities

The design activities are co-reflective, respectful, community-based and design-led: The researcher does not guide the process but facilitates a space for the community members to reflect on the current context through design activities that are playfull and of benefit to the community. Important in this is that the main researcher understands that she is just a visitor and that some information might not seem appropriate to be shared with her. She completely understands this and will not push in anyway to receive information that she is not entiteled to.

[Recording]

- i. The design activities may be video recorded, or photos might be taken by the main researcher. If this is the case, the researcher may ask the participants for their permission to use recording devices such as a video recorders or camera. At any point a participant can let the main researcher know that they are not happy for this to happen and recording will not occur.
- ii. During some of the activities suggested by the researcher, the participants will have the opportunity to take photos of their own, keeping these at the end of the activity. The researcher will also seek permission to also keep a copy of such photos taken by the participants, again if the participant is not happy with this happening, the photo will be deleted.

- 3. Free, Prior and Informed Consent Certificate and Research Agreement -

- iii. To improve the communication between the researcher and the participants, a translator might be used. This translator is chosen in consultation between both parties. The translator will need to sign a contract in which will be stated that he/she will keep the information strictly confidential
- iv. The elders of the community will help identify and help set up design activities regarding Oro. However, the main researcher understands that Oro is a sensitive topic and therefore she will not take the lead in those activities. For the main researcher, only the process of the design activities is important. The actual meanings of Oro is not part of her research.

[Participation]

- v. The community will help the main researcher find people interested to participate in different design activities.
- vi. The process of participating is casual and completely voluntary.
- vii. Whoever participates can step out of an activity without further explanation and the relevant data will be destroyed on request.
- viii. If a participant wished to withdraw at anytime during a research activity they can do this by mentioning it to either the main researcher or community members who help in facilitating the activity. This does not have to mean that the participant has to withdraw from the entire research.

[Designing]

- ix. The main researcher will help in designing and developing suitable digital media to manage the stories.
- x. In order to let the technological designs fit to the communities aesthetics, local crafters will help to create those designs.

www.longlamai.info

- i. The proposed internet platform would base on the needs of the community. The database will contain stories about Long Lamai and the Penan culture. The information on the internet platform can, amongst others, be presented as voices, videos, photos, drawings and written stories.
- ii. The community will learn how to use the internet platform as well as the data collection tools through workshops,, design activities and exercises facilitated by the researcher.
- iii. After workshops about how to use the internet platform, the community members will take over the management of the platform.
- iv. The part of the internet platform on which the community members and the main researcher can post research outcomes and stories about Long Lamai and the Penan culture will be accessible by community members and the researcher only.
- v. The stories and discussions on the internet platform might be used to inform the research. Before a participants places a story, consent is automatically required from the participant which states that he/she accepts that the data can be used for the research. If he/she does not consent, the blog post will not be posted.
- vi. After the researcher leaves, she will use the internet platform to track the impact of her stay.
- vii. The researcher has access to the community part of www.longlamai.info only until the end of her PhD (end of November 2014), after that the platform becomes solely owned by the community.

Data and Information Management.

- 3. Free, Prior and Informed Consent Certificate and Research Agreement -

The researcher is for her research interested in the interactions - stimulated by the design interventions - between different people. The stories as posted on www.longlamai.info are therefore not literally used in the research neither are the direct outcomes of the design activities (e.g the boxes, the banner and the photo diaries). They are meant to get an idea of the topics that are used to reflect on the Long Lamai community and the Penan culture and serve as a tool to stimulate interactions between different generations.

Raw data collected by the researcher:

- Research diary (written and voice recorded) with reflections and observations regarding the interactions between the different generations regarding Penan culture and the Long Lamai community (in Dutch).
- Records of the processes of creating the design interventions as a co-operative process between community and researcher (e.g written research diary entries, photos, videos) (in English).
- Interviews with the people who were involved in the creation of the design interventions. Interviews can be done using the help of an interpreter, making the interviewee able to speak in Penan.
- General summaries of the topics covered in the stories on www.longlamai (in English).
- Photos and written reflections on the objects created during the design activities (e.g the banners, the boxes and the 'one-day-of-my-life-diaries') in English
- An overview of how different people from different generations are connected (e.g family tree) to inform the researcher about the effect of the design interventions.

Transcribed data:

The raw data will be transcribed leading to text, photo collages and diagrams. The transcribed data will be in English.

Outcome:

The transcribed data will be analysed and patterns will be sought. In order to understand whether the interpretation are approved by the community, people involved in the process will be asked to go through the analyzed data.

5. Data and Information collected is to be shared, distributed, and stored in these agreed ways:

The main researcher and the Long Lamai community shall have the joint ownership of Intellectual property rights and use of research findings, concepts, ideas, inventions know-how and working papers which are produced, developed, designed or created or acquired as a result of the project. The joint ownership is not transferable or assignable unless approved in writing by both parties.

Each party will be the owner of the data that is created and/or developed by them and the other party is subject to use license conditions determined by the community and need to obtain permissions for the use of and storage of that data. The main researcher will have the right to copyright and replicate the process and technological designs that aim to promote the internet platform, while the stories on www.longlamai.info will be in sole ownership/stewardship and of Long Lamai community.

ISITI- CoERI will get a copy of the obtained data.

The data will be kept strictly confidential (i.e. will not be passed to others), and anonymous (i.e. individuals will not be identified unless this is expressly required and consented to separately in writing).

This information may also be used for further publications, excluding the PhD research. If this is the case the participants will be informed of this change of consent.

- 3. Free, Prior and Informed Consent Certificate and Research Agreement -

Data obtained through this research will not be used for purposes other than those outlined above without the participants separate written consent.

The researcher and ISITI-CoERI will ensure that the data is stored in a secure place (on a USB drive and/or laptop under password protection) and anonymised (e.g. by means of changing names, not using quotes that can lead back to anyone directly, anonymisation the environment).

6. The parties agree that in the publications, the community and ISITI-CoERI will be acknowledged for their contribution in the project. If the topic of the publication is a direct outcome of the contribution of either the community or of the ISITI-CoERI, the publication will be co-authored jointly by the contributors and the main researcher, with the order and designation of authorship determined by the co-principal investigators of the research collaboration.
7. The community is free to translate a publication into the local language so that it can be read by the entire community. The physical outcomes of the design activities will be owned by the community (the main researcher will only keep a copy).
8. The community and ISITI-CoERI will receive a copy of the data collected during the design activities as well as a copy of any publication about this project so that it can be used by the community for future research.
9. Before the researcher leaves the community, a community meeting will be organized during which community and researcher will go through all the data (either with the entire community or with a panel of members of the community who can judge about which knowledge can be shared). At that moment can be decided which data the community would like to share and what they would not like to share. During these meetings, the participants will again be asked if they still consent in participating in the research. After this, the opportunity for withdrawal will have ended.

10. Funding, benefits and commitments.

Funding:

11. The researcher have received funding and other forms of support for this research project from KTP.

Benefits:

12. The benefits likely to be gained by the community through this research project are:
 - a) To create a way to keep the knowledge about the Penan culture alive.
 - b) To create a way to spark the interest about the Penan culture in younger people, so that they become motivated to learn more about the Penan culture.
 - c) Increase the sense of pride of being Penan and the self-esteem of the younger community members.
 - d) Introduce the Penan culture to other cultures to enrich the image of what it means to be Penan

13. The benefits likely to be gained by the ISITI-CoERI through this research project are:

- e) To offer the community of Long Lamai a project aiming to benefit the community.
- f) The assent to use the technological designs to enter competitions.

14. The main researchers wish to use this research project for their benefit in the following ways:

For fulfillment of PhD:

- a) To exploring the role of design interventions to facilitate cross-generational conversations about (contemporary) Penan identity.

- 3. Free, Prior and Informed Consent Certificate and Research Agreement -

- b) To explore the role design and design methods can play in overcoming the challenges of researcher and participants not speaking the same language, belonging to the same culture or communicating over a distance.
 - c) To explore how a respectful empathic research-through-design approach can be taken.
15. The main researcher will submit a final report to her university at the end of the project. Scientific presentations in peer-reviewed publications and conferences will be made. A copy of the final report and of all publications regarding this project, will be send to both the community members and ISITI-CoERI. Scientific presentations will be made and articles published after discussion with the respective community representative.

Commitments:

16. The community's commitment to the researchers is to:
- a) Recommend capable and interested community members to collaborate in this project.
 - b) Help in organizing the design activities and the creation of the designs.
17. The researchers' main commitment to the community is to:
- a) Inform the community about the progress of the project in a clear, specific, and timely manner.
 - b) Facilitate design activities.
 - c) Create an internet platform and technological designs that help promote the internet platform.
 - d) Act as a resource to the community on questions related to technicalities of the project.
18. The researchers and community agree to interrupt the research project in the following circumstances:
- a) If community members decide to withdraw their participation.
 - b) If from the point of view of the community there is no benefit in taking part in the research any longer.

Signed by:

Date:

Date:

Community:

(Signature of Main Researcher)

Name:

Position:

(Signature of Community Representative)

Name:

Position:

Date:

(Representative of ISITI-CoERI)

Name:

Position:

Appendix Seven | Publications during PhD

Publications on PhD topic

Reitsma, L., Light, A. and Rodgers, P (2014). Empathic negotiations through material culture: Co-designing and making digital exhibits. *Digital Creativity*, 25(3), pp. 269-274.

Reitsma, L., Wallace, J., Rodgers, P. (2013) Exploring respectful design directions for indigenous communities. In Proceedings of International Conference on Culture & Computing 2013, pp. 131 - 132.

Publications during PhD

Reitsma, L., 2015. Enabling design to disappear: The design process of StoryBeads. In N.J Bidwell & H. Winschiers-Theophilus, eds. *At the intersections of traditional and indigenous knowledges and technology design*. Santa Rosa, CA, USA: Informing Science Press, pp. 205-219.

Reitsma, L., Smith, A. and Hoven, E. van den (2013). StoryBeads: Preserving indigenous knowledge through tangible interaction design. In *Proceedings of International Conference on Culture & Computing 2013*, pp. 79 – 85.

References

- Aarhus, R., Grönvall, E. & Kyng, M., 2010. Challenges in participation: Users and their roles in the development of home-based pervasive healthcare applications. In proceedings of Pervasive Healthcare 2010. pp. 1–4.
- Balka, E., 2010. Broadening discussion about participatory design: A reply to Kyng. *Scandinavian Journal of Information Systems*, 22(1), pp. 77–84.
- Battarbee, K., 2003. Co-experience: The social user experience. In proceedings of CHI'03 Extended Abstracts on Human Factors in Computing Systems. New York, NY, USA: ACM Press, pp. 730–731.
- Bauman, Z., 2011. *Culture in a liquid modern world*, Cambridge, UK: Polity Press.
- Beaglehole, E., 1932. *Property: A study in social psychology*, New York, NY, USA: Macmillan.
- Becker, F., 1991. Workplace planning, design, and management. In H. Zube & T. Moore, eds. *Advances in Environment, Behavior, and Design*. New York, NY, USA: Plenum Press, pp. 115–151.
- Beggan, J.K., 1992. On the social nature of nonsocial perception: The mere ownership effect. *Journal of Personality and Social Psychology*, 62(2), pp. 229-237.
- Berkes, F., 1993. Traditional ecological knowledge in perspective. In J. Inglis, ed. *Traditional ecological knowledge: Concepts and cases*. International Development Research Centre, Ottawa, Canada, pp. 1-9.
- Bhabha, H.K., 1994. *The location of culture*, Oxford, UK: Routledge.
- Bhömer, ten, M., Tomico, O., Kleinsmann, M., Kuusk, K. & Wensveen, S. 2012. Designing smart textile services through value networks, team mental models and shared ownership. In proceedings of ServDes'12. pp. 53-63.
- Bidwell, N.J., Winschiers-Theophilus, H., Koch Kapuire, G. & Rehm, M., 2011. Pushing personhood into place: Situating media in rural knowledge in Africa. *International Journal of Human-Computer Studies*, 69(10), pp. 618–631.

- Bishop, R., 1998. Freeing ourselves from neo-colonial domination in research: A Maori approach to creating knowledge. *International Journal of Qualitative Studies in Education*, 11(2), pp. 199–219.
- Bjerknes, G., Ehn, P. & Kyng, M., 1987. *Computers and democracy – A Scandinavian challenge*, Avebury, UK: Aldershot.
- Björgvinsson, E., Ehn, P. & Hillgren, P.-A., 2012. Agonistic Participatory Design: Working with marginalised social movements. *CoDesign*, 8(2-3), pp. 127–144.
- Björgvinsson, E., Ehn, P. & Hillgren, P.-A., 2010. Participatory Design and democratizing innovation. In proceedings of the Participatory Design Conference 2010 (PDC'10). New York, NY, USA: ACM Press, pp. 41–50.
- Blomberg, J.L. & Henderson, A., 1990. Reflections on Participatory Design: Lessons from the Trillium Experience. In proceedings of CHI'90 conference on Human factors in computing systems. New York, NY, USA: ACM Press, pp. 353–359.
- Borg, S., 2001. The research journal: A tool for promoting and understanding researcher development. *Language Teaching Research*, 5(2), pp. 156–177.
- Borges, A., 2012. What design can do for access to cultures: True cultural exchange requires equality. In proceedings of What design can do!. pp. 20–23.
- Bossen, C., Dindler, C. & Iversen, O.S., 2012. Impediments to user gains: Experiences from a critical participatory design project. In proceedings of Participatory Design Conference 2012 (PDC'12). New York, NY, USA: ACM Press, pp. 31–40.
- Bossen, C., Dindler, C. & Iversen, O.S., 2010. User gains and PD aims: assessment from a participatory design project. In proceedings of Participatory Design Conference 2010 (PDC'10). New York, NY, USA: ACM Press, pp. 141–150.
- Botero, A. & Hyysalo, S., 2013. Ageing together: Steps towards evolutionary co-design in everyday practices. *CoDesign*, 9(1), pp. 37–54.
- Bowers, J., 2012. The logic of annotated portfolios: communicating the value of “research through design.” In proceedings of the 9th Conference on Designing Interactive Systems (DIS12): Processes, Practices, Methods, and Techniques. pp. 68–77.
- Brown, M.F., 2005. Heritage trouble: Recent work on the protection of intangible cultural property. *International Journal of Cultural Property*, 12(01), pp. 40–61.
- Bruno Manser - Laki Penan*, 2007, Directed by C. Kühn [Film], Switzerland: Arte, Filmkollektiv

Zürich AG, Schweizer Fernsehen (FS) & Titanicfilm.

Buchanan, R., 1992. Wicked problems in design thinking. *Design Issues*, 8(2), pp. 5–21.

Burton-Jones, A., 2001. *Knowledge capitalism: Business, work, and learning in the new economy*, Oxford, UK: Oxford University Press.

Bødker, S. & Sundblad, Y., 2008. Usability and Interaction Design - new challenges for the Scandinavian tradition. *Behaviour & Information Technology*, 27(4), pp. 293–300.

Camara, S.B., Nocera, J.A. & Dunckley, L., 2008. Exploring the problem domain: A socio-technical ICT design for the developing world. In proceedings of the Participatory Design Conference 2008 (PDC'08). pp. 154–157.

Carroll, J.M., Chin, G., Rosson, M.B, Neale, D.C., 2000. The development of cooperation: Five years of participatory design in the virtual school. In proceedings of the Third Conference on Designing Interactive Systems (DIS00): Processes, Practices, Methods, and Techniques. New York, NY, USA: ACM Press, pp. 239–251.

Chesbrough, H., 2003. *Open innovation: the new imperative for creating and profiting from technology*, Boston, MA: Harvard Business School Press.

Clarke, A.J. ed., 2011. *Design anthropology: object culture in the 21st century*, Vienna, Austria: Springer Verlag.

Clement, A. & Van den Besselaar, P., 1993. A retrospective look at PD projects. *Communications of the ACM*, 36(4), pp. 29–37.

Conrad, D. & Campbell, G., 2008. Participatory action research: An empowering methodology with marginalized populations. In P. Liamputtong & J. Rumbold, eds. *Knowing differently: Arts-based and collaborative research*. New York, NY, USA: Nova Science Publishers, pp. 247–263.

Csikszentmihalyi, M., 1996. *Creativity: Flow and the psychology of discovery and invention*, New York, NY, USA: Harper Perennial.

Csikszentmihalyi, M., 1993. Why we need things. In S. Lubar and W.D. Kingery, eds. *History from things: Essays on material culture*. London, UK: Smithsonian Institution Press, pp. 20–29.

Csikszentmihalyi, M. & Halton, E., 1981. *The meaning of things*, Cambridge, UK: Cambridge University Press.

Das, G., 1993. Local memoirs of a global manager. *Harvard Business Review*, 71(2), pp. 38–47.

- Dearden, A. & Rizvi, H., 2008. Participatory design and participatory development: a comparative review. In proceedings of Participatory Design Conference 2008 (PDC'08). pp. 81–91.
- Dewey, J., 1958. *Experience and nature*, New York, NY, USA: Dover Publications (Original work published in 1925).
- Dewey, J., 1938. *Logic: The theory of inquiry*, New York, NY, USA: Henry Holt and Co.
- Dindler, C., 2010. The construction of fictional space in participatory design practice. *CoDesign*, 6(3), pp. 167–182.
- Dion-Stout, M. & Kipling, G.D., 2001. Establishing a leading knowledge-based organization. *National Aboriginal Health Organization Discussion Paper*.
- DiSalvo, C., Lodato, T., Fries, L. Schechter, B. & Barnwell, T., 2011. The collective articulation of issues as design practice. *CoDesign*, 7(3-4), pp. 185–197.
- DiSalvo, C., Nourbakhsh, I., Holstius, D., Akin, A. & Louw, M., 2008. The neighborhood networks project: A case study of critical engagement and creative expression through participatory design. In proceedings of Participatory Design Conference 2008 (PDC'08). pp. 41–50.
- Dorst, K., 2008. Design research: a revolution-waiting-to-happen. *Design Studies*, 29(1), pp. 4–11.
- Ehn, P., 2008. Participation in Design Things. In proceedings of Participatory Design Conference 2008 (PDC'08). pp. 92-101.
- Ehn, P. & Kyng, M., 1991. Cardboard computers: Mocking-it-up and hands-on the future. In Greenbaum, J. & Kyng, M., eds. *Design at work: Cooperative design of computer systems*. Hillsdale, NJ, USA: Lawrence Erlbaum.
- Ellen, R. & Harris, H., 1996. Concepts of indigenous environmental knowledge in scientific and development studies literature - A critical assessment. Paper presented at the East-West Environmental Linkages Network Workshop 3. Canterbury, UK.
- Ellwood, C.A., 1927. *Cultural evolution: A study of social origins and development*, New York, NY, USA: Century.
- Emerson, R.M., Fretz, R.I. & Shaw, L.L., 1995. *Writing ethnographic fieldnotes*, Chicago, IL, USA: University of Chicago Press.
- Eythorsson, E., 1993. Sami fjord fishermen and the state: Traditional knowledge and resource man-

- agement in Northern Norway. In J. Inglis, ed. *Traditional ecological knowledge: Concepts and cases*. Ottawa, Canada: International Development Research Centre, pp. 133-142
- Fallman, D., 2003. Design-oriented human-computer interaction. In proceedings of the CHI'03 conference on Human factors in computing systems. New York, NY, USA: ACM Press, pp. 225–232.
- Fallman, D. & Stolterman, E., 2010. Establishing criteria of rigour and relevance in interaction design research. *Digital Creativity*, 21(4), pp. 265–272.
- Flavier, M.J., 1995. The regional program for the promotion of indigenous knowledge in Asia. In D. M. Warren, L. J. Slikkerveer, & D. Brokensha, eds. *The cultural dimension of development: Indigenous knowledge systems*. London, UK: Intermediate Technology Publications, pp. 479–487.
- Flick, U., 2004. Constructivism. In U. Flick, E.v. Kardorff & I. Steinke, eds. *A companion to qualitative research*. London, UK: Sage, pp. 88-94.
- Frayling, C., 1993/4. Research in art and design. *Royal College of Art Research Papers*, 1(1), pp. 1–5.
- Friedman, K., 2008. Research into, by and for design. *Journal of Visual Art Practice*, 7(2), pp. 153–160.
- Fulcher, J., 2004. *Capitalism: A very short introduction*. Oxford, UK: Oxford University Press.
- Fulton-Suri, J., 2011. Poetic observation: What designers make of what they see. In A. J. Clarke, ed. *Design anthropology*. Vienna, Austria: Springer Verlag, pp. 16–32.
- Furby, L., 1978a. Possession in humans: An exploratory study of its meaning and motivation. *Social Behavior and Personality: An International Journal*, 6(1), pp. 49–65.
- Furby, L., 1978b. Possessions: toward a theory of their meaning and function throughout the life cycle. In P. B. Baltes, ed. *Life span development and behavior*. New York, NY, USA: Academic Press, pp. 297–336.
- Furby, L., 1980. The origins and early development of possessive behavior. *Political Psychology*, 2(1), pp. 30–42.
- Gadamer H.-G., 1975. *Truth and method*, London, UK: Sheed & Ward.
- Gadamer, H.-G., 2008. *Philosophical hermeneutics*, Oakland, CA, USA: University of California Press.

- Gaver, W. & Bowers, J., 2012. Annotated portfolios. *Interactions*, 19(4), pp. 40–49.
- Gaver, W., 2012. What should we expect from research through design? In proceedings of CHI'12 conference on Human factors in computing systems. New York, NY, USA: ACM Press, pp. 937–946.
- Gaver, W., Boucher, A., Pennington, S. & Walker, B., 2004. Cultural probes and the value of uncertainty. *Interactions*, 11(5), pp. 53–56.
- Gaver, W., Dunne, T. & Pacenti, E., 1999. Cultural probes. *Interactions*, 6(1), pp. 21–29.
- Geertz, C., 1973. *The interpretation of cultures*, New York, NY, USA: Basic Books.
- Geertz, C., 1988. *Works and lives: The anthropologist as author*, Stanford, CA, USA: Stanford University Press.
- Glaser, B.G. & Strauss, A., 1967. *Discovery of grounded theory. Strategies for qualitative research*, Chicago, IL, USA: Aldine.
- Glăveanu, V.P., 2010. Paradigms in the study of creativity: Introducing the perspective of cultural psychology. *New Ideas in Psychology*, 28(1), pp. 79–93.
- Goffman, E., 1959. *The presentation of self in everyday life*, New York, NY, USA: Anchor Books.
- Gonzalez, J.A., 1995. Autotopographies. In J. Brahm & M. Driscoll, eds. *Prosthetic territories: Politics and hypertechnologies*. Boulder, CO, USA: Westview Press.
- Greenbaum, J. & Loi, D., 2012. Participation, the camel and the elephant of design: an introduction. *CoDesign*, 8(2-3), pp. 81–85.
- Grenier, L., 1998. *Working with indigenous knowledge*, Ottawa, Canada: International Development Research Center.
- Hallnäs, L., Jaksetic, P. Ljungstrand, P., Redström, J. & Skog, T., 2001. Expressions: Towards a design practice of slow technology. In proceedings of Interact 2001. pp. 447–454.
- Hamilton, R., 1956. *Just what is it that makes today's homes so different, so appealing?*, Kunsthalle Tübingen: Tübingen, Germany.
- Hansen, E., 2000. *Stranger in the forest - On foot across Borneo*, New York, NY, USA: Vintage Books.
- Heidegger, M., 1927. *Being and time*, New York, NY, USA: Harper.

Hillgren, P.-A., Seravalli, A. & Emilson, A., 2011. Prototyping and infrastructuring in design for social innovation. *CoDesign*, 7(3-4), pp. 169–183.

Ho, D.K.-L., Ma, J. & Lee, Y., 2011. Empathy @ design research: a phenomenological study on young people experiencing participatory design for social inclusion. *CoDesign*, 7(2), pp. 95–106.

Holcombe, S., 2011. The arrogance of ethnography: Managing anthropological research knowledge. *Australian Aboriginal Studies*, 2010(2), pp. 22–32.

Hummels, C.C.M & Frens, J.W., 2008. Designing for the unknown: A design process for the future generation of highly interactive systems and products. In proceedings of the 10th International Conference on Engineering and Product Design Education. pp. 204–209.

Hunt, J., 2011. Prototyping the social: Temporality and speculative futures at the intersection of design and culture. In A. J. Clarke, ed. *Design anthropology*. Vienna, Austria: Springer Verlag, pp. 33–44.

Hussain, S., 2010. Empowering marginalised children in developing countries through participatory design processes. *CoDesign*, 6(2), pp. 99–117.

Hussain, S. & Sanders, E.B.-N., 2012. Fusion of horizons: Co-designing with Cambodian children who have prosthetic legs, using generative design tools. *CoDesign*, 8(1), pp. 43–79.

Hutchinson, H., MacKay, W., Westerlund, B., Bederson, B.B., Druin, A., Plaisant, C., Beaudouin-Lafon, M., Conversy, S., Evans, H., Hansen, H., Roussel, N., Eiderbäck, B., Lindquist, S. & Sundblad, Y., 2003. Technology probes: Inspiring design for and with Families. In proceedings of CHI'03 conference on Human factors in computing systems. pp. 17–24.

Icograda - Rediscovery, 2012, Available at: <http://sarawak.icograda.org/> [Accessed May 2015].

ISITI-CoERI, *Our Mision*, 2014, Available at: <http://www.isiti.unimas.my/index.php/about-us/2012-01-17-02-53-24/mission> [Accessed May 2015].

Iversen, O.S., Halskov, K. & Leong, T.W., 2012. Values-led participatory design. *CoDesign*, 8(2-3), pp. 87–103.

Johnson, M.E., 2000. Heidegger and meaning: Implications for phenomenological research. *Nursing Philosophy*, 1(2), pp. 134–146.

Johnson-Laird, P.N., 1988. Freedom and constraint in creativity. In R.J. Sternberg, ed. *The nature of creativity: Contemporary psychological perspective*. Cambridge, UK: Cambridge University Press,

pp. 202–219.

Jonas, W., 2006. Research through DESIGN through research—a problem statement and a conceptual sketch. In proceedings of Design Research Society International Conference 2006 (DRS 2006), No. 0230.

Jonas, W., 2007. Research through DESIGN through research: A cybernetic model of designing design foundations. *Kybernetes*, 36(9/10), pp. 1362–1380.

Jones, P.H., Christakis, A.N. & Flanagan, T.R., 2007. Dialogic design for the intelligent enterprise: Collaborative strategy, process, and action. In proceedings of the 17th Annual International Symposium of the International Council on Systems Engineering. pp. 1–16.

Kensing, F. & Blomberg, J., 1998. Participatory design: Issues and concerns. *Computer Supported Cooperative Work*, 7(3-4), pp. 167–185.

Kleinsmann, M. & Valkenburg, R., 2008. Barriers and enablers for creating shared understanding in co-design projects. *Design Studies*, 29(4), pp. 369–386.

Kolb, D.A., 1984. *Experiential learning: Experience as the source of learning and development*. New Jersey, USA: Prentice-Hall.

Kolb, A.Y. & Kolb, D.A., 2005. Learning styles and learning spaces: Enhancing experiential learning in higher education. *Academy of Management Learning & Education*, 4(2), pp. 193–212.

Koskinen, I., Zimmerman, J., Binder, T., Redström, J. & Wensveen, S., 2011. *Design research through practice*, Waltham, USA: Morgan Kaufmann.

Kouprie, M. & Sleeswijk-Visser, F., 2009. A framework for empathy in design: stepping into and out of the user's life. *Journal of Engineering Design*, 20(5), pp. 437–448.

Lalonde, A., 1993. African indigenous knowledge and its relevance to sustainable development. In J. Inglis, ed. *Traditional ecological knowledge: Concepts and cases*. Ottawa, Canada: International Development Research Centre, pp. 55–62.

Latour, B., 1992. Where are the missing masses? The sociology of mundane artifacts. In W. E. Bijkerker & J. Law, eds. *Shaping technology/Building society: Studies in sociotechnical change*. Cambridge, UK: MIT Press, pp. 225–258.

Lave, J. & Wenger, E., 1991. *Situated learning: Legitimate peripheral participation*, Cambridge, UK: Cambridge University Press.

- Lee, Y., 2006. Design participation tactics: redefining user participation design. In proceedings of Design Research Society International Conference 2006 (DRS 2006), No. 0174.
- Lee, Y., 2008. Design participation tactics: the challenges and new roles for designers in the co-design process. *CoDesign*, 4(1), pp. 31–50.
- Lenskjold, T.U., 2011. Accounts of a critical artefacts approach to design anthropology. In proceedings of Nordes Design Research Conference 2011. pg. 85-93.
- Det perfekte menneske*, 1967, Directed by J. Leth [Film], Denmark: Laterna Film.
- Lewis, M. & Brook, J., 1974. Self, others and fear - Infants' reactions to people. In M. Lewis & L. S. Rossenblum, eds. *The origins of fear*. New York, NY, USA: Wiley, pp. 165–194.
- Liamputtong, P., 2010. Cross-cultural research and qualitative inquiry. *Turkish Online Journal of Qualitative Inquiry*, 1(1), pp. 16–29. Available at: http://www.tojqi.net/articles/TOJQI_1_1/TOJQI_1_1_Article_2.pdf [Accessed May 2015].
- Light, A., 2011. Democratising technology: making transformation using designing, performance and props. In proceedings of CHI'11 conference on Human factors in computing systems. New York, NY, USA: ACM Press, pp. 2239–2242.
- Light, A. & Akama, Y., 2012. The human touch: participatory practice and the role of facilitation in designing with communities. In proceedings of Participatory Design Conference 2012 (PDC'12). New York, NY, USA: ACM Press, pp. 61–70.
- Light, A., Hill, K.J., Hansen, N.B., Hackney, F., Halskov, K., Dalsgaard, P., 2013. Exploring the dynamics of ownership in community-oriented design projects. In proceedings of the International Conference on Communities and Technologies 2013. New York, NY, USA: ACM Press, pp. 90–99.
- Light, A., Egglestone, P., Wakeford, T. & Rogers, J., 2011a. Participant-making: bridging the gulf between community knowledge and academic research. *The Journal of Community Informatics*, 7(3).
- Light, A., Wakeford, T., Egglestone, P. & Rogers, J., 2011b. Research on an equal footing? A UK collaborative inquiry into community and academic knowledge. In proceedings of Indigenous Knowledge Technology Conference 2011 (IKTC'11). pp. 79-87.
- Lippard, L.R., 2010. Farther afield. In C. Wright & A. Schneider, eds. *Between art and anthropology. contemporary ethnographic practice*. London, UK: Berg publishers.
- Louis, R.P., 2007. Can you hear us now? Voices from the margin: Using indigenous methodologies in geographic research. *Geographical Research*, 45(2), pp. 130–139.

- Madden, D., Cadet-James, Y., Atkinson, I. & Watkin Lui, F., 2014. Probes and prototypes: A participatory action research approach to codesign. *CoDesign*, 10(1), pp. 31–45.
- Manzini, E. & Rizzo, F., 2011. Small projects/large changes: Participatory design as an open participated process. *CoDesign*, 7(3-4), pp. 199–215.
- Marsden, D., 2005. Indigenous management and the management of indigenous knowledge. In S.Wright ed. *Anthropology of organizations*. New York, NY, USA: Taylor & Francis, pp. 39–54.
- Maslow, A.H., 1943. A theory of human motivation. *Psychological Review* 50(4), pp. 370-396.
- Mattelmäki, T., 2006. *Design probes*, Vaajakoski, Finland: Gummerus Printing.
- Mattelmäki, T., 2008. Probing for co-exploring. *CoDesign*, 4(1), pp. 65–78.
- Mattelmäki, T. & Battarbee, K., 2002. Empathy probes. In proceedings of Participatory Design Conference 2002 (PDC 2002). pp. 266–271.
- McDonagh-Philp, D. & Denton, H., 1999. Using focus groups to support the designer in the evaluation of existing products: A case study. *The Design Journal*, 2(2), pp. 20-31.
- Menzies, C.R., 2001. Reflections on research with, for, and among Indigenous peoples. *Canadian Journal of Native Education*, 25(1), pp. 19–36.
- Meroni, A., 2010. Design for services and place development. In proceedings of Cumulus Shanghai conference 2010. pp. 234–242.
- Merritt, S. & Stolterman, E., 2012. Cultural hybridity in participatory design. In proceedings of Participatory Design Conference 2012 (PDC 2012). pp. 73–76.
- Miller, D., 2011. *Stuff*, Cambridge, UK: Polity.
- Moore, G.A., 1991, *Crossing the chasm: Marketing and selling high-tech products to mainstream consumers*. New York, NY, USA: HarperBusiness.
- Muller, M.J. & Druin, A., 2008. Participatory design: The third space in HCI. In J. Jacko and A. Sears, eds. *The Human–Computer Interaction handbook: Fundamentals, evolving technologies, and emerging applications*, 2nd ed. Mahwah, USA: Lawrence Erlbaum Associates, pp. 1050–1075.
- Mutua, K.N. & Swadener, B.B. eds., 2004. *Decolonizing research in cross-cultural contexts: Critical personal narratives*, Albany: State University of New York Press.

- Newbury, D., 2001. Diaries and fieldnotes in the research process. Research issues in art, design and media, The Research Training Initiative, University of Central England.
- Nichol, L., 2003. *The essential David Bohm*. London, UK: Routledge.
- MaXhosa by Laduma*, 2013. Available at: <http://www.maxhosa.co.za/> [Accessed May, 2015].
- O'Hanlon, R., 1986. *Into the heart of Borneo*, Edinburgh, UK: The Salamander Press.
- Odom, W., 2010. "Mate, we don't need a chip to tell us the soils dry" Opportunities for designing interactive systems to support urban food production. In proceedings of the 8th Conference on Designing Interactive Systems. New York, NY, USA: ACM Press, pp. 232-235.
- Ong, E., n.d., *Edric Ong*. Available at: <http://www.edricong.com/> [Accessed May, 2015].
- Oosterlaken, I. & van den Hoven, J., 2009. Design for development: A capability approach. *Design Issues*, 25(4), pp. 91-102.
- Overbeeke, C.J., Djajadiningrat, J.P, Hummels, C.C.M & Wensveen, S.A.G., 2002. Beauty in usability: Forget about ease of use!. In W.S. Green and P.W. Jordan, eds. *Pleasure with products beyond usability*. London, UK: Taylor and Francis, pp. 9-18.
- Oyugi, C., Nocera, J.A, Dunckley, L. & Dray, S., 2008. The challenges for participatory design in the developing world. In proceedings of Participatory Design Conference 2008. CPSR/ACM Press, pp. 295–296.
- Peirce, C.S., 1931-1935. *The collected papers of Charles S. Peirce* (8 Vol.). Cambridge, MA, USA: Harvard University Press.
- Pierce, J.L., Kostova, T. & Dirks, K.T., 2003. The state of psychological ownership: Integrating and extending a century of research. *Review of General Psychology*, 7(1), pp. 84-107.
- Pierce, J.L., Kostova, T. & Dirks, K.T., 2001. Toward a theory of psychological ownership in organizations. *Academy of Management Review*, 26(2), pp. 298–310.
- Pierce, L.J., O'driscoll, M.P & Coghlan, A.-M, 2004. Work environment structure and psychological ownership: The mediating effects of control. *The Journal of Social Psychology*, 144(5), pp. 507–534.
- Prelinger, E., 1959. Extension and structure of the self. *The Journal of Psychology: Interdisciplinary and Applied*, 47(1), pp. 13–23.
- Prosser, J. & Schwartz, D., 1998. Photographs within the sociological research process. In J. Prosser,

- ed. *Image-based research: A sourcebook for qualitative researchers*. London, UK: Falmer Press.
- Puri, S.K., Byrne, E., Nhampossa, J.L. & Quraishi, Z.B., 2004. Contextuality of participation in IS design: A developing country perspective. In proceedings of Participatory Design Conference 2004. New York, NY, USA: ACM Press, pp. 42-52.
- Reber, A.S., 1985. *The Penguin Dictionary of Psychology*, Harmondsworth, Middlesex, UK: Penguin.
- Redström, J., 2008. RE:Definitions of use. *Design Studies*, 29(4), pp. 410–423.
- Redström, J., 2011. Some notes on programme-experiment dialectics. In proceedings of the 4th Nordic Conference on Design Research. pp. 129-136.
- Reitsma, L., Smith, A. & van den Hoven, E., 2013. StoryBeads: Preserving indigenous knowledge through tangible interaction design. In proceedings of the International Conference on Culture and Computing 2013. IEEE Press, pp. 79–85.
- Reitsma, L., Wallace, J., Rodgers, P. (2013) Exploring respectful design directions for indigenous communities. In Proceedings of International Conference on Culture & Computing 2013, pp. 131 - 132.
- Reitsma, L., Light, A. and Rodgers, P (2014). Empathic negotiations through material culture: Co-designing and making digital exhibits. *Digital Creativity*, 25(3), pp. 269-274.
- Reitsma, L., 2015. Enabling design to disappear: The design process of StoryBeads. In N.J Bidwell & H. Winschiers-Theophilus, eds. *At the intersections of traditional and indigenous knowledges and technology design*. Santa Rosa, CA, USA: Informing Science Press, pp. 205-219.
- Rhodes, S., 2014. *Bridging the Divide – Design Research Symposium & Workshop*. Available at: <http://thecraftofubuntu.com/bridging-the-divide-symposium-workshop> [Accessed May 2015].
- Rittel, H.W. & Webber, M.M., 1973. Dilemmas in a general theory of planning. *Policy Sciences*, 4(2), pp. 155–169.
- Robinson, D., Karlin, A. & Waters, R., 2011. *Borneo: regional guide*, 2nd ed., Melbourne, AUS: Lonely Planet Publications.
- Rogers, E.M., 1983, *Diffusion of Innovations*, 3rd ed. New York, NY, USA: The Free Press.
- Rodil, K., Winschiers-Theophilus, H. & Jensen, K.L., 2012. Enhancing cross-cultural participation through creative visual exploration. In proceedings of Participatory Design Conference 2012. New

York, NY, USA: ACM Press, pp. 81–90

Rosenfield, R., Sherwani, J., Ali, N. & Rosé, C.P., 2009. Orality-grounded HCID: understanding the oral user. *Information Technologies and International Development*, 5(4), pp. 37-49.

Ruddle, K., 1993. The transmission of traditional ecological knowledge. In J. Inglis, ed. *Traditional ecological knowledge: Concepts and cases*. International Development Research Centre, Ottawa, Canada. pp. 17-32.

Rudmin, F.W., 1991. “To own is to be perceived to own”: A social cognitive look at the ownership of property. *Journal of Social Behavior & Personality*, 6(6), pp. 85–104.

Rudmin, F.W. & Berry, J.W., 1987. Semantics of ownership: A free-recall study of property. *The Psychological Record*, 37(2), pp. 257–268.

Sanders, E.B.-N., 2000. Generative tools for co-designing. In A.R.S. Stephen, J.B. Linden, & A. Woodcock, eds. *Collaborative design*. London, UK: Springer, pp. 3–12.

Sanders, E.B.-N. & Stappers, P.J., 2008. Co-creation and the new landscapes of design. *CoDesign*, 4(1), pp. 5–18.

Sanders, E.B.-N. & Stappers, P.J., 2014. Probes, toolkits and prototypes: three approaches to making in codesigning. *CoDesign*, 10(1), pp. 5–14.

Sanders, E.B.-N., Brandt, E. & Binder, T., 2010. A framework for organizing the tools and techniques of Participatory Design. In proceedings of Participatory Design Conference 2010. New York, NY, USA: ACM Press, pp. 195–198.

Sanjek, R. ed., 1990. *Fieldnotes: The Makings of Anthropology*, Ithaca, New York, USA: Cornell University Press.

Sartre, P.-J., 1969. *Being and nothingness: An phenomenological essay on ontology*, London, UK: Melhuen & Co, Ltd. (Original work published in 1943)

Schatzman, L. & Strauss, A., 1973. *Field research: Strategies for a natural sociology*, Englewood Cliffs, NJ, USA: Prentice Hall.

Schön, D.A., 1983. *The reflective practitioner*, New York, NY, USA : Basic Books.

Seligman, M.E.P., 1975. *Helplessness: On depression, development, and death*. San Francisco, USA : Freeman.

- Sheehan, N.W., 2011. Indigenous knowledge and respectful design: an evidence-based approach. *Design Issues*, 27(4), pp. 68–80.
- Simeone, G. & Corubolo, M., 2011. Co-design tools in “place” development projects: an ongoing research case. New York, NY, USA: ACM Press, pp. 4-12.
- Smith, A., Reitsma, L., Van Den Hoven, E., Kotzé, P., & Coetzee, L., 2011. Towards preserving indigenous oral stories using tangible objects. In proceedings of Culture and Computing Conference 2011. IEEE Press, pp. 86-91.
- Smith, L.T., 1999. *Decolonizing methodologies: Indigenous peoples and research*, London, UK: Zed Books.
- Smith, L.T., 2005. On tricky ground: Researching the native in the age of uncertainty. In N. K. Denzin & Y. S. Lincoln, eds. *The landscape of qualitative research*, 3rd ed, Thousand Oaks, CA, USA: Sage Publications, pp. 113–143.
- Sochaczewski, P.S., 2012. *An inordinate fondness of beetles*, Singapore: Editions Didier Millet Pte Ltd.
- Star, S.L. & Griesemer, J.R., 1989. Institutional ecology ‘translations’ and boundary objects: Amateurs and professionals in Berkeley’s Museum of Vertebrate Zoology, 1907-39. *Social Studies of Science*, 19(3), pp. 387–420.
- Steen, M., 2013. Co-design as a process of joint inquiry and imagination. *Design Issues*, 29(2), pp. 16–28.
- Steger, M.B., and Roy, R.K.. 2010. *Neoliberalism: A very short introduction*. Oxford, UK: Oxford University Press.
- Steinhauer, E., 2002. Thoughts on an indigenous research methodology. *Canadian Journal of Native Education*, 26(2), pp. 69–81.
- Szalavitz, M. & Perry, B.D., *Born for love*, New York, NY, USA: HarperCollins eBooks.
- Thackara, J., 1999. An unusual expedition (Preface). In K. Hofmeester & E. De Charon de Saint Germain, eds. *Presence: New media for older people*. Amsterdam: Netherlands Design Institute, pp. 7-9.
- Thorpe, A. & Gamman, L., 2011. Design with society: why socially responsive design is good enough. *CoDesign*, 7(3-4), pp. 217–230.
- Tomico, O., 2009. Co-reflection. User involvement aimed at societal transformation. *Temes de Dis-*

seny, (26), pp. 80–89.

Tomico, O. & Garcia, I., 2011. Designers and stakeholders defining design opportunities “in-situ” through coreflection. In proceedings of the Participatory Innovation Conference 2011. pp. 58–64.

Tomico, O., Frens, J.W. & Overbeeke, C.J., 2009. Co-reflection: user involvement for highly dynamic design processes. In CHI'09 Extended Abstracts on Human Factors in Computing Systems. New York, NY, USA: ACM, pp. 2695–2698.

Törpel, B., Voss, A., Hartswood, M. & Procter, R., 2009. Participatory design: issues and approaches in dynamic constellations of use, design, and research. In A.Voss, M. Hartswood, R. Procter, M. Rouncefield, R. Slack, M. Büscher, eds. *Configuring User-Designer Relations*. London, UK: Springer, pp. 13-29.

Tufte, E.R., 1990. *Envisioning information*, Cheshire, Connecticut, USA: Graphics Press.

Tufte, E.R., 2001. *The visual display of quantitative information*. Cheshire, Connecticut, USA: Graphics Press.

Tunstall, E., 2011. Design anthropology, indigenous knowledge and the decolonization of design. Presented at the Fabrica Workshops. Available at: <https://vimeo.com/22599259> [Accessed May 2015].

Unsworth, K.L., 2001. Unpacking creativity. *Academy of Management Review*, 26(2), pp. 289–297.

Urquhart, C., 2013. *Grounded theory for qualitative research: a practical guide*, London, UK: Sage.

Van Klaveren, R., 2012. Artistic participatory practices as a vehicle for togetherness. In proceedings of Participatory Design Conference 2012. New York, NY, USA: ACM Press, pp. 93-96.

van Rijn, H. & Stappers, P.J., 2008. Expressions of ownership: motivating users in a co-design process. In proceedings of Participatory Design Conference 2008, New York, NY, USA: ACM Press, pp. 178–181.

van Rijn, H., Bahk, Y., Stappers, P.J. & Lee, K.-P., 2006. Three factors for contextmapping in East Asia: Trust, control and nunchi. *CoDesign*, 2(3), pp. 157–177.

Verbeek, P.-P., 2006. Materializing morality design ethics and technological mediation. *Science, Technology & Human Values*, 31(3), pp. 361–380.

Verbeek, P.-P., 2005. *What things do*, Pennsylvania, USA: Pennsylvania State University Press.

Vines, J., Clarke, R., Wright, P., McCarthy, J. & Olivier, P., 2013. Configuring participation: On how

- we involve people in design. In proceedings of CHI'13 conference on Human factors in computing systems. New York, NY, USA: ACM Press, pp. 429-438
- Walker, K. Underwood, J., Waema, T. Dunckley, L. Abdelnour-Nocera, J. Luckin, R., Oyugi, C. & Camara, S., 2008. A resource kit for participatory socio-technical design in rural Kenya. In proceedings of CHI'08 conference on Human factors in computing systems. New York, NY, USA: ACM Press, pp. 2709–2714.
- Wallace, J., McCarthy, J. & Wright, P.C., 2013. Making design probes work. In proceedings of CHI'13 conference on Human factors in computing systems. New York, NY, USA: ACM Press, pp. 3441–3450.
- Wang, Q., Battocchi, A., Graziola, I., Pianesi, F., Tomasini, D., Zancanaro, M., Nass, C., 2006. The role of psychological ownership and ownership markers in collaborative working environment. In Proceedings of the 8th international conference on Multimodal interfaces. New York, NY, USA: ACM, pp. 225–232.
- Warren, D.M., 1991. Using indigenous knowledge in agricultural development. No. 127. *Washington DC: World Bank Discussion Papers*.
- Wassner, J., 2001. *Espresso with the headhunters - a journey through the jungles of Borneo*, Chichester, UK: Summersdale travel.
- Weil, S., 1952. *The need for roots*, London, UK: Routledge and Kegan Paul.
- Wenger, E., 1999. *Communities of practice: Learning, meaning and identity*, Cambridge, UK: Cambridge University Press.
- Wexler, L., 2009. The importance of identity, history, and culture in the wellbeing of indigenous youth. *The Journal of the History of Childhood and Youth*, 2(2), pp. 267–276.
- White, R.W., 1959. Motivation reconsidered: The concept of competence. *Psychological Review*, 66(5), pp. 297–333.
- Winner, L., 1986. Do Artifacts Have Politics?. In L. Winner, ed. *The whale and the reactor: A search for limits in an age of high technology*. Chicago, IL, USA: University of Chicago Press, pg. 19-39.
- Winnicott, D.W., 1953. Transitional objects and transitional phenomena—A study of the first not-me possession. *International Journal of Psycho Analysis*, 34, pp. 89–97.
- Winograd, T., 1987. A language/action perspective on the design of cooperative work. *Human-Computer Interaction*, 3, pp. 3–30.

Winschiers-Theophilus, H., 2009. Cultural appropriation of software design and evaluation. In B. Whitworth, ed. *Handbook of research on socio-technical design and social networking systems*. IGI Global.

Winschiers-Theophilus, H., Chivuno-Kuria, S., Koch Kapuire, G., Bidwell, N.J. & Blake, E., 2010. Being participated: a community approach. In proceedings of Participatory Design Conference 2010 (PDC'10). New York, NY, USA: ACM, pp. 1–10.

Winschiers-Theophilus, H., Bidwell, N.J. & Blake, E., 2012. Altering participation through interactions and reflections in design. *CoDesign*, 8(2-3), pp. 163–182.

Wright, P. & McCarthy, J., 2008. Empathy and experience in HCI. In proceedings CHI'08 conference on Human factors in computing systems. New York, NY, USA: ACM, pp. 637–646.

Wright, P. & McCarthy, J., 2010. Experience-centered design: Designers, users and communities in dialogue. *Synthesis Lectures on Human-Centered Informatics*, No. 9. Morgan & Claypool.

Yeo, A.W., Hazis, F.S., Zaman, T., Songan, P. & Ab Hamid, K., 2011. Telecentre Replication Initiative in Borneo Malaysia: the CoERI Experience. *The Electronic Journal of Information Systems in Developing Countries*, 50(3), pp. 1–15. Available at:<http://144.214.55.140/ojs2/index.php/ejisd/article/view/882> [Accessed May 2015]

Yin, R.K., 2009. *Case study research*, Los Angeles, CA, USA: SAGE Publications, Inc.

Young, R.J.C., 2003. *Postcolonialism: A very short introduction*. Oxford, UK: Oxford University Press.

Young, R., 2014. The role of empathy as a core value for service co-design practitioners engaged in social innovation. In H. Daam, ed. *Strategic creativity series: Moving stories*.

Young, M.W., 1998. *Malinowski's Kiriwina*, Chicago, IL, USA: The University of Chicago Press.

Yukawa, J., 2006. Co-reflection in online learning: Collaborative critical thinking as narrative. *International Journal of Computer-Supported Collaborative Learning*, 1(2), pp. 203–228.

Zimmerman, J., Forlizzi, J. & Evenson, S., 2007. Research through design as a method for interaction design research in HCI. In proceedings of CHI'07 conference on Human factors in computing systems. New York, NY, USA: ACM, pp. 493–502.

Zimmerman, J., Stolterman, E. & Forlizzi, J., 2010. An analysis and critique of Research through Design: towards a formalization of a research approach. In proceedings of the 8th Conference on Designing Interactive Systems. New York, NY, USA: ACM, pp. 310–319.