

Designing Socio-Technical Systems to Illuminate Possibilities for a Vulnerable Population

Aakash Gautam

Dissertation submitted to the Faculty of the
Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy
in
Computer Science & Application

Deborah G. Tatar, Chair

Steve R. Harrison

Sang Won Lee

Bonnie Zare

Neha Kumar

July 15th, 2021

Blacksburg, Virginia

Keywords: assets-based, vulnerable group, sensitive setting, HCI4D, participatory design

Copyright 2021, Aakash Gautam

Designing Socio-Technical Systems to Illuminate Possibilities for a Vulnerable Population

Aakash Gautam

(ABSTRACT)

How might computer scientists work with communities in facilitating meaningful social change? In this project, we make a case for an approach that builds upon what the individuals and community already have—their assets—rather than emphasizing “user’s needs” as typically postulated by human-centered design. We present details of our four-year-long assets-based engagement with an anti-trafficking organization in Nepal and the sex trafficking survivors supported by the organization. We explored the potential role that socio-technical systems and technology designers can play in assisting the survivors to build on their existing assets towards their vision of “dignified reintegration”. The research involves three fieldwork and a remote study, each one leveraging carefully tailored socio-technical systems to investigate a design proposition. We present an operationalizable definition of assets and a framework of action to leverage assets in realizing change at an individual and institutional level. We describe the conditions that influenced the possibilities for our interventions and the factors that guided the design of the socio-technical systems. We further highlight how we adapted our methods to the local resources and practices in order to foster a space that promoted comfort and control to the study participants. The detailed account of our approach aims to provide a justification for undertaking slow, incremental steps with the community.

Designing Socio-Technical Systems to Illuminate Possibilities for a Vulnerable Population

Aakash Gautam

(GENERAL AUDIENCE ABSTRACT)

Human trafficking survivors face a myriad of challenges in their reintegration journey. Working with an anti-trafficking organization in Nepal, I explored the potential role that technology and technology designers can play in assisting the survivors in their reintegration journey. The research involved three forays into fieldwork and a remote study, each one leveraging carefully tailored activities to investigate the possibilities for the survivors to be in a position of power once they leave the shelter home. The activities included technology such as a specifically tailored web application contextualized around the survivors' existing strengths but also involved non-digital components such as collectively envisioning broader possibilities and alternative futures and discussing ways in which the survivors could engage with local actors to mitigate societal problems they had seen near their homes. In all these activities, I adapted local practices and materials to promote a safe space for the survivors to participate from within their realm of comfort. This dissertation illuminates a potential pathway to engage in long-term community-based research with vulnerable populations. In particular, it makes a case for an approach that builds upon what the individuals and community already have, that is, their *assets*. The work illuminates ways to identify and build upon assets to support the survivors. Using the work, we make a case for undertaking slow, incremental steps as part of assets-based engagement with communities. The work emphasizes the need for technology developers to understand their responsibilities and carefully contemplate what elements of a situation or design allow ethical intervention. Finally, the work emphasizes the need for developers to be cognizant of how design of technology is tied up with the larger, multi-level system in which technology use is embedded.

Dedication

आमा, बुवा, मुमु, बाबालाई, माया कति गहिरो हुनसक्छ देखाउनु भएकोमा ।

To my maternal grandparents and parents, for showing me how deep love can be.

Acknowledgments

Pursuing a Ph.D., despite its ups and downs, has been a privilege. The friendship, support, and care of many people have made this journey meaningful. For that, I feel truly blessed.

First and foremost, I am grateful to my advisor, Deborah Tatar, for patiently guiding me. Her passionate drive to use technology and research to support enduring human values has shaped my vision of the work that matters. Her influence can be seen in all pages of this dissertation. Without her insightful intellect and care-filled perspectives, this research would not have come to fruition.

I am also thankful to the members of my committee for their kind and thoughtful guidance. Steve Harrison introduced me to human-computer interaction (HCI) and has, over the years, shown by example the importance of asking difficult questions to know the right thing to do. Sang Won Lee was the guide I did not know I needed until I talked with him about the first study. His insight into systems design and his questions on involving broader stakeholders has been influential. I am indebted to Bonnie Zare for patiently listening to my incremental progress and half-baked ideas, and providing insights that have helped me see my work in different lights. Neha Kumar's research has been an inspiration for me and many ideas in this dissertation are influenced by her work. I am also grateful to Neha for guiding me after the COVID-19 outbreak when there seemed to be very few options for me to continue the work.

I am deeply indebted to the members of Shakti Samuha who welcomed me into their family. I am thankful to Sunita Danuwar and Aashish Dulal for championing the initial collaboration. I am grateful to Charimaya Tamang, Bal Kumari Rana, Sushila Khakurel, Ganesh Raj Bhatt, Narbada Sorali Magar, Rina B.K., Neera Dulal, Bala Bhattarai, Neelam Tamang, and all

the sisters for opening their hearts to me. It is their life experiences and knowledge that I humbly present in this dissertation. My sincere hope is that they found something of value from the collective engagement. I look forward to continuing the collaboration.

I am also thankful for the help and support from members of Maiti Nepal. In particular, I am grateful to Asira Khanal for initially supporting the collaboration and for her continued help during the early study. Thanks to Prakash Bhattarai from whom I learned to navigate the local politics in Nepal. I want to thank Sanam Aksha for his elder-brotherly support during my time at Virginia Tech and for constantly pushing me to be more socially adept. I am also grateful to Muna Khatiwada whose voice plays on the Hamrokala web application.

I am thankful for the privilege to collaborate and work with the members of ThirdLab – Michael Stewart, Javier Tibau, Anamary Leal, Chandani Shrestha, Melanie Trammell, and Andrew Kulak. I am especially thankful to Michael for guiding and mentoring me right from the start of my Ph.D. and Javier for being the person I could share all my frustrations on academia and migration with. More than that, I am grateful to Javier, Vanessa, and Emma for welcoming me into their family. Thanks to Javier, I got to be part of the Computational Thinking (CS 1014) team; the experience has influenced my teaching practice. I am particularly indebted to Dennis Kafura’s care and support that allowed me the additional time I needed for my fieldwork. Also, thanks to Javier, I met Marisol Wong-Villacres, working with whom over the last year and a half has been one of the most enriching experiences of my life. I have learned so much from Marisol and for that, I am truly grateful.

I want to thank my friends who have supported me, shared joy over things that meant very little to them—paper submissions and acceptance—and most critically, did not abandon me despite me repeatedly canceling the plans we made. Thank you Advait, Ajay, Anush, Arpan, Chandrika, Bigyan, Bijaya, Bikalpa, Geeta, Hari, Himanshu, Madhur, Nischal, Pritam, Sanjitha, Shruti, Ujjwal. Bigyan, thank you for starting TEFSE with me and for being

my local point of contact. Thank you, Aakriti, for pushing me to pursue a Ph.D. Thanks also to Bibek Kafle, my obscure but wise friend, whose insight on Wikipedia and language learning influenced the third study. Ayaan, thank you for illuminating the administrative side of grad school and for the support throughout. Without your help, I would not know where I would go after submitting this dissertation. Kedar, Sandeep, Nandita, Abhiyani, Soumya – thank you for feeding me and making Blacksburg a place where I felt welcomed. Shubham and Riddhi, thank you for being caring flatmates and for providing the abundance of materials that I have fast become used to. Iros, I celebrate this “fancy graduation” with you as we had planned several years ago. You are dearly missed.

I now come to friends who have become a family to me. Gaurang, Divya, and Revati, I cannot quite express what it means to me to have you all in my life. You have seen me at my worst and yet have chosen to be around. For that, I am eternally grateful. Gaurang, your support has been there even before we started the Ph.D. journey. Without knowing me and based solely on my awkward email, you finalized a place for us. It epitomizes the faith and support I have felt from you throughout this journey. Divya, I would have asked you to draw what I feel right now writing this paragraph, but you are part of it so I cannot. Instead, I will use my feeble words to express the gratitude I feel for having you around. You have been the person I could share my enthusiasm for participatory design and community-based work while also learning about Bollywood trivia and that-shall-not-be-named reality show. Revati, you trying to stop the bleeding from my thumb the night before the final defense kind of summarizes our relationship. You are the unsung hero in many respects: thank you for editing my drafts, for listening to my presentations multiple times, for taking care of everything while I indulged in research, and at times for, as you rightly put it, “saving me from myself.”

I feel that over the last six years—and even before that—I have put my family to the last, often prioritizing other things. I finish these acknowledgements both apologizing and thanking them for their continued support. Binita maiju, Anu didi, Pranab dada, and Smrity bhauju, having you all close by provided the assurance I needed to navigate a new country. Subash mama, Urmila maiju, Shreejwal, Surashree, Subodh mama, Sachita maiju, Suorchit, thank you for caring for me and for always being there. It feels weird to thank my younger brother, Ajay, but I am grateful that you are the calm and the “more normal” one of the two of us. Finally, buwa, aama, baba, mumu, it is your love that moves me. Everything I do and everything I will ever do is possible because of you. While nothing can quite make up for all that you have done for me, with humility and gratitude, I offer this to you.

Contents

- List of Figures xv

- List of Tables xviii

- 1 Introduction 1**
 - 1.1 Positionality and Reflexivity 13

- 2 Background and Related Work 16**
 - 2.1 Sex-Trafficking: A History of Poverty, Patriarchy, and Intersecting Penalties 16
 - 2.1.1 Survivor Characteristics 21
 - 2.2 Assets-Based Design For and With Vulnerable Population 22
 - 2.2.1 What are Assets? 24
 - 2.2.2 Our Adaptation of Assets-Based Design 26
 - 2.2.3 Assets-Based Empowerment Framework 28

- 3 First Moves to Understand the Context 33**
 - 3.1 Methodology 35
 - 3.2 Observations from the Ethnographic Study 36
 - 3.2.1 NGOs' Operations 37

3.2.2	Concerns on the sisters' Future Prospects	43
3.2.3	Organization's Relation With the Survivors	46
3.2.4	Reflections from the Field	51
3.2.5	Distance Between the Sisters and Me	52
3.2.6	On Forming Trust with the Organization	53
3.3	Chapter Summary	55
4	Adapting to Local Practices to Hear Nuanced Voices	57
4.1	Prior Use of Photo-elicitation and Probes	58
4.2	Methodology	60
4.2.1	Social Photo-Elicitation Session	60
4.2.2	Data Collection and Analysis	62
4.3	Findings	63
4.3.1	Skills Training for Financial Independence	64
4.3.2	Emotional Value of Crafts	68
4.3.3	Complexities Around Reintegration	71
4.4	Discussion	75
4.4.1	Identifying Assets	75
4.4.2	Asset 1: Knowledge of Crafting	76
4.4.3	Asset 2: Bond with One Another	79

4.4.4	Leveraging Communal Orientation in Social Photo-Elicitation	81
4.5	Chapter Summary	83
5	Introducing Hamrokala to Build on the Assets	85
5.1	Why Technology?	87
5.2	Methodology	88
5.2.1	Participants	88
5.2.2	Building Trust with the Sisters	89
5.2.3	Hamrokala: The Web Application	90
5.2.4	Workshop Sessions	93
5.2.5	Data Collection and Analysis Method	96
5.3	Findings	98
5.3.1	Computing	98
5.3.2	Communality	102
5.3.3	Crafting	108
5.4	Future Envisioning Exercise	112
5.4.1	Individual Aspirations	113
5.4.2	Social Aspirations	117
5.5	Discussion	120
5.5.1	Using Technology to Build upon Assets	122

5.5.2	Designing Technology to Support Collective Exploration	125
5.6	Chapter Summary	128
6	Incrementally Building on the Assets	130
6.1	Methodology	131
6.1.1	Participants	131
6.1.2	Study Methods	133
6.1.3	Data Collection and Analysis	138
6.1.4	Building Trust with the Sisters	139
6.2	Findings	141
6.2.1	Collective Exploration	143
6.2.2	Exploring Societal Engagement	146
6.2.3	Broader Possibilities Through Learning and Teaching	152
6.3	Discussion	160
6.3.1	Attending to Embedded Assets	162
6.3.2	Room to Explore Malleable Futures	163
6.4	Chapter Summary	165
7	Understanding the Staff Members' Perspectives	167
7.1	Methodology	170
7.1.1	Participants	170

7.1.2	Data Collection and Analysis	171
7.2	Case Study: Rita’s Reintegration Experience	173
7.3	Findings	177
7.3.1	Long-Term Challenges to Reintegration	178
7.3.2	Survivor-run Identity as an Organizational Asset	187
7.4	Discussion	193
7.4.1	Assets and Structural Limitations	195
7.4.2	Future Work: Playful Interactions to Showcase Knowledge	196
7.5	Chapter Summary	199
8	Discussion	200
8.1	Research Questions	201
8.1.1	Conditions Influencing the Situation of the Sisters	202
8.1.2	Conditions Influencing the Possibilities for Our Approach	207
8.1.3	Positioning Ourselves in a Sensitive Setting	212
8.2	Assets-Based Design for Individual and Institutional Empowerment	218
8.2.1	Supporting Critical Awareness About Assets	220
8.2.2	Challenging Exclusionary Practices	222
8.2.3	Mitigating Power Differences Between Stakeholders	225
8.2.4	Moving Towards Broader Possibilities and Alternatives	228

8.3	Practitioners Guide to Engaging in Assets-Based Design	230
8.3.1	When should we use assets-based design?	231
8.3.2	Agenda Control	232
8.3.3	Participants and Community	234
8.3.4	Resources	235
9	Conclusion	238
9.1	Contributions	238
9.1.1	A Detailed Account of the Context	239
9.1.2	Adapting Methods to the Local Context	242
9.1.3	Adapting Assets-Based Design in a Sensitive Setting	246
9.2	Limitations	248
9.3	Future Work	249
9.3.1	Furthering the Sisters' World Knowledge	250
9.3.2	Bridging Organization's Connections with Other Entities	251
9.4	Concluding Remark	252
	Bibliography	253
	Appendix A IRB Approval	286

List of Figures

2.1	Empowerment Framework from [40] which highlights informal and formal ways to bring individual and institutional changes that can empower women.	30
2.2	Adapting the empowerment framework to realize individual and institutional changes. All four mechanism of empowerment are interdependent.	31
3.1	NGOs relied heavily on quantitative measures to evaluate their operations as exemplified by the posters that adorned their office buildings.	41
3.2	Mutual bond between the sisters could be seen in several depictions in the photo-book. The sisters used different angles and compositional techniques to hide their identity.	50
4.1	The photo depicts a collection of handicrafts including cushions, shawls, poncho, and necklaces. Multiple participants had taken photographs of the shelf so they are grouped together. The text reads, “ <i>We hope that you will buy the handicraft products that we have made.</i> ”	65
4.2	The photo depicts necklaces made of glass beads. The participants had taken multiple takes of the necklace so they grouped it together in the poster. The text reads, “ <i>We can make different kinds of designs but you all don’t stop placing orders.</i> ”	67

4.3	A set of pouch made from old sari clothes and knitted decorative products created by the sisters. The text reads “One can easily work on these while staying at home.”	72
5.1	Users could share their crafts which would be visible to all members of the community. Members of the community could click on a shared item to see the details and leave an audio comment.	91
5.2	The interface where a new handicraft could be added for sale. An empty form where the sisters wrote the name, selected a type, clicked a photo, entered the price, and optionally recorded a description video. The name and price could be spoken instead of writing. The checklist on the right informed pending tasks to complete the posting.	92
5.3	An example craft posted for sale by S2.	93
5.4	The sisters shared laptops in groups and they were free to move around. The voice annotation also facilitated in making a group’s activity known to others, inviting others to join in and, if needed, help.	94
5.5	Example response to the first two prompts of the future envisioning exercise (“me” and “my family”).	96
5.6	Count of digital artifacts created by the groups each day after computers were introduced on the third day.	99
5.7	S5 helping S4 to record an item detail. Most of the sisters hid when capturing videos because of the fear of being identified as a trafficked person. I have further blurred the screen to protect their identity.	106

5.8	Some sisters saw the possibility of continuing crafting as a fall back plan to earn a living. All the sisters expressed desire to learn and use smartphones and computers, particularly to connect with family and friends.	119
6.1	Count of digital artifacts created by the groups each day after computers were introduced on the third day.	142
6.2	The translation and typing activities were heavily scaffolded to overcome comprehension barriers.	153
6.3	A dictionary of English to Nepali words created by S8 (in grade 5) who wants to become a veterinarian. She worked on the veterinarian Wikipedia page. .	154
7.1	When a player lands at a cell with a snake or a ladder, they pick the corresponding card from a deck. The player answers the question on the card. A snake card will involve another person present in the space; that person will decide whether the player slides down the snake based on the player's answer to the question.	198
8.1	The context of the study. We are outsiders trying to develop an understanding of the complexities surrounding anti-trafficking efforts in Nepal.	202
8.2	The framework along with the methods used in this project.	220

List of Tables

1.1	Timeline of activities presented in this dissertation	8
5.1	Demographic information and aspirations of the participating sisters	89
5.2	Overview of the major activities conducted during the workshop sessions. . .	95
6.1	Participants in our study. All of the sisters were enrolled in a school. Those marked with * (S2, S7, S10) had participated in the second study.	132
6.2	Overview of the major activities conducted during the workshop sessions. The sisters wanted to learn to type so we added typing exercises on the seventh day.	133
7.1	Staff members who participated in the remote interviews. During my field-work, I had met the the four staff members marked with *.	171
7.2	A sample of questions that we had come up during the design process. If a player lands on a ladder, the player answers a personal question about their lives in the shelter home or their vision of the future. If a player lands on snake, they answer relational questions that involve other people. The group can modify the questions before the game.	198

Chapter 1

Introduction

Human trafficking is an acute problem prevalent across the globe, including in Nepal, and has received considerable attention. However, work in understanding approaches that support long-term reintegration and the well-being of trafficking survivors has been limited [44, 51, 169]. In Nepal's context, trafficking of girls and women for sexual exploitation has been and continues to be a major problem. Around 12,000 girls and women are trafficked to India every year and more within Nepal itself [144, 223]. Additionally, there is a rise in trafficking oriented towards China [166]. Deep-rooted patriarchy and poverty are the major causes for girls' and women's vulnerability to trafficking [134]. Other factors including illiteracy, caste-based discrimination, natural disasters such as the April 2015 earthquake, lack of institutional mechanisms for human rights protection, and the ongoing political instability act as catalysts in exacerbating the problem [89, 92, 118, 190]. We expect the COVID-19 epidemic to worsen these conditions and promote human trafficking, even in the face of travel bans [182, 187].

Non-governmental organizations (NGOs) are the major actors mitigating problems in this space. They are involved in repatriation, rehabilitation, and reintegration of the survivors [44, 119, 134]. In 2017-18, around 3000 girls and women were rescued, primarily by NGOs. Typically, NGOs offer a protected living situation with some form of counseling and skill-based training which usually involves training the survivors in making handicrafts. The NGOs' programs and interventions have been helpful but concerns about their effectiveness

remain [44, 118, 179, 212]. Generally, NGOs' ultimate goal is to help the survivors reintegrate into society and most preferably with their own families. This can be a problem for many reasons including that many in Nepali society believe that the return of the survivor brings disgrace not just to the individual but to her family and even the entire community [108, 134, 143, 212, 213].

Over the past four years, we¹ have been working with anti-trafficking organizations in Nepal, exploring prospects for survivors² living in a protected home. Initially we worked with two organization who we shall call "Professional Organization" (PO) and "Survivor-led Organization" (SO) and later worked with the sisters living in SO's shelter home only.

Over the four years, we have conducted three field studies with the sisters and a series of remote interviews with the staff members at SO, each one investigating a small but important design proposition and allowing us to gain more insight into the setting and realities of the circumstances. The studies have helped us discover more about the sisters' relationship to the NGOs, to their possible futures, and to technology. It has also illuminated the staff members' goals and values that inform the programs designed to support the sisters in their reintegration journey. Having said that, our understanding of the setting and the challenges faced by the sisters upon reintegration remains partial. The sisters' and the staff members' understanding of the challenges are partial too. In this regard, we see our research as a collaborative, exploratory engagement to "understand the world better" [47].

¹While this document has my name in the front, the work was a collective effort and thus I use "we" wherever collective decisions and actions were taken. In cases where I alone was the actor, I have used the singular form (I or me).

²In my fieldwork, I addressed the survivors as "*bahini*" (younger-sister). The survivors addressed each other as "*didi/bahini*" (older/younger sister) as well. Sister is an unmarked term in Nepali. In keeping up with the nomenclature from my fieldwork, I shall address the survivors I worked with as "sisters". I will use "survivors" to denote the more general group of survivors of trafficking. It is also worth noting here that the sisters addressed me as "sir" which is how they addressed other male staff members. The word, while fairly common in Nepal, denotes distance and power differences between us. In my third foray into fieldwork, some of the sisters addressed me as "*dai*"(elder-brother).

Several challenges abound. First, collaboration, such as in the form of co-design and democratic participation, necessitates a non-hierarchical structure among equal power with all stakeholders. However, realizing such an equal relationship is challenging in the setting. The survivors are vulnerable in several ways: most are young, uneducated, impoverished, and have experienced traumatic ordeals; many have already been shunned by their families, others might be shunned in the future, and the sisters we worked with are dependent on SO for economic and social support. We too are dependent on the NGOs who are not just gatekeepers to the sisters but also possess knowledge that comes from protracted experience with many different survivors and their reintegration journeys. There is a distance between the sisters and me — as an educated, middle-class, upper-caste male in a patriarchal society, I am privileged and an outsider; as a technologist and a researcher leading the project, I am seen as the one who sets the agenda and establishes what is important in the study. Further, the anti-trafficking NGOs are subject to complex political, economic, and cultural forces that drive their programs. Thus, a major attempt throughout the study has been to attend to the power dynamics of the situation in a way that is respectful yet pragmatic. By adapting participatory approaches, the project strives to build social and technical capacities of the sisters to participate in the design process.

Second, exploration and iterations, which are the cornerstone of human-centered design, assume a level of privilege [63]. However, the sisters do not necessarily have time to afford iterative explorations. They may leave the shelter home at any time, sometimes after as little as two months and others as long as six years, adding a layer of challenge in achieving sustained impact through iterative progression. Moreover, the promise of change brought through novel technology creates a level of expectation that requires careful navigation. Involvement in a project without meaningful gains for the participants may cause disengagement at best and demoralization and frustration at worst. Thus, our approach in the

work here was to build upon social and technical capacities among the sisters, focusing on making learning available in each iteration: learning about themselves, of their society, and the broader technical possibilities enabled by computing. In this regard, this research comprises several strategic, iterative moves, each seeking to provide small but meaningful gains towards broader pathways for the sisters in their reintegration journey.

Third, design with communities rarely occurs in marked breakthroughs. Community-based design requires buy-in from all involved community members. Heroic design with “move fast and break things” [220] or “ask forgiveness, not permission” attitude [114]—as exemplified in many Silicon Valley products—does not align with community-based design. In fact, in a sensitive setting such as the one that this work involves, seeking drastic changes may lead to unanticipated harms. Indeed, the decisions in this project have been informed by an acknowledgment of our limitations in protecting an already vulnerable group in case our interventions fail. This work pushes for many small moves which, in aggregate, illuminate a pathway for ethical design action. In doing so, this work seeks to support the sisters within the structure, broadening future possibilities and alternatives rather than trying to dismantle the structure [217]. Further, as the work is situated in a sensitive setting, care needs to be placed in how we approach our study and the methods. Adapting the methods to local conditions and resources has been central in our work. To this end, in hopes of justifying our approach, we describe the rationales behind the use of the method(s) in each of the fieldwork.

Of course, there are various ways to go about bringing social change. We could aspire to create top-down change through engagement and negotiation with institutional infrastructures and policy-making. We could also seek bottom-up change, by supporting people in forming attachments [46, 136] to their issues and empowering them to work on the issues, including negotiating with institutional infrastructures and macro-level policies. This dissertation

work aligns with the latter approach. In particular, throughout this work, we have realized that meaningful action lies in delving into the (messy) complexities inherent in human lives and finding a way to move forward using our skills and knowledge as a computer scientist and a specialist in Human-Computer Interaction (HCI) to open up possibilities that are realizable by the sisters. We arrive at socio-technical arrangements partly because our expertise is technical. We see technology not as an end but rather as a medium to engage with our world, including to understand ourselves and our society. It can also be a means to build capabilities. The socio-technical designs that we present in this dissertation work is aligned with this belief. Thus, elements of learning are central in the discussion of the design space and possibilities.

Remaining aware of the macro-level realities (societal mores) of Nepali society, our study seeks to attend to the micro (individual sisters) and meso-level (institutional practices and norms) issues concerning rehabilitation and reintegration of the sisters. Our inquiry concerns how socio-technical interventions can assist a vulnerable group, in this case, sisters, move towards their own goals, in this case, often articulated as “dignified reintegration” into society.

In particular, this dissertation addresses the research questions listed below, by iteratively and systematically investigating and making forays into influencing the situation and its possibilities.

- RQ(1) What conditions influence the situation of sisters in the shelter homes in Nepal?
- (a) What complexities surround reintegration efforts in Nepal?
 - (b) What tensions and forces guide the services available to sisters during their reintegration journey?
 - (c) What conditions influence the behavior and experiences of sisters at the shelter

homes?

RQ(2) What conditions influence the possibilities for our interventions with sisters, particularly their strengths?

(a) What possibilities emerge from balancing their most important goals and values, with approaches that are pragmatic and attainable?

RQ(3) How should technology designers and researchers position themselves in a sensitive setting to ensure that the voices of the vulnerable are heard?

(a) How can interventions be at once asset-led and address needs that justify intervention from the point of view of the existing power structures, including the NGOs, the donors, and the research establishment?

Broadly, we ask, among other questions, “How might computer scientists work with communities in facilitating meaningful social change?” As we seek to provide a possible answer, we acknowledge its limitation. Social transformation requires long-term engagement. The duration of a Ph.D. dissertation, no matter how long it may feel, is not sufficient to achieve such change. Further, the challenges of achieving social change are more complex when we seek social change with and for marginalized and vulnerable populations. The best we can do is make strategic moves, illuminating possibilities and alternatives for the people involved as well as for future co-engagement. Extensive engagement with institutional and social processes is required to push back against the matrix of domination [37, 41]. Social justice also demands a high level of accountability from researchers; each move has to be deeply justified and shown not to cause harm. Thus, in this dissertation, we present the journey that we undertook in collaboration with an anti-trafficking organization in Nepal, highlighting the incremental strategic moves undertaken during the journey while acknowledging the limitations of said moves. In describing this journey, we contribute to the field not only through

the particulars of design and strategy but also by making a case for a strength-focused, incremental approach to community engagement.

We make three-fold contributions through this work. First, we present a rich account of the particular situation and our interactions with the sisters and the staff members. We describe details of these experiences that shaped the responses we considered and those we have taken so far. Amidst the growing interest in social good within HCI community [171], we add to the scholarship by establishing an account of how technology designers (we) can proceed with the goal of doing good and how we can know that we have done it. Consistent with the approach of building strong concepts [96], we believe that delineating the situational details of engaging in and modifying actions constitutes a contribution of this work. Second, we present details of the methods and strategies we designed to engage with a vulnerable group. In particular, we illustrate ways in which we adapted local resources and practices to foster a space that promoted comfort and control to the sisters. We further highlight how we prefigured [13] values that we aimed to achieve through the project within our methods. We see this work being in, what Schön calls, “an indeterminate zone of practice” [206]—uncertain, unique, conflicting, and complex—where common design epistemology and practices are not apt. To that end, the detailed account of our approach aims to provide a justification for undertaking slow, incremental steps with the community. Third, we add to the growing body of scholarship on assets-based design with a description of our adaptation to make it amenable to a sensitive setting. We demonstrate a way for designers to engage with communities in identifying and building upon assets, particularly in a context where past experiences may not readily be available to the community members and where their futures are highly uncertain.

The rest of the dissertation is structured in the following way. In Chapter 2, we describe the structural context that places the survivors at the margins of Nepali society, highlight-

Table 1.1: Timeline of activities presented in this dissertation

Date	Studies	Participants
2017 Dec to 2018 Jan	Study 1: Ethnographic Study Social Photo-Elicitation	13 staff members, 9 sisters 5 sisters
2018 Apr-Nov	Discussion with staff members	3 staff members
2018 Dec to 2019 Jan	Study 2: Hamrokala workshop Future Envisioning	9 sisters
2019 Mar-Jul	Discussion with staff members	2 staff members
2019 Aug-Oct	Study 3: Hamrokala workshop Future Envisioning Discussion on societal problems Dashain wishes Google Search and Wikipedia exercise	10 sisters
2020 Jul-Oct	Remote Study: Future Envisioning Discussion on organizational strengths	8 staff members

ing the multi-level complexities surrounding reintegration. Acknowledging the enormity of structural change necessary in supporting the survivors in their reintegration, we narrow the scope of our work by focusing on the rehabilitation services, exploring ways to support the survivors to be at a position of greater power once they leave the shelter home and reintegrate into society. We highlight pervasiveness of discourse around the survivors’ deficiencies and contend that drawing out and building upon the survivors’ existing strengths, capacities, and available resource—that is, the assets already available to them—would help push back on the discourse and thereby support in empowering the survivors. Our theory of change is that by implementing an incremental, long-term, assets-based³ design, we can enable sisters to see pathways of greater empowerment. We then present a brief overview of

³“Asset-based” is more idiomatic (e.g., *asset-based* community development [125, 148]). However, multiple assets are available to individuals and communities. Following prior HCI scholarship (e.g., [100, 173, 241]), we use “assets-based” to signify the multitude of assets available to the population.

existing HCI work that puts forth the need to move away from deficiencies and focus on the assets that are already present in the communities. We highlight two questions that remain unanswered in existing scholarship: (1) How do we identify and build upon assets that help achieve the design goals?, and (2) How can assets-based design support empowerment at an individual and institutional level? To address the gap, we postulate that assets constitute the strengths, attributes, and resources that can be brought into relevance to satisfice [214] the inherent tensions between a member of a population's needs, their understood or experienced aspirations, and the structural limitations of the system. We then present a framework that illuminates how assets-based design can bring about individual and institutional change that remains within the researcher's scope of action: directly by (1) supporting the participants to develop a critical awareness of their assets and (2) prefiguring inclusive practices in the space and illuminating outcomes that challenge deficiency perspective, and indirectly by (1) enabling conditions for the participants to access and engage with societal actors and institutions and (2) fostering critical reflection on the power differences between different actors.

We then present the three forays of fieldwork in one of the organization (SO), each of which deepened facets of our understanding of the design space. In Chapter 3, we present findings from the initial ethnographic study of two of the largest anti-trafficking organizations in Nepal. One of the organizations is led by professionals with formal degrees while many staff members in the other organizations are survivors of trafficking. We highlight the differences in the two NGOs' operations which, we argue, is influenced by differences in the staff members' values and experiences. At the same time, we uncover tensions between the staff members' values for the sisters and the sisters' beliefs about their futures. The study illuminates complexities surrounding reintegration at an individual, organizational, and societal-level. We contribute a discussion of (1) the positionality of the organization's

support for sisters (2) how these organizations sit within the laws and policies of Nepal and India, (3) how priorities are influenced by funding and donor organizations' objectives, and (4) how prior interactions with researchers influence the scope and conception of this project.

During the ethnography study, there was a noticeable distance between the sisters and me. To reduce this distance and create a space for open, ludic participation, we adapted the previously existing *photo-elicitation* method. In Chapter 4, we describe the adaptation of the method to reduce the burden of individual ownership on the sisters while promoting playful and engaging participation as a group. The findings highlight two major elements of strengths possessed by the sisters: their knowledge of creating local handicrafts and their close bonds with one another. We discuss the complexities surrounding these strengths, including weaknesses such as fear of social stigma, limited sources of social support outside of the NGO, and limited text and digital literacy. We argue that, while both these elements of strength are fragile, they constitute valuable resources upon which we can collectively explore pathways for the sisters to gain a greater position of power after they leave the shelter home.

In Chapter 5, I describe our approach to tapping into and building upon these two elements of strengths. The approach involved the design of a voice-annotated web application, called Hamrokala ("Our Craft" in Nepali), which was contextualized around crafting. We conducted a ten-day workshop to introduce computers and web applications. We also conducted a future envisioning exercise to support the sisters to reflect on their situation and envision ways to engage with actors outside of the shelter home. The findings highlight the ways the sisters-survivors adopted, adapted, and appropriated technology within the space. It also uncovered the limitations of crafting, necessitating the exploration of broader possibilities beyond crafting. The experience led us to believe that knowledge of computing could be a potential source of strength, particularly enabling the sisters to engage with societal actors

and institutions. We reflect on the socio-technical gap [1], that is, the divide between the social requirements to dignified reintegration and the socio-technical mechanisms that are attainable to us, and argue that a way to work around the gap is through slow, incremental steps involving mutual exploration.

The next iteration of the study is covered in Chapter 6. Hamrokala was a tailored application designed to build upon the sisters' salient strengths. In this study, we sought to extend the sisters' exploration of broader possibilities that could endure beyond the shelter home. The activities began with a replication of the Hamrokala workshop and future envisioning exercise. We expanded on the sisters' technical skills to explore widely available systems like Google Search and Wikipedia. Off the screen, we designed activities to support the sisters to chart avenues for interaction with societal actors. These included (1) a discussion on societal problems and ways in which they could engage with local actors to mitigate the problem and (2) a well-wishing exercise that facilitated *othering* their immediate problems and envisioning broader futures. The activities highlighted the value of their existing strengths (e.g., their existing knowledge, their mutual support for another, and their newly learned computing skills) in interacting with technology as well as societal actors. It also facilitated critical reflections on future possibilities and alternatives. The activities moved back and forth off-screen and on-screen which, we argue, helped convey the limitations of technology while situating its use within the broader context of engaging with societal actors and institutions. We further argue that the collective incremental exploration of technology and non-technological engagements enabled us to systematically work around the socio-technical gap [1] to identify space for future action.

We conducted a series of remote interviews with the staff members, including some human trafficking survivors who now worked at the organization. This pivot, engendered by COVID-19, focused on understanding the staff members' personal and professional values

(see Chapter 7). The findings uncovered a divide between the staff members' aspirations for the sisters and the operational constraints imposed by lack of resources and technical limitations. We unpack the struggles shared by staff members who had reintegrated into society, highlighting further complexities in reintegration that require additional attention. We also found hierarchies established within the organization that reinforces power differences between the staff members and the sisters as well as discourse around the survivors' deficiencies. While individual strengths were recognized as being central to the organizational assets, the power differences and prior experiences shielded the possibilities to draw and build upon the sisters' strengths.

We went into each of the studies (see Table 1.1) with a design proposition and a goal to deepen our understanding of the complexities of circumstances surrounding the sisters and the organizations' rehabilitation and reintegration efforts. We adapted our methods based on our observations, prioritizing the sisters' comfort and control over the process. We have sought to develop an account consisting of thick descriptions drawn from field notes, audio recordings, and other artifacts (e.g., drawings, posters, and videos) that were generated throughout our engagements. The collected data were analyzed following the tradition of grounded theory [30, 198]. Subtle but significant variations in each of the studies are described in detail in each of the chapters.

In Chapter 8, we reflect on our experience of undertaking a long-term, community-engaged, assets-based design. Drawing upon Cornwall's framework for women's empowerment [40], we illuminate a possible way for assets-based practitioners to bring about individual and institutional change. In particular, we make a case for using technology as a means to promote critical awareness of the existing assets and create pathways for vulnerable groups to make moves towards broader possibilities and alternatives. We also reflect on the relationship we built with SO and the sisters, and the various relational and material resources, including

digital artifacts, that supported in promoting inclusive practices in the space. Further, reflecting on our engagements, we find a need to constantly consider power relations and the individual (micro), institutional (meso), and macro-level influences on our decision-making process. Drawing from the reflection, we list a set of questions pertaining to agenda setting, degrees of participation, scope of the work, and the arrangement of resources. We believe that the questions are critical for practitioners to ask of themselves and the partner organization(s) before and during assets-based engagements with vulnerable groups.

Finally, we conclude in Chapter 9 with a summary of our work's contribution to the field of HCI. We also reflect on the limitations of our work and chart potential pathways for future work.

1.1 Positionality and Reflexivity

I believe that we as a society are as strong as our weakest members. I came into the study with an interest in exploring ways in which design can challenge existing power relationships and with it, support the empowerment of vulnerable groups. I was particularly interested in exploring ways to reduce gender inequality in Nepali society. This motivated me to work with organizations in Nepal working on women empowerment, beginning with an examination of complexities around domestic violence. However, as discussions ensued with the non-profit organizations, we reached a plan to explore ways to support sex-trafficking survivors supported by the organizations.

Being a Nepali and having seen the problems caused by patriarchal values and norms, further exacerbated by poverty and ineffective—and in some cases, detrimental—policies, working on gender inequality was an obvious move in my interest to do good. While I share some elements of identity with the survivors, there are stark differences in our positions. I am male,

upper-caste, and from a family with relatively stable financial resources. My family members have asked me “Why are you working with those girls?” Being asked that question suggests the privileges that I enjoy—after all, I *chose* to work on the project—and critically, embodies the distance between the survivors and me. Further, I am pursuing higher education in the United States and my presence in the space is justified as a researcher whose work can be of help to the organizations. I stood out in the largely female setting of the shelter homes.

I tried to reduce the distance by building rapport before and during the study and volunteering for the NGO beyond the project duration. I began the studies presented in this dissertation by working with the staff members, exchanging greetings and introductions with sisters⁴ in passing. I also built rapport with the sisters through shared conversations over tea, a practice common in Nepal. The discussions involved sharing personal stories such as shared struggles in understanding mathematics and in advantages and disadvantages of living in other countries. It was only after building such rapport that I invited the sisters to participate in the study. In parallel, I sought to build a reciprocal relationship with the NGO by going “beyond ethnography” [21]. This entailed maintaining the NGO’s website, sharing links to potential grants, and, at the beginning of the COVID-19 pandemic, raising funds for one of the shelter homes. While such relationship-building reduced the distance between the sisters and me, it was not completely erased. I see myself as a “friendly outsider” [87] committed to learn from and stand with [219] the sisters as they reflect on their circumstances and leverage their strengths to move forward in their reintegration journey.

Each of my engagements has sought to broaden my understanding of the complexities that surround rehabilitation and reintegration efforts. We have, to an extent, been able to unpack the influence of multi-level actors and institutions to identify potential pathways for

⁴We addressed the survivors as “sisters” which was also used by the survivors to address each other. “Sister” is an unmarked term in Nepali. To match this nomenclature, we shall henceforth call the group we worked with “sisters.”

justifiable action. Nonetheless, my understanding of the larger system at play remains limited. I have very limited resources to protect the sisters if my approach fails. Hence, I make strategic, incremental moves, justifying each move with the actors involved. Similarly, I see the NGOs' work, while limited at times, is the best they can do with the resources available to them.

I started this journey with a relatively naïve, techno-deterministic idea of how to use technology to bring about meaningful change in the sister's lives, particularly once they move out of the shelter home and into Nepali society. My initial instinct was to decompose the problem such that each part was rendered simple enough to be solved by technological interventions. Initially, I hoped to focus on the capacity that technology has to create story-telling communities. This still remains an important potential; however, initial work soon uncovered more complexity than I had imagined. For example, storytelling turned out to be painful for the sisters and had the potential to threaten their safety (because they might be identifiable). I hope to highlight the progression in my understanding through this dissertation.

Chapter 2

Background and Related Work

2.1 Sex-Trafficking: A History of Poverty, Patriarchy, and Intersecting Penalties

In the late nineteenth century, the aristocratic Rana family recruited girls and women from northern districts of Nepal to serve as entertainers in Kathmandu [118, 179]. Trafficking of girls and women for sexual exploitation grew out of this practice and crossed the border to India after the 1950 Treaty of Peace and Friendship Between the Government of India and Government of Nepal [179]. The bilateral treaty established an open border between the two countries. The border is one of the busiest sites for human trafficking in the world [160].

Despite sex-trafficking being widely prevalent in Nepal, it received limited government and civil society's attention [118, 179]. This changed in 1996 when Indian police raided brothels in Bombay (now Mumbai) and rescued 500 young girls from Nepal, Bangladesh, and India; around 250 of them were from Nepal [108, 247]. The girls were placed in a remand home in New Delhi for months while they waited for the government to initiate repatriation. However, Nepal Government delayed repatriation citing a lack of protocol for repatriation of the survivors and unfounded fear of bringing AIDS to the country [108]. The government's reluctance to repatriate the girls promoted major national discourse. Seven non-profit organizations working on women empowerment issues—ABC Nepal, Child Workers in Nepal

Concerned Center (CWIN), Istri Shakti, Maiti Nepal, Nawa Jyoti Kendra, and Women’s Rehabilitation Center (WOREC) Nepal—stepped in to help. With support from a popular Bollywood actor, the organizations repatriated and rehabilitated 128 girls¹ [247]. Fifteen of the repatriated girls supported by WOREC Nepal established SO, our partner organization in this project.

Non-profit non-governmental organizations (NGOs) have since then been the major actors who direct most of the anti-trafficking efforts in Nepal. Anti-trafficking programs have been found to be helpful but, at the same time, research has found it to be limited, often executed with clear measures of its effectiveness, and in some cases, problematic [44, 108, 118, 118, 134, 202]. There is no exact count of anti-trafficking organizations in Nepal; as of 2019, a network of anti-trafficking organizations called Alliance Against Trafficking of Women and Children in Nepal (AATWIN) listed 46 NGOs in its roster of active members. All anti-trafficking efforts can be broadly characterized within the “3 Ps” established by the U.S. Government’s Trafficking In Person’s Report (TIP): prevention of trafficking, protection of trafficking survivors, and prosecution of traffickers. Many of the NGOs are involved in rescuing trafficking survivors, either by intervening in villages and towns or by monitoring and stopping at the borders. Most of the NGOs provide shelter homes to trafficking survivors. While the government of Nepal has imposed a minimum service requirement to operate shelter homes, the execution of the standards remains questionable. These shelter homes are either rented homes or owned by NGOs. They are operated with the money raised from funding projects, which often involve larger donors like USAID or Save the Children.

¹It is worth noting here that not all the “rescued” girls and women chose to return to Nepal; around 100 refused to return. Corollary to it, not all individuals choose to seek services from anti-trafficking NGOs. Further, there remains a significant discourse of victimization that ignores the agency of some who choose to engage in sex work. Anti-trafficking organizations’ stance of rescuing and repatriating individuals irrespective of the individual’s choices has been a deeply problematic practice, informed by the patriarchal notion that emphasizes women’s chastity [108]. To the best of our knowledge, our partner organization, SO, interacts with individuals to understand if they were duped or forcibly trafficked before initiating repatriation.

All organizations support the reintegration of survivors and have policies for prosecuting traffickers. However, prosecution remains poorly executed and limited [108, 168]. In fact, several legal cases against government officials for being involved in trafficking are ongoing [168].

While there has been considerable work in understanding causes and processes leading up to trafficking (e.g. [92, 97]), there is limited research in hearing the voices and challenges faced by trafficking survivors [31, 108, 134]. Research highlights two closely related barriers to reintegration in Nepal. The first concerns the financial well-being of the survivors. Research highlights that most of the survivors are poor, illiterate, and have limited sources of financial support. Around 85.9% of human trafficking survivors have never been to schools [223]. The NGOs that serve the survivors work on providing vocational training as a means for the survivors to earn a living [44, 92]. In Nepal, working as a beautician or creating handicrafts are the most popular options presented to the survivors [44, 108]. Both these crafts are culturally acceptable, in that they are seen as tasks performed by women. Crafting, however, has not yet been found to provide sustainable livelihood. For example, in a study of 20 survivors, 11 were involved in some form of income-generating work but only two were found to be involved in endeavors related to crafting [44].

The second barrier to reintegration involves overcoming the stigma against trafficking survivors present in Nepali society [108, 133, 179]. Nepali society is dominated by Hindu values which reinforce traditional patriarchal values. Among other problematic aspects of the patriarchy, family honor is strongly linked with the female member's chastity, where their divergence from the desired norms brings dishonor to the family. Several moral codes are imposed upon girls and women to protect family's "*ijjat*" (family honor) [179]. The stigma against trafficking survivors stems from an association with the loss of the family's honor, even when it may be the family that may have sold the girl child in the first place. The deeply

ingrained patriarchal values promulgate stigma against trafficking survivors who are judged as “spoiled” or “rotten” person [179, 190], resulting in gross inequality and mistreatment of survivors in society. For instance, to obtain a citizenship certificate—a document required to own lands, open bank accounts, and even apply for jobs—requires an endorsement from either a woman’s father or husband [190, 191]. However, survivors, who are often trafficked when they are young, struggle to obtain citizenship since many are shunned by their families. This results in many survivors marrying as “ ‘a solution’ to social rejection and access to citizenship status” [190, pp. 269]. While the Constitution of Nepal 2015 opened possibilities to obtain citizenship with the mother’s endorsement and with external (e.g., NGOs or local government) support, significant challenges remain for survivors who have been shunned by their families [191].

The complexities surrounding reintegration raise the question “What can guide in knowing what is the right thing to do?” Ideally, the reintegration of survivors into Nepali society necessitates dismantling the patriarchal structure [108, 179]. However, pragmatically, the challenge of achieving the goal is difficult, especially within the scope of a dissertation work. Further, undertaking drastic steps can cause harm, especially to those who are already vulnerable []. In this respect, our work endorses the value of empowering vulnerable individuals within the structure [217]. To that end, we sought to work with survivors undergoing “rehabilitation”, exploring ways for them to be in a position of greater power when they move into Nepali society.

Some trafficking survivors choose to avoid the NGOs after repatriation but many depend on them for support for some time [118, 134]. The survivors who receive support from NGOs typically undergo what they call “rehabilitation” before reintegrating into Nepali society. Rehabilitation is a contested term because it may be understood as signifying that the survivors themselves are somehow responsible for being trafficked and now have to be

changed before rejoining society [134]. However, it captures the essence of the problem that trafficking survivors face not only because of their interrupted lives but also because of the stigma that Nepali society places upon them. Typical services as part of rehabilitation involve some form of psycho-social counseling, medical checkups, legal assistance, and a protected living home [108, 118]. NGOs make moves to reintegrate the survivors with their families and their local villages or in nearby cities, such as by initiating contact with family members. Additionally, whether reintegration into their former lives is possible or not, the NGOs try to strengthen the survivors' economic self-sufficiency through skills-based craft training, typically making local handicrafts such as *Pote*, Nepali glass-bead necklaces, and knitted bags, footwear, and scarfs. NGOs may also provide seed money to start a venture such as a small business based on these crafts. As such, rehabilitation remains a significant part of the survivors' reintegration journey, driven by the NGOs.

Rehabilitation programs have been known to face a myriad of challenges, including the fact that survivors leave the NGO at different periods; some leave as early as within two months, some have stayed beyond eight years [118, 134]. This variance in turnover influences the NGOs' programs. For instance, crafting is incorporated in the rehabilitation program partly because it does not require fixed cohorts; survivors can join any time. In contrast, programs that require long-term engagement are difficult to sustain.

Research critique the deficiency-focused approaches taken by the NGOs [44, 108, 118]. Indeed, prior scholarship has characterized anti-trafficking NGOs, including those in Nepal, as being part of the “rescue industry” [2, 134] for playing an active role in perpetuating dependency. A discourse of survivors' victimization and deficiencies remain at the center (e.g., survivors as helpless victims or dependent on the organization) [108, 134]. Our work seeks to push back on the predominant view of the survivors' dependencies by drawing out and highlighting their existing knowledge, practices, values—their assets—which we believe

can be valuable in their reintegration journey. To this end, we prefigure the goal of focusing on the sisters’ assets by adapting assets-based design (e.g.,[33, 116, 173, 241, 242]). We undertook an assets-based design approach to draw and illuminate agency and power from within the group, and, with it, place the survivors as agents of change.

2.1.1 Survivor Characteristics

People of all gender identities are trafficked. The 2020 TIP report for Nepal recommends paying attention to male trafficking [168], which has, so far, been overlooked by the government, NGOs, and the general public. However, a significant focus of anti-trafficking action remains geared towards girls and women. Trafficking remains gendered. We can observe the stark contrast in gendered notion around trafficking in typical Nepali discourse where “trafficking” is often reserved for women whereas men are seen to be victims of “foreign employment”. Moreover, in general discourse we find a loose association where trafficking is understood as involving sex trafficking.

Both the partner organizations we worked with had shelter homes for women who survived trafficking. Thus, when we use the term “survivors”, we mean women who have survived trafficking. Survivors are vulnerable in several ways. Most of them are young, having been trafficked at a young age. They have limited formal education; around 85.9% of survivors in 2018 were reported to have never been in a school and only 5.5% had studied grade 10 or above [223]. Most of them are from poor families and a significant majority are from marginalized family background² [223]. Many of the survivors are shunned by their families. Many rely on anti-trafficking organizations for support. Their reliance on the organization

²The 2018 trafficking in persons report [223] lists that 49.1% of survivors were from indigenous groups (*Janajatis* in Nepali) and 15.0% were from Dalit families. Indigenous groups are not homogeneous; while some indigenous groups are in position of power in society, many others are marginalized. Dalits are severely marginalized in Nepali society.

creates challenge for us in how we navigate critical

Having highlighted the history and the multiple penalties that survivors face at an individual, institutional, and societal levels, we now present our theory of change: We believe that by implementing an incremental, long-term engagement that explicitly and implicitly highlights the sister’s assets to themselves, their cohort and the institution, we can illuminate their agency and potential when they leave the shelter home. In the following sections, we present existing work on assets-based design to unpack what assets can be and how they can interact with individual and institutional elements to support the empowerment of vulnerable groups.

2.2 Assets-Based Design For and With Vulnerable Population

Significant HCI research has explored the potential of technology in supporting vulnerable groups [8, 24, 137, 159, 193, 233, 237]. One such influential work has explored how technology can support people who have experienced “life disruptions”—events that are adverse, unpredictable, and uncontrollable—to achieve a “new normal” [146]. In existing literature, we find work that deals with disruptions such as homelessness [137], death [145], or domestic violence [34, 80, 149]. In particular, Massimi *et al.* [146] raise three design considerations: (1) paying attention to changing social relationships, (2) considering the vulnerability of the existing infrastructure for support, and (3) upholding dignity, privacy, and safety during such times. Our project endorses these values. We see the NGO’s rehabilitation program and the subsequent reintegration process are part of the journey for the survivors to achieve a new normal. However, we also acknowledge that the term “life disruptions” implies a baseline with greater stability than what the survivors have. Their lives have been *severely*

disrupted from what would be considered a “normal” life and they have limited existing infrastructure for support. We believe that it necessitates greater attention to the relationships and available infrastructure through prolonged and carefully implemented engagements.

Despite the significant number of research over the years, challenges remain in designing technology that can provide sustained support to vulnerable groups [41, 67, 90, 104, 240]. A prominent diagnosis involves the varied and complex socio-economic factors that result in people being vulnerable in many different ways [37, 41] with various intersecting penalties and privileges [240], affecting how technology is used, adapted, and appropriated (e.g. [32, 153, 161, 180, 200, 201]). Broadly, there is a wide consensus within HCI and HCI-related fields that technology *alone* cannot overcome the complex socio-economic barriers faced by vulnerable groups [7, 93, 226, 227]. Our work begins from this position.

Further, taking a reflective view, a growing body of HCI research argues that our inability to realize sustained impact results from our field’s focus on identifying and fulfilling users’ needs which finds its roots in the field’s long-established human-centered design process [33, 53, 173, 241, 242]. The work argues that the focus on needs can lead to community internalizing dependencies, thereby robbing agency from actors who can bring and sustain change. In response, the scholars drew upon work from education [158, 245] and asset-based community development [124, 147] to champion design processes that focus on the local resources, knowledge, and other strengths, that is, the *assets* available to the community [4, 24, 33, 53, 100, 103, 116, 173, 241, 242]. Existing work in assets-based design has illuminated how various local practices and values such as care [116], local knowledge [241], solidarity [103], and civic participation [53] can be assets to support vulnerable groups to bring about social change. For instance, Karusala and Vishwanath *et al.* [116] examined care as an asset in an under-resourced after-school learning center in India. The work posits that care can help foster interdependency, community, and a sense of ownership in the learning center.

They further build on care as an asset to explore ways in which technology can extend care practices within the learning center. We adapted assets-based design in our project.

However, we find that there is a gap in assets-based design scholarship, particularly around two questions: (1) How do we identify assets that are of value to the population and the design endeavor?, and (2) How we can use assets to empower the population?

2.2.1 What are Assets?

Assets-based design has explored the potential of very diverse forms of assets ranging from tangible resources, such as community-level digital systems [99] and technology [100] to intangible elements such as care [24, 116], local knowledge [53, 117, 173], social relationships [24, 33], funds of knowledge [155, 196], and cultural values [241]. The multitude of assets in the research raises the question: what constitutes assets that are amenable to an assets-based design endeavor? Wong-Villacres *et al.* recently presented a way to address the question [241]. They posit that we could look at how people use their cultural resources—which building on Ann Swidler’s culture-in-action [218], they call “cultural toolkit”—to undertake strategic actions to solve their problems. This, they argue, can help us understand the complex relationship between people’s assets, their goals, our design endeavor, and the structural limitations influencing the participants as well as our design engagement. Working with low-income migrant parents, Wong-Villacres *et al.* uncover various strategies of action such as negotiating information and placing trust in authoritative figures, which illustrates the value of the approach in informing design [241]. However, in our context, we cannot rely on cultural resources for two major reasons. First, as we shall find in the initial ethnographic study (Chapter 3), many of the sisters do not want to recall their traumatic past or the time before trafficking. They are, in that sense, as Swidler calls [218], in an “unsettled”

situation. While in the NGO's shelter home, they are often coming to conceptualize and value a radically different future than they had previously: a life that is not within their birth families. This brings us to the second problem in relying on cultural resources: we risk amplifying discourses of deficit that are pervasive within the NGOs if we rely on the broader cultural norms present within the sisters' context as they appear to have previously experienced it.

Our approach seeks to find a balance between the following tensions: (1) the past is not available to the sisters; their present and future are, (2) their present is fraught with discourses of their deficits, and (3) our scope of action in the sisters' future is non-existent: the sisters leave the shelter homes at indeterminate times and there is no safe mechanism to follow up with them in the future. Thus, our work focuses on the sisters' present while forming connections to their aspired futures. In this space, Tatar's design tensions framework [221] guides our approach. The design tensions framework presents design not as a totalizing endeavor that solves a problem but rather as a goal-balancing engagement that handles multi-dimensional conflicts. By conceptualizing design as an ongoing endeavor of taking "decisions that are good enough"—or *satisficing* [214]—the design tensions framework is well suited for solving "wicked problems" [192], such as the one we encounter in this context. In this respect, we frame assets as those strengths, attributes, and resources that can be brought into relevance to satisfy the inherent tensions between a member of a population's needs, their understood or experienced aspirations, and the structural limitations of the system. Success is constituted by the artful integration of these concerns into action that (1) at minimum does no harm, (2) leads to positive experiences for the sisters and staff, (3) offers potentially useful learning that finds some up take, and (4) puts sisters in a position to use strengths and exercise agency.

2.2.2 Our Adaptation of Assets-Based Design

This definition of assets prioritizes the “who” question [162]: who is identifying and deciding what assets are important? Doing this ethically calls for paying close attention to the methods we adapt and ways in which our approach (dis)empowers the participants in their engagement with us.

Assets-based approach provides a lens for design endeavors. The crux of assets-based design involves centering the assets available to the individuals and the community through either or both of the two practices: (1) identifying assets available in the setting and (2) engagement with those assets to move towards the participants’ and designer’s goal(s). The identification of and/or engagement with the assets can be performed through any method: ethnography, cultural probes, participatory design (PD), and (participatory) action research. Indeed, different methods were adapted in the two assets-based research work cited in the section above. Karusala and Vishwanath *et al.* used an ethnographic study to understand care practices in the after-school learning center whereas Wong-Villacres *et al.* leveraged participatory design in their engagement with the immigrant parents.

Our view of assets as elements that balance tensions between needs, structural limitations, and aspirations led us to adapt participatory design methods as part of our assets-based design engagements. Participatory design enables the engagement of participants in a more democratic process to enable distribution of power in different ways [50, 121, 215]. PD is rooted in supporting engagement with political structures to envision and enact future possibilities and alternatives (e.g. [16, 18, 121, 130]). Concerned with the potential impact of technology in the workplace and recognizing the need for workers (and unions) to regulate new technology, PD established approaches that focused on the workers’ influence on technology and its adaptation, expanding the workers’ choices through alternatives, and en-

gaging with the wider network such as worker unions to strengthen democratic ideals (e.g. [19, 131, 167]). These values align with our goals. In particular, carefully design PD methods allows us to prefigure [13] values that we want to achieve through our project—appreciation of existing assets, growth in agency, and collective action—within our methods.

Given the emphasis on building on participants’ existing knowledge and situated practices [65, 66, 163, 215], we believe that PD is aligned with assets-based design. Historically, “local knowledge production” strategy was explicitly included in the very first project with the Norwegian Iron and Metal Workers’ Union (NJMF) [66, 194] where methods and practices were developed for workers to use their local knowledge to negotiate issues in the workplace. Other influential PD projects such as the UTOPIA project [19] and the living labs project [17, 18] too have placed value on local knowledge. We also hear elements of assets in the principles of contemporary participatory design practices, such as that of the Design Justice Network [41] which values community’s prior knowledge as an asset, and conceptualizes changes as a collaborative process involving shared knowledge³.

In particular, we adapt the notion of *infrastructuring* from participatory design (PD) to frame assets-based design as a process of infrastructuring around assets. Infrastructuring is the ongoing process of supporting people to develop commitments and dependencies—or attachments—which support them to grow their infrastructure and tackle matters of concern [9, 18, 46, 115, 177]. *Our adaptation of assets-based design entails supporting people to form attachments to their individual as well as collective assets and thereby form “infrastructure” that can support them to find a balance between their needs, structural limitations, and aspirations.* To that end, our project demonstrates ways in which socio-technical systems can support participants to situate their assets within the larger system, critically reflect on those assets’ potential as well as limitations, and learn to use the assets to explore broader

³<https://designjustice.org/read-the-principles>

possibilities and alternatives.

2.2.3 Assets-Based Empowerment Framework

This project seeks to support the sisters to develop attachments to their assets as a means to empower them. However, it is unclear from the literature how assets can be transformed and built upon to empower a population. In fact, we need to begin by unpacking “empowerment”: what counts as empowerment and how can it be achieved?

Emphasizing Power in Empowerment

Empowerment is widely used in development discourse with varying values, practices, and outcomes [15, 110]. Kabeer defines empowerment as “the expansion of people’s ability to make strategic life choices in a context where this ability was previously denied to them” [111, pp. 19]. Kabeer further posits that the ability to make choices is influenced by the social and material resources, the process involved in making choices, and the achievements from the choices [109], calling for the various individual, institutional, and social factors that influence how, why, and what choices are made.

Empowerment has seeped into the HCI lexicon too. A quick search of “empower*”⁴ in Association of Computing Machinery’s Digital Library (ACM DL) results in a list of 2070 papers⁵ (e.g., [28, 68, 102, 105, 128, 170, 203, 204, 228, 236]). Examining these papers suggests varying beliefs about empowerment, from strengthening individual or group’s position in society [102, 170] to collective civic action [28, 203]. The outcomes vary too from empowerment being seen as a transient outcome that emerges during or after an intervention [228] to an

⁴An * is a wildcard symbol that allows us to search broader variations of words that begin with the same characters, in this case, “empower”. Searching with “empower*” will find words like empower, empowers, empowered, empowering, and empowerment.

⁵As of June 8, 2021.

ongoing process requiring persistent effort [236]. Technology’s role, unsurprisingly, varies from being a means to support empowerment to an end in and of itself.

However, research finds that a significant number of projects seeking empowerment do not attend to social structures that influence power [15, 40, 210]. They have also been criticized for a lack of attention to the power relations embodied in social structures that dis-empower people in the first place. Batliwala, in her influential critique, argues for centering power and both individual and collective transformation stating, “empowerment was about shifts in political, social, and economic power between and across *both* individuals *and* social groups” [15, pp. 559] (emphasis in the original text).

Indeed, power is at the center of empowerment, both figuratively and metaphorically. Feminist theories conceptualize power as being multi-faceted, including (1) a resource requiring redistribution, (2) having relational “power over”, and (3) a capacity, that is, “power to” bring about change [6]. Conceptualizing power as a resource leads us to see empowerment as a process of enabling access and use of resources such as promoting the provision mobile phones and associated applications, promoting access to micro-finances, or facilitating easy access information about health care services (e.g. [126, 165, 176, 246]). However, research in HCI4D/ICTD and global development, in general, has shown that access to resources alone is not enough (e.g., [10, 52, 112, 120, 226]). As Gita Sen [210], Srilatha Batliwala [15] and Andrea Cornwall [40] posit, the relational element of power is critical in empowerment, calling for approaches beyond access to resources towards, what Cornwall calls, “shifts in consciousness” [40, pp. 345]. This shift, the researchers argue, allows people to engage and challenge the ideas and practices that place them in a perpetual situation of subordination, and in the process, develop the capacity to bring about individual as well as institutional changes. The belief resonates closely with Paulo Freire’s call for the historically oppressed to uncover and challenge the larger structure that keeps them trapped [73, 74]. Freire argues

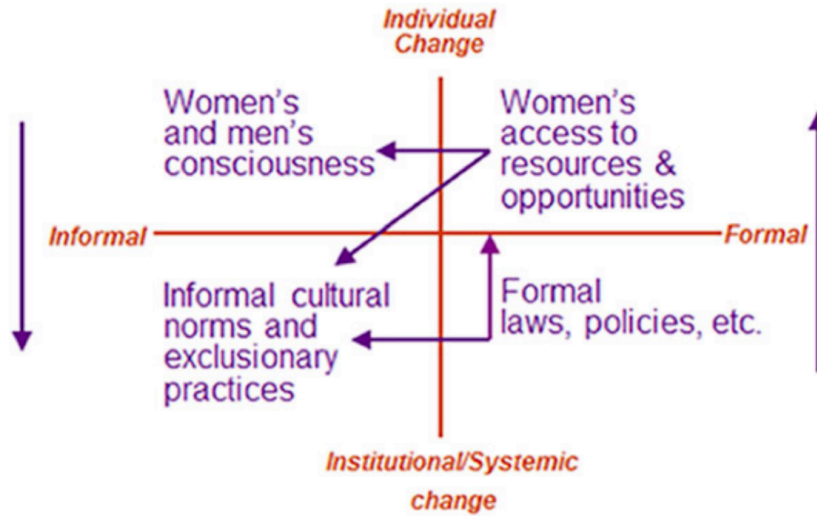


Figure 2.1: Empowerment Framework from [40] which highlights informal and formal ways to bring individual and institutional changes that can empower women.

for a shift in consciousness, which he calls *conscientizacãõ*, requiring active reflection on “both their [learner’s] objective situation and their awareness of that situation” [73, pp. 95]. Cornwall uses a framework (developed by Gender at Work [183, 184]) for women empowerment, building on Freire’s *conscientizacãõ* to place value in dialogue, offerings of solidarity, and a collective shift in perspectives about how and what women think about themselves and others (see Figure 2.1).

Cornwall’s framework highlights the dimensions of change from individual to institutional or systemic change that is necessary to empower vulnerable groups. Moreover, by laying out the inter-relationship between the dimensions and the processes, Cornwall provides a potential mechanism for us to adapt while seeking to support the sisters to be at a position of greater power.

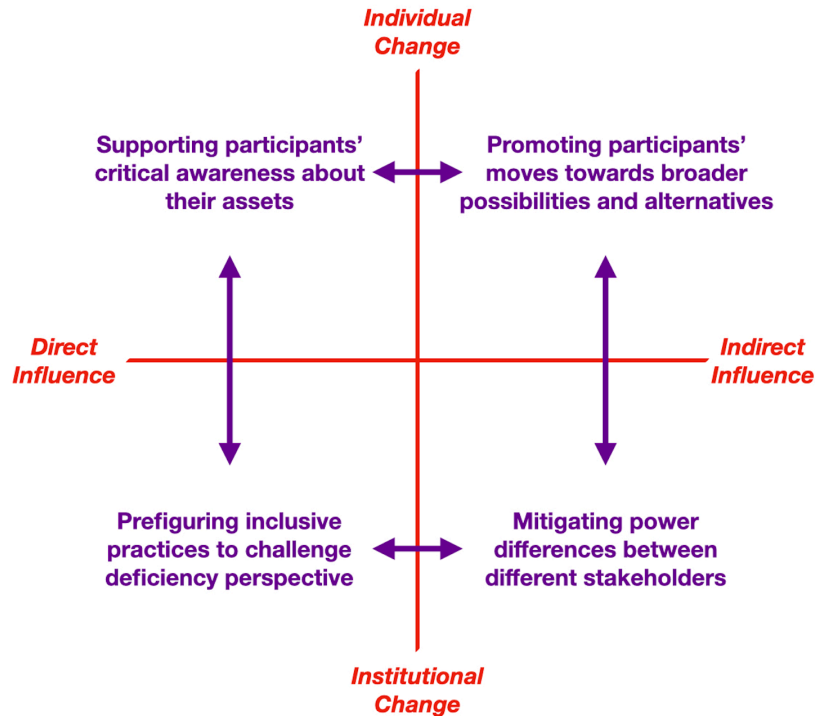


Figure 2.2: Adapting the empowerment framework to realize individual and institutional changes. All four mechanism of empowerment are interdependent.

Our Framework of Action

In this work, we adapted Cornwall's empowerment framework (see Figure 8.2) with two critical changes. First, it was critical for us to realize our limitation in bringing about individual and institutional or systemic changes [10, 93, 171]. Formal processes such as bringing change in the law require longer time and greater influence of the involved stakeholders and beyond. However, our scope of influence is limited within the NGO, between the sisters and the staff members. We, therefore, limited the scope of change within the dimensions of individual and institutional levels.

Second, we align the mechanisms of change to focus on the sisters' assets. In particular, we adapted participatory approaches to promote the sisters' critical reflection on their assets, that is, in forming attachments [46] to their individual and collective assets. This practice of

critical reflection aligns with Freire's belief that conscientização can be realized when the oppressed value the knowledge they already possess, arguing that they should "realize that they, too 'know things' they have learned in their relations with the world" [73, pp. 63]. While Freire focuses on knowledge, our work locates and builds upon broader assets available to the sisters, including their collective knowledge. By incorporating approaches to envision the future and engage in collective discussion on broader possibilities and alternatives, we supported the sisters to critically examine the beliefs and discourses about themselves and use it to expand their capacity. Here, assets and aspirations are presented as means to promote a shift in consciousness. Importantly, by prefiguring the values we wanted to achieve from the engagement (e.g., the sisters' appreciation and use of their assets and participation with agency in society) in our methods, we fostered a room for experimentation where the sisters could learn to use their assets and participate in the activities as agentic actors.

Chapter 3

First Moves to Understand the Context

I reached out to seven non-profit organizations involved in women empowerment beginning April 2017. The communication occurred over the phone, Facebook audio calls and Skype calls, and later included Whatsapp and email correspondence. These discussions involved understanding the problems the organizations were facing and hearing their thoughts on ways I could be of help. Two organizations proved responsive. From the outset, our technical expertise was at the center of the collaboration. In fact, initially, I had shared an idea of potentially creating a story-telling system with both organizations. Both the organizations were interested in using technology towards their organizational goals which helped form the relationship. For instance, in the initial email conversation, a program officer at PO mentioned that they were “actively looking for avenues where we can incorporate technologies to prevent or control women and children trafficking in Nepal.” In a subsequent communication, they expressed interest in bringing technology towards specific programs, asking me to share “a little more on your [my] technological expertise so that we can also come up with some requests/ proposals based on the needs of our programs here?” A similar exchange occurred with SO where the then president of SO shared the organization’s interest in exploring “empowerment and technology and how <organization name redacted> can take the advantage of technology.”

Both organizations were exploring opportunities to include technology in their work. SO had recently concluded a two-week-long Photoshop and computer training program with a group of sisters. Some sisters had also been involved in creating a photo book. The sisters took photos and wrote captions for those photos; however, SO hired external editors to “edit” the photos and captions to finalize the content.

An additional project reflects both the influence of donors and the organization’s orientation towards technology. A US-based software company had donated a mobile application to PO that allowed staff to create a database with photos of the reported missing person. Staff members at the borders could then use the application to scan faces and check against the database. During the time of my study, they were in the process of testing the application in the field. Given the problematic aspects of facial recognition technology, some of our discussions in the earlier stages revolved around testing and evaluating the technology.

In both organizations, our technical expertise influenced relationship building. It may be that the ability to bring technological expertise to the table was an essential component of gaining any kind of access to the organizations.

This is in many ways ironic and makes it important to be clear about our approach and goals, which featured moving away from technology-driven solutionism. We sought multiple ways to be transparent and clear about our process and objectives from the beginning. For instance, I clarified my position as a student interested in learning more about the issues surrounding the condition of the trafficking survivors. As our conversations moved forward, we continued to clarify that we saw technology as a means rather than an end. We asked the organizations to let us understand the context more deeply before thinking about action. In repeated emails, both organizations repeatedly came back to the idea that our goal and purpose was the design of a technology that would help them with their operations in general, to meet “the needs of our organization”. Nonetheless, before the first fieldwork encounter,

we requested and gained permission to interview staff members and survivors. In response to a communication officer's question about what technology we would bring, we described our general process:

We meet with the staff at <organization name> and understand the organizational needs, the problems they face, and ways in which we can help. With help from the staff members of <organization name>, we talk to survivors in rehabilitation and reintegration homes to understand some of their problems and where we can help. We do not want to create something they do not want or need and so their feedback and suggestions will be crucial for our design process

We further added:

We do not believe that technology alone will provide the magical solution; rather, we believe in socio-technical, grass-root level interventions that slowly and steadily bring about change.

3.1 Methodology

After several months of email correspondence and calls to build a connection, starting late December 2017, I conducted a month-long study of two anti-trafficking NGOs. I spent 10 days at SO and 8 days at PO spread over a month. My goal was to understand whether and how I could aid the survivors in the reintegration process. In this study, I visited four offices and four rehabilitation homes of the two NGOs, interviewed 10 staff members, observed three key players at work through shadowing, conducted supervised group discussions with nine sisters living in rehabilitation homes. I also conducted an initial ethnographic-style

inquiry, working to understand the current circumstances of survivors and their notions about the future as they experience life and training in the protected living situation. I also conducted a focus group discussion with four of the twelve sisters who had recently concluded an experimental four-month-long photography program focused on angles and composition, and had published a photo book called “Remembrances”. I observed the sisters while they were at work in the handicraft workshops which was part of their skill-building training. The staff members I interviewed ranged from the founder of the organization, the director, the program officer, and the rehabilitation-home warden. All the sisters who participated in the study were between the ages of 18 and 23.

I collected field notes throughout the study which were recorded in a mix of Nepali and English. Audio from the interviews and group discussions was recorded with permission from the participants. I translated the audio into English, transcribed, and coded it. I met regularly with my advisor, Dr. Deborah Tatar, and Chandani Shrestha, a computer science researcher at Virginia Tech who was then studying women’s conditions in her hometown in Nepal. We discussed the codes and the transcript text, as suggested by Saldaña when doing “solo coding” [198] to come up with the higher themes that we present in this chapter. Part of the work reported in this chapter has been published elsewhere [78, 79].

3.2 Observations from the Ethnographic Study

Both the anti-trafficking organizations are well-known in Nepal and have been recognized globally with a wide range of awards including the Ramon-Magsaysay Award and the CNN Hero Award. They have been operational for more than 15 years and each employs more than 100 staff members. They can be considered to be large within the context of similar NGOs in Nepal. Both organizations have existed for more than 15 years, and employ more than 100

staff members. In one, staff members “at program officer levels or above” were professionals who generally had formal education at the master’s level in business or social sciences. As mentioned earlier, we call this organization Professional Organization (PO). The staff at the highest level of the other organization included many people who are themselves sex-trafficking survivors. We call this organization Survivor-led Organization (SO). Although most sex-trafficking survivors have limited formal education [223], many but not all leading SO have gone on to obtain college and even master’s degrees.

During the time of my study, PO housed around 250 survivors in its shelter homes. SO housed only 32. The women came under the care of the anti-trafficking organizations through various mechanisms. About half of the women in SO had been located by an NGO in India that worked with SO on repatriation. PO also reached out directly to sex workers in and around Kathmandu and attempted to stop possible traffickers at the Nepal-India border.

3.2.1 NGOs’ Operations

There were similarities in many aspects of the two NGOs’ operations. Both the NGOs’ “core activities” involved the “three Rs”: rescue/repatriation, rehabilitation, and reintegration. The three Rs are closely tied to the United States Department of State’s annual Trafficking in Persons (TIP) report. The TIP report influences the kind of programs that are funded by international donors including the United States Agency for International Development (USAID). Hence, most anti-trafficking organizations in Nepal conduct programs around the three Rs with subtle differences.

Both organizations shared the aims of preventing and rescuing women from trafficking. Both provided rehabilitation homes with training in crafts and support for independent living. Both NGOs’ primary priority was on reuniting the survivors with their families

of origin. If the family is willing and if the organization judges it safe, they engage in a process of shepherded reconciliation. However, reconciliation does not always happen. Often families reject their daughters or the situation is too dangerous, in which case, both the organizations aim to help the survivors find jobs or start a business. SO called this process “urban reintegration”. Whether reunited with family or set up on their own, the current state of affairs is that the sisters lose contact with one another and the NGO. Staff responses confirm prior research suggesting that there are good reasons for this. Being known as a sex-trafficking survivor or even as someone associated with an anti-trafficking organization can trigger stigma that threatens abuse and rejection [179].

Rehabilitation Efforts

Rescuing trafficked persons was a central operation in both the NGOs during which they frequently engaged with families, the local police, and officials. Both organizations engaged with police and NGOs in India to repatriate rescued sisters. However, they differed in their focus on “rescuing” trafficked individuals at the border. PO mobilized large resources including many staff members to do this; SO, on the other hand, deprioritized border rescue and instead focused on raising awareness and “rescuing at-risk” girls in villages across Nepal. One of the staff member I shadowed at SO characterized PO’s priority to border rescue as “organization-centered number hunting” .

Both organizations provided handicraft training and psycho-social counseling as part of the rehabilitation program. They prioritized reintegration with family or in a place near the sisters’ home as part of the reintegration program. And both organizations had sought alternative skill-based training programs for the sisters. For example, at the time of my study, PO’s rehabilitation center in Itahari, a town in the south-eastern part of Nepal, had started providing auto-rickshaw training to a group of six sisters. Noodle making, baking,

and beautician training were some of the other programs that the two organizations had tried earlier.

However, there were challenges in ensuring that the training would lead to a sustainable livelihood. The staff at PO's Itahari office shared their worries about the sisters being able to obtain and repay the loan taken to purchase and maintain auto-rickshaw. They were also concerned about the family's involvement in their lives. A staff member shared that a few years ago PO had provided noodle-making equipment to the participating survivors after a training program. However, two of the survivors reported that their family members sold those devices, putting a halt to their venture.

Similarly, SO had hired "professional computer experts" to provide training to a group of 12 sisters on using computers and Photoshop. A staff member at SO shared that the organization saw value in the sisters' learning computers. However, the sisters found the experience to be overwhelming and reported that they did not learn much during the course. None of the 12 had used a computer before. They were asked during the two week program to use Photoshop, a fairly sophisticated program. S3, while recounting the experience, shared "... *when we were learning to edit, we had never touched a laptop before to know anything.*" The experience had eroded the sense of confidence on using computers in the future. Critically, it had convinced the staff members that computers were not a viable option for the sisters.

Reliance on Donors

A significant commonality between the two organizations was their dependency on foreign donors. For example, 60.7% of SO's annual funds in 2016 were from donors. Under these circumstances, other studies have found that plans and priorities could be driven by the donor's

interests and values [48]. The activities and materials developed in both the organization targeted the donors. For instance, the survivors' stories which were present everywhere from annual reports to multimedia presentations were seen as a means to appeal to donors, as one staff member at SO shared, “*We have audio-video recordings [of rescued victims] that would shake people in the US. These personal stories would shock them [donors]. When we incorporate awards that we have received in those videos, we could grab global attention.*” Indeed, when I was shadowing a communication officer at SO, he organized a video session where eight sisters wore matching blue scarfs and walked up a staircase. He planned to use the video to appeal to donors who visit SO's office by showing that the “sisters were together and growing”.

Such programs to appeal to donors were seen to be necessary since donor funds were limited. Some of the staff members hinted at a sense of competition between organizations. For instance, a staff member at SO mentioned that “we are in a competition with <PO's name> when it comes to funds” and raised concerns about PO's process of rescuing women from the border. The sisters' deficits were often centered to appeal to the donors. For instance, the 2016 report published by PO presented multiple “case studies”, which had accounts of details of the survivors' exploitation and their helplessness before PO's help.

The staff members in both organizations hinted at the influence of the donors' interests in shaping their programs. For example, during an interview, a program officer at PO mentioned that their “core activities” which involved rescue and repatriation across 17 districts of Nepal were planned “according to funds”. This also meant that program design was heavily centralized as staff members who wrote project proposals to donors influenced the activities. The warden at a PO rehabilitation home shared how the operations were dependent on “the HQ tells us what we should do [for the survivors]”. A program officer at PO corroborated this hierarchical process sharing that the grants are planning are done by the central office



Figure 3.1: NGOs relied heavily on quantitative measures to evaluate their operations as exemplified by the posters that adorned their office buildings.

and that they “gather suggestions from the districts otherwise we wouldn’t know what is needed”

Quantitative Measures

As with other NGOs, donation and aid are conditional upon quantitative measurements [59, 64, 197]. Consequently, I encountered extensive use and reference of quantitative measures during my study. In both the NGOs, staff members mentioned the need to get “numbers”, that is, quantitative measures to meet the donors’ requirements. The NGOs had different quantitative measure instruments developed to document progress with the benefactors. At the same time, the staff members also mentioned that such instruments were rarely prioritized by the donors and so the NGOs had limited resources to iterate, improve, and validate the instruments.

Number-laden posters such as the one seen in Figure 3.1 adorned the organizations’ buildings.

Some of these numbers seemed unlikely to be true in a meaningful way. In one case at PO, the number of women reported as rescued/intercepted consisted not of sex-trafficking rescues but the total number of cars checked and “suspicious-looking” people interviewed at the border. In this regard, a staff member at SO questioned PO’s approach of stopping people near the Nepal-India border and reporting those numbers:

“This [quantitative numbers showing rescue at the border] does not provide any meaningful gain to any of the survivors. They will just increase the goodwill for the organization, to increase their value. They can publish in media saying things like, ‘We have rescued 5000 survivors in a year.’ Where did they rescue those 5000 from? Where are the rescued 5000? If we ask these to them they will not be able to answer confidently ... Why they were going and why they are caught? These things are seldom assessed. To intercept when they are known to be at high risk of trafficking is a humanitarian action to do and that is a nice thing. But we can’t restrict people’s right to movement by grabbing people at the border indiscriminately just so that the organization can say that publish in their annual report that they have rescued 5000 people in a year. That does not seem to be a nice thing to do.”

Other numbers included people who just happened to be nearby when mass awareness announcements were made. Other critics also have questioned the numbers and, in general, the lack of systematic evaluation of the programs (e.g. [44, 118]). However, the use of quantitative measures is canonical in NGOs of this sort [64, 197].

The focus on quantitative measures also affected the sisters in processes of reintegration. The criteria for success were influenced by the reliance on quantitative measures, especially at PO. PO staff members used the language of “number of women saved”, and opening and

closing files to describe handling cases. One staff member talked about their criteria for successful integration of sisters into society, commenting that “*If we do not encounter any problem in six months, we close their files*”. Correspondingly, rehabilitation was defined at PO as a process to be undertaken, of going through 5-7 months of living in shelter homes, participating in training, and 1-2 sessions of counseling, followed by 6 months of tracking.

3.2.2 Concerns on the sisters’ Future Prospects

While the reliance on quantitative measures could be a useful approximation for successful reintegration, it ignores several nuances. At SO, probably because the staff members including the president were trafficked survivors, there was some emphasis on the long-term aspects of reintegration. For example, the (then) president of SO said “*Just keeping [survivors] for a year and sending them back to families is not reintegration. It’s a long process. It’s hard. One has to learn to forget the past, decide where one wants to go and accordingly obtain training, and form a long-term vision*”. When asked what they look at when they count someone as being successfully rehabilitated, she mentioned economic independence as a proxy for being independent, “*When sisters start to earn, that’s reintegration. Partly though. But in our current language, that is reintegration.*” Reintegration is a long complex process. In the interviews, staff members lamented the lack of resources available to them to ensure that the survivors are supported throughout the reintegration journey. In fact, the process in place during the time of the study was not able to even track hurdles that survivors may face during the early years of reintegration. Subsequently, the cases of successful reintegration may be more complex than those presented by the NGOs.

In addition to quantitative numbers, ambiguous phrases like “standing on one’s own feet” were frequently used by both organizations to describe success. When asked to define it,

five staff members offered emphasized economic independence. Indeed, each of nine success stories that staff members at PO shared with me involved sisters starting a business, thereby allowing the organization to *close files*. One staff member at SO, who is also a survivor, emphasized economic independence but as a means to gain respect in society, “*Economic independence is the main thing. If I have money to do things I want to do, the society will ‘give respect.’*” The other two staff members at SO emphasized a survivor-centered definition of reintegration arguing that the survivors should say whether she feels that “she has stood on her feet.”

This lack of clarity on knowing when survivors have been successfully reintegrated raises concerns on evaluating the effect of the activities in supporting the sisters’ reintegration. How would we know we have done good when we do not know what counts as good? This dilemma came to the fore during one of the interviews. In that interview, the warden at PO’s rehabilitation home in Itahari shared five success stories over the last two years. One of the stories was about a group of four sisters who had received financial support and training on sewing and tailoring from PO. Using the seed money, they had opened a sewing and tailoring shop in a nearby town a year and a half ago. The NGO had not observed “any problem” over the past year and so they had “closed the files” for the four sisters. The story was also published in PO’s annual report.

I wanted to learn more about the hurdles the sisters had encountered and their sources of support during the journey so I visited the shop in the nearby town. I interviewed the proprietor of the shop and learned that the four sisters had left the shop; three had been forced by their families to do so. The proprietor was not involved with PO but since the shop had been closed for five months, the landlord had allowed her to operate it. It could be argued that the four sisters had been reintegrated into society; however, if true, the story raises questions about longer-term prospects for sisters, especially with crafting presented as

the only viable opportunity for sustainable livelihood.

The issue also highlights the perverse incentive structure present in the ecosystem. Donor organizations, which are at the top of the hierarchy operational hierarchy, require evaluations that are easy to present. This has led to a reliance on quantitative instruments that evaluate aspects of reintegration that are relatively easy to measure. NGOs receive limited incentives to follow up on the survivors who have moved out of the shelter home and whose files have been closed. Overcoming the challenges of reintegration takes many years, if not the entire lifetime. This calls for developing support mechanisms that the survivors of trafficking can use throughout their long reintegration journey.

Crafting as a Viable Skill

The limited prospect of crafting, as we observed in the above encounter in Itahari, has been well documented. Crafting has its limitations [118]. The handicrafts that the survivors create such as bead necklaces and woolen scarfs have limited demand in the local market. Moreover, there a glut of Nepali handicrafts in online marketplaces like Etsy where, as of May 6th, 2021, a search of “Nepali bead necklace” results in 5928 items¹. The opportunity to transfer crafting skills elsewhere is also limited. During the study, the sisters mentioned their desire to study and work in offices. Crafting, however, cannot enable those opportunities.

Despite these limitations, there are pragmatic reasons for NGOs to support crafting including that it can be taught even when resources are extremely limited, it is culturally acceptable, and it is valued, understood, and attainable by all the survivors. Unlike many other skills, crafting does not have to be taught by cohort, which is a critical factor given that there is no fixed time when survivors join or leave the shelter homes. Creating local handicrafts does not require the sisters to own specialized devices such as in noodle-making or baking. This

¹<https://www.etsy.com/search?q=nepali%20bead%20necklace>

makes the possibility of continuing crafting financially as well as socially viable, considering that the survivors may have limited control over those devices as shared above.

In addition, both PO and SO are incentivized in introducing crafting as a valuable skill for the survivors. Both had invested in trainers and resources to operate the handicraft space. For example, SO had bought weaving machines and had leased a shop in a location frequented by tourists. Many staff members also believe in the therapeutic value of crafting, a value that, as discussed in the next chapter, was shared by the sisters as well. Selling crafting products also brings in some money for the NGO and the individual survivors. At SO, for example, 25% of the proceeds from the sale of crafting went to the sisters as “pocket money”; the rest was used in operating the shelter home. Both the organizations also mentioned that they provide seed money of around USD 200 to the sisters if they choose to start a small handicraft business.

3.2.3 Organization’s Relation With the Survivors

From a higher-level perspective, we see a relationship of interdependence between the survivors and the anti-trafficking organizations. The survivors are dependent on the organization. As we shared above with crafting, the survivors’ vision of the future is influenced by the programs made available to them by the organization. Moreover, the organizations provided services such as psycho-social counseling, legal cases, all of which critical in the survivors’ reintegration journey.

At the same time, anti-trafficking organizations required survivors to be service-recipient so that they could continue writing grants and implementing programs for them. As we gathered above, the availability of donor funds was contingent on the number of survivors rescued and supported. This resonated with the critic of the anti-trafficking organization

being a rescue industry [2, 134]. We observed this in the sisters' stories of overcoming pain to share their personal stories for the organization. However, the perceived danger of being associated with an anti-trafficking organization can complicate the relationship.

Dependence on the Organization

The sisters were reliant on the organizations' support during their rehabilitation and reintegration. They lived in the organizations' shelter homes and learned crafting skills within the organization. They also relied on the organization for sorting out legal troubles. Both organizations sought to prosecute traffickers and the prosecution rate was frequently mentioned as a measure of the organization's success.

The organization provided resources and opportunities to the sisters that they may not have had access to otherwise. In some cases, we noticed that the staff members dedicated their resources to support the survivors. In Itahari, the warden at PO's rehabilitation home mentioned that she relies on "local connections to help [in legal cases]" and that "we [she] learn [about legal cases] from observations. There are no formal classes on law and advocacy." At SO, I shadowed a staff member who met with a sister in the hallway where he asked her if she would be interested in becoming a dancer and an aerobic trainer. When she shared that to become a "dance trainer is my dream", he mentioned that he had arranged for her to attend an advanced dancing and aerobic training program through his friend. Many of the survivors have been shunned by their families and the NGOs are the only source of support for them.

This dependence on the NGO also resulted in the survivors' isolation from the outside world. The shelter home and the handicraft workshop where the survivors spent their time were managed by the organization. The staff members mediated the survivors' interactions with

their families whenever they attempted family reunification. Both the NGOs had forbidden the survivors from using mobile phones or computers.

This dependence was also observable in the personal relationship with the staff members. The sisters addressed female staff members at SO as “mommy” or “older sister”. Similarly, I observed several ad-hoc actions taken by the staff members to support the survivors, often dedicating personal time and resources. In one instance, one of the sisters was crying after an angry outburst. A staff member came rushing in and consoled her, sharing a story from his life where he told her that he does not have glass utensils at home because he would break them whenever he got angry. He sought to empathize and connect with the sister with his story. He then talked about a possibility for her to write about her anger and also “how <staff’s name redacted> shouts when he gets angry”. The last statement cheered her and she became calm.

Pain Associated with the Past

During the focus group conducted with the sisters who had been involved in making the published photo book, we asked them about their training experience. An initial task had asked the sisters to write their personal stories, that is, the stories of abuse and violence that the sisters had suffered before their rescue. All four of the sisters who participated in the group discussion mentioned the pain they felt remembering the past events. S1 said, “*I had already forgotten it [the past events] and being reminded of it was hard. I was so sad for 2-3 days. We have left that place and moved on.*”

Despite the pain, all of the participants said that they completed their stories in hopes that those stories would help raise awareness.

S4: *It was hard. <Redacted staff member name> asked us to write our own*

stories. I wrote my own story but with a pseudonym. But while I was writing the stories, having remembered incidents from the past, it hurt. I even cried. I cried not understanding why we had to revisit those old events that we had long since forgotten. At one point, I even told them that I won't write it.

Aakash: Did you complete the story?

S4: *Yes*

Aakash: What made you complete the story?

S4: *To raise awareness. I felt like we should do it. If we do this, the world will see it and once they see it, they will see different ways through which people could be trafficked. I felt we should show that and so I wrote it eventually.*

They valued their experiences, finding it to be of help to other people: “*People in my place may not know about these issues [trafficking]. Having gone through it, we have learned a bit and have reached here. No matter how bad it feels to us, if our stories help them, we should tell it*” (S1).

The sisters expressed motivation to raise awareness about trafficking and appeared to feel a sense of agency or obligation. This seemed to us to reflect a kind of an asset. At the current state, the sisters have limited avenues to mobilize resources and lead in awareness programs, but activities based on their existing senses of purpose could be an asset that enhances the sisters' connection to others and pride in accomplishment.

Perceived Danger in Revealing Identity

Remaining anonymous was a high priority for the sisters. They were aware of the stigma against trafficking survivors in Nepali society. We could see this fear of revealing identity



Figure 3.2: Mutual bond between the sisters could be seen in several depictions in the photo-book. The sisters used different angles and compositional techniques to hide their identity.

in the photo-book as well. During the group discussion, the participating sisters mentioned how they had been clever about the angle in which photos were taken such that no one in the photograph could be identified (for example Figure 3.2).

The fear of being identified also hindered the possibilities of the sisters being involved outside the organization. As shared earlier, the sisters wanted to raise awareness but were worried about being marked as trafficking survivors, as highlighted in S4's statement, "*If I could tell my story without showing my face and hiding some of my fears, I would tell my story to raise awareness*" and she elaborated further, "*If my face and voice are not recognizable, if they [public] can't figure out who I am, if they can't say that this [me] is so and so's daughter, then I would [record my story in my own voice].*"

They also shared that did not want to be seen being associated with the anti-trafficking organizations. The staff members were aware of the issue as well. At PO, the director

lamented how society discriminated against women as soon as they learned that they were part of PO, even if they were not trafficked. Staff members at both organizations shared that such a belief made it difficult for them to follow up with the survivors after they move out of the shelter home. In fact, both the organizations at different times tried to reach out to the survivors by obfuscating their organization name. However, at SO, they could not do it further because, according to a staff member, “villagers started asking questions”.

Their fear is not unfounded. Stigmatization and discrimination against survivors exist in the society [143, 179]. The challenges continue long after reintegration as well. A significant number of cases appear each year of survivors being abused in their workplace after employers learn about their trafficked past. Staff members were aware of the issue and have made attempts to locate jobs for the survivors within trustworthy organizations. However, according to two staff members at SO, there have been “mixed results”. Similarly, in SO’s 15-year history, only two survivors had revealed their trafficked past to their partners. In both cases, their partners rejected them.

3.2.4 Reflections from the Field

One lesson from development work in general and the ICTD and HCI4D communities, in particular, is the importance of modest and careful steps, with particular attention to avoiding the considerable danger and loss that can be created by interventions without sufficient long-term commitment and patient attention to local conditions [21, 49, 57], and the important potential of community-building [238]. For this reason, a key element in our initial exploration involved building trust with the organizations so that we could engage in a long-term relationship with them.

Here I highlight two aspects that were noticeable during my engagement with the organiza-

tion that highlights challenges as well as opportunities to building trust and relationship.

3.2.5 Distance Between the Sisters and Me

At SO, the female staff members were addressed as “mommy” or “older sister” by the sisters. On the other hand, the sisters addressed me and other male staff members as “sir”, rather than, for example, a common phrase like “older brother”. I addressed the sisters as “younger sister”, which is, given their age, an unmarked term in Nepali. The staff members too used “younger sister” to address the sisters but also used terms like “victims”, “rescued girls”, “beneficiaries”, and “service recipients” to denote them. The form of address denotes the distance that was present between the sisters and me as well as their distance with the staff members.

I was an outsider in the space and was seen as such. I walked around carrying a notebook, noting observation sporadically and asking questions. The IRB consent process further added distance between the sisters and me. I used terms like “research” and “project”. The process was conducted, as required, while the sisters were together in groups. Most looked down at the floor, said nothing, and agreed to sign only after visually checking with the staff member who was present.

Moreover, some of the staff members in both organizations inquired about funds that may have stemmed from them perceiving me as being associated with donor organizations. Additionally, some of the sisters asked me about the American lifestyle and infrastructure. Their inquiries can be seen as both reflecting enough comfort to display curiosity and a heightened consciousness of me as an outsider.

I sought to present myself as a “friendly outsider” [87], acknowledging both my distance from them but also highlighting the commonalities we shared. We shared stories of traveling

on muddy Kathmandu roads during monsoon, living in a hostel during winter with no hot water, living in fear during the 10-year civil war, and being far away from home. While such sharing helped in reducing the distance, it was not entirely erased.

3.2.6 On Forming Trust with the Organization

Trust is central in a design engagement and researchers have to build trust before design research can begin [35, 244]. Indeed, in our context, we can see the need for trust as the partner organizations had to trust our and our approach despite the uncertainty of the outcome. Beyond permitting to engage in design, a relationship of trust between researchers and community partners are critical to “designing value in the collaboration” [238, pp. 1]. Building on Mayer et al.’s model of trust [151], Warwick highlights three aspects that influence collaboration’s perception of trustworthiness: trust in the designer’s ability, designer’s integrity, and designer’s benevolence [238]. I sought to build trust by being transparent about my position and objectives, as well as by sharing my prior work experience.

However, trust is fragile. Distrust can form through interactions that are beyond the scope of our engagement. In our case, PO had earlier collaborated with researchers from the US who they felt had not been truthful about their objectives. A program officer at PO sent me a message stating, “... *looks like we have had a history where even a professor from a reputed university came for a research and just used the organization for his research purpose and did not help it as promised.*” Their prior experience with researchers in the US had built distrust which influenced our plans for future engagements too.

I sought to repair the trust with PO by being transparent and clear about my objectives. This included trying to distance myself from those US-based researchers, highlighting my background, and establishing my volunteering experiences in PO’s prior events. However,

it did not work. PO expressed reservations in engaging with researchers citing the limited control they have on what is being said of them [5]. All of our subsequent studies have been with SO only.

Mutuality in Research

In some cases, research becomes an extractive practice, especially when it does not establish mutual value and alignment of goals. According to the PO program officer, the researchers published critiques of PO's operations without allowing PO to share their voice. Critical analysis of organizations can be beneficial, especially when mechanisms are established for the organization to improve its process. However, without establishing feasible mechanisms for the organization to change, critiques can be harmful. As we saw in both PO and SO, resource constraints hinder significant changes.

This experience with PO was influential in establishing our approach with SO. We see that the organizations are providing help and support in a context where there are severe resource constraints. We see the organizations acting to the best of their ability, balancing the several constraints they face. The organizations have limitations; we uncovered some of those issues during our study. However, our approach has been to present those limitations to the organization, eliciting actionable pathways to mitigate the issues. We seek to form a supportive collaboration, based on trust and mutuality.

As such, our research aligns with Brereton's call to go "beyond ethnography" [21]. As mentioned above, technology was a key factor influencing our relationship. It was a resource that we possessed and were seen to possess that they valued. To promote mutuality and reciprocity and, in the process, build trust, I volunteered to help SO in maintaining their website. Over the years, I worked on several aspects of their website including the design

of templates, help setting up an online donation system, editing content, and training staff members in publishing content on the website. This volunteering work, we believe, helped in establishing mutual value.

While working within a general framework of trust and trust-building, it is important to acknowledge that we did not always see eye-to-eye even with a close partner like SO. While we respected them and their endeavors, we suspected that an asset-oriented framework would reveal that the sisters were capable of more agency and learning than the organization, or in some cases the sisters themselves, expected. We also came to feel that the staff at SO did not in all cases understand the real but subtle barriers to technology adoption. Thus discussion of the findings and the approaches we had planned became central in our engagement, supporting us to arrive at approaches that supported our assets-based design goals with the sisters while also satisfying SO's expectations from the collaboration.

3.3 Chapter Summary

The goal of the ethnographic study was to develop a holistic understanding of anti-trafficking organizations' operations in Nepal and the circumstances surrounding reintegration. While the program implementations varied between the two NGOs, the programs were heavily shaped by the annual TIP report and international donor organizations' priorities. In this space, the NGOs seem to have limited room to maneuver, especially given their reliance on donations. We also saw noticed a sense of competition between the two NGOs which may stem from the fact that they vie for the same pool of grant money.

The survivors are dependent on the organization for support. Their future is influenced by the programs being presented to them by the organizations. Anti-trafficking organizations can be a resource for the survivors, even long after reintegration. However, the danger of

being seen associated with the anti-trafficking organization raises concerns on how the sisters could leverage the resource after they leave the shelter home. Aligned with the principle of upholding the privacy, safety, and dignity of people who have experienced “life disruptions” [146], any approach in this context would have to focus on protecting the sisters from being identified as trafficked persons by others in the society. Any approach, either for research or intervention, should not arouse suspicion or put the survivors at risk.

At the same time, the organizations are dependent on the survivors in the sense that the organization needs the survivors to need the services that they provide. This may increase the tendency to make deficit-focused discourse prominent. We observed this in both the organizations’ desire to appeal to donors through the survivors’ past struggles. Survivors’ needs and deficiencies are highlighted to appeal and generate resources that are required by the organization, and through them, reach the survivors. We characterized their relationship as one of interdependence—both the survivors and the organizations need one another. In this context, we see our role in bringing change within the organization by working with the sisters and the staff members, such that the change comes from within.

Chapter 4

Adapting to Local Practices to Hear Nuanced Voices

In Chapter 3, I presented some results from our initial ethnographic-style study. During the study, there was a noticeable distance between the sisters and me. The personal and largely female nature of the shelter homes made me stand out. Many factors contributed to “othering”. As a male, walking around observing the sisters with a notebook seemed to make them self-conscious which was observed from the sisters stopping their work in my presence. Being required by the Institutional Review Board to reveal, at the outset of acquaintance, my position as an academic researcher added to the distance. It also required me to use words such as “project” and “research” which further added to the distance.

The interview method also created a distance since I was the one asking the questions and deciding what aspects of the sisters’ lives were important for further examination. Furthermore, the sisters were familiar with interviews, having occasionally been interviewed by “visitors”, that is, members of donor organizations who visited SO’s offices. Moreover, the staff members were present during our interview sessions. They often rephrased the questions I asked and, at times, answered for the sisters. The interviews and the group discussion allowed me to hear the sister’ voices in some respects but I did not feel that I was hearing their voices clearly.

All of these called for the need to subvert the usual interview or group-discussion method

to go beyond the expected “rules” of presentation and thereby allow possibilities for deeper understanding. Our initial observation suggested that many of the sisters struggled with letters and literacy, so the use of traditional diary studies or even use of postcards such as in Cultural Probes [84] was not appropriate. Instead, we sought to adapt the photo-elicitation method to mitigate the distance and get a better understanding of the sisters’ requirements and values.

The plan to adapt photo-elicitation emerged from my observations of the local practices within the NGOs. In addition to the NGO’s prior interest in teaching Photoshop, I noticed posters about societal problems adorning the interiors of both NGOs’ buildings. These posters were created by the survivors and contained photos from newspaper cutouts and text. At SO, posters were placed on the walls around the staircase signifying that they were meant for visitors to see. The posters suggested that working with photographs would not be very distant to the sisters. The ambiguous nature of the photographs could help break away from the familiar question asking and answering process of an interview while eliciting deeper conversation about the sisters’ lives in the shelter home. In addition, the playful nature of photographs could help reduce the distance between us.

This chapter reports on the social photo-elicitation method that I conducted with a group of five sisters. The method allowed me to uncover details of the sisters’ lives in the shelter home as well as their vision of the future.

4.1 Prior Use of Photo-elicitation and Probes

Photography as a research method has long been used in anthropology and sociology (e.g. [36, 207]). Photographs can be interpreted to understand important aspects of the local culture and subsequently used for design inspiration. This is the rationale behind using

cameras and photo albums in Cultural Probes [83]. Similar use of photographs has been made to get information from the participants about their situated actions through Informational Probes [42]. While these put the onus of interpreting photographs on the research team, photo-elicitation interviews generally use photographs taken by the participants in facilitating the interviews (e.g. [137]).

Despite capturing visible reality, photography is an inherently ambiguous medium. Ambiguity allows viewers to “interact with the natural events depicted and draw references and significances from a broad range of events, experiences, people, and responses which they recall, derive from, relate, and attribute to the depicted contents” [164, pp. 39].

Photographs can thus be looked upon as artifacts that embody the photographers’ perspective and simultaneously invite interpretation. They enable us to get a deeper understanding of the participants’ perspective through the references and significances they draw. Within the HCI community, photographs have been used in multiple ways such as in understanding practices of collaboration and sharing around photographs to inform the design of Photo-wares (e.g., [43, 75, 229]), as a medium suited to support storytelling [14], and used as an “enjoyable activity that can help deepen personal and community relationships” [75, pp. 167].

A growing body of research within HCI has been exploring ways to respectfully engage with people in vulnerable situations, whether it be for generating design ideas or for supporting and empowering them. To that end, photo-elicitation methods have been commonly used in part because they support participants in choosing only those aspects of their lives that they want to share. For example, Crabtree *et al.* [42], in their work with psychiatric patients in a hostel and elderly people at home, raise concerns about direct observation techniques. They seek to supplement such techniques with an adaptation of cultural probes and find the adaptation to be helpful both in gaining insights into user needs and in supporting

user involvement early in the design process. Capel *et al.* [27] use a self-reporting probe with videos and photographs recorded by participating women who are experiencing financial distress to generate technology design ideas. Similarly, Clarke *et al.* [34] present the potential of photo-elicitation probes to support women who had experienced domestic violence and are rebuilding their lives. The participating women brought photos and presented a video by putting the photos in sequence and adding words and sounds from audio recordings. In our social photo-elicitation method, we leverage the ambiguous, interpretative, and less-intrusive aspects of photo-elicitation. Our approach differs in that we focus on collective meaning-making rather than individual ownership of the photos and interpretations.

4.2 Methodology

4.2.1 Social Photo-Elicitation Session

I adapted the photo-elicitation method in the group activity. The planned outcome was a poster, similar to the posters created by the sisters using newspaper cutouts. Although posters were familiar, I wanted to make the familiar strange in a variety of ways. The sisters had never taken photos around their shelter home and their workshop. While they had used existing pictures, they had not elaborately discussed their interpretation of photographs with each other. The blend of familiar and unconventional was intended to provoke sisters to engage in discussion of personal and work-related issues, aspirations, and personal and organizational values.

The photo-elicitation started in a fairly standard way. I gave the sisters a Polaroid camera to use for two days with no particular goal, requesting them to take photos of anything they wanted. Before handing over the camera, I conducted a half-hour session to show them

the procedure to operate a camera and asked them to operate it. They all got hands-on experience taking photos individually. Polaroids were chosen because the physical materiality of the print made it implicitly clear that the sisters had full control of the photos to the extent that they could burn them if they wanted.

After two days, we convened to discuss the photos they had taken and were willing to share with others. The photo-elicitation sessions were held in a room next to the handicraft workshop, a place that was familiar to the sisters. The session was different in three major aspects from a typical photo-elicitation session. First, instead of asking an individual to present and talk about one of their own photos, I picked each photo in random order and asked each person to talk about that photo one after another as they went around the circle. This helped in reducing the burden that sisters might feel in being asked to speak as an individual voice. Second, at the end of each round, the group added the photo to a poster, making the photographs communally owned. Third, the poster was annotated with a communally agreed-upon statement or comment. I conducted two sessions with five sisters where each session lasted about an hour, with a week in between the sessions.

As we got involved, as facilitators of the photo-elicitation sessions, we became privy to their personal stories. We laughed and shouted, asked and answered when asked, and thus partially reduced the distance. It was only partial because we facilitated the activity and asked the questions. Nonetheless, the ludic elements incorporated in the sessions helped in reducing the distance between the sisters and me. The playful nature of the sessions was also helpful in supporting agency and personal decision-making.

4.2.2 Data Collection and Analysis

After receiving permission from the sisters, I recorded audio. I had also taken photos of the posters they had created. I also recorded field notes during the session and created written reflections from the sessions at the end of the day.

I translated and transcribed the audio recording. Chandani Shrestha, who is also both a native Nepali and a computer science researcher at Virginia Tech was involved in coding the transcribed text. We independently identified concepts and themes by going over the recordings and the transcript. The interpretation and meaning of the photos as expressed by the sisters were analyzed. The content of the photos was not used in the thematic analysis.

SO's stated aims included promoting productive work, financial independence based on skills training, and reintegration of the survivors in her town and perhaps with her family. As we worked iterated on the codes to identify higher-level themes, we began associating the sisters' expressions with SO's aims. We find that the sisters often endorsed these goals and associated values, but they also expressed more nuanced aspects which at times problematizes those points of view. We present our findings around those two categories: financial independence and their perceived complexities around reintegration.

The sisters had also participated in a program where they had created a photo-book called "Remembrances" (see Figure 3.2). I printed out photos from the photo book and Chandani, Deborah, and I coded the photos during a gallery walk-through session. We identified recurring themes from those photos and triangulated them with the themes we had observed from the audio recording. Part of this chapter was published at CSCW 2018 [79].

4.3 Findings

The photo-elicitation method reduced the distance to some extent in that the sisters were observed to be more relaxed and open. The sisters and I sat in chairs arranged in a circle; however, since some sisters got up, left, came back, and moved, we felt that they knew that they were free to come and go. The sessions were conceived of as games. They were not, for example, task-oriented. There were no right or wrong answers. The sisters were free to change the rules and in fact, did decide whether someone could “pass” on a photograph without talking about it.

The interpretation of the photos appeared to promote gossip, personal and work-related issues, aspirations, and expressing personal and organizational values. One participant, S12, was initially shy; however, during the third round of the game, her neighbor whispered statements to her that she then uttered. Subsequently, S12 became an active participant, pulling photos before I could choose one and playfully teasing other participants.

Nonetheless, participants were slow to start talking. Initially, a staff member was present. None of the sisters were willing to go first. So the staff member volunteered to start and said, “*The handicraft looks nice and we have to show this outside. There are many things in this photo such as cushions and the showcase. The showcase, when people see it, would exclaim that it is nice.*” Other sisters began to talk. The staff member left after the first round of comments and did not come back. Over time, the sisters relaxed enough to sing, shout, and laugh.

4.3.1 Skills Training for Financial Independence

Most of the photographs taken by sisters were of the crafts that they were learning to make. These crafts included making *Pote* (Nepali bead necklaces), bracelets using glass beads, knitted bags, scarfs, and shawls, and working on a Japanese-style crocheted shawl called a Saori. Red and green *Pote* play a role in the Nepali marriage ceremony and are important in Nepali culture as a marker of married status in women. While the photographs focused on the craft, the discussion highlighted complexity that failed to emerge or was downplayed in our earlier interviews and group discussions. The sisters valued the craft work not only for economic gains but for emotional value. They expressed a strong inclination to showcase their work, suggesting a sense of ownership towards the craft work. However, they also discussed the difficulty and boredom they felt in working.

Showcasing the Crafts

Cabinets full of necklaces and various handicraft products were visible all over the building including around the staircases. These are displayed for visitors to buy, most of whom are foreigners. This appeal to visitors came up multiple times during the photo-elicitation sessions. For example, S14 said about a photo of the cabinet (Figure 4.1), “... *this is of special importance to visitors ... the main thing is, a visitor, as soon as they enter, they will see this attractive set of objects.*” Along similar lines, S13 further added, “... *I feel like if foreign visitors come from outside, they should feel awe when they see this collection.*” S12 further expressed her belief in the potential of selling her handicrafts outside of Nepal to places that she “*can’t even name.*”

The focus on appeal was most evident in the outcome of the second session. At the beginning of the second session, a staff member informed the survivors that the posters they were

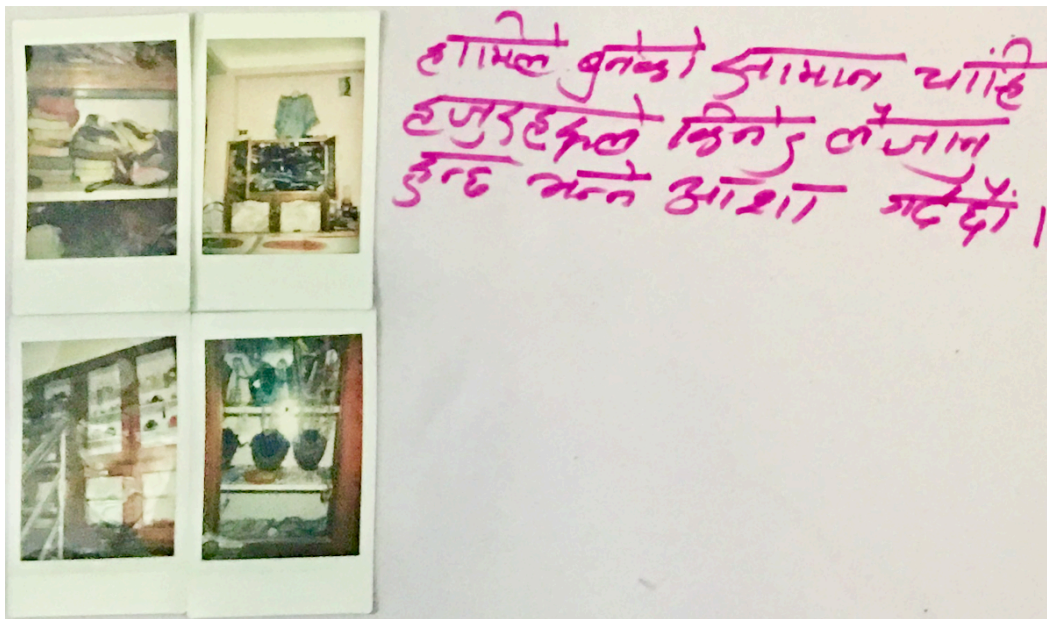


Figure 4.1: The photo depicts a collection of handicrafts including cushions, shawls, poncho, and necklaces. Multiple participants had taken photographs of the shelf so they are grouped together. The text reads, “We hope that you will buy the handicraft products that we have made.”

creating would be placed on the walls of the office building. Four out of the eight short statements written on the posters during the second session focused on trying to sell the products. In contrast, only one of the nine statements in the first session hinted at anything to do with sales.

This focus also uncovered disagreement about their perceived roles of the sisters within the organization. Some wanted to write statements aimed at promoting sales. Others, like S15 below, wanted to leave advertising to others.

S13: *We should say something like ‘If you like this pote, please take it immediately’*

S14: *Yes, that’s what we should say.*

S15: *No, that should be said by someone who is advertising.*

S14: *Shouldn't we try to advertise?*

S12 pushed the negotiation towards talking about their own activity, “*We should say that we make a lot of designs every month and wish that it could be sold quickly*” and eventually they negotiated the sentence, “*We can make different kinds of designs but you all please don't stop placing orders [for these].*” This formulation contained both references to their activity and an appeal to visitors on behalf of the organization.

Throughout the sessions, the sisters expressed a sense of ownership of the crafts and the activities. They did not express themselves as help-receivers, but rather positioned themselves as contributors to SO's activities and, like S14 and S12, sought roles as productive members of the organization. They had taken responsibility for the sales of the crafts upon themselves.

Economic Gains

During the discussion, the value of being able to sell the handicrafts came up several times. S14 talked about the personal value of being able to make and sell *Potes* to become financially independent. Similarly, S12 focused on the personal benefits of being able to make *Pote*, “*... because if we learn all these skills [different handicraft], in the future, we can make these at home and sell it outside [market]. That's why I think everyone should learn Pote making.*” S13 who preferred to work with wool and shawl-making rather than *Pote* appreciated the economic benefits of her craft, “*The more yarns you make, the more profitable it is for you.*”

While the sisters had varied opinions about the future possibilities of *Pote* making to achieve economic independence, they all valued handicraft work for its economic value. S14 and S15 believed that they could ultimately be independent by creating and selling *Pote*. S15 shared aspirations to sell *Pote* beyond Nepal too. S12 was skeptical about *Pote* but believed that

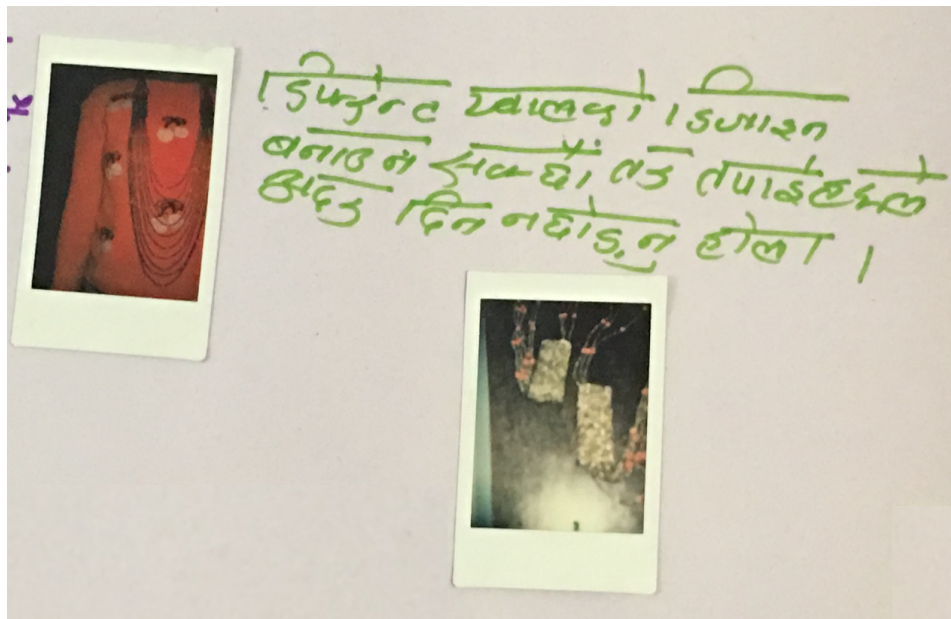


Figure 4.2: The photo depicts necklaces made of glass beads. The participants had taken multiple takes of the necklace so they grouped it together in the poster. The text reads, “*We can make different kinds of designs but you all don’t stop placing orders.*”

she could instead sell shawls to earn money.

However, all the sisters in the photo-elicitation session expressed a negative outlook on the organization’s financial gains from selling handicrafts, frequently remarking on the dwindling number of actual sales. They pointed out the lack of demand in the local market and the inability to sell as much as they had made with S14 exclaiming, “*We don’t get visitors anymore. We have so many Potes outside [on the shelves], we don’t know when any of them will be sold.*”

The fact that the sisters hold contradictory views about economic gains from crafts – that the current financial gains (to the organization) are dwindling but that they can be financially independent in the future – raises concerns about the feasibility of relying exclusively on the limited handicraft training to promote financial independence. In the absence of other training, the sisters seem to hope that what they have learned will suffice for their goals.

4.3.2 Emotional Value of Crafts

Along with the economic gains, the sisters expressed emotional values towards the craft work. The sisters mentioned their effort to not keep an idle mind. S13 while discussing the creation of shawls mentioned, *“I draw sometimes. When I go home and I am idle, thoughts creep into my mind. When I draw, the attention shifts to the drawing and takes my mind away from those thoughts.”*

The usefulness of handicrafts to heal from past trauma became the major focus when the sisters discussed the Japanese crochet cloth-making machine. S16 informed us about the machine being used elsewhere (Japan) to argue about the value of the craft in the healing process: *“This [Saori] was helpful for the process of healing. Do you know that they have Saori machines in Japan for mentally disturbed people? So it is also used here [at SO] for the process of healing.”* In that round, the group summarized their discussion where they focused on the craft’s helpfulness in healing and wrote, *“Saori is a Japanese shawl which can be taken as a form of healing. By engaging in it people can heal from different trauma.”*

Part of talking about the value of crafts involved imagination of possible futures. S13 mentioned that the ease of spinning yarn could provide opportunities for all family members to do something productive. She tied this together with an image of social bonding: *“You could talk to your friends. You could be speaking while you are also engaged in work. In cold seasons, you could bask under the sun and instead of sitting idle, you could work together with friends and family to work on this.”*

Likewise, the sisters talked about making the most out of the lack of resources and adjusting to it by working on their handicrafts. S14 exemplifies this initiative-taking attitude when she said, *“You don’t need electricity¹, battery, or power to use this. You don’t need help from*

¹Power cuts are frequent in Nepal especially during the dry season. In the four winter months of 2016, Kathmandu had electricity only 8 hours/day on average.

the Internet. You don't need anything extra for this. You could relax, talk and work instead of wasting time. If you could manage your time like this, it [knitting wool] could improve your life."

The combination of hope and recognition of many aspects of their likely future situation that is reflected in these comments is presumably part of what the sisters gain through their time in the protected living situation, but once again raises questions about longer-term pathways. At the current state, the organizations have limited resources to support ongoing, long-term work on handicrafts for sisters who move away from the protected living homes. As evident from earlier work [44], sisters may be forced to forgo crafting as they become reintegrated.

Difficulty and Boredom

The discussions also included the challenges of learning the craft work. Most of them talked about how they had persevered in learning the craft. The frustration in doing some of the work was expressed such as by S14 when working on woolen shawls, *"It looks easy when you see it from the outside. I found it very hard initially. I didn't know how to put the wool when I kept it on one side, the other side would be ruined."* She later continued, *"It became irritating."* S12 similarly expressed how hard it was for her to learn *Pote* making and that she moved away from that when something else was available, never to look back, *"...it [Pote] was immensely hard. I couldn't even put a thread inside the needle ... I thought shawls would be easier and I moved to work on shawls. Even now, I have not made Potes."* It is to be noted that she persevered in learning to make shawls although she also found that hard in the beginning, *"I didn't know how to do it at first. My hands used to shiver. As time went by it became easier."* S13 shared her frustration and her journey moving from one craft to another not just because they were difficult but also because she did not find some

interesting:

I started by learning to make necklaces but I was never interested in that. There was no shawl making back then. So, I went to learn Saori ... it was very hard. You have to put a woolen thread in one place and pull out from another and put it in another place and pull out from somewhere else! It requires a lot of effort. Once shawl making started, I left this [Saori] too.

Similar to S13, other sisters also expressed boredom having to work on the same craft repeatedly. The sisters had access to a limited range of craft-based activities which was limited by the availability and interest of the organization. The limitation of the range of activities came up, especially when the sisters talked about the Polaroid camera. S13 remarked, “*We have knitted and made shawls but how much can one do the same work?*” S15 further elaborated it, “*We always do the same work here and it gets boring at times. Sometimes you want something different to do or use different kinds of tools. Getting to do that [taking photos] here made me happy.*” Her inquisitiveness and desire to use different tools led this sister to tear apart one of the Polaroid films to see what was inside it.

There are many pragmatic reasons that SO focuses on this kind of crafting, including that the skills are attainable, the materials are inexpensive, and the products are culturally recognizable. Despite the pragmatic reasons for these crafts, these interactions and observations raised questions about whether the sisters could have done something else other than the handicrafts that were available in the organization.

In fact, earlier, SO had tried something else. They had provided computer and photo-editing training to sisters who had produced a photo book. The sisters reported feeling overwhelmed as evident from S3’s statement, “*I feel short on editing photos which we couldn’t learn well. When we were learning to edit, we had never touched a laptop before to know anything [laughs]*

... *it would have been better if we had been able to do [editing].*” The barrier to entry in this statement is clear. The sources of the barrier are somewhat less clear: is it engendered by the laptop itself, the editing system, something about the complexity of the editing tasks, or some combination of all of these? Did the barriers arise primarily from apprehension or from the cognitive distance of the tasks [29, 150]?

Despite the negative reaction to the training sessions, the sisters expressed the desire to learn to use computers. They shared visions of being able to communicate with family and friends using computers and smartphones. We conjecture that there may be an opportunity to build upon the sisters’ existing skills, including their knowledge of crafting, towards projects that they find both personally meaningful and economically beneficial. From a sufficiently abstract point of view, recent work on DIY technologies and feminist makerspaces [71, 222, 224] suggests extensions to the craft work could provide an emotional and intellectual pathway towards introducing technology. However, moves in that direction must consider what constitutes too much of a barrier.

4.3.3 Complexities Around Reintegration

The sisters shared their desire to form ties with family and members of the community during the photo-elicitation session. I could also observe a strong bond between the sisters. The discussions also hinted at the limited sources of social support for the sisters outside of the shelter home. However, the sisters move out across the country making it difficult to sustain their connections with one another.

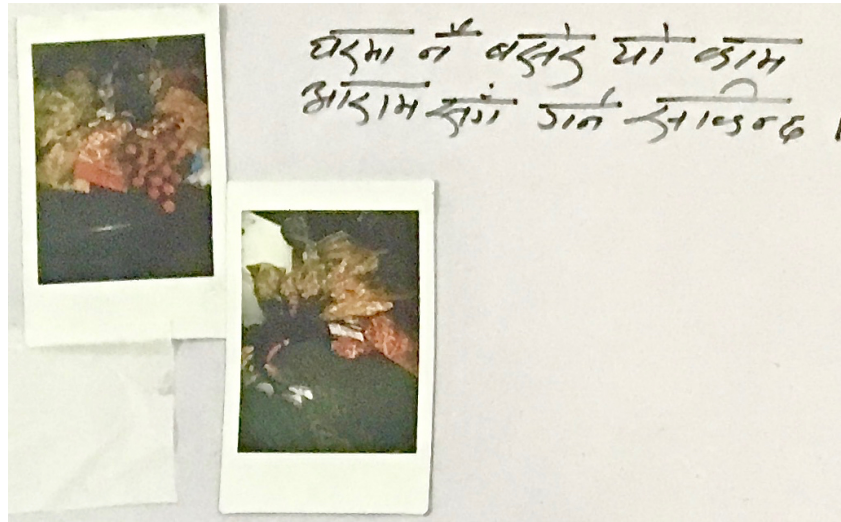


Figure 4.3: A set of pouch made from old sari clothes and knitted decorative products created by the sisters. The text reads “One can easily work on these while staying at home.”

Desire to Belong

During the elicitation, S15 and S16 discussed the value of working away from home and gaining membership in the outside community. S15, for example, valued the interaction with people outside of her home saying, “*Outside environment has different types of people and having a job would make it easier to be part of them. You would also build communication and relational skills.*” This comment is aligned with the staff’s focus on independence but also projects societal connection.

A different sort of wish to belong was widespread throughout the discussions: the wish to belong to a family. For instance, S13 while discussing a photo of them knitting wool (see Figure 4.3) mentioned, “... *you can do it [yarning wool] from home. People could also involve their brothers and sisters in the task.*” S14 added that she prefers to work on the handicrafts “*from home. I would have children and I would drop and pick them off from school. At other times, I would work on these handicrafts.*” S12 too placed a greater value on working at home over going out, “*When you are at home, you have family members around you [laughs]*

I would prefer to work from home.”

None of the sisters said that they wanted to be simply supported by a man. However, many appeared to want more connection than implied in simply “going out to work.” Belonging seemed to come from engaging with family members and other members of the community. However, many of the sisters were either rejected by their families of origin or SO judged return to being too dangerous. We did not know which sister fell into this latter category but thought it possible that these sisters also shared the kind of longing for belonging and family that we heard communally.

This raises concern given that neither the NGOs nor the government in Nepal has taken initiatives to support trafficking survivors to build connections with members of the community. Indeed, as we observed during the ethnographic study, the sisters have limited opportunities to interact with members of society outside the shelter home. They also do not have access to computers or mobile phones to connect with people outside the organization. The social network for support is limited for survivors, especially for those who are rejected by their families. Research posits that social capital and family structure is one of the strongest factors influencing upward economic mobility [54, 58]. There may be viable opportunities to promote “weak ties” [86] between sisters, staff members, and broader groups outside of the shelter home as a way to progressively broaden opportunities for social support.

Sisterhood and Mutual Support

We also noted that discussion of relations between sisters within the shelter homes had elements of familial environment. The photo book created previous to our investigation and discussed by the initial focus group of sisters depicted them holding each other, huddling

together, and engaging in a shared activity. The narratives too described sharing personal secrets with one other, promising to keep those a secret, and a desire to live together with other sisters (see Figure 3.2).

During the elicitation sessions, togetherness and mutual support came up multiple times. S14 mentioned how she supported newcomers by giving them scaffolds to encourage them to participate in creating *Pote*. S12 was one of the recipients of S14's help who was more than happy to mention the help that S14 had provided. S13 too talked about how she seeks help from other sisters when she can't work on the *Pote*, "*it's not that I don't do it at all ... I do ... when I have to work on it, I try for 4-5 times and then if I can't then I ask someone else to do it for me.*" Similarly, when discussing a photo of working on Saori shawls, S13 talked about the help other sisters provided: "*... I went to learn Saori. It was fun in the beginning when others [sisters] would put the wool for us. Later when we had to put the wool on our own, it was very hard.*" The shared experience involved moments of shared frustration as well. For instance, S12 quipped how they had "*thrown the shawl from the rooftop because we both couldn't do it [design the shawl].*" Support of one another was also evident during the sessions where some encouraged others to talk more during the rounds.

Togetherness and mutual support, especially when enforced by a living situation, do not make enduring future attachment inevitable, but it does suggest that such relationships deserve further investigation as an important resource. Along this line, research work on fostering connections and support has relied on access and use of technology [8, 159, 193]. Similar to Massimi *et al.*'s suggestion [146], one design sensibility would be to provide a way to sustain the sisters' connection with one another.

4.4 Discussion

4.4.1 Identifying Assets

The sisters leave the protected living situation to a mostly unknown future. From the ethnographic study and the social photo-elicitation sessions, we have identified a few elements of strength in their situations. These include their communal orientation and desire to help others which, as we discussed earlier, could be a resource that we could build upon to foster deeper connections with people in the society; however, it remains unclear for us how we could assist them in helping others without putting them at risk, especially considering the stigma against trafficking survivors.

One of the key observations from our study was that the sisters were distant and isolated from the society outside the shelter home. In the photo-elicitation session, they expressed a desire to belong in society. A key concern is to identify the mechanisms with which the sisters can gain power such that they are on equal footing with members outside the shelter home when they reintegrate; however, as it stands, there are very few opportunities for them to do so.

One way for us to begin charting a pathway would be by furthering their existing skills and assisting them to foster abilities that are valued in society. To that end, two resources appear to be possible to build upon to further the sisters' lives after leaving the protected living situation. The first is their knowledge of crafting and the second is their close bond with one another. Of course, there may be other assets that we have not discovered, but in contemplating action, we believed that building these two assets could lead to enduring pathways.

4.4.2 Asset 1: Knowledge of Crafting

Why is the Knowledge of Crafting an Asset?

We defined assets as those strengths, attributes, and resources that can be brought into relevance to satisfy the inherent tensions between a member of a population's needs, the structural limitations of the system, and the member's understood or experienced aspirations. The sisters' knowledge of crafting satisfies all these conditions from different stakeholders' perspectives.

From the sisters' perspective, crafting is a valuable skill that they are learning every day in the shelter home. As we heard in the photo-elicitation session, they value the skill and saw it as a potential source of livelihood in the future. They saw the possibility of using the crafts to bring their family together. They also wanted to showcase their crafts, thought that crafting was therapeutic, and had persevered through difficulty to learn the craft work.

From the organization's perspective, they have invested in handicraft workshops and hired trainers to provide training. Crafting also allows them to showcase the fact that they are helping the survivors develop agency to bring change in their lives. They had written grant proposals to further the survivors' crafting skills. SO had also opened a shop—a significant investment—to sell the handicrafts and generate additional income.

From our perspective, we can rely on the sisters' knowledge of crafting to be present. The sisters move out of the shelter home at indeterminate times; some leave as early as two months. Given that all the survivors at SO are trained in making local handicrafts, we could rely on the sisters knowing at least a bit about crafting even when the groups change. Critically, their knowledge of crafting and ideas surrounding it (e.g., design, implementation, iteration, marketing, transactions, and sales) is valuable and can be built upon towards more

enduring strengths.

There are problems with crafting aside from its limited demand in the local market. Rehabilitation and reintegration programs would be more efficient if it could be tailored to the survivors' interests and background. Crafting does not support that. It does not allow the sisters to define their own aspirations and design plans to achieve those aspirations. We considered this constraint as we planned on our next step to build on the sisters' knowledge of crafting.

Leveraging Crafting

The ultimate outcome expressed by the sisters is to be reintegrated into society with dignity, with a sense of belonging. For greater acceptability in society, the survivors would have to be in situations that allowed them to create ties with other members of the community in which they would be treated as equals. To that end, their sense of agency, ownership, and skills in making crafts could be leveraged as resources.

Prior work in HCI has argued for creating such opportunities for vulnerable groups to connect with people with more resources or capital (e.g., [54, 193]). Increasing interaction between the sisters and members of the community in a context that showed the sisters as productive members of the community could help towards greater social acceptability. Many women in Nepal could profit from crafting skills, especially if those skills were constructed in such a way as to lead to increasing their capability. Therefore, we contemplated leveraging the sisters' existing skills in group settings for mutual growth and profit while working towards shared goals. Such settings might encourage interactions with women outside and thereby "link" [243] the sisters with members of the community.

While this approach seemed somewhat feasible, it did not align with the sisters' values and

concerns. Even though crafting was a palpable asset, it was not ideal in every respect. First, from the social photo-elicitation sessions, we knew that the sisters worried about whether the crafts had substantial financial value, having observed what they characterized as declining sales in the local market. Also, they sometimes found crafting boring. They had expressed the desire to do something different.

Crafting has several external limitations as well. We found that a tailoring shop had been forced to close. Likewise, a prior study found that very few of the survivors worked on making crafts after leaving the shelter home [44]. Critically, making moves to further the sisters' crafting skills (e.g., by introducing computer-aided embroidery machines²) could have an unintended side-effect of reinforcing the idea of crafts training in the organization.

Instead, we sought opportunities to build on their knowledge of crafting towards more enduring assets, that is, skills that are valued more generally in society. Ideally, tailored programs for the sisters to explore and build on their interests would be suitable. However, neither we nor SO had the resources to support such a tailored approach. This called for an exploration of approaches that would be flexible enough for all sisters to gain something of value.

To that end, we shared findings from the study with three of the staff members at SO. We shared that the sisters had expressed interest in photography while using the instant print camera and in using computers to communicate with family and friends. The staff members suggested several pathways: (1) provide photography lessons so that sisters can market the crafts, (2) expand SO's previous lessons on photo editing which the staff members saw as means for the sisters to create stories that could be "posted on Facebook", (3) create a mobile app that supported the sisters to learn new skills, and (4) develop technology for the sisters to report incidents at home to the police and the organization. Technological components, at varying degrees, we present in all the suggestions. Discussing and negotiating on these

²<https://www.brother-usa.com/products/pe535>

suggestions with our observation of the sisters' interest to learn to use computers and mobile phones, led us to propose a tailored application that would be contextualized around crafting and introduce them to more aspects of the practice (e.g., how to present it to a buyer).

We hypothesized that the familiar context of crafting would encourage the sisters to bring in their knowledge from their practices in the technology use, and thereby, reduce the barrier arising from the sisters' limited digital and text literacy. The critical part, we believed, was to include computers as part of a workshop, with activities aiming to support the sisters in (1) developing a critical awareness of their assets, (2) exploring ways they could build on those assets towards skills and knowledge that could assist them outside the shelter home, and (3) moving towards a position where they can engage with societal actors and institutions with a level of authority. The flexibility of computing, we believed, would allow the sisters to appropriate it according to their interests, thereby creating a space with a high ceiling [172]. This exploration of supporting the sisters to move toward more enduring strengths through computing and associated activities became part of our subsequent studies (see Chapters 5 and 6).

4.4.3 Asset 2: Bond with One Another

sisters appear to rely on their relationships with one other in the protected living environment. The shared living situation, their awareness of each others' past, the shared work, and the mutual support they provided each other had fostered a strong bond between them.

Similar to crafting, the mutual bond constitutes an asset that satisfies the tensions between the sisters' needs, the structural limitations, and their aspirations. The sisters need mechanisms for social support once they leave the shelter home; however, as we uncovered in both the ethnographic study and the social photo-elicitation sessions, they have very few

opportunities to build connections with people outside the shelter home. The bonds that they have with one another could be beneficial for long-term emotional support and collective action. This could be especially beneficial for the sisters whose families have shunned them for they can build a familial-like relationship with one another when they undergo urban reintegration.

From our perspective, the sisters' mutual bonds can be a valuable resource. In particular, the sisters' mutual bond could be valuable in exploring multiple ways in which they can engage with societal actors and institutions. It could be beneficial towards collective action [189] as well as in providing facilitating explorations such as using technology [200].

Leveraging Their Social Bonds

Given the importance that the sisters place on connection, and the existing resource of the organization and other sisters, it is natural to think about using technology to create enduring community. Initial thoughts suggested that a voice-based system could build community that is accessed through non-smartphones (example systems to [186, 231]) or public kiosks (e.g. [178]). Similarly, voice-based social media have been explored for the workplace and home [62, 188]. However, sisters can have no expectation of privacy after leaving the sheltered home and mediating interactions that require explicit actions (such as making a phone call or use a kiosk) could be problematic or even dangerous, especially considering the suspicion that it could raise in their community.

Another avenue was to explore the design of technological tools that are present in the background and support a feeling of intimacy and togetherness such as Messaging Kettle [22] or Ambient Birdhouses [23] to allow the sisters to feel together without being brought to the attention of others in society. However, these necessitate an exploration that allows

the sisters to learn how to use technologies, and, in cases of problems, repair. This remains an avenue open to us but we could not see a clear pathway for us to manage such a system simply, sustainably and safely.

Instead of pursuing these approaches, we sought to begin by taking a small step through our exploration of introducing computers. The sisters face formidable barriers to technology use, including limited digital and text literacy. We hypothesized that we could reduce the barriers by making the exploration of computing communal, relying on the mutual support and collective exploration that we had seen and heard during our study. In this regard, we are influenced by a significant body of work in HCI4D/ICTD that has explored intermediated and communal use of technology to overcome some of these barriers (e.g., [3, 127, 185, 200, 232]). The mutual bond could facilitate playful experiences around technology, instead of the sisters being overwhelmed like they were earlier when SO had tried to introduce computers. Furthermore, we believe that by drawing forth their mutual support for one another in the new context around technology, we could reinforce their bonds. To this end, as described in the next chapter (Chapter 5), we sought to use and build upon their close bond by designing features in the web application that supported collective exploration and sharing.

4.4.4 Leveraging Communal Orientation in Social Photo-Elicitation

We drew upon well-known features of photo-elicitation, but some of these took on different meaning because of the particular situation. The initial ability to use the camera whenever the sisters wanted was important to (1) make them comfortable with the tool and the method and (2) win their trust by handing over a relatively expensive camera to them.

Additionally, we considered it important to begin to hear the voices of the sisters but we did not want to cause discomfort. To make the sisters more comfortable, we adapted the

methods to emphasize the social and communal. After hearing about the difficulty involved in making stories about their experiences as trafficked persons, we deliberately refrained from probing that pain. We similarly refrained from such sensitive topics as whether any particular woman was likely to be accepted back by her family or not. Instead, we tried to create a ludic experience where they had control and felt comfort in their participation with us. The laughter, singing, and freedom of movement suggest that we succeeded to some extent.

Using traditional participatory design tools such as mockups or prototypes was out of consideration. These not only would be less informative than in other situations given that none of the sisters used mobile phones or computers, but also could hamper their self-confidence since the lack of familiarity with tools could be perceived as them lacking the skill or knowledge to participate. In contrast, an instant print (“Polaroid”) camera that contained limited modifiable functionalities lowered the barrier to participation.

Photographs and their descriptions were not treated as the personal possessions of the photographer but rather as elements shared in a lighthearted group activity. By asking each participant to comment on each photograph, we made the activity playful and social. In contrast to more usual photo-elicitation studies (e.g. [27, 34, 137]), we diminished individual ownership of the photographs and the degree to which each person was “on the hook” to create an independent interpretation. This tactic, which might not work in all settings, was appropriate in this setting where participants are particularly likely to shy away from standing out as individuals³. The open-ended subjectivity of the photographs was used as a resource to facilitate a deeper engagement in discussions. The discussions were not limited to the significance depicted in the image but rather what it meant to each of the participants. It drew out pluralistic voices because each had different experiences of the same setting. By

³Nepal can be characterized as, in general, being a more communal society than the United States, but sisters might be more reluctant than most to assert themselves as individual contributors.

asking them to come up with a single descriptive sentence or phrase, we also increased the degree to which they were creating a communal product. It created an opportunity for the sisters to see how their individual contributions can be of value to the collective.

4.5 Chapter Summary

We had noticed a distance between us and the sisters. Interviews and focus group discussions—common methods of inquiry that we were using to further our understanding of the context—seemed to so familiar to the sisters that they felt scripted. Moreover, the staff members mediated the interviews, often rephrasing the questions or answering for the sisters.

To reduce the distance and facilitate a deeper understanding of the sisters' values and aspirations, we created a social photo-elicitation activity. The Polaroid camera with its minimal features and instant print photos facilitated in reducing barriers for the sisters to participate while providing them with control over the photos. Moreover, the activity was designed to reduce the burden on individual ownership and facilitate collective sharing and discussion. All of these small moves facilitated in fostering a space where the sisters could participate from within their realm of comfort. The playful nature of the activity also helped in reducing the distance between us and the sisters.

From the social photo-elicitation activity, we learned about their complex relationships with crafting and their envisioned reintegration with society at large. First, the sisters' relationship to crafting was complex. On one hand, they could imagine futures involving crafting and wanted to showcase their work to others. But on the other hand, they crafting to be boring and at times difficult. Similarly, their ideas about reintegration were also complex. They wanted to feel belonged in society and expressed wishes to help others, particularly to raise awareness against human trafficking. While none expressed the desire to simply be

supported by family or husband, they envisioned work in a family context. Because such a context seemed by-and-large unlikely, we noted that a related potential resource for social connection lay in the relationships they formed with other survivors. We also noted the lack of opportunities for sisters to engage with other members of the community through meaningful activities during their reintegration phase.

As we contemplate future action, three existing assets seem feasible to build upon and further the sisters' strengths. First, their knowledge of crafting which, as we discussed, could be used towards more enduring strengths that are valued by other people in Nepali society. The second was their close bond to one another which we believe has the potential to be a resource for emotional support and collective action. However, both of these are fragile, and approaches to build upon these assets need to be sensitive to the complexities surrounding material and social circumstances surrounding the survivors' present and future lives. Third was the power of their communal orientation.

Chapter 5

Introducing Hamrokala to Build on the Assets

In our earlier ethnographic and social photo-elicitation study, we had uncovered two strengths possessed by the sisters¹: crafting skills taught by SO and a close bond among the sisters. Additionally, we built upon their communal orientation. We argue the need to build upon these elements of strengths to move towards long-term, dignified reintegration. In this chapter, we describe a step that we took in that direction.

In particular, we introduced a voice-annotated web application called Hamrokala (“Our Craft” in Nepali) to a group of survivors. Hamrokala was contextualized around crafting and was designed to promote interactions between the sisters. It allowed them to post crafting items as if for sale on the internet. The setting was made communal by the sisters’ behavior but the web application was also tailored to build on this, allowing communal activities such as drawing and sharing design ideas, seeing other sisters’ crafts, and commenting on them. By introducing Hamrokala, we seek to add elements of sociality and fun to their crafting practices, provide an avenue to situate their crafting practices within the wider economic realities, and potentially explore opportunities to engage with actors and institutions outside the shelter homes, such as by accessing online market to sell handicrafts.

¹I have been using “sisters” to denote the women who had survived trafficking and with whom we had worked; we use “survivors” to denote the general group of girls and women who have survived trafficking.

The design of any technology for use in this context is not straightforward. A typical technology interface assumes some level of familiarity with text but an estimated 85.9% of the survivors in Nepal have *never* been to school [223]. Similarly, survivors have limited digital fluency. SO's previous attempt to introduce technology to the survivors had failed, with the survivors reporting being overwhelmed. Care was placed on making the application approachable by following design principles for low-literacy populations [85, 98, 152, 154]. Additionally, voice annotations were prioritized. The annotations, played in a female voice in Nepali, were longer and more elaborate than usual, and used phrases tailored to the population. The voice annotation thus served to relieve the pressure to read.

We had also observed sisters providing help to one another when working on crafting, and engaging in the shared venting of frustration. Additionally, as we saw with the social photo-elicitation sessions, formulating discussion tasks as communal appeared to allow considerable participation and appropriation. We hypothesized that a sufficiently communal orientation to the web application and workshop might succeed where a more standard approach had disappointed.

I conducted a ten-day-long workshop with nine sisters. This was followed by two sessions of future envisioning exercise where the sisters shared their vision of the future in periods of one, three, and five years. Two major findings guide our next step. First, presenting a tailored computing application contextualized around a familiar activity facilitated adaptation and appropriation of technology. They were able to showcase their skills to the staff members towards the end of the workshop. It leads us to believe that, with sufficient care, knowledge of computing could be a strength, working with the other two existing strengths, to support long-term reintegration. Second, the exploration allowed us to learn more about the sisters' complicated relationship with crafting along with their aspirations to belong in society and be of help to others. At the same time, we noted the lack of agency in their beliefs when

it came to societal changes in the future where they passively wished for changes without seeing a role for themselves to bring about change. These lead us to believe that further exploration of computing towards broader skills and knowledge could assist the sisters to see their own agency in interacting with societal actors and institutions. We explore this step in the subsequent study (Chapter 6).

5.1 Why Technology?

We do not consider the provision of technology as an *a priori* benefit to the sisters; technology can be too difficult to use, it can eat up resources that would be better used elsewhere, and it can disappoint. We think, for example, that more general social services and more widespread education could benefit the sisters more than our efforts; however, the sisters and SO have limited prospects and resources to do so. Technology, considered carefully, can be a means to explore possible pathways. The staff members believed that the sisters' familiarity with computers, as limited as it may be, can provide them a competitive edge when they search for jobs. Indeed, computing can motivate and dovetail with education [113] and open up possibilities of employment either directly (for example, when populations develop web support capabilities as exemplified by programs like DataMotivate²) or indirectly by increasing access to wider job markets or even, if the sisters choose to do so, opening access to international markets for local handicrafts. Moreover, computers are flexible. When introduced carefully and contextualized appropriately, as we do here with crafting, computing can deepen the knowledge of the context (such as that of crafting activities) but can also support sisters explore other possibilities based on their interest and background, creating opportunities for different but equal participation. Further, computing skills remain a source

²<https://www.datamotivate.com/ethical-sourcing/>

of status and prestige in Nepali society. Developing computing skills can in and of itself contribute to the sisters gaining respect in society.

There are pragmatic reasons for us to take the pathway constituting technology. Our collaboration with SO was, from the outset, based on SO's interest in using technology in supporting the sisters' reintegration journey. We are aware that technology can be perceived as a charismatic panacea [7, 226]. To mitigate such expectations, we have emphasized technology as a means rather than an end in and of itself. Nonetheless, our technical expertise remained visible and influences what is seen as being meaningful. Moreover, in the presence of our committed support, SO does not need to invest its resources to bootstrap possibilities.

In this exploration, we ask, if technology is tailored and introduced properly, will the sisters accept and benefit from it. Critically, experience with technology could lead to long-term pathways that can support the sisters' views of themselves as agentic actors with power to engage with actors and institutions outside the shelter home.

5.2 Methodology

5.2.1 Participants

Ten sisters were being trained in the handicraft workshop that was housed within SO's main office as part of the skill-based training program. Nine of the ten sisters, between 13 and 23 years old, participated in our study. Eight of them lived in the SO's shelter homes. One (S6) had started living outside of the shelter home. Only one of the sister (S6) had a bank account; one more had a bank account but no longer had access to it. All of them were dependent on SO for daily expenditure.

Table 5.1: Demographic information and aspirations of the participating sisters

Participant	Group	In school?	Can read basic Nepali?	Had used a computer?	Future Aspiration
S1	Group 1	N	Y	Y	Police officer
S2	Group 1	N	N	N	Dance teacher
S3	Group 1	Y	Y	N	Lawyer
S4	Group 2	Y	Y	N	Foreign worker
S5	Group 2	Y	Y	Y	Accountant
S6	Group 3	Y	Y	Y	Trekking guide
S7	Group 3	N	Y	N	Social worker
S8	Group 4	N	Y	N	Singer
S9	Group 4	N	Y	N	Businesswoman

On average, this group had more years of formal schooling than the group I had encountered in the first study. Four of the sisters were voluntarily attending a “morning” school from 6:30 a.m. to 9:30 a.m. Four others expressed plans to rejoin schools. All but one reported being able to read basic Nepali text.

Only two of the nine sisters had ever owned a mobile phone. No one in the shelter home was allowed to own phones and S6 had a simple phone. Three of the participating sisters (S1, S5, and S6) had used a computer at least once. None of the sisters in the shelter homes had access to a computer or the Internet.

5.2.2 Building Trust with the Sisters

There is no fixed time when survivors join or leave the shelter homes; some leave as early as within two months, some have stayed for more than six years. In each of my studies, I had to adapt to the change in population, and along with it, a change in the assets and possibilities the sisters see for themselves. In all my field visits, before the activities, I sought ways to foster a sense of comfort for the sisters in their interaction with me. This also involved working with the staff members a week before the study, ensuring that I was seen as being

part of the team by the sisters. During this time, I introduced myself and our project to the sisters and engaged them in discussions about other aspects of their lives. I also built rapport with the sisters through shared conversations over afternoon tea, a practice common in Nepal. The discussions involved sharing personal stories such as shared struggles in understanding mathematics and in advantages and disadvantages of living in other countries. While such rapport building reduced the distance between us and the participants, it was not completely erased. After a week of introduction, I invited the sisters to participate in the workshop.

Trust building goes beyond the immediate interactions. We need to earn the trust of our study participants and be true to that in all aspects of our work. During this study, the sisters expressed pride in having learned to draw on the computer but some expressed hesitation in sharing their drawings with people outside the group. So, while we report the number of drawings as part of our findings, we did not analyze nor share their drawings.

5.2.3 Hamrokala: The Web Application

Hamrokala (“Our Craft”) was contextualized around crafting. The earlier group of sisters had expressed a desire to showcase and sell their crafts but were worried about its limited demand in the local market. So we built features that allowed them to express their thoughts about the handicrafts, post those *as if* for sale, and share them with other sisters. They could also check the inventory, watch videos of experts creating similar handicrafts, and draw and share sketches.

An audio file played whenever a user hovered over a navigational or informational element in the web application. The audio files contained narration spoken by a native Nepali woman. She used long descriptive words and colloquial Nepali phrases as if in conversation rather than typical computer-based labels. For example, instead of using unfamiliar words like



Figure 5.1: Users could share their crafts which would be visible to all members of the community. Members of the community could click on a shared item to see the details and leave an audio comment.

“login” and “logout” which are typically used in Nepali websites, we used “to go inside” and “to go outside” in the written form. Further, the spoken version was even more naturalistic, saying, “If you want to go inside, press here”. Voice was conceived as a communication rather than an efficient information source or a reading lesson. The written form was often shorter than the voice form. This approach was underscored socially. During the sessions, we explained that login is “similar to how you come inside the workshop to work on crafts”, and logout is “similar to how you leave the workshop after your work is done”.

The web application used HTML data-* global attribute where each HTML element had an attribute called “data-audio” that stored the MP3 file. A client-side JavaScript code played the audio file when a sister hovered over the element. To ensure that complete information about an element was conveyed, we played the audio file until the end unless the survivor hovered over another element or navigated to another page.

Hamrokala sought ways to build upon and promote interactions and communality between

मुख्य पृष्ठ > नयाँ सामान हालुस्

सामानको नाम: अथवा

सामानको प्रकार:

- गलाको हार
- गलबन्दी
- चुरा / बाला
- झोला
- पोते
- जुता
- बुनेको सामानहरु

सामानको फोटो:

सामानको मूल्य: अथवा

आफ्नो काम या कलको बारेमा केहि भन्न:

अहिलेलाई छोडौं थाती राखौं बेचन राखौं

प्रगति जाँचु:

- ✗ नाम दिनुहोस्
- ✗ सामानको प्रकार छान्नुहोस्
- ✗ सामानको फोटो लिनुहोस्
- ✗ सामानको मूल्य तोक्नुहोस्

✗ ऐच्छिक: सामानको बारेमा अरु भन्नुहोस्

Figure 5.2: The interface where a new handicraft could be added for sale. An empty form where the sisters wrote the name, selected a type, clicked a photo, entered the price, and optionally recorded a description video. The name and price could be spoken instead of writing. The checklist on the right informed pending tasks to complete the posting.

the sisters. The sisters could share items that they had posted for sale which were listed on a single page for everyone to see. The system supported submitting audio comments on those shared objects (Figure 5.1). I used WebRTC APIs³ to implement the feature. I implemented a similar feature around sharing drawings using HTML canvas to allow users to draw, import, edit and reshare drawings.

Design principles for low-literacy populations were used throughout, such as using semi-abstract images, limiting navigational hierarchy, and supporting awareness of their current location [98, 154]. Dynamic feedback made it easier to use. For example, checklists were immediately updated as the sisters entered various information regarding their crafts (see Figure 5.2 (a)).

³WebRTC is an open-source project which has APIs that support real-time audio and video communication inside a webpage: <https://webrtc.org/>



Figure 5.3: An example craft posted for sale by S2.

The web application was hosted on a local server accessible through an ad-hoc network. It was not connected to the Internet because we had not presented any security and privacy practices for the sisters to remain safe over the Internet. Having all the services on the local server helped convey to the sisters that their identities were protected.

5.2.4 Workshop Sessions

Hamrokala Workshop

After receiving institutional review board (IRB) approval, I conducted ten two-hour sessions on computers and Hamrokala during January 2019. At the beginning of the sessions, I reminded the sisters of their right to drop participation at any time without incurring any penalty and asked for their permission to record audio, and started the recording only after he received permission from all.

The first two days were used to talk and emphasize sociality, and to ensure a high level

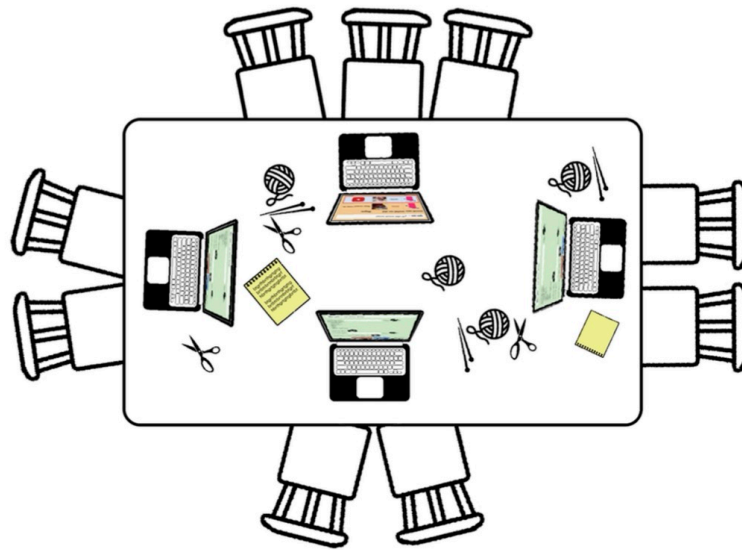


Figure 5.4: The sisters shared laptops in groups and they were free to move around. The voice annotation also facilitated in making a group’s activity known to others, inviting others to join in and, if needed, help.

of comfort and agency. I introduced himself, our project, history with the organization, and read out the IRB consent document. I discussed our earlier study, sharing the findings that we believed that the earlier groups’ knowledge of crafting and mutual support for one another are assets. We then engaged in reflections, discussing what crafting and mutual support meant for them. Computers were introduced on the third day. On the final day (tenth day), the sisters were paired with a staff member to whom they explained the web application.

The sessions were conducted in an environment that was familiar to the sisters, in a room next to SO’s handicraft workshop. The sisters shared four laptops in three groups of twos and a group of three (see Figure 5.4). Throughout the sessions, the sisters left the room, came back, and moved around, which we felt showed that they knew they were free to come and go. The staff members were not present during the sessions, except on the final day. The laughter, participation, and freedom of movement that the first author observed during the

Table 5.2: Overview of the major activities conducted during the workshop sessions.

Day 1	General introduction
Day 2	Further discussion on their crafting and computing interests
Day 3	Introducing laptops and the Internet; Beginning drawing
Day 4	Continuing drawing; Posting details of crafts
Day 5	Sharing drawing and crafts
Day 6	Adding and editing details of their crafts
Day 7	Watching and commenting on expert videos
Day 8	Watching and commenting on the shared work
Day 9	Hearing comments; Sharing new design ideas with each other
Day 10	Explaining the web-application to a staff member

sessions suggest that the program succeeded, to some extent, in staying within the sisters' comfort zone.

Future Envisioning Sessions

Technology adoption as an end or even a “good” in-and-of-itself, but only in so far as it increases existing strengths of the population and, in this case, holds the promise of leading to “dignified reintegration”. While the Hamrokala workshop introduced computing and supported the sisters to explore some of its possibilities, it did not situate the technology use within the broader context of their lives. In particular, we had not yet explored how they could interact with other actors in society and how technology could play a role in facilitating or hindering their interactions. In fact, as presented in the findings above, the sisters felt that they had limited control in their interactions within and outside of SO. To explore that end, I developed a future-envisioning activity to elicit the sisters' vision of the future outside of the shelter home, including their vision of technology use. I used a document to support them to envision their future with respect to six aspects of their lives: “me”, “my family”, “my society”, “my crafts and skills”, “my source of income”, and “me and my technology”. The document (see Figures 5.5 and 5.8) created to facilitate the activity was

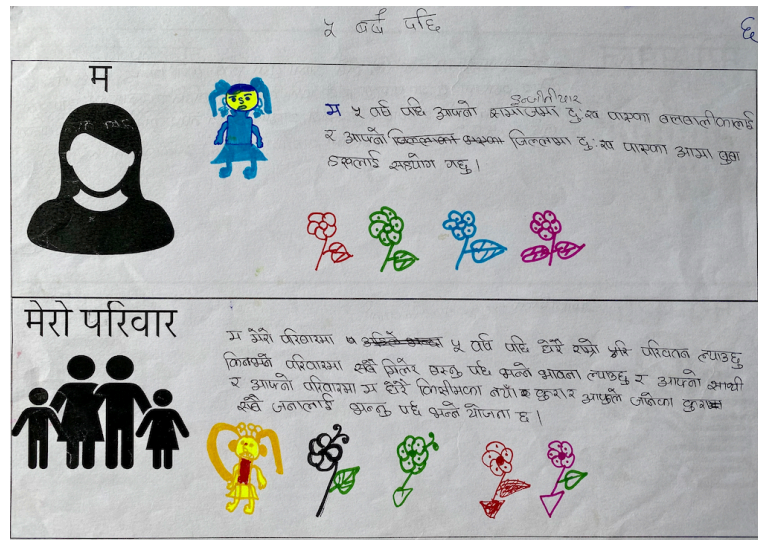


Figure 5.5: Example response to the first two prompts of the future envisioning exercise (“me” and “my family”).

designed considering that many survivors are illiterate [223]. The document was created such that the sisters could express themselves similarly or simply by speaking about those aspects of their lives.

The sisters first responded to the document individually. We then gathered to discuss their vision concerning those six aspects in time spans of one, three, and five years into the future. We conducted two sessions, each of around two hours long. The nine sisters who participated in the Hamrokala workshop partook in the future envisioning exercise although two of them (S7 and S9) missed the session when we discussed their vision one year and five years later.

5.2.5 Data Collection and Analysis Method

Field notes and audio were recorded during the workshop sessions. I also recorded a video of the sisters’ screens when they explained the web application to a staff member on the final day of the session. I translated and transcribed the audio and video recordings.

The transcripts were first analyzed using an inductive process because of the unique setting of the study. In the first cycle of coding, I performed “eclectic coding” [198] in which I conducted both descriptive and process coding. Descriptive coding closely follows and summarizes the text. Process coding searches for “ongoing action/interaction/emotion taken in response to situations” [198, pp. 96]. I met regularly with Dr. Deborah Tatar and discussed the codes and the transcript text, as suggested when doing “solo coding” [198]. Examples from the first cycle of coding are “expressing delight in being able to share videos”, “refusing to critique crafts”, and “asking for help”.

In subsequent rounds of meetings we combined the codes, leading to the emergence of higher-level codes such as “awareness of the work”, “elaborating the system’s action”, and “declaring a norm”. Although the analysis of data started from an open position, we had a goal of building upon existing strengths. Therefore, at this point, we began to introduce questions into the process about how the codes revealed strengths that could provide a sufficient and reliable basis for further work. In the subsequent two rounds of coding, higher-level codes emerged around three key assets: computing, communality, and crafting. The findings section is centered around these three resources.

I analyzed the transcribed text and documents from the future envisioning exercise similarly. I began by closely following the text and summarizing it. Then I generated codes from the text that was subsequently combined to generate higher-level codes such as “limited voice in the family”, “distrust in the government’s function”, and “citing lack of awareness”. We were interested in seeing how their assets (e.g., crafting, communality, and computing) could lead to pathways to achieve their aspirations and visions for the future. As we analyzed the higher-level codes, we began to focus on their expressions of aspirations and visions of the future. These led us to two higher-level themes: individual aspirations and social aspirations which we present in this chapter.

Parts of this chapter has been published at DIS 2019 and CHI 2020 [81, 82].

5.3 Findings

I came into the study with the goals of understanding whether Hamrokala together with the related workshop could work with this population and seeing, if, and how, it could be leveraged to build upon the sisters' existing strengths. The findings revolve around the three elements of strengths: computing, communality, and crafting.

5.3.1 Computing

Computing has a dual status in this project as the putative mechanism of change and as a potential source of strength. Evidence of use of the system in general and of the particular mechanisms designed to promote use are particularly important in evaluating whether computing had a chance of succeeding as a mechanism of change.

The sisters created a large volume of digital artifacts, including 47 clips of videos about their crafts of which 32 were included as part of an artifact for sale. They further had eight artifacts descriptions saved as drafts with five more item-description videos. They shared 24 instances of artifacts for comment by others in the group. They also made 45 audio comments and 38 drawings.

Initial Orientation Towards Computers

All nine sisters expressed a positive attitude towards technology. They had a desire to engage with family and friends using technology. For example, S7 envisioned a future where technology was seen playing a role in connecting her with her family and friends, "*I want*

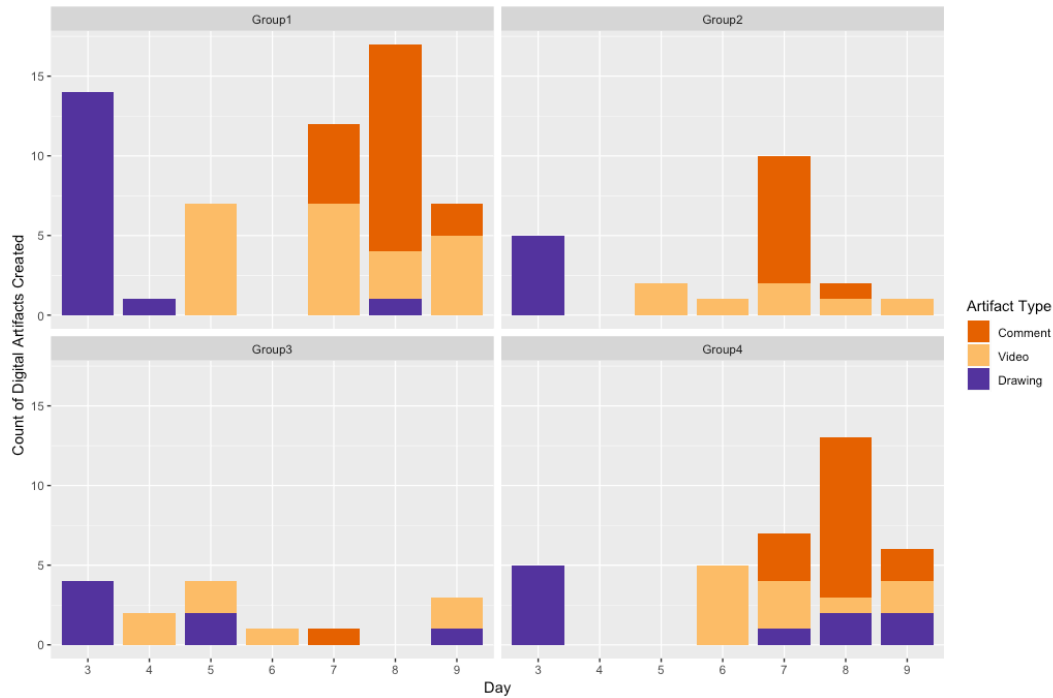


Figure 5.6: Count of digital artifacts created by the groups each day after computers were introduced on the third day.

to use computers to meet friends through the Internet and also talk to people in my family.”

The role of technology in their envisioned future was not limited to personal connections but also towards achieving professional aspirations. S2 wanted to run a dance school and she saw computing as a resource where she could “*watch songs and videos and, from that, learn [dance] steps.*” Similarly, S6 wanted to learn photo and video editing that she thought would be beneficial when she becomes a trekking guide.

Challenges Using Computers

This positivity was a component of their success using the system, yet there is no reason to doubt that the other sisters in the past also started positively. Equally critical is that the sisters had limited experiences of actually using computers, a situation that can lead to rapid disillusion and self-deprecation [234].

The sisters expressed initial difficulty using the keyboard and touchpad, factors that could have led to the earlier rejection. However, the attention paid to making the interface approachable and building on the existing communal orientation of the sisters appeared to have paid off; unlike in the previous experience, by the fourth day, all sisters were able to use the touchpad comfortably enough to draw sketches like flowers and hills.

Their discomfort was mitigated but not entirely eliminated. S2, on the final day, expressed both the achievement and the difficulty, “*With the sisters helping, it [computing] was a fun, easy thing. Now [showing it to the warden] I got scared and my hands shivered.*” S2 may have been scared but the warden was impressed exclaiming, “they learned all this in two weeks!”

Using and Improving Voice Annotation

Using detailed language, the voice annotation explained functions that could be performed within the link such as “to add a new item, press here”. In initial use, the sisters relied upon this aspect of the voice annotation to identify where they wanted to go, and also support others in navigating. For example, on the third day, we heard S1 helping S2 who found it hard to read Nepali text by suggesting her to “*go there where it says, ‘to draw press here.’*”

The elaborated voice annotations seemed to help clarify the actions of various elements of the application. On the final day, all the nine sisters used metaphor to explain login and logout as heard in S7’s explanation, “*We put in the code number [password] here. Then we press this to go inside.*”

Other elements, especially where we had used literal Nepali translations, were harder to comprehend and required adjustment. For example, we originally used *tippani*, the Nepali translation of “comment”, to signify an action that allowed users to leave audio comments

about a shared craft object. The sisters did not know what *tippani* signified, variously speculating that it probably meant, “*all the materials that are required to make it*”, “*the estimated price*”, and “*what is good about it*”. This led S9 to exclaim, in frustration, “*I have not even heard these words [before] so don’t know what to do.*” These expressions of frustration were turned into an opportunity for mutual learning when I pointed out that the word was physically next to particular craft items on the screen (see Figure 5.1) and asked “What else could be said about a craft?” This led the sisters to connect *tippani* to “saying what is nice or not nice”. I then changed *tippani* to this phrase in the written and spoken interface, and noted that, on the last day of the workshop, the sisters used this phrase to explain the web application to the staff member.

Evolving Attitudes Towards Computing

Novelty effects with technology use have been well documented (e.g. [39, 106, 157]). Consistent with this, the sisters started out positively and their enthusiasm continued despite challenges. We frequently found ourselves having difficulty in ending the sessions within the stipulated time to the chagrin of the staff members who had to wait a long time to accompany the sisters back to the shelter home.

However, there were indications in their behavior and expression that their interest went beyond novelty towards the perception that computing could constitute a real asset. What they were enthusiastic about changed over time. In the beginning, the sisters were thrilled when the voice annotation played in Nepali as they moused over the HTML elements. They repeatedly played the audio files without taking any action during the initial introduction, often mimicking the voice, including the intonation. They seemed to be engaged in active learning about the relationship between the screen and the sounds. As the sessions progressed, we found that sisters seem to have stopped relying on the voice annotations. They

went back to the voice when they had difficulty with the interface but even then they played the audio file just to the point that they remembered the page section. Instead, they relied on using common web navigation techniques like using the breadcrumbs and the back button.

At the same time, the sisters also expressed a sense of pride in being able to learn to do things on the computer. S8 appreciated the fact that she learned to draw, “*I liked it [computer]. I didn’t know how to draw earlier but now [I] can draw a little bit.*” In addition, S2, S6, S7, and S9 mentioned that they learned how to speak about a craft as S2 explained, “*I learned a bit about how to say it and what all to say about a craft. And also how we could possibly run a business.*” They also expressed interest in learning through feedback from people outside of the community. S3, for example, expressed, “*I want to show whatever skills I have, how so it may be because, for any of my bad drawings, I would get feedback and move forward on improving it*”. This sentiment of learning was appreciated by S6 who suggested to S8 to “*listen to that*”. S3 later reported, “*I felt increasingly that I could [draw]*”.

5.3.2 Communalities

We hypothesized that the existing social bonds between the sisters could be used to aid in the take-up of computing as well as be strengthened by the activity of computing.

Sharing Work

Pleasure in communalities was manifest in the sisters’ orientation towards Hamrokala’s sharing features. “Did it come?” was a commonly used phrase to confirm that the artifact such as drawing or comments could be seen by others. S9 was elated in being able to share and see videos of crafts:

S9: *I am very happy. I felt we know how to do it and that's wonderful [laughs]
I was also happy to see others' work. This was fun, even if we are all here, we
don't have to go over to their side [of the table] to see.*

Similar pleasure was expressed regarding sharing drawings. S7 remarked, “*I did as much as I knew about drawing. If I sent it here, other people saw whatever I had done and I could see what others have sent, and to be able to see those was extremely nice.*” The sisters expressed a desire to both “send” their work to others as well as to see others’ work.

While some of this is presumably due to the novelty of computation, the sharing — whether by the communication features of Hamrokala or just by what was seen as a collective endeavor — was an explicit source of pleasure. Such pleasure can be important in the success of the intervention [216].

Collective Behaviors

Pleasure was also arguably present in other collective behaviors, which were more similar to what we had previously seen in their collective crafting practices. The sisters moved around to help each other or ask for help. Sometimes they reached out to individuals, while at other times they asked the entire group. Support-seeking ranged from seeking information about the craft to help in using the web application. After S7 moved over to S9’s side of the table, she explicitly asked for help in understanding a page in the web application:

S7: *Please teach me how to do this [comment] from the start. I haven't understood anything about this.*

S9: *This is only for commenting.*

S7: *How did you comment? I have understood till here but I did not understand this part.*

S9: *Here you can see all the crafts that others have made and shared.*

S7: *Yes*

S9: *Here you have to press [clicks on a shared craft] who you want to comment*

...

Other times, the sisters jumped in to help without being explicitly asked. For example, S7 seeing S8 in distress while drawing asked, “*What happened?*” to which S8 pointed to the screen where a Bootstrap Modal, a popup dialog box, had appeared. S7 then suggested, “*Do an into* [press the cross mark]”. S9 joined and helped S8 to draw, “*Press this* [the touchpad button] *with one hand and you can draw with the other* [hand]” and further provided encouragement as S8 followed her advice, “*You are making it very well.*”

The sisters also built collective knowledge to gain greater control over the technology. On the ninth day, a sister closed the laptop that was hosting the local server causing the web application to crash. In our earlier session, we had discussed the Internet and had briefly covered local ad-hoc networks and private IP addresses. When their web application crashed, the sisters attempted to troubleshoot the problem:

S1: *It looks like you have turned off the Wifi. We were using the office’s Wifi.*

S2: *No, not the office’s internet. He said he was using a separate one that he had created. His own.*

S3: *Maybe from there* [pointing to the adhoc-network-providing laptop]

While their understanding of technology was incomplete, as a group, they collectively understood the technology enough to feel that they were in control and had the agency to troubleshoot the problem. They later reported that they “asked the Panda”, the background image, how to get the internet suggesting a playful and collective take on an adversarial situation.

Communal behaviors were not confined to collective problem solving but also involved encouragement in creating new practices. For example, S8 mentioned that whenever she tried to speak she could not help herself from laughing so she thought singing may be better for her. Upon S9's encouragement, S8 sang a song as part of the item-description video. Similarly, S8 had earlier asked for scaffolds in the form of questions that she could write the answer before speaking. I explored a question-and-answer model where I asked her questions about the craft and she answered. This, she reported, helped her. I later observed fellow sisters (usually S9) asking questions which S8 answered as she made her item-description videos. Similarly, S6 too wanted scaffolds and was willing to support others. In fact, out of the 47 item-description videos, S6 can be seen or heard helping fellow other sisters in seven of them suggesting the importance of leadership in facilitating collective behavior.

Individual Boundaries and Ownership

The sisters differed in where they were comfortable manifesting individual ownership. When discussing the possibility of sharing their anonymous drawings with others outside of the group, S6 reasoned, "*No, because I would know that I have kept a drawing and know that I have done that drawing and because of that [I would not want to share].*" At the same time, S9, for example, showed little reluctance. She wanted to share her work and created nine item-description videos that manifested personal ownership by showing herself holding the artifacts that she had made.

However, fear of stigmatization meant that sisters were not able to make free choices in this arena. S1, S5, S6, and S7 were hesitant in opening the camera to record video and thus they used the webcam cover during recording. Even S9 suggested that the webcam cover would help share their work with others outside the community:



Figure 5.7: S5 helping S4 to record an item detail. Most of the sisters hid when capturing videos because of the fear of being identified as a trafficked person. I have further blurred the screen to protect their identity.

With only our voice, without the camera, it will be harder to recognize us. With only voice, it becomes unclear who spoke. When we are the only ones, when we know who all are, we can know whose voice it is. But when [the video] goes out and speaks, it won't be easy to recognize who is the one speaking [in the video].

There were boundaries within the group as well. All the sisters-survivors expressed respect for others' drawings. S1 refused to draw on top of S9's drawing because it "would be ruined". Concern for boundaries could also be heard in S2's mixed feelings about the drawing feature, "I liked it [the drawing page] but I also didn't like it. I didn't like it because I could take others' nice drawings and ruin them. I felt I was ruining it. It was nice in that our drawing was going and I could see others' drawings." This led the group to explicitly establish a rule: to not draw on top of someone else's drawing. S6, on the final day, expressed this sentiment, "It is especially important that you do not draw on top of it [someone else's drawing]. This [the feature] is just here to show that it can be done."

When we mentioned that they would be drawing on a *copy* of the original drawing and that the original drawing would remain intact, S6 clarified that “ruining” was not about physical damage but rather an artistic one, that of showing respect for the original artist’s intent. S9 too expressed her reservations about making changes because she felt that her changes may not express the original artist’s intent, “*How can we improve their work? I felt that, when drawing, that it requires a lot of effort to know where to fill [on their work].*”

These strong feelings suggested that system design in this area cannot assume that everything is or will be shared, but needs to pay particular attention to ownership, even when an effect of this sentiment is to reject an ethos of reusing and remixing.

Negotiating Collective Practices

In addition to the collective rule to not draw over others’ drawings, the sisters created other rules for the space. For example, on the fourth day, when we were discussing the drawing page, S5 said that she liked everything. To this, S9 proposed a rule, “*You can’t like everything. There has to be something that you don’t like.*” We noticed that when a participant did not follow the rule, it was explicitly mentioned.

Similarly, the sisters negotiated and arrived at mutually accepted elements that they wanted to include in the item-description video:

S6: *I say, “Namaskar [Nepali greeting], this pote”?*

S7: *Don’t say namaskar.*

S6 [asking the group]: *What all should we say?*

S7 [to the group]: *Here it [the web interface] says “talk about your craft.”*

S6: So far, we have “*This is a pote called Chuche Pote.*”

S8: *Say the name and explain how you made it.*

S6: *So, I say, “This is a pote called Chuche Pote. It takes 5 hours to make this and ... ”?*

S2: *Does it discolor or not? I don’t think it does.*

S6: *This does not discolor. It will last for a long time. And what else do I say?*

S7: *Price? Let’s say [Rupees] 300.*

We find that the sisters followed the template in recording details, as we hear in S3’s description:

S3: *This is a bracelet. This is worn on the hand. It takes around 20 minutes to make this. We take a wire and we place Pote on it. We can have it in different colors and also in a single color. The price of this is 350. Thank you.*

30 of the 47 item-description videos described the process of making the handicrafts; 21 of them mentioned a price that ranged from NPR 150 (~USD 1.3⁴) to NPR 1300 (~USD 11.1).

Negotiation of practices around Hamrokala became an avenue for the sisters to leverage their existing social bonds, creating a context for interactions that were not just confirmatory. These incidents and behaviors suggest that conditions allowed room for experimentation about the intertwining of the social and the technical.

5.3.3 Crafting

The current work uncovered a complex story of attachments and also reluctance related to crafting. The sisters mentioned diverse aspirations; none of those involved crafting as the primary source of livelihood. Yet, during the sessions, the sisters’ interaction suggested that (1) crafting facilitated the use of the web application, (2) computing supported the growth

⁴1 USD = NPR 117.19 as of May 11th, 2021.

in their understanding of the crafting practices, eliciting expressions of lack of control and limitations over some aspects of crafting.

Computing Introduction Facilitated by Crafting

The sisters were familiar with buying and selling handicrafts. It was a practice that was taught by SO and they had seen SO sell handicrafts to visitors. The fact that the web application supported selling was well understood as we heard in S1's item-description video, said, "*I am putting this here [on sale] in the hope that you all will buy it.*"

Having the web application contextualized around crafting facilitated the understanding and use of the application. For example, S1 understood that Hamrokala helped her post items for sale whereas S7 thought it was about "*sending object [craft] information from one place to another*". These expressions denoted different ways of appreciating the system all of which, while partial, were connected to sharing and selling of crafts. These differences influenced how the sisters interpreted other functions, particularly, "Save as Draft" and "Edit Draft". Starting with a focus on selling the goods, S1 interpreted the notion of a "draft" as a limitation put by the system on what kinds of things were appropriate to sell or not sell at all, as in "*that there is something insufficient [about the craft] and we can't put it up for sale*". S7 thought "Save as Draft" meant "*that we save the object on the computer*", that is the description of the crafting item is kept locally as opposed to sending it away to be seen by others. Similarly, S7 interpreted "Edit Draft" as a function that allowed her to further save descriptions of new items on the local computer. Like S1, S3 focused on how the application was meant to sell the crafts online and so she interpreted "draft" as saying "*let's not sell but just keep it here*".

Deepening Their Understanding of the Crafting Practices

While the sisters knew that they had to communicate details of the craft to sell it, they were initially unclear about *what* needed to be communicated. The discussion between S2, S6, and S7, as shared above, presenting *Pote* without a greeting remark and by mentioning the name and explaining the process, illuminates a step towards their growth in situating their crafting practices within the wider economic realities.

Similarly, the computing activities, particularly the creation of item-description videos, created opportunities for the sisters to reflect on their crafting practices. For example, we observed S6 and S7 discuss how long it takes to make a *Pote* leading S6 to exclaim, *My god! It takes 9 hours!* A similar discussion ensued because S8 was unfamiliar with how much a Saori scarf, a Japanese-style crocheted scarf, costs:

S8 [to S9]: *How much would its [Saori scarf] price be?*

S9 [to the table]: *How much would this cost? Around 500-600 [rupees]?*

S8: *This costs 500-600!*

S7: *Around 1000, I think.*

S8: *Aama!* [exclaiming shock]

S8, who had worked on Saori scarfs, found the price to be unexpectedly high. Her shock, in fact, can be heard in her eventual item-description video where she says, “... *the price of this [scarf] is very expensive.*”

This interaction was one of several that made us aware of questions to be addressed in future interactions with SO about the sisters’ time and finances related to crafting. We were told that about 60% of the support for SO comes from donations and 25% of the proceeds of the handicraft sales goes to the sisters, but we do not know whether income from crafting

provides a significant portion of SO's operating expenses and how much the sisters have been paid. The sisters do not seem to be aware of these broader issues surrounding their crafting practices.

Limitations Around Crafting

Not all the discussions broadened their perspective to situate crafting within the wider economic realm. In some cases, SO's role in managing sales was prominent. The sisters, like S8, were unaware of the selling price of the crafts they were making. While 21 item-description videos quoted a price, they mentioned that they were not aware of the actual selling price and mentioned that they estimated it in the videos.

The sisters also expressed a lack of control over the crafting practice. S9 mentioned the power that the trainers hold in deciding the crafting work, "*With her [trainer's] permission and only when she says yes, we start working on it [a craft].*" She added, "*Do it like this, they [trainer] say. They give us the design and we do it looking at the design.*" On Day 7, they were watching videos of experts making handicrafts that were similar to the ones they make. A particular video⁵ was well-liked by the entire group. They felt that they could make it but were hesitant to try without the trainer's permission.

The centrality of SO and the lack of control over the craft manifested in the sisters audio comments as well. None of the 45 comments that the sisters left for each other mentioned a critique or suggested changes on the crafts. In contrast, all the comments provided suggested improvements to the description of the item or the video presentation such as S6's comment on S1's craft: "*The Pote that you have made is nice but you did not show the Pote properly. If only you could bring it up in the front and show it.*" S1 made the suggested change and responded to S6, "*With your [comment], we realized the shortcoming and we have made*

⁵https://www.youtube.com/watch?v=Deo7U_QV7Rs

changes. It [your comment] was helpful.” Through these suggestions, the sisters seem to express greater power to bring about change in the digital artifact in contrast to the physical ones.

5.4 Future Envisioning Exercise

The sisters were hesitant to begin sharing their vision with the group. Upon discussion, it became clear that the uncertainty about their future made it difficult for the sisters to begin the activity as heard in S2’s question, “How will I think about 5 years later?” Five years indeed is a long time for the sisters whose lives, even within the shelter home, is in constant flux⁶. I shared the value of thinking about the future, particularly emphasizing the value of charting out possibilities and alternatives, leading to a discussion on the purpose and outcome of the activity. S6, who had started the activity, acknowledged the uncertainty in the future, “*It’s not important that it has to happen. Five years later if you say you will be there, you can also not be there five years later. You have to write what you hope to happen in the 5 years. You have to think.*”

While hesitant at first, the sisters saw value in the activity as the session progressed. They particularly shared that they enjoyed thinking about how their future would be and what would be required to achieve the desired future as S3 shared, “*I can follow along as I have written here, I think I can achieve it. I felt like I can certainly reach that place.*” Others like S6 appreciated the opportunity to learn not just to plan for the future but to transfer that learning to sell handicrafts, “*I learned the need to be confident and how we can speak about ourselves. Nobody among us thinks about five years later, that’s too far away. But when we*

⁶In the subsequent iteration (described in the next chapter), we changed the time spans from one, three, and five years later to more meaningful milestones: when they leave the shelter home, when they are successful, and when they feel they are old.

think about it, those who have never thought about five years later, revealed what it could be. And another thing, I felt that doing this, if we make any craft, we can talk about it by talking about how did we make it, what did we use to make it, how much time it takes.” She further added the value of thinking about the future, “*while making planning what happens really is that we haven’t generally thought about these things and writing like this, if we can incorporate it to our lives, it will work like guiding rule and if we can follow it, it will be easier to move up in life. It is like climbing up the stairs.”*

The activity drew discussions on the sisters’ desire for financial independence and social acceptance but also shed light on the limitations of the programs available to them to achieve their aspirations. Their visions pertained around individual aspirations—that of becoming independent and being of help to others—and social aspirations where they shared their desire of being part of a family and living in a society that treated them with respect and care. In learning from each others’ aspirations, like how many children they wanted to have, and building on the trust that the previous activities had fostered towards the process, the sisters created a convivial space that motivated them to ask me to share my vision too, suggesting that we were able to reduce the distance between to foster a space for mutual learning.

5.4.1 Individual Aspirations

The sisters’ vision of the future involved being financially independent. However, crafting was not present prominently in their vision of the future. Instead, the sisters expressed a desire to study and teach, and to be of service to other marginalized and vulnerable groups.

Financial Independence

The sisters' desire to be financially independent was prominent throughout the discussions. S3, who was planning to move out of the shelter home the next year, shared her vision of being financially independent after leaving the shelter home, "*right now I am dependent on others for my expenses, later I will manage on my own probably. I will bear my own expenses probably.*" She shared her plans to find an office job in an NGO after leaving the shelter home and, in the long run, become a "government lawyer". Similar to S3, other sisters shared a range of short and long-term goals. S2, for instance, wished to open a small dance school and train others. In the short run, she wanted to dance in music videos and movies to earn a living. She had been providing dance training to some of the survivors living in the shelter home. Likewise, S1 wanted to be a police officer and shared her plans to join a school to qualify for the position. Some others had already taken a concrete step in the direction of their long-term goals. S6 was part of a group of four survivors at SO who had started a training program to become a trekking guide. Another non-profit had provided financial and material support to SO to enroll a group of survivors in training.

None of the sisters saw crafting as a primary source of income, as SO had envisioned. Two sisters mentioned crafting during the sessions; both saw it as a fallback source of income. For instance, S5 shared, "*I want to be an accountant after 6-7 years. I want to be an accountant and work as an accountant. As for the income source, if I don't get anything [accountant job], I will be making potes, and sewing and tailoring.*"

Skill-based training in crafting seems to provide a sense of safety, of the possibility of them being financially independent while they pursue other primary aspirations. Having an alternative fallback plan could be empowering. However, given the availability of a limited market, crafting may not be as reliable as they hope it to be, as we have seen in our earlier

study as well as through a prior study [44]. Crafting could be augmented or replaced with other skills-based training that provides the sisters with a better opportunity to achieve financial independence.

Studying and Teaching

The sisters' aspirations regarding their profession varied (see Table 5.1). To that end, formal education was highly valued where it was seen as a pathway for broader future possibilities. All but one shared visions of being in school in the near future; four were already attending a morning school. S1, for example, wanted to be a police officer to serve other vulnerable people in society. In the visions that she shared for herself a year, three years, and five years later, she shared her goals to be in school. A year later she shared that "she would join the ninth grade and be disciplined student". In her vision of three years from now, she saw herself "studying in college [high school] and along with it learning English." She further added that she will be preparing for the police entrance examination. Five years later, she shared her hopes of completing high school and joining the police force.

The four sisters' enrollment in morning school was made possible through another organization's involvement with SO. Questions remain on how the sisters can continue their education after they leave the shelter home. Indeed, during the third field visit, only three of the sisters who participated in this study were present in the shelter home. The rest had left, making it unclear whether they could continue their education.

Studying and learning were also seen as a means to become a trainer or teacher. S5, on sharing her vision of five years, expressed her desire of helping other vulnerable children to study, "I will be studying after five years. I want to help other kids who are not in schools by opening a small school." While opening a school in five years may be seen as ambitious

and unrealistic, it reflects the sisters' belief that teaching could be a source of status and prestige in society. S2, for example, wanted to learn and be able to teach others in five years' time. She had not yet enrolled in school (in my next visit she had resumed studying in grade 6) so her expression on future education was uncertain when she shared, " I will be studying after 5 years, most probably. As extra work, I hope to be teaching others too." During our discussion on her technology use in the future, she expressed her desire to be able to teach computers to others. Her vision of teaching was broader than the confines of formal education. She also wanted to learn new dance moves using technology and teach those moves to other people. S2 and few others (S3, S5, S6, and S8) wanted to teach and saw becoming a teacher as a potential pathway to be in a position of greater power in society.

The staff members also shared the belief that teaching and training could be a means for the sisters to be in a position of power and authority in society. After seeing the sisters successfully use computers, they wanted us to create avenues for the sisters to become computer trainers in the future. As mentioned above, technical skills are valued in Nepali society and the sisters seem to be able to adapt and appropriate technology in a way that could be geared towards them becoming computer trainers in the future.

Helping Others

Throughout the discussions, the sisters shared their desire to be of help to others. This was especially prominent when we discussed their vision of the future in five years. For example, S1 shared her aspiration to help others, "*I will be a police officer after five years. I will be helping any person in the society as a police officer.*" There are several hurdles in realizing her aspirations, including the need for resources for her to continue her education and prepare for the examination to become a police officer. The critical value here though is that she saw becoming a police officer as a means to help others.

Other sisters also expressed similar aspirations to help others. S3 wanted to become a lawyer to help other trafficking survivors “*who have not received justice to get justice and through that is what I want my livelihood to be.*” She acknowledged that it would take time to become a lawyer so she wanted to join an NGO and help people while she studied to become a lawyer. Similarly, S5 who wants to become a social worker shared her vision of being a help to other vulnerable people in society, “*In my society, I will be helping kids who are vulnerable and are suffering. And I will help the elderly.*” She saw the possibility to earn a living as a social worker adding, “*My income source will be through social service where I will help those that are suffering across the country, including children who are younger than me and haven’t been able to go to schools, and provide work to those children who are suffering.*”

As of this writing, the sisters at SO do not have an opportunity to actively engage with people in the society. Some NGOs, including SO, have proposed sharing the sisters’ stories to the public as a way to raise awareness. As my earlier finding highlighted, the sisters found the experience to be painful, although they did partake in writing the stories eventually. Moreover, stories do not provide a direct avenue for the sisters to see the effect of their service. SO also used to conduct street plays to raise awareness. The sisters acted in those street plays. However, street plays have been de-prioritized in recent years.

5.4.2 Social Aspirations

The sisters’ aspirations involved elements of belongingness particularly in their families and in the society in general. They wished for their families to accept them and, in the near future, imagined starting their own family. They also hoped that members of their community would treat them with respect and care, and not discriminate against them.

Connecting with Family and Friends

The deeply ingrained patriarchal values in Nepali society have perpetuated the belief that survivors bring shame to the family, resulting in families shunning away their daughters who have survived trafficking. Some of the sisters had not been welcomed by their families, others had not yet reached out to family members for reconciliation. Survivors of trafficking are young. The sisters were between the ages of 13 and 23. It is natural for them to wish to join their families, despite the outcome of their prior reconciliation efforts.

The discussion around families was one of the most challenging discussions I have had in the setting. S3 who planned to move out of the shelter home next year and live in Kathmandu shared her desire to reconnect with family members in the next year, *“I hope to be talking to my family after that [after moving out of the shelter home]. And I will share my feelings and conversations with my family probably.”* SO’s attempt to reconcile S3 with her family had failed. S3, in acknowledging the challenges of changing her family’s mind, envisioned being with her family in three years’ time, *“My family will be with me probably by then. My family’s thinking will be transformed by then.”* She further added that she would *“want to keep my family with me after five years. I want to keep my mom and dad, who love me the most, with me.”* This raises the question around aspirations, particularly on how we can move away from aspirations that are difficult to attain towards realizable aspirations that can support greater agency [129].

Some of the sisters saw technology as a means to connect with their families and friends. For instance, S4 shared that in three years’ time she *“will use a phone to use Facebook and talk to friends and family.”* Although S4 had not used Facebook before, she knew that Facebook connected people, and in her expression, we can see her hopes of connecting with family using the technology. Likewise, others saw technology being present as they act

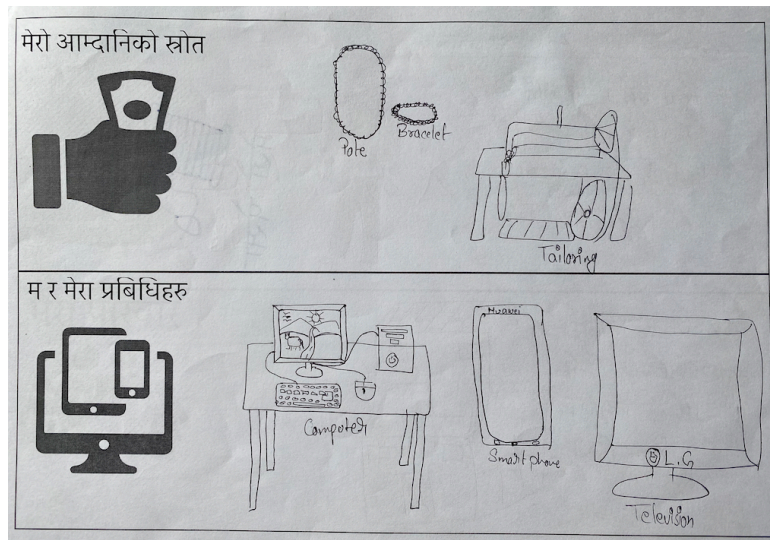


Figure 5.8: Some sisters saw the possibility of continuing crafting as a fall back plan to earn a living. All the sisters expressed desire to learn and use smartphones and computers, particularly to connect with family and friends.

together after reuniting with their families. For example, S2 shared her vision of traveling with families and collecting photos of the places she traveled together: *“I will be using mobile phones and with the mobile phone, I envision going to different places with my family and taking photos. I also want to talk to my friends and family.”* Of course, not all saw the possibility of reconnecting with family through technology; some saw their families being too distant for technology to connect. S3, for example, thought of technology as a way to talk to friends and not her family, *“using mobile, I will talk to my friends probably. And I will get a laptop and use the internet.”*

Wishing for change in Societal Perspectives

The sisters also wished to live together with everyone in the society. “Harmony” was frequently mentioned during the discussion such as in S8’s vision of five years where she envisioned living *“in harmony with the people of my village and others in the society”*. Harmony, as I understood from the discussion, constituted a lack of discrimination against survivors

as well broader elements of equality, respect, and care.

The sisters were aware of the stigma and discrimination that sex-trafficking survivors face in society. S3 wished for changes in society within a year that included change in people’s “way of thinking” about sex-trafficking survivors. She added, “*Right now there is a lot of discrimination and mistreatment and I myself want to contribute my best to bring an end to that.*” She suggested that she felt distant and unwelcomed from society without the change, adding, “and probably [with the change in their way of thinking] I will feel closer to my society by then.”

While the sisters wished for changes in society, they did not see ways in which the change can be realized, underscoring the intractable nature of the challenges they face during reintegration. For example, when I asked S3 ways she thought could end discrimination against sex-trafficking survivors, she did not know ways to do so. For instance, S6 shared, “*In 5 years, I wish the way the society looks at me changes. You know, that even now there is a thought that we, as women, we can’t do anything, that is still there and hasn’t changed yet and that’s why when they look at me, their perspective should change and think that women can do it.*” When asked how she envisioned bring change in the perspective, S6 mentioned the need for raising awareness by conducting programs in society but did not see a role for her to be involved.

5.5 Discussion

We came into the study with the design proposition that Hamrokala and the accompanying workshop would build upon the sisters’ assets (i.e. their knowledge of crafting and their mutual bond) towards opportunities that may be more enduring in the long run. To that end, we sought to introduce computing by contextualizing it around crafting and facilitating

its use by encouraging collective exploration and mutual support. In general, the sisters were enthusiastic about computers and had envisioned them playing a role in their future. The voice interface, including the elaborated, colloquial phrasing in a familiar Nepali tone seemed to facilitate initial interaction, even for sisters with low literacy.

It was also fun, compelling attention as sisters played annotations over and over. We noted the receding reliance on the voice-annotation after the sisters became familiar with the interface. Further, features such as sharing artifacts and commenting seem to promote a sense of togetherness. We also observed the development of new communal behaviors in response to the new context. Importantly, this encounter was pleasurable or even convivial in Johri and Pal's terms [107] and did not appear to leave them disappointed.

Our findings illuminate the nature of the asset identified in earlier work from a perspective influenced by the introduction of the technology. Our findings highlight how the sisters leveraged their existing social bonds to use the web application and through the use, reinforced their ties to one another. Our findings also show growth in their awareness of crafting and crafting practices. Further, they showed a degree of agency in their adoption and appropriation of the novel technology, suggesting that knowledge of computing could potentially be an additional asset. In fact, the success of the 10-day workshop, as perceived by the staff members, positioned the sisters as individuals who mastered a difficult skill. It seeded discussions on the possibility of training the sisters to become computer trainers in the future.

We also learned more about the sisters' lives and their vision of the future. None of the sisters saw crafting as their sole source of livelihood. We also heard them express a lack of control over the crafting process, which suggested that more control would be welcome. We also heard their desire to move away from crafting towards other professions. They valued financial independence which will surely support the sisters' acceptance in Nepali society.

Beyond financial independence, we heard the sisters' desire to be part of a family, to be of help to others, and, more generally, feel belonged in society. However, we also noted that they have limited opportunities to interact outside the shelter home.

5.5.1 Using Technology to Build upon Assets

Technology, when introduced as a replacement of existing practices, can promote a deficit perspective. Critically, when technological solutions fail, they can erode the populations' confidence. We observed this in the staff members' and the sisters' belief that computing was not for them after their previous experience of using computers had overwhelmed them. Here too, presenting technology without situating it in the sisters' existing practices could erode their agency. In contrast, we sought to promote a reflection of their assets by discussing their crafting practices and mutual support before introducing the technology. Moreover, Hamrokala was contextualized around crafting, allowing us to present it as a natural extension of their existing crafting practices. Further, by promoting collective exploration and use, we fostered a space for the sisters to leverage the forms of support they provided each other when working on handicrafts. All of these moves sought to present technology not as an end but rather as a means to further the sisters' critical awareness of their assets and to explore more enduring pathways that are led by their assets.

Technology and Crafting

There are direct ways to further the sisters' crafting practices through the design of socio-technical systems. Some of these ways remain within our scope of action. One option that we explored involved creating communal crafting spaces that involve more chance for women in the community, including the sisters, to innovate, including on the design and production

of sewable electronics [26]. We imagined building on Pepler’s work [174, 175] that specifies patterns for the creation of soft circuitry involving sewable and paintable electronics. These would be adapted to make it culturally appropriate and simpler. The communal crafting space would emphasize communal experience. As opposed to the neoliberal ethos and individuality that is fostered in some makerspaces, our approach would involve supporting collectivity and care. Collectivity and care have been documented in some CSCW and HCI scholarship (e.g. [71, 222, 224]), but our context would increase these elements both by our design and the survivors’ appropriation of the system. For example, the making *itself* would be conducted communally. The space would provide opportunities for the sisters to create connections with other members of the society and showcase their crafting skills. It could also augment the sisters’ prospects for livelihood both in the context of the protected living situation and perhaps afterward.

However, as we heard, the sisters were ambivalent about crafting. None saw crafting as their primary source of livelihood in the future; some saw the potential of crafting in case they fell short of achieving their aspired profession. The sisters also expressed having limited control over crafting. They had different aspirations (e.g., lawyer and dance teacher). It remains unclear how crafting could directly lead them to realize these aspirations.

However, crafting remains a valuable asset. Another group of sisters may want to continue crafting. Even in this group, seeing crafting as a backup source holds value in and of itself. Given the structural resources required for the sisters to reach their primary goal (e.g., school and college education and funds for training and higher studies), crafting as a fallback plan provides assurance for the future.

From this study, we found ways to handle the sisters low text and digital literacy. We also observed the limited opportunities for the sisters to engage with people outside the shelter home. Considering this, we could train the sisters such that they can (1) actually sell their

handicrafts online, which could broaden their access to the market while also providing opportunities to connect with others, if they wanted to and/or (2) develop computing skills that lead them to broader possibilities such as, as the staff members imagined, becoming a computer trainer. Further exploration of computing could also dovetail into providing basic training in communication, multimedia use, and protecting oneself around computing technology, all of which hold value in and of itself.

Collective Exploration of Technology

The constant help they received from other sisters – their peers – made interaction with the computer easier to understand. For example, S7’s very Nepali phrase, “doing an into” helped S8 understand the action required to close the Bootstrap Modal that had appeared on her screen. We also observed them build collective knowledge to diagnose that the failure of the local server had caused the web application to crash. Handling unexpected errors that come from outside the boundaries of the local system is a particularly challenging element within HCI.

These kinds of opportunities to seek help were facilitated by having the computing activities publicly visible to all the members of the community. It can be hard to know what other people are doing on a computer, even when the computer is shared. Voice annotation allowed the sisters to know something about what was happening and who was involved. This helped them know how and when to intervene. Various levels of support were provided, both when explicitly asked and without asking.

Further, the pleasure that the sisters expressed in being able to share their work with others show the value that they placed on action taken in a relationship with others in the community. In turn, the collective action of creating digital objects, discussing their crafting

practices, posting items for sale, and sharing them with community members appeared to reinforce togetherness among the sisters. At the same, our findings show that a communal orientation does not erase individual feelings of ownership and that any intervention must pay attention not only to the communal but also to the specific boundaries and tensions as individual sisters experience them.

Critically, the coupling of communal orientation with technology use seemed to give the sisters a feeling of sufficient control over the technology and the activities to allow them not only to participate but also to propose strategies and exert agency. They decided together what was to be done with Hamrokala. They established and enforced norms and practices such as not being allowed to like everything about the web application or what needs to be said about a craft in the item description video. In these ways, they seemed to make the technology their own.

In that context, we also saw emergent behaviors such as reflection about how to describe the artifacts for potential buyers and discussion about the wider socio-economic realities surrounding their crafting. The technology was appropriated in such a way as to increase their asset both directly—in-so-far as knowledge of technology has power—and indirectly—strategic discourse about crafting may be tied to how they see their prospects in the wider social context.

5.5.2 Designing Technology to Support Collective Exploration

As we reflect on our observations from introducing Hamrokala to this group of sisters, we identify three particular design approaches that we believe helped in supporting collective exploration of computing: making the activity perceptible to the group, creating appropriate steps, and building in fun choices. These design approaches are not mutually exclusive

but rather the provision of each reinforces the other.

Make Activity Perceptible

HCI and CSCW literature on groupware systems has extensively discussed requirements to maintain group awareness (e.g. [61, 88]). A lot of recent systems have offered facilities like large displays in affluent circumstances (e.g. [72, 94, 132]) that showcase individual accomplishments and indeed invite competitions.

We agree with the need for awareness, but a different kind of awareness. Sharing needs to be supported to foster communality. Beyond making the system usable by sisters with low literacy, voice-annotation publicized what someone else was doing or trying to do, making their activity known to others. Voice annotation functions as an invitation to other sisters to join in either by the simple display of interest or through the provision of support. Further, the sisters integrated both technologically supported and face-to-face opportunities to show their work to each other in their work practices. Facilities that support practices of reporting and sharing are important markers of attention.

Create Appropriable Steps

Hamrokala, especially through voice annotation, provided a way for all the sisters to be able to contribute from the start. That was important but more important was that someone in the group knew enough to help take the next step.

Appropriation and designs to support appropriation has been explored in prior research (e.g. [56, 60, 141, 199]). Dix [56] presents a non-exhaustive list of principles to design for appropriation which includes making the system visible, exposing the intentions behind the system, supporting tasks rather than controlling them, and encouraging sharing of the

appropriated technology. We endorse these principles to designing for appropriation. These are important principles, but they are primarily individualistic.

To encourage collective exploration, each step in instruction and support must be thought out from the perspective of the group. However, we assume and even welcome distributed cognition [95, 195]. Not everyone will absorb the same information in the same time frame. The important elements are the collective knowledge of the group and their ability to put their knowledge together. An element is appropriable if some set of people in the group understands enough of its facets and there is enough time and patience to stitch the knowledge together into collectively meaningful action. Such activities enable progress with local tasks and also strengthen the community.

Build in Fun Choices

We observed the sisters negotiating ownership, practices, and norms within the space. Arguably part of what enabled this was that the activities were in some sense fun. Communitality both enabled this to be fun and was reinforced by it. Fun in this sense is deeply tied to Mol *et al.*'s [156] emphasis on room for experimentation. We believe that it is critical to create a room for playfulness [12, 69, 211, 216].

In our case, this could potentially be increased by widening the sisters' modes of expression in using the computing interface. For instance, we think the sisters might enjoy creating and using avatars overlaid on item-description videos on Hamrokala. Such avatars would show their relationship to the crafts without displaying their real identities. We imagine the creation of such avatars as a communal enterprise.

5.6 Chapter Summary

Through the previous study (Chapters 3 and 4), we had uncovered two assets possessed by the sisters, namely their knowledge of crafting and their close bonds with one another. In this study, we sought to build upon those assets to support the sisters to move towards dignified reintegration. To that end, we introduced a voice-annotated web application to a group of nine sisters through a ten-day workshop. The web application, called Hamrokala, allowed the sisters to post crafting items as if for sale on the internet. It thus built upon their existing activities and products. The setting was made communal by the sisters' behavior but the web application was also tailored to build on this, allowing communal activities such as drawing and sharing design ideas, seeing other sisters' crafts, and commenting on them. Additionally, care was placed on making the application approachable. Voice annotation was prioritized and specialized compared to how it is often implemented in typical web applications. The annotations, played in a female voice in Nepali, were longer and more elaborate than usual and used phrases tailored to the population, for example, "to go in" and "to go out" for logging in and logging out. The voice annotation thus served both to relieve the pressure to read and as a positive contribution to the sociality of the activity because it made individual actions on the computer more public.

Hamrokala and the associated workshop were successful in that the sisters were able to use it. We saw an array of factors influencing how the sisters act in relation to one another. Their actions and opinions are multifaceted with room for disagreement, negotiation, and collective and individual ownership as well as displays of care and alignment. Considering that technology is an amplifier of human intent [225], our findings suggest a need to amplify collective values without undermining individual agency.

Broadly, the sisters supported each other, established and enforced norms and practices,

and built collective knowledge about technology suggesting that they were able to make the technology their own. This leads us to believe that the sisters' knowledge of computing could be an asset that could support long-term reintegration. However, technology can be a "good" only if it allows us to build towards the sisters' vision of dignified reintegration. From the study, we find that the sisters prioritize financial independence and want to feel welcomed by their families and their community. We also noted their limited opportunities to engage with societal actors and institutions, leading them to see a limited role for themselves to bring about societal changes. As we contemplate the next steps, we see the possibility of building on the sisters' computing skills along with the crafting knowledge and mutual bond to create a space for them to see themselves engaging with societal actors and institutions.

Chapter 6

Incrementally Building on the Assets

In the previous study, we saw that the sisters were able to adopt, adapt, and appropriate Hamrokala. This suggested that knowledge of computing could be an additional source of strength for the sisters. However, the exploration of computing and its possibilities were limited to the affordances of Hamrokala and the workshop. Critically, it remained unclear whether the sisters would be able to build on the knowledge to interact with others and be in a position of greater power.

In this study, we extend our previous exploration, making moves to support the sisters in engaging with actors and institutions outside the shelter home. Broadly, this study sought to promote the sisters' access to a range of digital resources, position those resources as being attainable, and explore how those resources can be used to engage outside the shelter home. To that end, we replicated the Hamrokala workshop and the future envisioning exercise to see if a different group of sisters would also find computers attainable and beneficial. The sisters were able to build proficiency in using the computers. They also had a higher literacy level than the earlier group. So, we used that asset to introduce widely available systems like Google Search and Wikipedia. Hamrokala was a tailored application that would not be present outside the shelter home. We wanted to explore ways to build upon their computing skills that they developed through Hamrokala towards more general systems. The introduction to Google Search and Wikipedia also allowed us to present ways in which the sisters could use their existing skills to find more about the world. Further, we designed

activities to support the sisters in charting avenues for interaction with societal actors and institutions.

Throughout one and a half month-long sessions, we incrementally built upon the sisters' practices to design activities that we believe supported them to explore computing while situating its use and their other assets in the broader societal context. The observations guide potential moves forward, particularly in furthering our understanding of *what* can be of help given the multiple complexities present in the setting and *how* can it be of help to the sisters. The sisters were able to build on the technical skills developed through the Hamrokala workshop to make use of Google Search and Wikipedia. They were able to publish edits to four Nepali Wikipedia pages that are, to date, available online. This suggests that we can provide computer training for the survivors living in SO's shelter home as part of their skill-based training program. However, computing cannot be presented separately from the sisters' existing assets and future aspirations. The sisters valued the potential of technology to help others such as by teaching or fighting against child marriage. This leads us to believe that we need to design tailored activities that position computing as a means for them to gain power and act along with people outside the shelter home.

6.1 Methodology

6.1.1 Participants

A group of ten sisters participated in the study. The sisters were between the ages of 11 and 20. All of them were attending a school in the morning (from 6:10 a.m. to 9:05 a.m. for those below grade 6 and until 9:45 am for those in grade 6 and above). The school was a Nepali-medium public school. Enrollment in the school began from the first grade and

Table 6.1: Participants in our study. All of the sisters were enrolled in a school. Those marked with * (S2, S7, S10) had participated in the second study.

Participant	Group	Grade	Read Nepali, English?	Had used a computer?	Primary Future Aspiration
S1	Group 1	1	N, N	N	Social worker
S2*	Group 2	7	Y, Y	Y	Accountant
S3	Group 2	1	N, N	N	Lawyer
S4	Group 3	1	N, N	N	Engineer
S5	Group 3	7	Y, Y	Y	Pote Business
S6	Group 4	3	Y, N	N	Farmer
S7*	Group 4	7	Y, N	Y	Trekking guide
S8	Group 5	5	Y, Y	N	Veterinarian
S9	Group 5	5	Y, Y	N	Social Worker
S10*	Group 1	7	Y, N	Y	TV host/anchor and Dance teacher

students were moved up a grade every six months until they reached seventh grade. Three sisters were in first grade (first year of schooling), one was in the third grade, two were in the fifth grade, and four were in the seventh grade (see Table 6.1). Seven of them could read basic Nepali. Those who were in the fifth and seventh grades also reported being able to read English, sharing that they were familiar with basic English words like “home”, “year”, and “river”.

Three of the ten sisters were part of the earlier workshop; they wanted to “refresh their memory and learn more” (S10). Of the other seven, only one had used a computer before; she (S5) had used it in her school. Four of the ten had recently enrolled in a trekking-guide training program as well.

Table 6.2: Overview of the major activities conducted during the workshop sessions. The sisters wanted to learn to type so we added typing exercises on the seventh day.

Day 1	General introduction
Day 2	Further discussion on their crafting and computing interests
Day 3	Introducing laptops and the Internet; Beginning drawing
Day 4	Continuing drawing; Posting details of crafts
Day 5	Sharing drawing and crafts
Day 6	Adding and editing details of their crafts
Day 7	Typing practice
Day 8	Watching and commenting on the experts and community work
Day 9	Hearing comments; Sharing new design ideas with each other
Day 10	Explaining the web application to one another

6.1.2 Study Methods

Hamrokala Workshop

In the second study (Chapter 5), we had concluded that the knowledge of computing could be a resource for the sisters. However, computing may not be attainable to a different group. Since the group of sisters in this study had changed, we needed to first examine if computing would be attainable to this new group. From the second study, we also found that Hamrokala provided a gentler introduction to computing. So we sought to replicate the introduction to computing through the Hamrokala workshop.

Compared to the previous group, they progressed through the activities quicker and were more open to exploring different features of the web application. These differences required us to add an activity around typing in English and Nepali. The sisters wanted to learn to type, a skill they believed would help in securing an office job. The sisters seemed more comfortable reading text than the last group. Indeed, we observed that this group did not rely much on the voice annotation. So, on the seventh day, we added an exercise for the sisters to practice typing in English and Nepali (using Romanized Nepali).

Future Envisioning and Societal Problems

After the Hamrokala workshop, we began the future envisioning activity by eliciting the sisters' values around six aspects of their lives: "me", "my family", "my society", "my crafts and skills", "my source of income", and "me and my technology". In the previous study, we discussed these aspects in one year, three years, and five years into the future. As we found back then, those numbers held little meaning to them, as heard in 2S2's reaction, "*We may be hit by a truck tomorrow and be gone [dead]. Who knows what is going to happen in five years?*" We changed the timeline and discussed their vision of the future at three significant milestones in their lives: (1) when they are about to leave the shelter home, (2) when they feel they are successful, and (3) when they become old.

On the first day of the session, the sisters shared various aspirations about their future at the time when they are about to leave the shelter home. We heard stories about their hometowns and their wish to go back into the society. They all wished for a better society, one that cared for and respected trafficking survivors and other marginalized groups. They also noted that Nepali society needed to change for their vision to come true. However, they did not see themselves playing a role in bringing about the envisioned changes.

We heard their wish for societal change as an opportunity to explore potential pathways for them to act along with societal actors. During the future envisioning exercise, they seemed comfortable talking about their home and their community. So on the second day, we built on it by discussing two specific societal problems the sisters had mentioned on the first day: child marriage and human trafficking. Discussing these concrete problems, we reasoned, would elicit visions of ways to engage with institutions and societal actors. The goal of the activity was not to chart a pathway for the sisters to become activists working on the societal problems but rather to illuminate possibilities of interacting with local actors

to bring about change and the local resources they could access and mobilize. During this activity, the discussion centered around (1) different factors that lead to the problem, (2) actors who perpetuate and/or can help in mitigating the problem, and (3) ways in which they could act together with the actors to mitigate the problem. The third part was critical in helping the sisters to see that the societal problems are not beyond them and that they can, if they choose to do so, be involved in bringing about change. Eight of the ten sisters participated in this activity; two of them joined us only at the end.

On the third day, we discussed their vision of the future at the two other stages of their lives. Each of the three sessions was around two hours long.

Dashain Wishes

The discussion on the two social problems drew out limitations on their capacity to bring about societal change, especially in changing larger institutions. To support the sisters in developing a sense of control that could, in turn, allow them to imagine assets-based futures, I proposed an activity that involved good-wishing for one another. I used the upcoming festival of Dashain¹ as the background to support the sisters to “other” their positions for a while and engage in expressing good wishes for others. The festival provided a context full of positive experiences where the sisters could face the uneasiness of the future. By focusing on others’ futures, this good-wishing narrative helped participants imagine changes beyond their limitations, learning from the many possibilities others wished for them.

¹A Hindu celebration of the victory of good over evil that includes a good-wishing tradition. All the sisters were familiar with the tradition; three reported that they did not follow the tradition at home.

Unstructured Internet Use

On the third day of the Hamrokala workshop, we briefly discussed the Internet and shared that the web application was connected to a local server and not the Internet. The sisters had expressed an interest to learn more and use the Internet. As we sought to extend their exploration of computers, we began by discussing further about the Internet. I used examples from their lives and parallel to the ideas about the Internet. For example, we discussed how web pages were like homes that people created and we needed their address before we visit. Drawing parallels from their experiences helped in making the concepts relatable and illustrate how their existing knowledge can be a resource in using new technological artifacts.

The parallels to their lives were most prominent when we discussed ways to remain safe on the Internet. I asked how the sisters keep themselves safe in their day-to-day lives. They mentioned three main practices: (1) not talk to strangers, (2) not go to unfamiliar places, and (3) keep an eye out for danger. We drew parallels from these practices to come up with four rule of thumb practices for them to remain safe while using the Internet. These rules were: (1) do not share personal information to people or websites that you are not familiar with, (2) check for a padlock sign and ensure there is no red sign on the top of the browser before sharing information even on websites that you trust, (3) do not use Facebook or any website to contact people outside the shelter home, and (4) check that there is no light near the webcam when you are not using the webcam.

Following this discussion, the sisters used the Internet in pairs for two and a half days. There were no tasks assigned nor any goals established. I was present as a guide on the side to support their exploration of the Internet. I took notes throughout the session.

Collective Google Search

During the unstructured Internet use, the sisters needed help in identifying, translating, and typing the search terms. I noticed that the sisters were actively helping one another in searching and were sharing their findings. This led me to believe that we could deepen their exploration through a collective Google search activity. I initially came up with seven questions based on the sisters' Internet use, such as "Who is the author of Cinderella?" and "What is the altitude of Kathmandu?" I placed some of the critical words in English (e.g., "Cinderella" and "altitude") within the question to scaffold the activity. I also introduced Google Translate for the sisters to translate the keywords and search results from Nepali to English and vice versa.

The activity involved four major steps. First, in groups of two, the sisters identified keywords to the questions. They then discussed the questions as a whole to finalize a set of keywords. Second, they translated the keywords to English using Google Translate. Third, they used those keywords to search on Google. Fourth, they translated the results back to Nepali and read the results to find the answer to the question. In the two sessions, the sisters were able to answer all seven questions.

The sisters were deeply engaged in the activity, often competing to find and share their answers. They also came up with questions so we conducted two more sessions to answer ten questions; each participant provided a question. The questions were varied, such as "How deep is Seti river?" (S5) and "How far away is Bajhang from Kathmandu?" (S9).

Wikipedia Editing

The sisters often landed on English Wikipedia pages during the collective search activity. They also expressed frustration on having to translate multiple Wikipedia pages. Observing

this, I built an exercise to expand the searching practice to introduce an activity that involved editing Nepali Wikipedia pages. This entailed, first, selecting topics of their interest to search in Wikipedia English, such as about their hometowns or an aspired profession. Then, they used Google Translate to make sense of the Wikipedia English article, compared the information with that in Nepali Wikipedia, and added new information to Nepali Wikipedia. The interpretation from Google Translate was required because the translation was not accurate. It also helped us to encourage active reading, seeding discussions on alternative futures and possibilities.

The sisters worked on editing the Wikipedia pages for the next four sessions. Eventually, four Nepali Wikipedia pages were created and published by the sisters: (1) [Veterinarian](#) (created by S8), (2) [Lawyer](#) (edited by S3 and S2), (3) [Annapurna Circuit](#) (edited by S4 and S9), and (4) [Dhunchhe](#) (edited by S7).

6.1.3 Data Collection and Analysis

I recorded field notes throughout the engagement. Similar to the earlier study, field notes and audio were recorded during the Hamrokala workshop, future envisioning sessions, and the Google search and Wikipedia editing activities. The sisters move around carrying the laptop with them when they were using the Internet since the activity was for the entire day rather than the typical two-hour session. I did not record audio of their use. I recorded field notes then. At the start of the day and the end of the day, we discussed what they did and how they felt. These discussions were recorded.

I translated and transcribed the audio recording. Similar to the previous study, I performed “eclectic coding” [198]. I met regularly with Dr. Deborah Tatar to discuss the codes and the transcribed text. The study methods, as described, were incrementally exploring if

and how computing could lead to broader engagement with societal actors and institutions. In our analysis too, as we were merging higher-level codes, we started asking questions about the sisters' assets and opportunities for engagement with societal actors. Thus, in our subsequent iterations, we identify themes around the sisters' use of computers, their mutuality and support for one another, their vision of societal engagement.

A part of the findings from this chapter has been published at PDC 2020 [77].

6.1.4 Building Trust with the Sisters

Similar to the earlier study, I started visiting SO a week before the study. During that week before the study, I had conversations with the sisters in passing and over afternoon tea. I built a relationship with the sisters before inviting them to participate in our study. I also worked with the staff members during this week in which I assisted in identifying different options to set up an online donation system on SO's website. Like the previous study, I shared our findings from our earlier work with the sisters and the staff members. We were working on a draft that discussed the findings from the previous Hamrokala workshop. I shared the draft with them, walking them through the major findings and the anecdotal quotes that we had used in the paper.

One of the interpretations we had made in the draft involved the sisters having limited control over their crafting process. The sisters agreed with this interpretation. They called the handicraft trainers to discuss the findings. The sisters were able to use this knowledge from the previous study with the handicraft trainer to identify ways to gain more control over the crafting practices. Sharing the findings helped in reducing the power difference, allowing the sisters to use the knowledge to initiate change, albeit locally. We believe that sharing the findings from the previous study and eliciting their feedback helped in earning

the sisters' trust.

Two observations in particular made me feel that I was able to win the sisters' trust. This incident highlights the importance for researchers to deeply reflect in action [205] so that our position in the space can help foster trust [140].

Creating a Playful Space

As discussed before, I have sought ways to reduce the distance, acknowledging that it cannot be completely erased. During this particular study, the sisters invited me to participate in the activity and I obliged. However, I tried my best to not share things that would set a different norm in the space (e.g., the value of pursuing higher education in the US). For example, they were discussing how their family would be in the future and what they would be like. They invited me to share my vision of my family. I shared that I wanted to have a family with two children. They asked whether I would have the family in Nepal or the US. I shared that I was not sure about that, adding that ideally I would like to be in Nepal but would have to consider my partner's preference. Later, when discussing societal problems, S5 directed a remark at me mentioning that societal problems exist because "good people go and live in foreign lands" and laughed. A similar friendly exchange could be heard when S6 mentioned that she would consider herself to be old at 30 after I had shared that I was 30 years old. These exchanges suggest that the sisters felt comfortable in the space. Indeed, beginning on the third day of the study, the sisters occasionally started addressing me as "dai" (elder brother) rather than the usual, more-distant "sir".

Correcting My Language

During the future envisioning exercise, I used the word “aaimai” which is a word to denote “woman”. Aaimai has the root words *aai* which means mother and *mai* which means goddess or mother. In recent years, people have been arguing against the use of words such as aaimai which associates women in relation to their family. They argue that such words can result in the “internalisation of a ‘women-as-kin’ attitude, rather than as equal, independent citizens” [122]. During the time of this study, I was not aware of this discussion; neither had I reflected on the word and the meaning it carried.

When I used the word, S7 pointed out, “You can’t say aaimai anymore” to which S10 added, “*Yes, aaimai can’t be used anymore [laughs]. You have to say mahila (woman in Nepali). It’s against the law.*” I apologized and thanked them for helping me learn. This led S10 to remark, “*It’s always good to know things that you didn’t know.*”

I believe that the sisters trusted me and felt comfortable in the space to stop and correct me. It also opened up an opportunity for me to be vulnerable, to show that I was learning—which I was—along with them, and thereby, present the engagements as a mutual learning endeavor.

6.2 Findings

The activities moved on and off the screen. The on-screen activities sought to deepen the sisters’ exploration of computing whereas the off-screen activities sought to create space for them to envision how their knowledge of computing and other assets could play a role in engaging with local actors and institutions. During the sessions, the sisters expressed a diverse and complex view of reintegration while computing exploration opened up discussion

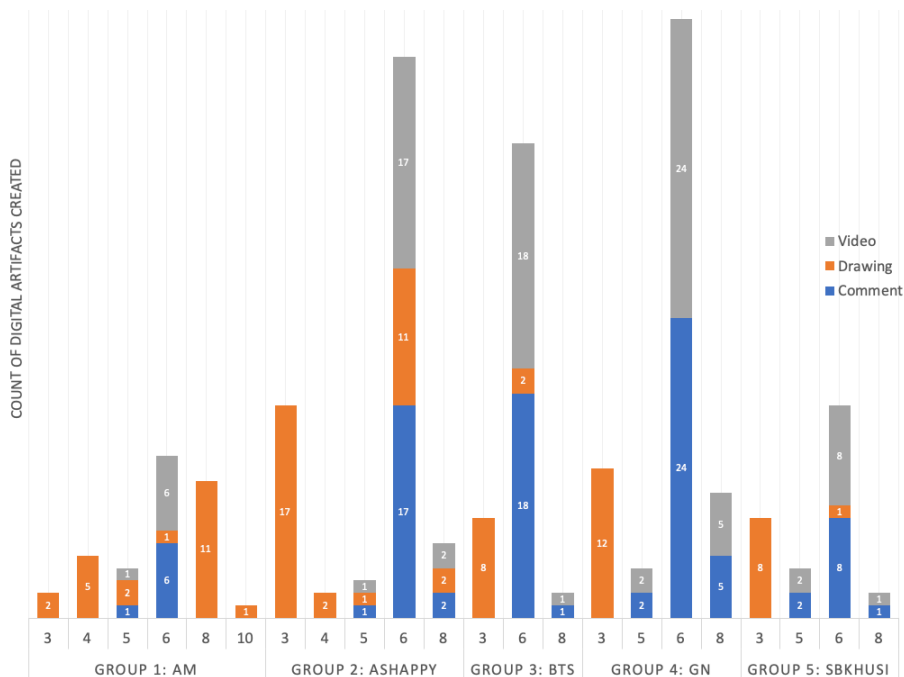


Figure 6.1: Count of digital artifacts created by the groups each day after computers were introduced on the third day.

on alternatives and broader possibilities.

Like the previous group, the sisters adopted, adapted, and appropriated technology during the sessions. They also negotiated practice in the space around technology use, suggesting the development of agency around technology. This group was more prolific while using Hamrokala, creating 88 videos, 86 drawings, and 88 audio comments.

We highlight three things in the findings. First, we see that the sisters were supporting each other constantly to overcome barriers in computer use and, in the process, facilitating a playful space to explore computing. Second, we highlight the sisters' changing belief in engaging with societal actors and institutions, particularly by engaging with family members and local institutions. Third, we note that this group has an additional asset—formal education—which could open new possibilities to engage others in society as well as be in a position of respect once they leave the shelter home.

6.2.1 Collective Exploration

Considering the sisters' mutual bond with one another, we presented the activities as collective exploration and learning exercises. For instance, the Google Search activity was presented as a group activity where the sisters came up with keywords in pairs, shared them with the entire group, and discussed to finalize a set of keywords to use while searching. Similarly, Wikipedia editing was also presented as an activity to be done in pairs where one looked over the screen to see if their partner was typing things correctly.

As noted earlier, the sisters were already providing mutual support such as by helping each other in crafting and in managing the kitchen in the shelter home. They also reported providing help in completing school work as well as in trekking guide training programs. Our observations highlight that their existing mutual support transferred in the new context of computer use and the associated activities. We believe that the mutual support they provided each other helped in making the technology usable and fun.

Mutuality and Support

The collective Google search activity encouraged the sisters to share their knowledge, often swapping roles as help seekers and providers—they were experts about their locality and needed help from others who were experts in theirs. For instance, S5, who was from Bajhang, came up with the question, “How far is Bajhang from Kathmandu?” for all the sisters to search. Bajhang was difficult to spell so everyone relied on S5 to help them. S5 provided help to all the groups individually, walking around ensuring that they got the name correctly.

Some explicitly asked for help from an individual, others spoke to the group waiting for someone to help. We could see the sisters trying to collectively help, often in spelling the English word. For instance, S6 wanted to search for an image of a tiger. She wanted to know

how to spell it. S8, who was familiar with English, jumped in first only to partial spell it correctly, leading S6 to be dismayed. S2 jumped in to spell it correctly.

S6: *How do you say tiger?*

S8: *T-i-g*

S6 [Searching for tig]: *Mommy, it didn't come!*

S2: *It's t-i-g-e-r*

S6 [searching for tiger and showing it to S7]: *Here is tiger, sister.*

There were moments of frustration as heard in S6's expression above, but the mutual support they provided each other (e.g., in spelling, navigation, and overall use practices) made the computing activities attainable. The visibility of the activity, including the state of their work on the computer, and the opportunity to call for help created a space for the sisters to seek and provide help.

There were also a few instances where the sisters felt stuck and required me to intervene. These moments arose when their work on the computer was not easily visible to others. For instance, once S7 was frustrated on not getting the answer to "What documents are required to open a bank account?" She could not translate the keywords to English, remarking, "*Mine does not show it at all. I am frustrated with this.*" S8 joined S7 to help but could not figure out the issue so I joined. S7 was trying to translate from Nepali to English but had set Google Translate to translate from English to Nepali so when she was typing the romanized Nepali word, Google Translate printed the word as is. The switch between languages, which was made seamless through a single click, was not visibly noticeable for the sisters to see and help.

A similar moment of frustration also arose when S8 searched for Bardiya, her district. Bardiya has a national park that is frequented by tourists. In the Google Image search,

the results showed wild animals from the national park. This led her to exclaim, “... *there are only animals. No houses. I knew about it [the national park] but this was ... I see only animals and animals.*” S9 and S7 came together and repeatedly searched “Bardiya” in Google Image search but their attempt also showed similar results. This led us to discuss how Google acquires photos and how the many photos that tourists would have probably shared in different places go on to dominate the search results.

In both these incidents, we see that the sisters joined in to support one another in moments of frustration and stayed even when the system did not respond as expected. We believe that such support at times when the computers seemingly failed helped in making the activity attainable and acceptable.

Supporting a Playful Space

The sisters’ mutuality was not limited to providing support during difficulty. They worked together to foster a playful environment around and beyond computing. For example, after S6 searched for a tiger on Google, two of the groups wanted to see other animals, such as a snake:

S10: *Let’s see a snake. A snake.*

S6: *I also want to see. I also want to. How is it [spelled]?*

S8: *s-n*

S9: *s-n-a-k-e. Here, it has come here.* (Google’s autocomplete suggested snake)

S6: *Aaah!*

S10: *My god! it looks scary.* (S6 and S3 laugh; S8 joins and laughs)

S10: *I have seen a lot of these snakes.*

S6: *Oh god! It’s eating a frog! Ooh.*

S7: *No. Aaah!*

S10: *I have seen this [snake]. I have seen this too.*

S6: *You have seen this? What if it bites?*

S10: *If it bites, it bites. This snake is grabbing a mic [microphone].*

The playful environment here was enabled by S8 and S9's help in getting the right spelling to search photos of a snake. We observed similar support throughout the sessions.

Play is valuable in and of itself [12, 69]. The playful nature of the space also allowed the sisters to share their knowledge and stories from their past with one another. In the above discussion, we see S10 sharing the fact that she had seen some of the snakes listed on the search result. The playful, convivial space made computing attainable. It also helped in promoting the activities as fun things to do together, rather than yet another task for the sisters to complete in the shelter home.

6.2.2 Exploring Societal Engagement

As argued earlier, computing alone is not enough. Dignified reintegration necessitates enabling the sisters to see their assets and use those to engage with actors and institutions. We explored this avenue together with the sisters through activities both on and off the computer.

Similar to the future envisioning exercise in our second study, all the sisters in this group wished for a better society by the time they leave SO as heard in S3's vision of the society 7 years later, "*I wish that my society would become good [by then].*" They were concerned about being accepted as heard in S8's expression, "*I wish that when I join the society, it doesn't look down upon me. May my society not hate me.*" S4 expressed her wishes more positively, "*I want my society to look at me with kindness and in a good light. May it love*

me and may it do good to other survivors like me.” None except S9 mentioned a role they could play in helping move society towards their vision. S9 wrote, *“I want to be able to say that my society is very nice. I wish nothing bad goes on in my society”* and added, *“I also want to help in making my society better”*, but when asked, she did not know what she could do to make her society better.

The lack of agency in influencing members of society could be heard throughout the earlier discussions. For example, S10 mentioned the helplessness survivors may feel when they encounter hatred from others in society, *“It is hard to mix with society. One may say something today, someone else may say something later on, and someone else may say something, and that will irritate them [survivors] and they can’t stay there anymore. They may not have any option left.”* When we asked about possible actions to reduce hate and discrimination, S10 suggested *“raising awareness such as through street plays”*, an approach that modeled SO’s operation but did not see herself doing it. Like S10, others too expressed views where they did not see themselves being involved in taking action.

As the sessions progressed, we could hear more assertive statements. S10 noted that while staff members discussed issues related to human trafficking with the sisters, those issues were *“never talked about in this detail”*, suggesting a limited understanding of what they could do to mitigate the problem. Raising awareness in villages and raising their voice to make the government pay attention to overlooked problems in their society were the two major action plans discussed during the sessions. All the sisters wanted to create videos and share them online and through television to raise awareness, particularly against human trafficking. Even though some of them feared being identified as a trafficked person once they showed their face, all of them expressed willingness to show their faces if needed to convey the message and raise awareness. At the end of the discussion on societal problems, S10 remarked that she now saw some possibilities for her to act locally, *“I have learned*

a bit about what needs to be done like if I go there [home] and see that child marriage is happening, I feel like I can probably do something. I feel I can at least counsel and advice.”

In particular, the sisters shared a sense of growing agency in engaging with family members and local institutions by bringing in their knowledge and skills.

Engaging with Family Members

Most of the sisters felt that they were placed at the fringe of their family’s decision-making process which S9 poetically captured, “*sons are sent to school and daughters to ‘chop wood.’*”

They discussed the pressure imposed upon them by family members trying to model others in the community. For example, S10 mentioned, “*They [family] will say things like ‘so and so’s son and daughter are now married, you too should marry’, [that] creates stress.*” Similarly,

the influence of societal norm of discriminating against daughters came up frequently as heard in S8’s statement, “*they [family] don’t educate daughters. They educate only sons.*”

To this, S9 added that daughters are seen by families as “*types that leave*”, suggesting their limited influence in their family’s decisions. Similarly, S6, recounting observations from her village, noted the significance of family pressure on young girls, “*Everyone in our village runs away and does it [marries]*” and added that they elope at a young age “*because the parents try to force them. So, they choose their own and run away instead.*”

The sisters expressed further marginalization in decision-making resulting from the pressure imposed upon their family by members of society. S8, for example, highlighted the way others pressurize their family, “*They say, ‘Your daughter has grown up, now get her married’ and that puts pressure [on the family]*” which led S7 to comment, “*More than the parents, it is those outsiders that put pressure.*” Similarly, when discussing factors that cause human trafficking, S5 mentioned that a major factor of trafficking is the societal pressure on families to send daughters to work. These intricate relationships between the influence members

of society have over families, and the power family members hold over a girl child's life repeatedly came up leading S5 to comment, "*Everything seems to lead to that same thing: family and neighbors.*"

This pressure from family was also identified as a leading factor in human trafficking. They discussed two major factors that the family pressure led to (1) existing poverty and the promises of work made by traffickers adds pressure on the family to send their daughters and (2) the pressure to marry their daughters early leads to a limited background check on the groom; the groom is involved in trafficking the girl. Both of these are well-known modus-operandi of the traffickers [223]. Anti-trafficking organizations, including SO, have been working in tackling these operations, particularly by raising community awareness. However, as S10 later noted, these issues and the potential role that the sisters can play in mitigating them are "never talked about [these issues] in this detail," leading them to see a limited role for themselves in the process.

As the discussion moved forward, the sisters started seeing space for them to engage, particularly by bringing their knowledge to raise awareness. All the sisters saw a need for families to be strong as heard in S10's expression, "*Our own family has to be strong, that's the main thing.*" To this, S8 added, "*First, mom and dad have to live harmoniously together. That's needed. Then others can't look down upon us. All [family members] have to love each other. That probably will help.*"

They discussed ways in which they could help strengthen their families. Some mentioned the need for themselves to have confidence and strength before supporting their family as heard in S7's plan of action, "*First, we have to have self-confidence and be strong. That's needed.*" S2 mentioned the need to become a model example and raise awareness and, like S8, also suggested a need for family cooperation, "*First of all, we have to be good. Also, dad and mom should listen to one another. And we should raise a bit of awareness among family*

members and outside [the family].”

Like S2, others too saw themselves interacting with family and community members to raise awareness. They had earlier mentioned that people were unaware of factors that lead to societal problems. To address this, S8 wanted to raise public awareness by “*telling them* [family and neighbors] *that they shouldn't do so* [child marriage].” Such assertive action plans were increasingly formulated as the sisters began charting out various factors and actors involved in the societal problems, and ways in which they would interact with those actors in their day-to-day lives.

Engaging with Institutions

The sisters expressed views of being distant from existing institutions. They mentioned that the police could play a role in tackling both child marriage and human trafficking. Some, like S1, thought that members of the society and the police could get together to find a resolution to social problems whereas S6 and S9 saw the police's role limited to raise awareness in villages. But none expressed views in which they or others in the society could leverage the police for help.

Similarly, the sisters wanted the government to help but felt distant from the government and did not see ways to engage with the government or to seek support from it. S8 mentioned that child marriage is prevalent despite being illegal because “*the government overlooks these issues in most places.*” S10 too felt that the “*government does not pay attention*” to mitigate child marriage. Similarly, S2 felt that the government did not take enough responsibility in mitigating human trafficking and expressed, “*The government should raise public awareness through programs like street plays.*” This is particularly noteworthy because S2 had conducted street plays for SO and yet did not see herself playing a role in working with institutions to

raise awareness.

The discussion covered various complexities surrounding the societal problems, leading them to see the need to engage others and leverage external resources to tackle the problems. Particularly, they expressed a desire to leverage existing institutional power held by different local actors as heard in S10's plan to "*bring in the police or NGOs or other people like teachers, who can help, people who can advise families*" while discussing ways to mitigate child marriage.

Once the sisters identified the police as potential actors who could help, they discussed plans to engage with the police. Acknowledging the power of the police to deter community members from perpetuating societal problems, they saw possibilities of getting the police to "*advise and warn families and neighbors*" (S6). Further, they saw possibilities of engaging the police to arrest people, including their own family members, if the people did not heed advice and warning. The sister also saw the potential of the police as a resource for support. It could be heard in S8's fallback plan if her family did not support against trafficking, "... *family should support [against trafficker] as needed. If the family does not support, then [I will] go to the police.*"

However, the sisters were also concerned about the excessive use of police force. S10, for example, mentioned, "*It's not possible to arrest everyone.*" This led to a discussion on engaging with other institutions, particularly NGOs and the government. S10 had earlier expressed that child marriage is prevalent because "*the government does not pay attention*". Later, she saw the possibility to engage and draw the government's attention, "*if we raise voice in unity, the government may pay attention.*" She later added, "*there is nothing we can't do, we can do it but the government has to help a little bit*", suggesting an interdependence between the individual and institutions.

6.2.3 Broader Possibilities Through Learning and Teaching

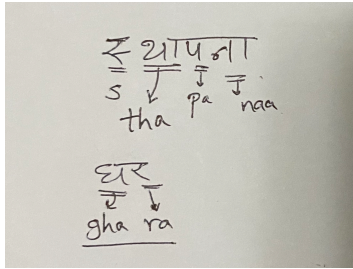
As noted, this group of sisters, on average, had higher literacy levels than the earlier groups. This a valuable asset. We were able to introduce Google Search and Wikipedia editing activities because the sisters had a relatively higher level of literacy. As noted above, those who could spell were helping others while using computers. It reduced the chances for the sisters to feel overwhelmed.

Initially in our discussion, they mentioned that they enjoy learning in school and saw education as a helpful resource for the future. They expressed the desire to learn more which manifested in different forms: in their appreciation of being in school, in their wish to learn about computing, in valuing the opportunity to learn about societal problems, and in inquiring about possibilities for future education. They also shared their vision of working outside by using their skills, including that of computing and that gained from formal education, especially to help others such as by teaching.

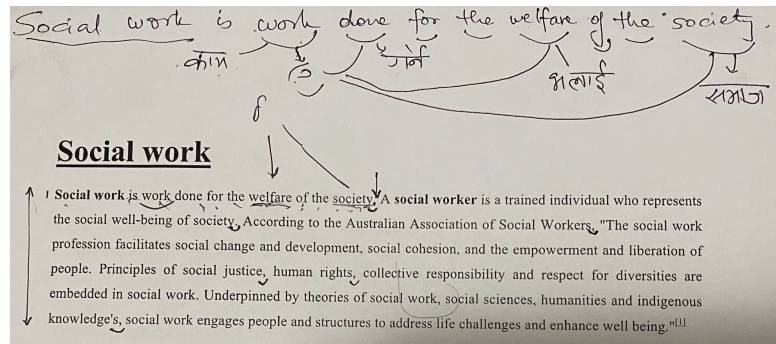
Appropriating Technology to Learn English

Six of the sisters had reported that they were not comfortable reading English; the other four could read basic English text. On discussing their level of English, S9, for instance, had shared that she can read, “A little bit. I can read small small words. I cannot speak.” All four had reported that they found English, as a class in their school, to be difficult, “Science isn’t that difficult. It’s English and maths that are difficult.” Hamrokala had Nepali text and, critically, audio annotations which made the system approachable for all. However, in the subsequent sessions when the sisters used Google and Wikipedia, they encountered challenges in comprehending English text.

The searching activity had hurdles and a lot of frustrating moments for the sisters. We had



(a) Nepali is written phonetically. The sisters struggled to identify the English letter combination to spell the word. Here, we worked with S8 to write *sthapana* (establish) and *ghara* (home).



(b) We worked with the sisters to identify critical words in the sentences to help them understand the essence of the sentence. Here, we came up with “work”, “do”, “welfare”, and “society”.

Figure 6.2: The translation and typing activities were heavily scaffolded to overcome comprehension barriers.

introduced Google Translate to find English words to use in the search. However, Google Translate was not accurate and required scaffolds. For instance, S4 was searching how far her hometown was from Kathmandu, the place where she currently was. Distance, in Nepali, is *tada* which also means avoid (as in to keep at a distance). When S4 typed in “tada”, it gave her “avoid” which she used in her search query to no avail. As mentioned above, the sisters helped each other spell the search terms.

We also observed that some of the sisters were using the Google Search and Wikipedia editing activity to learn English. The sisters frequently asked questions to verify the translation of the words (e.g., S2’s question, “Sir, *janasankhya* is called population in English?) and noted the words down. For example, S5, S8, and S9 were creating dictionaries with English words mapped with their corresponding Nepali translation (see Fig 6.3).

However, the sisters reported that English formed a significant barrier in the activities. On the last day of our study, reflecting on the overall experience, S8 shared “If we had good English, we would be able to write [the search terms] and find as well. That [limited English

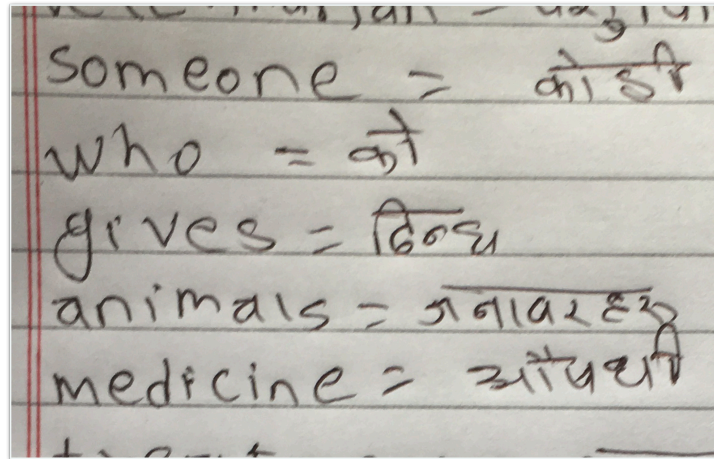


Figure 6.3: A dictionary of English to Nepali words created by S8 (in grade 5) who wants to become a veterinarian. She worked on the veterinarian Wikipedia page.

ability] made it hard.” Others appreciated learning to use Google Translate which, they shared, made it easier for them to find the search terms. S5, for example, imagined working without Google Translate to be “difficult to translate from Nepali first and then write in English”. They also appreciated being able to contribute to others like them by editing the Wikipedia pages as heard in S10’s reflection:

Not all will know English, but many know Nepali. If we make it in Nepali, many people can understand it. It is for others, it will be easier for others. In English, you don’t know what is going on. Others may feel the same way as we did today with a lot of things to do before understanding it.

The appropriation of Google Translate and Wikipedia content to learn English suggests future possibilities to use the two systems to design approaches that could further create an English learning space for the sisters.

Charting Career Pathways

The future envisioning sessions and the Wikipedia-editing exercises elicited discussions on future career possibilities and alternatives. Aspirations are dynamic and embedded within the context [38, 129] and indeed, the sisters' aspirations were influenced by the opportunities they had received at SO. For instance, S7, who was part of our second study, had mentioned that she wanted to be a singer. Since then she had enrolled in the trekking guide training program and now saw the possibility of becoming a trekking guide. In fact, she was the only one of the four enrolled in the program who wanted to become a trekking guide. The other three (S2, S10, and S8) had different aspirations: becoming an accountant, a veterinary doctor, and a TV host/anchor, respectively. In particular, we note that three major experiences seemed influential in their vision of the future: (1) the craft-making training that SO provided, (2) the trekking guide training program provided through an external institution, and (3) their formal education which too was arranged by an external organization.

Schooling seemed to have the most influence in shaping the sisters' aspirations (see Table 5.1). The sisters' aspired professions—of becoming a news anchor and a TV host, an accountant, a veterinarian, a social worker, and a lawyer— require higher education. Crafting and becoming a trekking guide were seen as a possibility for the future, but only as a fallback plan if they could not reach their primary career goals. Perhaps acknowledging the uncertainty in the future, the sisters were initially hesitant in sharing their primary aspirations and often began by mentioning trekking guide or crafting as a source of livelihood. For instance, S2 shared that she wanted to be a tailor and a lawyer. On discussing further, she shared that she would pursue tailoring only if she could not become a lawyer. Similar discussions helped uncover the sisters' primary aspiration:

S8: My wish is to continue the trekking guide training program. But another is

to open a hospital for dogs or animals. (laughs) I want to be a doctor for animals

(laughs)

A: More than becoming a trekking guide or less than becoming a trekking guide?

S8: *Both*

A: Let's say both are not allowed. You have to choose one. What would you choose?

S8: *For me, veterinary ... Because dogs are everywhere and many die because they are not treated for diseases. That's why I want to be a veterinarian.*

S4: *She will become a doctor. A doctor.*

The sisters appropriated the activities to explore details about their aspired profession. For instance, S2 used part of her unstructured Internet time to watch videos about finance officers. During the reflection, she shared, “*I also watched about finance officers. I understood a little bit about what all we need to study to become a finance officer. I didn't understand a lot but I enjoyed it (laughs).*” Later, she edited the Nepali Wikipedia page on accountants, adding degree requirements and responsibilities to the page. The sisters' inquiry about their professional goals allowed us to discuss potential pathways:

S9: *Sir, to become a social worker we have to work really hard and study a lot.*

Right now we have just begun. How much studying does it require?

A: You need to study BSW ... BSW is Bachelor in Social Work.

S2: *How many years does it take to complete BSW?*

A: BSW typically takes 3 years to complete in Nepal. That's after you complete 12. All of these require us to complete 12 and go to a bachelors level course ...

S8: *How about veterinary?*

A: For veterinary, currently there are 4 and 5-year programs. You have to finish class 12 ... After 12, you do a bachelor's course. There are a lot of options at

that level, a lot of opportunities.

The discussion seemed to draw varied perspectives on the effort required as we heard S5, who started counting the years of study needed for her to complete her 12th grade, “8, 9, 10, 11, 12. *Aama!* [exclaiming shock] *5 years!*” In contrast, S1, who had just started her formal education, asked about becoming a social worker. I mentioned that it would take her at least 12 years of studies. I then asked her, “Can you do it?” to which she emphatically replied, “*Yes, of course,*” adding, “*If we have the courage to do it then we can.*” The discussion also drew forth what they were likely to face as they pursue their primary aspirations. S2 shared concerns about earning an income while studying to which S9 shared her plan:

S9: After studying college, I will do a job. I will use only part of the earning, that which I need and will save the rest [for education]. I will use a computer and mobile, I will use them in my work, my job.

A: What kind of job will you do, sister?

S9: Typing and making documents, office job like that.

As evinced by the sisters’ reflection on the long-term commitment and making plans to pursue those commitments, they were exploring ways in which they could leverage their assets to pursue their aspirations. The experience also highlights the dynamic, embedded nature of aspirations which, as we imply in our definition of assets, influences what is seen as assets.

Teaching Others

As with the earlier group, the most common vision for computing and mobile phones was to connect with family and friends. However, the group also shared other activities they

envisioned to accomplish by using computers such as using it “for typing and making documents” (S9) or “to work in office” (S5). They also saw the possibilities for them to teach computers outside, especially to family members. For instance, S9, who had never used a computer before, felt empowered to teach others, “*I had not learned computer earlier. This is the first time I am using it. I didn’t know how to type earlier, which letters are where [on the keyboard]. Now I know a bit. Now if I go outside, if I see a computer, even if I do not know a lot, I will be able to go from one place to another [on the Internet] and type a little bit. That I now know, I learned that much. I also think I can teach people at home how to use computers, even if it is a little bit.*” Similarly, S7 saw her computing skills as a way to help people in her village, “*After leaving SO, I will have learned computers. I will go to my village and I will teach that to many young children and old moms and dads.*” We can also hear this in S4’s wish for S5, “*She is learning computers now but tomorrow [in the future] may she be able to teach computers [to others in her hometown].*”

Their interest to teach was not limited to teaching computers. For example, S3 wished for S2 to “study well and become a teacher.” S2 who did not want to become a teacher shared that she would like to teach her family members all the skills that she had learned at SO, including computers. Teaching was seen as a sign of success. We heard this in, for example, S8’s vision of her future, “*When I will be successful, I will be continuing to do what I have learned and I will teach that to others.*” It also echoed in the sisters’ wishes for others, such as S1’s wish for S10 to become a “*famous person through her dance, as a dance teacher. And may she have roles in movies.*” Upon hearing this, S10 shared her vision of helping other marginalized people by becoming a dance teacher, “*Yes, I would like to open a dance school and be able to support those who may not be able to afford learning dance elsewhere. I want to be able to teach dancing so that they can go to places and dance, like in dance competitions.*”

To this end, we designed the Wikipedia editing activity because the sisters were frustrated having to translate English Wikipedia pages to find answers during the Google Search exercise. When asked, the sisters had expressed an interest in creating Nepali Wikipedia pages to help other non-English speaking Nepali people to gain information. Their desire to help others made the activity meaningful for them as heard in S8's experience on editing the Nepali Wikipedia page on veterinarians, *"I liked it. everyone could see what I had said in Nepali. Even those who do not understand English can read the Nepali text. I enjoyed creating the pages."*

At the end of the previous study, the staff members had expressed interest in potentially training the sisters to become computer trainers in the future. Our observations suggest that the sisters' valued aligned with the goal. In fact, S8 shared that teaching computing could be her legacy that she could pass on to her children when she grows old. In general, trainers or teachers are respected in society. Becoming a trainer or a teacher could place the sisters in a position of prestige and respect.

Challenges to Future Education

The sisters also shared their struggle in catching up with the classwork while also shared pride in their achievement. They were in a school that moved them up a grade every six months, instead of a year. This meant that the course load was double that in a typical Nepali school. S10, for instance, reflected on the effort that made it easier for her to learn, *"At the beginning when you don't understand it, it feels extremely hard, not sure where to take what from where to where. After studying with concentration, I feel like I understand and I can do it and it becomes easy. When I don't understand I feel like why is math even included here, and when will that sir or miss [instructor] leave."* The perseverance to push through difficulty was consistent with what we had observed repeatedly in their crafting

work and while they were using the computers.

The sisters reported that they too did not have much free time, having been stretched thin by the workload in school, trekking guide training program, and SO's handicraft work as S10 remarked, "*In the morning, I go to school, in the afternoon, I work at SO's handicraft making shawls, and in the evening, I go back and study ... it has been a bit hard. It [academic performance] has been going down. I have not been working as hard as I used to*", adding "*in alternate days, I also have to go to the [trekking guide] training in <Redacted institute name>.*" To avoid adding yet another work on the sisters' already-congested schedule, our study was presented as a substitute for their handicraft work. Achieving higher education remains difficult for the sisters; as it stands, their school enrollment is contingent on the sisters' continued association with SO and even then, crafting is a higher priority for SO and the sisters' access to schools is influenced by the resources available to SO.

6.3 Discussion

The field of HCI and CSCW continues to grapple with, what Ackerman called, the socio-technical gap "between what we know we *must* support socially and what we *can* support technically" (emphasis in the original text) [1, pp. 179]. More recent work emphasizes that when working in low-resourced settings where intersecting complexities are at play [45, 240], the gap should be considered a deeper and wider "chasm" [55]. Traditionally, research frames the chasm as an issue of deficit, one in which novel technological configurations are sought to fill the chasm. In contrast, our work emphasizes the importance of supporting the community socially, placing technology as a means to do so. This study highlights how we can create a space for the community to develop a critical awareness of their assets, including that of knowledge of computing, and leverage it to chart pathways for the future. We believe that

developing critical awareness can lead to incremental transfer that can snowball into a larger impact over time.

In this study, we reduced the reliance on tailored technologies as the activities progressed. Instead, we incrementally built upon the sisters' assets—particularly their literacy skills and computing skills—to introduce widely available technology. Google Search and Translate were presented as tools to use in gathering information. Likewise, Wikipedia combined with Google Translate was used as a resource for the sisters to explore topics of their interest.

Although technology was at the center of this study, it was presented as a means to amplify existing assets and make incremental moves to more enduring ones. We were successful in that the sisters explored broader possibilities and alternatives outside of the shelter home. For instance, the discussion on academic commitment brought forth pragmatic concerns especially on ways to finance their higher education. The activities, both on and off the computer, encouraged envisioning ways in which they could leverage their knowledge and skills, including their computing skills, to interact and engage with societal actors and institutions.

In particular, in this study, we emphasize the value of undertaking slow, incremental steps in a long-term engagement. In our previous studies, we had been incrementally designing socio-technical approaches based on our understanding of the context. Before the study, we discussed the approaches with the staff members and came in with a planned approach to explore with the sisters, adapting along the way based on the sisters' feedback. In this study, we took a step further by incrementally introducing activities based on the sisters' change in perspective on what was feasible and what could support them to explore broader possibilities. We find that the incremental move allowed us to support the sisters socially in two inter-related ways: (1) by attending to their dynamic, embedded assets, and (2) by fostering a room to explore malleable futures.

6.3.1 Attending to Embedded Assets

A difference between this group of sisters and the earlier group of sisters was that all of the sisters in this group were attending morning school. This experience of being in school and pursuing formal education was influential in their participation in the study. First, this group of sisters had a relatively higher level of literacy skills which was valuable as we moved forward in the activities. We are not certain if we could have introduced Google Search and Wikipedia editing to the earlier groups. We also do not know if the next group of sisters will have a higher literacy level like this group. Nonetheless, this group of sisters', on average, higher level of literacy was an asset for the collective, and our incremental activities leveraged and built upon it. For example, the move from Hamrokala to Google search and Wikipedia was possible because many of the sisters could read and with their support others, few others like S3 could follow along actively.

Second, the sisters' exposure to the formal education system had influenced their aspirations. The sisters had diverse primary aspirations, only one involved crafting. As we noted in our definition earlier, assets interact with aspiration: something can be considered an asset if it supports an individual or a group to realize their aspiration(s) while balancing the tensions emerging from needs and structural limitations. Education is an asset but the sisters may not be able to continue it once they leave the shelter home; their current enrollment was made possible by SO's collaboration with a non-profit that sponsored the program and the sisters' continued enrollment is contingent on the sustained collaboration between the two organizations, the resources available to the other organization, and the sisters' continued association with SO. The discussion on academic trajectory and the long-term commitment required to realize their primary goal supported a critical awareness of their assets' potential and limitations. It encouraged them to see how their assets could be used in overcoming the barriers they will likely face while pursuing their primary aspiration.

Third, the sisters' exposure to formal education influenced how they used computers and what they valued about computing. For instance, they searched for information regarding careers that they were interested in during the unstructured internet use time. They persevered through moments of frustration to appropriate the technology to learn English. They wanted to engage with societal actors such as by teaching people or engaging with local actors to mitigate prevalent social problems. We also noted that they were actively supporting others in their computer use. This provided us with space to position technology within the broader context of societal engagement as we heard them envision using their knowledge in mitigating societal problems and valued editing Wikipedia to help others who could not read English.

Assets are dynamic; an asset available to a group may not be available to another similar group or even individuals within the same group may not have similar access to the assets [116, 117]. In this case, the sisters' relatively higher literacy level was not known to us prior to the study. In taking incremental steps, we were able to closely attend and build upon those assets.

6.3.2 Room to Explore Malleable Futures

We contend that the incremental steps fostered room for the sisters to explore alternative futures and see their circumstances and the future “not as a static reality, but as a reality in process, in transformation” [73, pp. 83]. Critically, by emphasizing the importance of their existing assets, we created a space where they could envision multiple futures and determine a pathway that they, as Sen calls it, “have reasons to value” [209]. An individual's reason to value can be highly adaptive, influenced by what they see around them as being feasible and practical [208]. In our case, S7's change in aspiration from being a singer to a

trekking guide after having enrolled in the trekking guide training program exemplifies the adaptation. After enrolling in the training she saw becoming a trekking guide as a feasible and practical possibility. On the opposite spectrum, the sisters in the first study (Chapter 3) saw themselves continuing crafting in the future because it was the only possibility presented to them.

As humans, we adapt to the context where we find ourselves. This includes adapting our future aspirations based on the context—often termed “adapted aspirations” [38]—which has deep implications for assets. We defined assets as the strengths, resources, and attributes that balance between needs, structural limitations, and aspirations (see Section 2.2.1). Aspirations determine what can be considered an asset. For an assets-based engagement to support community to build on their assets, it becomes imperative that we provide avenues for them to critically see and negotiate their adapted aspirations. To that end, assets-based design requires creating a room for the participants to see that the future is malleable and can be changed, and critically examine their aspirations to discern alternative and achievable futures.

Exploration of possible futures requires the participants to critically reflect on their assets, examine the alternative futures available to them, and identify steps required to realize those futures. It also necessitates participants to decide on whether and how they want to reflect on their future possibilities. Moreover, since assets and aspirations are embedded in the context, it requires collectively examination of the futures through discussions and reflections. All of these take time as they require slow incremental steps.

We do not believe that a month and a half-long introduction is enough for the sisters to retain their skills in the future or to actually engage with societal actors and institutions. In this sense, this study is limited. A more prolonged and deeper engagement is needed. Through this study, we believe that we have identified a way to design socio-technical approaches

that can facilitate the sisters to critically reflect on their assets, envision ways in which they could use those assets to engage with societal actors and institutions, and bring meaningful societal changes.

6.4 Chapter Summary

In the previous study (Chapters 5), we introduced a voice-annotated web application and an accompanying workshop to explore the possibility of the sisters to build upon their two assets: their knowledge of crafting and their close bonds with one another. In this study, we extended our study in three ways. First, we expanded on the sisters' technical skills and their higher literacy level to incrementally introduce widely available systems like Google Search and Wikipedia. Hamrokala was a tailored application that would not be present outside the shelter home so we explored ways to build upon their computing skills that they developed through Hamrokala towards more general systems. Second, we facilitated the sisters to use technology and their existing skills to find more about the world. Third, we designed activities to support the sisters to chart avenues for interaction with societal actors and institutions.

We were able to replicate the behavior that we had observed in the previous study with a different group. The sisters were able to adopt, adapt, and appropriate computers. We also noted their mutual support for one another which we believe facilitated in making the technology introduction acceptable and attainable. They appropriated technology to learn English and valued the opportunity to help others such as by contributing to Nepali Wikipedia pages. Within a playful space, they also examined the limitations of the systems. This makes us believe that, with a careful introduction, knowledge of computing can become an asset for sisters who are in SO's shelter home.

We were also able to extend the previous work, by building upon the sisters' technical skills to explore the general systems and envision engagement with societal actors and institutions. The incremental activities helped the sisters to critically develop an awareness of their assets, explore future possibilities and alternatives, and chart pathways that to fulfill those futures.

We noted that the sisters had a higher level of literacy compared to the previous which influenced the way they used computers and what they valued. However, we also noted that the sisters' access to school is contingent on external factors. Considering this, we make a case for undertaking incremental steps. We argue that such incremental steps are necessary in an assets-based engagement particularly because it enables us to (1) attend to the dynamic, embedded assets, which in this case was the sisters' higher level of literacy, and (2) create a room for the participants to explore alternative futures which helps convey that the futures were malleable to change and can be transformed with their assets.

Chapter 7

Understanding the Staff Members’ Perspectives

In our previous studies, we worked with the sisters living at SO’s shelter home. We had started our field studies with staff members, and continued to work with them throughout but we had not revisited their situation. Staff members’ had huge influence on the sisters’ futures. The staff members arranged resources for the sisters. This included arranging the sisters’ enrollment in schools or trekking guide training programs which, as we saw in the previous study, opened newer possibilities for the sisters. The staff members also design the projects, write grant proposals, and implement projects that support the sisters. We too consulted with the staff members where we discussed our findings and charted the next steps. While we began the project by interviewing staff members and observing them at work, we had not dived deeper to discuss their personal values, their goals, and their views about the reintegration services.

In this study, we pivoted our research direction to focus on the staff members. The pivot was engendered by the COVID-19 pandemic which curtailed the possibility for me to work with the sisters directly. We believed that interviewing the staff members would illuminate a more holistic perspective of the design space, one that could lead towards a sustainable co-engagement and change in the longer run.

In particular, we had two major goals. First, we sought to deepen our understanding of

the complexities that the sisters will likely face once they leave the shelter home. The staff members have been working with the survivors for many years. Their experience and knowledge from the work could further our understanding of the issues surrounding reintegration. Further, staff members at different levels in SO are survivors of trafficking. Their experiences during and post-reintegration could help us understand the long-term challenges that surround the sisters' futures.

Second, we sought to explore the possibility of the staff members including the sisters in SO's project design process. As discussed earlier (Chapter 4), an ideal rehabilitation and reintegration project for the survivors would be tailored according to their interests and background. We note that it is an ideal goal, especially considering the limited resources available to the NGOs. An attainable step in this direction would be to engage the sisters in the process of developing rehabilitation and reintegration programs. We see four major advantages of pursuing this move. First, the projects would be grounded in the sisters' experiences which could lead to more supportive and effective programs. Second, for SO—a survivor-run organization—including the sisters in the project design could be an avenue to train future employees. Third, the sisters would have an opportunity to learn a broad range of skills and showcase their skills. It would also expose them to a range of resources that they could potentially use after they leave the shelter home. Fourth, project design is a well-respected job at SO and other NGOs. We believe that involving the sisters would help reduce the power differences and thereby reduce the deficit-focused discourse at SO.

Background: Pivoting Research During the Pandemic

On March 24th, 2020, a country-wide lockdown was enforced in Nepal to contain the COVID-19 outbreak. It severely affected SO. The staff members were required to work from home. However, many of the staff members had limited digital fluency which meant that their work

was put on hold. The access to the shelter homes was limited to select staff members. The sisters were completely isolated. Donors withdrew funds that were slated for operating the shelter home. As a cost-cutting measure, SO had to shut down one of their shelter homes. They moved the sisters to another shelter home.

Around this time, I started a conversation with some of the staff members just to check on how they were handling the crisis. These conversations occurred over phone calls with staff members at different levels within SO. Staff members expressed concerns about operating the shelter home with limited funds, the pandemic's long-term impact on SO's work, and their own career paths.

In the phone calls, I started discussing possible actions that the research team could take to help SO a time of crisis. Two major avenues of action emerged: (1) raise funds for a shelter home in Sindhupalchowk district where they were running short and (2) explore potential to build the capacity of the staff members while they are at home. To meet the first goal, I started a GoFundMe campaign¹. Through the campaign, we have so far raised \$5790. To move towards the second goal, I interviewed eight staff members to discuss their personal and professional goals and visions.

In this chapter, we report findings from interviews I conducted with eight staff members. I conducted the interviews over the phone which also included an adapted form of the future envisioning exercise. In this adaptation, we asked the staff members to imagine their lives at the time when they feel they have reached the peak of success. The study helped us develop a more nuanced and comprehensive perspective on the services and resources available to the sisters at SO. I also inquired about whether the staff members might be willing to incorporate participatory approaches in the project design process such that the sisters could be included. We continue to further our understanding of the complexities surrounding

¹<https://www.gofundme.com/f/sheltering-trafficking-survivors-in-nepal>

reintegration efforts in Nepal. In particular, through the staff members' accounts, we uncover long-term challenges that survivors face during and post-reintegration into Nepali society. These include limited access to formal education and training, constrained opportunities to build social connections, and struggles arising from persistent social stigma against survivors of trafficking. We also heard the staff members' account of the hurdles in incorporating participatory approaches in the design process. These hurdles include a rigid hierarchy in the organization that reinforces power differences and a level of organizational inertia. Noting the staff members' interest in supporting the sisters to become active members in the organization, we suggest approaches that could bring the sisters into the project design process.

7.1 Methodology

7.1.1 Participants

Following snowball sampling approach, I relied on the staff members to recruit others for the study. Gopal was the first participant. We had met earlier during my field study. I had also worked with him on maintaining SO's website.

In total, eight staff members participated in the study. Of the eight, four were what they call "member staff". Member staffs are survivors of trafficking who had received services and support from SO during their reintegration journey. They were now working at SO. The other four were called "technical staff". They are professionals who have been working at SO.

The participants in the interviews were in various positions within the organization. It included two of the founding members. The interviews were between 1 hour to 1 hour

Table 7.1: Staff members who participated in the remote interviews. During my fieldwork, I had met the the four staff members marked with *.

Name	Position	Survivor?	Future Envisioning Participant?
Gopal*	Monitoring and Evaluation Officer	N	Y
Rita	Shelter home coordinator	Y	Y
Bhumi	Health and legal coordinator	Y	Y
Sandhya	Reintegration officer; founding member	Y	Y
Nima	Social Service Worker	N	Y
Shreya*	Administration Head and Psycho-social counselor	N	N
Aashma*	President; founding member	Y	N
Nabina*	Project Manager	N	Y

45 minutes long. In three of the interviews (with Gopal, Rita, and Nima), I conducted a follow-up interview of around 30 minutes each.

7.1.2 Data Collection and Analysis

Interviews

I conducted interviews from mid-July to mid-October through WhatsApp calls and phone calls. The first wave of COVID-19 had passed by and the Nepal government had eased restrictions. However, it was a time of great uncertainty and this resulted in several reschedules and cancellations. We took care in making the remote interviews as comfortable for the participants as possible. The staff members were participating from their homes; those who had survived trafficking (four out of the eight participants) had not revealed their trafficked past to their family members so questions related to their past experiences had to be carefully posed. We asked such questions only after they verbally confirmed that they could and were comfortable discussing their past. All four of the participants were willing to share

their stories. Care was also placed while interrogating by focusing on the staff members' positive experiences. During the interviews, when focusing on the critical incidents, we re-framed what should not have happened to what should have happened. When discussions on weakness and problems ensued, it was lead by the participants.

In the interviews, I used the future envisioning document (see Section 6.1.2) to provide structure to our initial interaction. I shared the document with the staff members three days or more before our interview. I requested them to imagine their lives at the peak of their success across the following six aspects: “me”, “my family”, “my society”, “my crafts and skills”, “my source of income”, and “me and my technology”. The third participant (Bhumi) reported that the moment she felt most successful was in the past, which was precisely the time when she landed in Kathmandu in 1996. Considering this, in the subsequent interviews, I rephrased the question to include both their past and the future. Two of the staff members had not used the document before our interview. Nonetheless, I began our interviews by asking them questions around those six aspects (“At the peak of your success, what were you doing or what do you imagine yourself doing?”).

Data Collection and Analysis

I recorded the interviews after obtaining permission from the participants. I translated and transcribed the interviews. The transcripts were coded following an inductive approach. I closely followed the text and summarized it. I generated higher-level codes from the summary text. As recommended by Saldaña when doing coding alone, I met regularly with my advisor, Dr. Deborah Tatar, to discuss the codes I had generated so far and the broader themes that were emerging. Examples from the first cycle of coding are “alluding to a hierarchy in the organization”, “noticing gender discriminations”, and “highlighting family's importance”. In subsequent rounds, I combined the codes leading to the emergence of higher-level codes which

we could merge into two major themes: the staff members' account of long-term challenges to reintegration and organizational operations. We present these themes in the findings section.

We begin by narrating Rita's reintegration experiences². Rita can be considered, by all existing measures, as having been successfully reintegrated. Her experiences highlight several challenges in reintegration that further our understanding of the complexities surrounding reintegration. We reflect on Rita's experiences and the accounts we heard from the other interviews to highlight the major findings from our study.

7.2 Case Study: Rita's Reintegration Experience

Rita grew up “a daughter of a BK” (a “lower caste”³), in a poor family in a rural-Western part of Nepal. From a young age, she experienced societal discrimination based on class, caste, and gender. Her family struggled to meet their day-to-day needs. None of her family members had formal education but they ensured that she enrolled in a nearby public school (commonly called a “government school” in Nepal).

When she “13-14 years old”, studying in “5th or 6th” grade, she was trafficked to India. She was rescued and repatriated to SO six years later. She stayed in SO's shelter home for a “few years”. She feels that time to be hazy and cannot recollect much. Her birth family refused to take her in; they have not reconciled in the ten years since. She underwent “urban reintegration”, in which she rented a room in Kathmandu rather than going back to her

²Rita wanted to share her stories with the public but fears that her family will shun her if they learn of her past. With her permission, we attempt to share her story here.

³Caste system is very rigid and remains dominant in Nepal despite political claims of an “inclusive Nepal”. There have been few and limited institutional moves (e.g., affirmative actions) to reduce case-based inequalities. For a detailed discussion on multi-dimensional caste-based inequalities in Nepal, please refer to [135, 181]

village.

She remembers the pain and suffering during the early reintegration years because people in the community mistreated her. It made her feel so weak and helpless. She even contemplated suicide a few times.

She also recalls feeling “very lonely” during the reintegration years, having “worked throughout the day and go back to an empty home in the evening with no friends.” She needed a friend “especially to remove the loneliness.” A few years later, when a man proposed to her to marry, she agreed. She did not tell him or his family about her trafficked past and has not yet shared it with them. Her husband and in-laws know that she works in an anti-trafficking organization as a “regular staff member”. She dreads thinking about the repercussions of revealing her past to them. She also feels guilty for not being truthful to them but fears that if she shares it, then “the relationship would be ruined”.

During the early years, SO’s support was critical. The assurance they provided her, such as by saying, “It’s ok, this [being trafficked] is not your doing, not your problem, others made you the victim, you didn’t do it knowingly” helped her feel strong. The experience also made her realize that she too “could do something” to help trafficking survivors.

She moved on from being a “service-recipient” at SO to becoming a “member staff”. She started working at SO as a cook. She cooked for survivors in the shelter home and the staff members in the organization. Gopal, a “technical staff”, guided her to study and mentored her in some of SO’s work. She was, and remains, determined to move up the ladder “no matter how slow the process may be”. According to her mentor, Rita was “very hard working and diligent, always asking questions and studying while others basked in the sun.” In the last ten years, Rita has moved from being a cook to a shelter home helper, then to shelter home warden, and now, works as a safe home coordinator.

While she was working at SO, Rita enrolled in a women's school as a part-time student. SO arranged funds through donors for Rita's education. Balancing both work and studies was difficult for her but she managed to graduate high school. She is currently in her second year of college, studying for a Bachelor's in Sociology.

She is determined to move further up in her career. She currently has "11-12 staff members under" her but feels that she can do more. She wants to become a project coordinator and start a project from scratch. She believes it will help her learn about "all things surrounding our effort like prevention, protection programs." It also has some additional financial benefits. She had already proposed this idea to the management team, arguing that "it will be a very good step" for her. The management was positive, including the president who told her, "it is a courageous step and a positive thing".

Her proposed project involves rescue and repatriation efforts which "too has the same work" that she has "been working on for a long time". The relevant experiences that she already has for the job include (1) going to India and repatriating survivors, (2) completing the necessary documentation, such as filing the repatriation documents and vacancy letters saying that SO has a place for the survivors, (3) developing and sending care plans for the newly repatriated survivors, and (4) coordinating with the Indian embassy and various Indian Child Welfare Committees (CWCs). She feels confident about her "knowledge about the process and the overall work" to move forward in her career.

However, reflecting on the next step in her career, she believes that a challenge lies in overcoming her limited English ability. As a project coordinator, she needs to have "direct communication with donors, submitting the reports directly to them", which she has not yet done. So far, she has written reports and submitted them to technical staff members. The technical staff then edits the reports before submitting them to donor organizations. She plans to "work hard and take help while reporting, asking people to help edit after completing

[the report].” She worries that she is “not perfect in English, to the level the donors need” which scares her a bit. She fears that she “may not be able to do a good job in [reporting] in English”. She wants to improve her English which she believes is crucial to move forward in her career. However, she has not had time outside of her family, work, and college, to enroll in an English language institution. She had earlier enrolled in an English-language training conducted by a couple of international volunteers. The program was conducted within SO’s office time. She wishes for a similar English-learning program that does not demand extra hours in addition to the work.

She sees her work as being more than a career. She values her contribution in solving a societal problem that had affected her and others like her. She feels that she has been able to use her experiences as an asset to help other survivors, “I came from that same place [trafficked past], I have been able to help so many people to find nice positive paths. Sharing examples from my life, I have been able to help them understand what they can become, what they need to do. I have been able to share those lessons with them.”

She feels that she has much to give. She wants to “open up and share everything” about her past with the public through a platform like YouTube. She has “been searching for a platform to do that as well” but has not been able to share it. She wants to share her experiences of “casteism, poverty, class-based discrimination, and gender-based discrimination between men and women, and discrimination that I [she] faced as a trafficking survivor. There are so many levels of discrimination that I have suffered. I want to share all of these things, put it out in the open.”

However, she worries that her “relation will be ruined there”, that is, her husband and in-laws will shun her after knowing her past. Being unable to share her past with others fills her with regret and guilt. She feels “it was in vain to marry without telling” her husband about her past. She believes that “if after knowing everything [about my past], he would

have proposed for marriage, then it would be ok.” She wanted her family to understand her past struggles and wished:

May my child also understand me, my story, and everything, and believe that ‘it was not my mom’s mistake’. May my son not be ashamed of me in the future. And may my husband not be ashamed of me thinking ‘Oh I married to such a person. It was all in vain.’ May he not have such guilt thinking that. May they [child, husband, and in-laws] be positive and supportive towards me and respect my work and everything that I do. I will also respect them and their work and may they also do the same to me.

7.3 Findings

We unpack elements from the case study and add to it the accounts we heard from the other staff members at SO. Our findings highlight several complexities in the reintegration process and challenges staff members face while working at SO.

Please note that the survivors were addressed as “sisters” (Rita, Sandhya), “service recipients” (Sandhya, Bhumi), “beneficiaries” (Nima, Nabina, Bhumi, Gopal), “children” (Sandhya) during the interviews. Sometimes two or more different words were used in the same sentence. Similarly, all the staff members who are survivors of trafficking used the term “trouble” when talking about trafficking (e.g., repatriation was called “coming back from trouble”).

7.3.1 Long-Term Challenges to Reintegration

From the interviews, we heard accounts of the long-term challenges that the sisters can face after they leave the shelter home. These include the limited opportunities for the sisters to gain formal education and training as well as financial uncertainties. We also heard accounts of the difficulty to push against the deeply ingrained patriarchal values in Nepali society that subjugates survivors to persistent stigma and discrimination.

Formal Education and Training

Rita was enrolled in a school before she was trafficked and resumed her education after repatriation. Education was highly valued and the staff members saw it as a means to help the sisters do develop agency, “*Most of them [sisters] are uneducated. We need to support them, provide education to help realize who they are and their capabilities, to know ‘What can I do?’*” The staff members shared pride in SO’s recent success in enrolling the sisters in schools. Just before the lockdown, of the 11 survivors in the shelter home that Rita supervised, six were enrolled in school, ranging from grade 1 (first year of school) to 10.

However, we also heard accounts surrounding the uncertainty of the sisters’ continued enrollment in schools. SO had secured donor funds to support Rita to enroll in a school and later in a college. Her continued access to those resources was possible because she remained associated with SO; the continued association provided social support, a source of livelihood, as well as, resources for her to chart a pathway in the future. Many survivors are unable to maintain such connections which restrict their access to formal learning opportunities. For instance, the sisters may not continue their schooling if they go home, a concern that Sandhya shared, “*They can’t study if they go home ... for many, that is true. If we can’t ensure their education, we need to find other organizations that can provide it to the children*

[sisters].” Formal education is expensive, making it difficult for families with limited financial resources, which is often the case of the sisters’ families [223], to enroll their children in school. Sandhya herself had struggled to ensure that her daughter and her nephew—whom she had adopted after the child’s parents died during the April 2015 earthquake⁴—remained enrolled in schools, “*I constantly worry how to keep her in school. If she studies, she can do something. Thinking that I try all I can [to keep her in school],*” adding further, “*I do all I can to get them the education they need. It is a constant struggle.*”

At the same time, the staff members acknowledged that all the sisters may not be interested in pursuing formal education. Instead, they argued for a more responsive “survivor-centered” approach to training and education. Sandhya, for instance, felt that approaches needed to be adaptive “*by understanding their [the sisters’] interests. Some will say, ‘I want to study’ or ‘I will become this and that’ and we have to support that.*” At the same time, she shared her experience with some survivors who “don’t even try to listen. ‘Our pain is with us, keep yours with yourself’, they say. They even say, ‘Don’t talk about these things [education and training] with us.’ It is very difficult.” Nima echoed similar belief to provide diverse experiences based on the sisters’ interest so that they could “explore various fields like law, journalism, social work, and tourism as a trekking guide.” She, however, noted that SO had been unable to provide support for such diverse explorations adding that they needed to support the survivors to “*have self-realization to be able to handle emotionally strong experiences. They also need to think about their future and reflect on ‘What do I need to do for a better tomorrow?’ The future envisioning tool was useful for me, something like this could help them.*”

⁴https://en.wikipedia.org/wiki/April_2015_Nepal_earthquake

Job and Financial Strength

The limitation on education and training also raises concerns about the sisters' long-term financial prospects. Those who undertake urban reintegration, such as Rita, have very limited sources of support outside SO. The skills they have developed at SO such as crafting and cooking, while valuable to few, holds limited value in the long run. Indeed, discussing with the staff members and looking at the current roster of staff at SO, Rita is an exception, not the norm; she started from a position leveraging her existing assets—her skills of cooking—and slowly learned and built a career pathway to become a shelter home coordinator. It is also worth noting here that her move up the organization's hierarchy was facilitated by supportive staff members.

Financial strength was also seen to be a critical factor influencing the family's decision to accept the survivor. Reflecting on this, Nima shared, “*Ultimately, the survivors want family reintegration, so we try family counseling. It does not always work and in those cases and we have to push for urban reintegration... The main thing to look at is whether she [survivor] has money. She will face a lower social stigma if she does. Education and job play a big role.*” She further added, “*If she [survivor] does not have a job, families will say, ‘She’s already dead for me. Please don’t contact us again.’*” Reflecting on a survivor's case from a few years ago, Sandhya echoed similar value where the family had reversed their decision after learning that the survivor was financially well off:

One of the child's [survivor's] family did not agree to even speak over the phone. The child went through urban reintegration and got a nice job. That's when the family started showing up, reaching out to her. They came to her when she was in a better position when things were looking good for her. Things happen to that extent. There are people like that who despise the child and when that same child

can work on her own and does well, they will come back saying that the child is a good person.

In fact, the member staff—staff members who are survivors of trafficking—themselves had struggled or continue to struggle financially. For instance, Bhumi had married after reintegrating but her husband was abusive. When her husband left her, she had a son to take care of and had no source of financial support. She turned to SO for help. Even now, she shared that she struggles financially to take care of her child. She had plans to enroll in legal studies but was concerned that she would not be able to dedicate time to studies, in addition to her work which she had to do to earn a living and take care of her child. She added that to reach the goal she would “need support from all things that touch our lives.”

The staff members hinted at the uncertainty of crafting to ensure financial stability for the sisters in the long run. From their account, we hear the rationale for crafting emerging due to constraints of resources and limited alternatives. For instance, Shreya emphasized the psychological benefits of crafting while accepting its limited scope for financial gains, “*Rather than making assumptions on whether it will sell or not—it may if it can take up market slowly it can provide some income generation—but also [provide] psychological healing because it has colors and requires concentration. To make it [handicrafts] requires concentration which I feel can be beneficial in healing, [in building] personal relationship and understanding, and at a personal level, to build up confidence.*” Similarly, Nima alluded to the lack of attainable alternatives and shared her belief that crafting can promote a sense of independence, “*Sewing-knitting is better than nothing. You can use it in your household and use it even if you don’t sell it*”, adding, “*if you think in creative ways, you can move forward.*” However, she acknowledged the limitations stating, “*How much can they learn? They can only go so far with it [crafting]. We don’t go deep as well.*”

Persistent Stigma in Society

Rita has a family and lives with her son, husband, and her in-laws. Even after such a seemingly successful reintegration, she fears that her husband and in-laws will shun her if they come to know of her past trafficked life. This fear imposes constraints on her interest to share her stories with the public. It encapsulates how deeply ingrained the stigma against trafficking survivors is in Nepali society. Indeed, discrimination against trafficking survivors by members of Nepali society frequently came up during the interviews, leading Rita to wish for a society that treated survivors “as a normal person”:

I wish society would improve compared to now. It will probably happen. I wish for it to happen soon. May people consider me as a normal person, not just me but all who have been trafficked, all who have fallen into trouble, sisters and even male, all of them. May it look at us all in a positive, nice way. May they accept us just as they would a normal person. They don't have to look at us as a different being, just as a normal person, like that. We don't want to be praised like they don't have to say 'Waah, waah' (overt praise) for the things we do, they don't have to say like that. All I want is for them to treat us equally. I wish for that kind of society.

However, the staff members noted that the societal changes were difficult to realize. Sandhya, for instance, saw the persistence of the stigma against trafficking survivors as she recalled the similarity between the time when she was reintegrating into society in 1996 and now:

In many cases, the way society looks at us has changed compared to before. A little bit has changed. But even so, for some children, I can't even locate their houses because they have been [trafficked] at such a young age. If we take her to

her village [to locate her home], there will be not less than 20-25 people who will come to see and the way they look is very different. I keep thinking people used to look at me like that and even now they do the same to this child. What has this child done to be looked upon like that, in that way? That perspective is still there in our society even now. Even if they do not say it out loud, they still mistreat [survivors]. It is slightly better than before, many understand our issue more, that's there. But we don't see a change in their behavior. For many, families still don't take them in. They cannot go back to their village community. That kind of problem still persists.

We heard similar expressions of frustration in Nima, Narbada, and Rita's account of the way society seemed rigid and unchanging, leading Nima to remark, "I sometimes feel like pouring Harpic [liquid toilet cleaner] in their ears and cleaning them [their thoughts]. People's perception does not change even after they understand the issue, bringing it [change] to practice is hard." She felt that people in power, "even when there is a woman CDO [Chief District Officer]" discriminate against survivors. A CDO holds significant power in the district and can make provisions to obtain citizenship certificates for the sisters, which remains a daunting challenge for many [191]. Rita believed that the change was lagging because of the inaction of powerful political actors:

"our voice is too small for anyone to heed and these issues [human trafficking] do not touch powerful people so they don't care. They have other kinds of problems to think about. They don't see this as a problem so how will this ever be solved?" adding, *"Unless I have a magic wand, I don't think there will be changes in society's perspective. (both laugh) ... I don't know what to say. If I can do magic, say "chhumantar" [a magical spell] and change people's mind, then maybe there will be a change. Otherwise, I don't think there will be significant change*

(laughs).”

The persistence of the stigma also meant that the staff members could not follow up with the survivors after they leave the shelter home. Being associated, even remotely, with anti-trafficking organizations could raise suspicion among community members and put the survivors in a position of harm. When visiting survivors in their hometowns—they only visited a few earlier—the staff members introduced themselves as “elder sister who they had known from earlier days” to protect the survivors from being associated with anti-trafficking organizations. The staff members also shared the various attempts they had tried “to track the mobility of reintegrated survivors for situational analysis and to maintain a relationship.” The reintegration officers maintained a fake Facebook account to reach out to “few survivors” but they soon stopped. Nima shared that SO had also explored WhatsApp⁵ and Viber⁶ but chose not to do it because of the potential risk of leaking the survivor’s identity to others.

Deeply Ingrained Patriarchy

All the staff members recognized that the deeply ingrained patriarchal values were the root cause of the challenges that survivors face in reintegration. We heard the uphill battle ahead to bring change such as in Bhumi’s expression where she raised concerns about the effectiveness of awareness programs that anti-trafficking organizations conduct:

It is very difficult until we change the patriarchal perspective. We can not even change the perspectives of those who are in power. Society’s perspective has improved compared to the past but not enough. People need to see the issue with

⁵<https://www.whatsapp.com/>

⁶<https://www.viber.com/>

self-conscience. That's critical. Education is not enough. Awareness is helpful but it can only go so far.

A common perspective shared by the staff members involved the fact since society discriminated against women and blamed them for being trafficked, it made survivors hesitant to prosecute. Even after filing cases against traffickers, many survivors withdraw or recant their accounts. The staff members called this “being hostile”. According to Nabina, to avoid survivors from being hostile, SO undertook “legal prosecution steps only after survivors have become mentally ready and strong.” This resulted in a poor prosecution rate which the staff members acknowledged was a weakness they would like to work on. Nonetheless, the prevalence of societal discrimination against women had added challenges in reintegration and perpetuated trafficking or, in Bhumi’s words “encouraged traffickers to do whatever they like.” In fact, seeing the importance of prosecuting traffickers, as shared above, Bhumi planned on becoming a legal expert, building on her experiences as a health and legal cases expert at SO.

The deeply ingrained patriarchal values in Nepali society also complicated services for male trafficking survivors. Nepali society overlooks the reality that men can be trafficked. As Nima put it, “When men are trafficked, it is called ‘foreign employment gone wrong’, when women or transgender face similar problems, they are said to be ‘trafficked.’” She further added, “They will say things like ‘It doesn’t happen to men’ or ‘Men don’t cry’. Society’s perception that men don’t suffer [from trafficking] makes it difficult to provide services. Funding is also difficult for male rehabilitation.” Likewise, Aashma shared that it is very difficult to convince the police that men have trafficked and equally difficult to encourage men to come forward to prosecute traffickers. Indeed, we see a contrast where the recent TIP report mentioned male trafficking as a major issue in Nepal [168], with men accounting for 21.8% of trafficking survivors. However, as Rita shared Nepali society dismisses the issue:

If it is a male, the discourse changes 'This poor thing, he did nothing wrong. Even though he was a male, this happened. He didn't know about it, this male. Even if he was trafficked, he was not exploited [sexually], this male was not. Maybe they gave him a lot of work to do. They must have beat him or, at worst, tortured him a bit. They didn't exploit him physically.' They will think that way. Even if they accept that they are sexually exploited, they will say 'He is man, it's not an issue. Nothing happens whatever a man does.' They will think of it that way, a different kind of respect and distance is placed on a man's experience.

Rita further highlighted the gross inequality in how society sees men and how it sees women who have been trafficked:

To begin with, our society is masculine-centered, a patriarchal society where whatever a man does is said to be very good. Keeping that society in mind, we know that men are also trafficked just like women. When it comes to women, the discourse just stops at sexualization, she did so and so, and her behavior was this and that, others behaved with her in so and so ways. They look at it in that way. When we come back from trouble, we have to face stigma and insult and so much abuse here and there. We have to face all that. But men don't. 'Poor thing fell into the trap unknowingly. He is a man so it's not a big deal. His ijat⁷ [(family) honor] is not lost. It's the girls and women whose ijat is lost. Nothing happens to a man.' Society and even families have that kind of thought.

Rita, Bhumi, and Nima highlighted the difficulty to challenge the patriarchal value by reflecting on the challenges they face at home. They all had faced difficulty in sharing that they work in an anti-trafficking organization. Nima, for example, shared the challenges of working

⁷For a more detailed engagement on social stigma and societal rejection, please refer to [179]

as a woman, “*People asked my in-laws ‘How much does your daughter-in-law keep going out [of the house]?’ The same level of acceptance is not there between men and women.*” She further shared that having two responsibilities—of managing her home and office work—had an impact in slowing her career trajectory, and shared the struggle by lamenting that “*they [in-laws] frown when I return from work late, even after I complete all my household chores.*”

Changing societal perspective is difficult and short of magical spell to change people’s minds, as Rita wished for, the moves we can make have to be incremental. In this regard, a potential approach can be by highlighting that men too are trafficked. It could push back on the stigma against trafficking survivors. However, care has to be placed to ensure such a move does not undermine anti-trafficking efforts for women and other gender persons.

7.3.2 Survivor-run Identity as an Organizational Asset

The staff members shared pride in being part of the world’s first anti-trafficking organization. I had shared our previous paper with Shreya where I had used the term “Survivor Organization”, noticing this she remarked, “As soon as you say Survivor Organization, people will know this place (SO). It is already known as the world’s first survivors organization. It was recognized by the 2007 TIP report.” Nabina, a professional who was working at SO, believed that the survivors who go on to become staff members at SO are the greatest asset of the organization:

Among the staff members too, Aakashji⁸, we technical staff members are not actually the strengths of SH. Because we are mostly temporary. Although I say temporary, I have been here 5 years already! (laughs). But we ultimately jump somewhere or other. Survivors [who have become staff], also may jump as their

⁸ji is added at the end of the first name as a form of respect. It is a fairly common practice in Nepal.

strength grows. There is no question not to jump. In fact, we have to support them to jump and move forward. But more than us, their stay will be longer and because of that when I think of assets, I think of them more than us.

Bhumi felt that being a survivor-run organization meant that it was “*an institution that understands the essence of the issue.*” Similarly, Rita, for example, on reflecting on the organization’s strength mentioned, “we are working for ourselves. Others may pity us but since we have suffered and gone through the experience, we understand the pain.” Indeed, all the member staff appreciated the opportunity to work in SO on issues that had deeply affected their lives, as we hear in Sandhya’s account:

The kind of problems I faced, when my village-community did not take me in, I work on that same problem. I look at how the sisters’ family is doing, what kind of work they do, and whether we can send the child back home. We suffered. I have gone through those problems in my life. So I think of things like ‘What do the service-beneficiaries do when they go back to that community?’, ‘What will the family do to her [survivors]?’ These are the things that I look at. When children come to us and we seek reintegration, I go to villages and assess these things.

A shared understanding among the staff members was that having survivors of trafficking in the team promotes empathy towards the issues which they saw as being critical. Sandhya felt that other anti-trafficking organizations need to provide training to their staff members so that they develop a similar capacity to empathize and care, “Other organizations need to understand the essence of the issue. They should treat [survivors] similarly, by understanding their pain and suffering.” When asked how organizations could do so, she added, “Care needs to be placed in hiring staff members. Then they need to provide training. It will make the

staff understand [the problems surrounding reintegration].”

Similarly, Bhumi shared pride in being able to support survivors to become staff members, “In the past 11 years, 5-6 of the children from the time when I was the warden [of the shelter home] have become staff members. Some are senior to me.” Likewise, Gopal mentioned that his biggest achievement at SO was to mentor Rita.

However, the staff members also shared that SO had not been successful in supporting survivors to become staff members in the organization in the past three years. Nabina saw this as a weakness of the organization to mobilize its resources, “We see less capacity in resource mobilization. For the past two-three years ... we have not been able to support survivors to become technical staff members. That is a way in which we are lacking in resource mobilization, a mistake on our side.”

Limited Role for Member Staff

While survivors who become staff members were seen as an asset, we noticed a hierarchy between professionals who are staff members (called “technical staff”) and survivors who were part of the staff team (called “member staff”). The technical staff manage the project design and proposal work, with limited involvement of the member staff or the survivors:

We [technical staff] are the ones who write programs at SO. You know that. We all technical staff members who are at a bit of a senior level, those who supervise projects, are the ones who lead and design the project proposal. Mostly it’s us. In the first design phase, in all the various drafts that are created, we are there. Till the stage that the grant is approved, we are the ones doing it.

Program design is a highly influential position in the organization. It involves creating project

plans and submitting them to donor organizations. Funded programs are the ones that SO eventually implements. Thus, the services that are available to the sisters are influenced by the programs written by the staff members. To date, none of the member staff have been involved in the designing programs which highlight SO's lack in "resource mobilization".

As we probed into understanding the barriers to including the member staff and the survivors in the project design process, we heard a range of institutional and organizational barriers. These accounts highlight the power differences between the staff members, especially the technical staff, and the survivors.

Individual deficiencies such as their lack of education or critical thinking abilities were mentioned as significant barriers in involving the sisters in the project design process, as heard in Nabina's comment:

All people at all levels to come to a single table to discuss is not possible. People understand according to their levels and they talk according to their level. In writing projects, they have to have some critical thinking abilities, someone who has understood a little bit, knows a bit, that level. Sisters who have recently been rescued, who have survived trafficking, if we insist on bringing them to the [planning] meeting and get them to participate, the meeting will not be successful.

Other staff similarly believed that the sisters would not be able to generalize beyond their experiences, "If you ask the sisters they will say 'we don't know anything'."

Ironically, having survivors of trafficking in the staff team seemed like a barrier to including survivors in the project design. Gopal and Nabina both mentioned that since some of the member staffs are consulted during project design and since member staffs are survivors of trafficking, they are, effectively, including the survivors in the project design process, "they [member staff] feel the same problem [as the survivors] so we get what is needed when we talk

to them.”

More critically, we noticed organizational inertia in changing the process that had been working. For instance, Gopal shared his concerns about the lack of a precedent, what he called a “standard operating procedure” for bringing the sisters in the project design process. Moreover, SO had been fairly successful in obtaining grants, indicating that the current process was working and hence there was little incentive to change it, “*It is because those who are supervising the project are doing such a good job that we are constantly getting new projects or opportunities to work on.*”

The discussion on using the assets—member staff and survivors’ knowledge—in the project design process drew forth discussions of structural limitations and power that were beyond our reach. The staff members hinted at SO’s precarious financial position which made it risky to try new approaches as Nima shared, “*We lack in core funding so we can’t say no to projects. We are needy a lot.*” Gopal, similarly, emphasized, “*We cannot solve the challenges [of including survivors] when depending on external resources and donors. We need to be self-reliant first.*” Such forces which remain outside the community’s reach pose a challenge on assets-based design: how do we interact and engage with these external forces when our approach of assets are limited within the community?

Member Staff’s Desire to Upskill

None of the member staff had been involved in the designing projects. Rita was the first one who had proposed to do so. However, she felt that she needed to learn English and become better at communicating her work to excel as a project manager. SO relies on donors, especially international donor organizations, to fund its programs. The donors typically communicate in English so donor-facing jobs such as project manager position requires

proficiency in English.

All the member staff reported wanting to learning English, and all had, at various times, tried to learn English. For instance, Bhumi shared that her concerns of not progressing in her career because she could not communicate with “visitors” (donor organization staff members) sharing “It would be wonderful for my career to be able to communicate with visitors [in English].” She further shared that she sought support from her daughter and the staff members at SO to translate things to English when needed. In our chats over WhatsApp, Bhumi could type Romanized Nepali.

Limited financial means and limited time were cited as the reasons they could not learn English. Bhumi, for instance, found a “basic course but it cost 8000 rupees” which she did not find to be worthwhile. Rita similarly felt that she was stretched too thin with work, college, and household chores to afford an additional English classes. She wished for a program that could be built-in the SO’s office hours so that she could learn English without having to dedicate additional time.

Moreover, Rita particularly wished for a Nepali-speaking instructor to teach her English. When I inquired why she wanted a Nepali-speaking instructor, she mentioned that a few years ago an “international volunteer group” had provided English lessons at SO. However, she felt that the instruction was not effective because the instructors could not understand her or the other member staff. In fact, she encouraged me to introduce an English learning program at SO sharing that “there are many member staffs who are interested [in learning English]. There are some technical staff members too who have mentioned that they would like to learn English.”

The member staff mentioned that SO provided occasional training to learn new skills but had not been able to sustain classes. We noted that a lot of programs, both for the sisters

and well as the staff members, were realized only when some external party (such as the international volunteer group) had were willing to provide the service. This highlights a contentious position of the organization in terms building one of its core assets: survivors who become member staff. In fact, Rita in critically reflecting on SO's assets noted that "we [SO] do not have the same level of competence because we are not in technical things as a survivor organization. We have limited technical education, limited." Supporting member staff and the sisters to build technical skills, including skills to communicate in English, remains an unexplored avenue for the organization.

7.4 Discussion

We continue to learn more about the complexities surrounding reintegration efforts at SO. Hearing the accounts of the staff members who have reintegrated into society post-trafficking, we learned about the myriad of long-term challenges that survivors face during their reintegration journey. In particular, we note that most of the opportunities are tied to the organization. Bhumi and Sandhya both had returned to SO years after reintegrating because they found limited support outside the organization. In this sense, we see an association with SO as a potential asset for the sisters moving forward.

However, the stigma in society against trafficking survivors creates a formidable barrier for the organizations to reach out to survivors after they leave the shelter home. Similarly, the risk of raising suspicion in society by being associated with an anti-trafficking organization barred sisters from remaining in touch with the organizations. Supporting connections in such constrained settings is a problem that falls under the purview of HCI and CSCW design space. In this case, the design for connection would have to ensure that the sisters are in control and comfortable with the risk associated. The need is analogous to the need for

privacy under a large-scale surveillance context. Brunton and Nissenbaum make a case for obfuscation as a design response to protect against such surveillance where the users have little agency to opt-out and there are no facilities to support privacy [25]. They further argue that “obfuscation offers a means of striving for balance defensible when it functions to resist the domination of the weaker by the stronger” [25, pp. 83]. Other work has presented case studies where such deception is considered as a form of empowerment [230]. In this space, we believe, the opportunity to reach out to organizations for support without the risk of revealing their identity as a trafficked person could indeed empower the sisters.

From the interviews, we learned of an organizational hierarchy that separated professional staff (technical staff) from survivors of trafficking who were part of the staff team (member staff). This hierarchy was most pronounced when it came to who gets to set the organization's agenda vis-a-vis the projects that are designed for the sisters. The technical staff designed and proposed the projects. While they consulted member staff during the design, the member staffs' involvement seemed limited. The staff also shared several barriers in including survivors and member staff in the project design process. These barriers included individual deficits such as the survivors' limited educational level or their inability to think beyond their own problems. At the same time, hearing the member staff, we learned of the challenges to upskill which necessitated support in, as Bhumi phrased it, all things that touch their lives, including familial, financial, and social support. Such support was limited.

It is also worth noting here that we were able to form a relationship with SO but not with another anti-trafficking organization who we call PO. A significant influence on our relationship was that the staff members cared for the sisters. While SO was also number-driven like PO, they were less driven by numbers and more by inter-personal relationship. We surmised that the difference emerged from SO being a survivor-led and survivor-operated organization (see Chapter 3).

7.4.1 Assets and Structural Limitations

In the staff members' accounts, we hear of them holding two conflicting beliefs at the same time. On the one hand, all the staff members believed that SO's greatest strength was that it was run and led by survivors of trafficking. Member staffs were seen as an asset that helped make the organization more empathetic, enabling the organization to work on issues that mattered. In this light, we now believe that there is a broader sense of community, involving both the staff members and the sisters, that can be supported to promote greater mutuality between them.

On the other hand, the hierarchy within the organization between professional staff members and the survivors who were part of the staff was clear and explicit, justified through a discourse of deficits. The member staff's limited involvement in project design has several repercussions including that they do not have a platform to use and showcase their existing skills and knowledge. The lack of opportunity also reinforced the beliefs around deficits, potentially forming a vicious cycle. We believe that Rita's proposal to become a project manager is significant for it can open paths for other survivors to follow.

The presence of the conflicting beliefs among the staff members highlights the long-term challenges that survivors are likely to face even when they are associated with a responsive and caring organization like SO. As we heard from the member staff, the survivors will encounter intersecting penalties arising from various factors, including limited literacy level and technical skills, challenges surrounding the stigma in society, balancing work and family, and financial constraints. Anticipating such structural inequalities, we have to ask ourselves "How might assets play a role here?"

While assets empower communities from within, the structural limitations outside the community are what we call *realities of the ground*. In such a case, a narrow focus on the

positive and productive element of assets may lead us to overstate the role of assets and structural inequities that surround the issue. We contend that assets-based design needs to support community movement forward while managing the structural limitations. There are two inter-related roles: (1) supporting agency building and self-determination steps by highlighting the existing assets (2) facilitating critical awareness of their assets *including* the structural limitations.

In our previous studies, we were able to support the sisters to act in the space on their own terms and decide how they wanted to participate in the activity. By undertaking participatory approaches in our engagement with the sisters, we were able to support them to have agency in their interaction with us. Similarly, we sought to situate their assets, such as their crafting practices and their knowledge of computing, within the broader context. The ensuing discussions around both the potential and limitations of the assets suggest that we were able to facilitate a critical awareness. In this study, the staff members brought to our attention both the assets that the organization, specifically as a survivor led organization, brings to the survivors and some structural limitations that prevent the organization from building on those assets as much as might be possible. However, the exploration was limited. COVID-19 cases spiked around mid-October and we had to terminate our study. We could not follow up later on. Much work is needed on this front.

7.4.2 Future Work: Playful Interactions to Showcase Knowledge

We believe that supporting the sisters and member staff to be part of the project design process can help build the sisters' agency. However, inferring from our study, a straightforward inclusion into the design process seems unlikely. It was hard to gain the trust of the staff members to work with the sisters. From one perspective, it suggests that the staff

members have compassion for how vulnerable the sisters are. We believe that a way forward would benefit from utilizing the staff members' prior experience as survivors to increase a sense of shared community and opportunity. In particular, through the interview process, our shared conversations with the staff members draw attention to their own beliefs that the sisters had untapped implicit knowledge and skills that could become valuable resources in designing projects.

To this end, I had begun co-designing a game with Rita and Nima to facilitate opportunities for the sisters to express themselves and share critical thoughts or values that may inform project design. The game involved an adaptation of snakes and ladder, a popular game in Nepal, that is known as "chutes and ladders" in the United States. We added collaborative elements to allow the players to connect and share with others (see Fig. 7.1). It relied on sharing knowledge and appreciating other peoples' assets (see Table 7.2).

We present the game to the staff members and the sisters to play together. It would allow the sisters to share thoughts about the shelter home and their lives with the staff members. As part of the game, the staff members and the sisters could ask questions to one another as well. We hypothesized that the questions and the discussion can support the sisters to slowly share and contribute to the project design process without disrupting the ongoing mechanism significantly. The playful nature of the game reduces the pressure on the sisters to deliver something profound to the staff members. Likewise, it aims to limit the load on the staff members' work while providing them an opportunity to learn from and about the sisters.

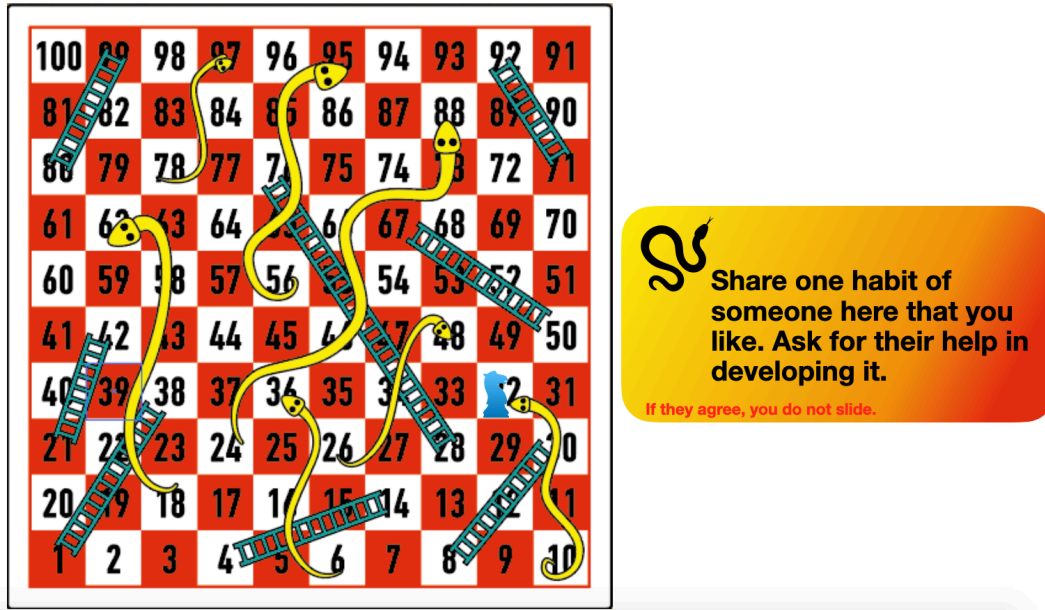


Figure 7.1: When a player lands at a cell with a snake or a ladder, they pick the corresponding card from a deck. The player answers the question on the card. A snake card will involve another person present in the space; that person will decide whether the player slides down the snake based on the player’s answer to the question.

Table 7.2: A sample of questions that we had come up during the design process. If a player lands on a ladder, the player answers a personal question about their lives in the shelter home or their vision of the future. If a player lands on snake, they answer relational questions that involve other people. The group can modify the questions before the game.

Ladder (personal questions)	Snake (relational questions)
Share one habit that you have either overcome or would like to overcome.	State a habit that you like in someone here. Ask for their help in developing it.
What advise would you give your 1-year-younger self?	Share something that you have in difference from the person besides you.
In the next five years, what ability would you like to develop?	Select one person here and convince them to swap lives with you.
What do you recollect that you recently did that like you would to do differently?	What is the nicest thing someone here has done for you?

7.5 Chapter Summary

Because of the COVID-19 outbreak, we pivoted our research direction to focus on the staff members, learning about their personal beliefs and values and their professional aspirations. We also inquired about their relationship with their sisters and discussed the possibility of including the sisters in the organization's project design process. Project design involves designing programs for the sisters who are at SO and we believed that involving the sisters in the project design process would support the sisters to showcase their existing knowledge and skills while also developing new skills that may be of value in the long run.

From this study, we learned details of the long-term challenges that the survivors may face including limited opportunities for formal education and training. We also noted that most of the opportunities are tied to the NGO and necessitates ways for the sisters to connect with organizations after they leave the shelter home, a difficult challenge considering the stigma placed against people who are even suspected to have been trafficked. We also learned about different ways in which patriarchal values manifested in complicating reintegration efforts.

We also encountered a hierarchy within the organization that placed the staff members who are survivors of trafficking at the margins of the organizational agenda-setting process. All of the staff members shared that the organization's biggest asset was that it was run by survivors. They shared pride in being part of the first survivor-led anti-trafficking organization in the world. At the same time, the difference between member staff—who are survivors—and technical staff—who are professionals—was clear and explicit. All of the projects were designed and implemented by the technical staff members; none of the member staff have yet handled projects. We noted that the difference embodies the intersecting penalties that survivors may face once they leave the shelter home. This led us to discuss ways in which assets could work while balancing several structural inequalities and limitations.

Chapter 8

Discussion

Increasingly, HCI scholars are exploring moves away from the needs-focused approaches such as those inherent in human-centered design to a design approach that prioritizes the assets available to the users [33, 116, 173, 241, 242]. Broadly, asset-based approaches call for a reevaluation of our methodological stance, one that requires us to focus on what the community already has and seek pathways to build upon those strengths. It relies on a deep understanding of people's strengths and capacities, necessitating moves to encounter people in the complexities of their lived lives.

In our assets-based design engagement, we conducted a series of four studies that engaged with anti-trafficking organizations and sisters living in the organizations' shelter homes. These studies allowed us to understand the complexities surrounding reintegration efforts in Nepal and make incremental moves to explore possibilities for socio-technical systems to assist the sisters in their reintegration journey. Particularly, we examined ways in which socio-technical systems can use and build upon the sisters' existing assets towards pathways that are enduring and beneficial in realizing dignified reintegration.

Our adaptation included participatory methods to understand the different participants' values, beliefs, and goals. The inclusion of participatory methods allowed us to prefigure control and agency in our methods. These were the values that we wanted to achieve through our engagement. The participatory nature of our work also necessitated the need to balance emergent tensions in the setting around decision making and goal setting.

8.1 Research Questions

My interest in working with women rescued from sex trafficking had two origins. One lay in a more general interest in women’s empowerment in Nepal. In talking with organizations working with women subjected to domestic violence, a staff member commented that at least the women he worked with had families, while women rescued from sex trafficking often did not. The other origin of this work lay in the HCI, CSCW, HCI4D/ICTD, participatory design, and development literature, which has increasingly concerned itself in recent years with the challenges in working with vulnerable populations.

Drawing on these sources, at the beginning of this dissertation (Chapter 1), we posed three major questions: (1) What conditions influence the situation of sisters in the shelter homes in Nepal?, (2) What conditions influence the possibilities for our interventions with sisters, particularly their strengths?, and (3) How should technology designers and researchers position themselves in a sensitive setting to ensure that the voices of the vulnerable are heard?

These questions promised to help us understand whether and how socio-technological systems could help without putting the sisters in a position of greater harm. In particular, we conjectured that an asset-based approach could provide powerful help. This case is of particular interest because the sisters have few of the assets of stability and community that other explorations have built upon. The situation is under-resourced, highly constrained, and potentially dangerous for the sisters. The situation had the potential to add to knowledge in the field by identifying *channel factors* [139], elements of action that appear to be details but have an inordinate influence on outcomes. *Realities of the ground* can lead to a better understanding of how programs of intervention need to satisfy the requirements and possibilities of a situation. The overarching question is concerned with how to “thread the needle” of various design tensions [221] in order to act responsibly.

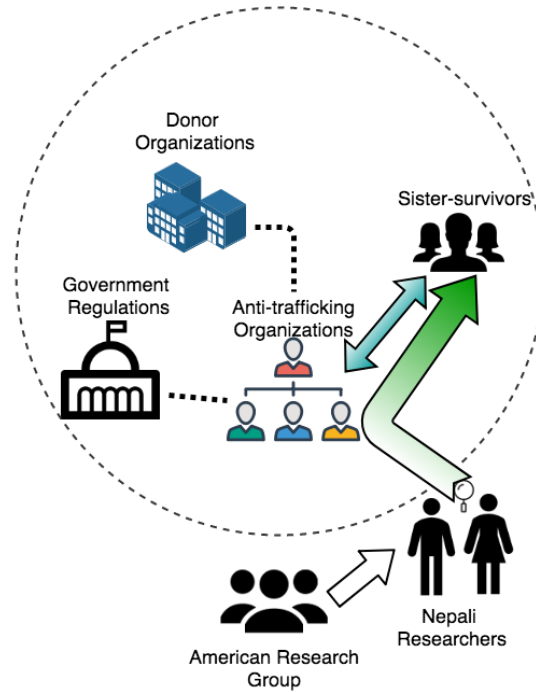


Figure 8.1: The context of the study. We are outsiders trying to develop an understanding of the complexities surrounding anti-trafficking efforts in Nepal.

We now reflect on our four engagements with the sisters and the anti-trafficking organizations to answer these questions.

8.1.1 Conditions Influencing the Situation of the Sisters

We identified multiple factors influencing the sisters' lives in the shelter home. These factors worked at an individual (or micro) level, institutional (or meso) level, and macro (societal and global) level.

Individual-level Conditions

At an individual level, the survivors face intersecting penalties that emerge from discriminating processes and systems [37, 45, 240] that are widely prevalent in Nepali society. Rita,

for example, shared the various discrimination she faced based on gender, caste, class, and her trafficked past. The sisters we worked with were young and many of them had limited text literacy. They relied on the anti-trafficking organizations that provided them with a protected living home, skill-based training, and support during reintegration. While family reunification was the top priority for both the survivors and the organizations, it was not always possible. Many have been shunned by their families and, as we learned from the staff members' accounts, they have very limited sources of social support outside the organization.

As part of the anti-trafficking organizations' rehabilitation programs, the sisters were learning to create local handicrafts. Both the organizations where we visited had tried other skill-based training programs but were not sustainable due to various reasons. In our engagements, we heard the sisters' ambivalent feelings about continuing crafting in the future. None of the sisters in the first group were enrolled in school. In that group, we noted that the sisters wanted to continue crafting despite knowing that it had limited demand in the local market. In contrast, that some sisters in the second group and all the sisters in the third group had started attending a morning school. Their school enrollment seemed influential in the sense that most of the sisters who were enrolled in a school did not see crafting in their future (see, for example, Table 6.1). Questions remain around whether the sisters can continue their formal education especially after they leave the shelter home. However, their enrollment in school while they are at shelter home can be a valuable asset that can be built upon towards dignified reintegration.

We also found that the sisters have limited exposure outside the shelter home. In all our studies, we heard the sisters' wishes to connect to people outside, especially to family and friends. This aligned with their aspirations to achieve a dignified reintegration. However, they could not do so. They did not have access to phones or computers, a decision that the organizations had taken to keep the sisters safe. The sisters had limited knowledge about

crafting and its position in the broader context of SO's operations. Only one sister we worked with had a bank account. Moreover, the sisters mentioned that they have a tight schedule (e.g., attending school in the morning, learning crafting during the day, and attending a trekking guide training program in the evening) which restricted the opportunity to explore new things. All of these, we believe, reinforced the sisters' reliance on the organization.

However, many of the sisters cannot continue associating with the anti-trafficking organizations after they leave the shelter home. The widely prevalent stigma against survivors of trafficking forced many survivors to disassociate themselves from the organization lest it may raise suspicion in society. For the same reason, organizations like PO and SO, both of which are widely known in Nepal as anti-trafficking organizations, did not follow up with the survivors after they leave the shelter home. The survivors who were part of the staff had either chosen "urban reintegration", that is living in a city like Kathmandu rather than going back home, or came back to Kathmandu later on and joined SO. Organizations also did not follow up with the survivors.

Institutional-level Conditions

Our findings highlight the significant influence of the anti-trafficking organizations on the sisters' reintegration journey. As mentioned above, the sisters were reliant on the organization. The programs that were made available to them (e.g., trekking guide training program or enrollment in school) were arranged by the organization. These programs often came into being because of another organization's involvement (e.g., the sisters' enrollment in school was arranged by another organization), suggesting that were not necessarily tailored to the sisters' interests and existing strengths.

The organizations were reliant on donors for their programs. This could be seen in the

organizations' drive to gather quantitative numbers and share survivors' stories. During our initial interviews, we also saw hints of a sense of competition between the organizations which, we believe, stems from the limited resources available to the organizations (e.g., there are only a few international funding agencies). The need to appeal to the funding agencies also had enforced the practice of highlighting the survivors' deficits (e.g., by sharing stories of struggle and pain in the annual reports). It could also be inferred from both organizations' priorities to involve technology (e.g., facial recognition system at borders); its use could be appeal to potential donors. However, despite the reliance on quantitative measures and creating reports for donors, we found that the organizations had ambiguous definitions of what constitutes a successful reintegration. Indeed, as we heard in the member staffs' accounts, survivors continue to face long-term challenges post-reintegration, raising concerns on the effectiveness of the programs.

Our observations also suggest that the programs for the sisters are often driven by constraints and limitations. For instance, the anti-trafficking organizations had already invested in setting up the crafting centers so they continued to provide handicraft training to the sisters despite knowing of its limited impact in supporting the sisters to become financially stable. Trying new approaches requires resources. However, organizations are in financially precarious positions. This came to the fore when SO was forced to shut down one of its shelter homes after the COVID-19 lockdown when few grants allocated to them were withdrawn. Moreover, new approaches are not certain to work; they could also have unforeseen consequences such as eroding the populations' confidence and sense of capability. SO had tried Photoshop and computer training by hiring an external expert just before our initial study. The sisters reported being overwhelmed by the experience, leading the staff members and the sisters to believe that computers were not for the sisters.

We also found that the programs were designed for the sisters but without their involve-

ment. We learned of a hierarchy in SO, separating professional members of the staff from the survivors who were part of the staff (who were called “member staff”). The professional staff members—called the “technical staff”—designed and proposed programs to donor organizations. Those that get funded were implemented. The member staff as well as the survivors had limited opportunities to provide input in the program design. The staff members mentioned individual factors (e.g., survivors’ limited education and inability to generalize), technical challenges (e.g., lack of standard operating procedure), and organizational issues (e.g., financially risky to change an approach that has been working so far). All of these suggest, as of yet, there is limited room for the sisters to obtain services and programs that are tailored to their needs and strengths.

Macro-level Conditions

Our work was limited to the individual and institutional level. However, during our study, we noted macro-level factors that influenced the decisions that were taken at an individual and institutional level. In particular, two factors were prominently influential: the global-level influence of the priorities established by donor organizations and, at a societal level, the patriarchal values that remain dominant in Nepali society.

As mentioned above, both PO and SO relied on donor organizations for their programs, and they sometimes competed for the same grant. Moreover, the donor organizations’ agenda is often influenced by the US Department of State’s annual Trafficking in Persons (TIP) report, which provides an account of trafficking issues prevalent in the majority of the countries across the globe. TIP report collects data from the government to generate the holistic report. Organizations shape their program proposals based on the TIP report. In fact, we saw both PO and SO categorized their programs under the TIP report’s 3Rs.

Patriarchy is one of the root causes of trafficking. It also is a major barrier to successful reintegration. We heard of the persistence of stigma against trafficking survivors in Nepali society. It made it challenging for survivors to reintegrate into society but also constrained their continued access to the anti-trafficking organizations, one of the very few resources for social support that they have available. The discrimination against women and third gender individuals who have survived trafficking is encapsulated in the belief that “Women are ‘trafficked’ whereas men (in a similar trafficked state) ‘migrate.’” While we identified a space to challenge the patriarchal values (i.e., by highlighting stories of trafficked men), the patriarchal values, as we heard multiple times during our study, are deeply ingrained and continues to add difficulties in the sisters’ reintegration journey.

8.1.2 Conditions Influencing the Possibilities for Our Approach

We reflect on the different stakeholders to identify the conditions that influenced the possibilities of our approach.

The Sisters’ Past Experiences

In our initial interviews, the sisters reported that they found recollecting their past life to be painful. Both the anti-trafficking organizations had required them to share stories from their past, including the period they were trafficked. Those stories were shared on annual reports and were seen as a resource to “grab global attention”. One could argue that the sisters’ stories from the past can be an asset to raise public awareness and maybe, with a professional counselor’s support, be a resource in psycho-social counseling.

However, we did not work with the sisters’ past experience because it did not satisfy the sisters’ need for a dignified reintegration and their future aspirations. First, recollecting the

past caused them pain. We wanted to support the sisters to have agency in their participation with us which, as I shall elaborate further in the next section, is critical in achieving dignified reintegration. Being in a position of pain and discomfort, we reasoned, would not support agency building (at least not with limited expertise in handling trauma and pain). Second, we believe that the sisters' trafficked experiences should not define their future. They were on a journey to a "new normal" [146], away from the problems that had emerged due to their trafficked past. Moreover, many of them were coming to conceptualize and value a radically different future than they had previously: a life that is not within their birth families. This, we argue, necessitated the exploration of the present and the future without eliciting and examining their past.

This is not to say that we ignored the sisters' past lives. The sisters' aspirations, which are "always formed in interaction and in the thick of the social life" [11, pp. 67], are influenced by their past lives. Those aspirations shape their belief in what counts as an asset. Moreover, the sisters' cultural knowledge was at play throughout the studies. For instance, the sisters shared stories from their homes and the challenges they faced growing up. However, these stories were shared in their terms, from within their realm of comfort and control. Once we felt that the sisters were comfortable in thinking about their homes and their past, we even designed activities to build on it, such as the session on discussing societal problems, sharing good wishes to others, and the collective Google Search activity (Section 6.1.2).

Mutual Trust With the Organization

An additional factor is our relationship with organizations. As mentioned earlier (Section 3.2.6), throughout our engagement we have sought to build a relationship of trust and mutuality with SO. Earlier, our collaboration with PO was terminated because we could not build such a relationship with them. Three major steps were taken to build trust with the

organization. First, I volunteered for the organization such as by providing web maintenance support and sharing links to potential grants. I also initiated a fundraiser to support a shelter home during the COVID-19 lockdown. Second, we were transparent about our approaches, findings, and overall objectives during every step of our engagement. This included discussing the approaches with the staff before we began the study with the sisters. Third, considering that drastic over-promises and unclear expectations can hinder collaboration [10, 90], we sought to establish the scope of our work clearly. This was most prominent in both the organization's interest to explore technology early on which we had to push back. Describing our approaches and sharing why we think it is important and where we expect to move after that helped in charting the scope of our work. It also required me to be clear about some of the technological requests they made from me (e.g., request for an application that could track a person's movement across towns), either by questioning the rationale for it or by explaining that the work was beyond my technical capabilities.

At the same time, we trusted SO. Our presence in the setting is limited; the NGOs are one of the few actors who are constantly working on the ground. Moreover, the setting is highly sensitive and we do not have a strategy to fight against the myriad of social problems that we uncovered during our study nor do we have a method of protecting sisters from the dangers that might fall upon them if our drastic steps fail to protect them. Our decisions during the project were based on our assumption that SO is operating in the best way it sees possible with the resources it has. This can be seen in our decision to build upon crafting with Hamrokala in our second study (Section 5). Continuing with crafting can be seen as creating moral quandaries, especially given that some of the sisters did not enjoy crafting activities. However, crafting was a crucial element of existing practice in this setting that SO had brought together. A drastically new activity, if it worked, would ask questions of SO's investment which, we suspect, would be met with resistance. If it failed, it would erode the

organization and the sisters' trust over the process and us. So, as we discussed earlier, we explored ways building on their knowledge of crafting to incrementally expand the sisters' exploration of alternatives. This, we believe, balanced the challenge of not undermining the sisters' existing assets and the organizations' significant investment while also creating pathways for the sisters to explore other possibilities for their future.

Pragmatic and Attainable Possibilities

The third component influencing our decision is our collective capabilities and the resources available to us. These capabilities and resources have limitations and they influence the possibilities that can emerge from the engagement. As shared above, these limitations are more pronounced in our context and it influences the possibilities we have sought in the engagement.

We come into the setting with our perspective, our expertise, and the resources at our disposal. Our capabilities are limited and formed by various beliefs and values we hold. Thus, in this space, as we engage with the sisters on reflecting on assets and the sisters' vision of the future, what we see as possible and pragmatic is highly influenced by our (in)capabilities. This shapes our decision on what assets we believe are valuable to build upon during the engagements. It is for this reason that we place the “who question” in our definition of assets.

Moreover, the sisters and the organizations also brought their resources in their engagement with us. Particularly, the sisters shared their individual and collective resources—which, in addition to their knowledge of crafting and mutual bond, also includes among other things, their time, curiosity, mental effort, and stories—as part of the engagement. To create a space where they can share such resources requires them to trust us and the other sisters present

in the setting. We have previously discussed the various moves we made to earn and remain true to that trust. A further component of building trust involves the sisters trusting our research endeavor, that is, the sisters need to see that they are gaining something meaningful from their engagement with us. Since assets-based design engages with the positive strengths that are available to the participants, finding ways to critically reflect on its limitations is difficult. Considering that we ourselves are influenced by our belief of what is possible, we face an ethical quandary of how we present and discuss the idea that the participants' strengths and resources may not be enough to achieve their desired vision of the future.

This acknowledgment of our collective limitations shaped our engagement in the setting. In particular, we undertook incremental steps, clarifying the objectives and expected outcome from the engagement. We discussed challenges that may require deeper exploration, drawing out the limitations of their assets, and envisioning other possibilities. For example, the sisters' knowledge of crafting does not lead to a direct pathway, to the extent that we can discern, to becoming a lawyer as one of the sisters wanted. With our capabilities and resources available, the engagement we subsequently designed involved Hamrokala. As we discussed, beginning with Hamrokala, we were able to slowly explore broader possibilities and alternatives (Chapter 5 and 6). We do not think that those explorations are sufficient to support the sisters to say become a lawyer. However, as evinced by the sisters' discussions on obtaining a part-time office job to pay for college, we believe, the incremental explorations brought them closer to their aspirations becoming an attainable possibility.

We need to constantly attend to the possibilities that emerge from balancing the participants' most important goals and values, with approaches that are pragmatic and attainable. This necessitates assets-based design to attend to the aspirations of the population but also their needs and the structural limitations of the setting. While the focus on needs may seem contradictory, especially since assets-based approaches are often placed opposite needs-focused

approaches [76], “assets” are valued because they meet an end such as an individual’s needs and thus, we cannot ignore the needs and the structural limitations, or as we have been calling it, the realities of the ground.

Resource constraints are a reality in all research endeavors. However, compared to a needs-focused approach, resource constraints impose greater challenges to an assets-based engagement. As an approach that promotes participants to develop a critical awareness of their assets, it is difficult to measure the impact of an assets-based approach. In contrast, in a need-focused approach, the participants and the researchers can assess how much of their needs have been fulfilled when faced with a resource constraint. In fact, optimizing our resources—computing or otherwise—to address needs, falls under the purview of computing research. Whereas need-focused approaches can make room to attend to resource constraints through optimization, assets-based approaches can not address such constraints directly. They must, in Herbert Simon’s words, satisfice across multiple goals [214]. We need to focus on our methods such that we can be transparent about our objectives while creating a space that allows the participants to be in control as they critically reflect on their assets and its limitations.

8.1.3 Positioning Ourselves in a Sensitive Setting

In our study, there are different levels of power differences: between the sisters and the staff members, the staff members and us, and the sisters and us. Following prior work on participatory design and community engagement (e.g., [68, 138]), we sought to amplify and center the voices of the marginalized groups, that is, of the sisters. In our work, we promoted the sisters to have control over their participation with us.

To hear and amplify the sisters’ voices necessitated that we build a relationship based on mu-

tual trust with the sisters and the organization. We were not able to build such a relationship with one NGO at the initial stage of our study. We were able to build a relationship with SO and the sisters living at SO. We believe that a critical role for an assets-based researcher is to build and maintain a relationship with the different stakeholders.

Supporting Sense of Control

Assets-based design necessitates the participants to engage in critical reflection of their assets, examining the potential and limitations of their assets as well as envisioning alternative possibilities. Forming attachments requires a level of emotional commitment. Moreover, assets-based design engagement involves slow, incremental steps which necessitate the participants to trust us and the design process. Assets-based design places a significant emotional demand on the participants. It thus calls for assets-based design methods to ensure that the participants are in control of their participation with us.

In reflecting on our work, we identify three aspects in our methods to carefully consider for supporting participants to have control in their engagement with us: materiality, context and narrative, and encouraging different but equal participation.

Materiality: The materials that we use in our methods can convey the wrong message and even foster distrust [35, 90]. In our engagement, we have adapted to the local conditions and practices to foster a sense of control in the sisters' participation. For instance, after learning that the sisters often crafted posters with newspaper cutouts as part of SO's awareness-raising programs, we proposed a social photo-elicitation method that used similar materials of photos and poster-making. They had already associated photos and poster-making with self-expression and learning. Our materials created a bridge between their prior experience and expertise and the new tasks and experiences that we were creating. Moreover, we

made the activity social by positioning the photos as collectively owned artifacts. These supported the participants to be in control over their participation as exemplified by their various degrees of participation during the session.

Materials can be digital too if we can create appropriate bridges. Small increases in literacy and education open up many new possibilities. In our third study, we were able to present the Google Search activity after we had noticed that the sisters were helping each other identify keywords to search on Google during the unstructured Internet use time. Similarly, noticing that they were often landing on Wikipedia led us to present the Wikipedia editing activity. The sisters' prior familiarity with the systems allowed them to have a sense of control in engaging in the activity. Moreover, we were able to better justify to them how we came up with the activity and why it is important.

Context and Narrative: The activities were conducted in a room beside the handicraft workshop. It was a space that was familiar to the sisters. All of our activities were conducted in place of the sisters' handicraft training sessions. We did so because the sisters had mentioned that they were overwhelmed with work and we did not want to add more. With the organization's permission, we placed our activities as a substitution to crafting that they could choose to attend. Their participation in the sessions was voluntary. We believe both these practices helped in supporting the sisters to have a sense of control over their engagement with us. We observed this in noting the sisters' free movement in and out of the sessions.

At times, reflecting critically on the problems and the assets to attend to those problems can be difficult. In the face of overwhelming challenges, reflecting on assets and their possibilities may not seem significant, causing participants to lose their sense of control and trust in the process. In such cases, proposing narratives that allow participants to *other* their problems

for a while can help in developing the sense of control needed to critically examine the assets. For instance, after the discussion on child marriage and human trafficking, we used the upcoming Dashain celebration to suggest that the sisters engage in good-wishing to each other. By focusing on others' futures, this good-wishing narrative supported the sisters to *other* their own problems for a while and imagine changes that were beyond their limitations and learn from the many possibilities others saw for them.

We leveraged observations from our engagements (such as the initial ethnographic-style inquiry) to identify and adapt materials and present activities with a justifiable and relatable narrative. Knowing what the participants find familiar and comfortable to engage with can be a challenge. Moreover, care needs to be placed in finding the right balance between familiarity and generative discomfort. Identifying the materials, adapting them to the methods, and presenting them in an appropriate narrative can take a longer time.

Encouraging Different But Equal Participation: All of our activities were centered on collaboration. The poster in the photo-elicitation was collectively created and the future envisioning exercise involved the sisters discussing their vision of the future with the whole group. Computers were shared in pairs (or in groups of three) and the voice annotation made each group's activity perceptible to others. The emphasis on collaboration supported the sisters to participate from within their realm of comfort. They could rely on others to lead the activity or present the work to the whole group. Some sisters were more active and enthusiastic to share while few others were quieter. Some took a long time to make sense of the activities or to feel ready to share their views with the group. All of these different degrees of participation were seen as equal.

Some of the rules for participation were created by the sisters, which further helped them be in more control over their participation. The rule to say "pass" and not speak about

a photo was established by the sisters during social photo-elicitation, supporting sisters to participate without talking about a photo they did not want to.

An outcome that we hope to achieve from our engagement is for the sisters to see themselves as agentic actors. We believe that prefiguring [13] those values in our method, create a small room for the sisters to experiment in further developing and using their agency. Towards the end of the project, we took this emphasis on agency to a new level, attempting to encourage staff members to engage with the sisters in a way that increased agency and connection for both (see Section 7.4.2).

Relationship Building

As discussed above, we made moves to build and sustain our relationship with SO. In our engagements, we also tried to build a relationship based on trust with the sisters. Earlier, we described the various approaches we took to earn and remain true to the sisters' trust on us (see Sections 5.2.2 and 6.1.4). Reflecting on our work, we identify two aspects of our engagement that we believe helped in building relations with the sisters.

Collective Reflection on Assets: We worked with a different group of sisters in each of our engagements, with only a few sisters who had worked with us earlier. Every individual possesses a different perspective and knowledge that constitute their assets. However, the realities of the broader context and the challenges surrounding rehabilitation within SO's shelter home remain the same for each group. Considering this, we continuously presented findings from our earlier work, including the earlier identified assets, and proposed activities that built on those assets to engage the sisters in constant reflection on the future. We gathered the sisters' feedback in the process. We also shared drafts of our papers with the sisters, walking them through what we were saying about them. In sharing those findings,

we were able to build connections with the sisters (e.g., a person they knew had participated in the study earlier).

More critically, sharing the findings and our proposed activity, helped the sisters to see themselves as being part of the larger collective. For example, during the third study (Chapter 6), I shared findings from our earlier work with the sisters. I mentioned that the previous group of sisters' lack of control over their crafting was prominent. This group of sisters reflected and agreed with it, and they discussed with the handicraft trainers on ways they could gain more control over their crafting practices.

Similarly, we shared findings from our studies with the staff members and elicited their thoughts on the next steps. We also shared drafts of our paper with them. In addition to volunteering, these steps have helped strengthen a relationship with the organization throughout our engagement.

Attending to Power Differences: By adapting participatory approaches, we wanted to work with—not for—the sisters and the staff members. This entailed fostering a relationship of mutuality. However, power differences influence the degree of mutual engagements we can achieve, requiring us to carefully attend to the power relations in the setting.

During the activities, I sought ways to illuminate interconnections with the sisters and share and learn with them. However, my significantly different experiences could impact the sisters' willingness to share with me. Care needed to be placed on deciding when, how, and what could be shared. As such, I reflected on the opportunities that most organically emerged to share the common connections with the sisters.

Sometimes, opportunities to share and become a participant emerge on their own. For instance, during the future envisioning exercise, in learning from each others' aspirations,

like how many children they wanted to have, the sisters created a convivial space that motivated them to ask me to share my vision too. Driven by their invitation, I shared my dream of becoming a teacher and a good parent to two children, and my fears that others would see me as a weak person who could not amount to much. Other times, it requires us to be open to learning and encourage them to teach. In my third study, upon using a dismissive word for woman, the sisters stopped me. This led to a discussion of the word and present myself as a learner.

Likewise, as discussed above, we have fostered a relationship based on mutuality with SO. During the engagements, we observed subtle but important differences in the values and goals of the sisters and those that have been set for them by SO. In such cases, attending to the power differences entailed for us to amplify and center the sisters' values and goals, following the value of elevating the voices of the marginalized [138]. This required us to work around the staff members' voices, negotiating a middle ground that centered the sisters' voices but also convinced the staff members that the move is justified. To that end, our discussion with the staff members between the studies was helpful where we shared our findings, elicited their feedback, designed the next steps, and discussed why we think it is important. These discussions also helped maintain a relationship, providing a sense of continuity despite our interventions on the ground being periodic (see Table 1.1).

8.2 Assets-Based Design for Individual and Institutional Empowerment

We began by asking “How do we identify and build upon assets that help achieve the design goals?” We defined assets as the strengths, attributes, and resources that can be brought

into relevance to satisfy the inherent tensions between a member of a population's needs, the structural limitations of the system, and the member's understood or experienced aspirations. As such those strengths and resources can be any or multiple forms of community resources (or the seven types of capitals): individuals (or human capital), associations (or social capital), physical assets (or built capital and natural capital), institutional (or political capital), local economy (or financial capital), cultural and stories (or cultural capital) [76]. To identify if the community resources can be an asset, we examined if and how the resource balances the population's needs, the structural limitations, and the population's aspirations. For instance, developing computing skills would not have been an asset if it did not support the sisters to move towards their aspiration of connecting with community members or becoming financially self-sufficient while studying towards their primary aspiration. Computing skills was also "good enough" to meet some of the sisters' needs (successfully learn a skill they valued and enjoyed, potentially supporting them to connect with family and friends) within the structural limitations they faced (as we arranged the computers and the sisters participated in the activities as a substitute for their crafting work).

We subsequently asked, "How can assets-based design support empowerment at an individual and institutional level?" Central to the question is our belief that assets-based design, as a design engagement, is action-oriented. As such, it requires attention to the work revolving around engagement (e.g., who is participating and how), articulation (e.g., what conditions lead to our identification of assets), and translation (e.g., how are the assets and the broader context informing design decisions) [101]. Our work attends to these formulations of design work. Further, we proposed a framework of action that illuminated mechanisms for assets-based design to bring about justifiable changes at an individual and institutional level. We now reflect on our methods and identify how our socio-technical design attended to the four mechanisms to bring individual and institutional change: supporting the participants to

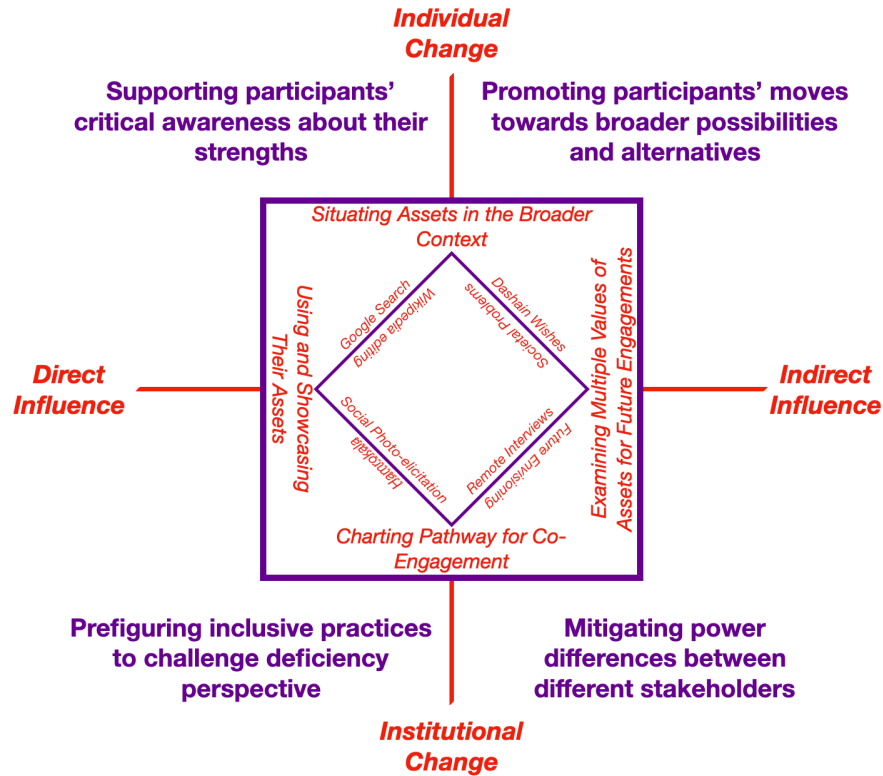


Figure 8.2: The framework along with the methods used in this project.

develop a critical awareness of their assets, prefiguring inclusive practices in the space and illuminating outcomes that challenge deficiency perspective, fostering critical reflection on the power differences between different actors, and enabling conditions for the participants to move towards broader possibilities and alternatives.

8.2.1 Supporting Critical Awareness About Assets

We adapted participatory methods as part of our assets-based design engagement. Adapting the notion of infrastructuring from PD [46], we emphasized the criticality of supporting participants to form attachments to their individual and collective assets. This necessitates participants to critically reflect on their assets' potential as well as limitations, and learn to use the assets to explore broader possibilities and alternatives. Forming attachments to their

assets is critical for the sisters to see themselves as having agency and power when they leave the shelter home. In particular, reflecting on our work, we identify two particular mechanisms enabled by our socio-technical systems to support the sisters in developing critical awareness about their assets: situating assets in the broader context and fostering an experimental space to use the assets.

Situating Assets in the Broader Context

Assets function within the broader context where people's lives are embedded. As such, developing awareness about assets essentially has to situate the assets in the broader context of the people's lives.

In our case, the introduction to computing through Hamrokala was followed by the future envisioning exercise where the sisters imagined ways in which their assets could be used in their future, with their families, and in their society in general, such as by thinking about what their income sources could be. As they had recently learned to use computers, we explicitly asked the sisters to share their vision of the future with respect to technology. This, we believed, would help the sisters to see how technology can be of help and where it would be limited.

We believe that a challenge in introducing technology is to ensure that technology is not seen as an end but rather as a means to develop a critical awareness of assets. We were able to do so by designing activities both on and off the screen that required the sisters to reflect on different ways in which they could use their assets (e.g., gather information to raise awareness about a societal problem or make changes on Nepali Wikipedia to help others). Similarly, critical reflection on the assets can be promoted by presenting technology as a way to further that asset. For instance, Hamrokala was closely connected to crafting with

features allowing the sisters to post their handicrafts for sale. The contextualized around crafting elicited discussions during technology use through which the sisters were able to see crafting within SO's operations (see, for example, Section 5.3.3).

Fostering Space to Use the Assets

The socio-technical systems fostered a space where the sisters could participate communally to explore and examine their assets. In the social photo-elicitation sessions, the playful space allowed reflection on the sisters' crafting practices, drawing forth both the possibilities as well as limitations of crafting. Similarly, with Hamrokala, the sisters experienced room for experimentation to enact their mutual support for one another while collectively facing a novel technology. Through mutual support, the sisters were able to adapt the technology in a communal way and created novel use practices. Likewise, later when we discussed ways to mitigate societal problems, the sisters shared various issues that they had separately recognized in their villages and hometowns to construct a collective knowledge that shed light on the different aspects surrounding the problem. They were then able to use that knowledge to envision potential actions they could take along with local actors and institutions. Moreover, as argued above, our methods supported the sisters' agency in their participation which, we believe, can be transferred to other contexts outside the research space.

8.2.2 Challenging Exclusionary Practices

Marginalized groups are often surrounded by the discourse of deficits, as we saw in the case of the sisters. Assets-based design's emphasis on identifying and building on the community's assets, including that of the marginalized groups, can promote a corrective course of action by challenging the deficit-centered discourses. In particular, in our work, we find two mech-

anisms were afforded by the socio-technical system in supporting us to collectively challenge exclusionary practices and discourse of deficits: showcase the use of assets to oneself and others, and leverage assets to explore alternative futures.

Showcasing the Use Of Assets

Our approaches promoted the sisters to showcase their assets to themselves, one another, and the staff members. For example, in the social photo-elicitation sessions, the sisters shared what the photos meant to them with the group. All of their contributions mattered and were considered in identifying the summary text to go along with the photo in the poster they created. This allowed the sisters to see their knowledge—their asset—to be of value to themselves and the group. Moreover, by hanging the posters on SO's walls, we created an opportunity for the sister to showcase their assets and achievements to the staff members at SO.

On the last day of the Hamrokala workshop, we had an activity where the sisters showed their computing skills to the staff members (Chapter 5). We were aware from our previous interactions that the staff members valued computing skills. At the same time, SO's prior failure to introduce computers had eroded the staff members' confidence that the sisters would be able to learn computers. However, by showing that they successfully learned and adapted computers, the sisters were able to challenge the deficiency-focused belief around them. In fact, the sisters' successful use of technology encouraged the staff members to propose the possibility of training the sisters to become computer trainers. It indicates that the approach mitigated some of the discourse around the sisters' deficits.

As we uncovered during our remote interviews with the staff members (Chapter 7), the deficit-centered belief is not completely erased. The sisters' deficits remain at the center

within SO, and much work remains, including creating multiple opportunities for the sisters to develop and showcase their varied assets. To that end, we proposed a way for the sisters to showcase their knowledge to the staff members through a playful game (see Section 7.4.2).

Leveraging Assets to Explore Alternative Futures

Assets are closely linked to aspirations. They are also both embedded in the setting, constantly shaped by the various forces surrounding the population. Sometimes it can impose a constraint on the population's view of what can be possible. For instance, in our initial study, the sisters did not have an opportunity to examine any possibility beyond crafting. As a result, their vision of their future source of livelihood involved crafting, despite them knowing that there was very limited demand of the crafts in the local market and SO had been struggling to sell their handicrafts. It is thus critical for assets-based design to challenge such constrained beliefs by creating space for the participants to leverage their assets in exploring alternative futures and broader possibilities. In our case, for example, after developing computing skills, the sisters started seeing the possibilities of an alternative to crafting by obtaining a job in an office.

The exploration of broader possibilities can also help participants to learn ways in which their assets can be a means to realize their aspirations. For example, in our third study, the sisters had diverse aspirations and wanted to pursue higher education. Through the collective discussion, they were able to see their computing skills as a valuable means to obtain a part-time job that could help fund their higher education.

8.2.3 Mitigating Power Differences Between Stakeholders

In any setting where multiple stakeholders are present, differences in values, goals, and power are bound to emerge. Power relations influence community-based engagements [20, 50]. They also influence assets-based engagements, requiring us to examine questions like “Whose assets are being amplified and whose are ignored?” and “Who is deciding what assets are valuable?”

In our case, there is a significant power difference between the organization and the sisters. We are dependent on the organization and are at a considerable power distance with the sisters. As our fourth study illuminated, there is an implicit inter-dependency between the staff members and the sisters. The sisters are dependent on the staff member since they design and implement the programs that support them. The staff members saw the sisters as assets for SO; as a survivor-led organization, the sisters could lead the organization in the future but, at the same time, the organizational processes (e.g., grant writing and the necessity to illustrate impact) necessitated the staff members to highlight the sisters’ deficiencies.

As a design engagement aiming to support the population from within [124, 147, 242], assets-based engagements necessitate attending to the power differences present in the setting such that the stakeholders’ assets remain at the center of the decision-making process. In reflecting on our work, we find two mechanisms that our approaches afforded in mitigating the various levels of power differences present in our setting: collectively analyzing assets-based insights and supporting multiple avenues for co-engagement.

Collectively Analyzing Assets-Based Insights

In each of our studies, I began by sharing our prior work, including the findings and insights we had gained from those studies. I then shared details of our planned study and encouraged

the sisters to share their thoughts. This sharing and eliciting feedback allowed us to switch the power roles, to an extent. I went from being in charge of the engagement to being in a position where I needed the sisters' knowledge.

Similarly, I shared findings from our drafts with sisters. In one case, the sisters used a finding—that they have limited control over crafting—to discuss with the trainers on ways they could gain more control over their crafting practice. This too helped switch the power roles between the sisters and the trainers, supporting the sisters to overcome some of the power differences.

Likewise, we shared the assets that we had identified from our study with the staff members, eliciting their thoughts and suggestions for the next step. These discussions helped illuminate the sisters' assets and its potential in supporting the sisters' reintegration journey. Later, by proposing an adaptation of a snakes and ladder game where the sisters could share their knowledge with the staff members, we were making moves to reduce the distance between the sisters and the staff members.

Supporting Multiple Avenues for Co-engagement

Our findings highlight the importance of creating multiple avenues for the different stakeholders to be involved as part of the collective. First, we believe that the participants need to see that their assets are of value to the collective. This, in our case, involved supporting the sisters to trust us, the research process, and to create space for them to be in control so that they could contribute to the group while feeling comfortable in having done so. Such collaborative engagements helped illuminate the interconnections between individuals' struggles and strengths and the larger, collective unit. Further, as discussed above, we encouraged different levels of participation in the group, all of which were considered to be equal. In

doing so, we believe, we were able to facilitate a sense of belonging where the participants could see the activities as a collective co-engagement.

Likewise, the co-engagement also necessitated how I was involved in the activities. As shared above, I participated in the activities when I was invited. In those instances, I felt that the sisters were comfortable with my participation and it allowed for us to see the common interconnections as well as differences between us.

Finally, to mitigate the power differences, allowing for assets to be centered, necessitates the sisters and the staff members to engage together. Our work has been limited on this front. The activities allowed the sisters to demonstrate their strengths, such as and the posters they had created during the photo-elicitation sessions, to the staff members. In our discussion with the staff members, we shared the assets that the sisters provided and later inquired about the possibility for the staff members to build on the sisters' knowledge and experience to inform the project design process. While these moves did not directly promote co-engagement, by bringing the sisters' strengths to the fore—which had been dominated by deficits—we make incremental changes in reducing the power differences.

An avenue for indirect co-engagement can also emerge by examining the possibilities that other stakeholders have presented. For instance, SO had presented crafting as a means to a sustainable livelihood. By discussing the potential and limits of crafting during the Hamrokala session, the sisters were able to examine the proposal deeper. We believe, the discussion on the selling price and effort required to make the handicrafts supported the development of knowledge that could promote greater equity in co-engagement later. Indeed, a later group was able to build on an aspect of the knowledge about crafting to negotiate with the trainers to gain more control over their crafting practices.

8.2.4 Moving Towards Broader Possibilities and Alternatives

We believe that needs-focused approaches often function as a band-aid, in that they can fix an immediate and proximate issue. Assets-based approaches, on the other hand, do not bring an immediate fix but can support the community to have agency and power to realize sustainable changes in the long run. A key aspect of assets-based engagement involves supporting the community to realize the potential of their assets in achieving broader possibilities beyond the ‘here and now’.

From our work, we find several mechanisms built in our assets-based engagement that supported the sisters to move towards broader possibilities and alternatives. As discussed above, our approach supported the sisters to form attachments to their assets by situating the assets in the broader context (e.g., how to communicate their handicraft to a potential buyer). We further argued that socio-technical approaches can foster an experimental space for the participants to use their assets. Both of these mechanisms are critical in developing awareness of the assets and leveraging it towards broader possibilities and alternatives. In addition, we believe two further aspects of our work supported the sisters to explore broader possibilities and alternatives: placing assets as resources in a malleable future and highlighting multiple values of the assets.

Placing Assets Within a Malleable Future

An individual or community’s perception of what counts as an asset is influenced by their future aspirations. Aspirations are embedded in the context, subject to adaptation [38, 129]. As such, the context influences people’s perception of their assets. For example, the failure in introducing computing to an earlier group of survivors had convinced the staff members that the sisters would not be able to use computers. Even when the group had changed, the sisters

were not introduced to computers and staff members held on to the belief that the sisters would not be able to use computers. By showcasing their competency to use computers, the sisters challenged the belief. Indeed, the staff members started contemplating the possibility of training the sisters to be computer trainers in the future, a pathway that emerged from the sisters' strengths.

More importantly, the exercise supported the sisters to see that the assets can lead to alternative futures, such as in their vision to gain office jobs using their computing skills. Later, we further observed the sisters using the Wikipedia activity to learn more about their aspired profession and make plans to use their computing skills to gain part-time jobs while they pursue their aspired profession. These visions of the future were different from the future that had been presented to them through crafting. By envisioning how their assets can play a role in different futures, the sisters were able to explore broader possibilities and alternatives.

Highlighting Multiple Values of Assets

An asset can be of value towards various ends. Seeing those multiple values of assets can help explore alternatives and broader possibilities. For example, the sisters were able to build on their computing skills to read and edit Wikipedia pages. This led them to find multiple values. We observed them learn English through the activity which they believed would be helpful to their career in the long run. They gathered information about their aspired profession and discussed the pragmatic challenges they are likely to face while pursuing the goal, creating a realizable alternative to crafting as a future source of livelihood. They also saw value in being able to create Nepali Wikipedia pages to help others who could not read English. The multiple values of assets afforded opportunities for the sisters to move towards broader possibilities and alternatives.

8.3 Practitioners Guide to Engaging in Assets-Based Design

Assets-based design does not advocate overlooking the needs or problems present in the community. In fact, we started working with the anti-trafficking organizations and the sisters because we observed that they have several complex problems and very limited means to bring sustainable changes. Problems and needs are bound to be present in every setting. An assets-based design approach acknowledges the problems but prioritizes identifying, learning, and building upon the assets that are already present in the community. In doing so, it seeks to bring about sustainable changes, with empowered actors from the community leading the change process. Whereas impact in a problem-driven approach could be seen through the extent to which a solution fixes a problem, in an assets-based approach, the impact is not immediately observable. Rather, it manifests slowly and incrementally through the growth in participants' attachments to their assets that increasingly enables them to envision, act, and reflect on matters of their concern, including negotiating with the structures that result in the problem.

As such, a challenge for assets-based design engagement involves gaining the community's trust in the slow, incremental process. The community has to trust the decision-making process. Moreover, since assets-based engagement involves incremental slow steps, it is challenging for the community to see the impact, making it difficult to sustain long-term engagement. Our steps have to be justifiable to the community.

8.3.1 When should we use assets-based design?

The first step before the engagement involves asking ourselves if assets-based design is appropriate for the context. As our work highlights, assets-based design is slow and requires incremental steps. Not all communities can afford such time and resources for incremental exploration [63]. Some communities may expect immediate technological output [90]. Assets-based design does not lead to immediate technological outcomes. In fact, as our work highlights, a challenge remains for communities to assess the progress in engaging in assets-based design. All of these require us to support the community in trusting us and the process throughout the long-term engagement.

Moreover, it remains unclear how assets based design can engage with larger structures. For instance, in the sisters' case, our work remained limited to individual and institutional change. It remains unclear how might assets-based approach work when direct engagements with larger structures are desired. This calls for care in promoting transparency with the community about the scope of our work and the expected impact it may have.

Assets-based approach promotes critical reflection on the assets available to the community and drives action based on those assets. As such, the approach can be appropriate in a wide range of contexts. In particular, we believe that assets-based approaches can be of value in three specific contexts: (1) when community values building individual and collective agency in which case assets-based design can highlight and support agency-building, (2) where the deficit-focused perspectives are prevalent in which case assets-based design can assist in pushing back on the belief and create opportunities for broader possibilities to emerge, and (3) where stakeholders are constantly putting out fires in which case the slow incremental process could illuminate alternatives away from short-term solutions.

Once we establish that assets-based design is appropriate in the setting, we believe that

reflecting on the questions pertaining to agenda control, participants and community, and resources would help us build on assets towards justifiable processes and outcomes. A key element in our engagement involved attending to the power relations in the setting which shaped the decision making process and the ways we arrived at balancing the emergent design tensions [221] to reach justifiable approaches (e.g., “What counts as an asset?”, “How do we build on those assets”). The questions shared below emerged during our engagement which we believe contributes to phronetic knowledge on assets-based design [70] We believe that the questions can assist practitioners in reflecting on the power relations when working with communities to bring about transformation. Please note that these questions emerge from our belief that assets-based design requires a long-term engagement with community partners.

8.3.2 Agenda Control

A set of critical questions before and during the engagement has to focus on agenda control. Even though our engagement was community-based, we were leading the endeavor. While we adapted participatory methods in our engagement, the broader decisions of the engagement remained with us. We gathered feedback and suggestions from the sisters and the staff members to inform our design process but the eventual decision remained with us. Ideally, assets-based design should be community-led, allowing them to manifest their power from within [147]. However, we also believe that in contexts that are new to assets-based design, support from practitioners is necessary for the initial stages, allowing the community to slowly trust the process and see their power in leading the projects.

It is important to note that not all communities would be well-aligned to an assets-based agenda. Communities may have immediate needs that are often established as their top

priority, making it difficult for them to buy into the assets-based approach. Indeed, we were able to build a relationship with SO because their values and beliefs were aligned to long-term incremental changes. For instance, the value resonated in their definition of successful reintegration which was seen as a multi-year or even a life-long journey. Some of the questions that we encountered in our engagement surrounding agenda setting include:

- Initial agenda-setting:
 - How is the entry gained into the community? Who controls it? How are their voices included or navigated while setting the agenda?
 - Who is bringing forth the assets-based agenda? How does it balance the populations' needs, structural limitations, and their aspirations?
 - How does the assets-based agenda represent the community?
 - How are the values (mis)aligned? How are the values negotiated?
 - What issues are addressed through the engagement? What are seen to be irrelevant and why?
- Adapting agenda along the way:
 - What approaches are seen as possible and pragmatic? Who decides?
 - How does the approach address the issue? What is being left out?
 - How do we navigate when the assets are seen to be not enough to address the problems?
 - What accountability measures are put in place to justify the assets-based approaches?
 - How are the justifications shared and discussed?
 - Do the communities trust the process? How are they voicing their distrust?
 - How are the changes in the community's expectations addressed?
- Long-term planning:

- How are project long-term outcomes going to be shared?
- Are there plans in supporting the community to lead the project?
- When do we terminate the study and how?
- How are the different stakeholders going to be positioned at the end of the project?

8.3.3 Participants and Community

Conflicting and misaligned values and goals between different stakeholders can influence what assets are valued and how they are built upon. Indeed, in our engagement, as noted before, there were significant power differences in our setting. We decided to emphasize the values and goals of the most marginalized groups—the sisters—and negotiate with other stakeholders' goals (i.e., the staff members' goals). Not all participants have to be equally engaged in the endeavor even when adapting participatory methods as part of the assets-based engagement. Decisions around whose assets need to be amplified should drive the level of participation among different stakeholders. We believe that finding the right level of participation and being transparent about our approach with the stakeholders helped in building a relationship of trust, supporting us to sustain our engagement.

Moreover, the sense of community is dynamic. For example, we began by seeing the sisters as part of a community and as our understanding of the context grew, we began seeing the staff members as part of the community too. The staff members, especially the member staff, shared experiences with the survivors and their responsive take on reintegration effort embodies the shared sense of collective. We inquired about the possibility of including the sisters in the project design process because we believed in the broader sense of community with both the sisters and the staff members as part of it.

Some of the questions that we reflected on during our engagements on participants and

community include:

- Who participates and how?:
 - Who are the actors in the setting and how do they influence the perspectives of what assets can be of value?
 - How is the community formed? Who drives the community's agenda and how do they influence the community's belief about their assets?
 - Whose assets can be brought to the fore in the community?
 - How are the assets brought to the fore and to what end?
 - How do we attend to the change in assets that are available to the population?
 - How and why are other stakeholders brought into the process? Who is being left out?
- Attending to the different stakeholders:
 - How are the different actors exercising power in their relationship?
 - How is the actor whose assets we amplify influenced by others in the setting?
 - What kind of short- and long-term decisions have to be made during the engagement? Who makes those and how?
 - How are we navigating the power differences in the setting to promote a sense of collective that cares about the assets?

8.3.4 Resources

The third set of questions revolve around resources required for the engagement. Assets-based design requires a long-term commitment, placing demands on the stakeholders' time and resources. This becomes more pronounced when we work with communities with limited resources. The demand on the resources may also raise concerns in placing long-term

commitment especially considering that assets-based engagements do not lead to immediate results. All of these concerns necessitate careful reflection on the resources that we demand of the stakeholders and how we justify them.

In our case, we brought materials for the research (e.g., posters, markers, cameras, computers, etc.). The organization provided space for us to conduct the research (a room beside the handicraft training space). The endeavor also required commitment from the sisters, placing demand on their time. We conducted the activities as a substitute for the sisters' crafting practices which helped reduce the demand on the sisters' time to some extent. Moreover, the group of sisters changed in each of our studies which required us to adapt by sharing findings from the previous study and repeating some of the activities that we had conducted with the earlier group (e.g., Hamrokala workshop and future envisioning exercise in the third study; see Chapter 6)

We faced resource constraints since the project was entirely self-funded. We applied for a few grants but did not receive any. We acknowledge that the possibilities that emerged from the engagement were influenced by the resource constraints that we faced. Despite the limited resources, we remain committed to action which we believe can help broaden the sisters' future opportunities and improve long-term outcomes. Some of the questions that we asked ourselves and the stakeholders include:

- Acknowledging commitment:
 - What resources can we arrange to support our endeavor?
 - What resources does our engagement demand of the other stakeholders? How do we justify those demands?
 - How do we convince the community of the long-term commitment and incremental outcomes?
- Resources for trust and engagement:

- How are the resources presented in the setting? Do they undermine the existing strengths of the community?
- How do the resources foster (dis)trust during the engagement?
- How do we adapt the resources to the local conditions? What materials speak to the participants?
- How are the constraints in resources influencing our perspective of the approaches that are attainable and pragmatic?
- Resources in the long run:
 - How will the resources be adapted when the context evolves over the course of our engagement?
 - If technology is presented, what are the plans for long-term support (e.g., updates and maintenance)? Who commits to it?
 - What happens of the resources once the study ends?

These questions are not exhaustive. They are questions that we had faced during our studies. We also have not attended to all of the questions (e.g., When do we terminate the study and how?) and more will emerge as we continue our engagement with the staff members and survivors at SO. However, we believe that reflecting on these questions around agenda control, participants, and resources, can assist us in deciding whether assets-based engagement is appropriate in the setting and if it is then identifying ways to sustain community involvement in a long-term assets-based engagement.

Chapter 9

Conclusion

In our work, we describe the challenges around goal-balancing and decision-making that emerged during our engagement. Issues of power and ethics abound. As postulated in the design tensions framework [221], the need to balance multiple goals and the tensions in the setting guided our moves. In doing so, we prioritized the voices of the sisters while we sought to justify our action and be transparent by continuously involving the staff members in decision-making process. We make a case for building a relationship based on trust and mutuality between researchers and the different stakeholders.

Design space is subject to negotiation with local values, culture, and power relations and requires constant reflection on the fieldwork and on all aspects of design work including engagement with “users”, our interpretation of users’ values, beliefs, aspirations, and assets, and translation of it to the design of socio-technical systems [101]. Through our engagement, we add to the growing voices within HCI and related fields on moving away from universalistic ideas of design towards local and situated approaches of designing for and *with* the users [101, 233].

9.1 Contributions

Our project demonstrates an approach to engage in assets-based design with vulnerable populations. We argue for incrementally amplifying and building upon vulnerable groups’

existing assets, making a case for a long-term engagement with slow incremental steps. We highlight ways in which socio-technical systems can be a means to build upon the assets. We further emphasize the need to adapt our approaches to local resources and cultural practices. In particular, our work makes threefold contributions to HCI scholarship. First, we provide a rich account of the context and the complexities surrounding reintegration efforts in Nepal. We share reflections on our interactions, our approaches to building and maintaining relationships, and the various factors that informed our socio-technical design. Second, we share details of our assets-based engagement. We describe how we adapted our methods to the local conditions to promote comfort and control and our approach to balance tensions between different stakeholders' goals. Third, we provide an operationalizable definition of assets and illuminate the role of socio-technical systems in an assets-based engagement within a sensitive setting.

9.1.1 A Detailed Account of the Context

A contribution of our work involves a rich description of the context, including the complexities surround reintegration efforts in Nepal, the tensions and forces that guide the services available to sisters during their reintegration journey, and the conditions that influence the behavior and experiences of sisters at the shelter homes. We describe the various factors—at an individual, institutional, and macro-level—that influence the situation of the sisters in the anti-trafficking organizations' shelter homes (see 8.1.1). These factors help us understand the design space, illuminating potential avenues for us to engage with the sisters and the organizations in exploring assets-based approaches for slow, incremental transformation. Our observations of the various forces and conditions influencing the sisters' lives in the shelter home shaped the approaches that we considered and enacted. Delineating the situa-

tional details of engaging in and modifying actions allowed us to share the rationales for our decisions and justify our approaches.

Through the initial ethnographic-style study (Chapter 3), we contribute an understanding of the anti-trafficking organizations' operations in Nepal and the various forces that influence the services available to the survivors. We present details of the anti-trafficking organizations' programs during the rehabilitation process. Both the organizations provided training in creating local handicrafts. We also describe the survivors' fear of the stigma against trafficking survivors in Nepali society and their dependence on the organization for services during reintegration. Our findings also highlight the anti-trafficking organizations' dependence on donors. We further highlight how external donor organizations and international programs like the US Department of State's Trafficking in Persons (TIP) report drive the anti-trafficking organizations' operations. The limited resources (e.g., donor funds) fostered a sense of competition between organizations, incentivizing them to highlight the survivors' problems and deficiencies. Further, we noted the two organizations' differing definitions of what constitutes a successful reintegration which affected the kinds of programs and services arranged for the survivors.

Acknowledging the distance between us and the sisters during our initial study, we adapted the photo-elicitation method (Chapter 4). The method promoted playful engagement, reducing the distance between us and allowing us to hear the sisters' nuanced voices about their lives in the shelter home and their vision of the future. We learned of the sisters' complex relationship with crafting where they saw it as a possibility for future livelihood and held emotional values towards it but also found it boring and difficult at times. We also highlighted their wishes to connect with family members and belong in society. From the study, we uncovered two assets that we believe would be available to the sisters in the shelter home (Section 4.4): their knowledge of crafting and their close bonds with one another.

In the next study (Chapter 5), we built upon the identified assets through a tailored, voice-annotated web application. The web application was contextualized around crafting and supported the sisters' existing communal orientation. It was introduced through a ten-day workshop followed by a future envisioning exercise designed to support the sisters in situating the technology within the broader context of their lives. We provide a detailed account of the playful space that the sisters promoted and the collective ways in which they explored technology. The familiar context of the web application and their mutual support facilitated in adopting, adapting, and appropriating the technology, leading us to believe that knowledge of computing can be an asset for the sisters. The sisters successfully showcased their knowledge of computing to the staff members which, we noted, challenged the staff's belief that computing was unattainable to the sisters. This led the staff members to propose explorations to train the sisters on becoming computer trainers. We also heard the sisters' vision of the future where they wanted to be financially independent but not by making local handicrafts. They also saw limited possibilities for themselves to engage with societal actors and institutions.

We replicated and extended the Hamrokala workshop and future envisioning exercise with a different group of sisters. Noticing that the sisters had a higher level of literacy, we incrementally designed activities to support the sisters in exploring widely available systems while situating their knowledge of computing and other assets in the broader societal context (Chapter 6). The sisters were able to leverage their higher literacy and computing skills to explore systems like Google Search and Wikipedia. We describe the collective support they provided each other and their appropriation of computers to learn English. We also highlight ways in which sisters explored alternative career possibilities and envisioned ways to mitigate social problems present in their community. These lead us to believe that, with careful introduction, knowledge of computing can indeed be an asset in the sisters' reintegration

journey.

We pivoted our study by interviewing staff members to understand their beliefs, values and their perspectives on the reintegration services (Chapter 7). The study helped further our understanding of the many challenges that survivors face long after they reintegrate into society. The staff members' accounts highlighted limited opportunities to gain formal education as well challenges in earning a sustainable livelihood. During the interviews, we heard of the various subtle ways in which the persistent patriarchal value in Nepali society affected reintegration efforts. Further, most forms of support that could be available to the survivors after they leave the shelter home remain closely tied to the anti-trafficking organizations. However, stigma against trafficking survivors creates a formidable barrier for many survivors to leverage the resources. Through the staff members' accounts, we also uncovered a hierarchy in the organization that created a barrier for the sisters to showcase their knowledge and contribute to the organizations' project design process. The findings led us to explore ways to promote interaction between sisters and the staff members.

9.1.2 Adapting Methods to the Local Context

Irani *et al.* posit that design processes are ways for “shaping and staging encounters between multiple parties” [101, pp. 1317]. The context of the encounter and the processes involved in facilitating the engagement influence design outcome. Importantly, the cultural context shapes the way people participate in the design process and the values they attach to the designed systems (e.g., the sisters' use of technology as described in Section 6.3.1). It thus becomes critical for us to attend to the local context. We demonstrate one way to do so: by carefully adapting our methods based on local culture and practices. Our work contributes to the field of HCI by adding details of how we adapted our research methods, the insights that

the methods afforded us to gain and its influence on our design goals, and the subsequent design outcomes that suit the local conditions.

In the first study (Chapters 3), we heard of the sisters' accounts of feeling pained when having to recall their trafficked past. This observation led us to adapt our methods where we focused on the sisters' present and their vision of the future. While the sisters' past experiences were at play during their engagements with us (such as when they shared stories from their villages), it was brought to the fore by the sisters on their own terms.

Further, in the first study (Chapters 3), we noted a distance between the sisters and me. I was an outsider and was seen as one. Further, as a male researching a prominently female setting, I stood out. The staff members mediated my interactions with the sisters. They sometimes rephrased the questions I asked and, at other times, answered them for the sisters. These observations led us to seek ways to adapt our research method to reduce the distance and hear the sisters' nuanced voices. I had noticed posters created by the sisters adorning SO's walls. These posters contained newspaper cutouts and written text. This suggested that the sisters were familiar with poster-making as a form of self-expression. Building on this observation, we adapted the photo-elicitation method. The three main modifications of the methods were that (1) instead of asking the sisters to present and talk about one of their own photos, I picked each photo in random order and asked each person to talk about that photo one after another as they went around the circle; (2) at the end of each round, the group added the photo to a poster; (3) the poster was annotated with a communally agreed-upon statement or comment that emerged from the discussion (see Section 4.4.4). The activity promoted playful and ludic space, supporting the sisters to share details of their lives in the shelter home and their vision of the future from within their realm of comfort.

In the second study (Chapter 5), we introduced computers through a context that we knew

the sisters were familiar with: crafting. Moreover, acknowledging the sisters' limited digital and text literacy could become a barrier to their participation in the activity, we embedded voice annotation in the web application. All the elements of the web application had naturalistic voice annotation in a female voice which played whenever a user hovered over it. The voice spoke in an intonation familiar to the sisters. Moreover, phrases common in digital parlance such as login and logout, which are also commonly used in Nepali websites, held little meaning to the sisters. To support engagement, we instead used elaborate phrases on the text interface as well as the voice annotation. For example, instead of saying "login" in Nepali, the web application said "to enter this technology press here". Details as small as the use of the word "login" in the interface may determine whether an intervention succeeds or fails.

Further, the way technology is introduced and how it is positioned is critical and requires careful consideration. To that end, we conducted a ten-day workshop where we introduced computers by slowly and incrementally exploring different features built in the tailored web application. Additionally, we designed a future envisioning exercise to support the sisters to envision ways in which their assets, including their computing skills, could interact with different aspects of their lives in the future (e.g., their family, their society, and their income sources). The future envisioning exercise drew forth varied aspirations including the sisters' wishes to be financially independent and of help to others (see 5.4). Critically, the activity shed light on the limitations of crafting on achieving their aspirations.

In the third study, we furthered our examination of knowledge of computing becoming an asset in the sisters' reintegration journey (Chapter 6). The group of sisters had changed so we began by conducting the Hamrokala workshop and future envisioning exercise. The repetition was important to understand if the sisters would be able to adapt and appropriate the technology. The sisters were successful in using technology and expressed a desire to

explore further (see Section 6.1.2). In the future envisioning exercise, we heard of the sisters' wishes for a caring and non-discriminatory society. At the same time, the sisters shared that they did not see any possibilities for them to play a role in bringing the desired changes in society. To continue supporting the sisters to reflect on their assets' potential on engaging with the outside world, we designed an activity to promote discussions around factors that cause two of the societal problems that the sisters had mentioned during the future envisioning exercise. Given the gravity of the issues in Nepali society, we invited the sisters to think in terms of their local context. The activity supported the sisters in envisioning possibilities of using the skills and knowledge they had gained so far to engage with local actors and institutions in mitigating the problem. The discussion also drew out limitations on their capacity to bring about change, especially in attaining an egalitarian society. Further, to support the sisters in developing a sense of control that could, in turn, allow them to imagine broader assets-based futures, we proposed a culturally-grounded activity where the sisters could "other" their problems for a while. To that end, we used the upcoming festival of Dashain—a Hindu celebration of the victory of good over evil that includes a good-wishing tradition—as the background context and suggested the sisters share what they wished for each other. By focusing on others' futures, the activity helped the sisters imagine changes beyond their limitations, learning from the many possibilities others saw for them. With this rich understanding of assets in the future, our activities then supported the sisters to explore broader possibilities using technology. We noted the sisters' higher literacy level compared to the previous group which influenced the way they used computers and what they valued during the use. These observations led us to build on the sisters' computing skills and higher literacy levels to introduce widely available systems like Google Search and Wikipedia. We noted the value of the sisters' mutual support for one another which was also promoted by the way the activities were designed (e.g., instead of searching on Google individually, the sisters collectively identified keywords). Across sessions, the participants had expressed a

strong interest in learning to type and use the Internet as means to gaining an office job while pursuing their primary aspirations.

Acknowledging that sisters are often in the fringe of the organizations' decision-making process, we sought to prefigure values that we aimed to achieve through the project [13]. In all of the approaches that we undertook, we attended to promote comfort and control in the sisters' participation with us, paying careful attention to the material used and the context and narrative with which the activities are conducted. For example, in the social photo-elicitation method, we used a Polaroid camera. The physical print of the photos conveyed to the sisters they have control over the photos; they could tear it apart or burn it if they wanted (see Section 4.4.4). Similarly, in our third study, we designed a good-wishing activity using the context of an upcoming festival (called *Dashain*) which allowed the sisters to *other* their problems and envision desirable futures for others. Our work makes a case for slow, incremental steps, allowing researchers to adapt processes to local resources and practices.

9.1.3 Adapting Assets-Based Design in a Sensitive Setting

We contribute an operationalizable definition of assets. We define assets as the strengths, attributes, and resources that can be brought into relevance to satisfice [214] the inherent tensions between a member of a population's needs, their understood or experienced aspirations, and the structural limitations of the system.

Three key aspects emerge from the definition which we describe in detail in our work. The first element involves the "who question" [162]. For example, "Who is bringing forth and establishing what assets matter?" The question highlights the importance of attending to power relations. We argue that assets-based engagements require a long-term commitment and the outcomes are incremental. The slow, incremental process places a demand on us to

justify our moves to the community, requiring us to attend to who gets to have a say while making decisions and how. In our case, we acknowledge that even though our approach was community-based and we adapted participatory methods, we held significantly greater power in the design process, including when making decisions on what assets to build upon. We sought to reduce the distance and promote inclusivity and democratic decision-making by being transparent in our approach and building a relationship based on trust and mutuality with the sisters and the organization. To that end, our work highlights various ways in which we sought to build and maintain trust with the sisters and the staff members (see Sections [3.2.6](#), [5.2.2](#), and [6.1.4](#)).

The second element in our definition of assets involves goal-balancing. Complex societal issues, such as that we encountered in our study, are “wicked problems” [192] where possible approaches vary depending on how we formulate the important conditions and values. Wicked problems are never solved; we can find “good enough” approaches that balance the multiple tensions. In our context, we highlight how we designed assets-based approaches to support the sisters to see their agency and potential when they leave the shelter home. We describe our moves such as creating opportunities for the sisters to showcase their computing skills to the staff members which, we argue, helped in challenging some of the prevalent beliefs around the sisters’ inability to use computers. In particular, we present four mechanisms with which our adaptation of assets-based design supported in bringing individual and institutional changes: supporting participants’ critical awareness about their assets, pre-figuring inclusive practices to challenge deficiency perspective, mitigating power differences between different stakeholders, and enabling conditions for the participants to move towards broader possibilities and alternatives (see Sections [2.2.3](#) and [8.2](#)). Our studies highlight how we leveraged these mechanisms to realize individual and institutional changes.

Finally, the third element in the definition argues that assets are embedded in the setting and

are valued because they facilitate in balancing the tension emerging from the populations' needs, aspirations, and the structural limitations that are present in the context. As such, assets-based design does not ignore problems or needs. We also highlight the embedded and dynamic nature of assets, requiring careful examination of how we identify and expand on the assets. To that end, we describe the articulation with which we arrived at crafting and mutual bond as two assets present to the sisters (see Section 4.4). We further provide the translation process which informed our approach to design Hamrokala, a web application that was contextualized around crafting and promoted collective exploration and sociality. Given the embedded nature of assets, we make a case for incremental steps (see Section 6.3.1), allowing us to closely attend and build upon it.

9.2 Limitations

We provide a rich account of the reintegration efforts to support survivors of trafficking in Nepal. The knowledge informed our incremental design of socio-technical systems that explicitly and implicitly highlighted the sisters' assets to themselves, their cohort, and the organization. Through our observations and qualitative inquiry, we demonstrate how such locally adapted approaches supported the sisters' agency in their participation with us and illuminated a potential pathway for them to have power and agency when they leave the shelter home. However, while our work uncovered the pathway, it did not involve a sustained engagement that would allow the sisters to realize those gains.

The lack of sustained support stems from a lack of resources on our end. The project was self-funded which imposed constraints on what we could explore. For instance, during the study, the sisters used my laptop as well as laptops arranged through family members and our lab. We could not design approaches that allowed the sisters to explore computing beyond

the duration of my field studies. Further, the time spent conducting the field studies was carved out of the academic schedule that I had to follow as part of my degree and funding arrangements.

Our asset-based approaches rely on the assets available to the sisters and the organization's operating conditions. As we have learned from our study, both factors are in constant flux. The sisters leave shelter homes at indeterminate times and the organization relies on external services and grants that influence the services available to the sisters. As such the design approaches we have undertaken and the recommendations we make may not be applicable within the same context with another group of sisters. Having said that, our work makes a case against the universalization of design and the push for generalizability within design endeavors. Design is highly situated and as such requires close attention to local conditions and realities on the ground.

Further, assets-based design necessitates empowering the community from within taking a bottom-up approach. We believe such a move is important especially to support vulnerable groups, like the sisters, to negotiate forces present in the larger system (e.g., society and government). However, in focusing on the community only, we have not attended to the influence of donor organizations and governmental agencies. These entities, as our work highlighted, influence the reintegration services and hence can affect the assets available to the sisters. In fact, the lack of attention to macro-scale entities and the state has been recognized as a problematic aspect of assets-based design [142].

9.3 Future Work

We have previously identified directions of action that can assist the sisters in gaining more power within the organization. The first approach involves including the sisters in the

organization's decision-making processes (see Section 7.4.2). The inclusion will position the sisters as active contributors in the organization as well as create opportunities for them to develop a critical awareness of their lives in Nepali society. Additionally, we believe there are two other design directions that open up through this project and holds potential to support the sisters in their reintegration journey: (1) furthering the sisters' world knowledge and (2) bridging the organization's connections with other entities.

Our studies illuminate a potential pathway for the sisters to be in a position of power when they leave the shelter home. This involves building on the assets available to the sisters, including their knowledge of crafting and their close bonds with one another. We do not know if the sisters will remain enrolled in school in the future but we can rely on the NGO to continue their crafting practices. Moreover, we know that with careful design, knowledge of computing can be an asset for the sisters moving forward. Thus, as we envision, we build on these elements of the sisters' strengths.

As we heard from the sisters and the staff members, survivors of trafficking have very limited sources of social support. Due to the stigma against trafficking survivors, the survivors cannot reach out to anti-trafficking organizations for support. In this sense, they leave the shelter home to unknown futures. Our work did not involve survivors living outside the shelter home because we feared that doing so could potentially raise suspicion and place the survivors in a position of harm. For the same reason, our future work too remains limited within the shelter home.

9.3.1 Furthering the Sisters' World Knowledge

In our study, we observed that the sisters were enthusiastic to use computers, especially to connect with family and friends. We know that with careful design, we can overcome barriers

due to limited digital and text literacy. The knowledge of computing can be an asset for the sisters moving forward. While we are uncertain if the sisters will be enrolled in school in the future, we can rely on SO to continue providing handicraft training and also that the sisters will be living together in the shelter home.

One approach forward involves building on these elements of strengths to broaden the sisters' knowledge about the world and, thereby, expanding the exploration of alternative futures. In particular, we believe we can build on the sister-survivors' enthusiasm around computing to introduce them to content that deals with "world knowledge". World knowledge, to us, is the set of practical knowledge of day-to-day life as an adult in the society that a typical child learns at home or by observing others in the community. These would cover various aspects of life in society such as personal finances and banking services, health care services, governmental and infrastructural services, and political and legal rights. The sisters do not yet have an opportunity to develop such world knowledge. For example, only one of the sisters we worked with had a bank account; others had not managed a bank account. There are various structural barriers to opening a bank account such as needing to have a citizenship certificate [191]. Developing critical awareness about such barriers exploring ways in which they could leverage their assets to overcome such barriers could be beneficial when the sisters move out of the shelter home.

9.3.2 Bridging Organization's Connections with Other Entities

SO's connections with other organizations had enabled resources for the sisters to attend trekking guide training programs and the morning schools. While the programs were not tailored to the sisters' interests, they provided opportunities for the sisters to explore broader possibilities and alternatives. As argued earlier, these broader explorations support the

sisters to see how their assets can play a role in their future. For example, connecting SO with local organizations with an inclination for social responsibility (e.g., BhatBhateni and Choudhary Group) could open opportunities for sisters to gain a part-time job as they pursue their education after they leave the shelter home. HCI research has examined various technical systems for bridging the public with organizations (e.g., [123, 235, 239]). We envision the potential to build on these scholarships but building more socially oriented approaches that allow the sisters to showcase their strengths to potential employers.

9.4 Concluding Remark

Our work follows the third-paradigm HCI mandate of encountering people in the complexities of their lived lives [91]. The complexities of these lived lives deepen our understanding of the potential and limitations of socio-technical systems to do good [171]. In this regard, our work adds to our understanding of ethical responsibilities and its contemplation of what elements of a situation or a design allow ethical interventions. Critically, we see our work as an ongoing endeavor and further co-engagements with the organization and the sisters are in planning. The body of work reported in this dissertation opens several design avenues within the space for us to move forward which, we believe, will help us further our understanding of how socio-technical systems can support vulnerable populations.

Bibliography

- [1] Mark S Ackerman. The intellectual challenge of cscw: the gap between social requirements and technical feasibility. *Human-Computer Interaction*, 15(2-3):179–203, 2000.
- [2] Laura María Agustín. *Sex at the margins: Migration, labour markets and the rescue industry*. Zed books, 2007.
- [3] Syed Ishtiaque Ahmed, Maruf Hasan Zaber, Mehrab Bin Morshed, Md Habibullah Bin Ismail, Dan Cosley, and Steven J Jackson. Suhrid: A collaborative mobile phone interface for low literate people. In *Proceedings of the 2015 Annual Symposium on Computing for Development*, pages 95–103. ACM, 2015.
- [4] Veronica Ahumada-Newhart, J Maya Hernandez, and Karla Badillo-Urquiola. A call for action: Conceptualizing assets-based inclusive design as a social movement to address systemic inequities: An assets-based inclusive design framework. In *Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems*, pages 1–4, 2021.
- [5] Linda Alcoff. The problem of speaking for others. *Cultural critique*, (20):5–32, 1991.
- [6] Amy Allen. *Feminist perspectives on power*. Stanford Encyclopedia of Philosophy, 2005.
- [7] Morgan G Ames. *The charisma machine: The life, death, and legacy of One Laptop per Child*. MIT Press, 2019.

- [8] Nazanin Andalibi, Oliver L Haimson, Munmun De Choudhury, and Andrea Forte. Understanding social media disclosures of sexual abuse through the lenses of support seeking and anonymity. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, pages 3906–3918. ACM, 2016.
- [9] Lars Bo Andersen, Peter Danholt, Kim Halskov, Nicolai Brodersen Hansen, and Peter Lauritsen. Participation as a matter of concern in participatory design. *CoDesign*, 11(3-4):250–261, 2015.
- [10] Yaw Anokwa, Thomas N Smyth, Divya Ramachandran, Jahanzeb Sherwani, Yael Schwartzman, Rowena Luk, Melissa Ho, Neema Moraveji, and Brian DeRenzi. Stories from the field: Reflections on hci4d experiences. *Information Technologies & International Development*, 5(4):pp–101, 2009.
- [11] Arjun Appadurai. The capacity to aspire: Culture and the terms of recognition. *Culture and public action*, pages 59–84, 2004.
- [12] Payal Arora. *The next billion users: Digital life beyond the West*. Harvard University Press, 2019.
- [13] Mariam Asad. Prefigurative design as a method for research justice. *Proceedings of the ACM on Human-Computer Interaction*, 3(CSCW):1–18, 2019.
- [14] Marko Balabanović, Lonny L Chu, and Gregory J Wolff. Storytelling with digital photographs. In *Proceedings of the SIGCHI conference on Human Factors in Computing Systems*, pages 564–571. ACM, 2000.
- [15] Srilatha Batliwala. Taking the power out of empowerment—an experiential account. *Development in practice*, 17(4-5):557–565, 2007.

- [16] Eevi E Beck. P for political: Participation is not enough. *Scandinavian Journal of Information Systems*, 14(1):1, 2002.
- [17] Thomas Binder. Why design: labs? *Nordes*, (2), 2007.
- [18] Erling Björgvinsson, Pelle Ehn, and Per-Anders Hillgren. Participatory design and” democratizing innovation”. In *Proceedings of the 11th Biennial participatory design conference*, pages 41–50, 2010.
- [19] Susanne Bødker, Morten Kyng, Pelle Ehn, John Kammersgaard, and Yngve Sundblad. A utopian experience: On design of powerful computer-based tools for skilled graphic workers. In *Computers and democracy*, pages 251–278. Gower Publishing, 1987.
- [20] Tone Bratteteig and Ina Wagner. Disentangling power and decision-making in participatory design. In *Proceedings of the 12th Participatory Design Conference: Research Papers-Volume 1*, pages 41–50, 2012.
- [21] Margot Brereton, Paul Roe, Ronald Schroeter, and Anita Lee Hong. Beyond ethnography: engagement and reciprocity as foundations for design research out here. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pages 1183–1186. ACM, 2014.
- [22] Margot Brereton, Alessandro Soro, Kate Vaisutis, and Paul Roe. The messaging kettle: Prototyping connection over a distance between adult children and older parents. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*, pages 713–716. ACM, 2015.
- [23] Margot Brereton, Malavika Vasudevan, Tshering Dema, Jessica L Cappadonna, Cara Wilson, and Paul Roe. The ambient birdhouse: Bringing birds inside to learn about

- birds outside. In *Proceedings of the 2016 ACM Conference Companion Publication on Designing Interactive Systems*, pages 321–324. ACM, 2017.
- [24] Alice V Brown and Jaz Hee-jeong Choi. Refugee and the post-trauma journeys in the fuzzy front end of co-creative practices. In *Proceedings of the 15th Participatory Design Conference: Full Papers-Volume 1*, pages 1–11, 2018.
- [25] Finn Brunton and Helen Nissenbaum. *Obfuscation: A user's guide for privacy and protest*. Mit Press, 2015.
- [26] Leah Buechley and Benjamin Mako Hill. Lilypad in the wild: how hardware's long tail is supporting new engineering and design communities. In *Proceedings of the 8th ACM conference on designing interactive systems*, pages 199–207. ACM, 2010.
- [27] Tara Capel, Dhaval Vyas, and Margot Brereton. Women in crisis situations: Empowering and supporting women through icts. In *IFIP Conference on Human-Computer Interaction*, pages 64–84. Springer, 2017.
- [28] Silvia Cazacu, Nicolai Brodersen Hansen, and Ben Schouten. Empowerment approaches in digital civics. In *32nd Australian Conference on Human-Computer Interaction*, pages 692–699, 2020.
- [29] Paul Chandler and John Sweller. Cognitive load while learning to use a computer program. *Applied cognitive psychology*, 10(2):151–170, 1996.
- [30] Kathy Charmaz. *Constructing grounded theory*. sage, 2014.
- [31] Catherine Chen and Karen Marcovici. Exploring the status of reintegrated girls: A participatory study. *Kathmandu: Columbia University and Save the Children USA*, 2003.

- [32] Wallace Chigona and Paul Licker. Using diffusion of innovations framework to explain communal computing facilities adoption among the urban poor. *Information Technologies & International Development*, 4(3):pp-57, 2008.
- [33] Alexander Cho, Roxana G Herrera, Luis Chaidez, and Adilene Uriostegui. The comadre project: An asset-based design approach to connecting low-income latinx families to out-of-school learning opportunities. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*, page 607. ACM, 2019.
- [34] Rachel Clarke, Peter Wright, Madeline Balaam, and John McCarthy. Digital portraits: photo-sharing after domestic violence. In *Proceedings of the SIGCHI conference on Human factors in computing systems*, pages 2517–2526. ACM, 2013.
- [35] Rachel Elizabeth Clarke, Jo Briggs, Andrea Armstrong, Alistair MacDonald, John Vines, Emma Flynn, and Karen Salt. Socio-materiality of trust: co-design with a resource limited community organisation. *CoDesign*, pages 1–20, 2019.
- [36] John Collier. Photography in anthropology: a report on two experiments. *American anthropologist*, 59(5):843–859, 1957.
- [37] Patricia Hill Collins. Black feminist thought in the matrix of domination. *Black feminist thought: Knowledge, consciousness, and the politics of empowerment*, 138 (1990):221–238, 1990.
- [38] Ina Conradie and Ingrid Robeyns. Aspirations and human development interventions. *Journal of Human Development and Capabilities*, 14(4):559–580, 2013.
- [39] Sunny Consolvo, David W McDonald, Tammy Toscos, Mike Y Chen, Jon Froehlich, Beverly Harrison, Predrag Klasnja, Anthony LaMarca, Louis LeGrand, Ryan Libby, et al. Activity sensing in the wild: a field trial of ubifit garden. In *Proceedings of the*

- SIGCHI conference on human factors in computing systems*, pages 1797–1806. ACM, 2008.
- [40] Andrea Cornwall. Women’s empowerment: What works? *Journal of International Development*, 28(3):342–359, 2016.
- [41] Sasha Costanza-Chock. *Design justice: Community-led practices to build the worlds we need*. The MIT Press, 2020.
- [42] Andy Crabtree, Terry Hemmings, Tom Rodden, Keith Cheverst, Karen Clarke, Guy Dewsbury, John Hughes, and Mark Rouncefield. Designing with care: Adapting cultural probes to inform design in sensitive settings. In *Proceedings of OzCHI 2003*, pages 4–13. Ergonomics Society of Australia, 2003.
- [43] Andy Crabtree, Tom Rodden, and John Mariani. Collaborating around collections: informing the continued development of photoware. In *Proceedings of the 2004 ACM conference on Computer supported cooperative work*, pages 396–405. ACM, 2004.
- [44] Mary Crawford and Michelle R Kaufman. Sex trafficking in nepal: Survivor characteristics and long-term outcomes. *Violence against women*, 14(8):905–916, 2008.
- [45] Kimberle Crenshaw. Mapping the margins: Intersectionality, identity politics, and violence against women of color. *Stan. L. Rev.*, 43:1241, 1990.
- [46] Christopher A Le Dantec and Carl DiSalvo. Infrastructuring and the formation of publics in participatory design. *Social Studies of Science*, 43(2):241–264, 2013.
- [47] Antonia Darder. *Reinventing Paulo Freire: A pedagogy of love*. Taylor & Francis, 2017.

- [48] Andy Dearden. See no evil?: ethics in an interventionist ictd. In *Proceedings of the Fifth International Conference on Information and Communication Technologies and Development*, pages 46–55. ACM, 2012.
- [49] Andy Dearden and William D Tucker. Moving ictd research beyond bungee jumping: practical case studies and recommendations. *IEEE Technology and Society magazine*, 35(3):36–43, 2016.
- [50] Chiara Del Gaudio, Alfredo Jefferson de Oliveira, and Carlo Franzato. The influence of local powers on participatory design processes in marginalized conflict areas. In *Proceedings of the 13th Participatory Design Conference: Research Papers-Volume 1*, pages 131–139. ACM, 2014.
- [51] Nathaniel A Dell, Brandy R Maynard, Kara R Born, Elizabeth Wagner, Bonnie Atkins, and Whitney House. Helping survivors of human trafficking: A systematic review of exit and postexit interventions. *Trauma, Violence, & Abuse*, 20(2):183–196, 2019.
- [52] Nicola Dell and Neha Kumar. The ins and outs of hci for development. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, pages 2220–2232. ACM, 2016.
- [53] Jessa Dickinson, Mark Díaz, Christopher A Le Dantec, and Sheena Erete. ” the cavalry ain’t coming in to save us” supporting capacities and relationships through civic tech. *Proceedings of the ACM on Human-Computer Interaction*, 3(CSCW):1–21, 2019.
- [54] Tawanna R Dillahunt. Fostering social capital in economically distressed communities. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pages 531–540. ACM, 2014.
- [55] Tawanna R Dillahunt, Vaishnav Kameswaran, Desiree McLain, Minnie Lester, Delores

- Orr, and Kentaro Toyama. Entrepreneurship and the socio-technical chasm in a lean economy. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*, pages 1–14, 2018.
- [56] Alan Dix. Designing for appropriation. In *Proceedings of the 21st British HCI Group Annual Conference on People and Computers: HCI... but not as we know it-Volume 2*, pages 27–30. BCS Learning & Development Ltd., 2007.
- [57] Leslie L Dodson, S Sterling, and John K Bennett. Considering failure: eight years of itid research. In *Proceedings of the Fifth International Conference on Information and Communication Technologies and Development*, pages 56–64. ACM, 2012.
- [58] Silvia Dominguez and Celeste Watkins. Creating networks for survival and mobility: Social capital among african-american and latin-american low-income mothers. *Social problems*, 50(1):111–135, 2003.
- [59] Hristos Doucouliagos and Martin Paldam. Aid effectiveness on growth: A meta study. *European journal of political economy*, 24(1):1–24, 2008.
- [60] Paul Dourish. The appropriation of interactive technologies: Some lessons from placeless documents. *Computer Supported Cooperative Work (CSCW)*, 12(4):465–490, 2003.
- [61] Paul Dourish and Victoria Bellotti. Awareness and coordination in shared workspaces. In *CSCW*, volume 92, pages 107–114, 1992.
- [62] Paul Dourish, Annette Adler, Victoria Bellotti, and Austin Henderson. Your place or mine? learning from long-term use of audio-video communication. *Computer Supported Cooperative Work (CSCW)*, 5(1):33–62, 1996.
- [63] Paul Dourish, Christopher Lawrence, Tuck Wah Leong, and Greg Wadley. On being

- iterated: The affective demands of design participation. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, pages 1–11, 2020.
- [64] Alnoor Ebrahim. Accountability in practice: Mechanisms for ngos. *World development*, 31(5):813–829, 2003.
- [65] Pelle Ehn. Participation in design things. In *Proceedings of the tenth anniversary conference on participatory design 2008*, pages 92–101. Indiana University, 2008.
- [66] Pelle Ehn. Learning in participatory design as i found it (1970–2015). In *Participatory Design for Learning*, pages 7–21. Routledge, 2017.
- [67] Sheena Erete, Aarti Israni, and Tawanna Dillahunt. An intersectional approach to designing in the margins. *Interactions*, 25(3):66–69, 2018.
- [68] Marie Ertner, Anne Mie Kragelund, and Lone Malmborg. Five enunciations of empowerment in participatory design. In *Proceedings of the 11th Biennial Participatory Design Conference*, pages 191–194, 2010.
- [69] Pedro Ferreira. Why play?: examining the roles of play in ictd. In *Proceedings of The Fifth Decennial Aarhus Conference on Critical Alternatives*, pages 41–52. Aarhus University Press, 2015.
- [70] Bent Flyvbjerg. *Making social science matter: Why social inquiry fails and how it can succeed again*. Cambridge university press, 2001.
- [71] Sarah Fox, Rachel Rose Ulgado, and Daniela Rosner. Hacking culture, not devices: Access and recognition in feminist hackerspaces. In *Proceedings of the 18th ACM conference on Computer supported cooperative work & social computing*, pages 56–68. ACM, 2015.

- [72] C Ailie Fraser, Tovi Grossman, and George Fitzmaurice. Webuild: Automatically distributing assembly tasks among collocated workers to improve coordination. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*, pages 1817–1830. ACM, 2017.
- [73] Paulo Freire. *Pedagogy of the oppressed* (mb ramos, trans.). *New York: Continuum*, 2002, 1970.
- [74] Paulo Freire. *Pedagogy of freedom: Ethics, democracy, and civic courage*. Rowman & Littlefield Publishers, 2000.
- [75] David Frohlich, Allan Kuchinsky, Celine Pering, Abbe Don, and Steven Ariss. Requirements for photoware. In *Proceedings of the 2002 ACM conference on Computer supported cooperative work*, pages 166–175. ACM, 2002.
- [76] Ivis García. Asset-based community development (abcd): Core principles. In *Research handbook on community development*. Edward Elgar Publishing, 2020.
- [77] Aakash Gautam and Deborah Tatar. p for political: Participation without agency is not enough. In *Proceedings of the 16th Participatory Design Conference 2020 - Participation(s) Otherwise - Volume 2*, page 45–49. ACM, 2020.
- [78] Aakash Gautam, Chandani Shrestha, Andrew Kulak, Steve Harrison, and Deborah Tatar. Participatory tensions in working with a vulnerable population. In *Proceedings of the 15th Participatory Design Conference (PDC'18)*. ACM, 2018.
- [79] Aakash Gautam, Chandani Shrestha, Deborah Tatar, and Steve Harrison. Social photo-elicitation: The use of communal production of meaning to hear a vulnerable population. *Proceedings of the ACM on Human-Computer Interaction*, 2(CSCW):56, 2018.

- [80] Aakash Gautam, Chandani Shrestha, and Deborah Tatar. Beyond saving: A case for agency-first approach against domestic violence. In *Proceedings of the Tenth International Conference on Information and Communication Technologies and Development*, pages 1–5, 2019.
- [81] Aakash Gautam, Deborah Tatar, and Steve Harrison. Adding voices to support web navigation among a low digital literacy group. In *Companion Publication of the 2019 on Designing Interactive Systems Conference 2019 Companion*, pages 165–169. ACM, 2019.
- [82] Aakash Gautam, Deborah Tatar, and Steve Harrison. Crafting, communality, and computing: Building on existing strengths to support a vulnerable population. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, CHI '20. ACM, 2020.
- [83] Bill Gaver, Tony Dunne, and Elena Pacenti. Design: cultural probes. *interactions*, 6(1):21–29, 1999.
- [84] William W Gaver, Andrew Boucher, Sarah Pennington, and Brendan Walker. Cultural probes and the value of uncertainty. *interactions*, 11(5):53–56, 2004.
- [85] Kaushik Ghosh, Tapan S Parikh, and Apala Lahiri Chavan. Design considerations for a financial management system for rural, semi-literate users. In *CHI'03 Extended Abstracts on Human Factors in Computing Systems*, pages 824–825. Citeseer, 2003.
- [86] Mark S Granovetter. The strength of weak ties. In *Social networks*, pages 347–367. Elsevier, 1977.
- [87] Davydd J Greenwood and Morten Levin. *Introduction to action research: Social research for social change*. SAGE publications, 2006.

- [88] Carl Gutwin and Saul Greenberg. A descriptive framework of workspace awareness for real-time groupware. *Computer Supported Cooperative Work (CSCW)*, 11(3-4): 411–446, 2002.
- [89] Bishal Gyawali, June Keeling, and Per Kallestrup. Human trafficking in nepal: post-earthquake risk and response. *Disaster medicine and public health preparedness*, 11(2): 153–154, 2017.
- [90] Christina Harrington, Sheena Erete, and Anne Marie Piper. Deconstructing community-based collaborative design: Towards more equitable participatory design engagements. *Proceedings of the ACM on Human-Computer Interaction*, 3(CSCW): 1–25, 2019.
- [91] Steve Harrison, Deborah Tatar, and Phoebe Sengers. The three paradigms of hci. In *Alt. Chi. Session at the SIGCHI Conference on Human Factors in Computing Systems San Jose, California, USA*, pages 1–18, 2007.
- [92] Monique Hennink and Padam Simkhada. Sex trafficking in nepal: context and process. *Asian and Pacific Migration Journal*, 13(3):305–338, 2004.
- [93] Jasmine Hentschel, Syed Ishtiaque Ahmed, Faheem Hussain, Nova Ahmed, and Neha Kumar. Working with women in ictd. In *Proceedings of the Ninth International Conference on Information and Communication Technologies and Development*, page 20. ACM, 2017.
- [94] Morten Hertzum et al. Visible but unseen?: A workplace study of blood-test icons on electronic emergency-department whiteboards. In *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing*, pages 798–807. ACM, 2015.

- [95] James Hollan, Edwin Hutchins, and David Kirsh. Distributed cognition: toward a new foundation for human-computer interaction research. *ACM Transactions on Computer-Human Interaction (TOCHI)*, 7(2):174–196, 2000.
- [96] Kristina Höök and Jonas Löwgren. Strong concepts: Intermediate-level knowledge in interaction design research. *ACM Transactions on Computer-Human Interaction (TOCHI)*, 19(3):1–18, 2012.
- [97] Sigma Huda. Sex trafficking in south asia. *International journal of gynecology & obstetrics*, 94(3):374–381, 2006.
- [98] Matthew P Huenerfauth. Developing design recommendations for computer interfaces accessible to illiterate users. 2008.
- [99] Julie Hui, Nefer Ra Barber, Wendy Casey, Suzanne Cleage, Danny C Dolley, Frances Worthy, Kentaro Toyama, and Tawanna R Dillahunt. Community collectives: Low-tech social support for digitally-engaged entrepreneurship. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, pages 1–15, 2020.
- [100] Azalea Irani, Kriti Nelavelli, Kristin Hare, Paula Bondal, and Neha Kumar. Refuge tech: An assets-based approach to refugee resettlement. In *Extended Abstracts of the 2018 CHI Conference on Human Factors in Computing Systems*, pages 1–6, 2018.
- [101] Lilly Irani, Janet Vertesi, Paul Dourish, Kavita Philip, and Rebecca E Grinter. Post-colonial computing: a lens on design and development. In *Proceedings of the SIGCHI conference on human factors in computing systems*, pages 1311–1320. ACM, 2010.
- [102] Farnaz Irannejad Bisafar, Brooke Foucault Welles, and Andrea G Parker. A dramaturgical approach to online activism within youth empowerment organizations. *Proceedings of the ACM on Human-Computer Interaction*, 4(CSCW2):1–22, 2020.

- [103] Azra Ismail and Neha Kumar. Engaging solidarity in data collection practices for community health. *Proceedings of the ACM on Human-Computer Interaction*, 2(CSCW): 76, 2018.
- [104] Ole Sejer Iversen and Christian Dindler. Sustaining participatory design initiatives. *CoDesign*, 10(3-4):153–170, 2014.
- [105] Nis Johannsen and Finn Kensing. Empowerment reconsidered. In *Proceedings of the 4th decennial conference on Critical computing: between sense and sensibility*, pages 203–206, 2005.
- [106] Ian G Johnson, John Vines, Nick Taylor, Edward Jenkins, and Justin Marshall. Reflections on deploying distributed consultation technologies with community organisations. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, pages 2945–2957. ACM, 2016.
- [107] Aditya Johri and Joyojeet Pal. Capable and convivial design (ccd): a framework for designing information and communication technologies for human development. *Information Technology for Development*, 18(1):61–75, 2012.
- [108] Sushma Joshi. ‘cheli-beti’: Discourses of trafficking and constructions of gender, citizenship and nation in modern nepal. *South Asia: Journal of South Asian Studies*, 24(s1):157–175, 2001.
- [109] Naila Kabeer. Resources, agency, achievements: Reflections on the measurement of women’s empowerment. *Development and change*, 30(3):435–464, 1999.
- [110] Naila Kabeer. Conflicts over credit: re-evaluating the empowerment potential of loans to women in rural bangladesh. *World development*, 29(1):63–84, 2001.

- [111] Naila Kabeer. Reflections on the measurement of women's empowerment. *Discussing Women's Empowerment: Theory and Practice*, (3), 2001.
- [112] Naila Kabeer. Is microfinance a 'magic bullet' for women's empowerment? analysis of findings from south asia. *Economic and Political weekly*, pages 4709–4718, 2005.
- [113] Matthew Kam, Anuj Kumar, Shirley Jain, Akhil Mathur, and John Canny. Improving literacy in rural india: Cellphone games in an after-school program. In *2009 International Conference on Information and Communication Technologies and Development (ICTD)*, pages 139–149. IEEE, 2009.
- [114] Dana Kanze, Mark A. Conley, and E. Tory Higgins. Research: Organizations that move fast really do break things. <https://hbr.org/2020/02/research-organizations-that-move-fast-really-do-break-things>, 02 2020.
- [115] Helena Karasti, Karen S Baker, and Florence Millerand. Infrastructure time: Long-term matters in collaborative development. *Computer Supported Cooperative Work (CSCW)*, 19(3-4):377–415, 2010.
- [116] Naveena Karusala, Aditya Vishwanath, Arkadeep Kumar, Aman Mangal, and Neha Kumar. Care as a resource in underserved learning environments. *Proceedings of the ACM on Human-Computer Interaction*, 1(CSCW):104, 2017.
- [117] Naveena Karusala, Isaac Holeman, and Richard Anderson. Engaging identity, assets, and constraints in designing for resilience. *Proceedings of the ACM on Human-Computer Interaction*, 3(CSCW):1–23, 2019.
- [118] Michelle R Kaufman and Mary Crawford. Research and activism review: Sex trafficking in nepal: A review of intervention and prevention programs. *Violence against women*, 17(5):651–665, 2011.

- [119] Michelle R Kaufman, Jennifer J Harman, and Deepti Khati Shrestha. Let's talk about sex: Development of a sexual health program for nepali women. *AIDS Education and Prevention*, 24(4):327–338, 2012.
- [120] Linus Kendall and Andy Dearden. Disentangling participatory ict design in socioeconomic development. In *Proceedings of the 15th Participatory Design Conference: Full Papers-Volume 1*, pages 1–12, 2018.
- [121] Finn Kensing and Jeanette Blomberg. Participatory design: Issues and concerns. *Computer supported cooperative work (CSCW)*, 7(3):167–185, 1998.
- [122] Ankit Khadgi. Nepali women say they are not just 'cheli' but individuals in their own right. <https://kathmandupost.com/national/2019/12/09/nepali-women-say-they-are-not-just-chelis-but-individuals-in-their-own-right>, 12 2019.
- [123] Sunyoung Kim, Jennifer Mankoff, and Eric Paulos. Exploring the opportunities of mobile technology use in nonprofit organizations. In *CHI'14 Extended Abstracts on Human Factors in Computing Systems*, pages 1939–1944. 2014.
- [124] John Kretzmann and John P McKnight. Assets-based community development. *National civic review*, 85(4):23–29, 1996.
- [125] John P Kretzmann and John L McKnight. Introduction to building communities from the inside out: A path toward finding and mobilizing a community's assets. *Institute for Policy Research, Northwestern University*. Tillgänglig: <http://www.abcdinstitute.org/docs/abcd/GreenBookIntro.pdf> [2013-02-22], 1993.
- [126] Anuj Kumar, Anuj Tewari, Geeta Shroff, Deepti Chittamuru, Matthew Kam, and John Canny. An exploratory study of unsupervised mobile learning in rural india.

- In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pages 743–752, 2010.
- [127] Neha Kumar and Richard J Anderson. Mobile phones for maternal health in rural india. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*, pages 427–436. ACM, 2015.
- [128] Neha Kumar, Daniel A Epstein, Catherine D’Ignazio, Amanda Lazar, Andrea Parker, Muge Haseki, and Anupriya Tuli. Women’s health, wellbeing, & empowerment. In *Conference Companion Publication of the 2019 on Computer Supported Cooperative Work and Social Computing*, pages 116–121, 2019.
- [129] Neha Kumar, Marisol Wong-Villacres, Naveena Karusala, Aditya Vishwanath, Arkadeep Kumar, and Azra Ismail. Aspirations-based design. In *Proceedings of the Tenth International Conference on Information and Communication Technologies and Development*, pages 1–11, 2019.
- [130] Morten Kyng. On creating and sustaining alternatives: the case of danish telehealth. In *Proceedings of The Fifth Decennial Aarhus Conference on Critical Alternatives*, pages 5–16. Aarhus University Press, 2015.
- [131] Morten Kyng and Lars Mathiassen. *Systems development and trade union activities*. Computer Science Department, Aarhus University, 1979.
- [132] Benjamin Lafreniere, Tovi Grossman, Fraser Anderson, Justin Matejka, Heather Kerrick, Danil Nagy, Lauren Vasey, Evan Atherton, Nicholas Beirne, Marcelo H Coelho, et al. Crowdsourced fabrication. In *Proceedings of the 29th Annual Symposium on User Interface Software and Technology*, pages 15–28. ACM, 2016.

- [133] Nina Laurie and Diane Richardson. Geographies of stigma: Post-trafficking experiences. *Transactions of the Institute of British Geographers*, 46(1):120–134, 2021.
- [134] Nina Laurie, Diane Richardson, Meena Poudel, and Janet Townsend. Post-trafficking bordering practices: Perverse co-production, marking and stretching borders. *Political Geography*, 48:83–92, 2015.
- [135] Mahendra Lawoti. Introduction to special section: Ethnicity, exclusion and democracy in nepal. *HIMALAYA, the Journal of the Association for Nepal and Himalayan Studies*, 28(1):1, 2010.
- [136] Christopher A Le Dantec. *Designing publics*. MIT Press, 2016.
- [137] Christopher A Le Dantec and W Keith Edwards. Designs on dignity: perceptions of technology among the homeless. In *Proceedings of the SIGCHI conference on human factors in computing systems*, pages 627–636. ACM, 2008.
- [138] Christopher A Le Dantec and Sarah Fox. Strangers at the gate: Gaining access, building rapport, and co-constructing community-based research. In *Proceedings of the 18th ACM conference on computer supported cooperative work & social computing*, pages 1348–1358, 2015.
- [139] Kurt Lewin. Frontiers in group dynamics: Ii. channels of group life; social planning and action research. *Human relations*, 1(2):143–153, 1947.
- [140] Ann Light and Yoko Akama. The human touch: participatory practice and the role of facilitation in designing with communities. In *Proceedings of the 12th Participatory Design Conference: Research Papers-Volume 1*, pages 61–70, 2012.
- [141] Thomas Ludwig, Volkmar Pipek, and Peter Tolmie. Designing for collaborative in-

- frastructuring: Supporting resonance activities. *Proceedings of the ACM on Human-Computer Interaction*, 2(CSCW):113, 2018.
- [142] Mary Anne MacLeod and Akwugo Emejulu. Neoliberalism with a community face? a critical analysis of asset-based community development in scotland. *Journal of Community Practice*, 22(4):430–450, 2014.
- [143] Vaishali S Mahendra, P Bhattarai, D Dahal, and Siobhan Crowley. Community perceptions of trafficking and its determinants in nepal. *Kathmandu, Nepal: The Asia Foundation*, 2001.
- [144] Chandan Kumar Mandal. Nearly 1.5 million nepali at risk of human trafficking, report says. <https://kathmandupost.com/national/2019/08/06/nearly-1-5-million-nepali-at-risk-of-human-trafficking-while-35-000-trafficked-last-year-nhrc-report>, 08 2019.
- [145] Michael Massimi and Ronald M Baecker. Dealing with death in design: developing systems for the bereaved. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pages 1001–1010. ACM, 2011.
- [146] Michael Massimi, Jill P Dimond, and Christopher A Le Dantec. Finding a new normal: the role of technology in life disruptions. In *Proceedings of the acm 2012 conference on computer supported cooperative work*, pages 719–728. ACM, 2012.
- [147] Alison Mathie and Gord Cunningham. From clients to citizens: Asset-based community development as a strategy for community-driven development. *Development in practice*, 13(5):474–486, 2003.
- [148] Alison Mathie and Gord Cunningham. Who is driving development? reflections on the transformative potential of asset-based community development. *Canadian Journal*

- of Development Studies/Revue canadienne d'études du développement*, 26(1):175–186, 2005.
- [149] Tara Matthews, Kathleen O’Leary, Anna Turner, Manya Sleeper, Jill Palzkill Woelfer, Martin Shelton, Cori Manthorne, Elizabeth F Churchill, and Sunny Consolvo. Stories from survivors: Privacy & security practices when coping with intimate partner abuse. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*, pages 2189–2201. ACM, 2017.
- [150] Richard E Mayer, Julie Heiser, and Steve Lonn. Cognitive constraints on multimedia learning: When presenting more material results in less understanding. *Journal of educational psychology*, 93(1):187, 2001.
- [151] Roger C Mayer, James H Davis, and F David Schoorman. An integrative model of organizational trust. *Academy of management review*, 20(3):709–734, 1995.
- [152] Indrani Medhi, Aman Sagar, and Kentaro Toyama. Text-free user interfaces for illiterate and semi-literate users. In *Information and Communication Technologies and Development, 2006. ICTD’06. International Conference on*, pages 72–82. IEEE, 2006.
- [153] Indrani Medhi, Archana Prasad, and Kentaro Toyama. Optimal audio-visual representations for illiterate users of computers. In *Proceedings of the 16th international conference on World Wide Web*, pages 873–882. ACM, 2007.
- [154] Indrani Medhi, Somani Patnaik, Emma Brunskill, SN Gautama, William Thies, and Kentaro Toyama. Designing mobile interfaces for novice and low-literacy users. *ACM Transactions on Computer-Human Interaction (TOCHI)*, 18(1):2, 2011.
- [155] Kelly Mills, Elizabeth Bonsignore, Tamara Clegg, June Ahn, Jason Yip, Daniel Pauw, Lautaro Cabrera, Kenna Hernly, and Caroline Pitt. Connecting children’s scientific

- funds of knowledge shared on social media to science concepts. *International Journal of Child-Computer Interaction*, 21:54–64, 2019.
- [156] Annemarie Mol, Ingunn Moser, Jeannette Pols, et al. Care: putting practice into theory. *Care in practice: On tinkering in clinics, homes and farms*, 8:7–27, 2010.
- [157] Maletsabisa Molapo, Melissa Densmore, and Brian DeRenzi. Video consumption patterns for first time smartphone users: Community health workers in lesotho. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*, pages 6159–6170. ACM, 2017.
- [158] Luis C Moll, Cathy Amanti, Deborah Neff, and Norma Gonzalez. Funds of knowledge for teaching: Using a qualitative approach to connect homes and classrooms. *Theory into practice*, 31(2):132–141, 1992.
- [159] Wendy Moncur, Lorna Gibson, and Daniel Herron. The role of digital technologies during relationship breakdowns. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing*, pages 371–382. ACM, 2016.
- [160] Violeta Santos Moura. Spirit me away: The women and girls lost to trafficking in nepal. <https://www.aljazeera.com/gallery/2020/3/8/spirit-me-away-the-women-and-girls-lost-to-trafficking-in-nepal>, 03 2020.
- [161] Preeti Mudliar. Public wifi is for men and mobile internet is for women: Interrogating politics of space and gender around wifi hotspots. *Proceedings of the ACM on Human-Computer Interaction*, 2(CSCW):126, 2018.
- [162] Michael Muller. Feminism asks the “who” questions in hci . *Interacting with Computers*, 23(5):447–449, 2011.

- [163] Michael J Muller. Participatory design: the third space in hci. *Human-computer interaction: Development process*, 4235:165–185, 2003.
- [164] Christopher Musello. Studying the home mode: An exploration of family photography and visual communication. *Studies in Visual Communication*, 6(1):23–42, 1980.
- [165] Maryam Mustafa, Amna Batool, and Agha Ali Raza. Designing ict interventions for women in pakistan. *Communications of the ACM*, 62(11):46–47, 2019.
- [166] The Kathmandu Post/Asia News Network. Nepali women are being trafficked to china and sold as wives. <https://newsinfo.inquirer.net/1162563/nepali-women-are-being-trafficked-to-china-and-sold-as-wives>, 09 2019.
- [167] Kristen Nygaard and Olav Terje Bergo. The trade unions-new users of research. *Personnel review*, 1975.
- [168] U.S. Department of State. Trafficking in persons report. <https://www.state.gov/wp-content/uploads/2020/06/2020-TIP-Report-Complete-062420-FINAL.pdf>, 06 2020.
- [169] Siân Oram, Melanie Abas, Debra Bick, Adrian Boyle, Rebecca French, Sharon Jakobowitz, Mizanur Khondoker, Nicky Stanley, Kylee Trevillion, Louise Howard, et al. Human trafficking and health: a survey of male and female survivors in england. *American journal of public health*, 106(6):1073–1078, 2016.
- [170] Antti Oulasvirta. Finding meaningful uses for context-aware technologies: the humanistic research strategy. In *Proceedings of the SIGCHI conference on Human factors in computing systems*, pages 247–254, 2004.
- [171] Joyojeet Pal. Chi4good or good4chi. In *Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems*, CHI EA '17, pages

- 709–721, New York, NY, USA, 2017. ACM. ISBN 978-1-4503-4656-6. doi: 10.1145/3027063.3052766. URL <http://doi.acm.org/10.1145/3027063.3052766>.
- [172] Seymour Papert. *Mindstorms: Children, computers, and powerful ideas*. Basic Books, Inc., 1980.
- [173] Lucy Pei and Bonnie Nardi. We did it right, but it was still wrong: Toward asset-based design. In *Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems*, pages 1–11, 2019.
- [174] Kylie Pepler, Melissa Gresalfi, Katie Salen Tekinbas, and Rafi Santo. *Soft circuits: Crafting e-fashion with DIY electronics*. MIT Press, 2014.
- [175] Kylie Pepler, Katie Salen Tekinbas, Melissa Gresalfi, and Rafi Santo. *Short circuits: Crafting e-puppets with DIY electronics*. MIT Press, 2014.
- [176] Trevor Perrier, Nicola Dell, Brian DeRenzi, Richard Anderson, John Kinuthia, Jennifer Unger, and Grace John-Stewart. Engaging pregnant women in kenya with a hybrid computer-human sms communication system. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*, pages 1429–1438, 2015.
- [177] Volkmar Pipek and Volker Wulf. Infrastructuring: Toward an integrated perspective on the design and use of information technology. *Journal of the Association for Information Systems*, 10(5):1, 2009.
- [178] Madeline Plauché and Udhyakumar Nallasamy. Speech interfaces for equitable access to information technology. *Information Technologies & International Development*, 4(1):pp–69, 2007.
- [179] Meena Poudel. *Dealing with hidden issues: Social rejection experienced by trafficked women in Nepal*. LAP Lambert Academic Publishing Saarbrücken, 2011.

- [180] Gary W Pritchard and John Vines. Digital apartheid: an ethnographic account of racialised hci in cape town hip-hop. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pages 2537–2546. ACM, 2013.
- [181] Uddhab Prasad Pyakurel. *Reproduction of Inequality and Social Exclusion: A Study of Dalits in a Caste Society, Nepal*, volume 2. Springer Nature, 2021.
- [182] Nunuta Rai. Nepal’s poor have turned more vulnerable to human trafficking amid covid-19. <https://english.onlinekhabar.com/nepals-poor-have-turned-more-vulnerable-to-human-trafficking-amid-covid-19.html>, 04 2021.
- [183] Aruna Rao and David Kelleher. Is there life after gender mainstreaming? *Gender & Development*, 13(2):57–69, 2005.
- [184] Aruna Rao, Rieky Stuart, and David Kelleher. *Gender at work: Organizational change for equality*. Kumarian Press West Hartford, CT, 1999.
- [185] Aishwarya Lakshmi Ratan, Sambit Satpathy, Lilian Zia, Kentaro Toyama, Sean Blagsvedt, Udai Singh Pawar, and Thanuja Subramaniam. Kelsa+: digital literacy for low-income office workers. In *2009 International Conference on Information and Communication Technologies and Development (ICTD)*, pages 150–162. IEEE, 2009.
- [186] Agha Ali Raza, Farhan Ul Haq, Zain Tariq, Mansoor Pervaiz, Samia Razaq, Umar Saif, and Roni Rosenfeld. Job opportunities through entertainment: Virally spread speech-based services for low-literate users. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pages 2803–2812. ACM, 2013.
- [187] Corinne Redfern. The pandemic’s hidden human trafficking crisis. <https://foreignpolicy.com/2020/04/30/coronavirus-pandemic-human-trafficking-crisis/>, 04 2020.

- [188] Paul Resnick. Phone-based cscw: tools and trials. *ACM Transactions on Information Systems (TOIS)*, 11(4):401–424, 1993.
- [189] Paul Resnick. Beyond bowling together: Sociotechnical capital. *HCI in the New Millennium*, 77:247–272, 2001.
- [190] Diane Richardson, Meena Poudel, and Nina Laurie. Sexual trafficking in nepal: constructing citizenship and livelihoods. *Gender, Place & Culture*, 16(3):259–278, 2009.
- [191] Diane Richardson, Nina Laurie, Meena Poudel, and Janet Townsend. Women and citizenship post-trafficking: the case of nepal. *The sociological review*, 64(2):329–348, 2016.
- [192] Horst WJ Rittel and Melvin M Webber. Dilemmas in a general theory of planning. *Policy sciences*, 4(2):155–169, 1973.
- [193] Jahmeilah Roberson and Bonnie Nardi. Survival needs and social inclusion: Technology use among the homeless. In *Proceedings of the 2010 ACM conference on Computer supported cooperative work*, pages 445–448. ACM, 2010.
- [194] Toni Robertson, Tuck W Leong, Jeannette Durick, and Treffyn Koreshoff. Mutual learning as a resource for research design. In *Proceedings of the 13th Participatory Design Conference: Short Papers, Industry Cases, Workshop Descriptions, Doctoral Consortium papers, and Keynote abstracts-Volume 2*, pages 25–28, 2014.
- [195] Yvonne Rogers and Judi Ellis. Distributed cognition: an alternative framework for analysing and explaining collaborative working. *Journal of information technology*, 9(2):119–128, 1994.
- [196] Wendy Roldan, Paola Vanegas, Laura Pina, Carmen Gonzalez, and Jason Yip. The role of funds of knowledge in online search and brokering. 2019.

- [197] David Roodman. The anarchy of numbers: aid, development, and cross-country empirics. *The World Bank Economic Review*, 21(2):255–277, 2007.
- [198] Johnny Saldaña. *The coding manual for qualitative researchers*. Sage, 2015.
- [199] Antti Salovaara, Kristina Höök, Keith Cheverst, Michael Twidale, Matthew Chalmers, and Corina Sas. Appropriation and creative use: linking user studies and design. In *CHI’11 Extended Abstracts on Human Factors in Computing Systems*, pages 37–40. ACM, 2011.
- [200] Nithya Sambasivan, Ed Cutrell, Kentaro Toyama, and Bonnie Nardi. Intermediated technology use in developing communities. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pages 2583–2592. ACM, 2010.
- [201] Nithya Sambasivan, Amna Batool, Nova Ahmed, Tara Matthews, Kurt Thomas, Laura Sanely Gaytán-Lugo, David Nemer, Elie Bursztein, Elizabeth Churchill, and Sunny Consolvo. “they don’t leave us alone anywhere we go”: Gender and digital abuse in south asia. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*. ACM, 2019.
- [202] Jyoti Sanghera, Ratna Kapur, and Nepal Kathmandu. An assessment of laws and policies for the prevention and control of trafficking in nepal. *Kathmandu: The Asia Foundation and New Delhi: Population Council*, 2000.
- [203] Saiph Savage. Citizens as more than sensors, citizens as agents for change. In *Companion Proceedings of the Web Conference 2020*, pages 549–549, 2020.
- [204] Hanna Schneider, Malin Eiband, Daniel Ullrich, and Andreas Butz. Empowerment in hci—a survey and framework. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*, pages 1–14, 2018.

- [205] Donald Schön. *The reflective practitioner*, volume 26. New York: Basic Books, 1983.
- [206] Donald A Schön. *Educating the reflective practitioner: Toward a new design for teaching and learning in the professions*. Jossey-Bass, 1987.
- [207] Dona Schwartz. Visual ethnography: Using photography in qualitative research. *Qualitative sociology*, 12(2):119–154, 1989.
- [208] Amartya Sen et al. Commodities and capabilities. *OUP Catalogue*, 1999.
- [209] Amartya K Sen. *Development as freedom*. Knopf, 1999.
- [210] Gita Sen. Empowerment as an approach to poverty. *Human Development Report*, 97, 1997.
- [211] Araba Sey and Peppino Ortoleva. All work and no play? judging the uses of mobile phones in developing countries. *Information Technologies & International Development*, 10(3):pp–1, 2014.
- [212] Jyoti Sharma. *Sex trafficking in Nepal: women’s experiences of reintegration*. PhD thesis, The University of Queensland, 2015.
- [213] Padam Simkhada. Life histories and survival strategies amongst sexually trafficked girls in nepal. *Children & society*, 22(3):235–248, 2008.
- [214] Herbert Alexander Simon. *Models of bounded rationality: Empirically grounded economic reason*, volume 3. MIT press, 1997.
- [215] Jesper Simonsen and Toni Robertson. *Routledge international handbook of participatory design*. Routledge, 2012.

- [216] Thomas N Smyth, Satish Kumar, Indrani Medhi, and Kentaro Toyama. Where there's a will there's a way: mobile media sharing in urban india. In *Proceedings of the SIGCHI conference on Human Factors in computing systems*, pages 753–762. ACM, 2010.
- [217] Sharifa Sultana, François Guimbretière, Phoebe Sengers, and Nicola Dell. Design within a patriarchal society: Opportunities and challenges in designing for rural women in bangladesh. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*, page 536. ACM, 2018.
- [218] Ann Swidler. Culture in action: Symbols and strategies. *American sociological review*, pages 273–286, 1986.
- [219] Kim TallBear. Standing with and speaking as faith: A feminist-indigenous approach to inquiry. *Journal of Research Practice*, 10(2):17, 2014.
- [220] Jonathan Taplin. *Move Fast and Break Things*. Little, Brown and Company, 2017.
- [221] Deborah Tatar. The design tensions framework. *Human–Computer Interaction*, 22(4): 413–451, 2007.
- [222] Nick Taylor, Ursula Hurley, and Philip Connolly. Making community: the wider role of makerspaces in public life. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, pages 1415–1425. ACM, 2016.
- [223] Kamal Thapa Kshetri, Yesoda Banjade, and Govind Subedi. Trafficking in persons national report. Technical report, National Human Rights Commission Nepal, 09 2018. URL http://www.nhrcnepal.org/nhrc_new/doc/newsletter/NHRC_National_Report_TIP_in_Nepal_September_2018.pdf.
- [224] Austin L Toombs, Shaowen Bardzell, and Jeffrey Bardzell. The proper care and feeding

- of hackerspaces: Care ethics and cultures of making. In *Proceedings of the 33rd annual ACM conference on human factors in computing systems*, pages 629–638. ACM, 2015.
- [225] Kentaro Toyama. Technology as amplifier in international development. In *Proceedings of the 2011 iConference*, pages 75–82. ACM, 2011.
- [226] Kentaro Toyama. *Geek heresy: Rescuing social change from the cult of technology*. PublicAffairs, 2015.
- [227] Kentaro Toyama. From needs to aspirations in information technology for development. *Information Technology for Development*, 24(1):15–36, 2018.
- [228] Carl Unander-Scharin, Åsa Unander-Scharin, and Kristina Höök. The vocal chorder: Empowering opera singers with a large interactive instrument. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pages 1001–1010, 2014.
- [229] Nancy A Van House. Collocated photo sharing, story-telling, and the performance of self. *International Journal of Human-Computer Studies*, 67(12):1073–1086, 2009.
- [230] Max Van Kleek, Dave Murray-Rust, Amy Guy, Kieron O’hara, and Nigel Shadbolt. Computationally mediated pro-social deception. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, pages 552–563. ACM, 2016.
- [231] Aditya Vashistha, Edward Cutrell, Gaetano Borriello, and William Thies. Sangeet swara: A community-moderated voice forum in rural india. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*, pages 417–426. ACM, 2015.
- [232] Aditya Vashistha, Abhinav Garg, Richard Anderson, and Agha Ali Raza. Threats, abuses, flirting, and blackmail: Gender inequity in social media voice forums. In

- Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*, CHI '19. ACM, 2019. ISBN 978-1-4503-5970-2.
- [233] John Vines, Roisin McNaney, Rachel Clarke, Stephen Lindsay, John McCarthy, Steve Howard, Mario Romero, and Jayne Wallace. Designing for-and with-vulnerable people. In *CHI'13 Extended Abstracts on Human Factors in Computing Systems*, pages 3231–3234. ACM, 2013.
- [234] John Vines, Roisin McNaney, Amey Holden, Ivan Poliakov, Peter Wright, and Patrick Olivier. Our year with the glass: expectations, letdowns and ethical dilemmas of technology trials with vulnerable people. *Interacting with Computers*, 29(1):27–44, 2017.
- [235] Amy Volda, Ellie Harmon, and Ban Al-Ani. Bridging between organizations and the public: volunteer coordinators' uneasy relationship with social computing. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pages 1967–1976, 2012.
- [236] Otto Von Busch and Cigdem Kaya Pazarbasi. Just craft: Capabilities and empowerment in participatory craft projects. *Design Issues*, 34(4):66–79, 2018.
- [237] Dhaval Vyas and Tawanna Dillahunt. Everyday resilience: Supporting resilient strategies among low socioeconomic status communities. *Proc. ACM Hum.-Comput. Interact.*, 1(CSCW):105:1–105:21, 12 2017.
- [238] Laura Warwick. Designing trust: the importance of relationships in social contexts. *The Design Journal*, 20(sup1):S3096–S3105, 2017.
- [239] Earnest Wheeler and Tawanna R Dillahunt. Navigating the job search as a low-

- resourced job seeker. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*, pages 1–10, 2018.
- [240] Marisol Wong-Villacres, Arkadeep Kumar, Aditya Vishwanath, Naveena Karusala, Betsy DiSalvo, and Neha Kumar. Designing for intersections. In *Proceedings of the 2018 Designing Interactive Systems Conference*, pages 45–58, 2018.
- [241] Marisol Wong-Villacres, Carl DiSalvo, Neha Kumar, and Betsy DiSalvo. Culture in action: Unpacking capacities to inform assets-based design. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, pages 1–14, 2020.
- [242] Marisol Wong-Villacres, Aakash Gautam, Wendy Roldan, Lucy Pei, Jessa Dickinson, Azra Ismail, Betsy DiSalvo, Neha Kumar, Tammy Clegg, Sheena Erete, Emily Roden, Nithya Sambasivan, and Jason Yip. From needs to strengths: Operationalizing an assets-based design of technology. In *Companion of the 2020 ACM Conference on Computer Supported Cooperative Work and Social Computing*. ACM, 2029.
- [243] Michael Woolcock. Social capital and economic development: Toward a theoretical synthesis and policy framework. *Theory and society*, 27(2):151–208, 1998.
- [244] Joyce Yee and Hazel White. The goldilocks conundrum: The ‘just right’ conditions for design to achieve impact in public and third sector projects. *International Journal of Design*, 10(1), 2016.
- [245] Tara J Yosso. Whose culture has capital? a critical race theory discussion of community cultural wealth. *Race ethnicity and education*, 8(1):69–91, 2005.
- [246] Muhammad Yunus. *Banker to the poor: Micro-lending and the battle against world poverty*. PublicAffairs, 2007.


- [247] Serene Sarah Zachariah. The untold story of how suniel shetty helped 128 sex trafficking survivors return home in 1996. <https://www.thebetterindia.com/227031/suniel-shetty-1996-rescue-operation-sex-trafficking-victims-nepal-real-hero-inspiring-ser106/>, 05 2020.

Appendices

Appendix A

IRB Approval

MEMORANDUM

DATE: October 31, 2017 

TO: Deborah Gail Tatar, Aakash Gautam, Chandani Shrestha

FROM: Virginia Tech Institutional Review Board (FWA00000572, expires January 29, 2021)

PROTOCOL TITLE: Jeevankatha: Preliminary Informational Interview

IRB NUMBER: 17-1020

Effective October 30, 2017, the Virginia Tech Institution Review Board (IRB) Chair, David M Moore, approved the New Application request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at:

<http://www.irb.vt.edu/pages/responsibilities.htm>

(Please review responsibilities before the commencement of your research.)

PROTOCOL INFORMATION:

Approved As: **Exempt, under 45 CFR 46.110 category(ies) 2,4**
Protocol Approval Date: **October 30, 2017**
Protocol Expiration Date: **N/A**
Continuing Review Due Date*: **N/A**

*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals/work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

Date*	OSP Number	Sponsor	Grant Comparison Conducted?

* Date this proposal number was compared, assessed as not requiring comparison, or comparison information was revised.

If this IRB protocol is to cover any other grant proposals, please contact the IRB office (irbadmin@vt.edu) immediately.

December 18, 2018

Deborah Tatar, PhD
Virginia Polytechnic Institute and State University
2202 Kraft Dr., Room 1123
Blacksburg, VA 24060

Dear Dr. Tatar:

SUBJECT: REGULATORY OPINION—IRB EXEMPTION
Protocol Title: JeevanKatha: Field Observation and Application Testing
Investigator: Deborah Tatar, PhD
IRB No.: 18-1054

This letter is in response to your request to Western Institutional Review Board (WIRB) for an exemption determination for the above-referenced research project. WIRB's IRB Affairs Department reviewed the exemption criteria under 45 CFR §46.101(b)(2):

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:

(i) Information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

We believe that the research fits the above exemption criteria. The data will be collected in a way so that the subjects can be identified, directly or through identifiers linked to the participants. However, any disclosure of the human subjects' responses outside the research will not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation. You have also confirmed that the results of this study will not be submitted to the Food and Drug Administration (FDA) for marketing approval.

This exemption determination can apply to multiple sites, but it does not apply to any institution that has an institutional policy of requiring an entity other than WIRB (such as an internal IRB) to make exemption determinations. WIRB cannot provide an exemption that overrides the jurisdiction of a local IRB or other institutional mechanism for determining exemptions. You are responsible for ensuring that each site to which this exemption applies can and will accept WIRB's exemption decision.

Western Institutional Review Board®

1019 39th Avenue SE Suite 120 | Puyallup, WA 98374-2115

Office: (360) 252-2500 | Fax: (360) 252-2498 | www.wirb.com

Please note that any future changes to the project may affect its exempt status, and you may want to contact WIRB about the effect these changes may have on the exemption status before implementing them. WIRB does not impose an expiration date on its IRB exemption determinations.

If you have any questions, or if we can be of further assistance, please contact R. Bert Wilkins at 360-252-2852, or e-mail RegulatoryAffairs@wirb.com.

RBW:jca

B2-Exemption-Tatar (12-18-2018)

cc: VA Tech WIRB, Virginia Polytechnic Institute and State University
Aakash Gautam, Virginia Tech
WIRB Accounting
WIRB Work Order #1-1140543-1

MEMORANDUM

DATE: July 14, 2020
TO: Deborah Gail Tatar, Aakash Gautam, Chandani Shrestha
FROM: Virginia Tech Institutional Review Board (FWA00000572, expires October 29, 2024)
PROTOCOL TITLE: JeevanKatha: Remotely Understanding Organizational and Client Perspective
IRB NUMBER: 20-511

Effective July 14, 2020, the Virginia Tech Institutional Review Board (IRB) approved the New Application request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at:

<https://secure.research.vt.edu/external/irb/responsibilities.htm>

(Please review responsibilities before beginning your research.)

PROTOCOL INFORMATION:

Approved As: **Expedited, under 45 CFR 46.110 category(ies) 6,7**
Protocol Approval Date: **July 14, 2020**
Progress Review Date: **July 13, 2021**

ASSOCIATED FUNDING:

The table on the following page indicates whether grant proposals are related to this protocol, and which of the listed proposals, if any, have been compared to this protocol, if required.

Date*	OSP Number	Sponsor	Grant Comparison Conducted?

* Date this proposal number was compared, assessed as not requiring comparison, or comparison information was revised.

If this protocol is to cover any other grant proposals, please contact the HRPP office (irb@vt.edu) immediately.