UNMAKING

Exploring Agency through Unmaking

Unmaking

EXPLORING AGENCY THROUGH UNMAKING

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Exploring agency through Unmaking

Exploring agency through Un-making.
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" Whether you think you can, or you think you can't, you're right."

~Henry Ford

3.0 Glossary/ Keywords

Agency
A sense of agency refers to the feeling of control over actions and their consequences.

Capability approach
A theoretical framework that claims that the "freedom to achieve well-being is to be understood in terms of people's capabilities, that is, their real opportunities to do and be what they have reason to value." (Robeyns, 2016)

Unmaking
Is the act of deconstructing physical object, specifically consumer and household technology

Localization
An action by region , city or neighbourhood that endeavours to systematically reduce their dependence from the effects of globalization through local investment into local goods and service (Schuman, 2000, p. 6)

Blackboxing
Is the opacity of use that embody contemporary goods and services. Opaque systems and products that we do not know how it works, or be able to repair it, or have little control over its function.

Resilience
Resilience is a trait that can be possessed by people or individuals, and refers to an ability to function through adversity and recover from challenging situations.

Agency | Capability | Technology | Unmaking
Economic Localization | Blackboxing | Capability

4.0 Abstract

This thesis proposes that if people and local communities were more skilled in making and repair, they could be more resourceful with the objects around them, making it possible to engage in more sustainable practices. Such skills afford a revised pattern to the consumption of products, services and materials. The thesis explores an observed gap between a person's sense of agency and their capabilities to act in more sustainable ways. Maker movements, Transition Towns, and other project-based learning organizations like Vancouver's Citystudio and Costa Rica's Earth University, are re-skilling people to live more sustainable lives. Communal learning and tangible skills build more self-reliant communities. These movements are seen as vital steps in a long path toward sustainable local and circular economies.

Through a series of hands on 'Unmaking' workshops the research attempts to leverage our relationship to waste electronics and appliances as mode of exploration to discuss ideas of agency, capability and curiosity. By taking waste electronics and appliances apart, un-boxing the black-box, participants mindfully investigate our complicity in their existence, and ultimately develop new understandings and skills to collaboratively tackle their adverse effects. The act of Unmaking, not only provides a platform for discussion, but also gives participants an opportunity for co-learning driven by mutual curiosity. The heuristic nature of this research opens up an exploratory space for designers and non-designers alike that encourages a reflective practice. The resistance to adopt more sustainable lifestyles partly lies in a lack of understanding of our built environment, the resources and energies involved in its production, and a sense of value in the objects we encounter in our daily lives.

5.0 Introduction

This thesis explores the redevelopment of technical capability as a vehicle for regaining a personal sense of agency through the act of Unmaking [taking things apart to their simplest component]. Technical capability in this context, relates to tangible skills such as hands on material practice (making, modifying, and repairing), and generally a more holistic understanding of the built environment, which many have argued have declined in contemporary society in our quest for convenience, ease of use, technological facilitation, and the increase in replacement and disposal over repair of consumer goods (Walker S. , 2017, p. 22). The American Society of Training and Development has demonstrated that many hands on construction industries are suffering severely as a result of technical skills loss due to retirement and younger generations preferring the knowledge economy over a technical economy. (ASTD, 2012)

Can insight into our own capabilities and capacity for understanding engender an agency that will challenge our more harmful consumer behaviors, and could it open up more responsible and meaningful ways of engaging with everyday objects?. Stuart Walker, in his book, "Design for Life," suggests that in order to "unmake waste, we have to unmake the outlooks, values and priorities that lead to waste" (Walker 95). Walker also suggests we might require re-establishing a relationship to devalued and neglected ways of knowing – "the tacit, the intuitive, the meaningful and the profound" (Walker S. , 2017, p. 30) are means for design to contribute toward positive social change.

This investigation explores some of these 'ways of knowing', by prototyping frameworks that support the rediscovery of capabilities and core values that can facilitate a shift toward resilience and self-reliance on a societal, communal and personal level.

The vehicle for this exploration is a series of hands-on Unmaking workshops facilitating discussions about the relationships between personal capability , the agency we have over these objects, and the implications of owning them. Participants are invited to navigate the complexity of contemporary consumer technologies through a process of Unmaking, or deconstructing everyday objects. The workshops delve into 'blackboxing', a term that refers to the opacity of function and diminished repair-ability of our usual technologies and devices. This methodology of 'Unmaking' looks to spark curiosity as a driver for inquiry, offering an element of risk and uncertainty and the promise of discovery and reflection. This process of discovery builds confidence and contributes toward the development of tangible and critical skills for resiliency and more sustainable lifestyles.

6.0 Ideology

Figure 02   *Photocredit Evan Clayton*

I am a maker, designer and tinkerer of things. I graduated from Emily Carr university in 2013 with a Bachelor's degree in Industrial design and shortly after co-founded a design firm, which focused exclusively on upcycling, a practice that utilize waste materials to design and make with. This practice was driven by the philosophy of "waste not want not" and after having been inundated with the doom and gloom of consumerism, environmental ethics and the reality of what it means to be an industrial designer, sustainability minded projects became my primary focus.

I was born in South Africa and for most of my childhood I lived in what can be described as poverty in a government subsidized boarding facility with a hundred other boys. I have two brothers and a sister, and we grew up having to rely on hand-me downs in many aspects of our lives. I was either drowning in a extra large shirt from my brothers, or having to repair torn or worn clothing. Friends passed down their old school shoes and worn out sneakers and by the time I was twelve I had gotten really good at clothing repair. At 16 years old, I was sent to live with my father, an auto electrician and backyard mechanic, who integrated me into his workshop starting me off with mundane things like removing parts from vehicles being repaired, taking them apart and in some cases, repair them. He enrolled me into the local technical vocational high school which offers a range of subjects that include accompanying workshops geared towards industrialized economies like mining, manufacturing and the automotive industry.

Exploring Agency through Unmaking

Pedagogically the learning included subjects like auto mechanics, civil engineering, electrical wiring, and much off the academic technical learning associated with extraction economies. At the end of my high school career I had a strong ability to solve technical problems and given the opportunity, be able to step into many technical roles and learn these new skills somewhat effortlessly. Leaving high school, with few jobs prospects in the technical sector and, job digging trenches and holes for telecommunications infrastructure in rural Africa was the only available employment. This experience afforded me a diverse learning, including learning local tribal language, in order to be able to communicate and understand the cultural differences in various villages.

My employment history after covers a journey of sweeping floors in factories in the UK, professional IKEA furniture assembly, crewing on educational charter ships, cell tower rigging, boat warranty administration, limousine driving, film industry worker, entrepreneur with a bachelor's degree in Industrial design. Today I am privileged enough to be exploring the roots of my experience, writing about skills, learning, capability and agency. I recognize that I am extremely privileged today for the experiences and opportunities I have been given in life living in a great city like Vancouver having had seen much of the world and I, for the most part, do what I love doing in a creative, meaningful way.

Over the last four years I have had the good fortune to teach at college level and one thing that has stood out to me is that my experience is quite unique and there are less folks around with access to tangible tacit skills as they are mostly immersed in what is called the knowledge and technology economy.

This way of being and living sometimes affords little adversity due to its seemingly 'designed for convenience' nature. It seems like we have been moving toward a point where there will be so few technically minded and apt people, and the knowledge economy would have absorbed much of the workforce in the world. I would agree that some tacit skills have become redundant and outdated, but there is still much value in many areas of hands on learning and doing. It seems that we are losing control of the process of 'deskilling' in exchange for this convenience and I think it is affecting our lives, our relationships, confidence in our own abilities, and arguably, self esteem in an adverse way. During my practise as a designer and sometimes educator, I co-facilitated a design charrette with industrial design and engineering students centered around upcycling and it here that I realized that in order to have a positive impact as designers, we might need to engage and involve others collaboratively to build capacity around skills development that involves making and thinking critically about the objects that surround us.

7.0 Context

Throwaway culture

Skills

Localization

Transitioning

Enabling Solutions

Blackboxing

Agency

Curiosity

Mutual Benefit

Figure 03   *Recycling BC Unmaking project sponsors*

Throwaway Culture

Ezio Manzini, in his book, "Design for When Everyone Designs", argues that a consumer 'throwaway culture' might be a major contributing factor to the loss of practical skills and capabilities in people due to the lack of a need for upkeep [of these products and services] (Manzini, 2015, p. 95). Tim Cooper describes this throwaway culture as a behavior that is "reinforced by the idea of neoclassical economics where more is always better", and the idea that, when there is an update to a product, it infers replacement for many people, thereby creating unsustainable resource depletion through the production of new product (Cooper, 2013, p. 138).

This throwaway culture has left our planet with serious ecological, social and psychological problems, to the point that the country of Sweden started to give tax breaks to citizens who are willing to repair their belongings, as opposed to purchasing new products (Starrit, 2016). Sweden is also supporting the first ever reuse, recycle, and upcycle mall (ReTuna Recycling Galleria, located in the city of Eskilstuna) as part of their commitment to sustainability. This 'movement' is in parallel with other initiatives, attempting to mitigate consumerism, through things like local maker movements, transition town movements, new and old craft exploration, building support structures for local manufacturing, circular economies, as well as upcycling, and repair initiatives (L. Leonard, 2009) (Dougherty, 2013) (https://www.goodnewsnetwork.org, 2017).

Locally in Vancouver, Canada, small initiatives and businesses like 'Repair Matters, NADA Zero Waste Supermarket and Lupii Café are pioneering the pathways toward this shift and has collectively prevented truckloads of waste from going to the landfill through design, repair and retail efforts. Textile waste reduction efforts supported by the City of Vancouver is being led by organisations like Leverage Labs, FRAMEWORQ and DeBrand, who either consults or takes textile waste and turn it into a resource. Vancouver, may be a playground for new sustainability ventures and alternative business models tested and grown locally, however all of these initiatives exist in the service of mitigating our behavior as consumers.

Manzini argues that changing behavior from the ground up might tilt the scale in our favour, but given the gravity of the situation we are facing, it may not be enough. While this might bear some truth he also suggests that changing individual behavior on a micro-scale could "cumulatively exert pressure from within" and "set conditions for a macro-scale change" (7). In order to exert this kind of pressure it might mean that the participants would need a certain level of skill and understanding to be able to participate in, and grow the change needed. This thesis is about trying to understand the framework of the development of these personal resources and skills, depending on the level the participants want to participate in.

Skills

In South Africa, where I was born, people repair broken things as much is possible, and in many cases, do so for a living as in many other parts of the world where re-manufacturing, micro repair and refurbishing economies thrive(India)(Saha, 2018). Generations of people survive on these ventures and as they grow, provide economic sustenance for small families. Scarcity, mixed with human ingenuity is arguably the most motivating factor for this behavior and necessity, as they say is the 'mother of all invention'.

This attitude is passed on from a very young age where people learn how to diagnose problems, understand the anatomy of things and are able to either replace parts, creatively modify parts, and in extreme cases might make their own parts. In many cultures washing clothes by hand, communally, is still a prevalent practice. This lies in contrast to owning a washing machine, which, while labour saving and convenient, is materially, water, and energy intensive, but might also deprive us of the less quantifiable communal aspects of the activity. These skills nurture capabilities and foster resilience, but also connect people and foster human relationships.

Whilst not wishing to idolize or sugar-coat the labour intensive nature of such ways of life, we can nonetheless learn lessons from them. This way of being means that these folks not only live a more sustainable way of life, but also occupies a very low carbon footprint, and in some ways, live a more connected life. In a lifetime they will grow more

food than they can eat, use only what they need and probably share more food with their neighbours than most of us. These skills are passed on from brother to sister, sister to brother and parents to children and grandparents to grandchildren. In western cultures this way of being is defined as the hard life, and we have developed services and products to relieve us from this burdensome life, adding layers of convenience that when truly considered, might also be corroding our human resilience through the lack of understanding of how things work or the skills we lose in adopting them (Borgmann, 2003). As we adopt new technologies for their perceived benefits, we are also in many ways tacitly condoning their impact in the world, but also agreeing to surrender some of our skills, our capabilities, and agency at the same time (Badke, 2013, p. 391). This study investigates, what skills we have lost, which ones might be needed, and how they might shape us in the future.

Localization

"A community can best strengthen its economy when it builds on its internal strength" – Michael Shuman(6)

Designers, economists, and leading sustainability writers are proposing that a sustainable way forward, might have to be associated to doing things radically differently. Some of the ways we can do things differently, could be to localize some production and economic activity associated with basic needs. Schuman, in his book "Going Local" suggests that there are both short term and long-term benefits to going local, eg. In the short term, these activities expand the "local economic multiplier" and in the long term it shows that "communities reduce its vulnerabilities to events outside its control. (Schuman, 2000, p. 77). An economic multiplier simply means that if you invest in local market economies, the wealth stays within and incrementally grows in the communities as opposed to big box stores providing products and services in communities and the wealth gets extracted from the community, thereby enriching global corporate entities far away from those communities. He also suggests that in order to become self-reliant communities, we need to educate ourselves on the difference between needs and wants economies. Developing a market-based economy around basic needs might be a starting point for community development (77).

Ezio Manzini and Stuart Walker add that looking at existing resources in communities and recombining them to 'create new functions and meanings' will further drive social innovation toward new workarounds and new ways of being (Ezio Manzini, 2008). In order to foster this way of living and being, we need to understand the skills we might need to be able to engage actively in these ideas. This move toward self-reliance, does not necessitate isolation, but in practise just means that we have to build the "economic base to produce necessities for residents and to focus existing resources on more value added industries." (Schuman, 2000, p. 188). We need to support repair and localized production, and look closer at the life cycle and

impact path of the things we own. To build towards these ideas we need to "enable individuals and communities to deal with the most diverse aspects of daily lives," by building skills capacities and capabilities (Ezio Manzini, 2008, p. 14). There are many communities working towards these goals in many countries in initiatives like the "Repair Café" and IFIXIT (Saha, 2018) (Whitford, n.d.). Locally, the Sunshine Coast community of Gibsons and Sechelt, has provided the conditions for community corporations to be established and facilitates opportunities for the community to invest into local social ventures and community corporations. (Community futures, 2018).

Transitioning

In order for society to transition communities from unsustainable models toward more informed, connected, self reliant local communities and lower impact societies, we will need to change what we are doing and the way we are doing it. New political, economic, educational and social models will be among the biggest changes we have to implement. Economic unsustainability is driven by globalization and corporate interest, and politically under the guise and promise of personal 'prosperity' and 'global sustainability', so much so that the World Bank influenced the restructuring of educational systems in the 1980's in order to adjust to economic development supporting goals, with implications for local economies (Sterling S. , Sustainable Education, 2001, p. 39).

These changes came with their own challenges such as the loss of repair culture, low cost disposable culture development and extraction of local resources, environmentally and financially. Many leading thinkers and practitioners point to the development of strong local economies as the foundational element of building more sustainable communities that are resilient, adaptable and locally responsible and accountable.

The good news is, in many communities and cities across Canada, we are seeing government funded 'local economic development' strategies that are supporting new local sustainable ventures. For example, Simon Fraser University has founded a dedicated hub for social entrepreneurship through their RADIUS and LEDLAB programs, strategically building programs towards this kind of socially responsible economic capacity building (SFU, n.d.). Economist, Robin Murray, describes this as a new kind of 'social or household economy' that stand in contrasts to a commodified economy (Robyn Murray).

A social economy is collaborative, requires interactions with others, and embodies local small ventures, bartering, charities and pro-bono activities . New educational models are growing that support transformative learning as opposed to transmissive education. Transmissive education is information transmitted from teacher to learner in a structural systematic way, as opposed to a constructive, participative model that encourages an iterative, self-driven and experiential way of engaging with learning (Sterling S. , Sustainable Education, 2001, p. 39). Earth University in Costa Rica has successfully transitioned an agricultural program to

encompass a radical new way of learning by introducing key components that create an overall capability and agency structure that includes social and environmental awareness, personal development, technical and scientific knowledge models, as well as ethical entrepreneurship (Earth University).

Local Vancouver program, CityStudio, introduces an interdisciplinary approach that convenes students from multiple universities and disciplines to engage in hands-on project-based learning centered around a dialogue model that fosters openness and personal development. This model introduces students to city employees and its networks in an attempt to better understand the way that cities work through this immersive experience. Transition towns are an example of movements that implement these ideas on a grassroots scale. This movement is largely concerned with building local food assets and local enterprise development with the overarching goal to bolster community resilience, to 'bounce back' from dependencies on resource extraction, and transition communities toward more sustainable ways of life (Elton, 2017)
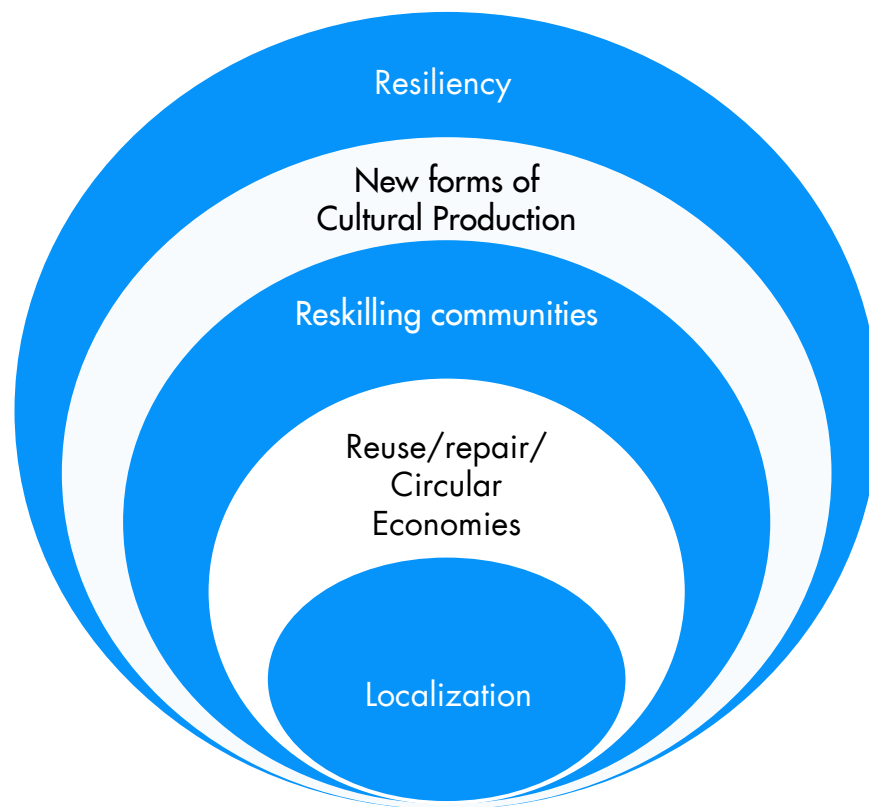

Figure 04 *Elements present in Localization models.*

Enabling solutions

At CityStudio, students are able to gain access to city staff, in other words, tacit, mentorship based, hands-on collaborative learning. Insights garnered from interviews with CityStudio founders, pointed towards a lack of real world opportunities for hands-on, project-based learning in every day life for a large part of the student population (CityStudio, n.d.). A similar example to CityStudio is London based "YEAR HERE" in the UK which is "about learning in the real world rather than in a lecture hall" (Year Here, n.d.) which many researchers suggest that this kind of tacit, intuitive learning is what is missing from contemporary thinking (Walker S. , 2017, p. 141). Through this kind learning by engaging in real world scenarios, these ways of learning can cultivate more informed and resilient students, with real world scenarios. Being able to learn in this way can build confidence in participants to execute on other projects (Sterling S. , Sustainable Education, 2001).

As a teenager, my father taught me how to service automobiles. Since then, automobile designers have incorporated a plethora of sensors, alarms, triggers, electronic and physical barriers to keep me from gaining access to those previously accessible areas. Special wrenches, screwdrivers and proprietary software in vehicles has in some instances completely removed the agency of otherwise very capable fixers and maintainers of things to do this kind of maintenance themselves. It has essentially been 'blackboxed' and can only be serviced by expensive licensed technicians who will simply plug in a scanner that tells them which part to change. The disturbing thing about the emergence of many of these technologies is the fact that we do not know how they work anymore and when they are sending or receiving information about us back and forth.

Blackboxing

"Why is it so difficult to measure, with any precision, the mediating role of techniques? Because the action that we are trying to measure is subject to blackboxing, a process that makes the joint production of actors and artifacts entirely opaque." Bruno Latour, Pandora's Hope, pp. 183

We are surrounded by blackboxes. We handle them every day in our smartphones and laptops, our electronic appliances, and even increasingly in the cars we drive to work in. The complexity of the inner workings of these technologies are invisible and in many instances the only aspects we can actively engage with are their inputs and outputs. Bruno Latour suggests that as our technologies become more complex and sophisticated, they also become more 'opaque and obscure' (Latour,304). Blackboxing refers to the opacity that has been designed or built into processes, objects or systems.

Most people do not know how a smartphone works, they just do, and when they stop working

we have to replace them or seek professional help as we do not have the skills to diagnose and repair them. The idea behind the blackboxing of our devices is that we, as a community, do not have to worry about how our everyday objects work, where they come from, how they are made and what their implications are for us or the environment. This is more overtly evidenced in the use of proprietary screws that only special tools can open, present in many of the technological objects we are surrounded by, from our blenders to our smartphones.

When one looks back at the last thirty years of product development, its easy to see the vast differences in how things are made and which of the many little daily tasks we have systematically removed for ourselves. We are now so incredibly reliant on technology to do simple things for us that when these technologies fail we are seemingly lost. Albert Borgmann states that "the trend in contemporary culture that becomes visible when you look back 150 years is that the environment we have constructed mitigates against comprehension and competence" (Badke, 2009). Borgmann also posits that while striving to create conditions for ourselves to make things easier, we do not often stop to consider the possibility that maybe some things should not be made easier, in order for us, as a community and arguably society, to maintain our sense of agency and our capability (Borgmann). There was a time when it was possible for us to change the oil in our own cars and the RAM in our PC's, but as technology becomes more complex, our ability to tinker and try our hand at maintaining and repairing things, has largely been reduced.

In this thesis project, we explore this aspect by taking apart some of these technological black boxes in order to discover where we are situated in our understanding on the implications of these technologies, and discuss how we might move forward to reclaim our ability to act and, what skills we might need to navigate these complexities.

Curiosity

"Transition toward a sustainable society is a massive learning process" (Ezio Manzini, 2008) and if we become curious about the things we own, our built environment and our own capabilities, this learning will happen more spontaneously. Some of the methodologies in this paper seeks to spark curiosity as a way to activate new ways of living and being, rediscovering our own abilities, possibilities and capabilities.

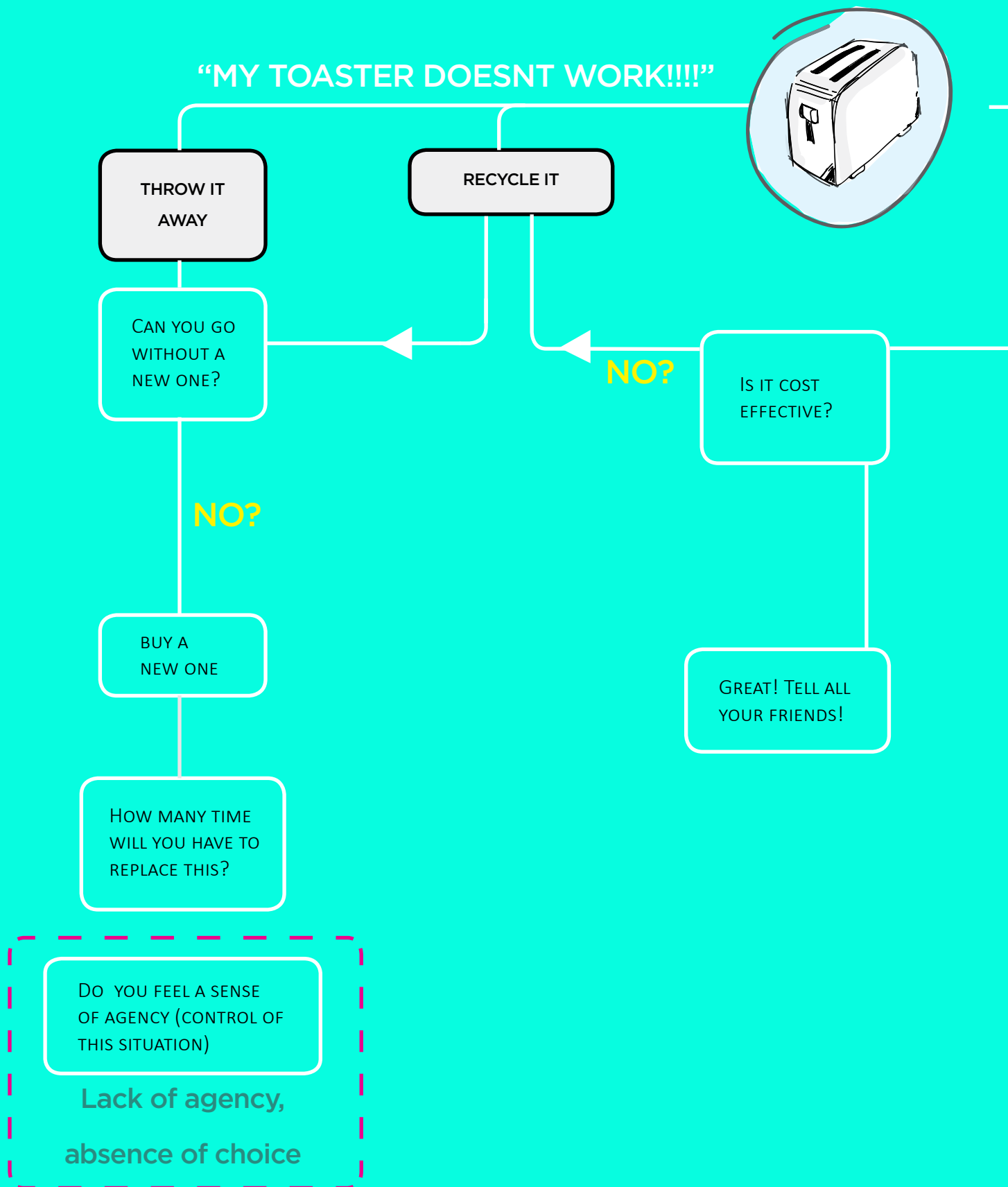Robeyns describes the 'capability approach' as a theoretical framework that claims that the "freedom to achieve well-being is to be understood in terms of people's capabilities, that is, their real opportunities to do and be what they have reason to value." (Robeyns, 2016). I am interested in the space between the thought and the act and its relationship to attributing value to the things that surround us.
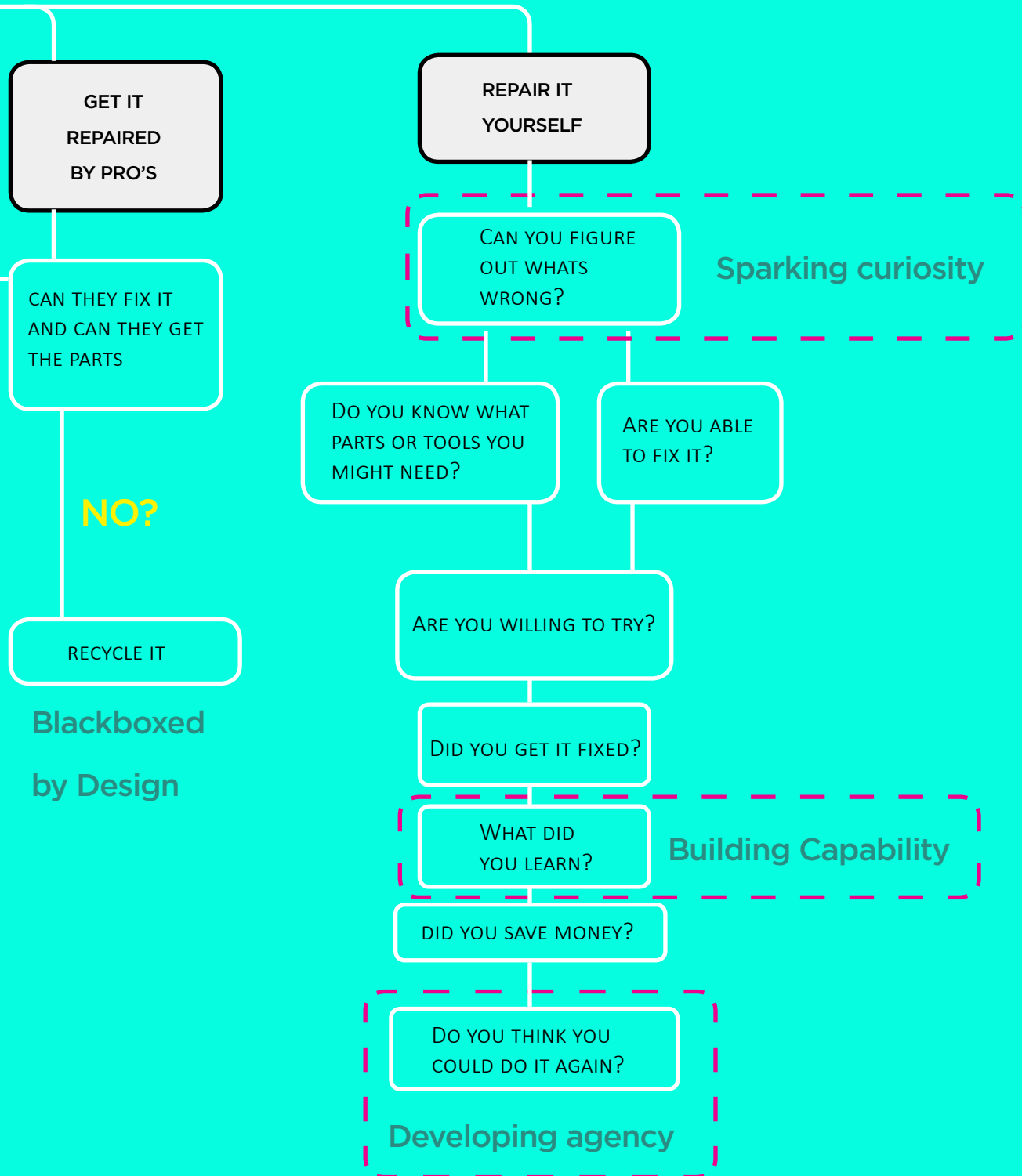
Mutual benefit

Enabling people to become involved in "localized design and making practices can bear fruit that is critical for the appreciation of stewardship of nature" (Walker S., 2017, p. 29). Within this framework of fostering new capabilities, it is important to note that this endeavour also needs to be situated within communities. Cultivating skills and capabilities individually, should consider how such capacities contribute to the mutual wellbeing and opportunities for their own communities. Engaging people in dialogical and experiential learning could provide people with tangible skills to engage in repair, novel making practices and fostering resilience. Schuman proposes that by empowering people and communities to become more diversified in skill sets that can overcome local complex challenges, can encourage personal and communal pride, respect [and confidence]. These are less tangible but still important human qualities that cannot be replaced by specialized, single function, factory labour, simply because they do not inspire the soul and arguably a sense of personal agency (Schuman, 2000, p. 48). Self-reliant communities, when looked at from an ecological perspective, allow people to become stewards of their own geographical context, more connected to reducing pollution and endeavouring to "safeguard their natural resources for future generations"(Schuman, 2000, p. 49).

Agency

Agency, the context of this project refers to having the ability to act in sustainable ways. By taking apart technology on several levels we attempt to regain a personal sense of agency by educating ourselves on the implications of our relationship to objects in the world. When we're curious about something, we investigate and we learn, and when we know, we can act accordingly. Agency can be seen as the ability to affect the circumstances in one's life. The lack of this ability to affect, would then be defined as a lack of agency. A "Sense of agency refers to the feeling of control over actions and their consequences. It is the relationship between the thought and the action that determines the sense of agency" (Weneger via Moore)(Moore, 2016). How do we get from thinking to doing and how does building capability affect our levels of confidence and our impetus to act?

"MY TOASTER DOESNT WORK!!!!"

THROW IT AWAY

RECYCLE IT

CAN YOU GO WITHOUT A NEW ONE?

NO?

IS IT COST EFFECTIVE?

BUY A NEW ONE

GREAT! TELL ALL YOUR FRIENDS!

HOW MANY TIME WILL YOU HAVE TO REPLACE THIS?

DO YOU FEEL A SENSE OF AGENCY (CONTROL OF THIS SITUATION)

Lack of agency,

absence of choice

Exploring Agency through Unmaking

HOW DO WE BEHAVE AROUND BROKEN THINGS?

GET IT REPAIRED BY PRO'S

REPAIR IT YOURSELF

CAN YOU FIGURE OUT WHATS WRONG?

Sparking curiosity

CAN THEY FIX IT AND CAN THEY GET THE PARTS

DO YOU KNOW WHAT PARTS OR TOOLS YOU MIGHT NEED?

ARE YOU ABLE TO FIX IT?

NO?

ARE YOU WILLING TO TRY?

RECYCLE IT

DID YOU GET IT FIXED?

Blackboxed by Design

WHAT DID YOU LEARN?

Building Capability

DID YOU SAVE MONEY?

DO YOU THINK YOU COULD DO IT AGAIN?

Developing agency

Figure 05   *The Broken toaster Diagram*   27

8.0 Research

Research Question

Research Statement

How might we explore agency through the act of Unmaking?

Research Statement

According to Manzini we need to explore new social learning processes that "enable individuals and communities to live and work together in ways that are more self-reliant "(Ezio Manzini, 2008, p. 15). There is potential gap between being able to think about a situation and being able to act or intervene in it and we may have some skill deficits that prevent us from even connecting to the idea of self-reliance and personal sense of agency. This ability to act is usually developed from skilled interactions and tacit ways of knowing, and a deficit in this ability creates a cascading effect of limiting factors. The lack of these abilities and skills, also denotes not knowing what is possible for ourselves, a potential engagement with a material culture, and what the contributing factors to our own sense of agency are (Walker S. , 2017, p. 22).

A personal sense of agency can give us the impetus to act and do and may reinforces the development of new capabilities, behaviors, and understandings of our experiences with objects and materials. In this project, we explore the idea that we may have lost a sense of agency through the decline of skills, both social and physical, which limit our ability to act and participate, and even the ways we think about, many of the more sustainable types of engagement suggested by Manzini, Walker, Thackara, and others (Ezio Manzini, 2008) (Thackara, How to thrive in the next economy, 2017) (Walker S. , 2017).

9.0 Methodology

Exploratory Research

Reflective practise

Qualitative and interpretive investigation

Heuristic inquiry

Charting

Interview

Participatory

Methodology

Exploratory research

The design research in this paper, seeks to understand "how humans think, know, act and learn" in order to advance, uncover and explore our theoretical understandings in the field of design (Sasha Barab, 2004, p. 5). According to Robert Stebbins, a leading researcher in sociology, exploration can traditionally be defined within four categories; investigative exploration, innovative exploration, exploration for discovery and limited exploration (Stebbins, 2001, pp. 2,3). This project approaches research, through the lenses of exploratory research for discovery and a reflective practise. This Unmaking project engages groups of participants through a series of documented workshops that deconstruct and disassemble our contemporary devices in order to have a discourse about agency, technology, and capability.

This exploratory and collaborative methodology attempts to investigate the relationship between Unmaking and new material practises, gauge peoples' perception of objects in their lives, their operational understandings of these things and their implications to sustainability. This methodology makes use of a heuristic exploration, providing touch points for discussions around circular economies, waste, repair, remaking, reuse etc. Through a dialogic process, the work connects ideas like societal and social transition with skills acquisitions, facilitation strategies, and ultimately investigates how these ideas might connect to the field of design and design practise.

Reflective practise

A reflective practise draws upon lived experiences, knowledge and wisdom to acknowledge what we are doing, and takes the time to think and then reflect upon it. In the 1980's, Donald Schon's book, "The Reflective practitioner", popularized the idea of a reflective practise. He proposes an idea for a concept of "reflection-in-action" and suggests that "doing and thinking are complimentary" (Schon, 1983, p. 62). Doing extends thinking in the tests, moves, and probes of experimental action, and reflection feeds on doing and its results. Each feed the other, and each "sets boundaries for the other" (Schön, 1983, p. 280). According to Stuart Walker, "valuing and giving time to reflection can yield spontaneous, intuitive awareness and sudden insights in which discontinuities and discordances become unified and harmonies are found" (Walker S. , 2013, p. 6). Walker goes on to say that in doing and reflecting, we are able to generate iterations and synthesize new insights and knowledge (Walker S. , 2013, p. 8). Reflecting is a way of improving on what has passed and fosters continuous learning in life. A good reflective practise "enables recognition of the paradigms-assumptions, frameworks and patterns of thought and behavior" (studies, n.d.), which influences what we do and think.

Qualitative and interpretive investigation

Due to the exploratory nature of this project I chose to utilize qualitative and interpretive types of research methods comprised of interview transcripts, audiovisual documentation via film and still photography, participant reflections, and personal reflections. The audiovisual content based analysis allowed me to look and listen to the conversations that were being had during the participatory process. The use of this footage allowed me to open up a space for preliminary inquiry(Stebbins, 2001, p. 25). Collecting data in research can cover many modalities of capturing materials for analysis and in this project, I have used:

Heuristic inquiry

"Heuristic inquiry attempts to discover the nature and meaning of phenomenon through internal pathways of self, using the processes of self-reflection, exploration, and elucidation of the nature of phenomenon that is being studied (Douglass,1985, p. 25). An exploratory, heuristic inquiry requires the researcher or practitioner to be open to new concepts and that outcomes of small explorations might not have the expected outcomes, he or she might hope for, and that the topic of research might change during the process due to the open-ended nature that a problem space might occupy. Heuristics looks for similarities and possible new directions in its area of research. The goal with this kind of research is to keep the study dialogical and open in order to understand the problem space from a more diverse perspective. This process requires an introspective approach from both the researcher and to an extent, the participants in order to contribute critically and reflectively. (Witt, 2000). In this project, researchers and participants are engaged in an open exploration and conversation, manifested in the form of a series of workshops engagements that aims to open up discussions around a sense of agency, capability and technological blackboxing and its implications on our society. This methodology section will highlight the process, insights and creative synthesis and finally, reflections from participants and consequently, my personal reflections on these reflections.

Charting

Much of the charting and brainstorming in this project was informed by extensive literature review, sorting out assumptions and different perspectives from colleagues, supervisors and sustainability and design experts. Through a process of charting I explored the notion of skills identification and how it might be relevant to my current direction of study. Through this process I identified some of the spaces possible for exploration. The goal was to understand the skills, we as a society might have lost from taking advantage of the convenience that technology offers. The process investigates which transitions we might need to make to re-establish the relevant useful skills needed, to build toward sustainable thinking, actively engaged, self-reliant, circular economic community development.

Interviews

Conducting interviews with stakeholders, users and communities in order to gather primary research data, can be an effective strategy to gain empathy of a problem or opportunity space. Key informant interviews were conducted with persons active in local learning models such as the founders of CityStudio Vancouver, Simon Fraser University Faculty, and Makerlabs personnel.

Interviews were conducted by engaging in collaborative brainstorming on a white eraser board, by phone and informal meetings. The topic was defined as "tangible skills development, agency in learning and aspirational model generation for learning" and what associated learning models and institutions might look like. Situating them in my project through a thesis question, helped surface other relevant models of learning associated with my project.

Participatory research

Participatory research methods are designed to include people in a knowledge creation process where the outcomes of the research are mutually beneficial. Co-creation is often characterized as real-life practises with participants. Where ideally a mutual benefit is derived either from the generation of research questions for the researcher, or there is an outcome of this process that is beneficial to the other party. As participants become co-researchers, they are then able to cognitively question, reassess and rethink certain aspects, relationships and or processes in their own lives. (Jarg Bergold, 2012).

This project includes people and involves them in a participative engagement through a process that includes learning new skills, social interaction, facilitated dialogue, centered around a critical assessment of everyday objects and actions through an "Unmaking" process. According to the outcome of the workshop reflections described later in this paper the work suggests that there is a rich flow of ideas and thoughts that can be generated through this process. A process that connects participants to critical questions, valuable insight into their personal and collective experiences and the objects in their everyday lives.

Relationship
Building

Sustain.
Thinking

Under
stand
Societ
as a who

Local ⟷
connected
living.

Young
Leaders
(Changemakers)

Philosoph

Involving
Youth in
their future

T Shaped
community

Self
discovery

Seeing
the world
as it is

imagining
the world
could be

Group
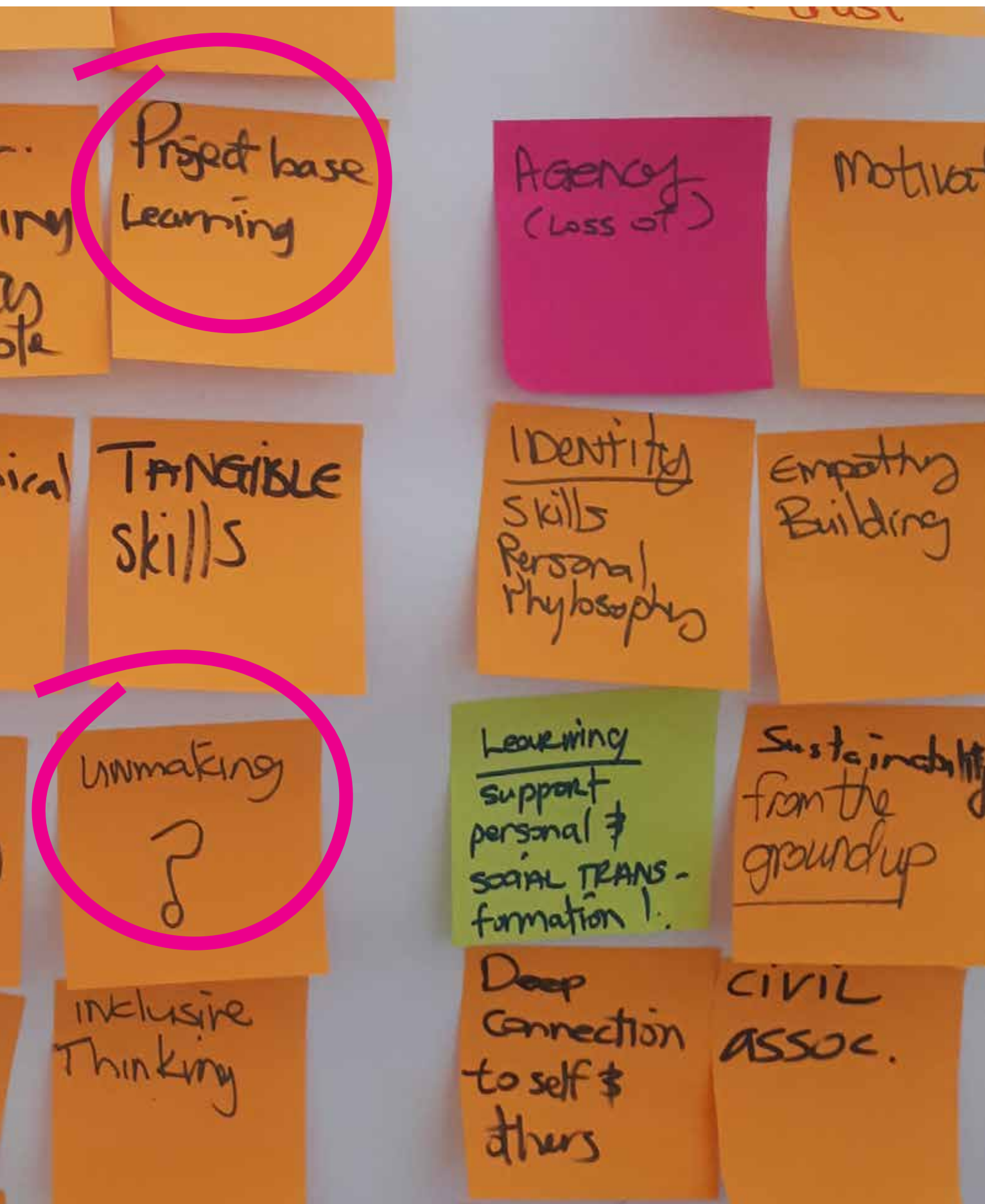facilitation

Exploring Agency through Unmaking

Figure 06   *Charting skills and engagment with skills*

10.0 Unmaking

Unmaking Workshop

Context

  What I learned

Participant feedback

 Unease

 Curiosity

 Personal Reflection

 Video Analysis

 Remaking

I have always been intrigued by taking things apart and trying to fix them when they are broken. It comes from a place of childlike curiosity and a way to prove to myself that I can. Being able to repair something when its broken feels good because to some extent it feels like I have control over a seemingly uncontrollable situation. I have taken many things apart and repaired them with varied success. Sometimes, I mess it up and there are leftover pieces and I know that the repair might only be temporary.

Theoretically this work can be described as open ended explorations **(heuristics)** and **constructivism** (hands on self-directed learning), however, I propose that this project is rooted in the idea of learning by undoing. The act of taking a tool into your hand and stripping away all the layers of any one thing in life, gives us a platform for learning something new, with very little judgment. Although this work draws from a constructivist framework, this work is firmly rooted in principles described by Stephen Sterling in his book "Sustainable education" as an "Ecological education paradigm", which describes a collaborative, dialogic, transformative and creative approach of learning (Sterling S. , Sustainable Education, 2001, p. 24).

According to Stuart Walker, "we have to unmake the outlooks, values and priorities that lead to waste" (Walker S. , 2017, p. 104) and, somewhat poetically, I chose to look at appliance and electronic waste as a medium of exploration. Technology and our relationship to it, is increasingly becoming integrated and global production of e-waste is set to rise by some 33 percent (Walker S. , 2017, p. 97).

The act of Unmaking presents possible opportunities for understanding. It lets you see the unseen by taking it apart, and new knowledge is garnered from the experience. These workshops utilize these objects to help unpack the complexities and implications associated with obtaining, and owning an object with a short-term life span.
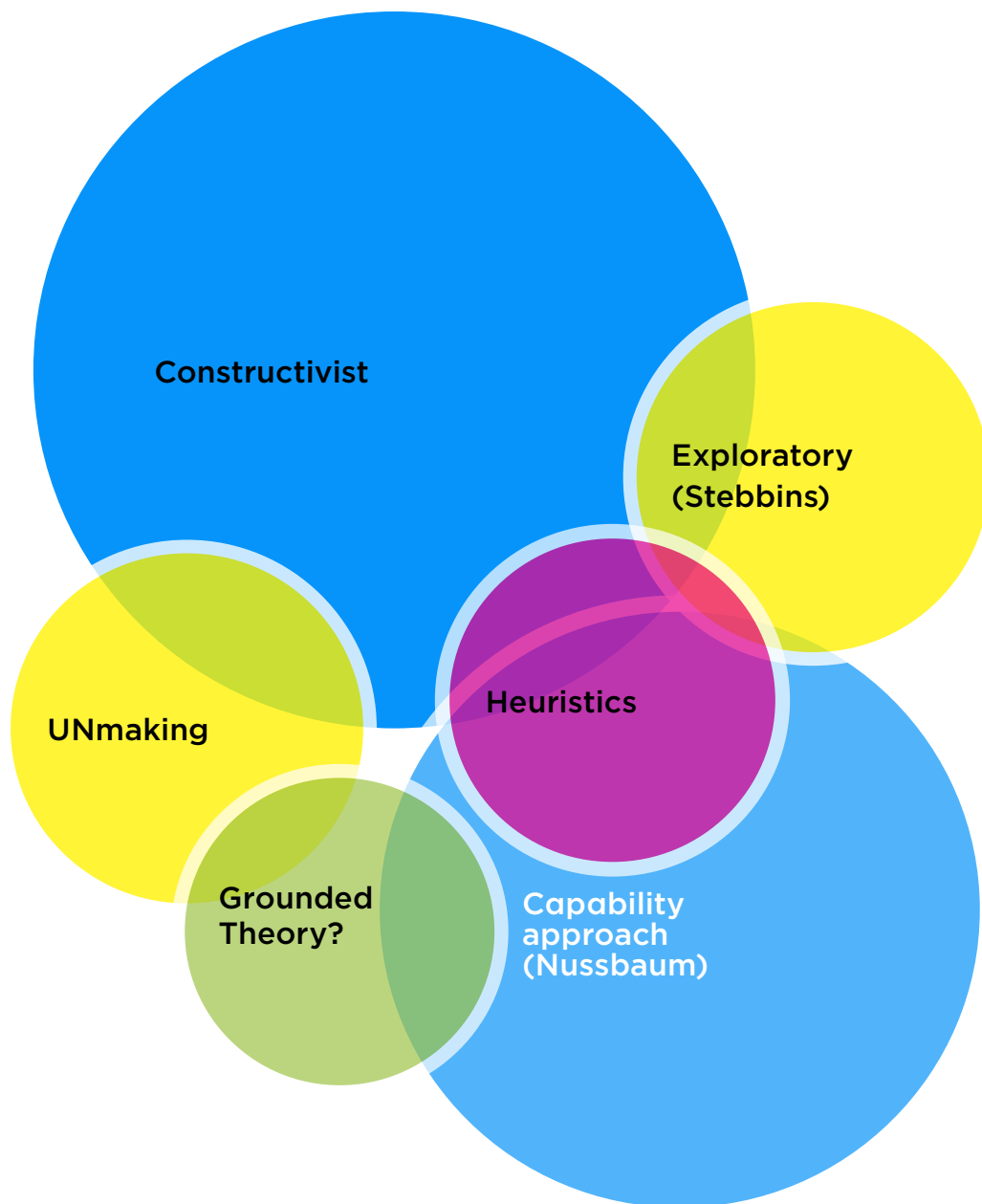
Figure 07 *Theoretical frameworks explored in this thesis*

Figure 08 *Desis Workshop before the unmaking*

Unmaking workshop

Context

The Unmaking Workshop uses discarded objects, be they electronic or otherwise, as a vehicle to engage participants with simple tools, disassembling them into their smallest possible components. The workshops are intended to start a conversation around agency, capability, and blackboxing within everyday objects.

Four workshops were held at four locations, a studio space in East Vancouver, The DESIS lab at Emily Carr University of Art + Design, Makerlabs Vancouver and Makerspace SFU in Surrey. After a brief introduction [and provocation!] and an introduction to best practices for safety, participants engaged in the Unmaking (taking apart) of a wide variety of everyday objects, from small household appliances, toys, textiles, computers, phones, printers, among other things with some very basic tools provided which included Phillips head screwdrivers, a few sets of pliers and wire cutters.

Participants were then asked to consider the object in front of them, take it apart with tools to the smallest possible piece and then discuss the experience through facilitated dialogue, written reflection, and post workshop participant interviews. The workshops were documented via audiovisual equipment. During the first two workshops, it was only about taking things apart. There were multiple iterations of this workshop with different participants, however also slight variations in the activities, for example, the last workshop required the participants to take things apart and then try and dream up new ways of using this resource, essentially trying to remake disassembled object parts into something different.

DESIS Network originates from three main international activities in the 2006-2008 period: the European research EMUDE, 2005; the UNEP Program CCSL, 2008 and the international conference "Changing the Change, within the framework of Torino World Design Capital, 2008.
The main ideas behind it were that social innovation could be a powerful driver towards sustainability and that design schools could help in supporting and accelerating the process. In 2009, this network took the name of DESIS: Design for Social Innovation towards Sustainability.
In the 2009-2011 period, DESIS spread in several regions of the world, establishing partnerships with other entities and evolving towards a network of Design Labs based in design schools and in other design-oriented universities and operating with local, regional and global partners to promote and support social change towards sustainability."
Within this worldwide framework, some DESIS Labs located in the same area decided to connect and coordinate with each other to discuss regional specificities and develop regional programs (UK, Asia)(http://www.desisnetwork.org/about/)

Figure 09   *DESIS Unmaking workshop post unmaking*

What did you take apart?

What was interesting about it?

What surprised you most?

How did you feel about this activity?

Figure 10   *Reflection questions posed for the Unmaking workshop*
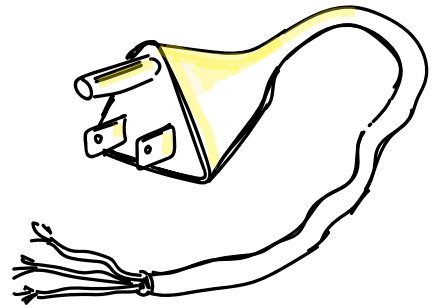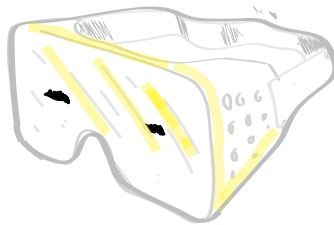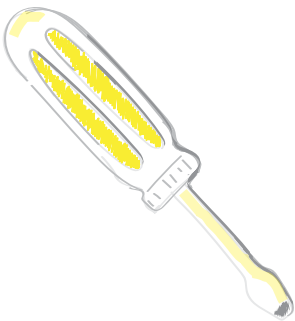
Figure 11   *Safety protocol from slide presentation*

Exploring Agency through Unmaking

Figure 12   *Participant unmaking a toaster*

Figure 14   *Participant Unmaking a printer*

Figure 13   *Participant unmaking a printer*

Figure 15   *Collaborative Unmaking*

Figure 16   *Unmade keyboard*

Exploring Agency through Unmaking

Participant feedback

Participants were asked to reflect on the experience, post workshop and I respectively reflected on participants reflections. The feedback and insights garnered, provided insights into many of the assumptions made earlier in the project and can thematically be broken down into related categories that relates to fear, assumptions and feelings of solidarity.

Themes

These are but a few of the responses from participants in the earlier iterations of the workshop.

"I am afraid of what's inside."

Product labels forewarn us to not open up their insides, cautioning us with legitimate danger such as residual electrical shock, power source explosion or leaking risks, and heavy metals present in aged electronics, as well as the potential loss of warranty, which in most cases, exist as a non-existent value-add. This statement speaks to the fear that we associate with these products. Their mystification and fragility keeps us treating them like precious gems, not to be lost or broken, for fear of great loss. Walker describes the material culture associated with these objects as "prosaically functional" and "contemporary", but "for the most part is quickly outdated and forgotten" (Walker S. , 2017, p. 103). The entire cycle restarts each time we update, upgrade, or make a new purchase, creating the same fear and anxiety over and over again.

"I thought it would be much more complicated than it was."

The perceived complexity often being built into these objects is hidden away inside a shell and we automatically assume, that if it becomes faulty, that we would not be capable of repair, and I think this activity, really demystifies that. The sum of the parts then become the conversation and we can see these things for what they are, open on display for critique.

"It was a fun and collaborative experience."

According to these reflections there is value in doing these things in groups due to their collaborative and social nature. The cathartic nature of this exercise within a group somewhat serves an emotional release as confirmed through other responses like "I felt liberated and humbled".

"I felt a sense of accomplishment."
How interactive with the material world are we, and where do we find accomplishment in our daily lives? What are the things that makes us feel like we've achieved something and finished something and how many times are these things associated with active thinking and doing? All of these questions emerge through this experience for me when I consider the nature of own process of designing and making.

"It gave me a feeling of independence."
Independence denotes that there is a sense of self determination and this indicates to me that this workshop gets closer to the conversation I would like to have around agency, active thinking, and being able to choose how we consume.

"I felt like I was a kid again."
The curiosity that was sparked was echoed in all three workshops from several participants. It is this curiosity that makes this activity so compelling. It is something "I would never do on my own" and presents itself as a really accessible method of engaging people with that childlike inquiry to understand.

Reflection

People arrive at the table, there are tools, audiovisual equipment and electronic devices. It might seem like a performative space and participants are sometimes a little apprehensive at first. What do we do? Some ask: "What is the goal with this?". These sentiments showed an initial hesitation at the start of the workshop which seems to stem from a lack of understanding of the process a concern that there might be a hidden agenda of asking them to put it back together.

Unease

A few of the participants had a need to know what the goal of the exercise was and on the first run of the workshop. I did not know how to answer them myself as to me it was also an exploration that was open and ambiguous. Subsequent workshops flowed much easier and I felt much more confident to leave things open for interpretations and sitting within the ambiguity with participants. My initial discomfort and feeling of insecurity in facilitating this workshop, stemmed from a feeling of unpreparedness and a perceived lack of complexity on my behalf in this exercise, however, once participants were able to cross the fear threshold of not being accountable for breaking the objects or of having to put them back together, I started to notice them becoming more open in their conversations and rich discussions encompassing the design, materiality, and the implications of these objects came out as they started to lay bare their inner workings.

Exploring Agency through Unmaking

Participants initial reluctance was soon forgotten as soon as the first few screws was undone and the process was underway and it was encouraging to see people engage in this process in such a willing way. It is possible that we are so used to engaging in the act of making, that the idea of taking things apart 'for fun' leaves us with a questioning mind.

There was a cross section of creative and non-creatives that attended the workshops. Participants were people in the tech sector (programmers), they were Industrial Designers, Interaction Designers and Communication designers.

Curiosity

Based on the discussions, experience, and reflections of participants in the workshops. Unmaking lowers a barrier to engagement and curiosity with the objects and appliances around us. This process reverse engineers our perceptions of these objects as previously impenetrable, potentially dangerous and precious objects. Unmaking is a learning tool that reveals aspects about ourselves that we do not anticipate in the onset. More so, when taking things apart, we are now faced with new questions about our habits and assumptions about our own capabilities. Ezio Manzini proposes the idea of "personal resources", or "enabling ecosystem[s]" as a way to describe "capabilities [that] are people's abilities to choose among alternatives and achieve results" (Manzini, 2015, p. 97). If these personal resources are well developed, it seems only natural that we might then be more resourceful in our everyday lives. Drawing less from the environment and more from ourselves, wearing our resourcefulness as a badge of honor, we reacquaint with our own capabilities and how they complement sustainability.

Personal reflective space

Based on the discussions, experience, and reflections of participants in the workshops. Unmaking lowers a barrier to engagement and curiosity with the objects and appliances around us. This process reverse engineers our perceptions of these objects as previously impenetrable, potentially dangerous and precious objects. Unmaking is a learning tool that reveals aspects about ourselves that we do not anticipate in the onset. More so, when taking things apart, we are now faced with new questions about our habits and assumptions about our own capabilities. Ezio Manzini proposes the idea of "personal resources", or "enabling ecosystem[s]" as a way to describe "capabilities [that] are people's abilities to choose among alternatives and achieve results" (Manzini, 2015, p. 97). If these personal resources are well developed, it seems only natural that we might then be more resourceful in our everyday lives. Drawing less from the environment and more from ourselves, wearing our resourcefulness as a badge of honor, we reacquaint with our own capabilities and how they complement sustainability.

Remaking

In the most recent iteration of the Unmaking workshop I decided to ask participants, just like before, to take these objects apart, but instead of just taking it apart, reconsider the part when completed and try and create something of new meaning with these components. The participants spent most of a day, trying to conceive of new uses, or remade objects from these parts.

The parts from these unmade objects promised a new use and the possibility in aiding to a new ecological perspective, but, ultimately, the participants struggled to make sense of what might be possible in this setting. This is in part is due to the design of the parts within these objects which lacked an ecological post-use scenario consideration. Post use scenario examples can be found in textile recycling products like carpet underlay, automotive upholstery liners etc which are still somewhat contentious as a post use. These are not premeditated uses, but offers the technical possibility to do so. Many of these products were designed as a barrier to entry for repair through the use of proprietary fasteners and components, greatly restricting attempts to disassemble or attempt repair.

Appropriate tools for unmaking were provided, but participants still struggled in some instance with the concept of the complex nature of merely opening the products. The implications of this are that there is little chance for notions of circular activities and economies to emerge from them. Other less popular strategies for these objects include either re-purposing, repairing or reusing, alternatively they are discarded and sent to the local landfill. This insight led me and others involved in my project to think about the role that this work can play in the education of new designers.

The notion that if designers were introduced to the act of unmaking, it might provide a transformative experience to question our accepted understanding of materials and processes, and what might be needed to redesign some of these objects for consideration of their inevitable post-use life.

Figure 17 *Remade object from Unmade parts*

Deconstructing pedagogy in unmaking

This section introduces and elaborates on the pedagogical approach of this work and how it might be situated within the practice of design. The Unmaking workshop engages participants and learners in the unmaking of technology by taking it apart to its component parts and simplest form. Objects and tools are provided with one goal: To deconstruct, disassemble and or reduce the object as far as the tools will take you. This workshop takes a constructivist approach in which learners' activities, when facilitated in a group setting, connect and overlap with several conceptual frameworks that relate to how we learn and absorb information. Constructivism refers to the process in which "individuals form or construct much of what they learn and understand" through doing it themselves and embedded within this approach the process connects to discovery learning, inquiry based learning, cooperative learning or peer assisted learning (Bruner, 1961).

Learning theories

Though Paul Kirschner argues for direct instructional learning (transmissive) and the failure of the constructivist approach (transformative), the goal of this workshop is exploratory and experiential. This is a component of learning that Stephen Sterling argues for as essential for sustainable education (Sterling S. , Sustainable Education, 2001, p. 38). Discovery learning is a variation of inductive reasoning that come from engaging in experiential, problem based inquiry, in which the learner participate in formulating their own ideas and rules. Inquiry based learning is a variation of discovery learning and suggest that a learner engages in an activity, deriving questions and then attempts to answer them. These two frameworks connect to a cooperative learning process in which learning happens from engaging peers in discussion that may or may not relate to this activity, but acquire knowledge by intuition within a group setting (Bruner, 1961).

Student experience

A diversity of experiences and, exterior and interior cognitive influences, help shape our understandings of the world and the skills we acquire. Unmaking provides an opportunity for participants to actively engage with activities that might be universally relevant to their future learning. The learning that happens within this workshop is emergent and collaborative acts of Unmaking can be understood as a "community of practice", which requires an active and critical engagement with the process.
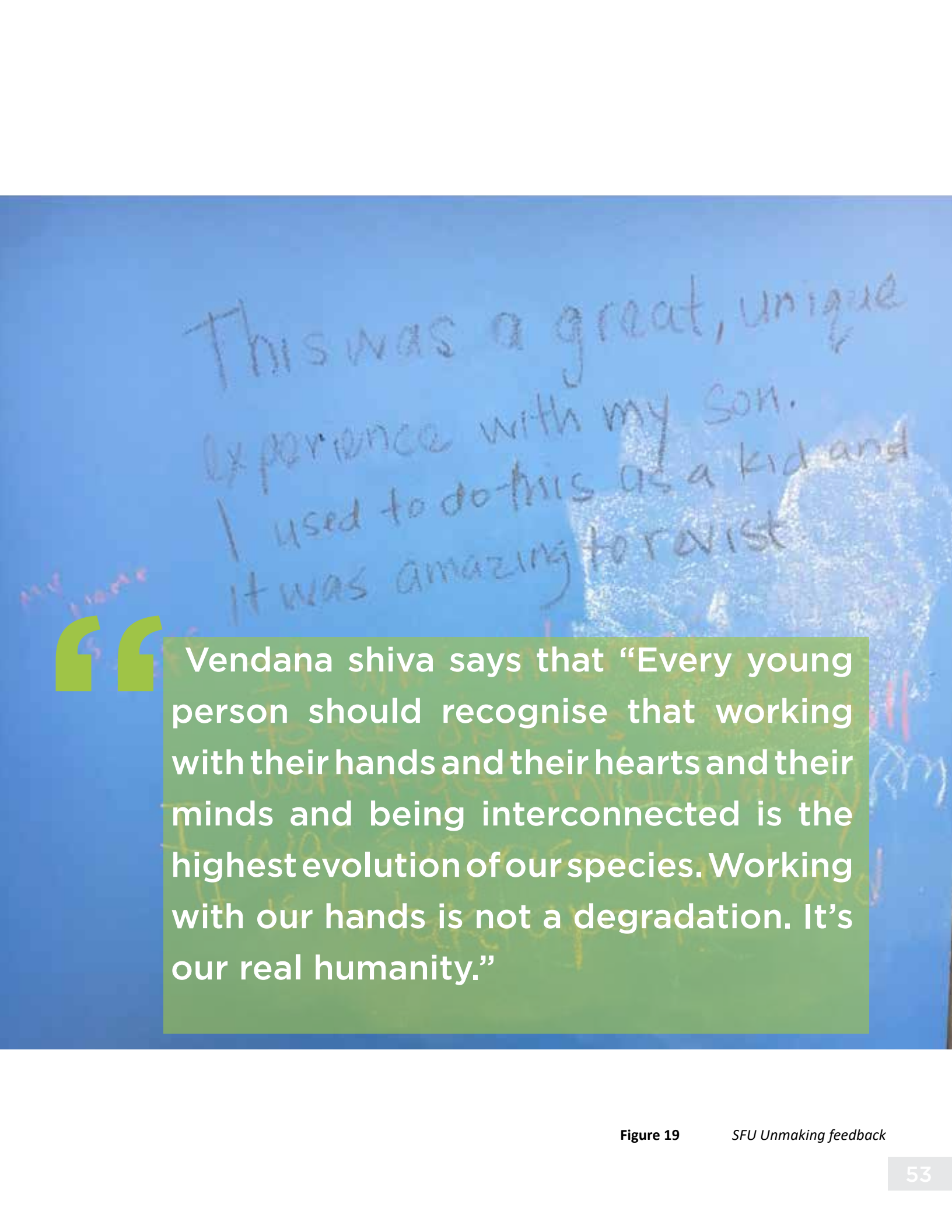
Furthermore, through this workshop, this contextual collaborative exercise, a value based practise could be initiated by hosting an active discussion with each other in relation to sustainability, materiality, purpose and disposal, before even engaging in the act of design. Curiosity is a vehicle for learning, which leads to discovery. According to Jerome Bruner, discovery learning sets up a foundation for insight and critique and therefore cognitive engagement with design and making as a practise (Bruner, 1961). In an expanded conversation within the context of this workshop it sets up a platform for problem based learning by discussing the implications and the future of the object in front of them, by possibly simply asking "what now?". Problem based learning refers to a kind of hands on learning with open ended outcomes and is implemented in K-12 curriculum (Savery, 1995). Although problem based learning is only part of the learning process, it promotes active investigation and self directed learning. Through this process, students might now have to face the realities of having to participate in the undoing of what has been done, and this work might enable them to better understand and situate themselves within the problem space, relative to the ecological issues associated with these artifacts. This work might then reveal the role design might need to play in that process, and how they might see themselves in that potential future.

Skill sharing and tacit interactions

Creates oportunities for personal growth

Builds confidence

Fosters new capabilities

Develops new skills

Promise of discovery

Risk of uncertainty

Enables inquiry

Sparks Curiosity

Unmaking

Figure 18   *Toward a sense of Agency*

Exploring Agency through Unmaking

" Vendana shiva says that "Every young person should recognise that working with their hands and their hearts and their minds and being interconnected is the highest evolution of our species. Working with our hands is not a degradation. It's our real humanity."

Figure 19 *SFU Unmaking feedback*

Summary of Unmaking

In summation, I think it's important to note what this method of inquiry is, and is not, trying to achieve. Taking apart everyday consumer objects, and exploring their 'innards' is not about an attempt to try and understand their functional workings, reverse engineering, or even make attempts at the repair of these items. Repairing contemporary technology is a specialized vocation and requires specialized knowledge of circuitry, faultfinding, parts sourcing and replacement, all of which there is currently very little infrastructure to support such practices. The complexity of these objects is shrouded with secrecy and hidden inside the beautiful black boxes we surround ourselves with. This thesis has investigated how design and development decisions can often limit our agency to act, reducing our role to passive consumers and not people and communities who could participate more actively in the objects they live with.

Unmaking as a method, when situated within the context of a design education at a formative junction, such as the foundation or first year of a design degree or diploma program, offers a way for emerging designers to deconstruct some the ideas around making technology and objects. The workshop facilitates a discussion around concepts and thinking around materiality, design for disassembly, tacit understandings of lifecycle, etc., and starts a path of inquiry with designers to explore the environmental and social impact of their work. Importantly, this thesis explores an expanded range of concerns surrounding the role design might play in enabling the agency of citizens to take on a more active role in environmental sustainability and the development of potential mitigation strategies.

Integrated within an early design course aimed at introducing ideas around materiality, consumption, sustainability, and design culture, Unmaking could be used to facilitate hands on tacit exploration of concepts in sustainability. Unmaking, coupled with cursory research on components, could ground discussions through a lens of resource use, manufacturing processes, and to understand the way we currently design and make things, hopefully opening up discussions around possibilities for, and barriers to, alternative end of life strategies.

This is an important segue into the relationship this process might have to exploring longer term strategies toward increasing localisation, reuse, repair and conceptions of circular economies, new forms of cultural production, and resilience, all of which would require skilled/reskilled communities to be able to implement them. This process aims at starting design students down a path of consideration as to what the post-life or objects could be and what new forms of infrastructure and citizen skills we would need to facilitate such cultural shifts.

This thesis is ultimately about understanding what might be needed to create an enabling environment for citizens to be able to move toward the ability to act and participate in the post-life of things.

On a philosophical level, it is important to discuss the ideas around our relationship as designers to the conception of these objects, as well as the roles of manufacturing, engineering, communities, and individual consumers. Unmaking gives us the opportunity to pause and think about our contributions toward the materialization of these objects and their eventual end of life and what role everyday citizens could play in a substantive move towards more sustainable material economies.

12.0 Conclusion

During the course of my research, which began situated within the maker movement and maker spaces, I explored the question of 'how the act of making might change the way we attribute value in the world?'.This question was formed around the idea and assumption that there might be a relationship between hands-on, creative material practise and reconsidering our hyper-consumption of everyday consumer objects. How does this relationship affect our own agency and how does it ultimately affect our personal and community resilience?. This thesis is about exploring new ways of designing interactions that might facilitate foundational, tactile learning and re-enforce a curiosity in making. The goal of this work is to increase engagement to this space and systematically re-skill ourselves that might build new pathways toward resilience in our everyday lives.

A key problem identified in this project, is not necessarily people's resistance to living more sustainable lifestyles, but possibly the lack of understanding, or attention paid to our belongings in the built environment, the resources and energy involved in their production and eventual disposal, and having a sense of value or attachment to the things we encounter in our everyday lives.

The methodology of Unmaking sparks curiosity, and curiosity drives inquiry. It offers an element of risk and uncertainty, but offers in return the promise of discovery. This process of discovery builds confidence and contributes to the development of skills for resiliency, understanding, and engagement with sustainability. This thesis provides a framework for a methodology, to develop and foster these new capabilities in people as a vehicle for rediscovery of personal agency.
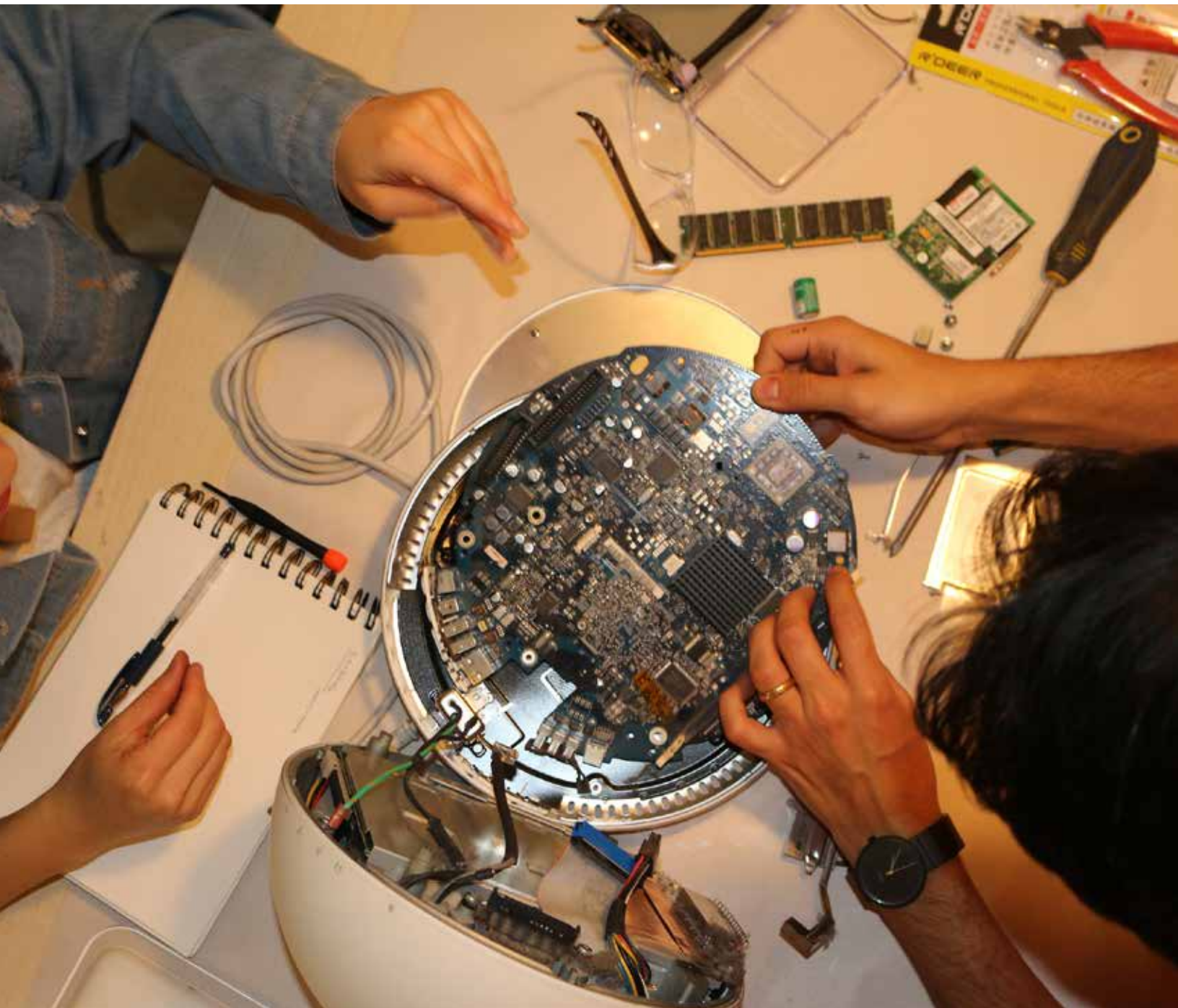
Figure 20   *Unmaking an I-Mac*

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