Design as
Freedom

Claudia Garduño García

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To the chamacos (children) of El 20

Abstract

Creating a perfect world is most likely impossible; however, it can be generally agreed that the world we live in can be better. Designers can potentially make an important contribution to this quest, given that design is about imagining and achieving better futures. This thesis is primarily concerned with advancing the moral groundings of design and with assessing good design by prioritising what is right, regarding whether it contributes to making the world better. This book introduces Design as Freedom, an alternative driving principle for design, which is based on philosophical elaboration, and it also proposes the Aalto LAB meta-framework as a method of putting it into practice. This research has constantly looped from theory to practice, so that the alternative driving principle and the method have been fundamental in building each other. As a case of constructive design research, where knowledge is generated through design, four different things have been constructed, providing four different lenses to Design as Freedom: an alternative driving principle for design, a design process, a pedagogic programme, and the researcher's personal journey (setting up and implementing Aalto LAB Mexico).

In my view, design is constrained by the idea of progress as coined during the Enlightenment and the Industrial Revolution, where betterment is expressed through a positive exponential curve. In the course of time, economic growth became the unquestioned primary goal of nations, organisations, and individuals; however, this goal has yet to be reasonably justified. Design as Freedom challenges the traditional assumption that design is an economically and technologically driven activity. In contrast, it embraces the diverse ways of life that different people might have reason to value. Design as Freedom is a reasoned alternative, a highly complex practice in which socially committed designers co-design with people who are acknowledged to be living in clear situations of injustice. Within Design as Freedom, co-design becomes a longitudinal process and a mutually enabling activity for designers and for participant end-users. Additionally, with the aim of keeping environmental sustainability at the forefront, I propose making use of *assemblage thinking* as a framework that explicitly expresses the intricate relationship between humans and non-humans, and simultaneously enables the imagining of new human–non-human relationships. Therefore, this is a Kantian conception of freedom, which is tightly related to the concepts of *reason* and *morality*. In this case, *Sustainability* sets the moral limits that constrain human freedoms. The assemblage also enables the understanding of freedom as a triad (following Gerald

MacCallum, 1967), where an *agent* has an *intention* and there are *no constraints* preventing its achievement. In other words, freedom is envisioning a new assemblage, it means being able to identify which new relationships must be created as a means to overcome the barriers that made them unfree. I argue that this type of design practice can be equated with *exercising freedom*.

Mainly due to the conjunction of circumstances, Design as Freedom was put into practice through a project called Aalto LAB Mexico (ALM). ALM is based on a project that took place in 2010, called Aalto LAB Shanghai. ALM takes place in a Mayan community called 20 de Noviembre (El 20), located in Calakmul, Campeche, Mexico, a highly marginalised area, which is also highly biologically diverse. An interdisciplinary team of students (labbers) from Aalto University, Tecnológico de Monterrey Campus Ciudad de México, and Universidad Nacional Autónoma de México are mentored by an equally interdisciplinary team of experts who belong to either the public, private, or third sector, or to academia; and all their processes are facilitated by expert designers. The labbers have collaborated with people from El 20, and have generated several Sustainable Product Service System (S.PSS) types of projects, which have reached different phases within the design process (diagnosis, conceptualisation, implementation, evaluation). Each of the projects has the potential to expand people's freedoms and thus reduce injustice.

ALM added a pedagogic dimension to the exploration of Design as Freedom; however, rather than seeing this as a constraint, it is seen as an opportunity. Nearly three decades have passed since the term 'Sustainability' was coined, and whilst the world has not changed dramatically, it can be observed that a growing number of young design students, herein called the Children of Brundtland, demand more meaningful professions. When study programmes prepare students to exclusively satisfy the needs of industry and pursue the goal of economic growth, the Children of Brundtland, who do not share the idea that economic growth is the highest end, experience a clear case of injustice. The pedagogic dimension required an extensive focus on the designers' freedoms, which for its part enabled the observation of what we have called the *double-sided mirror perspective*. The design team and the people of El 20 learned about a design process that could deliver freedom (the S.PSS). Moreover, they also experienced the design process as a mutually enabling experience. The people of El 20 gain awareness and experience in tackling their own problems. The design team gains the effective opportunity to exercise a type of professional practice that they have reason to value. My own journey constructing ALM is a case of Design as Freedom, which enabled me to experience life in accordance with my own rational plan.

The Design as Freedom principle presented in the first part of the book was constructed in response to what was observed in practice throughout the longitudinal journeys of the design team, the people of El 20, and myself. In the second part of the book, throughout these experiences, the Design as Freedom principle is put into practice. If profit-making was left aside, design could possibly do much more; Design as Freedom is just one reasoned alternative. Conceiving an initial situation as an assemblage enables designers to keep environmental considerations at the forefront of the process, and it also inspires desirable and feasible visions of the future. Moreover, by conceiving communities as assemblages, it could be possible to envision a wide array of alternative ways of living, which is probably what is needed before achieving a sustainable world. Many cases developed by designers and design researchers worldwide prove that designers have the skills required to make the world better; which is also the source of a great moral responsibility. Thus, I maintain that designers should not discriminate against any type of potential end-user, and that design should incorporate the most urgent matters of the world into its research agenda, and contribute to global justice.

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Part II

Prologue: When you're poor, you can't afford to get sick

Soon, the sun would be hot. That is how Mayan people describe the time of the day when the Sun reaches its zenith and so do the temperatures (up to 40°C). They knew it because they were getting hungry. They had got up at 4:00 am, and by 5:00 they were already working on their land. They wouldn't get a salary at the end of their day, but at least they could be sure that feeding their families was literally in their hands (as they don't own machinery). If and when the weather was benevolent, of course.

Right before noon, the men arrived at Mateo and Ofe's place, where the whole family gathered for lunch every day. But that day, rather than chatting and laughing while making tortillas, they found three women in terrible angst. As soon as they came in, Ofe claimed, "Baby Jocelyn must be taken to the hospital at once, she hasn't stopped crying in hours!" Lencho ran towards the hammock to see his one-year-old daughter, and asked Gaby, his wife, to get ready to leave.

Mateo and Lencho went to get the truck. Ofelia gathered all the money she could find in the house, and gave it to Gaby. Grandma wrapped a bunch of tortillas with nopales in a cloth and gave it to them by saying, "Remember that *outside,* food is very expensive, and you might have to wait long in the hospital".

The only way in and out of 20 de Noviembre (El 20) is through a small road that intersects with the highway that connects the cities of Escárcega and Chetumal, right where the military checkpoint is. They are near the borders with Belize and Guatemala, which are entry points for drugs and migrants on their way to the United States. For that reason, the soldiers stop every vehicle that drives through, and many times, they even ask all the passengers to step out of the car to conduct a routine search. They don't ask the people of El 20 too many questions; after all, the military camp is on their land.

At the hospital in Xpujil, the doctor identified that something was wrong with the baby's kidneys. However, they couldn't make a full diagnosis because they didn't have either a urologist or ultrasound equipment. They were urged to take baby Jocelyn to Chetumal.

Gaby was hopeful that everything would be sorted out in Chetumal. A few years earlier, they could not have afforded to get medical attention, but they had paid for their affiliation

to the new universal health programme called Seguro Popular, which was launched by President Felipe Calderón (2006-2012). Unlike any other National Healthcare System, Seguro Popular was not tied to formal employment, so even subsistence farmers were entitled to become its beneficiaries.

After an hour and a half, they arrived at the hospital in Chetumal, where they could perform the analyses, but these would cost money. "That must be a misunderstanding!", they all told the nurse. But she explained that beneficiaries of Seguro Popular are only entitled to receive free medical attention within their state of residence. Calakmul is located in the State of Campeche, but the nearest (big) hospital is located in the Capital of Quintana Roo. Of course, they were disappointed, but they paid the fees: 200 MXN pesos for the ultrasound plus 200 for the doctor.

The diagnosis was not very good. Although she had great chances to survive, baby Jocelyn needed urgent surgery. The operation would cost 150,000.00 MXN pesos (about €8,000). They could not possibly pay that much money. Apparently, their only choice was to drive for around 6 hours to cross the peninsula, and take the baby to the hospital in their capital, the City of Campeche.

And so they did. However, that hospital was not properly equipped for that type of procedure. They were advised to take Jocelyn to Mérida, two hours away from Campeche.

Gaby, Lencho and Mateo were hopeful that in Mérida, the Seguro Popular programme would be understood differently. However, again, they were told that they would have to pay for the surgery because they were not residents of the State of Yucatán. The cost of the operation was 60,000.00 MXN, which they still could not afford. In any case, Jocelyn was hospitalised.

At 4:00 am, Ofe woke up and climbed a mountain to reach a signal for her phone and receive Mateo's message, in which he communicated the situation and asked her to collect as much money as possible. Ofe was lucky that her Canadian friend, who was writing a thesis on anthropology in El 20, kindly loaned her 10,000.00 MXN. Additionally, her good friend Carmen gave her 2,000.00, and the kids collected another 2,000.00. Then she visited the Municipal Palace in Xpujil, where the government loaned them 3,000.00 MXN. She promised to pay every single penny back.
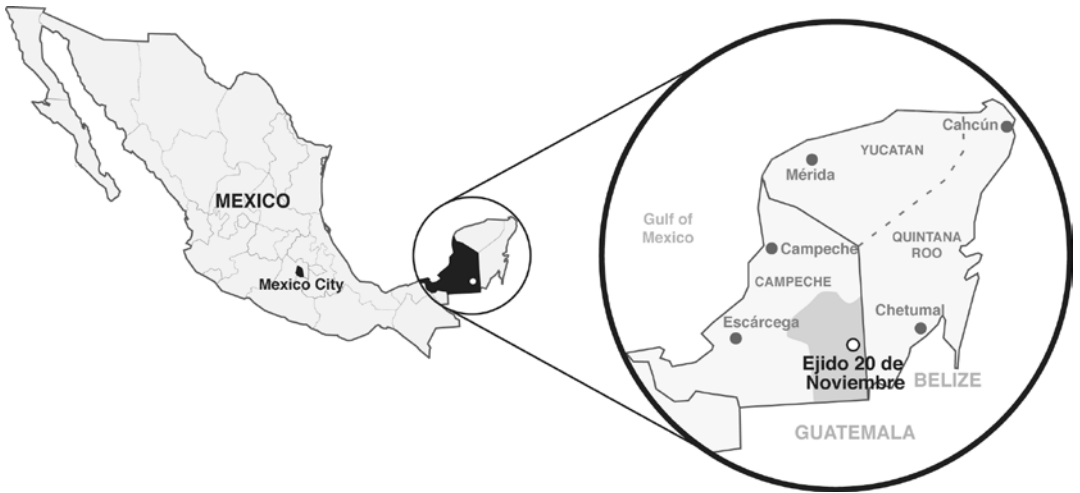
Figure 1. Location of 20 de Noviembre within Mexico and the Yucatan Peninsula. Drawn by Claudia Garduño

Gaby had never seen Lencho as sad as when, in a faltering voice, he broke the news that although Ofe had managed to raise some money, it still was not enough. "How much did they raise?" asked Gaby. "Seventeen", replied Lencho.

Gaby nodded and went back to her baby, held her in her arms, and started walking through the corridor. At the end of it, she saw an open door and a group of doctors gathered in a room. As an impulse, she walked in, got down on her knees, and begged: "Please save my baby! She's dying, she needs surgery! All we have is 17,000.00 MXN! Please!" At that point, she realised that many of those doctors were Asian, one of whom stood up and volunteered to do the operation, despite not being a specialist. Gaby would never forget this young Japanese doctor's face; the operation was successful.

The recovery treatment was so expensive that Lencho had to do the last thing he would ever do, but the only thing that he could do. He had to sell a great part of his land, which, in step with the ideals of the Mexican Revolution, coincidently celebrated on November 20th, is the main source of their sense of identity and autonomy. However, all their struggle had been worth it. Two years later, the girl still had to have some special hygienic care, but she was in perfect condition and could run like every other child.

This story was reconstructed from facts collected throughout my visits to the community called 20 de Noviembre (10 visits in 2 years and 8 months, up until October 2014),

located in Calakmul, Campeche, Mexico. It is just one story about one struggle that one family has faced during their lives. Just one among many other stories lived by this and many other families within their community; and this is just one among many communities in Mexico, not to mention the rest of the world. The law might proclaim that we are all born equal, but the truth is that some have it much harder. I do not, by any means, intend to imply that suffering is unique to the poor, which is not the case (especially regarding health issues). However, when one is born among those who are better off, it is easy to dismiss this initial situation of privilege and to believe, instead, that fortune is completely based on one's own merits. Giving medical attention or any other basic service on condition of the availability of monetary resources does not seem *fair*; especially when that condition might largely determine a person's fortune in the long run.

Without deserving it, many people simply learn to live lives of limited choices, which is unjust. People should be free to plan how to live and to live accordingly. Very likely, humanity could do more to remedy these situations, which allegedly is sufficient reason to claim that humanity ought to act accordingly. Most certainly, design has something to contribute to this difficult task, and if it does, then it is of paramount importance that designers acknowledge their moral obligation, which comes from the ability to imagine better futures.

Photo by Jan Ahlstedt

Introduction

If we cannot reasonably prove why economic growth is ultimately necessary, which we cannot, then the statement that good design is good business stands on equally unstable grounds. The design of design should be grounded on a clear ethical justification. Deeper and stronger roots might enable design to do much more than it currently does. This research seeks to contribute to *defining and practising a better design*, and presents the idea of *Design as Freedom* as a reasoned alternative driving principle for design (which is based on philosophical elaboration), which can be adopted by those designers who resist practising design as usual and insist on finding a more honourable way to do it. Designers ought to see themselves as human beings, not as special human beings, and engage in the difficult philosophical debates that have troubled humanity for ages. Thus, the discussion of design and ethics cannot be independent from the study of ethics. Furthermore, those discussions cannot be disassociated from their context; this research argues that in this case, the concept of Sustainability[1] as an ideal cannot be ignored.

Through the understanding that people are diverse, and therefore might value very different things, this research proposes judging good design based on whether it contributes to making the world a better place. Furthermore, inspired by the work of Amartya Sen (2001 [1999]), this research departs from the statement that if humanity should be concerned about growing anything at all, it should be the *freedom to be and to*

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1 Since Sustainability is seen as the greatest ideal of our times, in this work it appears capitalised.

do what one has reason to value[2], and it proposes that *one* case of good design is when it contributes to making the world a bit less unjust by growing freedom(s). This work seeks to reply to several questions, including: **How might freedom be connected as a guiding principle for design?** How might freedom become the means and end of design? How should the freedoms to be enlarged be chosen? What is a suitable unit of study? Design as Freedom implies that the practice of design can be equated with the act of exercising freedom; most precisely, when designing to overcome clear situations of injustice.

This work also embraces the concept of Sustainability, which does not fit within Sen's evaluative, anthropocentric, and individual-based 'Capabilities Approach'[3]. In this case, following the system proposed by Immanuel Kant, freedom is approached as a concept that is inherently related to the concepts of morality and reason. Incorporating Sustainability into the freedom-morality-reason system is achieved by borrowing Manuel DeLanda's (2013 [2006]) model of *assemblage*. Assemblage thinking enables a broadening of the focus of design, from humans to composites, where humans and non-humans (including other species, non-living things, and tangible and intangible human-made things) are tightly related. The assemblage also helps in understanding Gerald MacCallum's (1967) triad, where freedom (or unfreedom) is caused by a configuration in which an agent has an intention and there are no elements that act as obstacles to achieving it. Design as Freedom is therefore the act of conceiving a strategy that enables the exercise of that which was intended but which was not possible in the initial situation (N_0) and, more precisely, when the initial situation is a clear case of injustice (be it the lack of adequate access to healthcare, or the lack of study programs that enable students to explore a sustainable practice, or any other).

Considering that it is a fundamental human capacity to discern the just from the unjust (Rawls, 2009 [1971], 41), and that it is also natural for humans to experience the need to fix a situation of injustice that seems remediable (Sen, 2009, viii); and by taking into account that design is a means to transform a current situation into a preferred one (Findeli, 2001; Simon, 1996), and a set of competencies that enables people to deal with wicked problems (Rittel & Webber, 1973), this research argues that it would be unhuman if designers turned their backs on solving situations of injustice (Rawls,

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2 Instead of adopting the capability approach, this research adopts the essence of Sen's approach: freedom. In fact, what is called freedom herein is very close to what Sen calls agency.

3 Other proponents of the capability approach have incorporated Sustainability (i.e. Scholtes, 2011; Holland, 2011; Heyward, 2011; Watene, 2011; Mathai, 2011). Nevertheless, Sen's own perspective, with high regard for freedom or agency has been criticised (e.g. by Nussbaum 2003, 44) for setting no limits on freedom, even when not all freedoms are good, such as causing environmental depletion.

2009 [1971]), especially those that are seen as urgent matters. Moreover, it would be as if designers and their skills were being wasted, and as if designers were avoiding their moral duty.

Design as Freedom, however, is not merely a theoretical research, as it has a strong practice-based component. In fact, this research has been developed in loops, moving constantly from theory to practice. According to Jung-Joo Lee (2013, 101), the process of making innovative methods is not too different from the design process. Moreover, she states that the method is the "externalization of a designer's initial interpretation of users and possible solution spaces" (Lee, 2013, 107), and explains that through the method-making process, designers are already framing the design outcome. The method through which Design as Freedom is put into practice is what I have called the Aalto LAB meta-framework, which has precisely resulted from the constant loops from theory to practice, and which is the reason why this research pays extensive attention to the freedoms of designers, too.

The main case in this research, Aalto LAB Mexico (ALM), is based on the project Aalto LAB Shanghai (ALS), which took place in 2010. The community called 20 de Noviembre (El 20), located in Calakmul, Campeche, Mexico, was selected as the location for ALM following the model of ALS. The project participants have been students from Aalto University, Universidad Nacional Autónoma de México (UNAM), and Tecnológico de Monterrey Campus Ciudad de México (Tec). Aalto LAB can be described as an experimental design pedagogy (Garduño, Nousala, and Fuad-Luke, 2014), which implies that the Aalto LAB meta-framework includes a pedagogic dimension. Moreover, the Design as Freedom principle was developed in response to what was being observed in El 20 through ALM.

This research is a case of constructive design research, as coined by Koskinen et al. (2011), which means that knowledge is earned through the *construction* of something (object, scenario, mock-up, concept, etc.) (5–6). This happens at four different levels, which also provide four different lenses. The first level corresponds to the construction of the alternative driving principle for design, called Design as Freedom. The second level refers to the design program in El 20, which consists of the conceptual and tangible construction of three Sustainable Product Service System (S.PSS) types of projects: Eco-hostel, the Water Project, and Artesanía para el Bienestar (Artistry for well-being). On the third level, there is the construction and the shaping of ALM as a pedagogical program. The second and third level constructions are integrated in the meta-framework, and enable hypothesising Design as Freedom as a mutually enabling experience for the

people of El 20 and for the (student) design team. The two groups provide each other with suitable conditions for significant personal learning, and together, they learn to design and implement S.PSS with the specific goal of enlarging freedoms, and thus reducing injustice. The fourth level corresponds to my personal journey, which goes from facing a professional existential crisis, to setting up ALM in order to frame and explore Design as Freedom.

The fourth level of construction and the lens to look at this project might seem confusing to some readers. Nevertheless, the fact is that throughout the whole process, I have played many different roles, depending on what was needed at any given time, which also made me a subject of research. This is a case of research through design, and it seems that when one is professionally trained as a designer, there is hardly any other way in which things can be approached. The following table visualises the different roles, and

Moment within the process	Roles / Other	Designer	(Design) Researcher	Project manager
2010	Labber	Designer	(Design) Researcher	Project manager
	Artist			
Set up	Anthropologist			
	Fund Raiser			
	Graphic Designer			
Preparation periods	Teacher			
	Communications manager			
Fieldwork periods	Facilitator			
	Translator			
	Documentor			
	Expert			
Reflection Periods	Writer			
	Curator			

Table 1. Description of my different roles throughout the stages of the project. Drawn by Claudia Garduño.

the impossibility to set oneself apart from a designerly approach. Moreover, there are some background ideas and personal convictions that motivated the development of this research project, and the reader might benefit from knowing how Design as Freedom originated. Therefore, to introduce this research, I weave together my own journey.

Towards making freedom a guiding concept that connects design, philosophy, and pedagogy

It all started with a crisis: my very own existential-professional crisis, which followed the realisation that my chosen profession is not precisely sustainable. This happened around the year 2006, when I was attending a course on Sustainable Design taught by Emiliano Godoy, during my Bachelor's studies in Tecnológico de Monterrey in Mexico City. Design, in many cases, seemed to do more harm than good, regardless of how much designers always highlighted the latter. That crisis transformed into a genuine need to find a new direction for my profession, and led me to apply to study on the Master of Arts Program in Applied Arts and Design in what today is Aalto University School of Arts, Design and Architecture, which I joined in August 2008. This exploration was at the core of my MA thesis, developed in 2010, which consisted of a political manifesto type of document and an art installation.
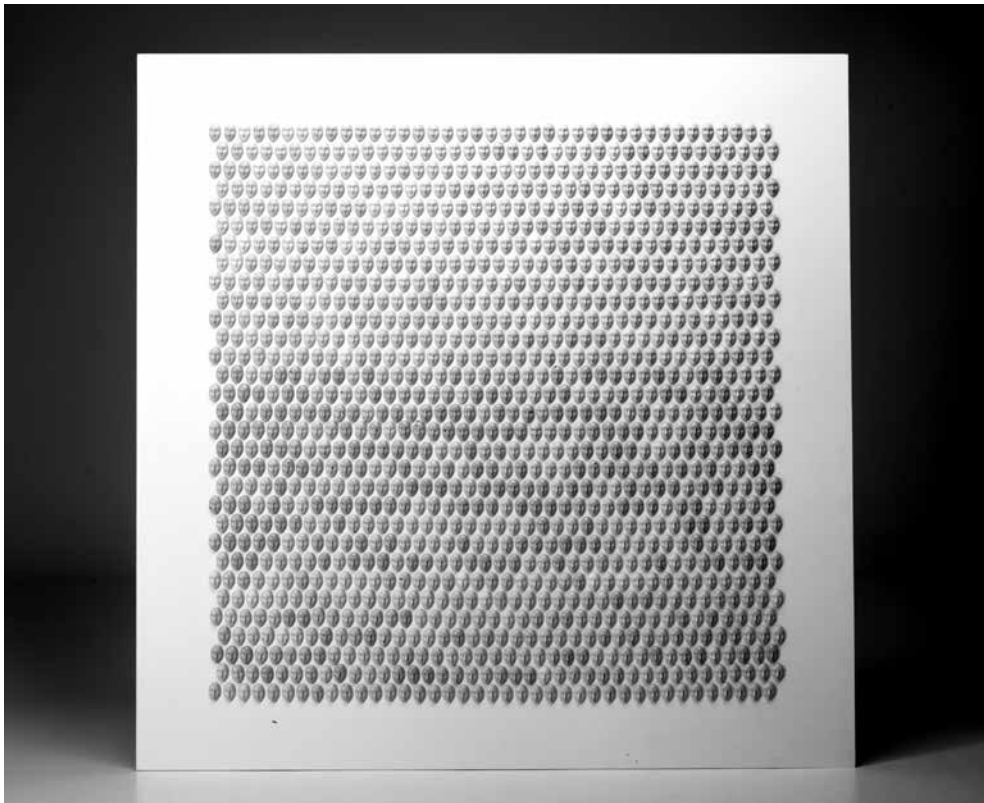
Figure 2. Final work for MA Thesis made of over 1200 ceramic faces. By Claudia Garduño. Photo by Aukusti Heinonen and Mikko Hakio.

Around 1200 white ceramic faces represented the worst possible future scenario, and the one we seemed to be heading towards: a completely homogenous world, where people lived under the impression of pursuing dreams of their own, which are actually designed by the market economy; hence, their *unique* dreams are simply everyone else's dreams. The unique intervention of each visitor, therefore, represented *hope*.

Several years later, I look back at that work, and I know that although it did not give me many answers, this artistic approach set the mood and provided the origin for many of the questions that are the starting point of this research: **What is a better guiding principle for design?** Why is economic growth so important? How might cultural plurality enable or inspire the emergence of a more just and sustainable world? Are people still living within different paradigms? Moreover, that art piece allowed me to physically express what I was not able to describe in words because I was lacking both theoretical and practical knowledge. I could not yet describe 1200 white faces as the absolute hegemony of the Eurocentric paradigm described and criticised by Zea (1990) and Braidotti (2013, 13–54), a scenario to which traditional design practices contribute with segregating and homogenising forces (not to mention environmental impact). Back then, I had not found a proper replacement for the term *development*; I had not encountered Amartya Sen and his proposition of a non-elitist, fairer, and more congruous goal for the future of humanity, such as *freedom*, or *the expansion of choices that people have to live the lives they have reason to value*, a task to which design should contribute.

At around the same time, I was invited to participate in a project called Aalto LAB Shanghai (ALS). Through ALS, I met poverty in person for the first time, by looking at it in the eye. Paraphrasing Manfred Max-Neef (as quoted in Benítez, 2014), this is the only way to truly comprehend poverty. With a deep sense of indignation, we realised that there are people in the world who have simply conformed to living lives of limited choices.

The ALS experience, in conjunction with the theoretical analysis I had made with the aim of developing my design political manifesto, led to understanding that design is unjust when it is conceived and practised as an economically and technologically driven activity that only satisfies the needs of user-customers who represent a market. This type of design practice discriminates against everyone who cannot afford to pay for the service. In doing that, design pushes people who do not want to be discriminated against into the market economy, which in many cases is also linked to a less environmentally sustainable way of living. Moreover, as more people integrate into the market economy, their former alternative ways of living disappear, together with the possibility to know what types of

lives different people from different places around the world could possibly dream of. ALS, nonetheless, filled me with hope. Perhaps design could be practised differently.

Aalto LAB Shanghai

Aalto LAB Shanghai was an original initiative of Tuuli Sotamaa, who in 2009[4] was the person in charge of making the strategy of the newly constituted Aalto University (2010) visible. However, the challenge was, instead of doing this by traditional means such as publishing ads in magazines, to achieve it by *making* something. Sotamaa recalls reading the inaugural speech by the forthcoming president, Tuula Teeri, and coming across the final statement, which read: "Together our mission is nothing less than to change our wonderful, difficult world". Sotamaa added "for the better"[5]. At the beginning of 2010, she decided to form an interdisciplinary team of students representing all the different schools[6] and give them the task of collaborating in *making the world a better place*.

There were several reasons why Shanghai, China, set the perfect stage for Aalto University in 2010. First, Tongji University (Shanghai) had become the first academic partner of Aalto University through the signing of a memorandum of understanding (MoU). Their first collaborative goal was to set up Design Factory in Tongji, giving birth to the Aalto Tongji Design Factory (ATDF)[7]. Also that year, Shanghai City was hosting the World Expo, and within that framework, Tongji University was hosting the Cumulus Conference; both were forums at which to present the project and promote the university. Moreover, IDEO Shanghai was invited to work as a facilitator of the design process during the two-week visit that the Aalto students would make to Shanghai in May. This included a workshop in the Finnish Pavilion "Kirnu", on the Day of Finland during the World Expo.

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4 That year in September, Sotamaa organised a one-week workshop called Pop up Hub Helsinki, which was facilitated by IDEO London, and which was a prototype for Aalto LAB Shanghai. Anni Hapuoja and I were among the participants. More about it can be found here: http://www.finnish-institute.org.uk/en/articles/309-pop-up-hub-helsinki-london-design-in-helsinki

5 As told by Tuuli Sotamaa during a small panel discussion held by Aalto LAB Mexico participants that took place in Caisa Cultural Centre in Helsinki, Finland on September 9, 2014.

6 In its beginning, Aalto University was formed by three schools: Art and Design, School of Business, and School of Science and Technology.

7 Later, in 2011, also the Sino-Finnish Centre in Tongji University, and in 2014, the Tongji Lounge in Aalto University.

We, the students, or as we called ourselves, the labbers, were recruited in February. In March, we met Lou Younqi, the Vice Dean of the College of Design and Innovation at Tongji University, and Coordinator of DESIS-China. He decided that the Chongming Project[8], the project with which Tongji University participates in the DESIS Network, would be the basis for Aalto LAB Shanghai. Without further instructions, we spent a couple of months proposing a series of research topics and activities that we thought would be relevant for the field trip, and that we would introduce and discuss weekly. Unknowingly, throughout our work, we were shaping the Aalto LAB process.

Once in Shanghai, we met the labbers from Tongji, who had recently been recruited. The team integrated quickly, through a series of workshops and activities facilitated by five designers from IDEO Shanghai, including Greg Perez and Hei Cheng, (who would also facilitate the process in Aalto LAB Mexico in 2012). Next, we undertook a very brief immersion in the community (3 days and 2 nights). During that time, we based our process on IDEO's Human Centred Design Toolkit; nonetheless, it was not followed to the rule. This was largely because the time frames were different and because we were sent into the community by ourselves, and none of us mastered the methods; in fact, to most team members, they were completely unknown.

This short visit, however, happened to be sufficient for the team to grasp at least some of the main challenges of the community. Evidently, having had a couple of members from Tongji's permanent research team in Chongming helped very much. We learned that people in rural China have limited choices in their lives due to a special legislation, which made us experience a deep feeling of hopelessness. Despite those difficult conditions, by the end of our visit, we had envisioned at least five different feasible projects (S.PSS) that could be implemented in collaboration with the people of the community, namely, an organic beer, a website for promoting tourism, a community hub, a park for kids, and a sports centre. Although each of these projects tackled specific problems, we could envision an ideal future for the community through the implementation of all the projects.

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8 The project was later called Design Harvests, and it had the aim of improving the relationship between the urban and rural areas of Shanghai; Chongming being a rural area. More information about this project can be found here: http://www.designharvests.politecalab.org/ http://chongmingtao.blogspot.mx/ http://www.desis-network.org/content/design-harvests-acupuncture-design-approach-towards-sustainability

Although we labbers had no clue, Sotamaa and Lou must have been aware of what a Lab[9] is when they planned the project. In any case, the proposals we envisioned were not far from what Björgvinsson, Ehn, and Hillgren (2010, 42) describe:

> There are more than two hundred innovation milieus within the European Living Lab initiatives. How the labs operate varies, but they share some common characteristics. They all argue that the labs are situated in real world environments, are user-driven, and collaborate with research organizations, companies, and public and civic sectors with the aim to collaboratively develop new services and products. (Björgvinsson, Ehn, and Hillgren, 2010, 42)

However, ALS did not become a living lab. It started with the World Expo and it ceased when the Expo came to an end.

Despite its short life, ALS disseminated the enthusiastic belief that this model of project could genuinely change the world for the better, even if just a little bit. In September 2010, after the Cumulus Conference finished, I was working on my research proposal for doctoral studies in the Department of Design at the Aalto University School of Arts, Design and Architecture, and I had just finished reading Amartya Sen's *Development as Freedom*[10] (2001 [1999]). This quote stuck in my mind, for it very well explained what we had experienced through Aalto LAB:

If you help a destitute person because his destitution makes you very unhappy, that would be a sympathy-based action. If however, the presence of the destitute does not make your particularly unhappy, but does fill you with determination to change a system that you think is unjust (or more generally, your determination is not fully explainable by the unhappiness that the presence of the destitute creates), then this would be a commitment-based action. (Sen, 2001 [1999], 270.)

However, I still needed to figure out **how might Design as Freedom be put in practice through Aalto LAB?** How might young people be inspired to become moral agents?

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9 It should be pointed out that the descriptions of living labs are very different from how Koskinen et al. (2011) describe constructive design research through *lab*. The latter make use of the term to describe studies that take place in controlled and isolated environments (laboratories). The sense in which the term labs is used in *living labs* is perhaps closer to Koskinen et al.'s (2011) *field*.

10 This was a recommendation by one of my MA thesis evaluators, Kati Reijonen, to whom I am very thankful.

For the sake of justice and sustainability, how might people choose to limit their own freedoms?

Why study Design as Freedom by replicating Aalto LAB?

It could be agreed that Aalto LAB is not the only means to put the Design as Freedom principle into practice; in fact, it is most likely not the best means to achieve that task. Adopting and adapting the Aalto LAB framework for Design as Freedom added certain dimensions, restrictions, and even some controversies to this study. The fact that Aalto LAB has student participants adds a pedagogical component that could be avoided if the team was formed by professionals, instead. In addition, the initial situations of Aalto LAB Shanghai and Aalto LAB Mexico were nearly diametrically opposed. Aalto LAB Shanghai had been a perfectly staged top-down process, developed on instructions from the President of Aalto University. Aalto LAB Mexico, for its part, has been developed as a bottom-up process; there were no formal collaboration agreements, no "platform project", and no budget. Moreover, the format of Aalto LAB can easily be linked to imperialist practice, for it requires Finnish students to travel across the world to intervene in a marginalised location.

However, organising Aalto LAB in Mexico was becoming the best way in which *I* could observe Design as Freedom in practice; it was leveraging the circumstances and turning them into opportunities (Thorpe and Gamman, 2011, 244). The initial situation of ALM presented a clear advantage over ALS: we had a general idea of a replicable process required to tackle this type of undefined project before, in between, and after the field trips. There also seemed to be ways of developing the project in a non-imperialistic manner. Moreover, some of the pieces needed for the development of Aalto LAB in Mexico were falling into place. Several actors within Aalto University supported the idea of having another Aalto LAB, including ENCORE[11], and they agreed that it had to become a permanent program of some sort (posing an additional challenge). Additionally, ALM had gained support from the Embassy of Mexico in Finland.

I joined the doctoral program in January 2011, but things had changed. Tuuli Sotamaa had left Aalto University, and with her, her plans to develop more Aalto LABs in different locations. Yang Li Hua ("Emily", Industrial Design student at Tongji University), Anni Hapuoja (Architecture student at Aalto University), and I, all labbers from ALS, had

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11 ENCORE is the research team to which I incorporated upon my enrolment to Aalto University as a doctoral student in design. It stands for Engaging Co-design Research.

been working on the project report for several months, and we decided to finish the task regardless of the organisational changes. First, we believed that sharing our ideas with the Chongming Project was the only means to achieve continuation of the ALS projects in the village. Second, we believed that the experience had been worth it, and that it should be shared with a wider audience. Finally, we thought that the project had great potential and that, instead of leaving it in oblivion, more Aalto LABs should be developed.

By having open access to everyone's learning diary, reflections, and blog entries, we were understanding the types of learning experiences that students from different fields had during Aalto LAB. We identified the most common positive and negative statements made by the members of our team. Those statements were simplified and sent to all participants to be graded from 0 to +5 in the case of the positive ones, and from 0 to -5 in the case of the negative ones. The results of that questionnaire were clustered by study field and visually represented as shown in figure 2.

Furthermore, through our constant dialogue, Anni, Emily, and myself, realised that ALS had filled a gap in an educational system that was failing us and other students like ourselves. ALS had provided us with the choice (and very difficult task) of serving something other than the world of 'businesses'. I kept a piece of paper on which I summarised my reflections about what I believed we learned and achieved through ALS during our first visit to Shanghai in May 2010. These notes were part of our presentation before returning to Finland; this is a transcript of those notes:

1. That each and every proposal that has been introduced today has been originated by true research and observation.

2. That we tried to keep ourselves within the borders of empathy.

3. That we really believe that there are different paths for development, besides becoming urban[12].

4. That we understand the value of both progressiveness and tradition.

12 This was how our team reacted to the World Expo slogan, which, in Mandarin, read "Better life in the City" (although it had been translated into English as "Better City, Better life").

Feedback

DESIGN
- CHEN
- CLAUDIA
- PENNY
- ANNI
- EMILY

ENGINEERING
- ALEX
- BENNY
- HENRI
- RYU
- MIKKO

BUSINESS
- CHINGYI
- ANNE

Column categories:
- INTERCULTURAL EXPERIENCE
- I EARNED A LOT OF PERSONAL GROWTH
- IDEO WAS GREAT
- THE PROCESS WAS BETTER THAN THE END RESULT
- I LEARNT A LOT ABOUT TEAMWORK
- UNIQUE PROJECT/ BRILLIANT IDEA
- IT WAS GOOD THERE WAS NO TEACHER
- IT WAS HARD TO DO IT IN ENGLISH
- THE TEAM SHOULD BE FORMED THROUGH AN OPEN APPLICATION
- THE THEME SHOULD BE CONCRETE
- THERE SHOULD BE MORE ACTION (PROTOTYPING)
- BOTH TEAMS SHOULD START AT THE SAME TIME
- THERE SHOULD BE A FINAL PRESENTATION (AS PROMISED)
- BOTH TEAMS SHOULD EARN CREDITS
- TONGJI STUDENTS MUST HAVE TRAVELED TO FINLAND

Legend scale: 5, 4, 3, 2, 1, 0, -1, -2, -3, -4, -5

Table 2. Most postive and most negative feedback by all labbers of Aalto LAB Shanghai grouped by fields of study. Source: ALS final report.

We created service ideas that would meet the needs of the villagers (from research) and start interactions between the island and outsiders (to make money flow into the island)[13].

Even if not all the product-service-systems connect directly to each other, altogether, they result in synergy. We believe that these ideas have the potential to make Chongming become the model it is expected to be.

The fact is that ALS had made me experience the feeling of exercising my profession according to my own rational plan and my own free will (in the words of John Rawls, 2009 [1971]). Throughout such a project, I could make use of my skills to achieve something significant, something that would not just pay my bills, but that would deliver good to other people or, at the very least, make their living situations a little bit less unjust. ALS opened my mind by taking me to an alternative livelihood[14] that coexists with our globalised-urban-western-capitalist-developed-world, and which is extremely difficult to imagine when one was born and has lived only within a globalised-urban-western-capitalist-developed-context. We could not affect the community in the way we wished, but the community certainly had an impact on us. *The educational/learning experience had become at least as relevant as the design intervention in a village, especially if the greatest change that the world needs to see, if Sustainability is to be achieved, is in the globalised-urban-western-capitalist-developed way of life.*

The ALS final report, which included abstracts and analysis of our learning diaries, samples of the materials that had been presented, diagrams, and a rich selection of pictures from the whole process, which had lasted altogether seven months, was finally finished in November 2011. We had been motivated by the first seminar organised by ENCORE, "From Empathy to Engagement", where a slot had been assigned to ALS; this seminar was a very suitable forum at which to release the report[15]. The presentation

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13 If assessed through the three traditional pillars of Sustainability, Chongming was doing fine regarding environmental sustainability, but social sustainability was at risk, largely because of the poor economic opportunities. Young people were migrating to the city because they could find no job opportunities on the island; hence, the elderly people were being left behind.

14 The term livelihood appeared in this research program in a workshop with the students of Aalto LAB Mexico 2012, but it gained relevance after a tutorial meeting with Alastair Fuad-Luke in 2013.

15 We printed only a few samples for that event, and afterwards, we got funding to print 50 copies from Design Factory through its director, Kalevi Ekman. Some of these copies were sent to Shanghai, to be distributed in Tongji University, IDEO Shanghai, and the Chongming Project.

was well received, and Mr. Agustín Gutiérrez Canet, Ambassador of Mexico in Finland, who was among the audience, expressed his will to support the project[16].

I was not consciously aware of it, but through that presentation, I was announcing my will to develop Aalto LAB in Mexico. In fact, this was a critical moment within my studies, when rather than observing a project in Mexico[17], my research plan required starting a project anew. I could fail, but by then, I strongly believed in the words of Russel Ackoff (1999, 427), that "It is much better to do the right thing wrong than the wrong thing right, because when errors are corrected it makes doing the wrong thing wronger, but the right thing righter."

In fact, exploring Design as Freedom through Aalto LAB enabled the observation of the (potential) mutual expansion of freedoms, of the participant end-users, and of the (student) design team. This gave way to the construction of the meta-framework and to the eventual nullification of the term *participatory design* as a description of the collaborative practice in Aalto LAB. In participatory design, empowerment is generated mainly in the users; this collaborative design practice would also empower the designers; hence, *co-design* was considered a more suitable term. Additionally, it has to be noted that although the focus has been on documenting and analysing the (potential) effects of the project on members of the community and students, in ALM, other members in the network, including teachers, facilitators, experts, and documenters, have also shared some stories of personal learning.

Although many were still missing, by the end of 2011, several pieces had started to fall into place for the organisation of Aalto LAB in Mexico. However, while it was relatively easy to adopt the pedagogic component as part of this exploration, the most controversial parts of Aalto LAB process are, straightforwardly expressed, the need to transport a group of European students and teachers across the globe, and the fact that they visit a local community and suggest changes in their lives, which can easily be seen as an unsustainable and imperialistic practice. However, this is also an argument built from a distance, without thoroughly analysing the complexity of the design situation.

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16 The Embassy gave its support to the project and was crucial in building relationships with the Embassy of Finland in Mexico.

17   Already then I proposed that it should take place in Mexico for several reasons: from the most personal perspective, I felt that it would be far more rewarding to develop this type of project in my homeland; but it was also the place where I already had connections and where I would be able to find new ones. Furthermore, I was applying for funding from the Mexican National Council of Science and Technology (CONACyT).

This work proposes that the theoretical starting point of Design as Freedom is the identification of a human–non-human *assemblage*, bonded to a particular territory. While the idea is to identify all the different natural and cultural elements, and how they relate to each other, as a whole, these groups of intertwined relationships can be, and are commonly called, context. In other words, Aalto LAB is fully contextual[18]. Since ALM is based on ALS, both locations are classified as poor, rural communities, and they are located within wider territories, which the governments were aiming to transform into "sustainable areas"; finally, both communities had a prior connection with the design department of a local university.

These relevant characteristics will be further explained in Chapter 6, but at this point, the focus will be on the fact that the communities are poor and rural in China and in Mexico, contexts where it would be rare to find professional designers, and where the civil society is not very active. In talks with Arch. Oscar Hagerman in 2010 and 2012, he pointed out that it would be difficult to make local people participate, because in general, people in such communities in Mexico are used to being told what to do (by the government)[19]. Additionally, Hagerman observed that the best choice would evidently be to have local designers tackle the challenges of their own communities; however, given that very few people have access to university education, especially in poor rural communities, this remains a dream.

While the argument presented above justifies the need for external designers, it does not justify the need for Finnish designers, as one could expect that Mexican or Chinese designers could do the job just as well. This is also not completely true. In the case of Mexico, the discipline of design was introduced in universities relatively recently, in 1959 at Universidad Iberoamericana and in 1969 at Universidad Nacional Autónoma de México (UNAM) (Comisarenco, 2006, 167). These early programs had the goals of improving the quality of products, generating new production means, and increasing exports (ibid.); thus, design in Mexico was born as a technically and economically driven activity. One of the elements that is much appreciated of Nordic design, and particularly of Finnish design, for its part, it its *humanist approach* (Comisarenco, 2006, 117–119), which eventually gave rise to participatory design and empathic design. It was the idea of learning from Finland and taking that knowledge back to Mexico that motivated

18 This was observed by the researchers involved in Aalto LAB Mexico, and was reported in Garduño, Nousala, and Fuad-Luke (2014).

19 He especially referred to indigenous communities.

me to leave in the first place. Now I realise that design could really generate a positive impact in contexts like Mexico, if it adopted that humanist approach.

The dimension of the meta-framework to look at is the pedagogic program, from the perspective of the students of Aalto University (and the local universities). I have stated that I went to Finland to learn what I could not learn in Mexico. Nevertheless, what we, the labbers of 2010, learned in China, we could not have learned in Finland, because Finland could not bring us face to face with the type of unfair poverty we met in China or in Mexico, where literally, people cannot afford to get sick. Therefore, by travelling, we were confronted with different paradigms; in this case, the idea is not to reach consensus upon a single new paradigm, but to generate a dialogue and to learn to appreciate diversity (to understand that different paradigms live side by side).

Hence, having *privileged* students travelling to meet victims of injustice is a way to achieve something that has become very difficult in our global world, which is to be aware of how our everyday decisions might have an effect on people who live on the other side of the planet (Nussbaum, 2010, 79–80). It is not the same to hypothetically speak of how the poorest people will be the first to suffer the consequences of climate change, as to have met and become friends with someone living in that situation; the latter is, on most occasions, a really powerful means to develop a sense of empathy and compassion. Thus, and although many have been or are going through a reformation process, here, the critique is extended to the (design) education systems, which have been primarily concerned with preparing their students for the industry. Many highly respected thinkers throughout history, including Immanuel Kant, John Stuart Mill, John Rawls, Martha Nussbaum, and Russell Ackoff, stated that facilitating moral learning and developing the skill in judging the just and the unjust is more important.

Therefore, it is the paternalist practices, the lack of access to professional education, and the technical-economic approach to design that justify the participation of a team from Aalto in such communities. On the other hand, it is those contexts that would inspire privileged students (an adjective that refers not only to Aalto students, but also to those from the local universities) to rethink many aspects of their lives, and possibly even act accordingly.

From my perspective, although many questions remained unanswered, especially if people's lives would eventually benefit, Aalto LAB matched my research interests so well that it seemed to translate my theoretical inquiries into practice, despite the restrictions it entailed, and despite the controversies it brought about. If, on one hand, I had the

huge task to build the project almost from scratch, on the other hand I gained the opportunity to tune the research program in accordance with my own interests. The actual construction of the case would take a series of loops between practice and theory (Nousala, Jamsai-Whyte, & Hall, 2010), together with much public relations and project management. Eventually, I was able to articulate the definition/hypothesis: *The process of conceptualising what an assemblage might become and translating that vision into a feasible plan in order to put it into practice is, ultimately, Design as Freedom.* Bringing ALM to life became more than leveraging circumstances, it was identifying an assemblage, foreseeing the best desirable and feasible scenario, and constructing new relationships in order to generate a new assemblage. The construction of ALM was, in itself, a case of Design as Freedom.

Data sets for different lenses

Observing Design as Freedom through Aalto LAB is a complex task that involves paying attention to various matters simultaneously. The pedagogic component requires gathering feedback from the participants at various stages of the program, in order to design a better learning experience for the following group. The development of the design process and the sub-projects in the community also needs to be documented. As stated above, the context plays a leading role, since everything, including the pedagogic program, the sub-projects, the design team, and the networks of mentors, unfolds around it. The Design as Freedom principle is built from a theoretical exploration, but also through reflecting on what is learned in practice.

The full research program has consisted of a series of exercises from which different data sets have been collected. According to the classification proposed by Koskinen et al. (2011), in which there are three main formats for constructive design research (lab, showroom, and field), this inquiry is mainly a construction that takes place in the field. Nevertheless, some parts, including the primeval art installation in 2010 and the *Crossing boundaries* (2014) exhibition, which is described later in this work, are clear examples of the showroom format. The different data sets that were gathered from the total collection of exercises have contributed to advancing one or more of the four key explorations mentioned above.

The following chart illustrates the type of data that was gathered in each of the stages of the Aalto LAB Mexico program, in chronological order starting from ALS final report, to the

	Design as Freedom	Pedagogic program	Design process	'El 20'	DATA
Setting up	X		X	X	2 visits to El 20 by the researcher
	X			X	Interview starting point (in audio)
			X	X	Revision of government databases
			X	X	National Anthropology Museum
	X	X			ALS report
ALM 2012 preparation	X	X			Students' application letters
	X	X	X		Learning diaries (not all wrote them)
	X	X	X		Meeting minutes
	X	X			Emails
		X			Photos
	X	X	X		Researcher's field notes
	X		X	X	Students' presentations
	X	X	X		Blog entries
ALM 2012 fieldwork	X	X	X	X	Researcher's field notes
	X	X	X		Interviews with students (in audio)
	X	X	X		Students' working documents
	X	X	X	X	Photos
	X	X	X	X	Video
ALM 2012 reflection	X	X	X	X	Final presentation
	X	X	X	X	Students' final report
			X	X	Experts' reports
			X	X	Researcher's field trip
	X	X			Final talk with Aalto students (in audio)

Table 3. Description of data sets gathered from 2010 to November 2014, presented in chronological order. Columns 2-5 show the different purposes with which data was collected: either understanding life in the community, observing design as freedom (either from the point of view of the labbers or the community),

Phase	Data source			
ALM 2013 preparation	Fieldtrip by the researcher		X	X
	Weekly questionnaires	X	X	
	Students' research			X
	Meeting minutes		X	
	Researcher's field notes	X	X	X
	Water sample analysis results	X	X	
	Blog entries	X		X
ALM 2013 fieldwork	Blog entries	X	X	X
	Researcher's field notes	X	X	X
	Students' working documents		X	X
	Photos	X	X	X
	Video	X	X	X
ALM 2013 reflection	Students' final learning diaries	X	X	
	Conference papers	X	X	X
ALM 2014 preparation	Planning documents		X	X
	Researcher's notes	X	X	X
	Students' working documents		X	
	Email conversations	X	X	X
ALM 2014 fieldwork	Working documents	X	X	X
	Researcher's notes	X	X	X
	Personal interviews with students (audio and video)	X	X	
	Group interview with students (audio and video)	X	X	X
	Interview with students and community members (audio and video)	X	X	X
	Photo	X	X	X
	Video	X	X	X
ALM 2014 reflection	Exhibition	X	X	
	Discussion panel with students from 2012-2014	X	X	X
	Conference papers	X	X	X
	Journal article	X		

information that would allow us to better develop the Aalto LAB pedagogic program, or regarding the design program developed with and within the community.

setting up of ALM in 2011, ALM 2012, 2013, and 2014, and it finishes with the *Crossing Boundaries* exhibition, which took place in September 2014 (see figure 3).

From the chart, it can be noted that the data sets differed every year. On the one hand, this shows that the informality of ALM, meaning that it was developed without formal agreements among the universities, made it impossible to oblige the students to perform some learning tasks (such as learning diaries), given that most of them were participating voluntarily. On the other hand, there are cases in which changes were planned; for example, in 2013, the students were selected from a group of students who attended a summer course; therefore, no application letters were collected that year.

The structure of the book

This book is structured in two main parts. The first part is theoretical and has the aim of conceptually defining a noble goal for design (freedom). The second part tells the story of the exploration in 20 de Noviembre through Aalto LAB Mexico. By the time this work was written, some effects had started to be seen in the community and in the tens of people who had been part of the team. However, more is to be done with and within the community; hence, this work seems to be only the beginning of a greater project that is helping us make of design a *commitment-based action*. Each of the chapters is briefly described below:

Chapter 2 revises a selection of design practices and practitioners, not with the intention of determining where this work fits best, but rather with the aim of identifying elements that, combined, could make the best of design. These elements are classified into emerging qualities and emerging purposes of design. The chapter also argues that by clinging on to the assumption that good design is good business, because design must generate economic growth, designers constrain their practice, and design is prevented from generating much greater outcomes. Rather than seeing not-for-profit design as charity, it is seen as a matter of human justice and human rights.

Chapter 3 introduces the model of paradigm shift proposed by Thomas Kuhn. It also presents a historical analysis in order to show that the way we think of the world, and thus the world, has changed over time, including the conception of the *good*. Additionally, this revision insists that whilst some of the dominant ideas of our times originated in ancient times and evolved slowly, the conception of human history as a continuous and progressive process, as well as the goal of economic growth, are, precisely, ideas only, and relatively new ones. In doing this, it ratifies the right to question some rather

grounded notions. Furthermore, it introduces the alternative thinking of contemporary authors who continue to philosophically explore more meaningful goals for humanity. The chapter concludes by explaining why this work aligns with Amartya Sen and why it proposes that that greater goal is *freedom*.

Chapter 4 makes a quick historical revision through the philosophical debates on freedom. Starting from Kant, it presents freedom as inseparable from the concepts of morality and reason, given that one is free only by being morally responsible for one's own actions, which only rational beings can do. This systemic view of freedom is reinforced by the relatively recent work of Gerald C. MacCallum (1967), who proposed seeing freedom as a triad system that includes an agent, an intention, and the lack of constraints. The chapter continues by introducing the model of assemblage, the final piece in conceptualising design as freedom. Finally, Design as Freedom results in the process through which designers encounter an initial assemblage, which entails cases of injustice, and together with its inhabitants, they transform it into what the latter might consider a more desirable assemblage.

Chapter 5 works as a transition space between theory and practice. It starts by justifying why it is suitable to explore Design as Freedom through Aalto LAB, including why is it worth taking a group of European students to a far-off location. In step with Jung-Joo Lee (2013), the construction of the Aalto LAB Mexico framework is seen as a design process, where theory and practice have informed each other iteratively since 2010 (Nousala, Jamsai-Whyte, and Hall, 2010). The ALM framework became a longitudinal process that merges a *pedagogic program* and a *design process*, and makes use of a collection of different methods, or specifically*, creative design methods*. In order to make a comprehensive description of what happens in practice, and how it happens, the framework is viewed from several perspectives, which is achieved by equating the rationale of Turkka Keinonen (2009), that creative design methods can be evaluated through different foci with different results (i.e. agenda, competencies, instruments), with that of Kees Dorst (2005), that design can be approached as a complex task that can be described through a multidimensional framework (formed by an object, actor, context, and process). This chapter describes the Aalto LAB framework as a long-term process that is largely defined by the context (or assemblage), from which everything else is derived: the agenda-object is defined, the design team is formed by specific actor-competencies, and the specific instruments-processes are selected. Moreover, the different design phases (diagnosis, conceptualisation, implementation, and evaluation), are developed through the pedagogical program, which is divided into learning periods (preparation, fieldwork, reflection).

Chapter 6 describes the process of setting up Aalto LAB Mexico. It includes a brief historical overview of Mexico, which will help the reader understand the wider context where the project takes place. Moreover, it introduces the original assemblage, or the point of departure in El 20 for ALM.

Chapter 7 tells the story of ALM 2012 in a rigorous chronological order, and it introduces broad descriptions of some work sessions. This chapter explains how the diagnosis stage produced three main projects.

Chapter 8 tells the story of ALM 2013, but also describes some events that happened in 2014 and at the beginning of 2015. The story of each subproject is told separately and narrated chronologically.

Chapter 9 concludes this part by telling the story of the design process of the exhibition called "Crossing Boundaries, Co-designing with a Mayan community", which, as put forward by Koskinen et al. (2009, 89) was a case of constructive design research through showroom; in this particular case, the activity enabled the analysis and synthesis of a great amount of data that had been gathered throughout the years, and thus was rather useful in structuring the second part of this book.

Part 1

Photo by Jan Ahlstedt

Making the best of design

This work seeks to contribute to the discussion on the moral grounding of design, as put forward by Victor Papanek in 1971, and which has been more recently advanced by design theorists such as Richard Buchanan (2001a) and Ilse Oosterlaken (2009). From this work's perspective, other discussions within the discipline that are somehow concerned with designing design, already contribute to morally grounding design, even if not explicitly. In fact, by borrowing elements from those discussions, we could make the best of design.

In order to identify those elements that could bring design to its best, a crude classification of design discussions is introduced herein. The discussions in the first group focus on design as a process, and propose *emerging qualities* that are applicable to any type of design intervention. This group includes the discussions that point out that design practice is shifting its focus from tangible products to service systems, and where we can find proponents such as Anna Meroni and Daniela Sangiorgi (2011); but there are also those who emphasise the benefit of collaborating with other disciplines, including Geoff Mulgan (2014), Brian Boyer, Justin W. Cook and Marco Steinberg (2011), and IDEO (2011); and also those who focus on encouraging a wider societal participation in design, including professional, amateur, and citizen designers, among whom Pelle Ehn (1993), Francesca Rizzo (2010), Tuuli Mattelmäki and Froukje Sleeswijk Visser (2011), and Alastair Fuad-Luke (2009) can be found. From these discussions, it can be concluded that nowadays *good* design is complex, collaborative, and empathic.

On the other hand, there are those who focus on goals, and more specifically, on what design *ought* to do, or what it would be *right* for design to aim for; these are herein called the *design for's*, or the purposes of design. Within that type of discussion, there are those who focus on overcoming the environmental crisis, such as Ezio Manzini and Cullars (1992), John Thackara (2006), and Bruce Mau (2004); those who focus on designing for social innovation, including the ideas put forward by Ezio Manzini and Francesca Rizzo (2011), and Erling Björgvinsson, Pelle Ehn, and Per-Anders Hillgren (2010); and those who theorise on designing for well-being, like Turkka Keinonen et al. (2013).

However, the different lines of research have blurry boundaries; thus, it is rather common to come across projects with a main focus, say, on collaborative practices that aim for Sustainability and that have services as outcomes. Moreover, different paths have led different schools towards similar research topics; this seems to be the case, for instance, with *co-design*, which some encountered through user-centred design (UCD) and others through participatory design (PD) (Rizzo, 2010; Manzini & Rizzo, 2011; Mattelmäki & Sleeswijk Visser, 2011; Björgvinsson, Ehn, and Hillgren, 2010). Hence, a single discussion might simultaneously deal with qualities and purposes of design, while similar qualities and purposes of design are being proposed in different discussions.

Whilst all the discussions mentioned above contribute to taking the discipline of design to a more desirable state than the current one, or to designing design, this work argues that this task can only be achieved by explicitly expanding the moral discussion: defining what good design is, and what design ought to do, and most importantly, by discussing *why*. Moreover, without attaching the discussion of what good design is to the primary discussion on defining what is good and right for humanity, there is a risk that design would be basing its discussions on questionable or unprovable premises; in the end, there is the risk that design would be wasting much of its potential and preventing itself from becoming the best it can be.

Defining what is *good* (and bad) is a philosophical matter that has troubled humanity for centuries; nowadays, the conception of the good is intertwined with the goal of Sustainability, especially in the minds of the younger generations. This section introduces a selection of design discussions that aim to cope with the current world dynamics and contribute to visualising a better design practice accordingly. It also shows how very different schools of thought have engaged in similar discussions regarding the qualities and purposes of design. Nonetheless, this section also offers a critical reflection on how traditional conceptions, and specifically the idea that design has to be economically driven, limit its potential to do good. The discussion continues by speculating what

design could become if it overcame those limitations, and ends by proposing an alternative conception of design that will be theoretically developed further (within the first part of the book), before attempting to observe it in practice.

Emerging qualities and purposes of design

Sustainable and complex

A consistent claim within this work is that the emergence of the term *Sustainability* caused structural changes in many fields of study and areas of human life, within which design is no exception. Within the world of designers, the adoption of the concept brought about an existential crisis because this process included acknowledging that designers stand in the middle of the paradoxical situation that seems to be the cause of the environmental crisis: Human beings make use of the products of nature in order to create objects of use; while doing so, they construct their world, and this is an essential trait of *human life* (Arendt, 1998 [1958], 135). Thus, human life differs from other types of life because it is dependent on what nature provides (nowadays called ecosystem services) for reasons that go beyond nourishment and shelter. Nevertheless, the existence of a man-made world, which is traditionally design's greatest concern, is directly tied to the destruction of the natural world[20] (139).

In the seventies, largely through the influence of the work of Victor Papanek (1984 [1971]) and his search for a positive design practice, many joined the effort for a more proactive and less environmentally damaging design. For some decades, it seemed like the impetus had decreased, but nowadays the global design community has turned its attention back to the subject, for example, when in 2012, while Helsinki was the World Design Capital, the School of Arts and Design of Aalto University was dedicated to conducting research on design for well-being (Keinonen et al., 2013, 14). As stated above, not all the current discussions of the sort originated from the one on Sustainability; nonetheless, design teachers around the world seem to agree that these approaches are

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20 Arendt explains that the mediaeval conception of creativity reckoned that a man-made world required the destruction of part of God-created nature, and that the conception of man as the lord of nature originated in the modern age, which will be further discussed in Chapter 3.

being demanded by their students[21], which (I believe) can be linked to the emergence of the term Sustainability.

Nearly thirty years have passed since the Brundtland Commission coined the term *sustainable development* and urged a global movement of local actions (Drexhage & Murphy 2010). Perhaps this call for action was not as successful as had been expected, but at the very least, the United Nations succeeded in spreading the term worldwide. By 2007, the children that were born when the term was coined became the new students enrolling in universities all around the world, and they used the term with absolute familiarity; and perhaps, they could not even conceive the world without it. Within these new generations, we can find the *children of Brundtland[22]*, who judge good and bad in a similar fashion to the way they distinguish the sustainable and the unsustainable, even if the former remains an ambiguous ideal. Thus, it is naturally shocking to young design students to learn that their incipient profession is a strong link between mass production and mass consumption, a vicious cycle that has caused massive environmental damage.

The interaction between design students and design schools has become very dynamic, so that curricula are constantly modified in order to respond to their students' needs. The earliest current of sustainable design, eco-design, began twenty years ago (den Ouden, 2012, 53); its main focus was the maximum reduction of environmental damage by, for example, emulating the cycles of nature that reintegrate disposal materials rather than conceiving processes in a linear manner (Van der Ryn & Cowan, 1996; Brugart & McDonough, 2002). One of the tools adopted by design practitioners and taught to design students is Life-Cycle Assessment (LCA), which is a tool that enables visualisation of "the total ecological footprint of a product, from development and production through to use and disposal" (den Ouden, 2012, 53). Furthermore, the tool is powerful because it enables designers to gain a wider perspective of the implications of their design decisions, and therefore understand that, by expanding the boundaries of the systems they deal with, externalities can be turned into internalities (Rittel & Webber, 1973). However, this approach can also be overwhelming because it inspires a deep reflective process and might even cause a professional-existential crisis[23].

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21 This was shared by Patricia Berine in Oslo 2014, but has also been discussed informally with Tuuli Mattelmäki and Turkka Keinonen.

22 This distinction is relevant because these type of people are the ones who would most likely adopt the approach introduced in this research. As will be seen in Part II, these type of students have been the ones who have become most actively engaged in the Aalto LAB Mexico project.

23 I can directly relate to this process described by Patricia Beirne during her presentation at the Relating Systems and Design Conference in Oslo in 2014. It was during my BSc in Industrial Design Studies in

When talking about design activism, Tim Brown (2009, 203) suggests that although designers are currently attracted to solving *problems that matter*; this should not be seen as a case of collective altruism, that it should, instead, be explained by the fact that designers have always been attracted by the most difficult challenges. Nevertheless, in my experience, new design students in the process of overcoming their professional-existential crisis wish to see design doing good for the sake of it. New design students want to be trained in practising design in a more responsible manner; design schools, for their part, have gone from teaching sustainable design as an elective subject to creating full programs (e.g. Creative Sustainability was a minor that became a joint interdisciplinary Master's program, including the MA Creative Sustainability Program in Design at Aalto University). Moreover, to some schools, it no longer makes sense to differentiate sustainable design from other types of design; instead, they are concerned about embedding Sustainability into design's DNA (see, e.g., The Designers Accord's [2011] *Integrating Sustainability into Design Education: The Toolkit*).

It should be pointed out that although it seems that different design schools are reaching a consensus and adopting Sustainability as a desired dimension of design practice, no one yet really knows what a sustainable world would look like (Manzini, 2003; Thackara, 2006; Fuad-Luke, 2009; Godoy, 2010). Moreover, top design theorists hold contrasting perspectives around it; for instance, Ezio Manzini (2003) is hopeful that the status quo and a healthy environment can co-exist, while Tony Fry (2003; 2010) states that the only path towards *Sustainment* is the destruction of the current status quo. Whilst that debate is too difficult to solve, design theorists have engaged in what might be a more promising search: that of defining the new specific role(s) for designers to play within the global search for Sustainability. So far, the areas of opportunity for designers that are most commonly pointed out are the capacity to deal with complex or *wicked problems*, the capacity to facilitate creative processes, and the ability to imagine new futures.

Many authors belonging to various fields of knowledge coincide in claiming that the world is all the time moving faster, that societies are more plural, technologies more sophisticated, and, among other things, communication technologies becoming more accessible as the demand for raw materials and energy expenditure increase; all in all, the world is becoming more complex, making it more difficult to achieve a sustainable future (Ackoff, 1973; Thackara, 2006; Rifkin, 2010; Jackson, 2011). Following a similar line of thought, Horst W. J. Rittel and Melvin M. Webber (1973), used the term *wicked*

Tecnológico de Monterrey in Mexico City, attending the lectures by Emiliano Godoy on Sustainable Design, that I encountered the professional existential crisis that inspired all my later studies.

problems[24] to describe the types of problems that social policy encounters and that can be contrasted with *tame* problems, such as the ones exact sciences and engineering deal with. Wicked problems deal with people, and given that society is formed by many minority groups and is therefore plural in its values, these problems cannot be *definitely described* and they do not have any objective, undisputable, or optimal solutions (Rittel & Webber, 1973).

Even before design got involved in social policy and other issues of that kind, it dealt with wicked problems. Design is about conceiving *that* which does not yet exist; therefore, it deals with the indeterminate. Furthermore, rather than being concerned with a specific subject matter, it is an approach that can be applied to every area of human existence; hence, it is concerned with the particular, but its scope is universal (Buchanan, 1992, 16). Design students have traditionally been trained to develop skills such as scalar thinking, critical reframing, experience design, forecasting, and transdisciplinarity[25]; therefore, as the world gets more complex, design education does not need to be greatly transformed. In fact, design can be thought of and taught as problem crafting, rather than problem solving (Beirne, 2014).

Design's greatest contribution to humanity might emanate from designer's ability to imagine a radically different and desirable future (Manzini, 2003; Godoy, 2010; Manzini & Rizzo, 2011), especially when keeping in mind Richard Buchanan's (1992, 21) reflection that what many call impossible, might simply be a limitation of imagination that could be overcome through better design thinking. Already in 1991, Ezio Manzini started framing a proposal that was widely welcomed by the field and that was to be tested in several countries through a program that "aimed at building a widespread network on the theme of design for Sustainability (Global Network on Design for Sustainability)" (Manzini & Jégou, 2003). He proposed a technique called the "Design Orienting Scenario", which accounted for a "vision of a hypothetical future", where the aim was to generate a feasible scenario, and which accounted for having (1) a vision of

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24 Few years before Rittel and Webber published the article where they described the wicked problems, C. West Churchman (1967) wrote a short description about Rittel's participation in a seminar, where he introduced the concept. In the paper of 1973, Rittel and Webber state that the term builds on Karl Popper's insight that hypotheses cannot be proved, but only refuted.

25 I am using the word transdisciplinarity in step with Fuad-Luke (2012b), where he distinguishes among four different levels of disciplinary collaboration. In an incremental order of integration, these are: Cross-, Multi-, Inter-, and Trans-. Transdisciplinary collaborations, thus, are the ones which are most holistically integrated, where two or more different disciplines work as one due to their high level of cooperation, and which is integrative and interactive in kind. Additionally, there is a high transference of methodologies and a common output of this kind of collaborations is a new way of knowing.

how a product-service would affect the world if implemented, (2) a proposal that could be explained as the strategy to make that scenario become real, and (3) a motivation or justification for why that scenario is desirable (Manzini, 2003).

So far, this work has reflected the effect that the emergence of the term Sustainability has had in the field of design, and especially on young design students. Sustainability has been embraced both as a desired quality (that design was sustainable, as could be assessed by LCA method) and as a desired purpose of design (that design generated Sustainability, by visualising a desirable future). Sustainability is a complex concept that responds to the complexity of the current world, and that has been relatively easily adopted by design because design has always dealt with complexity. Rittel and Webber (1973) stated that wicked problems cannot be solved, only constantly re-solved; design can naturally deal with this indeterminacy, and tools and methods are developed in order to support designers in the task.

In the course of time, the work mentioned above, started by Ezio Manzini, Francois Jégou, and colleagues, which allowed them to observe and compare different local design interventions aiming for Sustainability in different parts of the world, led them to identify the existence of creative communities; that is, groups of people who are deeply rooted in a place and who, by making good use of the local resources, promote new ways of social exchange (Manzini, Jégou, and Penin, 2008, 261). The actions put into practice by these groups of non-designers bore great potential to become sustainable solutions (ibid.); and if designers engaged with those communities and made use of their skills and their tools, the chances of generating and achieving a desirable vision of the future could greatly increase. Finally, they realised that design experts had much to contribute as *specialists*, but also that they had to see themselves as part of a greater and more complex network of *stakeholders*, including experts from different fields, enterprises, non-profit organisations, the public sector, and global organisations, with whom they needed to construct peer-to peer collaborations (Manzini, Jégou, and Penin, 2008).

While designers focusing on Sustainability encountered collaboration nearly by chance, there are other design practitioners, researchers, and schools of thought who have, for a long time, had the users or human factors at the core of their practice. For them, it was also a natural step to promote the active participation of users and other stakeholders in the design process, and this is precisely what is covered in the following section.

Collaborative and empathic

Other paths that led designers to envision their practice as a peer-to-peer collaboration with the final user and other stakeholders are participatory design (PD), which originated in the seventies, and more recently co-design, with roots in user-centred design (UCD) (and in empathic design, too), and connections to the design research developed in the United States, the Faculty of Industrial Design Engineering at Delft University of Technology (Delft, Netherlands), and in what today is the Design Department of Aalto University School of Arts, Design and Architecture (Helsinki, Finland) (see, e.g., Rizzo, 2010; Mattelmäki, Vaajakallio, and Koskinen, 2014). Although each of those lines of thought has particular areas of interest, it is certain that overlaps cannot be avoided.

Participatory design originated in Scandinavia in the 1970s, in the workplace context (Ehn, 1993, 41); it was born from the ideal of democracy, or more precisely, that "every human should have the right to participate equally in decisions concerning his or her life" (42), including at work. In the beginning, there was much emphasis on the development of computer systems and related artefacts, but it eventually became an integrated strategy that included "work organization, job content, and the way technology is used to support these activities" (Greenbaum, 28); ultimately, the active participation of workers was to challenge the existing power relations (ibid.). This democratic approach to the design discipline eventually spread to other areas, such as innovation, the private life, and the public sphere (Björgvinsson, Ehn, and Hillgren, 2010). Participatory design maintains its goal of contributing to empowerment and to generating alternatives in participation and democratisation (49), and further than dealing with functional and innovative products, it can now be seen as "a process for radical change in developing services, systems and environments, which support more sustainable lifestyles and consumption habits" (ibid.).

Evidently, as participatory design broadens its agenda, it overlaps with the discussion on design and Sustainability presented above. In fact, through international collaborations that involve design research and teaching, such as the Design for Social Innovation and Sustainability Network (DESIS Network)[26], projects being developed in various cities around the world are being assessed through the same lens. In fact, Ezio Manzini and Francesca Rizzo (2011) make an account of five long-term projects taking place in Europe, the United States, and China, where participatory design has been put to the service of *social innovation* in order to examine "the effects of citizen's active

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26 http://www.desis-network.org/ Retrieved June 10, 2016.

participation and design co-operating to realize such changes [large-scale, sustainable changes]" (199). What all those projects share is the engagement of final users in the design process; rather than being people who simply express their needs, they are seen as key actors who contribute to the process with their skills and their knowledge about local matters; moreover, they participate in the ideation process (201).

Assuming that civil engagement is necessary in generating change towards more sustainable ways of living, the active participation of users as *co-creators* is rendered as a strength that increases the possibilities for implementing a design in their real-life context (Björgvinsson, Ehn, and Hillgren, 2010); hence, "large-scale sustainable changes can be considered cases of *participatory design*" (Manzini & Rizzo 2011, 199). Nonetheless, this is also highly dependent on the identification of key stakeholders and the establishment of long-term relationships with and within them (Björgvinsson, Ehn, and Hillgren, 2010). An additional observation that was drawn from these projects is that design's contribution to generating democracy might not lie in it being a tool for achieving consensus, but in being a means for enabling engaged social conversations about possible futures (Björgvinsson, Ehn, and Hillgren, 2010; Manzini & Rizzo, 2011).

Before directing this discussion towards the great potential that designers see in collaborative design practices, there is yet another path that should be introduced: the one that was born in the field of UCD. UCD is an approach shared by the fields of design and information technologies (IT); given that both disciplines generate objects (including services) of use, each of their projects is tied to understanding a series of human factors.

Within the industrial design tradition, the ergonomic dimension became rather relevant around the 1950s. The products in development aimed for universality, or at least to maximise the number of people who could effectively use those objects. The work of Henry Dreyfuss, specifically his anthropometric charts, can be named as an example of the development of this field, which was at first mainly concerned with physical and mechanical properties (Flinchum, 1997). Later, through the rise of human–computer interaction (HCI), human factors made it necessary to increase the focus on cognition and behaviour. Nonetheless, by the end of the 1990s, the state of affairs called for the need to innovate the research methods (e.g. Mattelmäki, Vaajakallio, and Koskinen, 2014, 67). The approaches that were being applied to the study of the usability of products focused too much on objective factors (Koskinen, 2003, 7), and at the same time, there was a growing interest within the world of design "to address aspects of product desirability,

pleasurable interactions, and emotional resonance", and to incorporate them in design outputs that were already centred on the useful and the usable (Hanington, 2003, 10).

Mattelmäki, Vaajakallio, and Koskinen (2014, 68) trace the origins of empathic design to a series of researchers and practitioners from around the world, namely Leonard and Rayport, Patrick Jordan, Liz Sanders, and Jane Fulton Suri and Alison Black, who simultaneously encountered themselves feeling constrained by the cognitive models that design was using to assess UCD and human-centred design (HCD). Moreover, they explain that those models were unsuitable for two different reasons. Firstly, those approaches would be useful if design was about problem solving; but, as stated above, design deals with wicked problems and is rather a discipline concerned with problem crafting. Secondly, they left no room for some matters with which design is concerned, such as sensitivity; and this was crucial because research methods in design should do more than lead to a thorough understanding of the matter of study, they are also means of inspiration of innovative ideas.

Eventually, designers and design researchers saw themselves in need of, further to adapting methods that had been established by other disciplines, developing their own innovative methods (Hanington, 2003, 15–16). Some of the innovative methods that were developed within empathic design are Design Probes (Mattelmäki, 2006), Design Games (Vaajakallio, 2012), and Contextmapping (Sleeswijk Visser et al., 2005). Through these tools, says Mattelmäki (2006, 124), "people are seen and understood from where they stand, not as test subjects but as persons with feelings". Since its early days, it has been widely agreed that empathic design is especially useful in the early phases of product development, at the fuzzy front end of the process (e.g. Hanington, 2003; Koskinen et al., 2003; Sanders & Stappers 2008; Mattelmäki, Vaajakallio, and Koskinen, 2013).

From this work's perspective, as will be further explained later, the best reasoning about the relevance of empathic design was made by Jane Fulton Suri (2003, 52). She explained that designers can fail to understand their users in two opposite ways: either by assuming that everyone else is just like themselves, or by assuming that everyone else is too different from themselves. As observed within this research, this paradoxical situation is not unique to the world of design; in fact, it is one of the most difficult matters that humankind deals with (both in theory and in practice). Nevertheless, Fulton Suri observed that empathic design is about navigating that difficult paradoxical situation; its innovative methods mentioned above, but also diaries, pictures, and collages, became

means for making sense of what people felt and thought (Fulton Suri, 2003, 53–55; Mattelmäki, Vaajakallio, and Koskinen, 2013, 68).

User-centred design and participatory design started to influence one another (Sanders & Stappers, 2008, 5); for instance, tools and methods that had been developed by those concerned with empathic design were found useful in the fields of participatory design and design for social innovation. Moreover, while design has increasingly shifted its focus towards dematerialised outputs like services, systems, and environments, overlap among design discussions cannot be avoided. If discussions on sustainable design eventually led to discussing collaborative design practices, in a similar way, the discussions that started with collaboration in design could not ignore Sustainability, the contemporary goal.

A matter that is consistently discussed within these new practices of design is the role that professional designers play when boundaries blur as non-designers also become designers. In a book entitled *Design for Services* (Meroni & Sangiorgi, 2011), Ezio Manzini (2011) raises the question of whether designers should limit their participation to assisting with the visualisation of scenarios, or whether they should contribute to envisioning. In his opinion, designers should also be provocative proponents, so that the participants take their discussion beyond their original limits (4–5). In an article called *Small projects/large changes: Participatory design as an open participated process*, Ezio Manzini and Francesca Rizzo (2011) expand this notion by describing four different roles that designers might play: facilitators, triggers, members of a co-design team, and design activists. Liz Sanders and Pieter Jan Stappers (2008), for their part, state that although all people are creative, not all people are co-designers; therefore, they detail four different levels of facilitation (leading, guiding, providing scaffolds, or offering a clean slate) that designers can provide while adapting to the creativity level of the participants, which is based on the rationale that the more creative the participants are, the less facilitation they need.

Mattelmäki and Sleeswijk Visser (2011, 4–5), for their part, explain that the level of engagement of the user in the design process might vary in four different (not necessarily sequential) directions. In the first direction, the voices and expertise of the users are heard, but the designers maintain their designing roles; hence, the users play the role of informers. In the second direction, methods and tools are developed to ease the users' expression of their ideas. In the third direction, designers and users collaborate in the mutual exchange of ideas. In the fourth direction, the users are not that much emphasised, because a wider range of people is invited to "brainstorm and learn together". Thus, for

as long as the voices of the 'end-users' are included in the design process, and for as long as the aim of the experiment is generating proposals that improve the existing situation, it can be considered that the experiment or practice belongs to the co-design field.

Nonetheless, authors belonging to all the different currents that have intersected in collaborative design practices seem to agree with Manzini and Rizzo (2011, 211) that "the most effective specific designer's role" is "using creativity to make things happen".

Although design as a collaborative practice is very promising, it has also been subject to major criticism. First of all, as stated by Geoff Mulgan (2014, 1), Chief Executive of the British National Endowment for Science, Technology and the Arts (NESTA)[27], there is insufficient evidence that collaborative design interventions have actually reached their goals. Moreover, he continues, design consultancy services are very expensive and the high level of commitment from designers seems to be conditioned by the money flow, which might be related to designers' poor ability at implementation (4–5). In fact, although the design cases are developed over long periods of time, many design interventions that happen within them have been short or quick exercises, rather than longitudinal processes (Hillgren, Seravalli, and Emilson, 2011); and in many cases, their proposals do not grasp the full complexity of a system and tend to be too simplistic, according to Mulgan (2015, 5). Finally, he states that designers have poor learning skills (ibid.), and while other disciplines have been working in those spheres and in collaboration with different stakeholders for a much longer time, designers tend to "reinvent the wheel'" (ibid.); thus, while their creativity is appreciated and welcome, designers should also acknowledge that they do not possess other skills that are equally relevant.

Therefore, Mulgan (2015, 2) suggests that design should play a humbler role and acknowledge the need to closely collaborate with other disciplines. In fact, the complexity of new design projects requires collaboration with disciplines with which design did not commonly work together in the past, like policy-making or even philosophy. Additionally, designers should understand that whilst they are good at initiating change (e.g. Keinonen, 2013, 10), design does not need to lead the full process, and that the process might require that representatives of different fields take turns to lead. In addition, designers need to collaborate with a wide variety of actors that constitute intricate networks, including individuals, the private sector, non-governmental organisations, and the public sector (Manzini, Jégou, and Penin, 2008, 275).

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27 NESTA defines itself as an innovation charity with a mission to help people and organisations bring great ideas to life. See more here: http://www.nesta.org.uk/

Discussion

So far, this brief overview of emerging practices in design has illustrated how many of them overlap and influence each other. In general, those discussions are not mutually exclusive but complimentary; collaborative design does not need to exclude the condition of being human centred, hence, it does not lose the quality of being empathic; or if the aim is to design for well-being, there is no reason to think that the outcome could not be a service or that it could not have the potential for social innovation. Moreover, another reason why it might be wiser to focus on similarities rather than on differences is that in synergy, the world of design might be pursuing a much greater agenda. In fact, in the view of Kees Dorst (2007), there is an upcoming revolution in the field of design that will ultimately result from the joint effort of design researchers and practitioners for "co-creating the design expertise and design practices of the future" (11).

It can be said that the emerging and complementary practices of design are identifying desired qualities for design practice, meaning that the qualifiers that in the past were used to differentiate a particular field within design (sustainable, empathic, collaborative, and complex) are actually not harmful to design as a whole, and that the design discipline could, in fact, benefit from defining itself as a sustainable, empathic, collaborative, and complex practice. Additionally, different emerging (and some already well-established) design purposes (the *design for's*) are not in opposition with one another. For instance, designing for services is not at odds with designing for social innovation or with designing for well-being, and all these practices also give room to designing for Sustainability. In fact, Anna Meroni and Daniela Sangiorgi (2011, 15) insist that services have a great potential to boost innovation and can therefore tackle environmental and societal challenges, which is clearly illustrated by the concept of Sustainable-Product-Service-System (S.PSS).

Nonetheless, the core discussion in this work, precisely that of *defining and practising a better design*[28], requires being very critical of these discussions developed by the leading design researchers and institutions in the world of design. This critical discussion must start by stating that despite all the efforts to transform the field, and although more than four decades have passed since Victor Papanek's (1985 [1971]) call to beware of the negative consequences of practising design merely as an economically and technologically driven activity, these dimensions do not seem to have been sufficiently

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28 Ultimately, the better definition and better design practice proposed by this work is Design as Freedom, but that definition will be constructed in the following chapters.

challenged. Traditionally, good design, or a well-designed output (whether product, service, system, etc.) is the result of a complex process that satisfactorily responds to very different requirements: it is produced efficiently through cost optimisation, and is usable and pleasurable to use. In the end, a potential user acknowledges its *value*, and the company can set its price at a higher level than its costs, generating a surplus (den Ouden, 2012, 26). In a world where value is understood only in monetary terms, design is as good as the surplus it generates; design is therefore a tool that contributes to boosting economic growth.

Some of the big questions explored within this work are: Is economic growth ultimately necessary? Why is design so grounded in it? What if the assumption is wrong? What if it is constraining discussions within our field? What could design do if economic growth was not at its core?

These questions might sound incredibly naïve, and whilst they will be explored more widely in the following sections, it should be stated that at least some economists are also challenging the grounded notion of economic growth by proposing that we would be better off if the economic system served humans rather than having humans serve an economic system. The ecological economist, and author of the controversial book entitled *Prosperity Without Growth: Economics for a Finite Planet*, Professor Tim Jackson[29] (2011, 14), states that "… no subsystem of a finite system can grow indefinitely, in physical terms. Economists have to be able to answer the question of how a continually growing economic system can fit within a finite ecological system". Moreover, the Nobel Laureate economist Amartya Sen, on whose work this research is deeply grounded, has consistently stated that "the acknowledgement of the role of human qualities in promoting and sustaining economic growth – momentous as it is – tells nothing about why economic growth is sought in the first place" (Sen, 2001 [1999], 295).

Herein, the discussion turns towards three harmful consequences of not challenging that economic dimension forcefully enough; namely, (1) environmental damage, (2) segregation, and (3) homogenisation.

With the ultimate goal of staying alive, living beings continuously oscillate between two roles, being predators or prey; in this sense, environmental impact is inherent to life. However, as stated above, in the case of human beings, the construction of a human

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29 Tim Jackson is also director of the Centre for the Understanding of Sustainable Prosperity (CUSP) in the United Kingdom.

life as such generates the paradoxical situation in which environmental depletion of some kind cannot be avoided. Moreover, environmental damage is consistent in each of the phases of a design process. It is true that many efforts have been made to reduce these harmful effects, including the use of responsibly managed renewable resources, minimisation of energy use and by-product generation in manufacturing processes, and the development of S.PSS's that enable products to last longer and to be reused and even recycled after disposal. Nevertheless, if design is shifting its practice mainly to respond to the service economy of developed contexts, as emphasised by Meroni and Sangiorgi (2011, 11), and companies maintain the goal of continuously increasing their sales, then all those efforts help to slow down a movement (that harms the environment), but they do not ultimately shift its trajectory.

The second side-effect is segregation. Design segregates because a user is defined as an economic being who expresses value in monetary terms, as a price; but most importantly, as someone who is able to pay that price. People who "do not have the economic or political means to generate a formal demand" (Manzini, 2014) do not have a voice because they do not represent a market, and therefore, they are not commonly thought of as users; their needs and desires remain outside the main interests of the design industry. Ultimately, the majority of the world's population is not eligible to become beneficiaries of a design process if they have to pay 'design experts', as they lack the resources to employ them.

Many, including Manzini, Hillgren, Bjorgvinsson, and Ehn, argue that there is, in fact, a field within design that is very similar to design for social innovation, but that takes place in *developing countries*. For instance, Hillgren, Seravalli and Emilson (2011) state that design for social innovation in Europe and in the USA can be differentiated because the latter "is often related to projects in developing countries", where they collaborate with "local creative communities" and "local rural communities", while the former aims to develop solutions for local needs by co-designing with communities or public servants (172). Based on data retrieved from the World Bank, Anthony Crabbe (2012), for his part, explains (sustainable) design work in developing countries as follows:

> Beyond the 1980s, at a time when 2% of the world's population now owns 50% of its wealth, and half of the world's individuals live on less than US$2 a day, there are tens of thousands of organizations *in the developed world charitably offering their design and development expertise* to help neighbors in the *developing world* create products and systems for providing *basic needs* such as water, fuel and housing. (7)

Manzini has proposed referring to that type of design practice as social design. In *Design When Everybody Designs: An Introduction to Design for Social Innovation* (2015), as well as in a very short text published on the DESIS Network website (2014), he describes the differences between both practices[30], starting from the use they make of the term *social*. In design for social innovation, it refers to "social forms as such; that is, to the way in which a society is built" (Manzini, 2015, 64); in social design, it refers to very problematic situations that cannot be solved by either the government or the market (as if those very problematic situations, e.g. poverty, were not social constructions). He acknowledges the noble nature of social design, but differentiates it from *normal* design: "…there is a normal design that operates in economic terms, and another one that is promoted for ethical motivations and enhanced in a charity mode. Thus, social design is intrinsically a complimentary activity: a design that, to exist, asks for someone else who can and will generously pay for it." (65).

On one hand, distinguishing social design from normal design acknowledges the possibility to practise a not-for-profit design, or one that does not have economic growth at its core. On the other hand, this is problematic. If a leader in the design world stresses that social design is not normal design, young designers might be discouraged from getting involved in the field, which cannot be desirable, especially if social design deals with urgent matters, as Manzini himself points out. Moreover, this distinction also implies that the ethical and noble nature of social design is alien to *normal design*.

The criticism of Manzini's statement (which seems to officialise DESIS's position in the debate) could continue by pointing out that huge amounts of money (besides other resources) are allocated to development programs around the world, and that people working in NGOs receive payment for their work. However, that could be the subject of another book. Additionally, it could also be argued that when designers and non-designers engage in a collaborative practice, exchange occurs necessarily: they learn, inspire, and engage with each other (Mattelmäki & Sleeswijk Visser, 2011). Much is earned in the process, contrary to the traditional perspective that expects a monetary contribution from the customers (Manzini, Jégou, and Penin, 2008).

Within this work, it is more important at this point to talk about the charitable nature of social design described by Manzini (2014; 2015) and Crabbe (2012). Charity is often

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30 However, in In a Post Scriptum, he acknowledges that there are blurry boundaries between the two, because it happens that design for social innovation is sometimes the means to tackle very problematic situations and that the financial crisis has provoked a greater involvement in socially sensitive issues.

seen pejoratively, either as an act that is provoked by a feeling of guilt, or even as an action that prevents wasting left-overs. However, many authors throughout history have reflected on a human quality that allows us to identify a situation of injustice (e.g. Rawls, 2009 [1971]). Moreover, in an effort to make those historical reflections more practical, Amartya Sen (2009) explains that humans have the capacity to identify that a situation of injustice can be alleviated, or at the very least improved, which might even cause us to act accordingly. In addition, "one does not need to be a Gandhi (or a Martin Luther King, or a Nelson Mandela or Aung San Suu Kyi) to understand that one's objectives and priorities could stretch well beyond the narrow limits of one's own personal well-being" (Sen, 2009, 290). Bringing all the new potential of design to contexts where change is dramatically needed is therefore not a matter of charity, but a matter of justice and human rights.

In *The Idea of Justice*, Sen (2009, 114–116) tells the story of how Mary Wollestonecraft wrote a letter (and later a book) in order to criticise Edmund Burke's support of the American War of Independence of 1776. From Wollestonecraft's perspective, Burke, a member of the British Parliament, defended an inadequate type of liberty, for although he pronounced himself for the freedom of non-slave American people, he remained mute in regards to the freedom of slaves. Sen sees this episode as one of the earliest claims of *justice for all*. This might be a gross comparison, but it is definitely the nature of this criticism towards those who believe that design has the potential to change the world, but that designers should only act when they get paid.

It cannot be denied that Ezio Manzini has been a true visionary whose work has opened new possibilities for and by design; first as design for Sustainability, and more recently through design for services and for social innovation. However, restricting the benefits of design practice to those who constitute a market generates an unjust situation. If designers can imagine better futures and ways to achieve them, the lack of profit-making does not seem like sufficient reason to withhold those potential contributions.

Nonetheless, this opens up the discussion on the third harmful consequence of not challenging the traditional principles of design forcefully enough, because making design accessible to all is something that should be done with care, given that there is a risk that design homogenises, and it is not clear if homogenisation would be desirable. When the world's towns and peoples are classified into developed and undeveloped, a lot more is at play: the undeveloped are pushed to become more like the developed, or what accounts for *less like themselves*. And while the *developing* process homogenises or fades *the otherness* away (Zea, 1990), economic prosperity becomes globally acknowledged as the ultimate

goal. The developed parts of the world are distinguished, among other things, through their infrastructure and built environment. Pre-manufactured materials and machines are designed to fit each other; products of use are designed to respond to human needs but also to make efficient use of manufacturing materials and machines. The design of living spaces considers specific building parameters, including the standard sizes of elements like doors and windows and even of furniture pieces. Cities and their networks of water pipes, electricity cables, roads, and wi-fi services contain and connect those living places. In the end, all this infrastructure enables a global lifestyle that requires much mobility, and that in many cases is expressed in physical terms as a houses that dedicate a great part of their land to fitting a parking space, roads that are wide enough to fit a car, and cars that most of the time travel with four of their five seats empty.

A paradoxical situation in the scale of world dynamics is that through the identification of the human-caused environmental crisis, it has been agreed that there are not enough fossil-fuel reserves to enable every person in the world to enjoy the way of life of the industrialised countries, that this is not a sustainable way of living. Nonetheless, non-industrialised nations have been historically encouraged, and continue to be encouraged, to follow the path of 'the most developed' civilizations. Hence, on one hand, industrialised nations agree that fossil-fuel energy use and global-warming gas emissions have to be reduced; and on the other hand, non-industrialised nations argue that their energy consumption per capita is much lower than that of industrialised nations and that their *development* depends upon increasing their energetic consumption (Rifkin, 2009).

So, on one hand, there is the recognition of unfairness in the world, that very few people enjoy the status quo and practise consumerism, and therefore are *overconsumers*, while a great amount of the world's population does not have the means to fulfil their basic needs, hence they are *underconsumers* (Fuad-Luke, 2009, 83, 123). On the other hand, the development process is described as a linear process from A (developing) to B (developed). Humans continue to stubbornly pursue the goal of spreading a defective model of development, and reaching the status of developed remains a precondition for the implementation of retrofitted sustainable solutions.

Design follows that global convention; it is part of a cluster of practices that serves a middle class and systematically generates it elsewhere (Fry, 2010). Those who have been neglected and acquire a drive to develop might either be motivated by their desire to gain access to *basic services*, or by the external and constant pressure to renounce their ways of being and doing and to become more like those from the developed world.

Sometimes when talking about achieving a new lifestyle, it is difficult to distinguish between egalitarianism and intolerance[31].

It is crucial to raise awareness of these difficult discussions within the field of design. As long as designers continue to ground their practice on an assumption that is not reasonably grounded (that economic growth is ultimately necessary), they will continue to neglect discussions that, according to Martha Nussbaum (2010), might not be profitable, but might be much more important, for instance, gaining a wider understanding of the multiple and complex causes of large societal issues and the difficult philosophical debates around them. Moreover, designers might be constraining themselves to think within a box (invisible to their eyes), and they might be missing great chances to generate truly innovative alternatives. Moreover, if designers omit difficult debates, they would doubtfully be entitled to make ethical judgements and act as facilitators, provocative proponents, or moderators of processes towards a better future.

Possibilities

> In an environment that is screwed up visually, physically and chemically, the best and simplest thing that architects, industrial designers, planners, etc., could do for humanity would be to stop working entirely. In all pollution, designers are implicated, at least partially. But… I take a more affirmative view: it seems to me that we can go beyond not working at all, and work positively. Design can and must become a way in which young people can participate in changing society.32 (Papanek, 1984 [1971], xiii–xiv.)

Victor Papanek is widely acknowledged, not only for having being among the first to be critical about the contemporary design culture, but especially for the acute concerns he raised about its ethical groundings and environmental impact. The quote above, from his *Design for the Real World* (1984 [1971]), rightly summarises the steps followed by a designer going through a professional crisis characterised by the impossibility of finding in it an honourable or meaningful enough purpose. All outputs of design

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31 Notice the great relevance of a design practice (empathic) that navigates between designing for someone at the same time different and similar to oneself, noticed by Jane Fulton Suri, and described above.

32 The second line that is emphasized is by me. The first one is Papanek's.

generate environmental damage, and whether that environmental damage is worth it, or justifiable, is highly questionable. Nonetheless, it is also possible for designers to find honourable ways to practise design; as John Thackara (2006, 1) states, "if we can design our way into difficulty, we can design our way out".

Few designers (when compared to the number of designers exploring the business world) have got engaged in understanding difficult debates from the field of humanities as an attempt to take Papanek's proposal even further. In *Human Dignity and Human Rights: Thoughts on the Principles of Human-Centered Design*, Richard Buchanan (2001a) tells his story of a trip to South Africa to attend a design conference. He was amazed by the manner in which the Minister of Education, Dr. Kadir Asmal (a public servant, not a designer), had "quickly and accurately … captured the core of our discipline and turned it back to us for action" by stating that design was switching its focus from "form and function into the new design theme of form and content" (35). Dr. Kadir Asmal's speech, dedicated to the *design* of the South African Constitution, encouraged Buchanan to revise the historical evolution of human rights. It is in the preamble of the Universal Declaration of Human Rights that he finds a precious motto for humanity extendable to the practice of design: "recognition of the inherent dignity and of the equal and inalienable rights of all members of the human family[33]" (36).

In *Design for Development: A Capability Approach*, Ilse Oosterlaken (2009) responds to Buchanan's recommendation by proposing an alternative by which to deepen the exploration of design's grounding. She points out that theories that talk about designing for the market largely outnumber those related to social design, and in line with Richard Buchanan (2001a), from the little attention that design scholarship has paid to development, she draws the discipline's evasion of its ethical discussion. Through Buchanan's words that "in short, we are better able to discuss the principles of the various methods that are employed in design thinking than the *first* principles of design, the principles on which our work is ultimately grounded and justified… The implications of the idea that design is grounded in human dignity and human rights are enormous, and they deserve careful exploration" (Buchanan as quoted in Oosterlaken, 2009, 97), she illustrates that design has widely explored its methods (how's) and its products (what's), but has neglected to explore its justification (why's).

Like Oosterlaken, other researchers (e.g. Annemarie Mink, Andy Dong, and Crighton Nichols) have incorporated the capability approach, *the state of the art* in development

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33 Preamble of the Universal Declaration of Human Rights, as quoted by Buchanan.

studies, which already incorporates reflections from the fields of economics and philosophy, into the field of design. The capability approach was originally proposed by Amartya Sen and subsequently developed by him and Martha Nussbaum. Following Sen, Oosterlaken defines capabilities as "the effective opportunities that people have to live the lives that they have reason to value" (Oosterlaken, 2009, 91), and by stating that technology itself has no further purpose than increasing the capabilities of humans, she is able to clarify that design can get deeply involved in development matters.

The main interest of the *Research Project Technology and Human Development; A Capability Approach* directed mainly by Ilse Oosterlaken and Annemarie Mink, which takes place in the Netherlands at Delft University of Technology (Oosterlaken, 2015), is to explore the connections between the capability approach and design and technology. Oosterlaken frequently (2012, 16; 2015, 11) refers to Robeyns' (2005, 94) observation that the capability approach is not an explicative framework and hence has to be complemented with other theories. In the CA, Oosterlaken (2015, 9) sees a lens to look at *technology*; she offers a theoretical and philosophical reflection and explains that design plays an important role in advancing justice and development. In order to do so, she makes use of theories from science and technology studies (STS), including actor network theory (ANT) and appropriate technology.

Mink, Parmar, and Kandachar (2014, 134) state: "We specifically focus on technological design of product innovations, which we define now as 'the successful creation of *tangible, technological* [34] products or services that induce change to a new context'." The capability approach, says Oosterlaken (2013, 70), "has drawn attention to the existence of immense human diversity; not only in terms of what we value, but also in terms of personal and social/environmental characteristics that influence the conversion from resources into capabilities and functionings[35]". She advocates for a *capability-sensitive design* that is at the same time universal (takes human diversity into account) and participatory. Hence, despite its strong focus on the design of technological artefacts, there is no way in which Oosterlaken's and Mink's research project might disregard the larger systems in which those artefacts are implemented.

However, from the perspective of this research, preconceiving the design outcome as a technological artefact is somewhat restrictive, especially when it is also meant to

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34 My emphasis.

35 Functionings are defined as what people are and do, while capabilities refer to what people are able to be and to do (Nussbaum, 1997, 289).

become a commodity offered to the big market constituted by developing countries (Mink, Pramar, and Kandachar, 2015, 117). These assumptions negate the possibility of intangible design outcomes, but also the possibility to generate outcomes of non-marketable value, as argued above. Furthermore, they also prevent the designers from engaging in projects early enough to affect their briefs. Oosterlaken (2012, 7), Van der Marel (2012, 94), and Mink, Pramar, and Kandachar, (2015, 119) acknowledge that there is great potential in the prospective use of the capability approach in the design process, but so far, its use has been evaluative; for example, with the Philips Chulha stove (Van der Marel, 2012; Mink, et al. 2014) and the Anna Tasar Reeling Machine (Mink, Parmar, and Kandachar, 2012; 2015). Whilst the assessment has been proven to be very useful for the iteration of product design (as in the *Local Content, Local Voice* project presented in Oosterlaken, Grimshaw, and Janssen, 2012), the process of deducing that what was needed were technological artefacts remains unknown. As observed by Van der Marel (2012, 88), there is much potential in engaging designers much earlier in the process. Hence, it could be said that the freedom of designers to use their skills (to tackle wicked problems), and to determine the most suitable project to be developed, is also constrained.

As will be further explored in Chapter 5, Nichols and Dong (2012) claim that design is a central capability. They "use the word design in the sense of a projection of possibilities, of the creation of a world that does not yet exist, rather than the popular definition of design as about giving form and style" (Nichols and Dong, 2012, 191); thus, they make a processual interpretation. Dong (2008) is an advocate for the people's rights to participate in the design process of public works, and he has argued for "effective policies to make people truly capable of design" (77). The capability of design should not be mistaken for the capacity to design (Nichols and Dong, 2012, 195); the latter is a skill to be developed and which is embedded in our biology, but the former includes our political and social organs (ibid. 195, 200). Nichols (2015), for his part, has explored the design capability from the perspective of First Australians.

Frediani and Boano (2012, 212) observe that the perspectives of Oosterlaken et al. and that of Dong and Nichols are two parts of the same discussion. Following the CA, they observe that design freedom is composed both of participation in the design process and of design outcomes that advance people's capabilities (Frediani and Boano, 2012, 210-212).

Design as Freedom bears much resemblance to the body of knowledge developed by linking the capability approach to design; however, it also presents a few differences,

which will be further clarified in Chapters 3, 4, and 5). This research was also inspired by the work of Amartya Sen. In fact, it was through *Development as Freedom* (2001 [1999]) that *freedom* became its central topic. Adopting the term accounts for taking a political stand and rejecting the use of the term *development,* which is found to be both elitist and incongruous, for reasons already explained above. Moreover, it also denotes that this work is an effort to contribute to that careful and necessary exploration of the ethical groundings of design. From Sen, Design as Freedom appropriates two things: his critique of the current centrality of economic growth, and the essence of his capability approach, the notion that the ultimate path to make this world more just (or less unjust) is expanding the freedom that people have to live the lives they have reason to value.

Thus, like Nichols and Dong (2012), Design as Freedom considers design to be a central capability (freedom), and like Frediani and Boano, it observes both the participatory process and the design outcome. This work does not focus exclusively on technology, but, as explained above, it conceives design as a complex, sustainable, empathic, and collaborative practice, more in step with Nichols and Dong (2012). There are also some characteristics of this work that respond to the case study through which Design as Freedom is explored in practice. First, the case has a strong pedagogic component, thus, this work supports Martha Nussbaum's (2010) perspective that all disciplines would benefit from being brought face to face with difficult debates typical of the humanities and liberal arts. Even if there was no manner to make those debates more easily understandable, designers would benefit from being exposed to them. Moreover, it seems that those debates cannot be avoided. Given that the location where the Aalto LAB Mexico project takes place is an indigenous community, some topics that cannot be left unexplored are "Mexico", "development", and "indigenous". Third, the pedagogic dimension also requires the research to pay attention to the designers' (students') freedom to choose to participate in projects that aim to expand someone else's freedoms. By building the case study from scratch, the rationale of Sen is applied in the design process in a prospective manner, which also confronts the designers with a decision-making process for defining the project's brief. Finally, the Aalto LAB project was originally framed to embrace Sustainability, but following the perspective of indigenous communities, rather than valuing the environment instrumentally (e.g. like Oosterlaken (2012, 5) does by considering it only within the conversion factors in the CA), it ought to be valued intrinsically.

There are other currents of thought with which this work shares a spirit, and which have not been yet been mentioned. One of them is design for well-being, which was widely promoted by the Department of Design at the Aalto University School of Arts,

Design and Architecture through Helsinki World Design Capital (2012) (Keinonen et al., 2013). Design for well-being consolidates the transition of the focus of design from objects to the intangible, so that is now aims to "create the conditions where people are supported and taken care of, and where they can take care of themselves and each other" (Keinonen, 2013, 8).

Finally, there is design activism, in which the designer can play the role of an igniter of social change - although, like in various other fields, the designer does not work alone but is simply one within a co-design team - and in which Alastair Fuad-Luke (2009) is one of its main proponents[36]. Fuad-Luke's (2015) investigation of the meaning of social design, which he compares to the meaning of design activism, is very different from that of Manzini, and a lot more in step with what is being explored here. He states that social design and design activism "are situated within the meta-field of Sustainability and sustainable development, and that while these design approaches share some common ground, their framing is very different. Design activism is motivationally framed in participatory democracy, contestation, utopian logic and radical innovation. In contrast, social design is diagnostically framed in representative democracy, neo-liberal consensualism, entrepreneurial logic and incremental innovation" (Fuad-Luke, 2015, 282). While his broad literature review shows that social design happens in an organised manner (many times with the collaboration of governments and institutions), design activism tends to be more disruptive, by strongly going against the established. Nevertheless, the two types of practices share characteristics (e.g. participative processes) and in some situations, as when design is required to be consensual and agonistic at the same time, social design and design activism blend.

Intention

This work seeks to contribute to *defining and practising a better design*, and is in step with those who believe that designing design is a task that has to be grounded on a clear ethical justification. This work stands against discussing design and ethics independently from *the study of ethics*, which is traditionally led by philosophers and humanists. Moreover,

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36 Other relevant contributions to design activism are Ann Thorpe's blog: designactivism.net, commenced in 2008, and her book of 2012 *Architecture & Design Versus Consumerism.* London: Earthscan. Guy Julier also contributed with his Leeds Design Activism festival in 2009. This is an observation of Alastair Fuad-Luke.

neither of those discussions can be detached from the context in which they happen, nor should they be insensitive to the public concerns of their time. Therefore, as the first generations of the *children of Brundtland* are reaching adulthood, neither the study of ethics nor the discussion on design and ethics can ignore Sustainability, the new ideal.

Design plays a leading role in the man-made world, hence it is as responsible for making human life *human* as it is for the human-generated environmental crisis. Since the appearance of the term *Sustainability*, humanity has challenged many of its ways of being and doing. Nevertheless, relatively few but highly relevant economists (including a Nobel laureate) argue that economics has not been sufficiently challenged, and they warn us that infinite economic growth might, in fact, be a fallacy. Nevertheless, design continues to be an economically driven activity, and in being so, it does not fight the environmental crisis strongly enough, and it has become an elitist practice that serves the markets only, and therefore pushes everyone else to conform to the model of a customer-user. Moreover, design theorists consistently describe the great potential of design practice as a driver of change and a generator of more desirable futures; but if this is only done to serve the market economy, then design is being unjust.

As discussed above, design researchers and practitioners widely agree that design is a discipline inherently prepared to tackle wicked problems, mainly because imagining that which does not yet exist is dealing with the indeterminate. Already in 2008, Ezio Manzini and colleagues identified the possibility of *leapfrogging in the social development process*, where new sustainable and better futures that are envisioned are potentially better than those brought about by conventional *modern* solutions (271). Their observation is crucial for this work, because it supports the idea that *development* as it is conceived today, and that works against life itself, does not need to be the only vision of the future promoted for all. If, on one hand, this is a matter of principle that concerns humanity, on the other hand, it is a matter that concerns designers because it is clearly also a problem of imagination (Koskinen et al., 2011, 17).

Imagining the best that design could be might not be an easy task; however, thanks to the work being developed independently by a large number of design researchers and practitioners, it could be said that we are already on our way there. It has been said that a good design outcome and process should be sustainable, and that design as a whole should advance Sustainability. Additionally, it is widely agreed that people who will become users of a design outcome should participate in the design process. On the one hand, this is because they bring in their expertise, and on the other, because it is a matter of democracy and empowerment. Furthermore, from this work's perspective, design

could become a means to reduce injustice, which would not be a profitable exercise, but which could generate change in the lives of people who need it more urgently.

When doing this, designers might find out that people have reasons to value lifestyles that are slightly or considerably different from those of the dominant global middle class. Ultimately, the great benefit that humanity might gain from designers working with and among alternative users (not only with user-customers), is the conception of truly alternative futures that will not pose a threat to life on this planet. Even if this assumption is wrong, the current state of our world justifies that it is worth trying.

The exercise that is being proposed here will unavoidably become a learning experience for designers (and for everyone else involved). First, one would need to follow the example set by Hannah Arendt (1998 [1958], 5) and try to *think what we are doing*, and then, one would need to imagine how the world would look if we maintained our current practices. One would need to be very reflective to try and trace the paths that brought us here, and to attempt to identify current dogmas. Perhaps then, one would be able to observe that some of the things we do are wrong (Ackoff, 1999), and at last, one would be driven to envisioning alternative futures.

The best design I can imagine, which might be very different from what others would define as such, is what I call *Design as Freedom*, a concept that will be constructed through the following chapters. Before introducing the arguments that support why I believe it is the right concept to aim for, I will revise how the conception of good is contextual, and has therefore changed through time and space. While doing so, I will attempt to trace the path that brought us to thoroughly believing that economic growth is good and necessary, and I will demonstrate that there are solid reasons for questioning that assumption.

Paradigm shifts

Nowadays, it is nearly obvious that economic growth is an indication of a good economy. Economists explain that if the economy does not grow, or grows too slowly, the efficiency of productivity results in job losses: *unemployment*. Unemployment reduces buying power, encourages saving, and reduces demand. Low demand increases the cost of public services, which results in the growth of public debt. Ultimately, it is people's *well-being* that is at risk (Jackson, 2011, 63). However, this neither justifies that economic growth is necessary, nor that it is the *right* goal to pursue, as acknowledged by some economists, including the Nobel Prize winner Amartya Sen.

The notion of economic growth is not the only one that is being challenged, but that it is being challenged is of paramount importance, because it is at the core of the paradox described by many (e.g. Fry, 2010; Rifkin, 2009). Peter A. Victor (2008) explains that the notion of economic growth as the ultimate solution for any challenge faced by the western economies is rather new, as it emerged just a few decades ago (in the 1950s). In fact, the overall process through which it became "the number one policy objective of government(s)" (Victor, 2008, 18) took place only in "the last moments of human history" (5).

A new sustainable paradigm that seeks a more just world among human beings, but also in their relationships with other species and with the environment, demands bringing the moral debate to the forefront. Moreover, given that design has been crucial in establishing the current unsustainable way of life, ensuring that designers are capable of making moral judgements is crucial for the world.

Kuhn's paradigms

If one considers that a single generation, those who were born at the beginning of the twentieth century (and might still be alive), lived through the energetic transition from coal to oil, two world wars, and the fast development of digital technologies, claiming that we are now living in a breakthrough moment in history is nothing but obnoxious. Nonetheless, many authors, including Russell Ackoff (1973), John Thackara (2006), and John Wood (2013), agree that the peculiarity of the moment is that we seem to be going through the process of understanding the world in a different manner, and that this new understanding, which is necessarily influenced by new scientific discoveries, technological developments, socioeconomic and political debates, and recent historical events, is subsequently inspiring us to engage with the world in a different manner. We seem to be living through a *paradigm shift*.

Paradigm shift is a term that was introduced by Thomas Samuel Kuhn (1922-1996), considered to be among the most influential philosophers of science in the twentieth century (e.g. by Bird, 2011; Hacking, 2012). In his book entitled *The Structure of Scientific Revolutions* (2013 [1962]), Kuhn used the term to refer, precisely, to the ultimate achievement of a *scientific revolution*.

Paradigm is a word of Greek origin (paradeigma). In Plato's *Dialogues*, the great astronomer Timaeus used the term[37] in order to describe the eternal model according to which the supremely good Craftsman fashioned the supremely beautiful universe (*Timaeus*, 28a-29b, trans. Waterfield, 2008, 16–17). Paradigms referred to archetypes, rather than to actual creations (Wood, 2013, 435). For a long time, a paradigm signified a very stable model, pattern, or exemplar. Even today, the Oxford Dictionary (2010) defines it as "a typical example or pattern of something".

The first person to apply the term in a different fashion was Ferdinand de Saussure (1857-1913), whose reorganisation of the systematic study of languages granted him the title of "father of modern linguistics" (Culler, 1986, 15). De Saussure proposed that a paradigm ought to be the structure of what is said (Wood 2013, 436). Kuhn was aware of this grammatical use of the concept (Kuhn, 2013 [1962], 131), and he acknowledged that his notion of scientific revolution was inspired by the multidisciplinary environment he experienced while working at Harvard University Society of Fellows. Like Rittel and

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37 It is not common to see the Greek term in English or Spanish translations of Plato's Dialogues, which instead use the word model; but the term can be traced through secondary sources, such as Zeyl, 2014.

Webber (1973), Kuhn noticed the special nature of the problems that the social sciences dealt with, and he was especially influenced by the work of Jean Piaget, the Gestalt psychologists, and Ludwick Fleck (Kuhn, 2013 [1962], 91-92).

Kuhn introduced the term paradigm into the philosophy of science to convey the collection of meanings, the set of theories that are established, and the rules that are accepted and that give structure to a particular world view. He also proposed that rather than a linear path towards uncovering the ultimate truth, the history of science collects the different ways in which the world has been looked at or understood. Kuhn described a scientific revolution as a process that starts with the identification of an anomaly (something cannot be solved or explained) within an otherwise mature science, which triggers a crisis. The crisis indicates that it is time to generate new tools and to create alternatives. The cycle ends when a paradigmatic theory is capable of fitting the anomaly, and is therefore adopted (Kuhn, 2013 [1962], 174, 208).

The development of new instruments enables the observation of new things, it enables scientists to see old things from a new perspective, and thus it facilitates the emergence of a new paradigm. Moreover, when the means by which scientists view the world change, it is then possible to affirm that scientists respond to a different world (Kuhn, 2013 [1962], 256). Thus, scientists have to re-educate their perception to see a new gestalt, and when they have done that, the new world will seem *incommensurable* with the one they inhabited before (257).

Incommensurability, Kuhn observed, is one of the key characteristics of a scientific revolution. It means that the adoption of a new paradigm causes the old conventional methods to lose compatibility with the new world view. Sense cannot be made of the world in accordance with the old structure, which does not mean that either paradigm is true (Hacking in Kuhn, 2013 [1962], 48-50), but simply that they are different sets of theories through which the world is approached. Hence, the history of science is the recollection of different understandings.

Kuhn's perspective proved rather outrageous for the advocates of positivist doctrines. However, he was neither the first nor the only person to make a proposition of the kind. A few years earlier, in 1958, Hannah Arendt, considered one of the most influential political philosophers of the twentieth century (e.g. by d'Entreves, 2014), who was born into a Jewish family in Germany but managed to escape during the holocaust, published her book *The Human Condition*. In this, she stated that men do not share the world; that instead, what they share is *the structure of their minds* (Arendt, 1998

[1958], 283). Additionally, when we find similar patterns in the microcosmos and in the macrocosmos, in reality "…we deal only with the patterns of our mind, the mind which designed the instruments and put nature under its conditions in the experiment" (286). Furthermore, she pointed out that technological and scientific developments, especially some that happened unintentionally, like the discovery of America, the Reformation, and the invention of the telescope[38], had dramatically affected people's lives and shaped the world view of the *modern age* (248).

Kuhn's objection to the traditional perspective of the history of science and knowledge acquisition, which described a continuous progression of contributions towards uncovering the ultimate truth (Kuhn, 2013 [1962], 295), was appreciated by some, while others criticised his relativist, subjective, and irrational conception of science (346-347). In either case, this situation caused Kuhn's work to receive special attention, even among others of the sort[39] (Nickles, 2014). We still have not achieved an adequate general theory or model of a scientific revolution, but the wide adoption of the term paradigm shift, by very different areas of knowledge (in design e.g. Dorst, 2008; Wood, 2013), and its colloquial use can be seen as a scientific revolution. People seem to be comfortable with the idea that throughout history, the world has been looked at or understood in different ways. Thus, *paradigm shift* can be considered an *autological* concept, which defines itself.

In his essay, Kuhn delimited a scientific revolution to a particular scientific community and deliberately avoided speaking about the effects of external factors such as technical progress and social, economic, and intellectual conditions (Kuhn, 2013 [1962], 96). Nonetheless, he acknowledged that some of the greatest scientific revolutions (e.g. Newtonian physics and relativity and quantum mechanics) were contemporary with fundamental philosophical analyses (225). Here, the intention is to make use of the model of paradigm shift in order to describe revolutions that include but go beyond the scientific sphere.

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38 Bruce Mau (2004), many years later, would, instead, point at the first picture of the Earth, taken from space.

39 A related concept is e.g. Michel Foucault's episteme, which was introduced in *Les Mots et les Choses* ("The Order of Things") (1966). An episteme is "the orderly 'unconscious' structures underlying the production of scientific knowledge in a particular time and place. It is the 'epistemological field' which forms the conditions of possibility for knowledge in a given time and place" (O'Farrel, 2010). According to Nickles (2014), Kuhn's early work described large scientific revolutions; thus, at that point, his work was closer to Foucault's; however, as his work progressed, Kuhn narrowed his scope and ended up claiming that paradigm shifts occur within particular scientific fields (Kuhn, 1962; Wood, 2013; Nickles, 2014).

The adoption of the term Sustainability might illustrate that we are living through a paradigm shift. At least, there seems to be a general agreement that the world can be much better than it currently is. This chapter illustrates how the current dominant paradigm has gone from its establishment to the beginning of its collapse. Moreover, it argues why this is desirable, and compiles some alternatives that are being generated and with which design practice could align.

Despite resistance, paradigms shift; despite intolerance, paradigms co-exist

As stated above, this work supports the idea that the world is living through a paradigmatic change. This section is meant as a reflective exercise that should lead to acknowledging that the current dominant paradigm is not as stable as it might seem at first glance; that many others preceded it, that it was built over a long period of time, and that it is no longer holding together, because a series of anomalies have been found. Moreover, this section speaks about the actual co-existence of alternative paradigms. Additionally, it describes how the dominant paradigm has consistently been intolerant towards those alternative paradigms. Finally, it proposes looking at alternative paradigms as valuable sources of inspiration for imagining a better future. Ultimately, this section argues that the emergence of a new paradigm is a positive and desirable thing, which, in fact, has been the subject matter for a wide array of thinkers from various disciplines already for several decades.

This is not an easy exercise, especially when one lives immersed in the current dominant paradigm, which promotes the belief that humanity shares the same path towards one single fate called development. However, the ambiguous and even controversial concept of a paradigm can help understanding that, in the words of Oscar Hagerman (2010), on this planet, there have been and there are still "many worlds". These worlds might be incommensurable because they only make sense if they are looked at from the perspective of those who constructed them. In order to move the argument forward, this inquiry will start by exploring how a deeply grounded notion came into being; that is, the division of (Western) history into the Ancient Age, the Middle Age, and the Modern Age.

In Theodore E. Mommsen's (1942) account, this distinction could be attributed to the poet and "father of humanism", Petrarch (1304-1347). Until then, light had been used metaphorically to refer to the times of Christ. However, Petrarch, whose work was mainly

concerned with the history of Rome, believed that being ruled by *barbarian towns* made his own a worthless and Dark Age. Thus, he designated light to the prosperous Western Roman Empire (Mommsen,1942, 237). Nonetheless, he had a periodical conception of history, so the (light) *Ancient History* ended when "the name of Christ was celebrated in Rome and adored by the Roman emperors" (Patriarch in Mommsen, 1942, 232). His time was the (dark) "Middle Age", and he believed that better times would come afterwards. Therefore, it can be said that Petrarch, very early on, predicted the rupture with the paradigm of his times, and the emergence of the Renaissance, which shows that going from the identification of a crisis to shifting a paradigm can be an extremely slow process.

Nevertheless, the distinction of historic eras proposed by Petrarch might also be criticised for contributing to establishing intolerance at the core of the Eurocentric paradigm, which was recently described by Rosi Braidotti (2013), as follows:

> This Eurocentric paradigm implies the dialectics of self and other, and the binary logic of identity and the otherness as respectively the motor for and the cultural logic of universal Humanism. Central to this universalistic posture and its binary logic is the notion of 'difference' as pejoration. Subjectivity is equated with consciousness, universal rationality, and self-regulating ethical behaviour, whereas Otherness is defined as its negative and specular counterpart. In so far as difference spells inferiority, it acquires both essentialist and lethal connotations for people who get branded as 'others'. These are the sexualized, racialized, and naturalized others, who are reduced to less than human status of disposable bodies. (Braidotti, 2013, 15)

The Mexican philosopher of ideas, Leopoldo Zea (1990), traced the origin of the term barbarian to Greece, when *barbaroi* was used to refer to those who could not speak Greek, and argued that since Roman times, the *West* has justified the domination of other towns through the idea that barbarians ought to be civilized. Nevertheless, civilizing entailed turning *others* into an exact copy of oneself; therefore, his historic revision supports Braidotti's perspective, and this can be synthesised by naming chronological dichotomies: Christian-Pagan, European-Native, Capitalist-Socialist, Developed-Undeveloped, The West-The Rest.
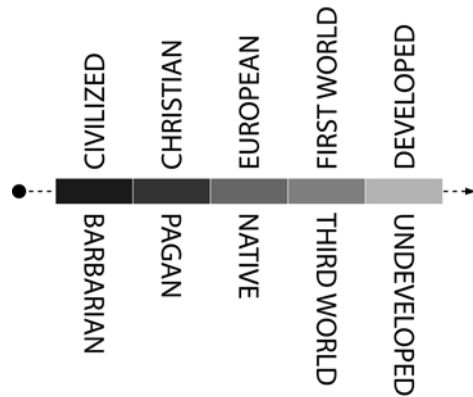
Figure 3. The west and the rest. Drawn by Claudia Garduño, based on Zea (1990).

Zea's account, rather than supporting Kuhn's notion of paradigm shifts and incommensurability, describes how the current paradigm was gradually shaped over a long period of time. However, even if the current paradigm maintains characteristics that emerged in Rome, and even if there was no clear breakthrough between the Middle Age and the Renaissance, it could be said that when men declare a break with their historical period, at least their particular community might have learned to see a new gestalt (Kuhn, 2013 [1962], 221).

Now, it can be stated that rather than being severely critical towards Western intolerance, Zea's main call was for the celebration of diversity. In present times, when being able to imagine alternative visions of the future seems of paramount relevance, being aware that a diversity of worlds already exists might be extremely inspiring.

The clearest example of the simultaneous existence of different worlds is drawn from the era of European discoveries in the 15th and 16th centuries, when contact was made with far-off civilizations. The "new world" had not had the opportunity to borrow beliefs, traditions, knowledge, or technological developments from other civilizations as widely as the cultures that flourished in the Fertile Crescent (Diamond, 2005), and was thus described as primitive. Nevertheless, these civilizations had remained in isolation for so long that they had developed their own visions of the cosmos (cosmovisions).

It is interesting to point out that more than five hundred years later, when presumably no civilizations are left in absolute isolation, *traditional societies* have not disappeared for good. *Traditional societies*, including the communities where the Aalto LAB projects have been developed in China and in Mexico, share traits with ancient civilizations. For instance, they base their lifestyles in some sort of *household*. The household is the most

basic mode of human settlement, where groups of people (mainly family members) cohabit, driven by life, which means that they collaborate in daily tasks in order to achieve their own nourishment and survival, as well as that of its other members. Basically, everyone's survival is necessary for sustaining the household (Arendt, 1998 [1958], 30).

Throughout this research project, it has been observed that the way in which people engage with the world when living in a household is somewhat incommensurable with the current dominant paradigm. Thus, when the aim is to design, or to generate desirable visions of the future, making an effort to make sense of that *other* paradigm becomes primary. Here, the parallel will be drawn with Ancient Greece, merely because through the writings of Aristotle, it is possible to understand that kind of world as a sense-making whole and to explicitly link that kind of living with a reflection on right and wrong. Furthermore, this reflection is meant to support Zea's (1990) idea that, rather than looking at others as barbarians who ought to be civilized, diversity could be valued for its own sake.

A basic thing to understand is that when people live in households, given that the household provides the essentials for survival, not everyone is a jobholder who bases their sustenance on an income earned from performing a job (Arendt, 1998 [1958], 31). The household allows what market values disallow, namely "goods that are goods in themselves – that defy market evaluation because they are not quantifiable, thus not subject to commodification" (Poovey in Maurer, 2006, 25). Again, this is difficult to grasp when one's own life is completely based on a money economy so that one is used to being able to quantify everything. Moreover, reflecting deeply on this matter might be shocking, as it might reveal "the apparent hegemony of money's fictionality" (Maurer, 2006, 27). However, from this work's perspective, the great risk is that a society that fully bases its living on a money economy might be disregarding the discussion on value and its relation to goodness and morals, which has now been set aside for philosophers, but which played a more central role in past eras.

In his *Nicomachean Ethics,* considered by many as the cornerstone of western moral philosophy (e.g. by Sen, Rawls, Nussbaum, Max-Neef), Aristotle stated that "the life of money-making is one undertaken under compulsion, and wealth is evidently not the good we are seeking; for it is merely useful and for the sake of something else" (Arist. *EN* I.6, 1096a5-7, trans. Ross, 2009, 7). This passage has been frequently cited by contemporary authors who criticise the extreme relevance that the accumulation of wealth plays in the current world, including Hannah Arendt (1998 [1958]) and Amartya

Sen (2001 [1999]; 2009). Aristotle's perspective is better understood by looking at the Greek household economy.

In fact, the Ancient Greek economic system was divided into two different types of practices: oikonomía and chrematistics (Cruz, Stahel, and Max-Neef, 2009, 2021), which enabled the public and private spheres to remain separated (Arendt 1998 [1958], 33). The household (oikia) was concerned with the private sphere of a family (24, 33). The oikonomía, or 'the art of household management', encompassed a diversity of domains, including the discussion of ethics, aesthetics, meaning, and value. However, it also referred to those related to the production of use-values, namely, agriculture, crafts, hunting and gathering, mining, and even warfare. Ultimately, oikonomía was dedicated to "the art of living and living well" (Cruz, Stahel, and Max-Neef, 2009, 2021). On the other hand, chrematistics, "the art of acquisition" (ibid.), could either share the purpose of oikonomía, the provision of something necessary for life that the household had failed to produce, or then it could be performed as the 'art of money-making' (ibid.).

According to Shroeder's (2012) definition of Value Theory, "the area of moral philosophy that is concerned with theoretical questions about value and goodness of all varieties", and which "encompasses axiology, but also includes many other questions about the nature of value and its relation to other moral categories", Aristotle's proposition that money should be valued as a means rather than as an end can be expressed as: the value of money is instrumental, rather than intrinsic. Nonetheless, in the money economy, it is rather common that the experience of receiving money makes someone happy; thus, money is valued intrinsically[40] (ibid.).

Studying the effects of going from socially embedded economic forms (like oikonomy) to disembedded and abstracted economic forms has, for a long time, been within the interests of anthropology, which is what Bill Maurer (2006) reviews in *The Anthropology of Money*. Somewhat unexpectedly, some explorations led anthropologists to discover that western money is perhaps more morally embedded than they originally thought (17). Nevertheless, many studies conducted in traditional societies have shown the structural link that the incorporation of western money creates between value spheres, and how it inevitably affects traditional practices and social organisations, which go from the introduction of alien "notions of number and classification" (23) to the introduction of money in non-commercial payments such as bridewealth (20).

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40 If the value of money is simultaneously instrumental and intrinsic, it can be described as constitutive.

The failure to acknowledge that money cannot ever truly (fully and finally) stand for something else (Foster, as referred by Mauer, 2006, 30) might prevent people from taking part in what seems to be an inherently human pursuit, at least since the times of Aristotle. Aristotle observed that the impulse to do good is a natural inclination of humankind, from which he deduced that there ought to be a highest end, one that is desired for its own sake, and not for the sake of something else; and moreover, that other things are desired for the sake of that highest end (Kraut, 2014).

Both the masses and the sophisticated people[41] agreed that the highest end was happiness (eudemonia). However, there were different types of happiness that could be associated with different types of life: happiness as pleasure was characteristic of a life of enjoyment, while happiness as honour was characteristic of a life of politics. In step with the Sophists, Socrates, and Plato, Aristotle believed that the latter was superior because it was directly tied to the notion of virtues.

Virtues, which can be identified because they are good from one's own standpoint and from that of others (Rawls, 2009 [1971], 390), were described by Aristotle as the *mean*, or the exact point between two opposite vices: the excess and the defect. Therefore, courage is a virtue because the courageous stands at the middle point between the cowardly and the rash; in the same way, wise temperance is a virtue, because indulging in every pleasure makes one self-indulgent, while restraining from all pleasures makes one insensible (Arist. *EN* II.2, 1103b27-1104a26, trans. Ross, 2009, 24–25).

Aristotle considered that human beings shared the quality of being alive with animals and plants, but that their rational soul made them different. He paid special attention to rational virtues, among which he highlighted *phronêsis*[42] *(Kraut, 2014),* "… a true and reasoned state of capacity to act with regard to the things that are good or bad for man"

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41 Notice that whilst many of the Greek ways of thinking and doing, like dividing people between the sophisticated and the masses, would be unsuitable in current times, overall, their full system held together, if not with full, at least with certain coherence. Their world view is therefore incommensurable with our current paradigm.

42 *Phronêsis* has been translated in several ways, including *practical judgment, practical wisdom, rational choice*, and *prudence*. In some Spanish versions, *prudencia* (from the Latin prudent a), which means temperance, caution, moderation, sense, and good judgement, and is one of the cardinal virtues that consists of distinguishing good from bad, to either follow it or run away from it (http://lema.rae.es/drae/?val=prudencia), is still used. The Oxford dictionary, for its part, defines the English word *prudence* as "a sensible and careful attitude when you make judgements and decisions; behaviour that avoids unnecessary risks", and clarifies that "Prudence is used particularly in financial contexts".
(Oxford http://www.oxfordlearnersdictionaries.com/definition/english/prudence?q=prudence)

(Arist. *EN* VI.5, 1140b4-6, trans. Ross, 2009, 106). This virtue enabled discernment between two exact opposites, and therefore, it made all other virtues possible and conduced men to a good life in general.

Aristotle's ethics have influenced virtually every moral doctrine developed in the western tradition. The concept of Sustainability can be seen as a mean that calls for *phronêsis*, for it acknowledges that human beings depend upon an exploitation of natural resources that should not overshoot the carrying capacity of the planet. Design practice, however, does not commonly reflect upon these matters, perhaps because it became professionalised through a period in which *the ethical debate lost prominence against the economic realm. A couple of centuries ago, maximum utility accounted for maximum happiness; in today's jargon, where* "good design is good business"[43], it means maximisation of profit.

The current dominant paradigm is unsustainable and intolerant, and it has widely disregarded philosophical and ethical debates, which are crucial and inherent to humankind. For these reasons, this work not only supports the view that we are living through a paradigm shift, but it also argues that this change is necessary and desirable. The following section is a historical overview constructed by making use of Kuhn's model of paradigm shifts, and paying special attention to several works on political philosophy, including some by Immanuel Kant, John Stuart Mill, John Rawls, Amartya Sen, Martha Nussbaum, and Manfred Max-Neef, from which the main proposition within this thesis, that a case of good design (right) is to make use of freedom as a tool to diminish injustice, was deduced.

The establishment of the current paradigm

In *Managing Without Growth: Slower by Design, Not Disaster*, Peter A. Victor (2008), an economist who has been working on environmental issues for more than four decades, explains that the first thing one has to understand is the idea of *progress*; or more precisely that it is an *idea*. Victor traces the origin of the idea of progress as such to the Enlightenment, where the concept of progress entailed improvement in other spheres of life, including the arts and social organisation. The Enlightenment created the belief that human progress could be achieved through reason and knowledge. It took a while

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43 As stated by Thomas J. Watson Jr, chief executive of IBM in 1973.
See: http://www-03.ibm.com/ibm/history/ibm100/us/en/icons/gooddesign/

before the industrial revolution (through design) generated items of use that definitely improved people's living condition. By the 19th century, when the political economy of Adam Smith had become widely spread even in the minds of common people, progress had become merely a synonym of economic growth (Victor, 2008). What is normally missed, insists Victor (2008), is that "the idea that history has a direction and that the direction is towards improvement of human condition", the "quintessential modern idea" (p. 6) is simply that, *an idea*, and it contrasts, for example, with the observation of change as cycles, which was embraced in the ancient Eastern Civilizations.

The beginning of the age of reason is commonly associated (e.g. Arendt, 1998 [1958]; Latour, 1993) with the work of René Descartes (1596–1650), and specifically with his views that in the world, matter interacts in accordance with a few universal laws, that human beings possess an immaterial mind, and his method of doubt (Hatfield, 2015). What drastically changed was the way in which the generation of knowledge was approached. In prior times, it was acquired through experience, and incremental innovations happened over extended periods of time, without the need for explanation. Mokyr (2007, 3) points out that "it was a world of engineering without mechanics, iron-making without metallurgy, farming without soil science, mining without geology, water-power without hydraulics, dye-making without organic chemistry, and medical practice without microbiology and immunology". In the Enlightenment, the process of acquiring knowledge became much faster and more systematic; and even when, as in most cases, it took a long time to make science applicable, scientific knowledge started to be seen as potentially beneficial for technological development.

Many design historians point to the Industrial Revolution, or more precisely to James Hargreaves's *spinning jenny* of 1770, an early adaptation of James Watt's (1736-1819) steam machine for the manufacture of products of use (textiles), as the primary cause of design as a professional activity (Comisarenco, 2006, 29). From this moment on, there would be a clear distinction between those who conceived things and those who made things. Moreover, there would also be machine manufacturing processes and materials (e.g. steel) to which to adapt the design of things.

In science, unlike in art, individuals discover, rather than create things. For this reason, individuals are naturally driven to build on the work of their predecessors, which inspired the *idea* that progress was a succession of linear events that lead to improvement (Victor, 2008). Around 1850, the rise in productivity had finally generated an increase in wages and an improvement in the quality of life, which was experienced from one generation to the next if not within a lifetime. Thus, it was only in the later phase of the Industrial

Revolution that the link between scientific and technological development was made evident (Mokyr, 2007). The shared view, however, was that by understanding why something worked, it would be easier to modify it and to apply it to different contexts. The belief that machines could liberate people from their workload and thus improve their lives sounded very appealing.

While technological progress was central, other types of adjustments also added to the establishment of the idea of progress, including institutional changes, increased trade, capital accumulation, and the freer markets (Mokyr, 2007). Arendt (1998 [1958]), points out two other notions that emerged during these times concerning capital and money: first, capital started to be seen as wealth that, once invested, brings gain (68); and second, she attributed to John Locke the notion of value as a thing that lasts without spoiling and that men may keep (102).

Not everything was positive. First of all, the agrarian reformation that preceded the Industrial Revolution caused peasants to lose their lands and forced them to move into cities, which were not ready for that many immigrants. Overpopulation caused health and sanitation problems, and also a high unemployment rate, which enabled the proliferation of low wages and the exploitation of workers, who worked for 16 or 18 hours a day, including children (Comisarenco, 2006, 32).

In Kuhn's language, it could be said that in his writings, Karl Marx (1818-1883) identified anomalies within his paradigm. His approach to history was that of the struggle between classes, as in every society, there had always been the oppressors and the oppressed, and in his time, society was increasingly dividing itself into two: the bourgeoisie and the proletariat (Marx and Engels 2006 [1847], 32). Marx did not contest the notion that progress was connected to technological development; he actually believed that the right combination of industry and agriculture could become a means to fade the distinction of classes away (55). However, he stood against the socio-political regime of his time, in which the great majority of the world's population lived in conditions of exploitation, while production was concentrated in the hands of very few. In the Communist Manifesto, Marx and Engels proposed the union of the proletariat of the world in a common struggle to end private property and the different social classes (ibid.).

Additionally, a system that aimed for high productivity would only fit within a world of high consumption; and machine production would cause the standardisation of products, but also the devaluation of objects of use (clothes or furniture) into objects

of consumption (Arendt, 1998 [1958], 126). In the words of Victor Papanek, (1984 [1971], 87), "That which we throw away, we fail to value." Furthermore, the introduction of machine manufacturing processes split into simple tasks enabled machines to mimic the work of men, but also led men to become like machines; "the dehumanization of men's work was the irony of the Industrial Revolution" (Ackoff, 1973, 663).

Within the world of design, the Arts and Crafts movement (1850-1914), which took place in England and was led by John Ruskin and William Morris, was born as a response to the conditions of social injustice that had been caused by the Industrial Revolution. Rather than being about design, the movement was about transforming society through design (Comisarenco, 2006, 48). Nevertheless, over time, design communities ended up adapting to the new world and its machines (Papanek 1984 [1971], 30).

Design was established as a professional activity between the spinning jenny and the Arts and Crafts movement. While positivism and capitalism are familiar within the field, the moral doctrines that were developed in parallel, and that were largely disregarded when shaping the idea of progress as economic growth, remain under-discussed. The following section briefly describes two of the main moral doctrines developed during that period - those of Immanuel Kant and John Stuart Mill - in order to introduce the features and discussions that inspired the proposal of Design as Freedom as introduced in the following chapters.

The main moral doctrines of the 18th and 19th centuries

Kant

Immanuel Kant (1724-1804) is certainly one of the most representative thinkers of the Enlightenment. Moreover, he is sometimes referred to as "the *central* figure in modern philosophy" (Rohlf, 2016). It is not that his propositions are unanimously considered the ultimate solutions to highly philosophical matters. In fact, his main contribution was the introduction of a new formula by making use of the existing moral principles (Kant, 2006 [1788], 20). His formula posited several highly intricate philosophical debates, and those were an exceptional contribution to philosophy and many other fields of knowledge. One of his central concepts, freedom, and the way in which he treats it, is fundamental in this work, as will be more thoroughly explained in the following chapter. However, it is relevant, at this point, to introduce some of his main models

and ideas that became very influential to the paradigm of his time, and that nowadays continue to be relevant matters of discussion.

In step with Aristotle, Kant (Kant, 2006 [1788], 42) considered that being happy was desired by every rational being. However, following the Christian tradition, although happiness is always enjoyable, it is not always absolutely good. The highest good is the conjunction of virtue and happiness, where the latter is directly proportional to one's own morality, and morality is what makes us worthy of happiness (141–142). Kant conceived of human beings simultaneously as members of the sensible world and as members of the intelligible world, that is, as *phenomena* and *noumena* (145), for which reason he was able to propose a philosophical system that synthesised modern rationalism and empiricism, two opposite approaches that explain the generation of knowledge (Rohlf, 2016). Within his system, *reason*, *morality,* and *freedom* are tightly intertwined, so that intelligible noumena are subjects of freedom (Kant, 2006 [1788], 18), and freedom is expressed through morality (16). However, without freedom, men could not be moral (ibid.), so being practically free implies being morally obliged (Kant, 2004, 166). Moreover, freedom is a principle that regulates reason (Kant, 2006 [1788], 69).

If men were members of the intelligible world only, their *will* would be saintly, equal to that of God; but men are subjected to necessities given that they also belong to the sensible world, hence their will can only be pure. Their innate rational capacity is what enables men to choose to act morally despite their phenomenal needs, and this is what makes them *free*. Additionally, Kant argues that the moral law is therefore an imperative that categorically commands (Kant, 2006 [1788], 50–51). In other words, for Kant, morality is driven by reason and detached from all emotional subjectivity, where "his *categorical imperative* is an articulation of a universal moral code that is applicable at all times and under every conceivable circumstance, independent of the empirical situation[44]" (Rifkin, 2009, 175).

The *categorical imperative* is another of Kant's central concepts, which works as an evaluative system that defines whether it is right or wrong to perform an intended action, and it is a self-imposed a priori proposition that is not founded on any type of intuition, either empirical or pure. It also implies the fundamental law of pure practical reason (Kant, 2006 [1788], 49–50): "Any action is right if it can coexist with everyone's freedom in accordance with a universal law, or if on its maxim the freedom of choice of each can coexist with everyone's freedom in accordance with a universal law" (Kant as

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44 My emphasis.

quoted in Rauscher, 2012)[45]. In the spirit of the Enlightenment, where reason becomes "reckoning with consequences" (Arendt, 1998 [1958], 283), before acting, one is able to foresee the effects of an intended action. Hence, if one's action would not make social life impossible and, most importantly, it could be willed as a universal law, then the action is morally permissible (Rohlf, 2016).

Although Kant did not do it in an explicit manner, he has been listed among those who adopted the model of the *social contract* (e.g. by Rawls, 2009 [1971] and Sen, 2011). This model, which can be attributed to the Stoics, is the type of agreement that would be reached by rational persons (Rawls, 2009 [1971], 14–15). It sets limits to the agreement and also to the conceptions of the good (152, 230). Rousseau used it as a tool for exploring an ideal society that would be just, and where civil order would be legitimate (Dent, 2005), while Hume made use of it to ask what a perfectly just society would be like (Rawls, 2009 [1971], 8). From this condition, where different individuals acknowledge each other's rights, Kant induces universality: given that the individual is governed by moral law, and given that the interaction among individuals is ruled by a social contract, morality can be expanded to the level of societies and even *nations*.[46]

Utilitarianism (John Stuart Mill)

Nearly a century had passed, and the discussion on right and wrong continued to be of paramount relevance. Nevertheless, the perspective that morality emanated purely from reason was contested. Utilitarianism, which was inspired by the Greek hedonism, a movement founded by Epicurus, became "the dominant ethical theory" (Sen, 2001 [1999], 58) of the 19th century. In this approach, the highest end is identified through introspection, where pleasantness is assumed to be an agreeable feeling and the special characteristic of experiences that human beings desire to have and wish to prolong (Rawls, 2009 [1971], 486). Thus, the highest good is pleasure[47]. The two main representatives of this movement were Jeremy Bentham (1748-1832) and John Stuart Mill (1806-1873); this section is based on the work of the latter.

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45   Note that I am using Raucher's quote of Kant, given that my original source is in Spanish.

46   Despite his seemingly noble intention, Kant's universalism can be criticised for promoting the homogenisation of humanity.

47   It could be said that within the field of design, this perspective is somewhat shared by fields such as user-centred design and design for user experience (Koskinen & Battarbee, 2003, 41–42).

John Stuart Mill's view of morality was not completely different from that of Kant, in the sense that he maintained that it originates from human reason, and that it is governed by a universal law. However, Mill believed that universal law is not completely rigid, and that it leaves room for the agent to act with responsibility and in accordance with the specificity of a given circumstance (Mill, 2014 [1863], 53, 95). The main difference between Mill and Kant is that while Kant held that men ought to make themselves worthy of happiness, in Mill's view, given that men desire happiness, they have the right to be happy and must try to be so.

Mill's *Utilitarianism* (1863) built on Bentham's *utility principle* or principle of greatest happiness[48] (Mill, 2014 [1863], 53). He started by stating that no ethical theory completely disregarded how happiness somewhat influences the determination of at least some parts of the moral. Mill explained that the only way to prove that things are visible is that people see them, and the only way to prove that things are audible is that people hear them. He then extrapolated this to the case of happiness: the only way to prove that it is desirable is that people desire it. Furthermore, the fact that everyone desires their own happiness verifies that happiness is the highest end. From this, Mill concluded that the happiness of all is of general interest[49].

Happiness as the highest end, said Mill, established the criterion through which actions can be tested and assessed as right or wrong. Right actions cause happiness (defined as pleasure and absence of pain), while wrong actions inflict unhappiness (defined as pain and lack of pleasure). However, the utilitarians, like the Epicureans, discern between lower and higher pleasures. Human beings possess higher appetites than animals, and human happiness derives from the satisfaction of those higher appetites. Therefore, there are lower pleasures attached to sensations and higher pleasures related to human intellect, feelings, imagination, and moral sentiments (Mill, 2014 [1863], 61–62). For that same reason, the latter pleasures are more desirable than the former ones, which can be confirmed, as is normal, by those people who have experienced both types (62).

48 According to the Online Etymology Dictionary, Jeremy Bentham coined the term in 1781, to refer to his doctrine of "the greatest happiness to the greatest number", and that since 1847 it has been used to describe things "having regard to utility rather than beauty". Before that, the main sense in which the word utility was used was to convey usefulness or usability, and to a much lesser extent, profit (one of its main meanings nowadays). Retrieved 25/05/2016 from: http://www.etymonline.com/index.php?allowed_in_frame=0&search=utility&searchmode=none

49 Esperanza Guisán (who comments on the 2014 edition of Mill's Utilitarianism [1863] in Spanish) explains that this is one of the main criticisms made of John Stuart Mill; namely, that he incurs a composition fallacy because the fact that everyone wants their own happiness does not imply that people are interested in the happiness of others.

Moreover, and also in step with Kant, Mill declared his approach to be aligned with Christianity, and he adopted the Golden Rule[50] (treat others as you would like to be treated, and love others as much as you love yourself) (Mill, 2014 [1863], 80). Thus, utility is a search for happiness together with the prevention of pain and unhappiness (70–72), and his view of a happy life included expecting from life only as much as life can give (72).

Although Mill considered it probable that at least some part of human consciousness can be innate, he was inclined to believe that moral feelings are acquired (Mill, 2014 [1863], 104). He compared the higher pleasures to a fragile plant that has to be taken care of, in allusion to formal education, but also to the need to make them habitual, because it is through experience that one learns that similar actions generally have similar consequences. Already, then, he believed that young people were not being given the opportunity to cultivate those higher pleasures, because they were not being exposed enough to them[51].

In the final part of his short essay, Mill connected utility and justice. First, he stated that the idea of justice is difficult to define, because it is associated both with an innate feelings and with absolute facts. Moreover, attempting to define its opposite, injustice, is also problematic, because, he noted, ideas of right and wrong and just and unjust can vary greatly (Mill, 2014 [1863],135–137). He identified two perspectives of justice that cannot be harmonised, which was a discussion that would gain relevance in the years to come, mainly in the work of John Rawls and Amartya Sen. On the one hand, what is just is based on what the individual receives according to their own merit; on the other hand, what is just is based on what the community gives to compensate the least favoured for their undeserved inequality of capacities (155).

Ultimately, stated Mill, it can be agreed that justice concedes that people who act correctly deserve good, and the opposite goes to those who act wrongly (Mill, 2014 [1863], 132). Moreover, we find it pleasurable when unjust acts get punished (137). Regardless of how these ideas of worthiness of punishment are conceived, they are ultimately rooted in the distinction between right and wrong (137–139). Thus, justice is tightly connected to utility, because the former is meaningful only when it contributes to the general happiness (Guisán in Mill, 2014 [1863], 126).

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50 This is another similarity between Mill and Kant.

51 More than 150 years later, I believe this continues to be the case.

Despite its conception as the highest end, and as a means for discerning right and wrong, or its connection with justice, over the course of the years, utility would become a synonym of economic profit. As stated above, the Enlightenment, the Industrial Revolution, capitalism, and the idea of progress must have certainly contributed to the new meaning. However, some events that happened before and during the World Wars can be directly linked to the establishment of economic growth as the ultimate human goal.

Turning point

When looking back towards more recent phases of history, the problem encountered by Kuhn when speaking of paradigm shifts and scientific revolutions becomes evident. While some disciplines challenge their own groundings, others continue to develop at an even faster pace. In many cases, even when new accounts that are opposite to the dominant theories emerge, they might not be strong enough to defeat the dominant ones completely. So, whilst new currents of thought are born, the formerly dominant perspectives are kept alive, resulting in a diversity of continuously evolving paradigms living side by side. Or, then, perhaps it is simply that paradigm shifts happen so slowly that going from the identification of a crisis to a paradigm shift takes several centuries, and individuals with finite and short lives simply lack perspective.

The World Wars were definitely not the first international conflicts, but certainly no others had been of similar magnitude. They can be seen as a turning point, for on the one hand, many events, including advancements in science and technology, became crucial in shaping and making the current paradigm dominant, while on the other, by making evident the capacity of humankind to destroy, these global conflicts might have triggered the identification of the crisis or the beginning of this paradigmatic decline. Technological developments brought about with military purposes are among the most commonly discussed matters that originated during the wars; nonetheless, other factors that belong to the field of economics were also established during wartime.

Although National Income accounting had started during the economic depression of the 1930s, it was during WWII that it became of paramount importance, given that the Allies needed to know "how much could be produced in economies working flat out" (Victor, 2008, 10). This is a direct antecedent of Gross Domestic Product (GDP), which in the course of time would become a matter of national relevance, and simultaneously

a comparative indicator of the state of nations and a stimulus for international rivalry (14). During the Cold War, those international comparisons of growth rates became of primary importance.

Once the capitalist system was running, "the shortage of employment [became] more important than the shortage of products", and rather than having a need to employ people to meet the demand for goods and services, there started to be a need to maintain production growth "simply to keep people employed" (Victor, 2008, 12–13). The fact that, during WWII, some countries "had experienced full employment … when government expenditures had been running at record levels" (11) supported the perspective of John Maynard Keynes, who argued that unemployment could be fought with more governmental intervention in the economy. Later on, R. Harrod in Britain and E. Domar in the USA proposed that unemployment could be controlled through economic growth (13).

For that reason, at least in the United States after the crisis of 1929, the work of designers like Brook Stevens and Raymond Loewy, who deliberately shortened the aesthetic life-cycles of products, became exceptionally relevant, not only for companies but also for society in general (Comisarenco, 2006, 113). On 31 October 1949, a portrait of Raymond Loewy made it to the cover of Time magazine, and below it, the caption: "He streamlines the sales curve" (Time, 1949). It was only after Brook Stevens coined the term *planned obsolescence*[52] and defined it as "instilling in the buyer the desire to own something a little newer, a little better, a little sooner than is necessary" (as quoted in Adamson, 2003, 129) that the strategy started to be widely criticised. In 1958, Stevens introduced ten points by which he intended to clarify and defend the strategy by reasoning that, since products are not born but rather man-built and planned, obsolescence is, thus, also planned. Furthermore, his point number 3 read "This attitude and general philosophy keeps employment at the highest possible record, and purchasing power at a

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52 Although planned obsolescence became infamous, and although very few would outspokenly support it, it is still widely practised within corporations because, among other reasons, Stevens's argument that it keeps the system running remains strong. Within his analysis of an Apple iPod as a case study of consumption and contingency, Guy Julier explains that:

"In the case of the iPod, its replacement cycle is estimated at 1.5 years – a figure not dissimilar to the mobile telephone and the PC markets. With five generations of the product being released inside its first four years, these upgrades are carefully controlled in order to capitalize on consumption cycles so that just as one item 'wears out' (either in terms of the dedication and interest on the consumer's part or in terms of its technological functioning) so an upgrade is available. Indeed, as new costumer numbers are estimated to decrease from 2006, so the replacement market would become more significant to Apple's market (Credit Suisse 2006)." (Julier, 2008 119)

maximum, and in turn these combine to increase the standard of living for all" (Stevens, 1958, as quoted in Adamson, 2003).

While some praised economic growth, in the eyes of others, humanity had lost its way. These were the times when awareness about the environmental crisis started to rise, even if not in a generalised manner. The environmental depletion was added to other pieces of evidence that had been uncovered by the World Wars, like holocausts and genocides, and that proved humanity's amazing power of destruction. It was all connected: the need to keep people employed, together with improved manufacturing methods, started to generate items in excess; the only manner to keep such a system running is by consuming those items at a faster pace. Objects of use become objects of consumption (Arendt, 1998 [1958], 124, 126, 138), and given that man is the measurement of all things on Earth, our need to keep the system running justifies the destruction of the environment. Moreover, in step with the utility principle, what becomes relevant to measure is "the amount of pain and pleasure experienced in the production or in the consumption of things" (309). Additionally, the generalised need for public admiration and the equation of success with wealth accumulation pushes people to pursue precisely that (56, 108), resulting in "[t]he universal demand for happiness and the widespread unhappiness in our society (134).

Nihilism and human despair at least partly spread into the sciences (Arendt, 1998 [1958], 261; Sen, 2009, 36). This melancholic mood, however, was not shared by all. Challenging the idea that technological progress necessarily benefits humanity had a positive side-effect: "teleology—the study of goal-seeking and purposeful behavior— was brought into science and began to dominate our conceptualization of the world" (Ackoff, 1973, 665). A crisis had been identified, and it was time to generate alternatives for a new paradigm; at least that is what Russell Ackoff (1973, 661), among others, believed to be happening while developing the systems approach, which in their view was a similar breakthrough to the Renaissance or the Industrial Revolution.

These new approaches might affirmatively be one of the keys of our changing paradigm, since they directly challenge the rationalistic perspective of the Enlightenment that divided knowledge into silos and supported the study of all types of phenomena in isolation. This will be better illustrated in Chapter 4. Now, this work turns to review some of the alternative proposals that have resulted from gatherings of economists and philosophers in recent decades, and that might be seen as attempts to define a new paradigm.

Generation of alternatives

> [S]ince the various varieties of environmentalists are opposed to modernization, and since modernization is a particular normative view of the development and thus a particular idea of what constitutes human progress, then the basis of a new consciousness which would unite them would have to be a new conception of progress. (Skelton, 1999, 56)

WWII came to an end, and the United Nations (UN) was founded. However, this neither brought peace nor caused the immediate generation of alternatives. Despite establishing the channel for global debate, the world would reach an impasse and polarise. The capitalist socioeconomic system would finally emerge as the triumphant model. Within the UN, the efforts of philosophers and humanists to conceive a better world in a holistic manner would constantly be blocked by the advocates of neoliberal economics. In consequence, far from celebrating diversity, all the member nations were evaluated in the terms proposed mainly by the US and the UK; therefore, this global league of nations became a mechanism for establishing the current paradigm, and for making it absolutely dominant.
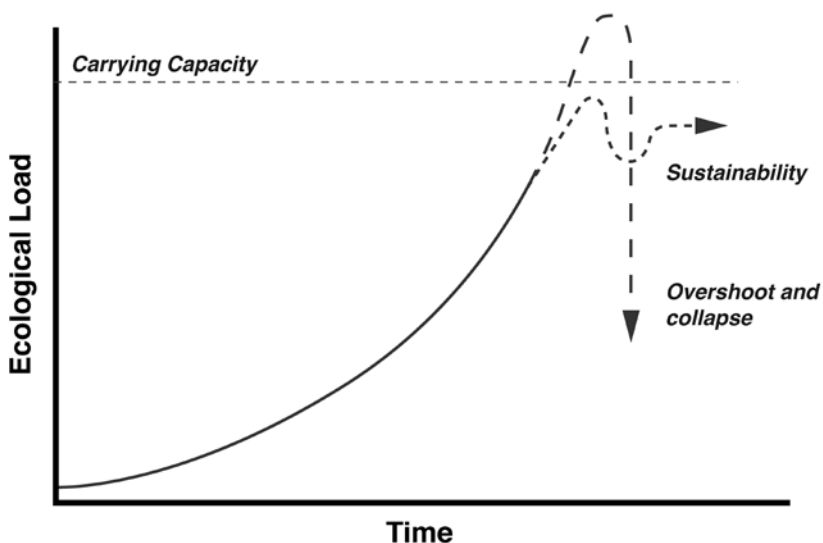

Figure 4. The curve that represents sustainability modifies the idea of progress as put forward during the Enlightenment and the Industrial Revolution, and which was reinforced by the Capitalist system. The carrying capacity forces humanity to reconsider the positive exponential curve as the ultimate representation of progress. Drawn by Claudia Garduño.

Nonetheless, the openness to global dialogue eventually started generating true alternative proposals. Herein, the term Sustainability is seen as a real breakthrough because it directly challenged several of the most deeply grounded notions of the dominant paradigm. First, Sustainability contests the idea of progress that is characteristic of a technocratic and capitalist model promoted by the Enlightenment and the Industrial Revolution. Rather than expressing improvement exclusively as a positive exponential curve, a vision of a better future is expressed as a curve limited by an asymptote called the carrying capacity. Second, Sustainability challenges the positivist way of generating knowledge introduced by Descartes, which is also seen as one of the milestones of modernity. On the one hand, it contests the possibility to understand phenomena in isolation, and on the other, it advocates for disciplinary collaboration (trans-multi-inter-cross[53]) rather than for high disciplinary specialisation. Third, being a call for global action, at a local level, it opens up for a diversity of different strategies, rather than supporting the universal homogenisation of towns. Finally, the term Sustainability enables the environment and other species to gain relevance, challenging the current paradigm's characteristic anthropocentric approach.

What follows is a compilation of alternatives proposed by philosophers and economists who found it abnormal to always aim for a positive exponential curve. Following Aristotle, these thinkers have dedicated their work to reflecting on ends that we would like to pursue for their own sake. They do not directly contribute to the debate on Sustainability, but their works most certainly open up new possibilities when imagining what a sustainable future could be like.

United Nations and development studies

At the end of the Second World War in 1945, the global claim for peace resulted in the formation of the United Nations (United Nations, n.d.). Nevertheless, as the United States of America (USA) and the Soviet Union (USSR) rose as the two most powerful nations, holding very different economic, political, and social perspectives, giving place to the Cold War, the world was far from achieving absolute peace and harmony. Within the UN, the USA and the USSR were entitled to the right of veto, making consensus very hard to reach (Pirenne, 1979, 17).Nations were deciding their side in the bipolar world: whether to align with the *first world*, the capitalist, or with the *second world*, the socialist. Nevertheless, not everyone fitted perfectly with either one. France was the first

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53 See: Fuad-Luke, 2012b: https://window874.files.wordpress.com/2012/05/research-note-001-trans-disciplinarity.pdf

to declare its non-alignment, and the emergence of a *third world*[54] (Pirenne, 1983, 105; Wolf-Phillips, 1987, 1312). Other countries followed, most of which were among the world's poorest and least industrialised. In 1978, the World Bank[55] started writing yearly reports that globally assessed the economic status of countries, introducing the terms Third World to refer to poor countries and Fourth World to refer to the poorest ones (World Bank, 2015; Wolf-Phillips, 1987).

Those were also the times when *development studies* began. Development (develop + ment) is a term that was introduced in 1756, and that meant "an unfolding". Since 1836, it meant "advancement through progressive states", and since 1885, "bringing out the latent possibilities". It was only in 1902 that its meaning became "state of economic advancement"[56], very similar to the idea of progress that emerged in the Enlightenment. Thus, when most historical accounts of development studies departed from economic growth and modernisation, and continued by revising the main theories all the way to neo-liberalism, it did not seem suspicious. Nevertheless, there is a direct link between colonialism and development (Kohtari, 2005, 50). Development studies were started by colonial officers during the decolonisation process of the British Empire. However, if colonialism was bad, development was and still is promoted as something good. Following that view, development happened when the colonies were prepared for independence, after they had been dominated culturally and economically (Kohtari, 2005, 48). Therefore, and in step with Zea (1990) and Braidotti (2013), development studies can be criticised for giving a new name to the same western hegemonic practice described above; but this time, the dichotomy between the West and the rest was based on the level of development. A few years later, when the fall of the USSR caused the collapse of the second world, the terms third world and developing world became interchangeable concepts, and authors no longer clarified their selection of terms (Wolf-Phillips, 1970, 1318). Furthermore, capitalism was legitimated as the one social, political, and economic model, and all that was left was a gap between the traditional Third World and the modern First World (Kothari, 2005, 50).

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54 Apparently, the concept (originally third force) was coined by Charles De Gaulle in order to state that France was neither aligned with the United States nor with the USSR (Pirenne, 1983, 105; Wolf-Phillips, 1987, 1312). Wolf-Phillips (1987, 1311-1312) has traced the first use of the term third world, in a similar sense, to the writings of Alfred Sauvy of 1952, a French demographer and economic historian.

55 Which was found in 1944 in the United States

56 Retrieved 25/05/2016 from: http://www.etymonline.com/index.php?allowed_in_frame=0&-search=development

By the end of the 1970s in the USA, academic bodies such as that of Colorado State University, and researchers such as Peter Berger, had identified the necessity of linking the fields of ethics and development (Crocker, 2008, 2-5). It was in the 1980s that alternative approaches "such as gender development, environmental and sustainable development, and participation and empowerment" (Kothari, 2005, 48) started to emerge. In 1987, the World Commission on Environment and Development published a report entitled *Our Common Future*, (or the Brundtland Report), and through it, the term *sustainable development* and its classic definition became popularised. Sustainable development was defined as "development which meets the needs of the present without compromising the ability of future generations to meet their own needs". The General Assembly of the United Nations accepted the term, and next, in 1992, world leaders gathered in Rio de Janeiro, Brazil, to celebrate the United Nations Conference on Environment and Development, with the aim of setting out the principles of sustainable development (Drexhage & Murphy, 2010, 2). Almost simultaneously, in 1990, the United Nations Development Program (UNDP) published its first Human Development Report (HDR), which was based on a document from 1970 authored by the International Labour Organization World Employment Program, which they describe as their earliest version of an "intellectually coherent vision of a people-focused development strategy" (Jolly, Emmerij, and Weiss, 2009, 1). The report defined Human Development as follows:

> A process of enlarging people's choices[57]. The most critical of these wide-ranging choices are to live a long and healthy life, to be educated and to have access to resources needed for a decent standard of living. Additional choices include political freedom, guaranteed human rights and personal self-respect (Jolly, Emmerij, and Weiss, 2009, 2).

The Human Development Index (HDI) was the instrument designed to measure development in accordance with that definition. The UNDP's own historical account acknowledges that the HDI, intended as a comprehensive summary, ended up confronting economists with humanists. The contextual economic driving forces of the early eighties, "Thatcherism and Reaganism in developed countries, the onset of world recession, and banking policies designed to ensure that developing countries repaid their debts" (Jolly, Emmerij, and Weiss, 2009, p1), pushed the HDI to be more focused on the economic perspective and to move away from a basic needs perspective (ibid.). The HDI combined three types of indexes that measured the first three components of the

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57 This definition is clearly influenced by the thinking of Amartya Sen, as will be explained below.

definition and integrated them in a final formula: a long and healthy life was translated into life expectancy at birth; education was a combination of adult literacy rate and enrolment in primary, secondary, and tertiary levels; and finally, the access to resources needed for a decent standard of living was to be measured through Gross Domestic Product (GDP) per capita (Jolly, Emmerij, and Weiss, 2009, 2).

The World Bank defines GDP as:

> The value of all final goods and services produced in a country in one year. GDP can be measured by adding up all of an economy's incomes (wages, interest, profits) or expenditures (consumption, investment, government purchases and net exports)—exports minus imports.[58]

The GDP per capita of a country is what results from dividing its GDP by its total number of inhabitants, and of the three indexes, it is the only one without a finite limit (considering that human life is finite, and consequently, the scholarly years are finite as well). Therefore, the income level is not just one more factor, but a determining variable of the equation: by growing its national economy, a country raises its HDI. Additionally, it is very questionable that GDP plays such a leading role in evaluating the performance of nations worldwide when it includes expenditures on warfare, damage repair after natural disasters, and in some cases even drugs and prostitution (as is the case in Spain [Bolaños, 2014]). Moreover, many non-remunerated products of activities such as housework or subsistence farming, which cannot be measured, are simply omitted.

The UNDP has continued to explore different approaches (see Table 2a). Almost every year, a new HDR with a special focus is released. Since 1993, the concept of people's capabilities (which will be explored more thoroughly in the following section) has been used to assess the quality of life (Nussbaum, 1997). By 2009, three *human* indicators had been added to the overall assessment of Human Development, so that besides measuring the HDI, the UNDP also started measuring the Gender-related Development Index (measuring inequalities between men and women), the Gender Empowerment Measure (measuring the opportunities open to women), and the Human Poverty Index (measuring deprivation along the main dimensions of HDI) (Jolly, Emmerij, and Weiss, 2009, 2).

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58 Retrieved March 04, 2010 from: http://youthink.worldbank.org

Year	Title
1990	*Concept and Measurement of Human Development*
1991	*Financing Human Development*
1992	*Global Dimensions of Human Development*
1993	*People's Participation*
1994	*New Dimensions of Human Security*
1995	*Gender and Human Development*
1996	*Economic Growth and Human Development*
1997	*Human Development to Eradicate Poverty*
1998	*Consumption for Human Development*
1999	*Globalization with a Human Face*
2000	*Human Rights and Human Development*
2001	*Making New Technologies Work for Human Development*
2002	*Deepening Democracy in a Fragmented World*
2003	*Millennium Development Goals: A Compact Among Nations to End Human Poverty*
2004	*Cultural Liberty in Today's Diverse World*
2005	*International cooperation at a crossroads: Aid, trade and security in an unequal world*

2006	**Beyond scarcity: Power, poverty and the global water crisis**
2007	**Fighting climate change: Human solidarity in a divided world**
2009	*Overcoming barriers: Human mobility and development*
2010	**The Real Wealth of Nations: Pathways to Human Development**
2011	**Sustainability and Equity: A Better Future for All**
2013	*The Rise of the South: Human Progress in a Diverse World*
2014	*Sustaining Human Progress: Reducing Vulnerabilities and Building Resilience*
2015	*Work for Human Development*

Table 4. Titles of Human Development Reports by year. Source: UNDP's website for global reports (http://hdr.undp.org/en/global-reports).

It must be pointed out that the original definition of human development made no mention of Sustainability, and that it was not until 2006 that the HDR made explicit mention of environmental issues (water scarcity) in its title, while the word Sustainability, as such, appeared in 2011.

In 2010, the UNDP's Human Development Report stated that "there was remarkably little correlation between economic growth and improvements in health and education, even over longer periods of time" (UNDP, 2011). When calculating the HDI when GDP or GNI (Gross National Income) per capita are removed from the equation, these were the results:

Rank	Non-income HDI	HDI	Income
1	Australia	Norway	Liechtenstein
2	New Zealand	Australia	Qatar

3	Norway	New Zealand	Norway
4	Ireland	United States	United Arab Emirates
5	Iceland	Ireland	Kuwait
6	South Korea	Liechtenstein	Luxembourg
7	United States	Netherlands	Brunei Darussalam
8	Israel	Canada	Singapore
9	Japan	Sweden	United States
10	Germany	Germany	Hong Kong, China (SAR)

Table 5. Source: Human Development Report 2010.

When the human development approach is compared with the neoliberal framework, "which focuses on maximization of returns and market efficiency" (Jolly, Emmerij, and Weiss, 2009, 5), it is possible to perceive some of its strengths. Mainly, this approach, which is aligned with the Human Rights Declaration, focuses on issues that the former neglects, including gender equality and care for children and the aged. Nonetheless, the UNDP acknowledges that "human development as a paradigm has yet to be fully grasped, even within the United Nations" (6), and that it remains a challenge to position this paradigm as a serious basis for action (ibid.).

Amartya Sen and Martha Nussbaum are among the thinkers who have contributed to the UNDP. Both of them have declared themselves to be greatly influenced by the work of John Rawls, meaning that his thinking has somewhat been spread around the globe. The following attempts to explain the theory that Nussbaum and Sen find so appealing.

John Rawls

John Rawls (1921-2002) was an American political philosopher who, in 1971, authored the book *A theory of Justice,* which Amartya Sen considers to be "the most important contribution to moral philosophy in the recent decades" (Sen, 2003 [1989]). In it,

Rawls (2009 [1971], xvii) was critical towards utilitarianism, beginning with the fact that having been developed by economists and social theorists, like Adam Smith and John Stuart Mill, it had been restricted to fit into wider frameworks. Furthermore, he pointed out that utilitarianism defines the good independently from the right, and that the right is defined as the maximisation of the good (22). Rawls advocates, instead, for a deontological theory, where the right is prior to the good (26, 28). His notion of *justice as fairness*, in as much as it does not constitute a moral doctrine (rightness as fairness), is a counter-proposal that alleviates what he argues to be the greatest flaw of utilitarianism: that by prioritising economic principles, such as efficiency, it gives room to injustice:

> Each person possesses an inviolability founded on justice that even the welfare of society as a whole cannot override. For this reason justice denies that the loss of freedom for some is made right by a greater good shared by others. (Rawls, 2009 [1971], 3)

Rawls was concerned mainly with exploring "what the perfectly just society would be like" (Rawls, 2009 [1971], 8), and he claimed to adopt the model of social contract like Kant and Mill, but to take it to an even higher level of abstraction. Rawls's *original position* is a hypothetical situation in which a group of people, all of whom are rational beings and can therefore make decisions, choose the principles of justice behind a *veil of ignorance*, which means that they ignore their position in society, their natural set of skills and abilities, and even their own conceptions of the good (11). Rawls stated that the original position is the ideal initial situation, because through it, the group of people can arrive at fair agreements, which is what he meant by justice as fairness (ibid.).

Different moral doctrines can be assessed in their original position through *reflective equilibrium*, which means that rather than adopting a conception of justice that matches one's own judgements, one weighs different conceptions of justice and later decides whether to keep those original judgements or to revise them in accordance with a preferred conception (42–43). For instance, when assessing the utilitarian take on slavery, a slaveholder could maintain that slavery of some is needed for the greater good, and that this would be his position even in the initial contractual situation, despite the risk of being held a slave himself (145). Thus, utilitarianism gives room for slavery, which, like every other explicitly racist doctrine, Rawls found to be not only unfair, but also irrational (129).

Rawls deduced that there are two principles of justice as fairness with which every group of rational people could agree, and I believe these principles to be crucial in the development and understanding of the Capabilities Approach proposed by Amartya Sen (discussed below). His first principle, which synthesises his criticism against utilitarianism explained above, states that liberty may not be restricted, it is inviolable, and it has to be equally distributed to all members of society in the form of liberty rights. The second principle, also called the difference principle, takes into consideration what Rawls calls the *natural lottery* (64), that human beings are arbitrarily born in different conditions regarding not only economic circumstances, but also social (including whether one is born within a functional or dysfunctional family), and also regarding their set of skills (some are highly skilled and others are disabled). Thus, different people might need different amounts of goods (among which Rawls includes rights, liberties, opportunities, income, and wealth (2009 [1971], 380) in order to achieve the same goal. Rawls's second principle of justice states that primary social goods are justly distributed when it is done unequally, if and only if that unequal distribution compensates for the disadvantages of the least advantaged[59].

By defining the perfectly just society, Rawls worked on a fully conceptual level. Like Mill, he acknowledged that in reality, social systems, including their established laws, can be unfair. Moreover, in step with what Amartya Sen would argue several years later, Rawls pointed out that the way in which we experience justice is by selecting one among different unjust choices.

Rawls supported Kant's "idea that moral principles are the object of rational choice" and argued that "… moral philosophy becomes the study of the conception and outcome of a suitable rational decision" (Rawls, 2009 [1971], 221). He also commented that his concept of original position is similar to Kant's categorical imperative, which has an implicit veil of ignorance (226). Ultimately, Rawls concluded that "the most suitable conception of justice, therefore, is presumably one that is perspicuous to our reason, congruent with our good, and rooted not in abnegation but in affirmation of the self" (436). Moreover, and given that he focused on the institutions and not on the individuals, the contractual nature of his theory indicated that a given social system determines and limits the conceptions of the good (230); and although all individuals construct their

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59 The works of Amartya Sen and Martha Nussbaum build on the work of Rawls. His difference principle would inspire the idea that what matters are capabilities, rather than the distribution of goods. Sen would eventually see capabilities as freedoms, while Nussbaum would see them as more attached to the concept of *dignity*.

own rational plan, those plans fit within a wider plan realised by the institutions of their society (460–463). Around those times, the awareness of the environmental crisis started to rise more dramatically, and *The limits to Growth* (Meadows, 1972) was to be published just one year after Rawls's book. In fact, Rawls showed concern about other living species, but his contractual and rationalist theory left no room for them. This work believes that in the current times, justice cannot be conceived without the inclusion of other species.

Amartya Sen

The economist and philosopher Amartya Sen (Economic Nobel Prize 1998 laureate) has repeatedly acknowledged that he is influenced by the thinking of John Rawls (e.g. Sen, 2003 [1989]; 2001 [1999]; 2009). He shares Rawls's criticism of utilitarianism, but he is also critical of some parts of Rawls's work. Sen claims to be a rationalist, but he also acknowledges that "reason and emotion play complimentary roles in human reflection" (Sen, 2009, 39), and that being strongly moved by an emotion is sufficient reason for exploring it further. He argues that although human beings have the ability to discern injustice, what really *moves us* are the cases of "clearly remediable injustices around us which we want to eliminate" (Sen, 2009, vii). Thus, rather than being concerned with conceptualising an ideally just society, like Rawls, Sen is concerned with advancing justice by diminishing injustice (Sen, 2009, ix).

In *Development as Capability Expansion*, Sen (2003 [1989], 42) states that the theory of welfare economics has deliberately ignored alternative approaches, because economic prosperity is only *one* way of enriching people's lives. This approach has failed to see that "income and wealth do not give adequate account of quality of life" (ibid.). Throughout his work, including his contribution defining the HDI for the UNDP, Amartya Sen has insisted that human development is about humans, not about economics.

Sen contests Rawls's account of goods as central in judging distributive equality; in his view, goods are not ends, but means towards valued ends (Sen, 2003 [1989], 48; 2009, 234). It can be argued that Rawls already proposed a perspective of goods where these are not necessarily exchangeable for money, and that his classification includes some valued ends such as rights, liberties, and opportunities. Nonetheless, Sen criticises how "Rawls takes primary goods as the embodiment of advantage, rather than taking advantage to be a *relationship* between persons and goods" (Sen, 1980, 216). Again, Rawls was not completely unaware of this relationship; as stated above, he described the different situations in which people are born as a natural lottery and his difference

principle established that it was fair to distribute goods unequally for the benefit of the least advantaged. In Sen's view, pluralities of all people (and not only the least advantaged) should be more strongly addressed. On the one hand, different people might not necessarily accomplish similar goals when given the same amount of goods, because people have different *conversion factors*. This can be easily exemplified by thinking about a disabled person, for whom a bicycle would not become a means to achieve mobility. On the other hand, different people might have different preferences. Sen (1980) observes that "a rejection of welfarism need not take us to the point in which utility is given no role whatsoever." (216).

Whilst further developing these arguments, especially whilst aiming to respond to the question *Equality of what?*, Sen developed the earliest proposition of the capability approach (Robeyns, 2005, 104). Sen's basic notion is that people should have the freedom to choose what type of life to live, and the effective opportunity to do so. Thus, "this approach challenges the fundamental basis of welfare economics as well as its schematic model of rational economic man" (Alkire, 2005, 126). In *Development as Freedom* (2001 [1999]), he wrote:

> If, instead, the focus is, ultimately, on the expansion of *human freedom* to live the kind of lives that people have reason to value, then the role of economic growth in expanding these opportunities has to be integrated into that more foundational understanding of the process of development as the expansion of human capability to lead more worthwhile and more free lives. (Sen, 2001 [1999], 295)

"The capability approach is a broad normative framework for the evaluation and assessment of individual well-being and social arrangements, the design of policies, and proposals about social change in society" (Robeyns, 2005, 94), which "reclaim[s] some of the old heritage of professional economics" (Sen, 2001 [1999], 25). It pays attention to *functionings*, a concept with Aristotelian roots, which "reflects the various things that a person may value doing or being" (Sen, 2001 [1999], 75), and which might be very elementary (being properly nourished) or very complex (having self-respect). *Capability*, for its part, "refers to the alternative combinations of functionings that are feasible for her [a person] to achieve" (ibid.). "Capability", says Sen, "is thus a kind of freedom: the substantive freedom to achieve alternative functioning combinations (or, less formally put, the freedom to achieve various lifestyles)" (ibid.). Following Sabina Alkire (2005, 122), it can be stated that the definition of capability "combines functioning and freedom." The classic example is that a person who suffers from starvation due to food

deprivation is not in the same situation as a person who has decided to fast, despite having the effective opportunity to be properly nourished. The Capabilities Approach, argues Sen, can deal with this distinction (Sen, 2009, 237).

Sen directly links the expansion of freedom (or capabilities) to the reduction of injustice and poverty. His conception of *development as freedom* can be explained through his quote from Marx: "Replacing the domination of circumstances and chance over individuals by the domination of individuals over chance and circumstances" (in Sen, 2001 [1999], 289). Freedom, he says, can be valued instrumentally (if only the achieved states are valued in themselves) or intrinsically (if 'choice' is valuable in itself) (Sen, 2003 [1989]), but he believes that both dimensions are significant. Thus, Sen values freedom constitutively (Schroeder, 2012).

> Freedom is valuable for at least two different reasons. First, more freedom gives more *opportunity* to pursue our objectives–those things that we value. It helps, for example, in our ability to decide to live as we would like to and to promote the ends that we may want to advance. This aspect of freedom is concerned with our ability to achieve what we value, no matter what the process is through which that achievement comes about. Second, we may attach importance to the *process* of choice itself. We may, for example, want to make sure that we are not being forced into some state because of constraints imposed by others. The distinction between the 'opportunity aspect' and the 'process aspect' of freedom can be both significant and quite far-reaching. (Sen, 2009, 228)

Deliberately, Sen rarely gives examples of capabilities. He stands for democratic deliberation as a means by which people should define their valued functionings and capabilities. This equality of freedom enables a wide array of plurality (Alkire, 2005, 122). Nonetheless, it could be said that through his work in the HDI, Sen has shortlisted some basic functionings: purchasing power, longevity, and education (Crocker, 2008, 193). In addition, in *Development as Freedom*, he names five different types of instrumental freedoms "… *economic opportunities, political freedoms, social facilities, transparency guarantees,* and *protective security*" (Sen, 2001 [1999]). Those are also so closely interrelated that the enlargement of one might cause others to grow as well. Sen illustrates this interconnectedness through the cases of India and China, countries whose economic growth was preceded by the betterment of their basic healthcare and

education systems[60]. This final insight is relevant to this research project, which can be made clear in the second part when discussing designCapitalia.

Martha Nussbaum

Together with Amartya Sen, the philosopher Martha Nussbaum is one of the pioneer proponents of the capability approach. Although at some point Nussbaum and Sen collaborated in its development, eventually they independently followed their own lines of thought. Sen's ideas, for whose ancient roots he has searched more recently, originated within the field of economics. Nussbaum's research, for her part, departed from Aristotelian concepts and gradually moved towards current debates (Nussbaum, 1997, 275-276). By standing close to the fields of the humanities and liberal arts, she is able to focus on aspects such as people's skills and personality traits (Robeyns, 2005, 104). Her main goal is to construct a normative conception of social justice grounded in human dignity and, aligned with the feminist tradition, with consideration for vulnerable groups such as women, children, the elderly, and the disabled (Nussbaum, 2003, 33).

Functionings are "what render a life fully human", says Nussbaum (1997, 289). However, in step with Sen's perspective that the choice in itself is valuable (Sen, 2003 [1989]; 2001 [1999]; 2009), she argues that the focus should be in the capabilities, or what people are "able to do and to be" (Nussbaum, 1997, 285). Nussbaum refers to capabilities as substantial opportunities that are valued intrinsically. In her view, there are three different types of capabilities: basic (a person's innate equipment), internal (states of a person that are sufficient for exercising functions), and combined (internal capabilities combined with the necessary external conditions) (Nussbaum, 1997, 289-290; Nussbaum, 2016).

Nussbaum has proposed a "tentative and revisable" list of 10 central capabilities in order "to elaborate a partial account of social justice" (Nussbaum, 2003, 36). She argues that a list is necessary because "[w]e can only have an adequate theory of gender justice, and of social justice more generally, if we are willing to make claims about fundamental

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60 This is also one of the typical examples showcased by Hans Rosling, one of the creators of Gapminder. "Gapminder is a non-profit venture promoting sustainable global development and achievement of the United Nations Millennium Development Goals by increased use and understanding of statistics and other information about social, economic and environmental development at local, national and global levels. We are a modern "museum" that helps making the world understandable, using the Internet." See: http://www.gapminder.org/ Retrieved on June 10, 2016.

entitlements that are to some extent independent of the preferences that people happen to have, preferences shaped, often, by unjust background conditions" (Nussbaum, 2003, 34). The list has been constructed by researching the *minimum* "good things to be put into a constitution" (Nussbaum, 2016). In her view, "a society that does not guarantee these to all its citizens, at some appropriate threshold level, falls short of being a fully just society, whatever its level of opulence" (Nussbaum, 2003, 40).

She argues that the capabilities approach is a much better evaluative framework than GDP and utilitarianism (Nussbaum, 2003; 2016). In this case, "[t]he well-being of citizens will [now] be measured not by the sheer amount of income and wealth they have, but by the degree to which they have the various capabilities on the list" (Nussbaum, 2003, 53). She acknowledges a certain overlap between capabilities and Rawls's primary goods (50), and argues that if central capabilities are understood as such, "we can begin designing institutions by asking what it would take to get citizens up to an acceptable level on all these capabilities" (55). Nussbaum's account has been criticised, for example, by David Crocker (2008, 191). In his view, philosophers cannot take over the duty and freedom of citizens to deliberate and decide by themselves how they should live. Against this claim, she holds several arguments. First, that the list is thin and narrow, so that it can accommodate any moral view (Nussbaum, 2003, 42; 2016). Second, that she lists capabilities and not functionings, so that having those options available does not force anyone to choose them (2003, 49). Third, for political purposes, she lists the minimums, implying that individuals are to define their maximums (2003, 49; 2016).

1. LIFE	Being able to live to the end of a human life of normal length; not dying prematurely, or before one's life is so reduced as to be not worth living.
2. BODILY HEALTH	Being able to have good health, including reproductive health; to be adequately nourished; to have adequate shelter.
3. BODILY INTEGRITY	Being able to move freely from place to place; to be secure against violent assault, including sexual assault and domestic violence; having opportunities for sexual satisfaction and for choice in matters of reproduction.

4. SENSES IMAGINATION AND THOUGHT	Being able to use the senses; being able to imagine, to think, and to reason and to do these things in a "truly human" way, a way informed and cultivated by an adequate education, including, but by no means limited to, literacy and basic mathematical and scientific training. Being able to use imagination and thought in connection with experiencing and producing expressive works and events of one's own choice, religious, literary, musical, and so forth. Being able to use one's mind in ways protected by guarantees of freedom of expression with respect to both political and artistic speech and freedom of religious exercise. Being able to have pleasurable experiences and to avoid non-beneficial pain.
5. EMOTIONS	Being able to have attachments to things and people outside ourselves; to love those who love and care for us, to grieve at their absence; in general, to love, to grieve, to experience longing, gratitude, and justified anger. Not having one's emotional development blighted by fear and anxiety. Supporting this capability means supporting forms of human association that can be shown to be crucial in their development.
6. PRACTICAL REASON	Being able to form a conception of the good and to engage in critical reflection about the planning of one's life. This entails protection for the liberty of conscience and religious observance.
7. AFFILIATION	A. Friendship. Being able to live for and to others, to recognize and show concern for other human beings, to engage in various forms of social interaction; to be able to imagine the situation of another and to have compassion for that situation; to have the capability for both justice and friendship. Protecting this capability means, once again, protecting institutions that constitute such forms of affiliation, and also protecting the freedoms of assembly and political speech. B. Respect. Having the social bases of self-respect and non-humiliation; being able to be treated as a dignified being whose worth is equal to that of others. This entails provisions of non-discrimination on the basis of race, sex, ethnicity, caste, religion, and national origin.
8. OTHER SPECIES	Being able to live with concern for and in relation to animals, plants, and the world of nature.

9.PLAY	Being able to laugh, to play, and to enjoy recreational activities.
10.CONTROL OVER ONES ENVIRONMENT	A. Political. Being able to participate effectively in political choices that govern one's life; having the right of political participation, protections of free speech and association. B. Material. Being able to hold property (both land and movable goods); having the right to employment; having freedom from unwarranted search and seizure.

Table 6. Martha Nussbaum's list of capabilities. Source: Drawn by Claudia Garduño – all the information appears unmodified, as written by Nussbaum (1997).

Manfred Max-Neef

The works of Sen and Nussbaum have influenced the definition of the indicators that the UN uses globally; hence, their approaches are among the best known worldwide. However, other thinkers have also generated alternatives against the view of development that pursues global hegemony and is based on economic growth. One of them is the Chilean economist Manfred Max-Neef.

The central proposal within Max-Neef's (1989) *Human Scale Development* (H-SD) is his distinction between human needs and human satisfiers. He sees fundamental human needs as finite, few and classifiable[61], universal, and relatively static (they change at the pace of the evolution of the human species). However, sets of satisfiers[62] are defined by each human society in accordance with itself and its time.

Like the Capabilities Approach, H-SD is an evaluative approach that is meant to assess and assist the implementation of social policies. H-SD promotes participatory practices and proposes that "the best development process will be the one that enables improvement in people's quality of life, allowing people and communities to be coherent with

[61] "Those proposed are at the axiological level (i.e. referring to those things we value): subsistence, protection, affection, understanding, participation, idleness, creation, identity and freedom. The need for transcendence is sometimes included" (Cruz, Stahel, and Max-Neef, 2009, 2023).

[62] For analytical purposes, Max-Neef has identified five types of satisfiers:" violating or destructive satisfiers, pseudo-satisfiers, inhibiting satisfiers, singular, and synergic satisfiers, depending on how they relate to the whole needs system." (Cruz, Stahel, and Max-Neef, 2009, 2024)

themselves"[63] (Cruz, Stahel, and Max Neef, 2009, 2022–2023). Max-Neef's approach, in step with other Latin American authors (e.g. Larraín, 2005), questions the possibility to modernise or develop the region in accordance with the model established by the West. H-SD enables and even encourages the practice of a Greek-like oikonomy (Cruz, Stahel, and Max-Neef, 2009); it enables a high plurality of configurations and supports the existence of a third world that intentionally lives in a manner that differs from those practised in the first world. Moreover, Max-Neef opens up a possibility that had been widely neglected before: that a truly alternative future might emerge from communities that keep alternative ways of living alive, even though those are the communities that have been classified among the world poorest.

"[A]ny unsatisfied or not adequately satisfied human need reveals a form of human poverty", therefore rather than speaking of poverty, the matter should be approached in the plural, *poverties* (Cruz, Stahel, and Max-Neef, 2009, 2024). In that sense, a person can be rich in one sense and poor in others. And this is not dependent merely on economic means and goods, because those are only types of satisfiers. "Many non-traded (and sometimes non-tradable) social and ecological goods are fundamental to ensure human subsistence and well-being as well" (ibid.).

Within Max-Neef's H-SD, attention should be paid to his classification of resources into conventional and non-conventional. While conventional resources are those that get exhausted as they get utilised, non-conventional resources, like social consciousness, organisational culture, and popular creativity are lost when they are not in use. Non-conventional resources are central to the H-SD approach, which aims for self-dependency or autonomy of communities.

> …the main agent of transportation is the capacity of the human being to activate his or her sensitivity, imagination, volition and intellectual talent in an effort that extends itself from personal development to social development thereby generating a process of integration of the individual and the collective. It is precisely this synergic capacity of non-conventional resources which make them indispensable for Human Scale Development. And it is because of their historical and cultural dimension that a policy of using non-conventional resources is much more than an economic policy. (Max-Neef, 1989, 80)

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63 Which is largely in step with Oscar Hagerman's observations when working within communities, and which he defines as harmony.

Taking a stand

From this work's perspective, political philosophy has an important role to play if design is to advance its ethical groundings, thus, the thorough historic overview presented above. Here, the main intention has been to reflect on how it took centuries to shape the currently dominant paradigm, and also that one of its distinctive traits is its intolerance towards other paradigms, and its insistence on converting them all into its exact (defective and unsustainable) copies. Nonetheless, this has also led to the acceptance that, up to this day, very diverse paradigms have always co-existed. Here, it is consistently argued that the emergence of the term Sustainability simultaneously demonstrates the will to break with the current dominant paradigm and the determination to build a new one. The new paradigm necessarily has to pay more attention to the environment, and the ethical debate has to regain importance. More specifically, this work insists that designers should see themselves as human beings (not as "special human beings") who share responsibilities with all humankind, and so strongly believes in the following words by Martha Nussbaum:

> … If we do not insist on the crucial importance of the humanities and the arts, they will drop away, because they do not make money. They only do what is much more precious than that, make a world that is worth living in, people who are able to see other human beings as full people, with thoughts and feelings of their own that deserve respect and empathy, and nations that are able to overcome fear and suspicion in favor of sympathetic and reasoned debate. (Nussbaum, 2010, 143)

Philosophers might argue that the only correct manner to deal with ethics is by fully adopting one moral doctrine and making use of their specific concepts in full rigour, while also making use of their well-established methods. However, they also acknowledge the difficulties of thoroughly implementing a moral doctrine in the real world, as well as the need for different disciplinary areas to advance their own moral discussions (Hellsten, 2015). When one analyses the difficult philosophical debates around the field of ethics, or at the very least earns awareness that they exist, the definitions that conceive design largely as a means of boosting economic growth lose strength. Moreover, the economic dimensions of design might come across as restrictive for the true potential of design practice.

If a single doctrine was to be chosen, this research would sit more closely, although not fully, with the Capabilities Approach as proposed by Amartya Sen. Some reasons why this work does not follow Ilse Oosterlaken, Annemarie Mink, Andy Dong, Crighton Nichols, and others in their direct application of the capability approach in design practice were already explained in Chapter 2.4. Here, and in the following chapter, the discussion moves towards justifying the choice of studying the very essence of Sen's approach and not the approach in itself. In addition, it will be argued that freedom as conceived by Sen does not cover all the interests of this research (Sustainability), and therefore has to be complemented with other concepts and perspectives (mainly Immanuel Kant, Gerald MacCallum, and Manuel de Landa)[64].

John Rawls certainly contributed an insightful piece of political philosophy that did not challenge the Aristotelian idea that happiness is the greatest end sought by men. However, he treated it as a personal matter that each individual might reach in accordance with their own rational plan. Rawls proposed that society should, instead, be primarily concerned with providing the conditions that would enable all individuals to achieve their own rational plans. Thus, social justice is seen as a primary condition for the achievement of individual happiness.

Amartya Sen has proposed seeking for the applicability of justice, or more precisely, for the reduction of injustice. Freedom is his key concept because different people can be happy with very different achievements, and so people should be left to decide what kind of life they want to live, and they should also have the actual opportunity to achieve it. Sen's insight is central within this research because it contends hegemony by giving room to a plurality of co-existing paradigms.

In *Capabilities as Fundamental Entitlements*, Nussbaum (2003) argues against Sen's general endorsement of freedom. On the one hand, because not all freedoms are good (such as freedom to pollute the environment) (44), and on the other, because not every citizen necessarily conceives freedom and autonomy as central values (49). In Nussbaum's rationale, endorsing human dignity, and providing every individual with a minimum set of capabilities, prevents the possibility that people are treated as means

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64   In my view, philosophers, ethicists, and people working in development studies consider the capability approach to rightly synthesise concepts from different fields that have been the subject of debate for several decades. In my case, however, the capabilities approach became the entry point to concepts and debates that design should not keep ignoring.

rather than as ends. I agree with Nussbaum that freedom requires certain limitations, but I disagree with her approach to human dignity.

Perhaps more in step with Sen, I would argue that dignity is to be freely defined by different people. This belief is illustrated in Harriet Beecher Stowe's (2009 [1852]) *Uncle Tom's Cabin*. Tom, the main character, is a very skilful, responsible, and honourable person, but he is a slave. Nothing he can do would change that situation. He is also very unlucky and continuously suffers mistreatment. While it is easy to understand that Tom lives a situation of deprivation and injustice, he is not responsible for it; the society in which he lives is to blame. Tom's life fails to fulfil most of the capabilities listed by Nussbaum, and thus, can be labelled as undignified. Nonetheless, with the very little freedom he has, Tom never betrays his own principles, and there is no hint that he lacks self-respect. Tom would rather be described as a character with much dignity.

Nussbaum and Sen seem to reciprocally encourage each other to advance their own perspective and, at the very least, acknowledge that the tension is unavoidable[65]. At least partially (since both of them endorse plurality), each of them stands on one end of the paradox commonly addressed as universalism and cultural relativism, and which is no different from the one encountered by those who pioneered empathic design, which was introduced in the previous chapter. Other human beings cannot be completely similar nor completely different from oneself; however, are they sufficiently similar to agree upon a single conception of social justice? Can a single partial moral doctrine act as a module to accommodate all different perspectives globally (in step with Nussbaum)? Or else, should it be simply agreed that we cannot agree (in step with Sen)? It is dubious that this argument will ever be solved; certainly, not within this work. However, these dilemmas were encountered within the Aalto LAB Mexico project, as will be discussed in the second part of this book, and for that reason, it is necessary to further explore the debate.

Nussbaum proposes a potentially universal list. Sen is not against the definition of lists or capability sets, but he advocates for lists to be contextually sensitive and defined through democratic deliberation. When discussing development versus tradition, he states that "it is the people directly involved who must have the opportunity to participate in deciding what should be chosen" (Sen, 2001 [1999], 31).

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65 In *Capabilities as Fundamental Entitlements*, Nussbaum is very critical of Sen's reluctance to define a list of central capabilities, but in the end she acknowledges his comments in the construction of the piece.

One of the strongest arguments in favour of Nussbaum and her proposal of assessing capabilities as a minimum set of features shared by all human beings is the prevention of the adaptive preferences phenomenon, in which people get used to living in whichever circumstances. Sen (2003 [1989], 45) explains this notion through the fact that people who live in conditions of poverty do not lament their reality all the time and make their lives more bearable by getting joy from any small achievement. Sen points at those situations in which people learn to live lives of limited choices (or have adapted their preferences) as cases in which justice can be advanced by enlarging people's capabilities. Thus, Nussbaum's list can be used as a tool for assessing if a person has adapted to living under conditions of deprivation or injustice.

Nussbaum argues that, in step with Rawls's political liberalism, grounded on the principles of justice of equal respect for a plurality of perspectives, she has concentrated on creating a thin and narrow conception of value with a potentially universal application (Nussbaum, 2015, 70). Nevertheless, as discussed above, a consistent argument against universalist perspectives[66] is that they are primarily constructed from a Western perspective, and thus are of an imperialistic nature (Hellsten, 2015, 85). In that sense, if the argument of preventing the adaptive preferences phenomenon was applied every time, there is the risk that people who intentionally live a different type of life, and genuinely value it, would nevertheless be grouped among the third world, the developing nations, or the world's poor.

In Herder's words:

> The tendency to evaluate other cultures in terms of one's own culture results in cultural arrogance. The values and ideals of different cultures are incommensurable and irreducible among them. Therefore, an ideal culture or society cannot exist. "The sole idea of a superior European culture is an evident insult to the majesty of nature". Universally valid values do not exist[67]. (as quoted in Larraín, 2005, 87)

Sen (2009, 355), states that "there is something very appealing in the idea that every person anywhere in the world, irrespective of citizenship, residence, race, class, caste or community, has some basic rights which others should respect". Thus, it might be

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66 That perspective has been shared by several dominant ethical doctrines, including that of Immanuel Kant, and the Universal Declaration of Human Rights.

67 My own translation from Spanish

difficult to understand that human beings could disagree on the very basic notions that are meant to make them equal. In order to illustrate how several different and even opposite notions of justice can be sustained at the same time, Sen (2009, 12–15) introduces the parable of *Three Children and a Flute*:

Three children quarrel over one flute, and the reader should decide which one of the three deserves to get the flute. Anne argues that she is the only one who knows how to play the flute. Bob argues that he is the poorest among the three, and he has no toys of his own. Carla, for her part, argues that she has made the flute herself, and it took her several months to complete it. Sen claims that theorists aligned with different ethical doctrines will most likely adopt different resolutions: an economic egalitarian would give the flute to Bob, a libertarian would give the flute to Carla, and the utilitarian might give it to Anne. All of them can present solid and reasonable arguments that enable them to hold their choice as the obvious resolution. Comparatively, none of them stands out as the best option.

However, Nussbaum has other strong reasons to address the commonalities rather than the differences among human beings. She pleads for the need to strengthen the fraternal ties among the whole human population, especially in these times where we are all closely interdependent and a decision made somewhere on the planet can have consequences in a far-off place, on the other side of the world. Thus, individuals' awareness of others is the necessary condition for "seeing ourselves as 'citizens of the world'" (Nussbaum, 2010, 80).

At this point, it is worth introducing the perspectives of Jeremy Rifkin (2009) and Elizabeth Baeten (2009), who go much further than Nussbaum. According to Jeremy Rifkin (2009) in *Empathic Civilization*, empathy plays a key role in inter-individual linking, not only among humans, but also among other species. Empathy, he says, is now being studied in the brain, where scientists have discovered the *mirror neurons*, which control sociability, solidarity, sense of belonging, and empathy. He refers to several scientific experiments throughout his book, including one which was conducted about fifty years ago, in which rats that had been trained to push a lever to obtain food stopped doing so when it was visible to them that this action also delivered an electric shock to another, neighbouring rat[68]. When the same experiment was conducted with

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68 The experiment cited by Rifkin is: de Waal, Frans. *Primates and Philosophers: How Morality Evolved.* Stephen Macedo and Josiah Orber, eds. Princeton, NJ: Princeton University Press 2006.

monkeys, it was observed that they would stop pushing the lever for even twelve days; monkeys would rather starve than cause pain to someone else (Rifkin, 2009, 97–98).

Elizabeth Baeten (2009, 73), from the field of evolution studies, for her part, states that "…if we take seriously the notion that our facial musculature and expressive emotions are adaptations that aided in regulating social relations in our evolutionary past, then it makes a great deal of sense that, whatever cultural differences we might find, there is also a solid core of stable similarities across cultures and through history." Some of Baeten's examples include the human desire for companionship and friendship, or the capacity to be empathic and show compassion. In fact, she goes much further and pleads not to exclude the theory of natural selection from any moral account, if it is to be taken seriously (72). Thus, in Baeten's account, the origin of morality can be traced further than the society into which one is born; it can be traced to the natural environment from which human beings evolved.

Those are very powerful reasons for arguing that global justice must be grounded in some notion of equality, a notion shared by Nussbaum, Max-Neef, and Sen, even when the latter has not endorsed a universal list of minimums (other than in the HDI). The fact that they do not share a vocabulary complicates the debate. Rawls conceived liberties as goods; Sen and Nussbaum argue that it is more precise to state that capabilities are effective freedoms; and Max-Neef, for his part, conceives freedom as a basic need. In any case, another thing that the three authors have in common, perhaps Max-Neef and Sen to a greater degree, is their appreciation for plurality and the freedom that people around the world should have in deciding how to live their lives.

Martha Nussbaum has claimed that her list is thin and narrow, that following Rawls, it is meant to be a "partial moral conception" and to work as a module that can accommodate any other moral conception, including those that do not put freedom at their core (such as authoritarian religions) (42-43). In my view, Sen accomplishes this in a better way, because his notion that people should be left alone to choose which type of life they want to live, includes the freedom to not endorse freedom. Choosing to align with Sen does not disregard the possibility that people will democratically build a list of capabilities identical to that of Nussbaum; additionally, a high appreciation for freedom cannot refute the argument that a list like Nussbaum's or Max-Neef's can be useful when assessing if people are living in situations of injustice.

At this point, it is worth remembering two things. First, that this research project has been constructed in loops, moving constantly between theory and practice; and second,

that in development studies, "the choice of the unit of analysis[69]… is an ethical decision" (Crocker following Ravallion, 2008, 386). The direct implications of studying Design as Freedom in practice through Aalto LAB in an indigenous community are of two kinds. First, capabilities or freedoms are required to be seen in the collective or social dimension, and second, Sustainability is further addressed, showing that freedom should not be limitless, which will be further discussed in the following chapter.

Arguably, the right to self-determination is inherent to indigenous communities, and thus the relevance of collective capabilities (Murphy, 2014; Bockstael and Watene, 2016). Within capability approach research, not much attention has been paid to groups, but there is no reason to believe that freedoms cannot be conceived in the collective (Robeyns, 2005, 109-110). In fact, Smith and Seward (2009, 214) argue "that Sen's notion of capabilities and freedoms implies an ontology of a relational society. Within a relational conception of society, a particular capability is the outcome of the interaction of an individual's capacities and the individual's position relative to others in society". For example, if we borrow the second capability of Martha Nussbaum's list: "*Bodily Health*. Being able to have good health, including reproductive health; to be adequately nourished; to have adequate shelter", it can be assessed at an individual level, but achieving good health or adequate nourishment, and even shelter, are highly complex matters that, in all societies, result from social interactions, starting from agriculture and farming, and all the logistical practices between the field and somebody's mouth.

As stated above, Nussbaum (2003) has criticised Sen's absolute endorsement of freedom on the grounds that not all freedoms are good, and that having no limitations on freedoms could result in harm to others. Overconsumption has been directly linked to environmental damage and climate change; Heyward (2011, 11) states that "climate change constitutes a problem of justice". This is especially the case for indigenous people, who commonly value the environment instrumentally (Watene, 2011, 14), and who are directly dependent on ecosystem services. Moreover, the pursuit of limitless freedom could cause something like the adaptive preferences phenomenon but to the other extreme: the impossibility for overconsumers to ever be contented. By no means is this suggesting restricting people's freedoms, but, in step with Cortina (as referred by Crocker, 2008, 238), it approaches Sustainability as an Aristotelian virtue, to open a reflective space to overconsumers, where they could make more prudent decisions regarding other people and the environment (which she calls *cordura*). If the capabilities

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69 The assemblage, a unit of analysis formed by both the society and the environment (natural and built), will be introduced in the following chapter.

approach enables underconsumers to think that they should not be contented with too little, could it also encourage overconsumers to think that they might reach contentment with a little less?

Sen (2009, 371) acknowledges that "… issues related to the process aspect of freedom demand that we go beyond seeing freedom only in terms of capabilities", which I believe to be the case within this project, ultimately concerned not with the state of affairs, but with the actual expansion of freedoms. The essence of Sen's capability approach is therefore complemented with a variety of perspectives.

This work aims to find a way in which the design profession can be practised honourably, in a similar sense to Aristotle's conception of a higher type of life. As explained by J.S. Mill, this research project is of the kind that is triggered by a feeling that indicates that something is not right with the way of life for which we are designing. This feeling is so strong that it has to be examined more thoroughly, as recommended by Sen. Ultimately, it becomes evident that what really moves this research from theory to practice is the awareness that injustice can, in fact, be reduced. In step with Nussbaum, it should be stated that it is unfair that a great number of people do not get to choose what kind of life to live; however, as noted by Zea, imposing a way of life on others is intolerant. People should be free to become and to do whatever they want to, as argued by Sen. Nevertheless, the advancement of human freedoms can no longer neglect the freedoms of other species and of the environment, as noted by Baeten. Therefore, what is needed is a Kantian conception of freedom tied to a moral and rational choice. Inspired by Max-Neef, it should be said that communities that still live in close connection with their natural environments might therefore become a great source of inspiration. Given that "social structures and their mechanisms emerge from the relations between people and relations between people and nature" (Smith and Seward, 2009, 224), freedom has to be constructed in the social sphere, and must give room to the realisation of individual rational plans, to follow Rawls. The next chapter introduces such a conception of freedom and ultimately explains what is meant herein by Design as Freedom.

Conceptualising Design as Freedom

S en's proposal of seeing development through the Capabilities Approach, and more specifically as the expansion of the freedom(s) that people have to live the lives they have reason to value, is certainly inspiring. Nevertheless, its anthropocentric construction prevents environmental limits and considerations to be included in the model; paradoxically, this can be achieved if the focus is on freedom[70]. This reasoning is in step with that of Fry (2010), when he explains that sustaining life depends upon the establishment of certain unfreedoms. Nevertheless, this work does not support his view that given that Sustainment cannot be achieved by democratic means (4), a dictatorship of Sustainment must be imposed (124).

This work aligns with those who believe that humans are able to make a reasoned choice and constrain their own actions (e.g. Aristotle, Kant, Mill, Rawls, Sen, Nussbaum). In the past, these discussions have exclusively focused on human-to-human relations. Here, the model of assemblage as proposed mainly by Manuel DeLanda (2013 [2006]) is adopted, in order to cut across the nature-culture divide and enable the serious consideration of setting environmental limitations on the expansion of human freedoms.

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70   This statement refers specifically to the capability approach as conceived by Amartya Sen. Martha Nussbaum's includes "Other species", the capability to live with concern for and in relation to other species; however, one could argue that the environment is valued instrumentally rather than intrinsically, as other species are not recipients of the capabilities in the list. David A. Crocker (2012, Chapter 7) gives an account of the work of the Spanish philosopher Adela Cortina, in which she uses a Kantian notion of freedom in order to navigate the paradox between overconsumption and underconsumption. The latter notion is very much in step with the discussion below.

Most importantly, this work is a call to celebrate human diversity. Therefore, in order not to fall in contradiction, it should be openly clarified that the framework hereby proposed is neither intended to become a dictating guide nor to disregard the fact that others might value different frameworks (including the existing one). If, in positioning itself, *Design as Freedom* becomes a critique of the current systems, it is very well expecting to receive critique back from the advocates of those systems; thus, the argument is that this work intends nothing except to offer a reasoned alternative.

Kant's scalable formula

The philosophical debate on freedom goes from questioning its mere existence to classifying it into types; it is very frequently linked to other concepts, such as justice, equality, morality, and reason. Most of the great philosophers throughout time have dedicated at least part of their work to talking about freedom. It is not my intention to make a thorough philosophical review or to contest the most brilliant minds in history, but rather to explain to the reader, who is, most likely, a designer, the position where this work stands within the wider freedom debate. The fact that all theories are inevitably contextual makes it very difficult to ground any current work on a single theory.

Nonetheless, and despite it being highly controversial, the philosophical system of Immanuel Kant seems to provide a solid structure to build on. As stated before, he did not introduce a new moral principle. His actual contribution was generating a new formula that described the interaction of elements that had consistently appeared in the historic philosophical debate about freedom (Kant, 2006 [1778], 20). The time lapse of more than 230 years that holds us apart from Kant's work has been more than sufficient to enable the emergence of new perspectives, including opposite ones that seem to completely refute Kant. However, Kant's formula seems to give room to integrating the concept of sustainability into the debate. Ultimately, and by making use of the metaphor of assemblage, which will be introduced in the following section, this section will explain the notion of Design as Freedom.

Throughout his work, Kant presented slightly and sometimes substantially different relationships among three human characteristics: freedom, morality, and reason[71]. The

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71 Beauty and the sublime are also key elements within Kant's Moral Theory. He explored this concept most widely in *Critique of Judgement* (*Kritik der Urteilskraft, 1790*), the third of his Critiques which

main confusion is whether he inclined towards human beings being rational and free and therefore moral, or if human beings are moral and free above or before (a priori) being rational. His appreciation of human beings, which was also introduced in the previous chapter, as both phenomena (members of the sensible world) and noumena (members of the intelligible world) enabled him to portray those three characteristics both as sources and products of the others, as well as innate to human beings (Kant, 2006 [1778], 145). As a matter of fact, Kant's propositions have been extremely influential and are still the focus of philosophical debate.

In *Critique of Practical Reason*, Kant (2006 [1778], 131) derived individual morality from two characteristics that he found to be intrinsic: that of being free and that of being rational. Conversely, Kant saw moral law as a *categorical imperative*, or an a priori proposition, an innate characteristic, and rather than a rational or metaphysical construction, as an immediate feeling that pushes men to unconditionally act according to duty (51).
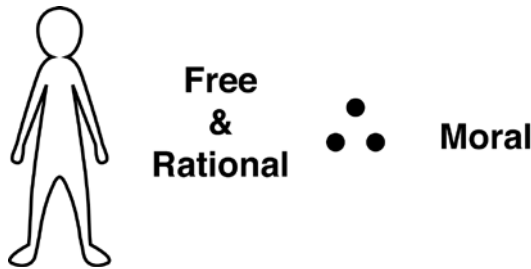

Figure 5. Men are free and rational; therefore, moral. Drawn by Claudia Garduño.

completes his study on the system of all the faculties of the human mind, the system of the higher cognitive faculties, and their related products: (1) Faculty of cognition – **the understanding** – *nature*, (2) Feeling of pleasure and displeasure – **the power of judgement** – *art*, (3) Faculty of desire – **reason** – morality (Kant, 2007 [1790], 351). In that work, Kant establishes connections between morality and the aesthetic, where the beautiful serves as an entry point for morality, as it prepares human beings to love something uninterestedly; moreover, Kant sees beauty as a symbol of morality (Ginsborg, 2014). Kant claims that the power of judgement "is merely a power of subsuming under concepts that are given from elsewhere" (Kant, 2007 [1790], 319), and that "beauty is not a property of objects, but a relation between their form and the way our cognitive faculties work" (Rohlf, 2016). However, he observes that "nature specifies its universal laws as empirical ones, in accordance with the form of a logical system, on behalf of the power of judgement", from which he derives the purposiveness of nature (Kant, 2007 [1790], 328). By employing the concept of God as its intelligent designer, Kant is able to regard nature as a teleological system with (human) moral beings as its ultimate end. He establishes a link with his previous works by stating that human beings are rational and therefore free to pursue their ends by making use of nature. Additionally, by pointing out that "human life has value not because of what we passively enjoy, but only because of what we actively do" (Rohlf, 2016), he implies that it is only by acting morally that human beings can ultimately be free. The concept of beauty has been left out of this particular research as it would evidently widen the discussion far beyond its original limits; nevertheless, it could be a topic to explore in the future.

Throughout his *Perpetual Peace: A Philosophical Sketch* (2012 [1795], 54), Kant seems to portray (in an ideal manner) "the scalability" of his freedom-reason-morality formula. In that, he stated that achieving perpetual peace depended upon understanding that all men live in relation to one another on three different levels: civil, state, and cosmopolitan. First, the categorical imperative enables the reciprocal relationship among two individuals who perform something due to their shared *will,* thus enabling the emergence of the law (63–64). This condition, for its part, allows the emergence of what Kant called the *original contract* (55).
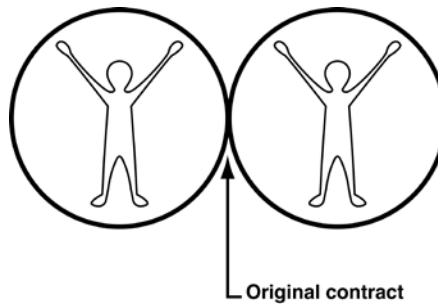

Figure 6. Original Contract. Drawn by Claudia Garduño.

Kant's original contract is what has led others to refer to him as a contractual (e.g. Rauscher, 2012; Rawls, 2009 [1971]; Sen, 2007). Such a social contract referred to the explicit acknowledgement that I make of others' rights and that others make of mine; therefore, it is the means through which everyone's freedoms coexist (Rauscher, 2012). Furthermore, this original contract legitimated a government; for a group of free individuals who constitute a community agree that they depend upon a single legislature that should treat them as equal citizens (Kant, 2012 [1795], 55). Kant acknowledged that there is evil in human nature (64), for which reason, the main function of the state is to hinder all hindrance to freedom (Rauscher, 2012).

The concept of *property* properly exemplifies how the categorical imperative scales into a social contract, then the state, and finally, the wider global scale. Kant derived individual property rights from reason, explaining that things or objects might be needed to realise free chosen ends (Guyer, 2005). Furthermore, although Kant recognised that the action that precedes official ownership is the empirical appropriation, property is never a unilateral claim, but a mutual obligation (Rauscher, 2012). That civil condition, through which someone's ownership of something is recognised by others, is in fact the first of the two components of the social contract. The second component, as mentioned above, is the justification of the power of the state; the state is granted power (and given the duty) to act as mediator in cases of disagreement, and especially in property matters.
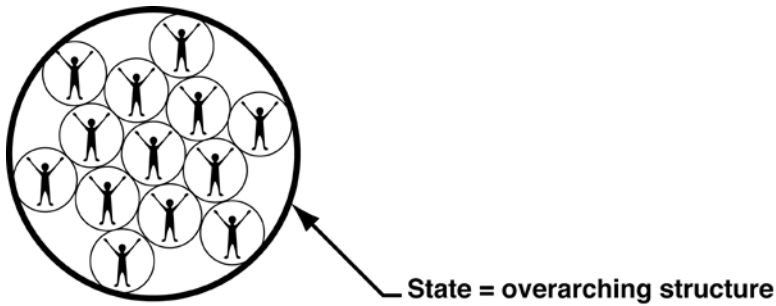
Figure 7. Kant extrapolated the discussion on property to the global sphere. The State as an overarching structure. By Claudia Garduño.

should not be a unilateral claim. The greatest European Imperialism, empowered by the Industrial Revolution, started being shaped during his lifetime. Although Kant never left his native city, Königsberg (Zulueta Fülscher, 2012, 5–6), Prussia was one of the world powers of the time, and it was leading the Seven Years' War fought both in Europe and North America. He was critical about lands overseas being invaded by the European nations, as they were already inhabited and therefore somebody's property (Kant, 2012 [1795], 72–73). In *Perpetual Peace: A Philosophical Sketch* (2012 [1795], 63), he proposed a world order as a league of nations. Somehow foreseeing the formation of the United Nations, he argued that this league should be a league of peace that, rather than dominating the states within it, would have the role of securing their freedom. This federation of states would extend through the free association of more states (63–67).

It proves rather contradictory that Kant argues for the need for a power figure to mediate conflicts on both local and global scales. If all individuals were inherently moral (or moral due to a natural order that emerges from being inherently free and rational), and if individuals are able to coexist through the civil condition brought about by the social contract, why would there be any room for disagreement? If it were true that societies were as homogenous as Kant describes, there would be no need to have a mediating
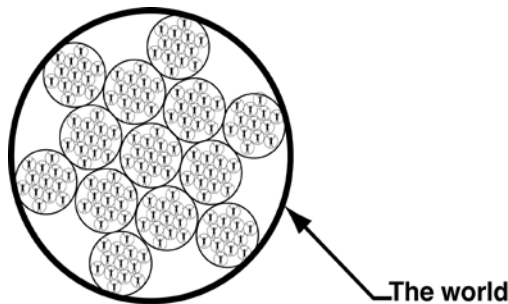

Figure 8. The world as a league of nations. By ClaudiaGarduño.

figure, such as the state. If the state is needed, it is because not all individuals respect the agreement, the social contract (European Imperialism rightly exemplifies a disobedience to the social contract). "Any wrong doing could only show that an agent is not rational and therefore not responsible at all" (Sidwick, as quoted in Guyer, 2005). Moreover, Kant's reasoned scalable formula of universal application can be criticised for promoting global homogenisation, without being able to prove that everyone in the world would equally distinguish right from wrong.

Free Will: Is there reason, morality, or freedom at all?

The relation between morality and freedom is one of the most recurrent topics in the history of philosophy, commonly referred to as the existence of a strong free will and the ultimate moral responsibility. Reason is much less frequently incorporated into that debate. Many philosophers, but especially those aligned to the non-freedom (or pessimist) view, would start by arguing that reason is not necessarily an inherent quality of all individuals, that some are more reasonable (respond naturally to rational considerations) than others (Feinberg, 2005), and that in fact, it implies having a certain type of motivational set. Therefore, being reasonable is nothing but matter of luck (or grace). In any case, in order for free will to exist, one would have to be ultimately responsible for what one *does*; following that, one would have to be ultimately responsible for what one *is*.

Kant eventually realised this problem, but got past it by arguing that self-creation takes place; by saying that there are men who, from childhood, develop certain maliciousness, and that even as children, they understand that the accusations made in return are grounded, and they thus remain responsible for their actions. Therefore, even in that case, the condition must be an effect of their free choice (Kant, 2006 [1788], 126). Moreover, Kant states that whoever commits a crime is justly already accepting the punishment that has been morally legislated. That person is therefore willing to sacrifice their own happiness. In this case, there is no longer any maliciousness in the action (58).

Strawson (2005) explains that pessimists argue that, in order to be fully responsible for what one is now (N_1), one should have been fully responsible for what one was before (N_0), which is not possible. No one can be *causa sui*. Next, if one cannot be responsible for what one *is*, one cannot be responsible for what one *does*. This extremely powerful logical reasoning is the basis for stating that full moral responsibility cannot exist, which,

for its part, implies that a strong free will cannot exist, either. Furthermore, it logically demonstrates that no punishment can ever be fair, because people act in accordance with what they are, and they cannot be ultimately responsible for such a thing[72].

The pessimists' argument proves Kant to be irrefutably wrong, and yet the subject keeps on being the focus of philosophical debate. As Strawson (2005, 292) states, this debate is a philosophical roundabout, and probably will be for as long as men can think, because "powerful logical or metaphysical reasons for supposing that we cannot have strong free will keep coming up against equally powerful psychological reasons why we cannot help believing that we do have it". What he means is that despite the general agreement that the reasons given by the pessimists demonstrate the impossible existence of both a strong free will and an ultimate moral responsibility, the convention is that they actually exist. On one hand, the arguments of the pessimists are irrelevant in real life, where everyone faces situations of choice on a daily basis. On the other hand, juridical institutions exist and function in practice all over the world, while moral responsibility is not questioned over guilt of crime.

We cannot reasonably prove it, but freedom can be taken for granted

The phenomenology of choice accounts for lived experiences of choice, which can in no way be sensed as determined (Strawson, 2005, 292). On a daily basis, one doubts, hesitates, and is aware of the possibility to choose one or another, or not to choose at all; one acknowledges that one of the choices is morally better than others. For as long as someone experiences a "fully explicit self-conscious awareness" (293), one experiences being morally responsible[73]. In response to this view, pessimists argue that this description explains the fervent belief in the possibility of ultimate moral responsibility, but does not demonstrate its existence.

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72 Personality traits are most likely genetically determined, and some other factors that shape the identity of a person are socially and environmentally influenced. A person can never be fully responsible for those factors. Furthermore, consider that people can sometimes act in unexpected manners because of a chemical unbalance in their bodies.

73 Rawls concept of rational plan, might be an example of individuals acting autonomously.

Evidently, this work cannot be anchored in the pessimists' leading argument, or it would have to end right here, concluding, by simple deduction, that freedom cannot be driven through human effort. Hence, design and all the other human disciplines cannot deliver freedom. Since this work does not aim to do what cannot be done – proving the pessimists wrong – it can only take a pragmatic turn and, in step with moral psychology and phenomenology of choice, argue that moral responsibility and free will are, in fact, experienced in real life (if not in their ultimate forms, at least partially).

Therefore, this discussion returns to Kant and his observation that the notion that we should pursue the highest good obliges us to presuppose first, that it is possible to achieve it; but also to assume the possibility of what can neither be proved nor refuted – in his case, God, freedom, and immortality (Kant, 2006 [1788], 173). In a similar manner, even if free will did not exist, believing in it could actually result in good things[74].

This work holds that freedom, morality, and reason are interrelated. It also recognises the existence of a priori propositions such as reason, personality, and temperament, which at least partially determine the individual. However, and given that free will is found to be individualistic, this project turns towards those who propose that every human being is born into a social environment, which therefore precedes the individual (e.g. Arendt, Rifkin and Baeten). Notions from evolutionary psychology are borrowed in order to look at free will – the ultimate moral responsibility debate from a different perspective. Rather than observing the matter on the scale of the individual, it is looked at on the scale of the collective. This perspective and the integration of the term sustainability into the discussion disrupt Kant's original propositions, and specifically, his views on property and the social contract.

As expressed by Elizabeth Baeten (2009, 65–66): "Human beings, as products of natural selection, are social animals. Humans did not become social; we became human (as individuals and as a species) within already established patterns of social relations… Evolutionary history does not move from solitude to sociality and an individual's life trajectory does not move from insular to gregarious. These social conditions are necessary preconditions for the development of unique human individuals." Although he claims to be mainly concerned with the enlargement of individual freedoms, Amartya Sen (2001 [1999]) does not disregard this fact, as he states: "There is a deep complementarity between individual agency and social arrangements … we have to see individual freedom as a social commitment" (xii).

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74   This observation was made by Ossi Naukkarinen.

Social environments could be addressed as an a priori condition into which a person is born. A person is greatly shaped by their social environment; from it, they will learn a language, shape their beliefs (DeLanda, 2013 [2006]), and acquire ways of doing. Society will not fully determine the individual, as stated before; the person's temperament remains merely *a matter of luck*. However, the society into which a person is born is at least partially responsible for the person's moral understanding. Moral systems change through time, so that what people living in one time found to be completely reasonable might no longer make any sense; for example, not too long ago, women were not allowed to vote.

Another example, which is even more alarming, is the phenomenon of slavery. During those times, and within their paradigm, 'negroes' were not people (humans), they were merely property objects, and they could be exploited as such within a moral system that made perfect sense to the people who lived through it. Sadly, even some slaves shared this view (Menand, 2002, 3–22). Individuals who exploited others cannot be blamed now for their lack of awareness. Fortunately, "not only are men a product of history, but history is also a product of men" (Fromm, 1987 [1941], 34). To put it in Strawson's terms, a generation that acknowledges the practice of an injustice of any kind within their systems is not ultimately responsible for generating the unjust practice (N_0), but it has the means (and responsibility) to make the adjustments towards a more just practice (N_1)[75]. The new generation is born under the N_1 paradigm, for which their parents were at least partially (never ultimately) responsible.

If this reasoning was applied to our current times, the structural failure might be called *un-sustainability*, following the design theorist Tony Fry (2010). Sustainability is a disruptive concept that not everyone finds convincing; there will be many that will not appreciate an understanding of freedom bound to this concept. However, a growing number of people, including professionals and academics, sum up the idea as being that a lot has to change in our current behaviour if life on the planet (including human) is to subsist for long.

Introducing sustainability into the Kantian formula described above disrupts the relations between freedom, morality, and reason, but also his understanding of concepts like *property* and *original (social) contract*. Kant stated that every object, that is, everything "within human capacity for use" (Rauscher, 2012), should be assumed

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75 This is in step with Crighton Nichols's (2015, 85-87) observation that individual human freedom and morality are in fact constituted by social arrangements.

to be the property of someone. Individuals were entitled to property rights because those objects could be used to perform free-choice actions. The social contract, for its part, delimited where one person's rights ended and someone else's started; it delimited one's own and everyone else's space for free action. Nevertheless, each geographically and historically situated context has delimiting systems of its own, and it can only be retrospectively assessed that those are not always fair.

The maxim of sustainable development introduced in the Brundtland Report in 1987, *that living generations should not compromise the possibility for the coming generations to meet their needs,* challenges the conception of both private and common property. Shared ownership with other human beings is not enough in this perspective, which calls for sharing ownership with generations to come. Furthermore, the introduction of environmental laws starts to do what Rawls rendered impossible: extending the notion of a social contract, in so far as human beings should not only respect each other's rights but also acknowledge the rights of other species and of non-living natural elements (rivers, mountains, etc.).

Hence, sustainability adds to the moral layer of the freedom-moral-reason system. It posits a new boundary to human behaviour: as Tony Fry (2010) states in his book *Design as Politics*, if life is to be preserved, Sustainment ought to become the necessary unfreedom. While Fry is not very positive that humankind will agree to transform their value system voluntarily, herein the hope is that all the time, there will be more people who will resolve to engage in that alternative world view.

Until this point, an account has been made of how the social sphere can be considered an a priori proposition and how it can play an active role in performing an intentional change in the current moral system. The disruption caused by the insertion of the term sustainability into Kant's morality (regarding the concepts of property and social contract) has also been explored. The next step will be to introduce the other great historic-philosophical discussion around the concept of freedom, that of positive and negative freedom, which might have come to a definitive end through Gerald MacCallum's (1967) proposition of a triadic system. This exploration will enable a more comprehensive account of the relation freedom-reason-morality (where morality might include a Sustainability layer), and direct the discussion towards its final phase, in which contemporary thinkers hold different perspectives around that notion of scalability.

Negative and positive freedom

The distinction between positive and negative freedom can be traced back to the times of Jean-Jacques Rousseau, Immanuel Kant, or David Hume. Nevertheless, the difference was first expressed by Isaiah Berlin in 1960 (Feinberg, 2005; Carter, 2012). The main distinction is that those who incline towards a negative conception of freedom say that it implies being free from constraints (the absence of something), where constraints account for actions or policies performed by other human beings, which directly or indirectly obtrude with an individual's intention (Feinberg, 2005); thus, freedom is external to the individual. Those who argue for positive freedom describe it as an internal force of human beings (the presence of something), and describe it as the possibility that one has to act in the way that one desires to. While negative freedom theorists strictly see it from the point of view of the individual, some advocates of positive freedom, like Rousseau[76], argue that freedom is achieved through the collective (Feinberg, 2005).
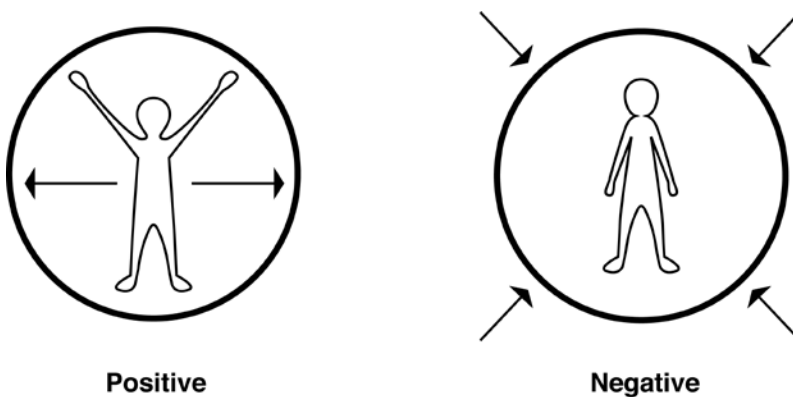

Positive   **Negative**

Figure 9. Positive and negative freedom. By Claudia Garduño.

Another criterion that sets the advocates of positive and negative freedom apart, says Feinberg (2005), is the types and sources of constraints. From the positive perspective, a disability prevents a person from doing as they wish and therefore makes them unfree. Nonetheless, from the negative perspective, being unable does not necessarily account for being unfree. Political and social philosophers argue that within their fields, freedom is, unlike in medicine or engineering, a social relation in which freedom can be seen as a non-social relation. Therefore, one is unfree only when someone else prevents one from

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76 In Rousseau's theory, a community that rules itself according to the "general will" is necessary for the achievement of individual freedom, where the individual achieves freedom by participating in the processes (Feinberg 2005).

doing something; to be unable accounts for being unfree if and only if the disability is caused through human deliberation (even indirectly). Feinberg (2005) exemplifies this by describing a person who does not earn enough to make a living because she does not have the skills that an employer would look for, because she did not have access to the required training, because the national system where she lives is unequal, because there is racial segregation dictated by an apartheid government. In that case, to be unable is to be unfree.

On the other hand, there is the example of the slave. In the negative sense, a slave is absolutely unfree. From the positive perspective, being a slave does not necessarily account for being unfree. We might find the case of a contented slave: the one who in fact enjoys being a slave. If this enjoyment is a product of the slave's own free will, then the slave is actually free. Only in the case where the enjoyment is a product of manipulation, in which the slave has reached the point of considering herself not human, is the slave unfree.

The more philosophers deepened the discussion of negative and positive freedom, the blurrier the distinction between the two became. In an article entitled *Negative and Positive Freedom*, Gerald C. MacCallum (1967) introduced the following example: "Consider a man who is not free because, although unguarded, he has been locked in chains. Is he unfree because of the *presence* of the locked chains, or is he unfree because he *lacks* a key?" (321). MacCallum's proposition is to get around the debate of negative and positive freedom by arguing that "the distinction between them has never been made sufficiently clear, is based in part upon a serious confusion, and has drawn attention away from precisely what needs examining if the differences separating philosophers, ideologies and social movements concerned with freedom are to be understood" (ibid.). He introduced an alternative in which there is just one account of freedom, and in which freedom is understood as a triad. The freedom of a person, subject, or *agent* (what is free?) is always the *freedom from* some constraint, restriction, interference, barrier, or preventive condition (from what?), *to do or become* something intended (to do or become what?) (MacCallum, 1967; Feinberg, 2005; Carter, 2012).

In fact, the capability approach responds to this conflict between positive and negative freedom. Amartya Sen argues against rights that focus on the negative perspective (or control), "imposing constraints on what others are permitted to do". Instead, functionings and capabilities enable rights to be addressed, following a positive perspective (Sen, 1985, 217). Martha Nussbaum, for her part, illustrates this reasoning by comparing the constitution of the United States, written from the negative perspective, and the Indian

Constitution, which "typically specifies rights affirmatively" (Nussbaum, 2003, 38). Although the proponents of the capability approach describe themselves as advocates of positive freedom, Ian Carter (2012) describes them as egalitarians because, like MacCallum, they acknowledge that freedom requires both certain abilities and the absence of constraints. Hence, when following MacCallum's conception of freedom, which prevents syntactic confusion, the language of capabilities becomes redundant[77].
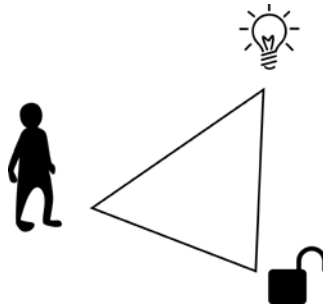
Figure 10. MacCallum's (1967) freedom triad, where freedom occurs when an agent has an intention and is free of constraints to do what is intended. Drawn by Claudia Garduño.

Similarly to Kant's formula, therefore, freedom is understood as a series of interrelations, where reason might be just another word for intention, and where morality, thought of as a self-regulatory mechanism, becomes a constraint that can give room for the notion of sustainability (as the necessary unfreedom proposed by Fry (2010)). However, it is also understood as forces in tension, in which the role of the barrier is not exclusively played by morality but also by other human and non-human components (such as chains). It could then be argued, as will be further elaborated below, that the intention of the agent is never enough; sometimes the process of being released from constraints also involves interaction with others, including non-humans (the key). Thus, "the locus of agency is always a human–non-human working group" (Bennett, 2010, xvii).

Freedom could then be represented as a sphere of action in which there is room for free choice and in which the individual is sovereign. A slave's sphere of action might be reduced to the slave's own body (or mind), and the slave might be contented with this situation, following the natural human disposition to search for happiness. Nevertheless, that is not the type of freedom that this work would look forward to delivering through the practice of design. This work proposes, and it is one of its main contributions,

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77 I have chosen to follow MacCallum's conception of freedom, so, although in the book I reference several proponents of the capability approach, I deliberately favour the term freedom over capability.

seeing design as the process through which agents are empowered, and through which new relations are envisioned, so that the agents are able to overcome the constraints that made them unfree[78] (and go from N_0 to N_1, not too different from Findeli's (2001) conception of design practice).

MacCallum's triad lets us see the similarities between exercising freedom and the design process, but it also opens up the discussion by generating a series of questions. For example, regardless of how big a sphere of action is, if there is something that an agent intends to do but cannot do, is that person free? Is the person just unfree regarding that particular action? Does it depend on the type of action? Are there actions all people should be free to perform? Those questions relate to the wider debate, which was introduced above, on equality and freedom, which John Rawls took forward in the 1970s, and which has influenced the work of Amartya Sen and Martha Nussbaum.
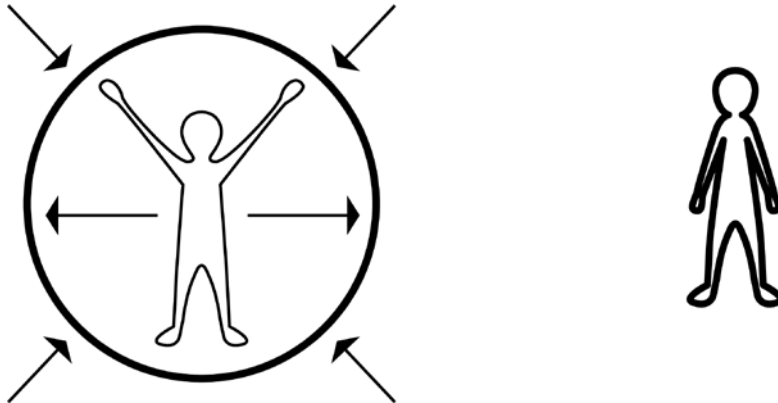

Figure 11. Freedom as a sphere of action, where the smallest sphere is one person's own body and/or mind. Drawn by Claudia Garduño.

This section has offered a glimpse into the difficult philosophical discussions that have existed around the concept of freedom, paying special attention to its *systemic* relations with concepts like morality and reason, and its representation as a triad. The following section introduces the concept of *assemblage*, a model that is borrowed from Manuel DeLanda (2013 [2006]) (although it was coined by Deleuze & Guattari), and that is useful in the process of conceptualising Design as Freedom.

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78 If people in El 20 lack access to an adequate healthcare system, the western-urban-industrial-capitalist way of living also brings constraints, about which it could be said, for instance, that survival is dependent on constant visits to the supermarket.

Assemblage

> Design is "… the intentional shaping of matter, energy, and process to meet a perceived need or desire. Design is a hinge that inevitably connects culture and nature through exchanges of materials, flows of energy, and choices of land use."
> (Ryn & Cowan,1996, 8)

Systems thinking was mentioned above as one of the drivers of the current paradigm change. It must be added that this approach might simultaneously be influenced by the discovery of the environmental crisis and a means to study the environmental crisis. In fact, it is because of this type of thinking that the term sustainability emerged. Basically, the systems approach challenges three things: reductionism, mechanism, and an analytical mode of thought, and introduces expansionism, teleology, and a synthetic mode of thought (Ackoff, 1973, 663). So, rather than viewing things as parts of greater wholes, systems thinking focuses on wholes to which parts belong. If wholes are taken apart, they lose their properties. The reason for this is that parts cannot be studied in isolation.

Designing to enlarge the capabilities (freedoms) of people while minimising the negative environmental impact brought within implies turning externalities into internalities, which could not be achieved by studying either humans or the environment in isolation. Therefore, this task has to be approached through systems thinking. Moreover, it also requires a new *unit of analysis* that goes beyond anthropocentrism, and so cuts across human-centred design, co-design (or participatory design), and sustainable design, since both natural cycles and socio-cultural patterns are given high relevance. The designer needs to understand the ecology of a community: the relations and interactions among its people, and the natural and built environments, so that new relations can be envisioned, for instance as sustainable product service systems. The economic dimension maintains a certain relevance, but as a type of system that is put at the service of humanity, and not the other way around. Ultimately, the proposal herein is to adapt 'assemblage thinking' to the design discipline as a framework to explain and understand the intricate relationship between humans and non-humans, and furthermore, to enable new possible relations to be imagined.

Among practising designers, the word *assemblage* is most likely heavily associated with mechanics, simply because it is used as a synonym for the word *joint*. Most designs, especially the ones that are planned for industrial production, have to deal with designing parts and the joints or assemblages between them. In addition, one could think of

any factory's assembly line. However, *assemblage* is a word of French origin that means "gathering"[79] and that has been widely used in history to convey a variety of things and events. Within governments and organisations, it can be related to the concept of assembly, as a formal meeting or as a board of members; in art, the assemblage has been used as a metaphorical resource associated with collage (Phillips, 2006; Marcus & Saka, 2006); in the architecture and literary spheres, specifically as the "academic interdisciplinary writing during the 1980s" (Marcus & Saka, 2006, 103). In music, it can relate to an ensemble, as "a group of two or more musicians who perform instrumental or vocal music…" (Princeton University in Katula, 2014).

Regardless of all its different connotations, assemblage has one clear denotation. An assemblage entails putting together several parts (which are wholes in themselves) to form a new whole. This whole is non-permanent because the quality of being assemble-able is inseparable from the possibility of being disassembled.

Here, the term is used in a similar fashion to when, in the seventies, assemblage emerged in the field of philosophy of science, alongside concepts like chaos, complexity, indeterminacy, or fractals, according to Couze Venn (2006). In the account of Marcus and Saka (2006), it is a term that bears great similarity to Bruno Latour's *Actor Network Theory (ANT)*. John Phillips (2006), for his part, makes an account of how the term was coined in an accidental manner, since the actual term introduced by Deleuze and Guattari in *A thousand plateaus* (1980) was *agencement*, a French word with no direct translation into English. Phillips explains that assemblage is a more rigid concept than agencement, and that the latter describes the manner in which concepts acquire a sense because of their connections with other concepts. The new sense in which a concept is used is greater than the original concepts because the relationships among them have caused them to change, and also because, altogether, they are part of something else. Despite the inadequacy of the translation, the word assemblage seems to have been used in a similar fashion to the French agencement.

Marcus and Saka (2006), in step with Venn (2006), emphasise that assemblage is a term that encompasses a tension between concepts commonly conceived as opposed. Assemblage enables the co-relation of different types of phenomena but encounters a theoretical problem of referring to the structured and the undetermined within a single theoretical framework (Venn 2006). Marcus and Saka (2006, 102), for their part, see "assemblage [as] … a resource … to address … the modernist problem of the heterogeneous within the ephemeral, while

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79 Retrieved 26/05/2016 from: http://www.etymonline.com/index.php?allowed_in_frame=0&search=assemblage

preserving some concept of the structural so embedded … in social science research… It offers an odd, irregular, time-limited object for contemplation." They also acknowledge that "whoever employs it does so with a certain tension, balancing, and tentativeness where the contradictions between the ephemeral and the structural, and between the structural and the unstably heterogeneous create almost a nervous condition for analytic reason" (Markus & Saka, 2006, 102). The tension is necessary because although some order exists in social life, the conditions of the present are always emergent, as they result from the intersection of two or more open systems (Markus & Saka, 2006, 103).

Manuel DeLanda (2013 [2006]), in *A New Philosophy of Society: Assemblage Theory and Social Complexity*, states that the theory created by Gilles Deleuze has realistic credentials based on "the fact that it cuts across the nature-culture divide" (3). However, he also acknowledges that the very few pages that Deleuze and Guattari dedicated to developing this theory cannot account for a sufficiently grounded theory. DeLanda takes over the task of further developing assemblage theory as a non-reductionist approach in which wholes are characterised by relations of exteriority. So, a whole acquires an identity and properties through the interactions among its parts and, very importantly, a whole cannot be reduced to the properties of its components. The theory is basically applicable to all heterogeneous wholes because everything, from atoms to ecosystems, can be treated as assemblages. In fact, throughout the book, DeLanda conducts assemblage analysis on social entities of different scales, from persons to networks and all the way to cities and nations. His argumentation is that while "every social entity is shown to emerge from the interactions among entities operating at a smaller scale" (118), "each level of scale retains a relative autonomy and can therefore be a legitimate unit of analysis" (119).

The matter of scale is treated by DeLanda (2013 [2006]) in a space-temporal manner, and it is in those two senses that he approaches the tension between stability and change within an assemblage. Assemblages are "entities that are products of historical processes" (3), and they are not permanent. Species are also treated as products of historical processes that change over a much longer time-span than a full human life. Therefore, their fixity is but apparent, an 'optical illusion' (49).

In every assemblage on any given scale, DeLanda distinguishes two types of components: those that play a material role and those that play an expressive role[80]; and two types of processes:

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80 I.e. in social assemblages, the material role is played by two or more human bodies physically oriented towards each other; the expressive role is played by the conjunction of language, symbols, the content of the talk, and the way things are said. While the material role is associated with cause, the expressive role is associ-

those that give stability (territorialisation) and those that destabilise (deterritorialisation) (12). Furthermore, he adds a third dimension of processes that either rigidify the identity of the assemblage or make its operation more flexible by making use of specific mechanisms such as genes and language; he refers to these as processes of coding and decoding (15). When thinking of a person as an assemblage, the physical body plays a material role, while passions and emotions play an expressive role. Habitual repetition is a process that gives stability and the acquisition of new skills destabilises the assemblage (learning new skills enables a child to experience new impressions and generate new ideas, thus, while shaping a personal identity, this process also breaks with what that child used to be). Finally, it would be through language that a person's beliefs get shaped. When analysing networks, governments, and organisations, DeLanda acknowledges that communication technologies have enabled those assemblages to exist while being detached from a physical location, except when, for example, a government's or organisation's headquarters is tied to a specific building within a city. Bondage to a territory, explains DeLanda, is a characteristic of the following scale, which corresponds to cities and nations. When an assemblage is delimited by a territory, all the available resources contained within that territory, both natural and demographic, are its components.

DeLanda also states that his work is constructed from a western perspective, so he might be missing what is noted by Bauman (as quoted in Larraín, 2005, 75), that "the world elite, the owners of capital, the globalized intellectuals become extraterritorial, detached from the local communities which stay marginalized and confined to their own space[81]". Small, rural, local communities in the world might not reach the scale of a nation, but when treated as an assemblage, all the resources that exist within their territory can be treated as their components.

It is based on this rationale that this research proposes to see a local community as an assemblage, or as the intersection between the nature that is found within a specific geographic location and the socio-cultural patterns of the people that live within it. This assemblage is evidently not stable, but it has acquired an identity and an individuality resulting from the interaction among its natural and cultural components. Then, the environment as such disappears, given that all its elements are understood as components within the assemblage (Bennett 2010). This observation is highly relevant in this work, given that the connection to place is seen as a strong and reasonable argument why a community would agree to pose limits on itself in favour of other living species and non-

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ated with catalysis (DeLanda 2013 (2006), 12).

81 My own translation from Spanish

living elements within their *assemblage*. Moreover, this is the main reason why this type of human settlement might inspire alternative desirable futures in the *developed* world, too.

It is important to keep in mind that assemblages do not exist as such; "assemblage is a mode of thinking … rearticulating the way we see, understand and thus live the world" (Dewsbury, 2011, 148). Assemblage is a paradigmatic shift, it is a "veritable invention" (Deleuze & Guattari, 1987 as quoted in McCann, 2011, 143), an arbitrary selection. Deleuze and Guattari expressed that "the assemblage is less about what it is … and more about what it can do, what it can affect and bring about" (as quoted in Dewsbury, 2011, 150); and it is in this manner that the term has previously been used in the field of design. Following the propositions of Latour and Reckwitz, Matt Kiem (2011) claims that design has a necessary role in shaping society, given that every society contains "bodies, minds, or (designed) artefacts" (2). He sees design as "the practice that conditions material and expressive effects, and therefore the means by which connections are made, stabilised or dispersed, the act of designing becomes a crucial element in the formation and effect of assemblages" (3), hence the "social significance of design" (ibid.).

In fact, many design researchers have made use of this type of thinking, mainly by adopting ANT. There are two particular applications that are worth describing at this point: those that have linked ANT to design and the capability approach, and those that have applied it in the field of participatory design for social innovation.

Oosterlaken (e.g. in 2009; 2013; 2015) has argued for the relevance of design and technology in the capability approach. She complements Smith and Seward's (2009, 218) view that individual capabilities are highly dependent on social structures (x causes y in circumstances c), by stating that "also technical artefacts are important constituents of human capabilities" (Oosterlaken, Grimshaw, and Janssen, 2012, 124). Moreover, it has been observed that the capability approach is highly compatible with ANT (e.g. by Kullman and Lee (2012), Oosterlaken, Grimshaw and Janssen (2012), and Oosterlaken (2015)). ANT can help in understanding "complex and dynamic relationships between individuals, technology, and social structures" (Oosterlaken, Grimshaw, and Janssen, 2012, 124), and in identifying conversion factors beyond the artefact (129). However, "rather than asking what conversion factors need to be taken care of, a better question to ask may be which network interdependencies needs to be in place" (Oosterlaken, 2015, 87). Thus, rather than liberating from, design and technology liberates *within* (Kullman and Lee, 2012).

Design researchers running Malmö Living Labs in Sweden have a less technological approach to design; they focus on participatory design, design for social innovation, and the democratisation of innovation. They introduced the concept of *things*, which they use in a very similar sense to that proposed here for assemblage. Pelle Ehn (2008) relates the term to Bruno Latour's "collectives of humans and non-humans", but further justifies the selection of the term *things* in its etymological origin: "In pre-Christian Nordic and Germanic societies these things were the governing assemblies and places, where disputes were solved and political decisions made" (Ehn, 2008, 92). In a later publication, together with Erling Björgvinsson and Per-Anders Hillgren (2010, 43), they describe the term in their own words: "Things are not cut off from human relations, but rather socio-material 'collectives of humans and non-humans' through whom 'matters of concern' or controversies are handled. (At the same time, a designed object/thing ('an entity of matter') is potentially a thing made public, since once it is delivered to its participants, it becomes a matter of concern for them with new possibilities of interaction)". Moreover, the design process itself might be seen as "a shared design thing" (Ehn, 2008, 95). Things "are open ended explorations of continuous articulation" that assemble various stakeholders temporarily to deal with matters of concern and that transform the actors involved by giving them insights and new competencies (Björgvinsson, Ehn, and Hillgren, 2010, 49). Thus, it could be said that during the design process, designers also become part of the thing, which is something that does not happen in the view of those linking ANT and CA.

In *Small projects/large changes: Participatory design as an open participated process*, Manzini and Rizzo build on the concept of *things*. Throughout the article, they develop a definition of participatory design seen as an open participation process, and end it by proposing a look at "participatory design as a constellation of design initiatives aiming at the construction of social material assemblies where open and participated processes can take place" (Manzini & Rizzo, 2011, 213).

In earlier publications, the researchers from Malmö described things as an outcome of design work (Ehn, 2008, 93), or as prototypes that are iterated in a longitudinal design process (Hillgren, Seravalli, and Emilson, 2011). However, more recently, they have stated:

> A design thing should be considered as a process that involves both setting the preconditions for a process of change and opening up opportunities for new design things in which future users and stakeholders can discuss new matters of concern according to changed conditions and re-design the outcomes of previous design things. In this process the design thing also

makes the objects of design and the matters of concern public through workshops, exhibitions, public debates, blogs, and videos. (Emilson and Hillgren, 2014, 69)

Thus, things are not merely the outcome of the design process, but they also precede it. In fact, when a design-led process starts, it necessarily already encounters an assemblage, as humans and non-humans are necessarily interconnected. The potential of encountering an assemblage, that is, identifying its parts and highlighting certain relations or interactions among its components, relies on being able to envision new relations among those components and, given the case, even bring new components into the assemblage. In the end, like Bjorgvinsson et al. and Manzini and Rizzo propose, design has generated a new assemblage.

Assemblage thinking, like Actor Network Theory, proves very attractive for designers. Perhaps rather than lying in their propositions regarding knowledge creation, their charm lies in how they elevate the human-made (human-designed) world to a much higher rank as actors within social networks. As stated above, Jane Bennet, who specialises in political theory and ecological philosophy (among other fields), claims that "the locus of agency is always a human-nonhuman working group" (Bennett, 2010, xvii). The central example of Bennett's (2010) proposition of the distribution of agency throughout the assemblage, in *Vibrant Matter a political ecology of things*, is the power blackout that occurred in North America on 14 August 2003. It was a massive failure that no one could have foreseen and "the end point of a cascade – of voltage collapses, self-protective withdrawals from the grid, and human decisions and omissions" (Bennett, 2010, 25). Her interpretation of the original term of Deleuze and Guattari is that:

> Assemblages are ad hoc groupings of diverse elements, of vibrant materials of all sorts. Assemblages are *living, throbbing confederations that are able to function despite the persistent presence of energies that confound them from within*. They have uneven topographies, because some of the points at which the various affects and bodies cross paths are more heavily trafficked than others, and so *power is not distributed equally across its surface*. Assemblages are *not governed by any central head*: no one materiality or type of material has sufficient competence to determine consistently the trajectory or impact of the group. *The effects generated by an assemblage are*, rather, *emergent properties*, emergent in that their ability to make something happen (a newly inflected materialism, a blackout, a hurricane, a war on terror) is distinct from the sum of the vital force of

each materiality considered alone. *Each member and proto-member* of the assemblage *has a certain vital force*, *but there is also* an effectively proper to the grouping as such: *an agency of the assemblage*. And precisely because each member-actant maintains an energetic pulse slightly "off" from that of the assemblage, an assemblage is never a stolid block but *an open-ended collective, a "non-totalizable sum"* (term by Patrick Hayden in Gilles Deleuze and Naturalism). An assemblage thus not only has a distinctive history of formation but a *finite life span* (Bennett, 2010, 23–24).[82]

Bennett's claim cannot be disregarded in this work, which deals with freedoms and with design - a discipline traditionally dedicated to the ecology of a human-designed and -made world. In fact, it is this argument that makes the assemblage such an appropriate lens through which to look at Design as Freedom. Bennett points out that the distributed agency within the assemblage shows that having the intention to do something is never enough; making something happen requires the alignment of certain components outside the person (agent), besides the person's intention. Laws and regulations can play a central role either as enablers or as constraints, but the same can happen to elements within the human-made world, which could act as a connecting bridge or as a splitting wall.

This observation is also shared by Pelle Ehn (2008), who states that "… resources to align in a participatory design project may for example include: Project brief; prototypes; cultural probes; sketches; ethnographies and other field material; buildings; devices; project reports; 'users'; engineers; architects; designers; researchers; other stakeholders; etc." (93), acknowledges that achieving that alignment is in itself a challenge, and proposes that the literal construction of a design thing (e.g. a prototype) is the way to achieve it (93–94). Moreover, it can be pointed out that Bennett's description is very much in step with MacCallum's description of freedom as a triadic system, where freedom is exercised only if the agent's intention can be performed due to having the means to achieve it and a lack of obstacles to its realisation.

Bennett's perspective of a distributed agency, however, entails a difficult moral implication. While no individual could be rendered as responsible for the power blackout in North America, following the same rationale when judging a person who has committed a crime might lead us to conclude that the person cannot be considered to be fully responsible for what their actions provoked. Distributing agency distributes responsibility. However, even if the agency can be reasonably proved to be distributed

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82 My emphasis

throughout an assemblage, it can still be argued that only a person can be an agent and thus have an intention that can be judged within an ethical framework.

Following the pragmatic tradition, the intention is not to make a perfect world out of the ever-changing assemblages; the hope is that they can be used as tools that would help designers to make the world a bit *better* (more responsive, adaptive, flexible, open to possibilities[83]…). Assemblages might enable designers to identify actual freedoms and unfreedoms, and more importantly, to envision how new freedoms might be achieved when aligning the human and non-human worlds through new relations.

Figure 12. Assemblage, a new unit of analysis. By Claudia Garduño.

The concept of Design as Freedom

This research project seeks to contribute to morally grounding design. It has been argued that such a task cannot be detached from the philosophical debates on ethics and morals that have troubled humanity for centuries. From the present-day debates, it can be concluded that agreement has been reached upon one thing and one thing only: that the world could be much better than it currently is. Here, both the environmental crisis (in

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83 These are suggestions by Alastair Fuad-Luke

step with the advocates of Sustainability) and the prevailing injustice of social systems (in step with Amartya Sen) are considered priorities.

From Sen, this work appropriates the thorough criticism of the centrality that economic growth plays in the current paradigm, and his notion that freedom is a better main goal to focus on. Thus, the belief is that design could do much more if it released itself from the notion that good design necessarily contributes to money making, and if it went beyond judging good design in terms of the attributes of a design outcome[84]. Good design might contribute to freedom and justice-making.

Stating that freedom is the means to fight injustice accounts for admitting that this work sees the worst injustice in the hindrance of freedom. The worst injustice, then, accounts for being prevented from being and doing what one has reason to value, like when the way of living of the unsustainable-urban-industrialised-developed-western-nations is imposed all over the world. For that reason, the current paradigm is criticised for being unjust; hence, the insistent call to challenge it. Besides being very critical of the current paradigm, Design as Freedom is in the need for a very open mind and to acknowledge plurality – that the world is very diverse, where different people might value different things. People might desire different lifestyles, and this ought to be considered a positive thing. The reader is asked to leave conventions behind and to think also of local rural communities (like the ones where the Aalto LAB projects have been developed) as places with much potential, where true alternatives can be generated. Furthermore, this work pleads for acknowledgement of the world's poor as worthy potential beneficiaries of design practice.

In the first chapter, it was argued that a growing number of design theorists see great potential in design as a sustainable, complex, collaborative and empathic practice, and very specially in designers' ability to imagine a better future. Now, Sen has stated that "if someone has the power to make a change that he or she can see will reduce injustice in the world, then there is a strong social argument for doing just that" (Sen, 2009, 205). Therefore, if designers can foresee a reduction of injustice, they are socially (morally) obliged to act accordingly.

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84 Any design product (a phone, a watch, a table) can be called a good design if it is better than others of the same product typology. However, when design is assessed based on whether it contributes to a better world (and this includes the ethical, ecological, social, and economic implications of design manufacturing processes), the discussion happens at a different level (e.g. a gun can be a good design, but is it right to design a gun?). In short, it becomes a moral issue as to whether it should be brought into existence.

Hypothetically, at times, designing can be equated to the act of exercising freedom, which relates to Max-Neef's idea of non-conventional resources, those which only come into existence when they are used. In such cases, the exercise of freedom (designing) results in the expansion of freedom(s). Thus, here, as in Frediani and Boano (2012), both the design process and product are relevant dimensions of the same discussion. In addition, design might be seen as a central capability, given that design is the means for expanding many other freedoms (Nichols and Dong, 2012, 193-194). Ultimately, by increasing freedom, design contributes to making the world more just, or at the very least, a little less unjust.

Freedom in this research project is not conceived as limitless. The Kantian system that tightly links the concept of *freedom* to the concepts of *morality* and *reason* is followed instead. Furthermore, Design as Freedom considers *Sustainability* to be the current moral ideal, for which reason the contractual model proposed by Kant is amplified to include the elements from the natural environment. People are not forced to act morally; they are considered rational beings capable of moral judgment. Therefore, it is expected that whilst design can expand the freedoms of those who need it most, the process might also influence overconsumers to choose to live with less (something which, according to Crocker (2008, Chapter 7), has been addressed by the Spanish philosopher, Adela Cortina). Selecting the unit of analysis is a moral choice (Crocker following Ravallion, 2008, 386). In this case, the high relevance of Sustainability could not be avoided for various reasons, including the researcher's personal interest, the values of Aalto LAB, and more especially, because the unit of analysis responds to what was learned in the field. Thus, it had to give room to valuing the environment intrinsically. This does not mean that elements other than human beings become agents with intentions, but it enables the consideration that natural resources that provide ecosystem services should not be consumed at a faster pace than they can repair themselves. The selected unit of analysis, which is presumed to allow all these, is an assemblage. An assemblage cuts across the social and natural realms. However, the most interesting part of understanding the world in assemblages is not their descriptive nature, but their potential to bring about something new, something *better*.

Besides the Kantian interpretation of freedom, this research follows MacCallum's rationale. In this case, freedoms and unfreedoms result from the relationships between the different elements within the assemblage. Freedom is achieved when an *agent* has an *intention* and is *free from constraints,* which is also how Sen defines *capabilities*. Nonetheless, since the term capability was conceived to overcome the debate between

positive and negative freedom, which is altogether disregarded through MacCallum's proposition, this research has opted to adopt MacCallum's triad.

Within the assemblage, there is a human society. Following (1) Baeten's perspective that the social precedes the individual, (2) Rawls's conception of a society as "a more or less self-sufficient association of persons who in their relations to one another recognize certain rules of conduct as binding and who for the most part act in accordance to them" (2009 [1971], 4), (3) Smith and Seward's notion of a relational society, and (4) Nichol's (2015, 85-87) perspective that societies and not individuals are the ultimate units of moral concern (following Deneulin and McGregor's (2010) notion of the social human being), Design as Freedom conceives both freedom and morality on the scale of the community, which ought to be defined through democratic deliberation (Crocker, 2008). Inspired by Strawson, any given society living within an assemblage (N_0) can either modify some relationships within its elements, or introduce new elements into the assemblage, grow certain freedoms, and consequently overcome some clear cases of injustice. The process of conceptualising what an assemblage (N_x) might become (N_{x+1}), translating that vision into a feasible plan, and later putting it into practice is ultimately Design as Freedom.

Poor rural communities can be framed as assemblages with a connection to a place, within which humans and non-humans (including the built environment and the social norms) coexist and establish relations of all kinds. It is through those relationships that people achieve their *livelihoods*, which rather than being economic practices, are very similar to the oikonomy of the Greek household. While these communities achieve a certain subsistence, there might also be relations within their own assemblage, or within a larger one (the state or country where they are located), which prevent them from living the lives that they have reason to value. In fact, those constraints might be causing a situation of injustice, and, in allusion to the story told in the prologue, a child cannot get medical attention simply because the nearest hospital and her home are situated in different states.

Conceiving communities as assemblages that include the natural and human realms could enlarge freedom by encouraging people to develop in harmony or in coherence with who they are. Constructing freedom on a social scale, however, does not undermine individual freedom, at least ideally. "One of a person's natural wants is that there should be harmony between his feelings and those of his fellow citizens. He desires to know that his aims and theirs are not in opposition, that he is not setting himself against their good but is furthering what they really wish for" (Rawls, 2009 [1971], 439).

Design as Freedom is, therefore, a complex task that deals with wicked problems. Koskinen et al. (2011, 17) point out that the way in which design approaches those problems is by understanding that they are problems "of creativity and critique, imagining something better than what exists…". In fact, Sen (2009) himself acknowledges that limited imagination prevents us from going beyond the world as we experience it (170), ploughing the land for design's greatest contribution. If Sen's parable of the three children and a flute, introduced in the previous chapter, is approached from a design perspective, the first thing to be contested is that the only possibility to solve this situation of injustice is by giving the flute to one of the kids. Design as Freedom would acknowledge that the poorest of the three is Bob, not because he does not own toys of his own, but because in addition to that, he has neither the skills to make a flute, like Carla, nor the skills to play the flute, like Anna. In addition, the three actors in the story are children; children like playing, and they enjoy playing together, which opens several possibilities. Carla can teach Bob and Anna how to make a flute, while Anna can teach Carla and Bob how to play a flute. In the best scenario, given that there is enough wood in their surroundings, and even if several months must pass by (remember that it takes Carla several months to make a flute), rather than having three children quarrelling over a flute, there would be three children making music. Such is the spirit of Design as Freedom.

Exploring practice as Design as Freedom: Aalto LAB

The discussion so far has enabled the theoretical framing of Design as Freedom, an alternative driving principle for design, which is based on philosophical elaboration, where freedom is the ultimate end or outcome of design, and where the practice of design is equated with the act of exercising freedom. Within this type of practice, designers engage with other human beings and socially commit to making the world less unjust. Designers understand that the initial stage of a design process will hardly ever precede the existence of a human–non-human assemblage. In fact, situations of injustice are understood as one of three different possible cases within the assemblage: (1) the human–non-human interaction becomes a barrier, (2) a relationship between those human and non-human actors is lacking; or (3) some components are missing within an existing assemblage.

Design has the potential to envision new relations within existing components and even the creation of new components; design can potentially enlarge the freedoms that people have to live the lives they have reason to value. Based on Nussbaum's account of the Capability Approach, Nichols and Dong (2012, 194) describe design as a central capability because design can lead to the expansion of other capabilities (199). Thus, they advocate for the generation of circumstances that will enable communities to exercise this functioning, if they wish to do so. When freedom is the end and the means of design, both the design product and the design process constitute freedom (Frediani and Boano 2012, 212). Arguably, every person has the capacity to design; nonetheless, design skills are variable and not everyone has the opportunity to train in

them. In response, designers can work with communities whose design capability has been neglected, and in this manner, collaborate in building it.

Awareness must be raised that generating new freedoms many times can bear the consequence of generating new situations of injustice, including environmental depletion. Arriving at an ideal situation would be impossible, but according to Sen (2009), humans possess the ability to discern among different possible outcomes within a specific situation, whilst thinkers like Mill, Rawls, and Nussbaum believe that (moral) judgment can be trained. Thus, it is paramount in Design as Freedom that designers train in this skill.

Although designers are very good at imagining new scenarios, and have developed methods to learn about people's lives, their knowledge will never overtake the expertise that people have about their own lives. Therefore, in this state, the best possible scenarios to imagine are necessarily the result of close collaboration, in which people (designers, other experts, and *participant end-users*[85]) engage together in true dialogue, like equal fellows.

It has been generally agreed by, for example, Koskinen et al. (2011), Dorst (2008), Bang et al. (2012), Buchanan (2001b), and Lee (2013) that designers tend to generate knowledge by following practices that very much resemble the design process, or that designers research through practice. Ilpo Koskinen et al. (2011, 5–6) named this type of design research, *constructive design research*, following the rationale that whatever is constructed, either an object, a scenario, a mock-up, a concept, a system, a space, or media, "takes the key means in constructing knowledge". They propose three different ways of performing constructive design research: a lab (when the subject matter is taken out of its own environment and is subjected to experimentation in a controlled environment (55)), a field (when the subject matter is studied within its very own context (69)), and a showroom (a type of research that, rather than building on science, builds on art and design (89)). Later, Bang et al. (2012, 2) adopted the term constructive design research, and described it as a process in which design skills and capacities enable designers to produce knowledge.

In this work, constructive design research has been developed on multiple levels. Four different but intertwined constructions can be observed throughout this research project: (1) the construction of the Design as Freedom principle, (2) the design process as the

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85   We introduced this term in Garduño, Nousala, & Fuad-Luke 2014.

means to expand the freedoms in the community, (3) the learning framework as the means to expand the freedoms of the students and other external participants, and (4) my personal history in shaping ALM.

Aalto LAB Mexico (ALM) was initiated in 2012 to serve as the main means for this exploration, and it took Aalto LAB Shanghai (2010) as a model to be iterated. Because of that previous experience, it was expected that ALM would generate concepts of Sustainable Product Service Systems (S.PSS), and it was within the interest of this research to see those implemented (unlike in ALS). However, during the negotiation process within Aalto University, several actors consistently insisted on finding a way to turn Aalto LAB into a permanent program of some sort within the university, adding a pedagogic component to the case. Therefore, the design team also had to be observed in their role of students, and the design process was to be developed throughout a pedagogic framework, giving origin to the ALM meta-framework.

Design as Freedom is theoretically conceived as a mutually empowering experience, very especially because it has also been observed through the pedagogical framework. On the one hand, the community that allows the development of Aalto LAB generates a suitable learning environment for the students (and for themselves), and on the other hand, the students (together with the members of the community) develop projects that could potentially improve the state of the community.

As the researcher, I had the opportunity to build the case from scratch, but I was constrained by a series of factors such as time (constrained by my study grant), network of contacts (considerably more robust in Mexico), language (Spanish and English), power relations (affiliation: doctoral student), knowledge (MA in Applied Arts and Design), experience (based on ALS), and financial resources (basically, none). Therefore, I was not completely free to design just any case to fit my research interests (it is rarely the case that anyone can do that). It was necessary to leverage contingencies, and turn them into opportunities, which is how Thorpe and Gamman (2011, 224) describe Sarasvathy's "*lemonade principle*" (referring to the popular saying "When life gives you lemons, make lemonade"). Therefore, my very own journey of Design as Freedom in organising and developing Aalto LAB Mexico was like making lemonade.

The conjunction of events and the method-making process for observing Design as Freedom

The process of making innovative methods can be equated with the process of designing. When designers adjust a method to serve a particular context, they generate knowledge that is relevant for that design situation, as pointed out by Jung-Joo Lee in her article *Method making as a method of designing* (2013, 101). Moreover, she observes that throughout the method-making process, designers are already framing the design outcome, for the method is the "externalization of a designer's initial interpretation of users and possible solution spaces" (Lee, 2013, 107). Following Lee, method making, as a means of generating knowledge, can also be addressed as a learning process. The construction of the case through which to study Design as Freedom, or more precisely, the process of making use of the conjunction of factors and events, and constructing the Aalto LAB meta-framework with the intention of observing Design as Freedom, is a clear example of method making as a learning process over time.

Along with the construction of the ALM meta-framework – the pedagogic framework and the construction of each of the sub-projects (S.PSS) – there was the process of defining Design as Freedom. Richard Buchanan (2001b, 9) states that a (design) definition "is like a hypothesis in research: it gathers together what will be investigated and sets the relation of causes that will become the themes of subsequent inquiry". Bang et al. (2012, 6), for their part, proposed a model in which "hypothesizing is seen as an ongoing process that is framed by the overall research motivation for doing the research and developed in a continual process centred around the experiments conducted and in close articulation with the research question".

Following Buchanan (2001b), the definition herein presented for Design as Freedom can be seen as a hypothesis in research; and in step with Bang et al. (2012), arriving at it has been the product of an ongoing hypothesising process. Thus, the main construction within this work benefited from the different periods that, together, formed the whole research program. Strictly speaking, the inquiry began with an art installation, and the first theoretical reviews revealed that *good design* could be related to terms such as *cultural pluralism*[86]. Next, the practical experience of ALS inspired deep reflection, which was again reinforced by the literature review, during which the term *freedom* was encountered. This early approach suggested that the exploration would focus on determining *how design could become a driver of freedom*. The ultimate conception of *Design as (exercising)*

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86 I am referring to the final work of my Master's studies, as described in the introduction.

Freedom results from a highly reflective and much deeper theoretical review that could only be achieved after sufficient experience had been gained in the field.

As stated earlier, at the time this text is being written, ALM and its S.PSS have not come to an end; however, already in 2014, it was possible to describe it as a longitudinal and iterative process, and as a collaborative design practice, and it was possible to identify its stages, goals, and objectives. The following section describes the methods in Aalto LAB Mexico following the rationale that Turkka Keinonen introduced in his article of 2009, entitled *Design Method - Instrument, Competence or Agenda*, which here is complemented with Kees Dorst's proposal for describing the *design complex,* which can be found in his article *Design Research: A Revolution-Waiting-to-Happen* (2008, 5).

Methods in Aalto LAB

It has been stated that studying Design as Freedom through Aalto LAB is a case of constructive design research. Thus, this work is in step with design thinkers who maintain that, within the field of design, it is by designing that knowledge is constructed. However, this also means acknowledging that especially innovative design methods lack the rigour of other fields (Keinonen, 2009, 283).

Nevertheless, and given that innovative design methods have the primary function of informing and inspiring the creative process, many design researchers and creators of these methods advocate for that lack of rigour. Turkka Keinonen (2009) states that such innovative methods can be looked at from different angles, so that the same method can be assessed as completely suitable for a particular research project when looked at from a particular focus, and it can be determined to be totally unsuitable, if looked at from a different perspective. In order to make his point, Keinonen explores three different conceptualisations of design method, namely, instrument, agenda, and competence. However, his intention is not to present these as a definitive list (284). In fact, he concludes "by suggesting that playing with the method conceptualizing frames, switching between them and setting methods to completely new ones is exactly what is needed to make innovative design methods truly innovative" (289).

Kees Dorst (2008, 5), for his part, speaks not of innovative design research methods, but of design itself as a complex creative activity. In order to deal with that complexity, he

Figure 13. Visualization of Keinonen's (2009) method conceptualizing frames, where the same method can be looked at from different perspectives. Design methods can be described from the point of view that results more suitable. Drawn by Claudia Garduño.

proposes a descriptive framework formed by four elements: object, process, actor, and context.

Going back to Lee's (2013) observation that method making is similar to the process of designing, a design method can be understood as a complex creative activity that could therefore be described through a framework that enables its observation through several perspectives in a simultaneous manner. Therefore, rather than selecting the most suitable frame, the method for putting into practice Design as Freedom will be looked at from the perspective of four different conceptualising frames:

1. The principles of Design as Freedom (agenda).
2. The initial assemblage N_0 (context)
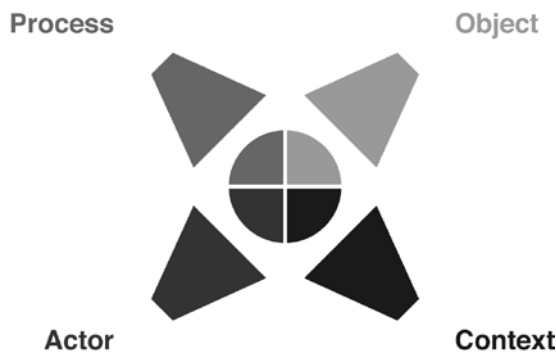3. The competencies of the different actors
4. The instruments

Figure 14. Visualization of Dorst's (2009) framework for describing the design complex. Drawn by Claudia Garduño.
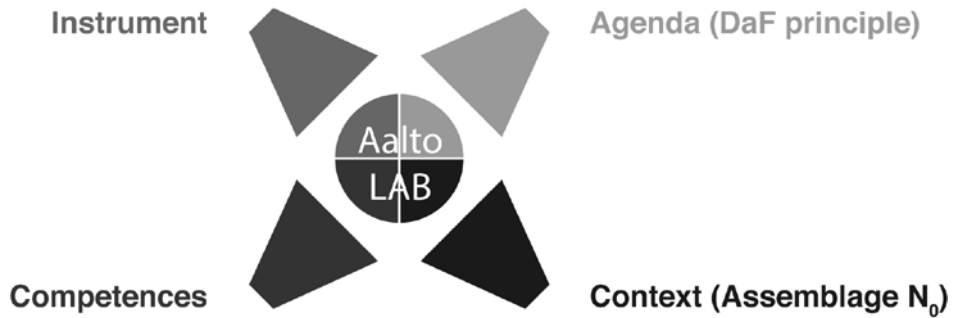
156

Figure 15. Visualization of the description of Aalto LAB; which is looked at from the perspective of four different conceptualizing frames. Drawn by Claudia Garduño.

The agenda-conceptualising frame is discussed first, because it is the most relevant in a study primarily concerned with ethics. In this case, what is designed is not as relevant as what it is designed for; moreover, Design as Freedom is translated into a specific type of collaborative practice that evolves over time. Next, the discussion turns to the context, or the initial assemblage (N_0), as conceptually defined within this research: the original source around which everything else is developed (the opportunity areas for the constructions of freedoms and the competencies of the design team are defined, the instruments are selected and adapted). The following discussion corresponds to the conceptualising frame of the competencies that are required and developed throughout the process. This includes those required in general by the members of the design team, but focuses especially on the design competencies of the design team, the community, and the designers. Finally, the discussion on instruments describes a series of well-known tools within the discipline of design, which have been applied at different stages of the Aalto LAB processes. The distinction between the different conceptualising frames is not always evident, so a certain overlap cannot be avoided.

The following is a multidimensional description of a design method that puts Design as Freedom into practice regardless of the pedagogic framework. The discussion regarding the pedagogic dimension is developed in the next section within this chapter.

The principle of Design as Freedom (agenda)

> First, members of the conservation community must not deny that we live in a society which desperately needs fixing and in which denial is seductively easy and cheap, at least for a time. We must acknowledge and seek to understand the connection between poverty, social injustice, and environmental degradation. We must acknowledge and seek to understand the connection between rootlessness and environmental irresponsibility. We must acknowledge and seek to understand the connection between the loss of functional human communities and the inexorable decline in the state of the earth. (Orr, 2002, 89)

Keinonen (2009, 287) argues that "method as an agenda can be regarded as the most fundamental angle to method evaluation, because it takes a clear position on the objectives of design and designing: what should designers do, instead of just dealing with what kind of results they should be able to create". Given that the intention is to put the Design as Freedom principle into practice, the agenda is definitely the main driver of this process.

Earlier in this work, it was acknowledged that the key features of participatory design, which are democracy and empowerment, are also desirable characteristics of Design as Freedom. In practice, the expansion of freedom ought to be the main end of design; if a design product, be it an object, a service, or a system, accomplishes precisely that, it could be said that design has achieved the goal of empowering the users. However, following Dong (2008), Dong, Nichols, and Kvan (2013), and Nichols and Dong (2012), a much higher degree of empowerment would be achieved if people acquired the capability to design.

Achieving design capability depends upon the proper alignment of a series of elements within an assemblage. Following MacCallum (1967), agents must be free of constraints in order to be able to achieve what they intend; thus, acquiring the capacity (ability or skill) to design is just one factor within an assemblage (N_x), which also includes a solid network of stakeholders and certain social policies. Nonetheless, the development of design skills is fundamental because it potentially enables people to live and act as agents, and it is assumed that design skills can be gained by participating in design processes.

Participation will also be observed below, through the conceptual framework of competencies. However, here, seen from the point of view of agenda, it is important to refer to Oosterlaken's (2009, 100) insistence that participation and deliberation

(democracy), the means proposed by Sen for defining a community's own capability set, can and should be linked to participatory design. David Crocker's (2008) recapitulation of Denis Goulet's late work includes the insights that the basic idea in participation in development is that "persons and groups should make their own decisions" (339), that "[p]opular participation is a way in which people manifest their inherent worth", and that "[t]o respect and promote such participation is to respect the dignity of hitherto neglected or despised people" (340).

Moreover, I must insist that empowerment in Design as Freedom happens in reciprocity between the design team and the participant end-users – a dynamic relationship that evolves over time – which is why we have described our collaborative design processes as co-design, and not as participatory design, as the latter might seem patronising (Garduño, Nousala, and Fuad-Luke, 2014). In ALS and ALM, the designers have been required to design for and with those who are not traditionally affected by design practice. On one hand, this includes the *participant end-users*, people who live in local communities and are marginalised from the global world where design normally functions. On the other hand, this is a call for openness for designers to collaborate with a diversity of disciplines (from natural to social sciences, business, and engineering) and sectors (public, private, third sector). Mattelmäki and Sleeswijk Visser (2011, 4–5) identified four different *directions* of collaborative design practices, as was already mentioned in Chapter 2. They describe them as directions because, in their view, they are not sequential. The main feature of co-design is that the voices of the 'end-users' are included in the design process with the objective of inspiring the design process to create new opportunities:

> 1. The voices of people are heard, but designers maintain their design roles.
> 2. Methods and tools are developed to ease the users' expression of their ideas.
> 3. Designers and users collaborate in the mutual exchange of ideas.
> 4. Users are not that much emphasised, because a wider range of people are invited to "brainstorm and learn together".

Nonetheless, from this work's perspective, and based on the Aalto LAB experiences, it has been observed that when a research program is developed over a long period, these dimensions can become sequential. The level of engagement of non-designers increases with time, mainly because it depends upon the construction of trusting relationships. Therefore, if the full process was understood as a series of photo frames, and each frame depicted a particular assemblage, theoretically, the *perfect* co-design moment

can be described as an assemblage in which designers, participant end-users, and other stakeholders participate equally in the ideation phases of the design process.

Paradoxically, the perfect co-design moment is not the ultimate goal in Design as Freedom. The ultimate goal is to reach empowerment – the point where all the different actors have the effective opportunity to design in order to expand their own freedoms and tackle their own situations of injustice – or, as expressed by Nichols and Dong (2012, 194), that everyone has acquired the central capability to design. Therefore, it would be expected that, over time, the level of engagement of community members would increase, and that more permanent relationships would be developed with other stakeholders. The design team, on the other hand, will eventually not be needed in the community, and at least those who are not part of the stable network of stakeholders will be able to *exit the field* (borrowing a term from anthropology).
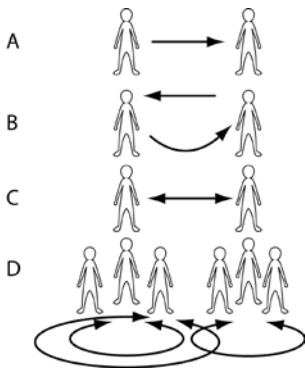

Figure 16. Mattelmäki & Sleeswijk Visser (2011) visualization of 4 different directions regarding the type and level of engagement of users in co-design.

Additionally, as stated earlier in this work, rather than treating the members of the design team as fully free agents, they are seen as people living in a marginal condition of their own (i.e. that of understanding the world through a Western convention, merely in economic and industrial terms). The design collaboration should give room for all participants to learn something, develop new competencies, or enlarge their capabilities. It is therefore expected that at least some members of the design team (especially designers) will make the rational and moral choice to make the expansion of freedom both the end and the means of their professional lives.

Finally, the environment is a crucial dimension in the agenda. As stated before, the environment can be considered an actor within the network of stakeholders, and it might be included in the model of a social contract. Given that it is very unlikely to generate anything that results in zero environmental impact, the design output should be an S.PSS that enlarges the freedoms of people, and that does not consume natural

resources at a faster pace than the environment's carrying capacity. Moreover, in the best of cases, it would be expected that at least some members of the design team will understand "… in a globalizing world, that some have more than they need is sometimes the cause of others having much less than they need to have the real opportunity for at least a minimally adequate life" (Crocker, 2008, 217), and they will make the choice to live more sustainable lives.

The (context) initial assemblage (N_0)

The two locations that have hosted the Aalto LAB experiments deliberately share some characteristics: both were classified as rural poor communities; they were located within wider territories, which the governments were aiming to transform into "sustainable areas"; and finally, both communities had a prior connection with the design department of a local university. And whilst some S.PSS's that were generated as strategies towards achieving the best desirable future for each location might touch upon similar topics (tourism, architecture), each of those is distinct; they were designed to fit the specificities of each community. Therefore, based on experience, it can be said that Design as Freedom is fully contextual[87].
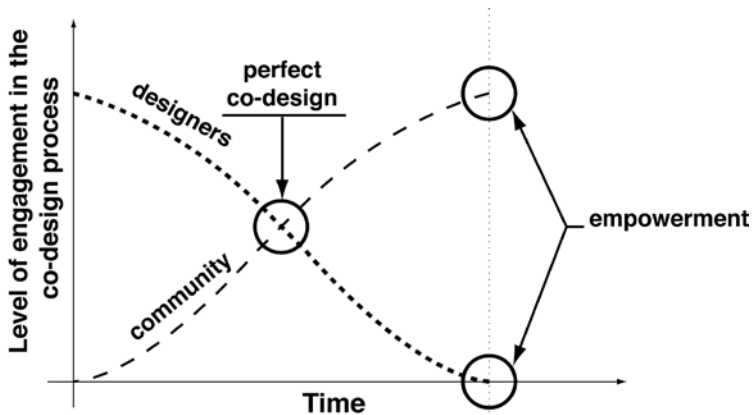

Figure 17. In this work, co-design is seen as a long term process which aims at empowering a community. Throughout the process, perfect co-design occurs when all the stakeholders engage in the process in equal manner. However, empowerment occurs when the community has taken over the process, and the external designers are no longer needed. Drawn by Claudia Garduño García.

87 This was observed by the researchers involved in Aalto LAB Mexico, and was reported in Garduño, Nousala, and Fuad-Luke (2014).

Earlier in this work, it was discussed that while context is a generally agreed term, it is somewhat inaccurate because it pushes some elements into the background. The theoretical starting point of Design as Freedom is the identification of a human–non-human assemblage, bonded to a territory. The idea is to identify different natural and cultural elements, and how they relate to each other; and very specifically, to be able to identify the relationships that are preventing the enjoyment of a specific freedom and the ones that are causing clear cases of injustice.

Those elements and their relationships will enable the identification of areas of opportunity that will be turned into concepts of projects (SPSS´s). The original design team that enters the community will also identify knowledge gaps, and the types of actors and relationships required for their implementation. This is a process that will happen iteratively. All in all, the team will be able to determine the areas of expertise that will be required in order to give continuation to each project.

Competencies of the design team in Aalto LAB

A method as competence, explains Keinonen (2009, 285), "is to consider it as something a specific agent is capable of performing". Aalto LAB was originally described (by Sotamaa in 2010) as an interdisciplinary collaboration, implying that the team is formed by a group of agents with specific capabilities (knowledge and skills). In the fuzzy front end of this design process, high diversity (cultural and disciplinary) is conceived as a means to achieve an integral initial diagnosis. Throughout time, as observed in ALM, Aalto LAB generates sub-projects (S.PSS), which are appropriate for the context and which in turn are in need of specific competencies; hence, the evolution of the team is demanded by the sub-projects. However, and especially because Aalto LAB is also a pedagogical framework, it has been observed that all the participants develop both general and design-specific competencies.

General competencies are those that are required from every participant, and that have to do more with social sensibility and personal skills. Paradoxically, these are the same competencies that are most strongly developed throughout the process: empathy and humility. In this work, design-specific competencies are seen as a contribution to building the central capability of design. This is not directly related to the development of social policy, laws, or other overarching structures that make this functioning available (as in Dong, Nichols, and Kvan 2013), but it refers to developing the ability to imagine a

better future and to define a strategy to get there. Although the team is interdisciplinary, the collaboration is led by design, which means that expert designers with specific design skills direct the whole process. Moreover, designers (professionals and students) are spread throughout the network in order to work agglutinatively, enabling the smooth flow of design processes and their assimilation by all participants.

In step with Nichols and Dong (2012, 199), design is seen as a central freedom because it is the basis of Sen's instrumental freedoms. In Nussbaum's terms, design capability is a combined capability that requires internal capabilities (design skills) and also certain external conditions (e.g. social policy). For this reason, having all stakeholders developing their capacity to design is a crucial step in achieving the freedom to design.

General competencies of the design team

Outsiders have a role to play. Whilst immersed in one's own context, it might be difficult to identify different choices and areas of opportunity. The members of the design team are not blinded by familiarity and can describe those choices to insiders. Outsiders are there to help insiders help themselves, and they stay only until people have awoken (Crocker, 2008, 341). However, "participation is sometimes merely used as a tool for achieving pre-set objectives" (Frediani, 2007, 8). Thus, it is very important to highlight how co-design that results in empowerment requires certain competencies from the members of the design team; they cannot be arrogant or have a know-it-all attitude (Crocker, 2008, 347 based on Alkire).

Empathy. In Chapter 2, collaboration, complexity, Sustainability, and empathy were qualities extracted from various design discussions, and it was stated that they might be virtually desirable in every design practice in order to make the best of design. Among these four qualities, *empathic sensibility* can be framed as a fundamental design competence, given that it consists of "being able to understand users and to develop sensitivity with their needs" (Keinonen, 2009, 288). Moreover, design empathy is especially relevant in a mutually empowering practice such as Design as Freedom, where it is crucial that "people are seen and understood from where they stand, not as test subjects but as persons with feelings" (Mattelmäki, 2006, 123–124).

While empathic sensibility is required throughout the whole process, its application in the early phases is determinant because it is then when the directions of the design processes are set. Thus, it is then when an empathic understanding might produce the most inspiring result (Mattelmäki, 2006; Mattelmäki & Sleeswijk Visser, 2011).

In this work, empathy becomes the key for engaging individuals with very different backgrounds in true dialogue, in which they "acknowledge each other as equals and work in an environment of shared respect" (Garduño, 2015, 122), which is valuable in itself but also enables mutual empowerment and mutual learning. In the words of Jeremy Rifkin (2009, 160):

Empathic extension is the only human expression that creates true equality between people. When one empathizes with another, distinctions begin to melt away. The very act of identifying with another's struggle as if it were one's own is the ultimate expression of a sense of equality. One can't really empathize unless one's being is on the same emotional plane as another. If someone feels superior or inferior in status to another and therefore different and alien, it becomes difficult to experience their plight or joy as one's own. One might feel sympathetic to others or feel sorry for them or take pity on them, but to experience real empathy for another requires feeling and responding "as if" you "are" that person. In an empathic moment, there is no "mine" and "thine", but only "I" and "thou". Empathy is a communion of kindred spirits, and it's elicited in a temporal and spatial zone that transcends distinctions based on social status.

Allegedly, human beings and other living beings (Rifkin, 2009) are capable of experiencing empathy; perhaps, rather than being the natural way in which we relate, it is the reason why we are able to relate, as stated by Baeteneaten (2009). Here, it is not important to know if all human beings in the world can agree on a single moral doctrine, but rather the fact that the members of the design team and the members of the community are naturally capable of relating to one another, and empathic design methods have been developed to accompany them in navigating that paradox, as raised by Jane Fulton Suri (2003, 52).

This is also relevant for the interactions within the design team, which is formed by students belonging to different fields of study, at different universities, and in different countries, mentored by experts working in various sectors (public, private, and NGOs). In the words of Mattelmäki and Sleeswijk Visser (2011, 1), "the experience driven empathic design that first focused on being involved with the users in their own environments also addresses the new kinds of collaborations with the design team and partners to promote shared visions". Therefore, empathy is primary in Aalto LAB, because it enables interdisciplinary, intercultural, and intersectorial collaboration. Additionally, while an empathic sensibility is required for participation in these type of processes, it is also one of the competencies that is strongly developed through them.

Humility . Oscar Hagerman has spent most of his lifetime, and he is nearly 80 years old, working as an architect and a designer within different communities all around Mexico. Based on his experience, he fully agrees with the need to develop an empathic sensibility and the need to involve users actively in the design process. He adds that communities should be approached with *humility*. Hagerman uses no academic language, but he has created his own design vocabulary. He explains that the first thing that a designer should do is to *learn* from "people who will live the design" and about "their world". Sanders and Dandavate (1999, 90) add that "it is possible to gain access to the experiencer's world only through his or her participation in expressing that experience". If whatever gets designed does not fit them and their world, it will be rejected, or a long time will have to pass before they find a manner to adapt that design to their culture or to adapt their culture to that design. Oscar Hagerman explains[88]:

Look, I think that one is created into a surrounding. One has a small universe, which is everything that surrounds you, which actually forms the culture. There are many things: food, family relations, beliefs … which shape a world. When harmony exists between that world and its people, it is like the harmony of two persons that love each other. From the emotional point of view, they are in tune, which is what makes people more or less "happy". And that is why I think that it is important to keep that harmony when somebody designs a product; harmony with one's own world and the activity being performed. But that world is not a static world, it is a dynamic world that is changing every day. Somehow, the important thing is to maintain the harmony between your life and the transforming world.

Design competencies

A question that is not easy to answer is how a collaborative design workshop differs from a collaborative workshop led by any other field. The question is especially difficult to answer as the boundaries between professionally trained designers and other participants get blurred because all participants become designers, and because designers might start developing roles that are not design specific. Additionally, design is no longer concerned with the material world only, and it engages with disciplines and matters with which it did not engage before.

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88 This fragment is taken from the transcript of an interview I had with him at his home in Mexico City in January, 2010. My own translation from Spanish.

Figure 18. Design competencies of non-designers (community members, other members of the design team, and other stakeholders).

Design competencies of designers. Empathy and humility are competencies required from all members of Aalto LAB team even before the process starts. It is true that the general competencies and the design competencies will be developed strongly through Aalto LAB; however, to achieve this, there are some specific competencies required from designers in the team even before the process starts. As mentioned above, with the purpose of ensuring that the process is driven by design, expert designers lead the processes and designers are spread throughout the network, at all different levels of participation (e.g. in ALM, students, experts, researchers), so that the design processes flow with ease.

Expert designers facilitate the processes, which means that they guide the team through the different stages, indicating when it is time to diverge by generating a large number of insights or ideas, and when it is time to converge, synthesize, and make decisions. Since designers are trained to deal with complex matters and wicked problems, they assist the team, for instance, by highlighting the findings that should be brought to the forefront of the process. In addition, as stated by Manzini (2011, 4–5), designers become provocative proponents who take the discussion beyond what the participants originally imagined. So, rather than following a set of rigid guidelines, the facilitators are the carriers of the methods as their very own internalized skill (Keinonen, 2009, 285), which is extremely relevant when working in interdisciplinary teams and in collaboration with communities. People are unpredictable, and activities can only be generally planned. Thus, in these situations, the ability to improvise to adapt and apply a design method (as an instrument or tool) is especially valued (see Figure 5).

Design competences of non-designers (community members, other members of the design team, and other stakeholders). Professional design facilitators carry the methods within them while other designers in the team enable those methods to be easily digested and to be put into practice by all, working agglutinatively. Participant end-users are acknowledged to be experts on their own lives, and the non-designer members of the team are considered experts in their own fields and regarded for their own competencies. Identifying the specific mix of expertise that will be needed, with the purpose of developing an appropriate sub-project, and adjusting the team accordingly is an iterative process that is fully dependent upon the continuous exploration of the context.

Because of this interdisciplinary collaboration, the people engaged gain knowledge, skills, and understanding from fields that are not their own. As mentioned above, on the agenda, it is a primary concern that all the different stakeholders become empowered by having an effective choice of designing in order to expand their own freedoms and

tackle their own situations of injustice. Developing design competencies, or acquiring the capacity of designing, is crucial in the construction of design capability. Design competencies can be acquired by participating in design processes guided by expert designers. Co-design that results in empowerment, as described above, is expected to be a longitudinal process that could take several years to complete. By that time, the designers and other stakeholders will have engaged in a range of design activities: practice, repetition, and iteration might enable all stakeholders to assimilate the design process.

Instruments applied in Aalto LAB

Keinonen (2009) states that "[a] design method can be seen as a generic procedure, series of well-defined steps conducted in a specific manner and/or order, that can be transferred across contexts and circumstances with relatively small variations". When a method is independent from those who apply it and their original purposes, the method becomes similar to "a material artifact such as a tool", in which case, they "can be essentially seen as an instrument leading the method" (284). Mattelmäki and Sleeswijk Visser (2011, 3), for their part, observe that co-design can be seen as "a set of tools"; which might include design probes (Mattelmäki, 2006), design games (Brandt, 2006), collage-making, and make tools (Sanders & Dandavate, 1999). ALS and ALM have made use of a series of design tools, including IDEO's Human Centred Design toolkit, co-design workshops, designCapitalia, and design probes (these tools will be described in the following chapter). In fact, the participants have also applied tools that were generated outside the design discipline, such as project-based learning, SCRUM, and Edward de Bono's Six Thinking Hats. Up to this point, and based on past experiences, it has been possible to identify which processes are most suitable for a specific phase within the overall design process.

What follows is a description of the Aalto LAB meta-framework, an instrument in itself, given that it is assumed that it can be applied to different contexts, if the agenda remains intact: the expansion of the freedoms of people through co-design. The meta-framework divides the design process into four phases: diagnosis, conceptualisation, implementation, and evaluation. Each of those phases is developed during a learning cycle of the pedagogic program, which lasts approximately six months and which is divided into three periods: preparation, field trip, and reflection. Additionally, the meta-framework suggests different specific design tools that can be applied at different moments of the design process.

Aalto LAB meta-framework

The Aalto LAB meta-framework described herein has been built from the experiences gained in ALS and ALM. Overall, this shows how to develop a design process in phases through a longitudinal pedagogic program. However, as stated before, the LABs develop in a highly organic manner, and in many cases, the adaptation of a design tool or practice has happened in an uncertain or unexpected situation as the direct contribution of highly competent designers who take the role of facilitators. Therefore, the meta-framework must not be understood as a rigid set of guidelines.

The phases of the design process

A design process can be described in different manners, and designers might choose to conceptually divide it into different numbers of phases. Here, the design process is described as a four-phase process: diagnosis, conceptualisation, implementation, and evaluation. This division into phases enables the development of a design process through a pedagogic program, in which a team of students is in charge of developing only one phase during a six-month learning cycle. Unlike a design process developed in industry, milestones are not determined by time or budget limits, but achieved when specific objectives have been reached. There are barely any rules for the labbers, but it is crucial that they involve the people of the community in the design process as much as possible.

Design Phase	Objective/Output
Diagnosis	Project ideas
Conceptualisation	Project plan
Implementation	Construction/prototype
Evaluation	Conditions to exit the field

Table 7. Objectives that mark the completion of a phase within a design process.

The diagnosis corresponds to the fuzzy front end of the design process. It corresponds to the exploratory phase, in which the design team is understanding the location and starts problematizing. The labbers (students) deal with a highly undetermined project, and their main goal is to determine some feasible sub-project ideas. When the Aalto LAB design team is new in the community, it is very likely that the community members will engage in the design process in the most basic manner. Nonetheless, it is extremely relevant that the design team hears their voices. The diagnosis phase, thus, is finalised when clear ideas of feasible projects have been envisioned. If this goal is not reached, the next batch of labbers would need to continue developing the diagnosis.

The following phase is the conceptualisation. In this case, the labbers start with a project brief based on the project ideas generated in the diagnosis phase. By this point, the team would have visited the community at least once before[89], so the labbers are given the instruction to think of ways to get the community members more actively engaged in the design process. It is expected that the second visit to the community will show the progress in the co-design process described above. The conceptualisation phase ends when a project plan has been conceived with the community, which means that a clear goal has been established and that a budget and time-frame can be estimated. If this goal is not reached, the next batch of students could be asked to either develop a more thorough diagnosis or to carry on with the conceptualisation phase.

The project plan and fundraising strategy give birth to the implementation phase. In this case, the design team might need to work on the design details, but they will also need to be in close communication with the community and its authorities, to clearly define different roles and time-frames. The implementation phase, in turn, ends when the project is up and running, which could give room for a last phase, an evaluation[90].

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89   Some labbers on the original team might still be part of the team, and if not them, at least some of the experts or managers of the pedagogic program. It is important for the community members to see some familiar faces.

90   So far, within ALM, the sub-project that has been developed the furthest, the Eco-Hostel, has started the implementation phase. It might take several more years to make it run fully, and it might need to run for some time before it is possible to evaluate its outcomes.

Aalto LAB as a pedagogic program

The pedagogic component within this research project might at first seem restrictive. However, when the construction of freedoms is seen through an assemblage, it becomes evident that a wide range of actors have roles to play. Walker et al. (2009) observe that institutions of higher education can directly affect the development of a more just society because they have the possibility to shape their students into transformative agents.

Arguably, the Aalto LAB process can be applied to every type of context. Nevertheless, the locations where the two experiments have taken place have caused the pedagogic program to deal with topics from the field of development education. Having run a long-term, practical program for development education, Boni, MacDonald, and Peris (2012, 184) state that they have been "able to demonstrate that students can develop their cosmopolitan abilities[91] whilst at university". Boni, MacDonald, and Peris (2012), as well as Walker et al. (2009), believe that programs in which students can acquire the knowledge and skills required to become transformative agents can be designed. Moreover, Walker et al. (2009, 571) say that the existence of those programs in universities encourages that way of being. So, by educating their students to serve the underprivileged, universities contribute to shaping a more just society, hence the opportunity and major relevance of transforming Aalto LAB into a permanent program within Aalto University.

As mentioned above, one of the fiercest criticisms of development work is the one that links it to colonialist or imperialist practices. David Crocker (2012b) writes of "agency, responsibility, and consumption" largely based on the work of the Spanish philosopher Adela Cortina[92]. He argues for development work that is tightly linked to ethical discussion, in which much is to be done not only in the poorest regions, but also in the affluent ones. Crocker (2012, 380) states that the global North/South dichotomy is being replaced by an elite/contented/marginalised trichotomy across the North and the South. Based on that distinction, the students who participate in Aalto LAB (labbers), regardless of their country of origin, are most likely among those who are better off. In step with Crocker (2012), the labbers are seen as national and global citizens with moral obligations towards their fellow citizens and the natural environment. If world

91 Cosmopolitan abilities is a term introduced by Martha Nussbaum in 1996 in her book *For love of Country*.

92 Mainly, her book of 2002 titled *Por una ética del consumo* (For an ethic of consumption).

citizens acquired a more *prudent*[93] consumption pattern, both ends of the spectrum would benefit. Underconsumers could get what they were missing in order to live the types of life they have reason to value, but overconsumers would also earn the chance to overcome their own adaptive preferences phenomenon, as characterised by a frustrating cycle of working to spend and consume without ever being contented. In short, everyone would gain the effective opportunity to be responsible for themselves; and if, as Cortina states, "ethical conviction is the best motor" (cited in Crocker 2012, 241), the possibility to change the world for the better might be genuine.

Aalto LAB is structured in learning cycles; a learning cycle is dedicated to developing one design phase (diagnosis, conceptualisation, implementation, evaluation). Every Aalto LAB learning cycle has had an estimated duration of 6 months, divided into a preparation period (8 weeks), a fieldwork period (2 weeks), and a reflection period (8 weeks). During that time, the labbers have the objective of advancing the project(s), and if possible, they should deliver the desired output of the design phase they are working on (e.g. diagnosis – project idea). That deliverable will be the starting point of the following learning cycle.

In the first part of this chapter, the discussion about competencies focused on those that are required and developed by the participants of Aalto LAB in the design process. Here, the discussion on competencies is about those required and developed by the participants of Aalto LAB in the pedagogic program. I have argued before that designers are not to be considered special human beings; in this case, that argument implies that some overlap might occur. In step with Boni and Perez-Foguet (2008, 350), Aalto LAB does not deny the possibility that all types of students could benefit from participating in this type of uncommon pedagogic program, but in step with Sen, the free choice of students (and local people) to participate in the project is valued intrinsically. Even more so, because Aalto LAB is meant to become a significant learning experience in the participants' lives.

In ALM, the recruitment of labbers through an open application process has been encouraged. In step with the observation of Boni, MacDonald, and Peris (2012, 181), the experiences of ALM and ALS show that in general, the students who are attracted to participate in the project are those whom I earlier called *the children of Brundtland*, already aware about many issues such as poverty, inequality, and environmental crisis.

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93   Cortina names the human virtue or excellence that regulates behaviour by taking others into consideration, *cordura* (sanity).
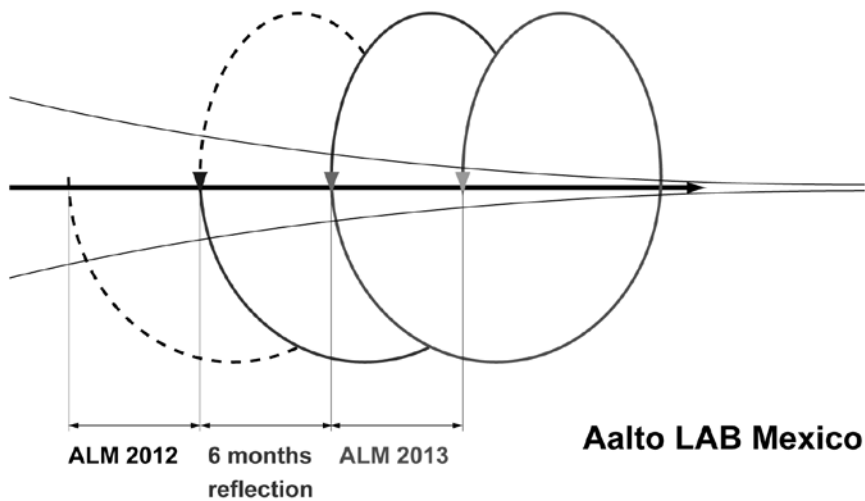
Figure 19. An ALM as a teaching program lasts 6 months, which include the preparation period, and the field trip. Later on, 6 months are used for reflection. Based on Nousala & Hall (2008), published in Garduño, Nousala & Fuad-Luke (2015).

Many of them also show a natural inclination towards altruistic behaviour. It is preferable that students sign up for a period longer than a year. On the one hand, the continuation of the project is made smoother when people in the community see familiar faces, which could also be a slight gesture of promises kept, and trust building. On the other hand, the process of sharing knowledge with new members is especially difficult. Nonetheless, it has been observed that students who join later in the process (in the second or third year), or participate only for a short time, can also contribute to the overall process, and they can also benefit greatly from the experience.

What follows is a detailed description of each of the three periods (preparation, fieldwork, and reflection) that take place in Aalto LAB learning cycle. The description below focuses on the initial phase of the design process, namely, the diagnosis, as guided by the HCD toolkit of IDEO.

Preparation period

In Aalto LAB, no group of students is sent to the community without going through a preparation process first. The preparation process lasts around eleven weeks. In this period, the labbers are encouraged to actively engage in constantly framing and reframing a research process. By gathering and discussing information that they consider

to be critical, they are eventually able to formulate and investigate questions that they find significant (Blumenfeld et al., 1991, 395). This "… comprehensive approach to classroom teaching and learning that is designed to engage students in investigation of authentic problems" (Blumenfeld et L., 1991, 369) is called project-based learning (PBL).

The designation of a location is what allows the application of the PBL approach, as it is somewhat possible to start understanding the initial assemblage (N_0) from a distance. For example, when the ALS team was told that the location of the project was a community in Chongming Island in Shanghai, China, it was possible to find information about its history, demographics, and climatic conditions. Conducting a PBL in an interdisciplinary team enables meaningful learning. Each labber is the team's expert in their own field. Each of them can introduce topics for research and discussion; therefore, they are given an opportunity to apply their knowledge. Based on the Aalto LAB experiences, students conduct personal research by dedicating up to six hours a week. Once a week, the team meets to present and discuss their research topics. The debates are mind-opening because each topic is discussed in an interdisciplinary and intercultural manner.

The distance causes some additional challenges. While a unit of labbers works at Aalto University in Helsinki (or Espoo), another unit of labbers approaches the subject at their own university in the hosting country. Communication between both units is encouraged, so that the (relatively) *local* students can help the visiting students to better understand some contextual issues. For example, when working together with Shanghainese students, it was possible to ask them direct questions on subjects that were more easily accessed by them, like the plans of the local government for Chong Ming, or the status of the *Chong Ming Project* developed in collaboration between Tongji University and Studio TAO.

The students are instructed to avoid making any decisions before visiting the place and talking with people who live there. However, they are encouraged, based on the background information, to benchmark sustainable projects that have taken place in other places in the world, and that might bear similarities (climate, history, threats) to the given location. The labbers gather knowledge that might (or not) help the students face the circumstances of the field trip. Nevertheless, the most important feature of the preparation process is that, through their debates and their quest for significant questions, the students learn to think critically and gain sensibility towards the conflicts that those people might face in their daily lives.

The original and ambiguous task of "making the world a better place" might make them anxious and it might also place them under a lot of pressure. This process might become rather confusing and even frustrating, but it is important to experience it to acquire the right attitude before visiting the community. Nonetheless, there is the risk that the labbers might develop the wrong attitude. Students might feel like their task is to save the world, or at least the people in the community they will work with, from oppression.

Thus, it is highly important to make the students realise that people are experts on their own lives and that many times, specific cultural values and practices cannot truly be comprehended by outsiders. What follows is commonly a period of uncertainty, when students question their own authority to propose any changes within a far-away community they know nearly nothing about. This process is about encountering oneself immersed in the middle of a difficult philosophical and ethical dilemma, as addressed by Sen and Nussbaum, of intuitively knowing that something must be done to remediate a situation of injustice, and being fully aware of the lack of straightforward answers. When the students have moved from feeling very confident and accepting the original challenge to feeling confused and powerless, when they have more questions than answers and have realised the paramount relevance of going to the place and meeting the people in person, it is the right moment to define the values of the team under which they commit to conducting themselves for the rest of the project. This can be done through a brainstorming session assisted by tools like the designCapitalia cards[94]. Therefore, the preparation period also has the objective of going from having a diverse group of individuals from multiple disciplines and cultures, to forming an interdisciplinary team with a shared mindset[95].

Fieldwork period

The fieldwork period refers to the moment when the design team visits the community to work with them. This phase is the one that is most closely monitored by expert design facilitators, if possible, by having the facilitators accompany the team on their visit to the community. It starts by gathering the full team in the same physical location and conducting some integration activities,[96] and finalising their plans for their visit. At

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94 The designCapitala cards can be downloaded from: https://window874.files.wordpress.com/2012/09/design-capitalia-cards_print-a4_def.pdf

95 The team of labbers is highly diverse, given that students are recruited from different faculties within their universities, from different universities within their countries, and from different countries.

96 One of the greatest difficulties of the project is raising funds; the host universities argue that too much

that point, uncertainty tends to grow. On one hand, the labbers are full of fears, and on the other, they are full of hopes. Their biggest fear is failing; going there with the great expectation of making things better and ending up making things worse. It is important to work with the students and make them see things from a different angle. The main objective of their participation keeps on being their learning experience; they certainly cannot change everyone's life on a short field trip, neither for the better nor for the worse. Therefore, they will go and visit the people from the community with the ultimate goal of *learning from them*.

It must be said that in this type of practice, things hardly ever go as planned. The team visits a community of individuals with occupations of their own, and while many can be interested in participating, or are simply kind enough to join the activities proposed by the visitors, the same cannot be expected from all.

Once in the location, based on IDEO's HCD toolkit, the team starts with an *exploration*. Even if it was not the first trip to the community, things might have changed in the assemblage (N_1). If possible, the team must stay and sleep in the community, at least for a couple of days. Evidently, in an ideal scenario, the team should stay in the community for a much longer period. In fact, many would argue for the need to spend several months in the field before truly understanding anything. However, the reality is that students must attend their regular lectures and that such a long trip is not possible within the existing structures.

The team splits into smaller teams of three or four, making sure that at least two persons speak the local language. So, while one talks the other one translates, and the one who does not speak the local language observes. It is also preferable to keep the teams interdisciplinary and intercultural. It can be said that at least for a while, the project becomes merely an ethnographic practice in which the students are encouraged to walk around, observe, talk to people, ask questions, take pictures, make notes or sketches, and try to be very aware of everything. At different moments of the day, the full team meets to share and reflect with the others what they have been doing, and to point out the highlights of their visits.

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money is spent to benefit a rather small number of students; therefore, one way to share the experience with a larger audience of students is to organise events like seminars or workshops, which is what has happened during the ALM field trips.

The exploration period challenges the team, as they discover that things in the community are different from what they expected. Although people live in poverty and in marginalisation, they seem very happy, *happier than most people they know,* as stated by a student in ALM 2012, and as observed by students in ALS. It is common that at this point, the students will start questioning their own presence in the community. If people live alright, why is there the need to conduct the LAB? Why do anything at all?

In response, the labbers are encouraged to start analysing the information they have gathered, to make sense of things and to identify the everyday big and small challenges that the community faces. By this point, the labbers have normally developed a sense of commitment, by which they feel the duty to make use of their knowledge and skills to make the community a better place. As stated by Frediani and Boano (2012, 215): "[r] evealing marginality is about revealing conditions of subordination as well as oppression, but also spaces and opportunities for subversive thinking and practice."

Overcoming the identified challenges might require the involvement of many stakeholders, like policy-makers, and local and national governments, and some of them might be too big. Given the grassroots nature of the project, the students focus on challenges that are at the same time necessary, desirable, and feasible, and that can be tackled within the community by making use of their own resources and their existing relations with a wider network of stakeholders (which might include the universities). Following IDEO's HCD toolkit, decisions are normally made by a vote.

Having selected the challenges, the *conceptualisation* process consists of designing something that answers the question "how might we _____?" The concepts must be made explicit, as they must be communicated to the members of the community. Several means can be used for that purpose, including drawings, sketches, 3D models, and role-playing. The last thing to do in the community is to meet the members of the community to show them what has been developed and to get their feedback. This *validation*, as it is called in IDEO's *Human-Centred Design Toolkit* (2011) is critical. It is for the community to discern whether the proposals are valid, whether they would bring benefits to the community, whether they respect their own cultural traditions, whether the team has missed something, and so on. Perhaps more importantly, this is the moment when the community decides whether they will allow the continuation of the project or not.

Once out of the community, but before the team splits and everyone goes back to their own country, students have typically presented their process and proposals to a

wider audience that includes decision-makers from their universities, governmental authorities, and potential sponsors. These public discussions have also played a crucial role in the continuation of projects, because the audience brings in factors that the team might have missed.

Reflection period

The immediate goal of this period consists of refining the proposals that were generated on the field trip. One tool that can be used for this purpose is scenario building. The labbers can generate the ideal scenario for the community by integrating both the comments made by the community members and those gathered from other experts in their concept proposals. Next, the labbers should imagine and visualise life in the community if all their proposals were successfully implemented. It is from these scenarios that more specific project ideas can be drawn.

There are various formats in which the labbers can report their learning experiences, and these have included learning reports, conference articles, conference posters, and art installations. The brief(s) given to the next batch of labbers in the following learning cycle will largely build on these deliverables.

The reflection process can be extended for several months, and perhaps even years, after the official "course" has come to an end. Deep reflection might enable the labbers to understand that "… [s]olidarity is not based on common identity or even the common history of oppression but on the transformative hope for what is yet to come. Solidarity therefore is not about merely confirming identities, but actually putting them into question and thus opening them to reconfiguration" (Frediani and Boano, 2012, 216; based on hooks, 1994).

Many labbers might participate in just one learning cycle, and it might be nearly impossible for visiting students to continue their relationship with the community. Nevertheless, Aalto LAB can potentially become a meaningful learning experience that would inspire the students to reflect about "… their role(s) and responsibilities to society, both globally and locally" (Boni, MacDonald, and Peris 2012, 183).

Visualisation of the meta-framework

In Aalto LAB, the design process is iterative and consists of four main phases (diagnosis, conceptualisation, imple–mentation, and evaluation), each of which is completed when specific goals are reached. Therefore, a diagnosis ends with concepts for feasible projects, the conceptualisation generates a project plan, and the implementation finishes with a prototype. Within Aalto LAB, these phases are not limited by time because the matters to be dealt with in a community can vary in complexity, and because the sub-projects are developed as part of a pedagogic program structured in periods that last several months.

The experiences of ALS and ALM show that the earliest diagnosis generates more than one concept for feasible projects. These projects might tackle different problems, or the same problems from different fronts. Altogether they represent a comprehensive strategy by which a desirable future could be reached. In the end, each sub-project is carried on with a time-frame of its own, so that one sub-project may have reached the implementation phase while another requires a third round of diagnosis..
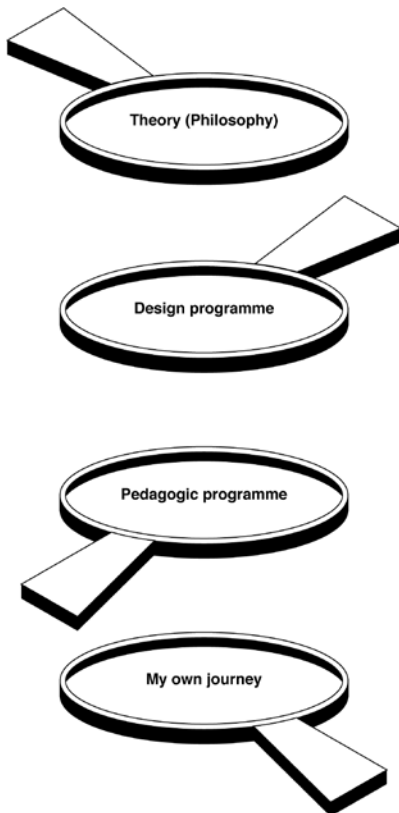
Figure 20. Visualization of the lenses through which Design as Freedom is constructed. Drawn by Claudia Garduño García.
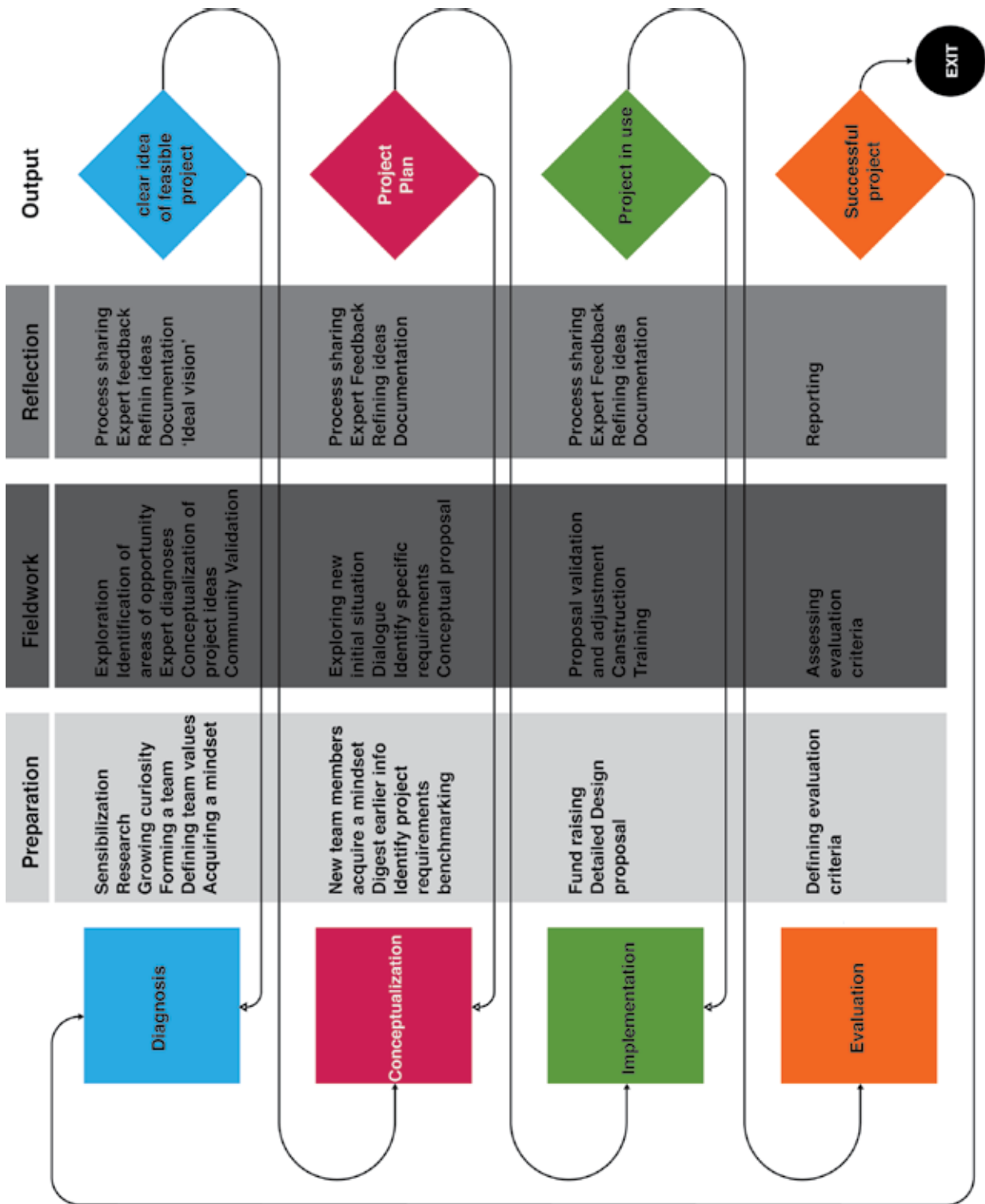
Figure 21. Visualization of the overall process of Aalto LAB. Each sub-project advances at its own rhythm, which might take several years. Drawn by Claudia Garduño García.
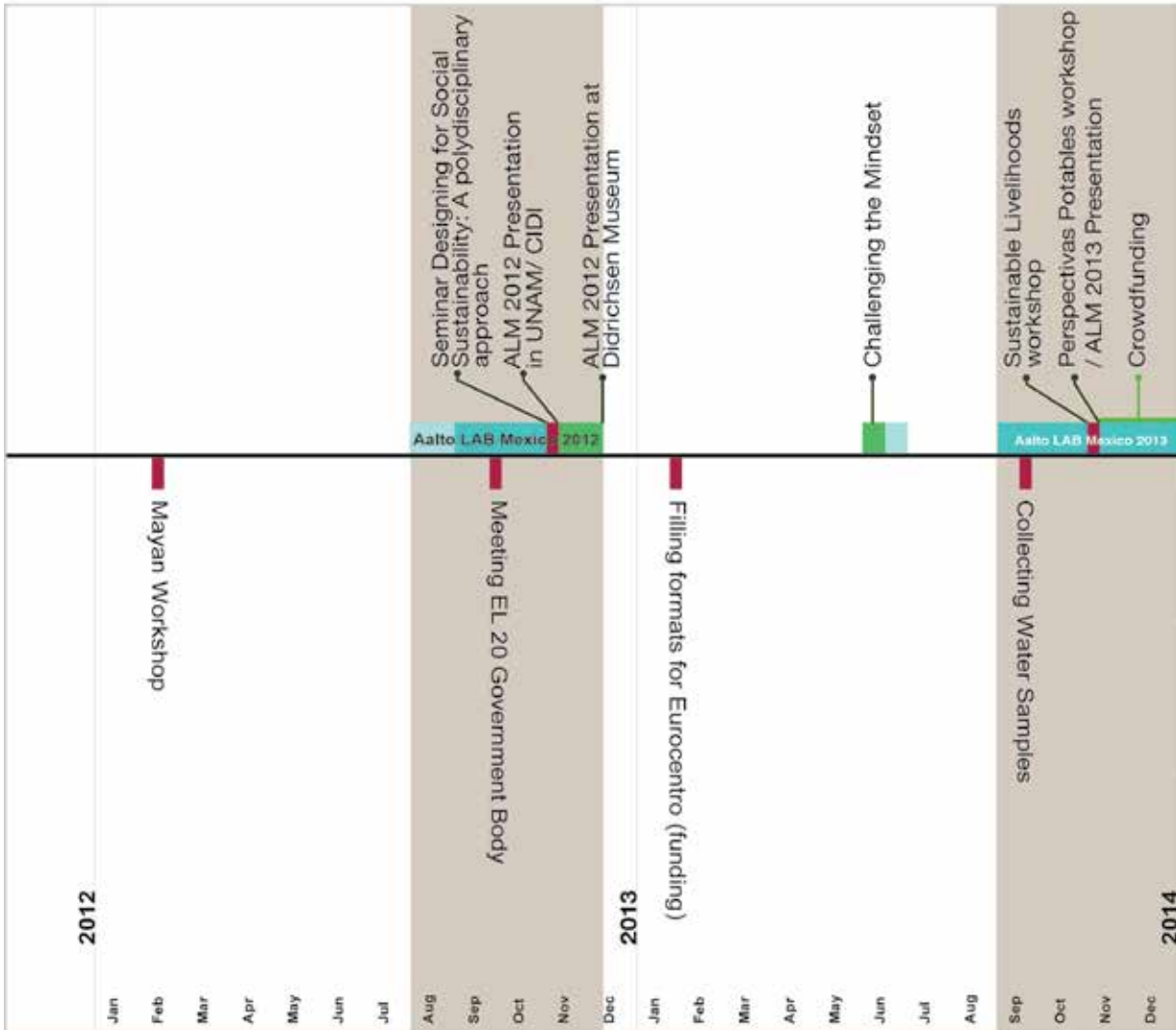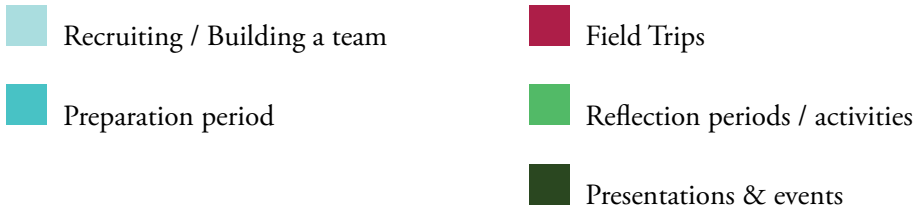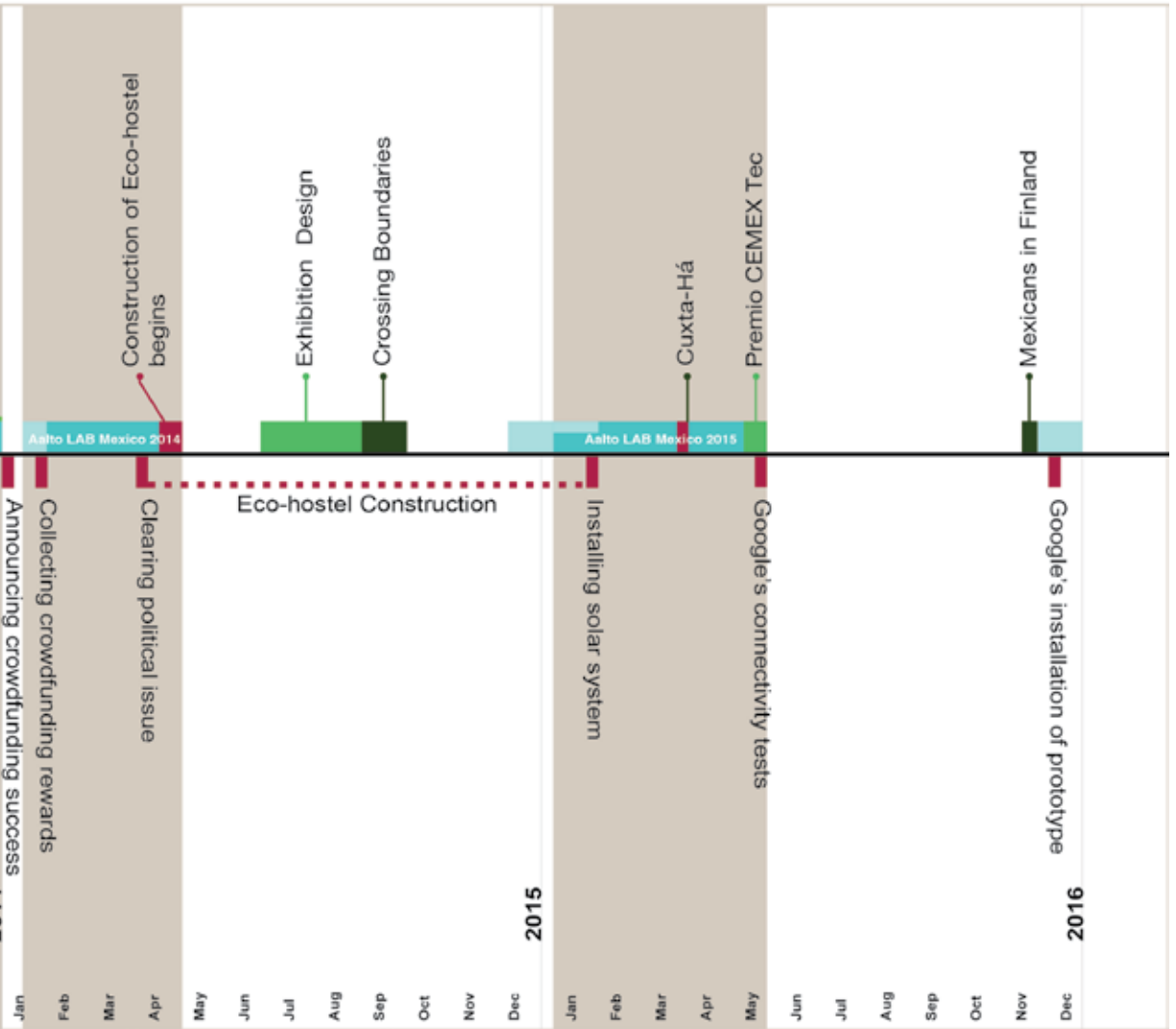
Part II

Figure 22: Timeline showing the whole process of Design as Freedom, from 2012 - 2016 (includes the epilogue). The upper part shows the ALM events, while the lower part shows the field trips made by the researcher. Drawn by Claudia Garduño.
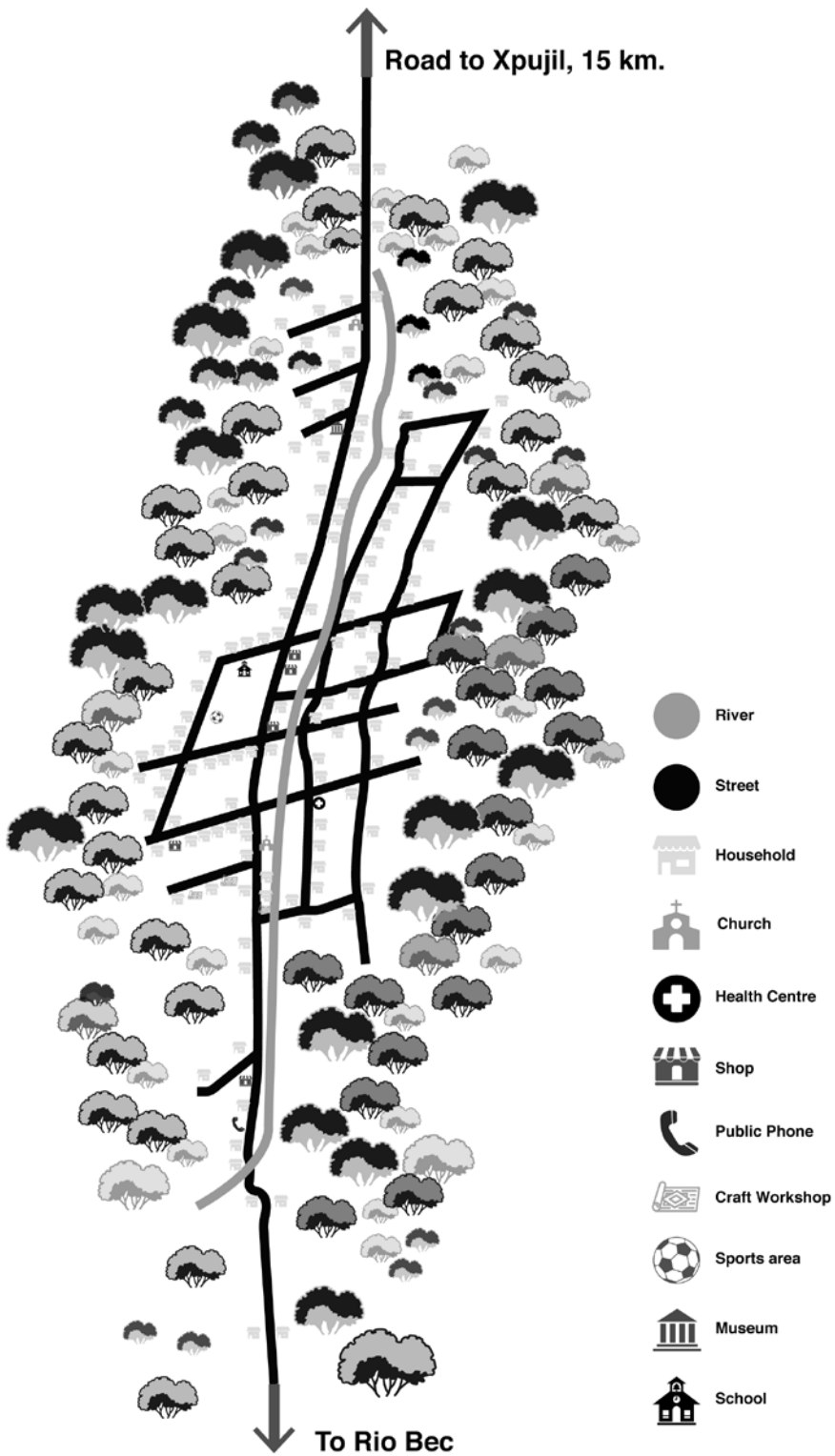
Construction of Eco-hostel begins

Exhibition Design

Crossing Boundaries

Cuxta-Há

Premio CEMEX Tec

Mexicans in Finland

Aalto LAB Mexico 2014

Aalto LAB Mexico 2015

Announcing crowdfunding success

Collecting crowdfunding rewards

Clearing political issue

Eco-hostel Construction

Installing solar system

Google's connectivity tests

Google's installation of prototype

2015

2016

Jan

Feb

Mar

Apr

May

Jun

Jul

Aug

Sep

Oct

Nov

Dec

Jan

Feb

Mar

Apr

May

Jun

Jul

Aug

Sep

Oct

Nov

Dec

Road to Xpujil, 15 km.

To Rio Bec

River
Street
Household
Church
Health Centre
Shop
Public Phone
Craft Workshop
Sports area
Museum
School

Figure 23. Map of 20 de Noviembre. Drawn by Andrea Naranjo.

Setting up Aalto LAB Mexico

This section of the dissertation is dedicated to reflecting on how Design as Freedom takes place in practice, through the story of Aalto LAB Mexico from its beginning in 2012, to 2014. However, there is a question that has to be answered first: *Why Mexico?*

I am aware that I am privileged. Only 16.7% of Mexican women have the opportunity to study for a university degree (INEGI, 2010)[97], and of every 10,000 Mexicans who belong to the economically active population, only 0.5 graduate from a doctoral program (CONACyT, 2013, 56). It was much earlier than 2010 when I started feeling the strong moral obligation to pay my 'social mortgage'; but it was ALS that truly inspired me to believe that certain design interventions could actually make the world a better place. It made a lot of sense to try it out in my homeland. On the practical side, by 2011, most of my connections were in Mexico, and I spoke the local language. Additionally, I was funded by the Mexican National Council of Science and Technology (CONACyT), and although they did not require me to dedicate my research to Mexico, the overall purpose of their grant system is to advance Mexican science, technology, and research.

Before describing the process of setting up Aalto LAB in Mexico, which includes building a network and selecting a location, I will briefly introduce Mexico and its history. This description is necessary because, as explained before, the context (initial assemblage) highly defines the project, and given that this dissertation is written outside

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97 http://www3.inegi.org.mx/sistemas/sisept/Default.aspx?t=medu13&s=est&c=35012

Mexico, there are matters that the audience should be aware of in order to understand the decisions made throughout the project. Aalto LAB Mexico would inevitably encounter some of the most intricate problems that prevail all over Mexico, including high inequality in wealth distribution, but also the complexity that derives from such incredibly diverse territory and cultural groups. The description below is rather brief. Therefore, if the reader is not at all knowledgeable about Latin American studies, or is interested in further understanding the critical perspective through which this work approaches Mexico, it is recommended to read Appendix 1.

Mexico

If one only paid attention to global economic indicators, it would be easy to assume that, within the world population, Mexicans are among those who are better off. Mexico is the 14th largest global economy (World Bank, 2013) and therefore belongs to the Group of Twenty major advanced and emerging economies (G20). However, this represents only a narrow fragment of the country's reality. The Mexican indicators point out that 46% of its population, which accounts for nearly 52 million people, live in poverty (CONEVAL, 2010), implying that within the country, inequality is vast. However, in order to grasp the high complexity of Mexican problems, one needs to understand some geographical, cultural, and historical factors.

Frank Tannenbaum (1968 [1951]), *The gringo who understood Mexico*[98], rightly pointed out in *Mexico: the struggle for peace and bread*:

> MEXICO is an isolated country. Geographic obstacles have impeded communication and fostered a local, inward view and an aloofness from the outside that has proved not merely physical, but political and spiritual as well. Mexico is unlike any country in the world, and almost every

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98 Enrique Krauze is a well-acknowledged contemporary Mexican historian, and editor-in-chief of the magazine *Letras Libres*. He dedicated an article, published in December 2010, to the life and work of Frank Tannenbaum (1893-1969), an Austrian-born American Citizen who witnessed the Mexican Revolution (1910) at close distance. Although at the beginning Tannenbaum was liked by Mexican intellectuals, his last book, *Mexico: the struggle for peace and bread*, published in 1950, was highly criticised by most of them. Krauze reveals that in 1960, while working with his colleagues in an effort to refute Tannenbaum, he was positively surprised by the creative manner in which he had approached Mexico - a surprise that has lasted for more than forty years. Krauze (2010) entitled his article *Frank Tannenbaum: El gringo que entendió a* México (Frank Tannenbaum: The gringo who understood Mexico).

Mexican community enjoys its own quality of uniqueness. The physical geography could not have been better designed to isolate Mexico from the world and Mexicans from one another. (Tannenbaum, 1968 [1951], 3)

Mexico has difficulties integrating within larger regions. On the one hand, it is located in North America, a geographic region with which it does not share a culture or history. On the other hand, if one defines Latin America as the group of American nations with a Romance official language, then Mexico certainly belongs to them; however, all it geographically shares with the region is a 956 km border with Guatemala (INEGI, 2002). Thus, Mexico is culturally isolated from its geographic region and geographically isolated from its cultural region.

When Tannenbaum mentioned that Mexicans are also isolated from one another, he made reference to the intricate geographic conditions within Mexico that are caused by its multiple mountain ranges, which divide its territory into multiple climates. Those intricate geographic conditions and climates enable the existence of a wide range of biodiversity, making Mexico the home of 12% of all known species in the planet, and thus the fifth most diverse country in the world (CONABIO, 2008). As a result, Mexico is also highly culturally diverse; within its territory, at least 52 different indigenous languages (CDI, 2010) are still spoken. The environmental and cultural diversity supports Tannenbaum's observation that most Mexican communities are somewhat unique. Nonetheless, history has confirmed that this great richness is also a source of intricate conflicts.

On October 12, 1492, Christopher Columbus (1451-1479) believed he had reached India; however, he had "discovered" America. A few years later, in 1521, the explorer Hernán Cortés (1485-1547) conquered the territory that was being ruled by the Aztecs, and established New Spain. The Spanish episode is so fundamental within Mexican history that history can be generally be classified around it.

1. (1600 BC-1521) Pre-Columbian Mexico (the time before the Spanish Conquest)
2. (1521-1821) New Spain (the time Mexico was a Spanish Colony)
4. (1821-to date)   Independent Mexico

Spanish-ness necessarily defines a great part of the Mexican identity. Nowadays, Spanish is the most widely spoken language in the country and Catholicism is the most widely practised religion. However, Spanish-ness has also been difficult to assimilate, as it is

the primary cause of an identity crisis that still prevails. During colonial times, Spain established a rigid, racist, and oppressive caste system that gave absolute privilege to the Peninsular Spanish (those born in Spain). Everyone else's rights were limited, including the Criollos (Spanish who had been born in colonial lands), the Indians (as native people were called when Columbus thought he had arrived in India), and the Blacks (people who had been kidnapped in Africa and taken to the new world as slaves). That was also the case for everyone else who was the offspring of an inter-racial marriage and, therefore, belonged to a different caste.

Among the tens of castes, the Mestizo (Spanish + Indian) have to be highlighted because they would eventually become a romantic symbol that would allow the reinterpretation of that era of subjugation. According to that positive version of history, Mexico was born "from the clash of two cultures", and the mestizo are "both the unconscious carrier of European culture to Indians and the natural link between the racial and linguistic groups in Mexico" (Tannenbaum, 1968 [1951], 15). In its own way, Mexico mimicked the homogenisation process promoted by the West, where the indigenous/barbarians ought to be mixed/civilised. The total number of indigenous has consistently decreased since the Spanish Conquest, which does not necessarily mean that all the indigenous towns wish to mix and integrate with the Spanish-speaking mestizos; in fact, their opinion was never asked.

The Mexican independence movement included causes like the abolition of slavery and equality of all, despite having been started by one of the most highly privileged casts, the Criollos. It could be stated that by the time the movement started, the Eurocentric paradigm had been deeply rooted and widely spread around Mexico. In the first years after the declaration of the independence, early versions of the Mexican right and left political forces started to be shaped, and also to engage in continuous and nearly surreal and absurd confrontations. On the right side, the conservatives continued to support the model of Spain and other European nations, they were loyal to the Catholic Church and to the idea that Mexico had to be ruled by a European Monarch; thus, they invited Maximilian of Austria (1832-1867) to become Emperor and to turn Mexico into a French protectorate (González, 2010, 35). On the left side, the liberals thought that Mexico had to follow the model of the United States of America; thus, they proposed substituting one foreign cultural legacy with another; a fact that has been described as the greatest possible contradiction (Sarmiento in Larraín, 2005, 43).

The next key episode in Mexican history was the Revolution of 1910, which was triggered by several causes, including the fact that having ruled the country for thirty

years, General Porfirio Díaz (1830-1915) had become a dictator. Díaz had certainly modernised the country by building ports and railways and introducing communication services like post, telegraph, and electricity. Additionally, Mexico had become one of the world's leading producers of cotton and sugar cane. However, all the infrastructure had been sponsored with foreign capital, which ultimately resulted in huge social inequality and very little opportunity for political participation, especially for the indigenous, the peasants, and the workers. The Mexican Revolution was a very complicated episode when different actors fought for multiple and not necessarily shared causes, including the fall of the dictator and the establishment of a new constitution. Particularly relevant for this work is the cause that was fought for by Emiliano Zapata under the motto "The land belongs to those who work it" ("La tierra es de quien la trabaja"), regarding the right of peasants[99] to own land[100].

When the revolution came to an end, the intellectuals and the artists sought to shape the country by integrating the ideals of the revolution, giving birth to Mexican Muralism. Diego Rivera depicted Zapata on the walls of public buildings, and in the same frames, he idealised Mexico's original indigenous legacy. These times, when Mexico flirted with communism, would not last very long; soon after, the government would overtly align with the social and economic policies of the USA.

Between 1957 and 1991, Mexico followed the global trend that aimed to integrate the indigenous and non-indigenous populations by developing social policies. Spanish became the only official language even in schools (INALI, 2013), which motivated indigenous families to talk to their children in Spanish exclusively[101]. As a consequence, the existence of many native languages was endangered[102]. Moreover, and in order to prevent them from being marginalised, some indigenous people chose not to be acknowledged as such (Duquenoy, 2011).

The idea that through the mestizaje process, Mexico would become the home of a homogenous population practically consigned the indigenous (the 52 groups) to marginalisation, a situation which motivated a group of indigenous people from Chiapas

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99 Not all peasants were indigenous, but most of the indigenous were peasants.

100 The agrarian law has gone through a series of reformations ever since, but land has been distributed in several periods, like the 1970s, when 20 de Noviembre was founded.

101 This was confirmed in our informal conversations in 20 de Noviembre.

102 In 2003, the indigenous languages were acknowledged as official within Mexican law, although the constitution has only been translated into a few of those (INLI 2013).

to form the Ejército Zapatista de Liberación Nacional[103] (EZLN) (Legorreta, 2007) and to start an armed conflict. On 1 January 1994, Mexico was in the world's spotlight because the recently signed North American Free Trade Agreement (NAFTA) would come into force; that same day, the EZLN attacked (Volpi, 2004, 203).

"The Zapatist fight for their right to self-determination; that is, their right to constitute themselves within the country as a different alternative (Marcos in Scherer, 2014 [2001]). They walk against "the world that hegemoni-zes and homogenises not only the country, but the whole world" [104] (ibid.). They are against private property and the money economy because they have kept alive their traditions of common property, barter, and non-mechanised agricultural systems; and because of that, it is impossible for them to achieve what the NAFTA agreement required them to do: to compete with big transnational producers "(Volpi 2004).

The armed conflict later became a war of words led by Sub-commandant Marcos (a mestizo) through a series of letters directed to the government and the intellectuals. At first, Marcos was not taken seriously, but over time he earned respect from Mexican and international intellectuals and journalists, including Octavio Paz (1914-1998), the Nobel prize winner who, at that time, had aligned with the rightists. The following, written in response to the government's announcement of forgiveness, has been pointed out as his most eloquent text (e.g. Volpi, 2004, 283):

> Why do we need to be pardoned? What are we to be pardoned for? For not dying of hunger? For not accepting our misery in silence? For not accepting humbly the historic burden of disdain and abandonment? For having risen up in arms after we found all other paths closed? For not heeding the Chiapas penal code, one of the most absurd and repressive in history? For showing the rest of the country and the whole world that human dignity still exists even among the world's poorest peoples? For having made careful preparations before we began our uprising? For bringing guns to battle instead of bows and arrows? For being Mexicans? For being mainly indigenous? For calling on the Mexican people to fight by whatever means possible for what belongs to them? For fighting for liberty, democracy and justice? For not following the example of previous guerrilla armies? For refusing to surrender? For refusing to sell ourselves out?

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103 Zapatist Army of National Liberation

104 My own translation

Who should we ask for pardon, and who can grant it? Those who for many years glutted themselves at a table of plenty while we sat with death so often, we finally stopped fearing it? Those who filled our pockets and our souls with empty promises and words?

Or should we ask pardon from the dead, our dead, who died "natural" deaths of "natural causes" like measles, whooping cough, breakbone fever, cholera, typhus, mononucleosis, tetanus, pneumonia, malaria and other lovely gastrointestinal and pulmonary diseases? Our dead, so very dead, so democratically dead from sorrow because no one did anything, because the dead, our dead, went just like that, with no one keeping count, with no one saying, "Enough!" which would at least have granted some meaning to their deaths, a meaning no one ever sought for them, the dead of all times, who are now dying once again, but now in order to live? Should we ask pardon from those who deny us the right and capacity to govern ourselves? From these who don't respect our customs and our culture and who ask us for identification papers and obedience to a law whose existence and moral basis we don't accept? From those who oppress us, torture us, assassinate us, disappear us for the grave "crime" of wanting a piece of land, not too big and not too small, but just a simple piece of land on which we can grow something to fill our stomachs?

Who should ask for pardon, and who can grant it? (Marcos translated by Nick, 2007 p222-223)

Carlos Fuentes (1928-2012) wrote back to Marcos, in gratitude. The Zapatists had reminded him that there were two different Mexicos, and that the idea of progress or modernity in this country could only be complete by including the perspective of its indigenous towns. The indigenous towns might be destined to disappear through the mestizaje process, but whilst that happened, Mexicans should respect the cultures and values that live within them (Volpi, 2004, 366–367).

Nevertheless, the Zapatist message, which was so neatly transmitted to the intellectuals, did not get across equally to the whole of the Mexican population. Two decades later, the situation of the indigenous towns has not changed dramatically. Moreover, when mestizos like ourselves in ALM reach out to the indigenous for the first time, it is with embarrassment that we realise that with our passiveness, we too had chosen to keep them in oblivion. How could global development perspectives fit contexts that fight economic

liberalism and homogenisation? Could this struggle really be reduced to the adaptive preferences phenomenon, because rather than being happy, this must show that people have conformed to poor living standards? Would a contented slave be willing to die to defend their lifestyle? Perhaps, what (we) Mexicans need to understand is precisely what Leopoldo Zea wrote back in 1990:

> A man, (all men), is equal to any other man. And that equality derives, not from a man or town's condition of being or not an identical copy of another; but from its own peculiarity. That is, a man or town is similar to others because it is, like others, distinct, diverse. Diversity, further than making individuals more of a man or less of a man; makes them all alike. That is what makes men, men, and towns, human communities.[105] (Zea, 1990, 19)

Tannenbaum, like Larraín, believed that Mexico's best possible future would not be achieved by following the path of the West. Like Max-Neef, Tannenbaum highly regarded communities that maintain, at least partly, their own ways of living; in fact, he believed that Mexico's greatest asset was its rural communities. Rather than aiming for big changes, Mexico needed a philosophy of small things for its communities, like small dams to enable the emergence of fisheries, hydroelectric plants, hydroponic projects, local sanitation, or apiculture. In December 2011, I was ready to leave Helsinki and travel to Mexico in order to find a location and the local partners that would help develop Aalto LAB Mexico. I had not yet come across Tannenbaum, but I was already inspired by the designCAPITALIA framework, which we were developing at Aalto University through the lead of Alastair Fuad-Luke. The general idea was to understand design projects as processes that grow capital, but not only money. That idea, in conjunction with the writings of Amartya Sen, Manfred Max-Neef, and my own experience at ALS, convinced me to believe in the existence of communities that intentionally and proudly lived lifestyles that were alternative to the dominant one (capitalist-western-industrial-developed-first world).

From the dominant paradigm's perspective, those communities would be very poor, but at the same time, in non-conventional ways, those communities could be very rich. Those people would have challenges; they could even be lacking some basic freedoms. However, rather than delivering the capitalist-western-industrial-developed-first world

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105 My own translation

model as a solution, my interest was in exploring alternative ways to construct the freedoms they were lacking.

I left Finland hoping that I would soon find a suitable location for the project. I was somewhat unaware that there were too many communities that would suit the description above, and that there was therefore a need to further develop the selection criteria. Simply, the 52 million Mexicans who live in conditions of poverty (CONEVAL, 2010) are spread within the 2456 municipalities among 32 different states (INEGI, 2002). Moreover, Tannenbaum's conception of isolated communities with cultural practices and microclimates of their own suggests that they can be treated like DeLanda's assemblages. In design terms, each of them represents an opportunity and a unique point of departure; altogether, they could inspire a variety of alternative visions for a more sustainable future. Evidently, it could fail, but the possibility that at least a few things could be improved was sufficient motivation to believe that it is worth a try.

Building a network

At the beginning of 2012, I became an exchange student in the Postgraduate Unit in Industrial Design (PDI) of the Universidad Nacional Autónoma de México (UNAM)[106], under the supervision of Prof. Oscar Salinas. This was the first step in building the network for Aalto LAB Mexico. In the following months, I would continue making links within UNAM and also with my alma mater, Tecnológico de Monterrey Campus Ciudad de México (Tec de Monterrey)[107].

At UNAM, Prof. Salinas decided that the PDI would be represented in ALM through the participation of Xaviera Sánchez de la Barquera, who at that time was an exchange student on Aalto University School of Arts, Design and Architecture's Creative Sustainability Master's program. The participation of their Research Centre in Industrial Design (CIDI), which hosts their BA program, was made possible through Alberto Vega, who is in charge of the Mayan Design Winter Workshop, which takes place once a year in Calakmul.

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106 National Autonomous University of Mexico

107 Technologic Institute of Monterrey, Mexico City Campus.

Tec de Monterrey's participation was ensured by getting in touch with the heads of four different Bachelor's programs: Constantino Landa from Industrial Design, Omar Rojas from Engineering in Sustainable Development, Gabriela Estrada from Journalism and Media, and Gabriela Vieyra from Humanities and Social Sciences. In Mexico, all undergraduate students have to complete 480 hours of social community service, so I contacted Tec's Social Community Service department in order to validate the students' participation as such.

Figure 24. Following the model of Aalto LAB Shanghai, the main partners of Aalto LAB Mexico are the community (20 de Noviembre), Aalto University, and the local universities: Tecnológico de Monterrey and Universidad Nacional Autónoma de México.

I spent the full month of June 2012 in Helsinki, and within this period of time, I contacted many people from different departments within Aalto University, with the hope of finding potential partners for the network, and obtaining sufficient funding, which was estimated at around €20,000. At my meetings, I was consistently asked to find a way to turn the Aalto LAB into a permanent course within Aalto University, a task that included finding someone who could act as the course teacher.

The trip was very successful, as links were established with Design Factory through its director, Kalevi Ekman, and with Aalto Global Impact through Riina Subra. Additionally, Susu Nousala, back then a recently arrived postdoctoral researcher in the Design Department at the School of Arts, Design and Architecture, expressed her interest in the project and agreed to become the teacher for the labbers.

Funding was (and continues to be) the greatest issue. ALM got its first funding of €4,000 from Aalto Service Factory, through an application by the Encore research team led by Tuuli Mattelmäki. An equal sum was granted by Aalto International Relations through an application that I submitted upon an open call. It was unlikely that I would find a sponsor who would grant the missing €12,000, so ALM required a creative funding strategy that, rather than asking for a lot from one sponsor, would ask for a little from many sponsors. Moreover, ALM was not seeking money for its own sake, but in order to obtain flight tickets, accommodation, meals, and so forth. I negotiated with Aalto ARTS International Affairs for sponsorship for flights for two students, and with Aalto

Design Factory for sponsorship for the trip for three students. With help from Aalto Global Impact, we established contact with the School of Business and had great hopes that they would fund the remaining two students.

Later on, when I was back in Mexico, Tec de Monterrey's Eurocentro agreed to fund €4,000 through Paz Díaz Nieto. Tec de Monterrey's Entrepreneurial Relationships department, through Zuleika de Alba and Mirta López, sponsored some of the accommodation costs in Mexico City, some of the travel costs of the facilitators from IDEO, and the meals for all participants during their stay on Tec's campus. ALM was underway.

Finding a location

A context had to be strategically selected to enable the exploration of Design as Freedom through Aalto LAB, which seemed feasible to me after experiencing ALS. In ALS, we learned that even a very poor community could have *something* that could inspire a brighter and feasible future. In Chongming Island, the barley fields, together with an old glass factory and the shipping docks, suggested the potential for the production of a local organic beer to be distributed along China's coastline, and while doing so, generate a sense of identity among its inhabitants. Thus, those types of places where people live *alternative lifestyles*[108] are propitious for exploring the propositions of Amartya Sen, Manfred Max-Neef, and Hans Rosling, for whom well-being and a better life are not necessarily completely constrained by economic growth.

The process of finding a location for Aalto LAB Mexico started by differentiating among different degrees of poverty. A piece of news published by REFORMA on February 1, 2010, just some weeks after an earthquake had severely hit Haiti, illustrated the feasibility of finding an alternative livelihood in Mexico. The heading speaks of Haiti-like misery (within Mexico). A total of 54 municipalities located in 9 different states (Oaxaca, Chiapas, Guerrero, Veracruz, Puebla, Jalisco, Nayarit, Chihuahua, and Durango) had an equal or even a lesser human development index than Haiti, meaning that the life expectancy, literacy rate, and GDP per capita were comparable. A total of 640,000 people lived in that condition, the majority of whom were indigenous. When the Public Institution of Social Assistance (DIF) visited those communities while collecting aid

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108 Alternative to the western, urban, industrial lifestyle of the middle class in developed nations.

for Haiti, people begged the Haitians for forgiveness, but they truly had nothing to give. However, a 15-year-old lad interviewed by REFORMA noted: "Here and there, we are equally poor, but here we do not fight each other for food because we grow corn and beans, and when that runs out, we eat herbs from the hills or then small animals" (Garduño & Rea, 2010). His statement could be contrasted with pictures published by Reuters, which showed Haitians making cookies out of mud by mixing dirt, salt, and vegetable fat, one of the few choices for Haiti's poorest inhabitants already before the earthquake (Elkington, 2010). Definitely, those ought to be different types of poverties.

Whilst it can be argued that working in a place where people cannot even feed themselves would have been a nobler task, the reality is that the research project had a strict time constraint established by the funding entity (CONACyT), and given that this was the first attempt to take the LAB all the way to the implementation phase, the opportunities of being able to achieve something had to be maximised. So, rather than working with a community living in extreme poverty, it was decided to work in a community where people were able to feed themselves despite having very little access to money.

Many communities in Mexico live in a condition of poverty but are able to feed themselves; thus, more specific criteria were needed in the process of finding a location. Once more, Aalto LAB Mexico looked back to ALS for inspiration. The community where we worked in Shanghai, Xian Qao, was also the focus of a project called Design Harvests; furthermore, two of the labbers, Yang Li Hua and Zhu Mingji, were part of that project under Lou Younqi's mentoring. The relationships that Li Hua and Mingji had constructed with the people of Xian Qiao were possibly the only reason why we had such easy access to the community, why people opened the doors of their homes and were willing to have long conversations with us. Furthermore, the existing relationships between the community, Tongji University, and Studio Tao were key to our conceptualisation process. It was through those relationships that the community was open to offering certain services, and it was by collaborating with their partners that the community would be able to expand its network and build long-lasting relationships with actors from the public and private sectors[109].

Therefore, the search for the location continued by exploring if either UNAM or Tec de Monterrey were conducting any social service projects in communities; but neither of them was. However, soon after, two different choices became available. Through Tec

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109 Based on those existing relationships, we were able to become an assemblage in Shanghai, at least for a few days; but more importantly, we were able to envision new relationships within existing stakeholders.

de Monterrey, there was the possibility to work in Huisuchi, a small Rarámuri[110] village in Batopilas, in the northwestern state of Chihuahua; and through UNAM's Research Centre in Industrial Design (CIDI) and their yearly *Mayan Winter Workshop*, it was possible to work in either of three different communities where their workshop takes place (Zoh-Laguna, Xpujil, and 20 de Noviembre) in Calakmul, in the southeastern state of Campeche.

Ultimately, Calakmul was preferred over Batopilas for a single reason. Since 2006, drug traffic-related violence had radically increased in Mexico. The newspaper called REFORMA kept (weekly, monthly, and yearly) track of the number of deaths that occurred in each state. The overall situation was shown by colour coding the territories in shades of white, yellow, and red; the more deaths that occurred within a state, the darker shade it would be coloured. It was clear that some states were much more dangerous than others, and that the Yucatan Peninsula, where the state of Campeche is situated, had remained the safest region in the country. Furthermore, the National System of Public Security (SNSP 2011) by the Mexican Presidency showed that only one person had been killed in Calakmul between 2006 and 2011 in relation to the drug traffic conflict - a number that contrasted with the 6437 cases that had occurred in Ciudad Juárez, Chihuahua, in that same period.

Again, it could be argued that those violent locations would be a perfect context to make use of design to generate new choices for people to live their lives. However, time and funding limitations required finding a location where people shared the mindset that the future could be different and would therefore be more welcoming. A place infiltrated with drug traffic was difficult to conceptualise as such a location for the sole reason that the common discourse is that those who join the drug gangs simply *had no choice*[111]. Finally, and more importantly, given that Aalto LAB is explicitly a pedagogic program with student participants, securing their safety as much as possible was a priority.

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110 Rarámuri or Tarahumara is the name given to a large indigenous group that lives scattered in the mountains of the state of Chihuahua, famous runners, winners of ultramarathons in Mexico and in Europe.

111 This observation comes from an informal talk I had in Urique, Chihuahua. One of our hosts gave an account of various different illicit activities that took place in the area; how most of the trucks had been stolen from cities all around the country, how some green patches in the mountains are actually heroin fields, and the most shocking: how children want to become *sicarios* (drug cartels' assassins) when they grow up. It made me think that the society was sick; in their madness they had lost the human sense of value. Rather than living difficult lives of hard work and small satisfactions, they were willing to risk it all and work for the drug cartels to become very rich and deadly feared, even if for the briefest time. They knew that the chances of getting killed were high; but *they had no choice*.

Therefore, this required the location to be as far as possible from the regions infected with drug-related violence.

This work has prioritised the full development of the approach (all the way to the implementation phase), and has selected a location that seems to be the most propitious for doing so. It is possible that this approach could be applied to different contexts, including those with much more extreme conditions, but that is not within the scope of this thesis.

Calakmul

This section is constructed from the governmental databases, documents, and programs from the National Institute of Statistics and Geography (INEGI), the Secretariat of Social Developmente (SEDESOL), National Commission for the Rights of Indigenous Peoples (CDI), the National Commission of Forestry (CONAFOR); visits to the national crafts fair organised by the National Fund for Social Enterprises (FONAES) and the Ministry of Economics (SE); a visit to the National Museum of Anthropology and History (INAH); a report on a Territorial Sorting Study developed jointly by Deutsche *Gesellschaft für Technische Zusammenarbeit*, (*GTZ)*, the National Commission of Natural Protected Areas (CONANP)[112], and the Municipality of Calakmul; and of course, from information gathered through informal conversation throughout my 10 visits to the community between 2012 and 2014.

Calakmul is the name given to an ancient Mayan city discovered by Cyrus Longworth Lundell in 1931. It means two adjacent mountains, which are in fact, pyramids (INAH, 2010). However, Calakmul is also the name given to the largest protected area of the state of Campeche, a biosphere that extends over 723,000 hectares and that is listed as UNESCO Natural Heritage site (UNESCO, n.d.) and produces 13% of the oxygen on the planet (Gob. De Calakmul, n.d. a). On 21 June 2014, UNESCO registered Calakmul as a Mixed Site on its World Heritage list (UNESCO, n.d.; Hernández, 2014a), becoming the first of its kind in Mexico. Finally, Calakmul is the name of a municipality that belongs to the State of Campeche.

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112 Arreola et al. n.d.

Apart from the Ancient Mayan, the history of Calakmul is very recent. In the fifties, a Polish company was established in Zoh-Laguna to exploit mahogany, until it was nearly exhausted. In 1989, the Mexican Government declared the (recovering) area the Reserve of Calakmul Biosphere (INAH, 2010). Finally, in 1996, the Municipality of Calakmul was officially created (Gob. De Calakmul, n.d. b). Calakmul is formed of 82 lowly populated communities (H. Ayuntamiento de Calakmul, 2012) with a total population of 26,882 inhabitants (INEGI, 2010). These communities were settled mainly because of the agrarian reformations and land distribution[113] that took place between the 1940s and 1970s, which attracted migrants from 24 different states within Mexico, according to the municipal president, Baltazar González.

The town of Xpujil, which functions as the capital of Calakmul, is the middle point in the road that connects the cities of Escárcega and Chetumal. It is located 26 km from the border that divides the states of Campeche and Quintana Roo. This road is one of the two routes that connects Cancun, one of the main tourist destinations within Mexico, with the rest of the country and with a series of archaeological and natural sites; therefore, it is seasonally transited by tourists. The reserve and the archaeological site attract tourists, too, but also researchers from all around the world. Several universities and NGOs are developing projects in the region.

Despite its rich natural and cultural diversity, the Mexican assessment of poverty from 2012 shows that the state of Campeche is considered an area of high marginalization[114]. Additionally, 85.8% of the total population of the Municipality of Calakmul live in poverty, while 46.1% live in extreme poverty (CONEVAL, 2010).

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113 Land distribution, as discussed earlier, was one of the drivers of the Mexican Revolution of 1910. In different reformations that occurred after that date, peasants who formerly owned no land and worked for a lord were granted plots of their own under 'ejido', which is roughly translated into commune, and which is basically a model of shared property.

114 However, the government has announced multimillion investments to proceed with discovery at the archaeological site of Calakmul and in order to transform the area into a large tourist centre.

Photo by Jan Ahlstedt

Ejido 20 de Noviembre (El 20)

The community '20 de Noviembre', or "El 20", as its inhabitants refer to it, is located outside the reserve , only 15 km away from Xpujil. It was settled in 1971 by a group of families who migrated from the Mayan town of Dzitbalché, located in the municipality of Calkiní, in the north of Campeche. For this reason, the inhabitants of El 20 say that their village was founded by Mayan families. Over time, the people of El 20 have married people from other communities, so not everyone in the community is fully Mayan anymore. Within their primary rules, they established the conservation of 'the jungle' by defining an *urban* area, where they built their houses, and by limiting the amount of agricultural land[115]. In principle, and in step with the revolutionary ideals, each ejdatario (head of the family, typically a man) could possess as much agricultural land as he could work.

The voluntary preservation they made of their jungle would later allow them to become part of the national forest preservation programs run by the National Forestry Commission (CONAFOR), and to work closely with the Commission for the Natural Protected Areas (CONANP). The latter, in collaboration with Mexican geographers and biologists and the German *Gesellschaft für Technische Zusammenarbeit*, (*GTZ)*, elaborated

Figure 25. Foundational stone of the Ejido 20 de Noviembre. Dated November 20, 1971. Photo by Jan Ahlstedt.

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115 Back in 1971, when those first settlers arrived, they agreed to leave the jungle as it was, "because it smelled beautiful". During one of our conversations, Ofelia recalled this story she heard from her mother.

a territorial sorting analysis of Calakmul (Arreola et al., n.d.). This analysis shows what Julia Carabias (2012) points out, that the designation of forests as agricultural lands was a terrible mistake.

Traditionally, families who practice subsistence agriculture in Mexico, as in other parts of the world, do so by alternating agricultural lands, so that part of the land that has just produced a crop is burned down and left to rest. However, with every generation, land gets divided and redistributed to the point where there is no chance to let any piece of land rest. In the jungle area, farmers would need to cut down parts of the forest to be used as agricultural land, which causes depletion and erosion. The new programs for the protection of the forests do not allow the farmers to extend their agricultural land and also restrict livestock activities. Nonetheless, when farmers live from what they grow, restricting agricultural lands puts their fundamental security at risk. For that reason, the territorial sorting analysis aims to define the best locations for existing cultural-economic activities, such as the extraction of gum and apiculture, as well as creating new activities (Arreola et al., n.d.).

CONANP's preservation programs in El 20, in accordance with the territorial sorting analysis, aim for the preservation of the forest and its responsible exploitation as an alternative economic activity, now that farming is restricted. With their mentoring, the governing body of El 20 decided to divide their shared property into three sections: the first section was designated for preservation, the second as an environmental management unit, and the third for sustainable forestry. The ejido earns some money from keeping the forest intact, but not much; each family gets about 180 euros a year, which is less than the total annual costs for transportation when sending the youngsters to the closest high school.

Additionally, starting in around 2008, efforts have been concentrated on establishing a production chain that should start with the exhaustive management of the forest area designated for wood production, continue with the mill, then the furniture makers, and in the end the craftsmen, who should make use of the smaller and left over pieces. The community has not achieved the absolute implementation of the production chain, but the wood that is used by the artisans is collected with the assistance and supervision of the Forestry Commission once a year. Therefore, they only make use of naturally fallen pieces and, at the same time, they clean the forest and prevent fires.

During the Mayan Design Workshop, coordinated by Alberto Vega, which took place at the end of February 2012, we worked with two artisan groups from El 20. They

welcomed us into their workshops and assisted the process of around 20 participants. I spent most of my time in the small wood workshop owned by Ofelia, wife of Mateo (who was the head of El 20's governing body at that time and until May 2014). It was through conversations with them and their family members, who also spend their afternoons doing woodcraft, that I started perceiving that El 20 was a positive location for ALM. In fact, these gatekeepers have facilitated access to the community and assisted at every stage since that moment.

When I told Mateo that we were within an incredible landscape, he replied that they knew it, and that unlike what everyone thinks, they are not poor; they are rich because they have everything they need. That short conversation with Mr. Mateo forcefully echoed the thinking of Manfred Max Neef in *Human Scale Development* (1991), yet he did not speak of this idea as a fresh new perspective on development, but as common sense or embedded local wisdom.

As described by Baltazar González, who served as the municipal president of Calakmul in the period 2012-2014, out of 82, El 20 is the only Mayan community in Calakmul. They acknowledge themselves as such and are recognised by other communities in

Figure 26. El 20 from the top of a hill. Photo by Jan Ahlstedt.

Calakmul as the only Mayan one. Therefore, El 20 is an indigenous community. Being completely honest, I was very hesitant to interfere in their cultural practices (even during the Mayan Workshop). I knew that when designers work in artisan communities, they commonly redesign the products that artisans make, or design new products so that international markets would find them appealing and therefore buy them as souvenirs. I had strong reasons to be sceptical about those strategies that can ultimately pull the indigenous into our homogenous, money-based way of living.

Back in 2004, during my undergraduate studies, and as part of my social community service, I joined a team of students working on the documentation of the restoration of a mural by Miguel Covarrubias, which in a caricatured and figurative manner mapped the different traditional crafts and dresses within Mexico. My task was to research the historical context in which the mural was painted. I came across names like Daniel Cosío Villegas and Daniel Rubín de la Borbolla, and a story, which stuck in my mind, about a big, yet completely unintended mistake made by the government of 1920-1924, when they intended to rescue craft-making or popular art, which was at risk of disappearing because of industrialisation (Abraham, 1996). The most respected artists of the time were commissioned to rescue the national popular art. However, they did so without understanding the aesthetic traditions of the artisans and their crafts. Soon afterwards, the government realised that traditional crafts were being transformed. In other words, by forcing the instruction of what was valuable and appreciated in other contexts, local traditions were being killed. The program was ceased at once (ibid.).

Therefore, my personal concern towards working with an indigenous community was what gets lost, what is created no more. That is what Fry (2010, 1) describes after Nietzsche: "The more we made, the more we destroyed. In making our world within the world we failed to understand what of the former was being destroyed"[116]. However, on one hand, the wood artisans had started their production just a few years earlier, and on the other, the work done through ALM could focus on something different from redesigning their crafts.

As a matter of fact, this additional dimension, that El 20 is an indigenous community, became central for ALM. It placed us (the whole team) face to face with one of the most

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116 Here, Fry is explaining his concept of structural unsustainability; he continues: "Once we reached sufficient numbers and gained sufficient technological muscle, destruction became devastation–which we render in both horrific material and aestheticized forms. Prosaically, technocratically, this situation may now be called structural unsustainability". However, I am using his words to refer to the process of destroying a cultural tradition.

intricate and complex topics that Mexico has dealt with since its colonial times, and that is tightly linked to an identity crisis reported many times (e.g. by Octavio Paz in *The Labyrinth of Solitude*), which until that moment we (the Mexican part of the team), like most non-indigenous Mexicans, had simply learned to ignore.

In conclusion, a combination of elements made El 20 a very promising location for studying Design as Freedom through Aalto LAB. It has been nationally assessed as a region that lives in poverty. Nevertheless, the community shares the perspective that there are different kinds of poverties and also different types of richness. They own extensive areas of land from which they obtain many natural resources, which allow them to maintain several economic activities, like forestry and apiculture (they live from their ecosystem services). Perhaps as part of their indigenous identity, the protection of the jungle is something they nearly take for granted, while their involvement in national environmental programs widens their knowledge of sustainable practices. Furthermore, the area had remained at peace throughout the so-called 'drug war', and this opened up the possibility to encounter people with hopes for a better future.

Nonetheless, nothing could have taken place there if the community had not allowed it. Aalto LAB Mexico got official permission to visit El 20 from its governing body at their meeting held in September 2012. Rather than making promises about changing their lives, the official request was to take a group of Mexican and Finnish students to visit the community for a few days in order *to learn from them*. The students, like me, I told the governing body of El 20, live in the cities and have forgotten the ways of their ancestors, which perhaps still prevail within El 20. The visit of the students to a community that participates in environmental programs had the potential to inspire them to become more environmentally and socially aware. If through their visit, the students came up with ideas that the community would approve, we could then think of doing something together.

The point of departure in El 20 (Assemblage N$_0$)

On my second visit to 20 de Noviembre, in order to record the starting point of ALM, I conducted an interview with my hosts, and gatekeepers, Mateo Marín, his wife Ofelia Cahuich, and their daughter, Sayuri. They are just one family, but all of them play important roles within their community. At that time, Mateo was the head of the

community's governing body. Ofelia is a very active artisan, the head of a group that has much contact with different government entities and with the Reserve of Calakmul. Moreover, every time her husband travelled because of government-related matters, which was often, Ofelia took over many of his tasks in the community. The teenage daughter, Sayuri, was the leader of the youngsters in her church[117]. The three of them participated in this conversation.

By this time, I had looked at the national system that assesses poverty with the ultimate aim of directing programs to fight this condition. As part of this preliminary research, I examined an article by Oscar Javier Cárdenas (2010), where it is explained that in Mexico, the term marginalisation has been used in order to observe poverty in reference to a geographic region. Marginalisation indicates "the degree of exclusion from the enjoyment of economic development experienced by regions (states, municipalities and towns)" (Cárdenas, 2010, 41). Moreover, marginalisation implies that a person or a group of people are in a social, political, or legal condition of inferiority; other governmental agencies in Mexico might see it as a lack of access to basic goods and services, or might use it to refer to those population groups that have been excluded from the benefits of national development and wealth (43–44). Furthermore, in order to measure marginalisation, the government observes deprivations in relation to the satisfaction of basic needs to which all Mexicans are entitled by constitutional right (44). If, on one hand, it was comforting to learn that the government is concerned with designing and directing social policies and programs for those who need them most, on the other hand, it was shocking to learn that great part of the population does not enjoy the basic rights, which might also be understood as capabilities and even as freedoms, and therefore a clear case of injustice.

As shown above, the Municipality of Calakmul and the State of Campeche had been evaluated as a region of high marginalisation, but I wanted to know what people in 20 de Noviembre thought about that. The first thing I asked from them was to define marginalisation. Being marginalised, stated Mateo, is lacking the benefits of the city. The State of Campeche, he continued, is catalogued as an indigenous state, and therefore marginalised. Ofelia pointed out that they are marginalised because they do not have access to communication services like telephone or healthcare, because although there is a health centre in the community, there are no doctors. Or piped water, added Mateo. And transportation, said Ofelia.

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117 There are four religious groups in the community: the Presbyterians, Baptists, Jehovah's Witnesses, and Catholics. It is common to see families whose members belong to different religious groups.

Next, I asked them to define development. Mateo explained that development is when those benefits are acquired, and he gave the example of the streets in El 20 as a sign of a development process. Ofelia, after thinking for a moment, shared that she had thought about that before and decided that she would not like development. She explained that if they suddenly had piped water, the service would imply a cost, and they, as farmers, have no means to pay for it. Furthermore, they *already had* water. Some things, like transportation, communication, and healthcare are basic, but other things would make her surroundings fall apart. She concluded that having all services would be fine, but only if they were managed by the community. Finally, Sayuri added that in a *normal* town, one can live a calmer and happier life than in a city, because you can go out at any time without taking the risk of being robbed.

Then we talked about what they valued most. I asked them that if everything else was to change in their lives, what they would choose to keep. At first, Ofelia thought of her home. She did not want another intervention by any government program that would not work in the end (although she acknowledged that some had been useful, like the cement floor and the water tanks). When Sayuri mentioned the "monte", Ofelia exclaimed: "That, I would not change for anything in the world! Although it has mosquitos and bugs, I would not change it! –Sigh– You go there and breath, sit in the shade… I would not change it for anything!" Finally, Sayuri added that she would not change the people either.

The second last topic was evidently freedom. Ofelia immediately replied that freedom is what she was living at that very moment. As they all thought out loud, they ended up repeating the same words at the same time: living in the way you want to. Freedom is now, emphasised Ofelia. Morning breaks, said Mateo, and if you feel like working, you work; otherwise, no one forces you to, that is the freedom we have. When I asked them to distinguish between individual freedom and the freedom of El 20, Mateo stated that the freedom of the community was very important, and that he believed that the unity of El 20, which is based on the fact that all of them belong to the same culture (Mayan), is the reason why they are able to keep order and to make quick agreements.

Finally, as a suggestion by Alastair Fuad-Luke, I asked about the term *design*, if there was a Mayan word, and what that would mean in Spanish. To design, in Mayan *jeelbésik* or *tumbeenrúnsik*, means to change, to adapt, to renovate, or to renew.

This brief but intimate conversation with my hosts helped me understand that their vision of a better future is not quite the same as that the government seems to propose.

It was striking to realise that they find that the concept of marginalisation is too closely linked to the concept of indigenous. I learned that they were well aware of being deprived from some services that are tightly related to the achievement of basic rights (such as education). However, it was also evident that they appreciated their own ways of doing and living very much. Calling their town *normal*, as opposed to cities, confirmed that I was in a place that held an alternative world view. In this alternative world that co-exists with ours, they especially valued their vast nature and the autonomy that derived from it, but also their community life and its sovereignty. In their desirable future, deprivations had to be overcome, but their most treasured values had to remain unchanged.

Photo by Jan Ahlstedt

Aalto LAB Mexico 2012

Forming the ALM 2012 (design) team

Parallel to the process of finding a location in Mexico, I was getting ready to recruit the team of students from Mexico and from Finland, so that they could start the preparation period in August or September, and the field trip could take place at the beginning of November. Once again, ALS was the starting point.

Back in May 2010, during our visit to Shanghai through the Aalto LAB project, we, the students from Aalto, gathered every night by the entrance to the lobby of our hotel and talked. We cherished the opportunity to have travelled all the way to China to work with the Tongji students and IDEO designers. We felt lucky and even guilty to have been invited to be part of the team, because many others would have wanted to be in our shoes, as we understood when talking to students who were part of other projects that Aalto University had in Shanghai in 2010. We agreed that if there was another Aalto LAB, the participants had to be selected through an open application, which we stated in our final report.

In Chapter 5, it was observed that according to Dorst (2008) and Keinonen (2009), who forms the design team and their competencies is a relevant dimension of the design and its methods. The recruiting process for Aalto LAB Mexico commenced in August 2012 and was designed in accordance with the lessons learnt from ALS. Rather than looking for the best students from each field, ALM was looking for students who were genuinely

socially concerned and very proactive persons who were able to work in teams. In order to ensure this, the applicants were required to write an essay in which they explained their motivations and reflected on why they thought they should be selected. The profiles that were requested were based on the team from ALS, which had apparently achieved a comprehensive observation of the community in a short period of time. Therefore, students from art and design, economics and business, as well as mechanical engineering and information technologies were invited. However, given that a deeper understanding of the indigenous people could be required, and in order to improve the exploration during the visit to the community, positions for students in the fields of humanities and social sciences, and specifically anthropology/ethnology and journalism, were also open.

Although the process was meant to be standardised, each selection process within each program and institution occurred in a different manner. Some labbers were selected because they were the only applicants, and others were handpicked by their heads of program. There were no applicants from some specific fields (no anthropologist or ethnologist from UNAM applied). The structure of the team had to be modified and adapted to the applications at hand, allowing more than one participant from the same school on a similar program. Help was kindly provided by the ex-labbers from ALS in the two cases where too many good applicants were competing for one position: Juan and Gabriel were selected by Yang Li Hua, while Tommi and Sofia were selected by Mikko Koski. The team:

Name	University	Field	Nationality
Anthony Michael	Aalto University	Mechanical Engineering	Finnish/British
Niina Gromov	Aalto University	ICT	Finnish
Nina Martin	Aalto University	Media	German
Anna Asikainen	Aalto University	Business Administration	Finnish
Tommi Simel	Aalto University	ICT	Finnish

Sofia Ziessler	Aalto University / University of Helsinki	ICT/ A nthropology	Finnish/ German
Gabriel Calvillo	UNAM	Industrial Design	Mexican
Juan Vértiz	UNAM	Industrial Design	Mexican
Mariana Cestellos	Tec de Monterrey	Industrial Design	Mexican
Sharoon Negrete	Tec de Monterrey	Humanities and Social Sciences	Mexican
Patricia Soto	Tec de Monterrey	Journalism	Mexican
Pamela Chantiri	Tec de Monterrey	Engineering in Sustainable Development	Mexican

Table 8. List of labbers of Aalto LAB Mexico 2012.

The students started work at the beginning of September, while negotiations continued in order to assemble a team of mentors. In the end, they were: Anni Hapuoja (who agreed to keep track of the LAB in Finland, while I did the same in Mexico), Susu Nousala (the teacher at Aalto University), Xaviera Sánchez de la Barquera (from UNAM, and research assistant), Greg Pérez and Hei Cheng (from IDEO, who had also facilitated ALS), Omar Rojas (head of Engineering in Sustainable Development in Tec de Monterrey), Rodolfo Alvarado (expert in clean energies), Antti Seppänen (professional film maker), Jan Ahlstedt (professional photographer), and myself.

Some of these professionals (not students) played several roles throughout different periods. When Susu joined the team, I was able to share some project management tasks with her, especially with regard to Aalto University and Finland. In the preparation period, Xaviera, Anni, and I would act as facilitators, but sometimes also as labbers. During the field trip, and this was decided during a meeting just before leaving for Calakmul, Susu would go from facilitator to researcher, and Xaviera and I would act as facilitators, documenters, and researchers. The model that resulted, which classifies

participants as local people, labbers, facilitators, experts, and documenters, has been kept and improved throughout the different ALM editions. The following chart indicates each person's role:

Name	Institution	Field	Role	Nationality
Greg Perez	IDEO Shanghai	Communication / Project lead	Main facilitator	American
Hei Cheng	IDEO San Francisco	Communication	Main facilitator	Chinese
Rodolfo Alvarado	Yectlahuilli	Clean energy	Expert	Mexican
Omar Rojas	Tec de Monterrey	Engineering in Sustainable Development/ Biology	Expert	Mexican
Jan Ahlstedt	Freelance	Photography	Documentation	Finnish
Antti Seppänen	Freelance	Film making	Documentation	Finnish
Susu Nousala	Aalto University	Social Complex Adaptive Systems	Teacher/ Research	Australian
Xaviera Sánchez de la Barquera	UNAM	Industrial Design	Facilitation assistant/ documentation/ research	Mexican
Anni Hapuoja	Aalto University / Muotohiomo	Architecture	Facilitation assistant	Finnish
Claudia Garduño	Aalto University	Design	Facilitation assistant/ documentation/ research	Mexican

Table 9 List of experts and facilitators of Aalto LAB Mexico 2012. All of them went to the trip to Calakmul.

Figure 27. This poster was distributed in the three universities in order to recruit students. By Claudia Garduño.

Preparation period: the fuzziest front end

The first meeting took place on Saturday, 1 September 2012, at 18:00 Finnish time and 10:00 according to the time in Mexico City, and it was conducted virtually, through Skype. The team in Finland gathered in Design Factory, while the team in Mexico did so in Tec de Monterrey. Through an imperfect connection, each person introduced themselves, and the labbers were given the challenge and the rules: they were "to make the world a better place" and focus on the Mayan community called 20 de Noviembre, located in Calakmul, Campeche. The team from Aalto University would spend two weeks of November in Mexico, and within that period, the whole team would spend one week in Calakmul. This meant that the labbers had two months to get themselves ready to visit the community. They were encouraged to develop individual research and collective discussions, to meet every week with their own units and to conduct virtual meetings every two weeks, and to maintain communication on how things developed. However, it was strictly forbidden to make any decisions before visiting 20 de Noviembre and consulting its inhabitants.

Evidently, the labbers did not have time to discuss too deeply. As a matter of fact, no one could really tell the exact things they needed to know before leaving, as no one could predict what would happen in 20 de Noviembre. The challenge, at least at this point, was approached as project-based learning (PBL), in which the students propose research questions that they find significant and investigate them (Blumenfeld, 1991, 369). Evidently, the first thing that the teams become curious about is the context itself, and so most of the topics they decide to research derive from their approximation to the context. Naturally, each student, as a representative of their own field, proposes topics related to the context of their own field (e.g. Pamela Chantiri, from Engineering in Sustainable Development in Tec de Monterrey, looked at the *Territorial Sorting Analysis of Calakmul made by GTZ*; while Sofia Ziessler, from Anthropology at the University of Helsinki, investigated the *Mayan identity*). However, there is also the possibility that the first explorations of the context will inspire students to conduct research outside their field of studies (e.g. Tommi Simmel, from Computer Science at Aalto University, conducted research on the *Modern Maya*; and Gabriel Calvillo, from Industrial Design in UNAM, explored *How ejidos work in Mexico*, a topic largely concerning the field of law). Finally, the third manner in which topics get proposed is by students bringing in wider topics from their own fields that they expect to encounter through the project (e.g. Anna Asikainen, from Business and Economics at Aalto University, introduced the

Mexican Economy; and Patricia Soto, from Journalism at Tec de Monterrey, introduced *Development*).

Additionally, some experts from academia, the private sector, and NGOs were invited to lecture on topics related to design, research methods, Sustainability, the humanities and social sciences, project management, and social corporate responsibility. In Mexico, Omar Rojas, a biologist and head of the Engineering in Sustainable Development Program at Tec de Monterrey, led the discussion on Sustainability in collaboration with Rodolfo Alvarado, a mechanical and electrical engineer who runs his own clean energy business (Proyecto Yectlahuilli); Irma Uribe, a consultant in public and social policy who works for an NGO (Fundación Idea) explained the process of how they get projects planned, funded, implemented, and evaluated.

In Finland, Andy Clutterbuck shared his experience of working in Uganda for a project on sanitation, in which Aalto University collaborated with UNICEF. Additionally, Niina Gromov and Anna Asikainen arranged a visit to the Didrichsen Museum in Helsinki, where an exhibition on the Mayan culture was taking place in relation to the forthcoming "end of the world".

In both ALS and ALM, the preparation period has been generally perceived by the labbers as a messy process. However, the labbers experience it in different ways; some enjoy it and find it inspirational, while others suffer from it and find it frustrating[118]. While these ways of experiencing the preparation process might simply be a matter of personality, it has been observed that labbers from the fields of engineering and business are among the ones who complain the most about the lack of structure in the process, while designers are generally comfortable with it. Perhaps not surprisingly, Mexican students seemed to cope more easily with uncertainty than Finnish students, given that even those from the engineering programs were motivated by joining a project that would not be as rigid as the ones they normally dealt with. However, it must be said that the labbers from Aalto University were subjected to a yet greater (and unplanned) level of uncertainty related to the funding of the project (their flights to Mexico).

Acquiring technical knowledge and training skills is an important goal within the preparation process. However, it might be even more important to cultivate in the labbers the attitude and the competencies that will enable them to engage with the people from the community as equals. In both ALS and ALM, the preparation period has led the

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118 Nonetheless, in the end, as will be discussed later, all seemed to find it significant.

PROJECT WEEK	FINLAND	MEXICO	VIRTUAL
1			• Kick-off
2		• Campeche, Calakmul, El 20 • History • El ejido • Social programs in El 20 • Territorial sorting analysis	
3	• Cooking Mexican food		• Aalto LAB Shanghai (Mikko Koski)
4	• ALS Report • The Modern Maya • NGO projects in Mexico • Flight tickets discussion	• Development • Indigenous towns • Indigenous laws • Self-determination rights of towns • Development and women • Ejidos 2	
5	• *DARK WEEK	• 20 de Noviembre	• Fieldwork (Andy Clutterbuck and Irena Bakic)

Table 10. Description of activities in each location, as well as virtual meetings which took place during the preparation period of Aalto LAB Mexico 2012.

#			
6	• Potential sponsors • Connections with the media • Prejudices • Mexican economy • Mayan architecture	• Sustainability (Omar Rojas)	
7	• Project blueprint	• Sustainability (Omar Rojas & Rodolfo Alvarado) • Peek Toys (Ariadna Stamatio & Piero Torio)	• Design Probes (Tuuli Mattelmäki)
8		• Social policy (Irma Uribe) • Self-determination rights of towns	
9			• DesignCAPITALIA

labbers to acknowledge that people living in the locations that have been selected for the Aalto LAB projects are experts on their own lives and have world views of their own. As part of their preparation, the labbers have to try to gain awareness of their own prejudices[119] and ultimately understand why it is crucial to visit the community. This section will describe different sessions, activities, and episodes that took place before the field trip, in order to illustrate how the teams of labbers engage in designing their own preparation period, even when they face unexpected and difficult challenges.

The indigenous (19 September 2012)

Two weeks earlier, the Mexican labbers had proposed the following topics to be presented individually and discussed with the group in the morning of 19 September 2012: *Development* (Patricia), the *Indigenous* (Juan), the *Self-determination right of indigenous towns* (Sharoon), the *Law of the National Commission for the Development of indigenous people* (Pamela) and the *Ejido, part 2* (Gabriel)[120]. The students from the field of the humanities acted as facilitators and enabled the active participation of all their colleagues in lively debates around topics with which designers, engineers, and business students are not very familiar. That day, Patricia opened the session by explaining the main criticism against traditional definitions of development and against instruments like the Human Development Index. Being acquainted with the work of authors like Amartya Sen, she pointed out that these are greatly determined by economic growth, although it is not clear if economic growth is ultimately related to people's well-being or their happiness; and therefore, it remains unclear if it is what we should be measuring. She widened the team's perspective by introducing the idea that development should be seen as "the expansion of human freedom to live the kind of lives that people have reason to value" (Sen, 1997). Sen's approach did not tell them what that type of development could possibly look like; however, they started wondering what type of life would a Mayan (indigenous) community, like El 20, have reason to value?

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119 In fact, the labbers in Finland conducted a brainstorming session in which they voiced all their prejudices about Mexico, and contrasted them with the actual experiences of those members in the team who had visited Mexico before.

120 I am reporting mainly what happened at the meetings of the Mexican students because unfortunately, around this time, we started facing issues with funding and a large part of the Aalto students' time was used to discuss and sort out those issues. Also, similar sessions took place in ALM 2013, but in that section, I do not introduce such in-depth descriptions.

Juan, being a design student, had not previously needed to reflect on these issues too deeply. To him, like to any other *mestizo* born and living in Mexico City, the distinction was clear: in Mexico, some people are indigenous, and some others are not. His presentation started by introducing the most basic understanding, that the indigenous are the first settlers of the Americas, who have historically been identified through their *race*. However, it is not difficult to find sources that describe that throughout history, the indigenous have been highly marginalised. For that reason, finding indigenous people who hide their identity has always been rather common. However, some contemporary ethnologists argue that the distinction is nowadays necessary in order to identify the beneficiaries of social programs.In a country where a mixture of *races* has been practised for more than 500 years, the phenotypic expression does not necessarily reveal one's genotypic legacy: visible features do not necessarily reveal an ethnic origin. Furthermore, after indigenous families spent decades speaking to their children in Spanish, so that they could attend school (due to the integrating social policies described above), language is no longer a distinctive feature, either. Other distinctive factors that prevail are younger ages at marriage and pregnancy, due to their association with adulthood: in indigenous communities, men are acknowledged as adults when they get married, while women reach adulthood by giving birth (Vázquez & Reyna, 2011). Juan's brief immersion in the world of ethnologists can be compared with the eureka moment experienced by the Mexican intellectuals after reading the letter by Sub-commander Marcos back in 1994. He acknowledged that integrating the indigenous without modifying their lifestyles is, indeed, a difficult problem. The final slide in his presentation read: What does indigenous mean?

I don't know!

From his research, Juan was able to conclude that a means by which the indigenous preserve their identity is their *land*, as claimed by Zapata and depicted by Rivera; and this linked directly to another difficult topic that was introduced by another design student, Gabriel (Gabo). *Ejido* is a term that refers to a big piece of land, normally the plots that were distributed by the government after the Mexican Revolution, to be owned by a community of peasants, often indigenous. It is based on the property model practised in Mexico before the Spanish established the latifundium model through the Haciendas[121]. The ejidos enjoy a certain level of autonomy, since through their governing bodies, they define their internal rules, which can never contradict the Mexican Constitution.

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121 Where the Spanish were the lords who owned the lands. The indigenous cultivated the lands of the lord, but had the right to feed themselves from some of those lands, and received protection in return.

There have been many agrarian reformations over the years, but the one that preceded the signature of the North America Free Trade Agreement (NAFTA) and the Zapatist movement was especially controversial. The ejido, as a property model, opposes privatisation and the commercial logic of neoliberal economies; therefore, and in order to sign the NAFTA agreement, that reformation prevented further distribution of land (and the creation of new ejidos), but it also allowed the conversion of communal land into private property in order to facilitate investment. As a result, big corporations were permitted to buy large extensions of land, and the greatest losers, agreed the analysts, were the small producers and subsistence farmers (Grammont & Mackinlay, 2006, 705–706).

Juan and Gabo felt they had reach dead-ends within their research topics, but Sharoon and Paty were able to move the discussion forward. Sharoon stated that although it is common to have a romantic vision of the indigenous groups, no town or village in Mexico has remained in absolute isolation and the indigenous people of our times are not the indigenous of the 1500s. Their traditions, languages, clothing, and religions have changed; they might have TVs, phones, and most certainly, they drink Coca Cola. Moreover, the way they see themselves highly depends on the religious groups that evangelised the area[122]. Additionally, they do not only exist in a collective manner; the indigenous groups are formed by individuals with dreams and thoughts of their own. Finally, Sharoon pointed out that "according to the constitution, in its second article, self-awareness about the indigenous identity shall be the most important criterion to determine whom indigenous law will be applied to and that those groups are the ones inhabiting the country since even before the conquest took place and who have lived according to their own social, economic, cultural, and political institutions."[123]

A few weeks later, Juan and Gabriel would join me in UNAM in an informal conversation with Oscar Hagerman, most likely the most experienced designer working with and within communities in Mexico, and one of the invited speakers for our upcoming seminar. We talked with him about ALM, and specifically about our intention to engage the people from the community in the design process. He pointed out that after 500 years of domination, the indigenous people of Mexico have got used to a paternalistic state that tells them what to do and how to do it. What we aimed for would definitely be something new to them, and therefore, something very challenging; however, he

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122 In some places, the different religions have been a matter of conflict, but it is not the case in 20 de Noviembre, where most people were originally Catholic and only recently converted to other types of Christianity.

123 Taken from ALM report 2012 (not publicly available)

highly encouraged us to do it. This was an extremely relevant debate, because the team was starting to consider that even our most grounded notions could be terribly biased. Perhaps letting the indigenous live their lives in isolation was far from paying them respect; perhaps it would be best if we reached out. At least it was clear that these questions could only be answered by them. Later in the year, during an interview, Gabo stated that during this period, the labbers truly understood that they could not impose anything on the community; that it was crucial to go there and meet the people and truthfully understand if they needed help, what type of help, and if ALM could provide it. Furthermore, he recalled getting very curious and even anxious to see what the LAB would result in. In the report of ALM 2012, Sofia summarised this period of learning a mindset as:

*The context of this project is a rural indigenous village just outside the vast natural biosphere of Calakmul in the Yucatan peninsula of Mexico. We in Aalto LAB Mexico, on the other hand, are students from the city. Our interaction with the community hence comprises a drastic social contrast. What has been done too many times under the glorious name of 'sustainable development' is to **impose** practices that hardly suit to local circumstances. What is crucial in terms of the encountering of city life with a rural community is coming conscious about **prejudices** and slants that might later cause biases in the interaction and formulation of development plans. **Respect** for the other and a **learning attitude** must be internalized by us before being able to continue on the path towards a balanced fieldwork experience.* (SOFIA/ Dec. 2012)

Dark week (September 18, 2012)

When the recruitment process started, a total of €8,000 had been granted by Aalto University. Additionally, it had been agreed that different departments within Aalto University would provide five flight tickets from Finland to Mexico; two more were being negotiated. In addition, €4,000, accommodation, and flight tickets for the facilitators were being negotiated with Tec de Monterrey. Given that the actual funding situation was uncertain, this was the message that I sent on 23 August 2012 to those who had been selected as labbers from Aalto University:

Dear _____!

You've been selected to be part of Aalto LAB Mexico!

I'll send an email to the whole team tomorrow or within the weekend.
I just need to tell you about some issues, and know if you are still interested in participating:

1. I haven't got all the funding needed, although I'm working on it. This means that worst case scenario, you might have to pay around 350 or 400 euros (the estimation includes meals, accommodation and transportation to Calakmul)
2. You might get credits for the work done before and after the trip, something between 5 and 8; but this has to be confirmed.
3. If you are still interested (say yes!), can you go to Design Factory on Saturday September 1st, at 16:00, to have a virtual meeting with the team in Mexico?

KR

Claudia

The cost of the project increased when Greg and Hei agreed to travel to Mexico, the former from Shanghai and the latter from San Francisco. Additionally, many of the people who were supporting the project, including Constantino Landa and Greg, agreed that the process had to be documented in photographs and in video, for which reason I got in touch with Jan Ahlstedt and Antti Seppänen. At that point, negotiations seemed to be going well with Tec de Monterrey, so it seemed that we would be able to fund the trips for the facilitators from IDEO and also for the documentation team. Nevertheless, between the fourth and fifth weeks of work, several events happened nearly simultaneously, causing a very negative mood within the labbers at Aalto University. First, the departments who agreed to pay for the students' flight tickets announced that they would do this retroactively. Second, the potential sponsor for the missing tickets gave a negative answer. Third, several urgent payments that were to be made with the money granted by Aalto (e.g. local flight tickets, accommodation) were on hold because there were issues with electronic transfer. Finally, Tec de Monterrey's funding required the signing of a contract with Aalto University, a process that was being overcomplicated. The situation seemed so disastrous that some labbers from Aalto were convinced that the project had to be ended.

Although in the end these events did not have an effect on the development of the field trip, the participation of some Aalto students before and after the field trip was clearly affected. In February 2013, when I met the Aalto unit for a final feedback session, Anthony made use of a metaphor to explain what had happened to them: If one is

standing at the top of a building, and there is no fence, one tends to stand in the centre of the building, not too close to the edge. If the same building had a fence, although nothing has really changed, people gain confidence to walk near the edge. Looking back, I can say that this was the main difference between the Aalto units of ALM and ALS. In Shanghai, the project was not structured at all, but all surrounding factors had been fixed, which encouraged us to walk very near the edge. In contrast, the Aalto labbers of ALM were not as daring[124].

Design probes (9 October 2012)

Another great difference between the preparation periods of ALS and ALM was that while in the case of China, the process was fully led by the students (all the research topics and activities were decided and designed by the labbers), in the case of Mexico, I invited experts from different fields to give lectures on specific topics in some of the working sessions. In this way, even if the new team was not as proactive, everyone would be exposed to the most relevant discussions that had emerged in the previous Aalto LAB.

Tuuli Mattelmäki was invited to give a lecture about her doctoral dissertation, *Design Probes* (Mattelmäki, 2006). Probes, originally described by William Gaver (2001), emerged from the need to achieve an empathic understanding that could not be achieved by traditional means (Mattelmäki, 2006, 42). Designers needed "to be designers even when conducting a user study", but they wanted to simultaneously truly meet the needs and wishes of future users (ibid.).

Mattelmäki's (2006) research focused mainly on describing what probes are, and analysing different ways in which they had been applied. From this, she drew reasons for applying them (11). Formally, probes are a collection of tasks that are given to the users, who become active documenters of their own lives (40). Additionally, probes focus on "the user's personal context and perceptions", including the social, cultural, and aesthetic environments, but also the user's values, feelings, needs and attitudes (ibid.). Finally, probes are exploratory in character; they assist the problem-crafting process by exploring and finding something that, in the beginning, we do not even know we are looking for (ibid.). Self-documentation is achieved through a process in which the designer hands a

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124 There was less uncertainty in the Mexican unit because they did not need sponsors for a transatlantic flight and because they got more guidance in their process.

probe kit to the user. The probe kit is commonly formed both by tangible objects (which can range from notebooks and cards to cameras) and a series of tasks (which can range from writing and drawing to taking pictures or making a collage) (41–42).

Mattelmäki concludes that there are four different reasons for applying probes: (1) inspiration (of designers), (2) information (about the users), (3) participation (of users in the ideation process), and (4) dialogue (between designers or between users and designers) (58). Moreover, she illustrates that regardless of the specific reason to apply them, probes can bring benefits to user-centred design. Each in their own way might contribute to advancing the process from understanding and specifying the context of use, to generating design solutions (63).

On 9 October 2012, Tuuli Mattelmäki met the part of the team from Aalto University in Design Factory. Communication was established with the Mexican labbers, who were in Tec de Monterrey, through Skype. Communication was difficult due to technical problems, but in the end the teams were able to improvise means for getting the message through[125]. Mattelmäki's lecture was very well received by all the labbers, who in later interviews (which took place during the visit to Calakmul), would repeatedly refer to her lecture as a relevant event within their preparation process.

By this time, Tommi had set up Aalto LAB Mexico's blog (aaltolabmexico.wordpress.com). Within the blog post dedicated to that session, Sofia reported:

> "…*truly understanding the locals is the start of all sustainability projects.* **But how to understand the locals?** *Yesterday* **Tuuli Mattelmäki***, a true master of* **design probes***, came to our meeting to give us a presentation about her dearest topic, what I would also call as* **empathic** *research design.*
>
> *Tuuli gave us priceless understanding of self-documenting tools and the virtue of this unconventional research method. The idea of design probes is to allow the community members to document their values, ideas and lives by themselves. Our responsibility is to prepare a* **self-documentation kit** *for each participant and* **saturate the data by methods carried out by ourselves** *(such as interviews and observation). The kind of self-documentation kits Tuuli was talking about can consist of anything: cameras, notebooks, collages,*

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125 By using four computers in total, two in each location, and having two simultaneous Skype conversations, one with no volume, used to transmit video, and a second one that transmitted voice only.

workbooks… anything. They are supposed to be stimulating for the community
members and informing for the researches and designers."

Deeply inspired by the concept of design probes, we'll next figure out:

> *-**What we want to ask on the field***
> *-**How to collect the data that contains the answers.***
> *Another hot topic is getting ready for the field by thinking **what is crucial***
> ***once we go to the community.** Next ideas came up yesterday by the Finnish*
> *team:*
> *Anni: listen, smile and respect, respect*
> *Anna: let the Calakmul lead the way, stating the obvious, clear roles*
> *Susu: remember why we're here, listen and hear, observe with eyes and ears*
> *Tommi: be aware you're the visitor, dare, observe*
> *Me: needs vs. wants, find out deepest values and aspirations, iterative and*
> *facilitating*
> *Tuuli: curiosity, motivation of us and the others, frustration is normal*
> *So here we go right now: inspired and, though, puzzled, trying to navigate*
> *in the jungle of true and false preconceptions, apt methods and all kinds of*
> *scenarios. 'Making sense' is what we do right now.*
> */by Sofia/Oct. 09, 2012*

Following Keinonen's (2009) terms, design probes were seen as an instrument that had to be introduced to the labbers to be applied during the field trip. Right after Tuuli's presentation, the labbers were very excited to design and make probes, as can be read from Sofia's blogpost. However, due to a lack of time, they did not perform the task[126]. Somewhat unexpectedly, Tuuli's presentation greatly contributed to the preparation of the labbers by building on their competencies and clarifying the project's agenda.

By the time this presentation took place, the labbers had already spent some time reading about and discussing difficult topics, including Sustainability, development, and the indigenous. They were well aware that whatever they proposed to do in El 20 would only succeed if it happened to be what the community really needed and desired; and they knew this was not an easy task. So, if on one hand, learning that there were

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126 However, an improvised medium for documentation was developed in El 20 in 2013, as will be described in the Water System Project. Find the original blogpost by Sofia here: https://aaltolabmexico. wordpress.com/2012/10/09/aalto-lab-mexico-goes-design-probes/

Figuer 28. Tuuli Mattelmäki lecturing from Design Factory in Finland. Photo by Jan Ahlstedt.

instruments that could help them gather the right information made them confident, on the other, learning that the reason that these instruments were created in the first place was to make the process as empathic as possible, built on their competencies. As can be read from the blogpost, most of them stated that in the community, it was crucial to act as receivers of messages, which contributed to clarifying the agenda, because this meant that the labbers were becoming aware that the most valuable inputs would be drawn from the words of the local people.

designCAPITALIA (22 October 2012)

I have previously stated that this work is very much in step with that of Alastair Fuad-Luke. I have also mentioned that in 2011 and 2012, several of my colleagues from the doctoral program and I participated in a series of workshops facilitated by Fuad-Luke, through which the designCAPITALIA framework was generated. The original concept belongs to Fuad-Luke, and it was born as a response to the very "uncertain present and even more unpredictable future" that 250 years of capitalism have created in relation to matters such as environmental depletion, unemployment rates, and poverty (Fuad-Luke et al., 2012b, 3).

Like Victor Papanek and Herbert Simon, Fuad-Luke maintains the hope that design can take us from this uncertain present towards a better and more desirable future, and that this process can and should be developed with other people who, despite lacking professional training, also possess the ability to design. Nevertheless, given that design is nearly inseparable from making use of resources, designCAPITALIA emerged as a tool for thinking about and questioning what and why we design, and speculating whether there is a better way to do it. This framework confronts designers with the task of determining what things are valued, in order to make better decisions. Capital is a word with many denotations. Already in *Design Activism*, Fuad-Luke (2009) described various types of capital, or stocks. By 2012, he had identified 29 different types of capital, six of which were key types and were classified into two domains. Thus, within Natural capital, there were biotic and abiotic; within Anthropocentric capital, there were human, social, public, and commercial. A series of types of sub-capital were identified for each key capital, some of which were applicable to more than one. For example, the political was a sub-capital of the social, public, and commercial key types of capital within the Anthropocentric domain[127]. Many types of capital can be involved within a single design project, as Fuad-Luke had confirmed by asking some designers to assess their projects retrospectively. Throughout the workshops at Aalto University, one of our early observations was that types of capital are interrelated, and that it was possible to reasonably deduce that the growth of one capital could result in either the depletion or growth of another. In the later workshops, it was decided that the framework could be showcased as a deck of cards with colour-coded capital types. A guide to using the cards, which suggested users to start from the key capital types, continue with the sub-capital types, and end by building a model, was also written.

Finally, the set that was launched in the Open Knowledge Festival in Helsinki 2012 was described as follows:

> designCAPITALIA is *"a framework for individually and/or collectively making informed decisions about how to change our present, and so co-future by considering which '**capitals**' we wish to grow, nourish, protect, conserve or use less. A 'capital' is a '**stock**' of something. Like all stocks it can increase or decrease, in which case it is subject to an inward or outward '**flow**', or it can remain stable with no net inward or outward flow."* (Fuad-Luke et al., 2012b, 2)

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127 The full description can be found here (Retrieved June 11, 2016): https://window874.files.word-press.com/2012/09/design_capitalia_leaflet_for_okf_final-afl-190912-v2.pdf

Natural	Biotic	Terrestrial	Biodiversity
			Carrying capacity
		Aquatic/Marine	Biodiversity
			Carrying capacity
	Abiotic	Geological	Energy minerals
			Non-energy minerals
			Precious minerals
		Hydrological	
		Atmospheric	
		Solar	
Anthropocentric	Human	Mental	
		Physical	
		Emotional	
		Spiritual	
		Symbolic	
		Cultural	
	Social	Symbolic	
		Cultural	
		Economic	
		Political	
		Infrastructure	
		Intellectual Property	
	Public	Economic	
		Political	
		Infrastructure	
		Intellectual Property	
	Commercial	Man-made goods	
		Manufactured	
		Infrastructure	
		Economic	
		Intellectual	
		Political	

Figure 29. Xaviera Sánchez de la Barquera uses a tablet to show the white board in Mexico to the labbers in Finland. Photo by Claudia Garduño

Figure 30. The labbers in Finland try and read what Xaviera is showing them. Photo by Jan Ahlstedt

Table 11. (Opposite page) Classification of capitals according with designCAPITALIA (Fuad-Luke et al. 2012) 174 'capitals' we wish to grow, nourish, protect, conserve or use less. A 'capital' is a 'stock' of something. Like all stocks it can increase or decrease, in which case it is subject to an inward or outward 'flow', or it can remain stable with no net inward or outward flow.' (Fuad-Luke et al., 2012b, 2)

The last session before the students from Aalto travelled to Mexico had two main goals. The first one was to introduce designCAPITALIA in order to illustrate that design decisions can affect interrelated capitals, even if those relations are not evident. The idea was to widen the labbers' perspective on Sustainability. We did not follow the full guide, but with all that the labbers had researched about the community, they spent a moment speculating about the capitals that people in the community could consider most valuable.

The second goal was to define the values of the team. This activity had proven to be critical in ALS. On the one hand, the team had to act in accordance with the values of the project; they could not expect that other people would adopt more sustainable ways of living if they, themselves, did not live by those same standards. Therefore, in ALS, guided by our team values, and in the hope of reducing our waste, we gave ourselves the task to take pictures before and after every meal. Moreover, and as was also highlighted by Tuuli during her lecture, design processes commonly include frustrating periods; in Shanghai in 2010, Greg made us acknowledge that at any moment of frustration or deep disagreement, we could always hold to the core values that defined us as a team. Anni and I insisted that ALM had to define its values. The designCAPITALIA cards were used to inspire this process. Regardless of the difficulties that derived from having one unit of the team in Mexico and another in Finland, the labbers brainstormed their main values, and ultimately came up with the motto:

**"Committed to collaborating and co-creating with
love, respect, and critical thinking"**.

This framework would inspire the labbers throughout the rest of the project, including their observations in the community and the way in which they outlined the continuation of the project after the visit to the community. For example, in the ALM 2012 report, Nina noted that "…previous exercises such as the designCAPITALIA session linked us to the same value proposition so that empathy was a constant in our entire process, whether consciously or not. These shared understandings are crucial for effective co-working."

Here, as with design probes, the session introduced a tool or instrument, but it also built on the agenda of the project and the competencies of the design team. Within the overall Aalto LAB goal of "making the world a better place", this design team defined their particular approach. Moreover, regardless of whether they made use of the tool or not, they had been exposed to a way of thinking that acknowledges that design can

grow many things, and not only money. Additionally, they acknowledged the different ways in which different capitals relate, and how a design decision could endanger the subsistence of certain capital. This is the reason why, when designing, it is important to observe the wider picture.

Designing for Social Sustainability: A Poly-disciplinary Approach (1-2 November 2012)

At the end of October, the members of the team who were in Finland, China, and the USA travelled to Mexico City. The first joint activity was the seminar "Designing for Social Sustainability, a Polydisciplinary Approach", which took place on 1-2 November at Tec de Monterrey, had several purposes.

On the practical side, inviting several of the experts and facilitators who had taken part in the preparation process enabled ALM to share their debates with a larger audience, and this was a requisite tied to the funding granted by Tec de Monterrey. Within ALM's own process, it had the aims of gathering the team, refreshing in their minds the topics that had been discussed up to that point, and getting them ready for the trip to Calakmul. ALM experts, teachers, and facilitators, and also some other speakers, were invited to reflect on social Sustainability as seen from their own area of expertise. The seminar gathered representatives from the fields of architecture, design, biology, mechanical and electrical engineering, social sciences, and complex systems.

The most memorable talk for the team was, perhaps, the one given by Oscar Hagerman. In his very touching style, he showed several of his projects with the aim of encouraging our team before their field trip. He concluded by saying: "I have walked a long road; somehow I am reaching the finish line; I am very glad, I have been a very fortunate person, I have worked

Figure 31. Seminar "Designing for social sustainability: a polidisciplinary approach" program.

Figure 32. Top row: Anni, Sharon, Oscar Hagerman, Claudia, Timmi, Xaviera, Constantino, Hei, Gabo. Bottom row: Sofia, Niina, Anna, Mariana, Andy, Nina, Greg and Susu. Picture taken after Oscar Haggerman's presentation. Photo By Jan Ahlsedt.

the way I like, with people, in the communities" (Hagerman 2012). This is how Anni Hapuoja described his talk[128]:

> "*Architect Oscar Hagerman walked us through his life work with indigenous communities. His presentation showed beautiful examples of projects that have been made in collaboration with different communities, and gave us examples of the process of working in the field. His last words were so touching that many of us were almost moved to tears. His dedication and commitment as a designer is one that has clearly made the world a better place, and his message to us ended in the soothing notion that little by little we'll all find our way as designers and professionals - not necessarily meaning we'll ever be "ready". We have to strive to live in peace with our brothers, and we have to use our right to design the world around us for it to become a better place.*"

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128 The original entry can be read here: https://aaltolabmexico.wordpress.com/2012/11/02/seminar-designing-for-social-sustainability-a-polidisciplinary-approach/

A few days later, on the road to Calakmul, as I wrote in my fieldnotes, Sofia would point out: "Everyone in every discipline should have a little bit of Oscar Hagerman's attitude; that would make the world a better place".

Planning the field trip

At the end of the first day of the seminar, Greg Perez, Hei Cheng, Xaviera Sánchez de la Barquera, Anni Hapuoja, Susu Nousala, Jan Ahlstedt, Antti Seppänen, and myself met to define the work plan for the field trip. The overall program would be based on ALS and on the IDEO's HCD toolkit, including its field guide, of which Greg and Hei had brought us a copy. At this point, we also decided our roles: Greg and Hei would be the main facilitators, and they would be assisted by Anni and Susu. Rodolfo and Omar would work as experts. Xaviera and myself, as researchers, became observers and documenters. At the same time, Susu, the teacher, had the role of "mother" of the labbers, and I would play the role of "big sister", which would also give me time to take care of the logistics of the trip.

It was also agreed that the labbers had to be split into four teams of four persons, and that those small teams had to be kept intercultural, interdisciplinary, and gender mixed. Each of those teams would be led by either Greg, Hei, Susu, or Anni. Omar and Rodolfo would each take two teams. Finally, and given that Jan and Antti argued that they would not like to have each other's cameras in their shoots, Xaviera and Antti teamed up, as did Jan and myself for documentation purposes.

Anni and I asked Greg and Hei to start working with the students in the same way they did with us in Shanghai, with the Hopes and Fears brainstorming, and it was agreed that this activity be followed by a discussion on "what do we want to learn?". Furthermore, whilst in the field, we would host daily morning reflections and afternoon debriefings. Greg asked me to prepare a document that would include the working schedule, the description of our *daily drumbeat*, the flight details, and everyone's contact details. The overall process was[129]:

- Hopes and Fears
- What do we want to learn?

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129 This is presented as documented by Greg Perez.

- Split into groups
- Observation
- Download
- What do we want to solve?
- Synthesis
- Insights and opportunities
- Present learnings

The following is the schedule that was part of the document that was printed for each of the participants:

Hopes and Fears

When the seminar finished, Greg and Hei took over the task of conducting the first brainstorming session with the whole team. Each participant (labbers, teachers, experts, and facilitators) was given a bunch of Post-it notes and a pen, and was given a few minutes to think of their greatest fears concerning the project and the trip to Calakmul. When I analysed this material, I clustered the fears into four main categories. There were those related to visiting the jungle, having packed all that might be needed, and being bitten by insects or attacked by wild animals. Second, the team was afraid of not being welcome by the community, to cause them to feel uncomfortable. Third, they were concerned that we would find problems too big to be able to tackle, especially in that short period of time[130]. Finally, they were concerned about the dynamics of the interdisciplinary and intercultural teams; they were afraid that there would be communication barriers and that they would not be able to work together.

Next, Greg asked the team to brainstorm their greatest hopes. In this case, I classified their Post-it notes into three main clusters; the expectation of a good experience (i.e. making friends, being in touch with nature, living new experiences, etc.), that of 'being successful' and making something meaningful or impactful for the community, and finally, those related to learning (i.e. generating knowledge or earning personal growth).

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130 At that moment, ALM 2013 was not even a plan; decisions as on how to proceed would be made in the end of ALM 2012.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
				Designing for Social Sustainability: A Poly-disciplinary Approach		Flight to Chetumal Bacalar
4	5	6	7	8	9	10
OBSERVE Visiting Calakmul Arch. Site	OBSERVE 20 de Noviembre		SYNTHESISE BRAINSTORM Visiting Nueva Vida & 20 de julio	BRAIN-STORM PROTOTYPE 20 de Noviembre	VALIDA-TION Presentation of proposals to the community	Flying back to Mexico City
11	12					
	Presentation at CIDI-UNAM					

Table 12. Scheduled plan for fieldwork. Drawn by Claudia Garduño.

Figure 33. Hopes & Fears brainstorm. Photo by Jan Ahlstedt.

Greg and Hei picked up from the participants' will to learn and continued by facilitating the discussion. The labbers were right in thinking that our visit to the community was going to be too short and that there was no way in which this group of people would "save the world" or save the people of 20 de Noviembre. Their second brainstorming session had correctly included the main purpose of our visit to the community: learning from them. That was the one thing that the team had to keep in mind: that before even attempting to do anything else, we needed to learn. That was the end of the preparation period in 2012, the truly fuzzy front end, which was necessarily approached in a messy manner most of the time, and which some labbers found very frustrating while others found it very inspiring. It was a period throughout which the labbers were required to play an active role in building their knowledge, but also a period during which they got to know each other. Most importantly, it was the period through which they developed the competencies and acquired the right *mindset* before visiting El 20. This is how Sofia would recall the preparation period in the ALM 2012 report:

Since we're all students and sustainability can only be reached by empathy, we told ourselves to swallow the pride and to take on the mindset of learning. Already before the field period, we knew that 20 de Noviembre, the community in focus, wouldn't be facing any of the most typical problems such as exceptionally high child mortality rates, water contamination, HIV-epidemics or drastic natural destruction. We were not heading to a refugee camp or among a war zone. No, we were going to collaborate with highly skilled artisans and self-sufficient farmers living in an environment of harmony and safety. What was obvious was the potential for us to learn tremendously much from them.

Visiting Calakmul: Field trip

The day after the seminar, the whole team met at Mexico City airport to take a flight to the city of Chetumal, located in the state of Quintana Roo, but still the nearest airport to Calakmul (located in the state of Campeche). Most nights, the team stayed in the same hostel where the participants of the Mayan Design Workshop of UNAM stay, which is located in a community called Zoh-Laguna (25 km from 20 de Noviembre and 10 km north of Xpujil). Besides visiting 20 de Noviembre, the team visited three other communities in Calakmul that are developing interesting projects: 20 de Junio (eco-tourism), Nueva Vida (organic shampoos and soaps), and Centauros del Norte (processing a wild seed called 'ramón' into nutritious food). Additionally, the team had the opportunity to visit Bacalar (Quintana Roo), the archaeological site of Calakmul,

and a bat cave in the biosphere. So, by the end of the week in Calakmul, the team was able to understand the bigger picture of the region, including the multiple and diverse nature of the communities and the tourist attractions in the wider region.

The two days spent in Calakmul before visiting El 20 were very useful for the integration of the team. Additionally, Greg and Hei were able to give pieces of advice to the labbers on how to conduct an interview, what types of questions to ask (like, "can you describe your daily routine?"), or even what types of questions not to ask (like "are you happy with your life?"). Furthermore, during this period of time, the team met other relevant actors in the region, like Baltazar González, the owner of the hostel, who had recently become municipal president of Calakmul, having previously served as the director of Calakmul Biosphere. The team also met Samuel Brugger, an environmentalist economist and team-mate of Rodolfo Balfre, who teaches on UNAM's Industrial Design program. Together, they are conducting research in the region in order to reintroduce a species of bamboo endemic to Calakmul into the biosphere, and to promote its use as a construction material.
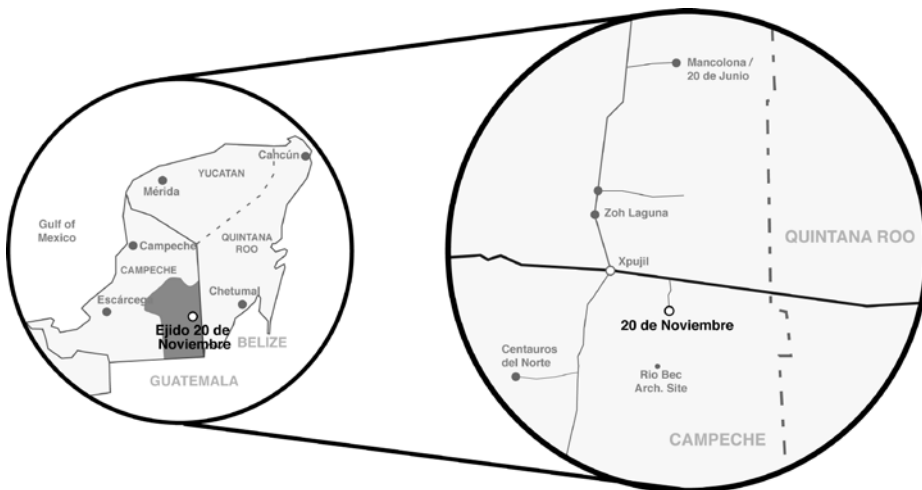

Figure 34. Communities visited within Calakmul. Drawn by Claudia Garduño.

Exploring El 20: "Living the dream" [131]

While most of the design process took place in Zoh-Laguna, the team experienced life in El 20, even if briefly[132]. During this period of time, the team slept in hammocks (and suffered cold and loud nights in the jungle), ate food prepared with products from the local crops, suffered from the high temperatures and the burning sun, showered with rainwater harvested in buckets and heated with wood, flushed toilets by carrying water from wells, were bitten by many mosquitoes, and were constantly vigilant for snakes (we did not find any snakes, though).

Four households hosted around five members of the team each, and three women divided the task of cooking breakfast, lunch, and dinner, and serving it to the whole team. Each member of the team bought a hammock from the community, and we bartered for the accommodation and meals with material that these women use for embroidery and for hammock weaving, which were bought in Mexico City.

The labbers were split into the following groups (See Figure 36):

• GREG, Nina, Gabo, Sharoon
• ANNI, Andy, Mariana, Sofia.
• SUSU, Tommi, Niina, Paty
• HEI, Pam, Juan[133], Anna

This exploratory phase is what the IDEO HCD toolkit (2011 p15) calls a deep dive. The sub-teams spent their time walking around the community, observing and conducting informal interviews with people from different demographic groups, like the elderly, men, youngsters, and children. They took pictures and notes. The full team would gather three times a day to share meals, and these moments were used by Greg to facilitate casual debriefing sessions. In the mornings, the labbers would speak about their plans for the day, and in the evenings they would share what had been done and learned throughout the day.

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131 This is how the labbers referred to this moment of the project when creating their presentation.

132 The group was too big and we did not mean to intrude too much; furthermore, we did not know how the students would react to not having the infrastructure they are used to, so we stayed in El 20 only two nights.

133 Juan fell ill before the field trip, so at times, I worked as his substitute.
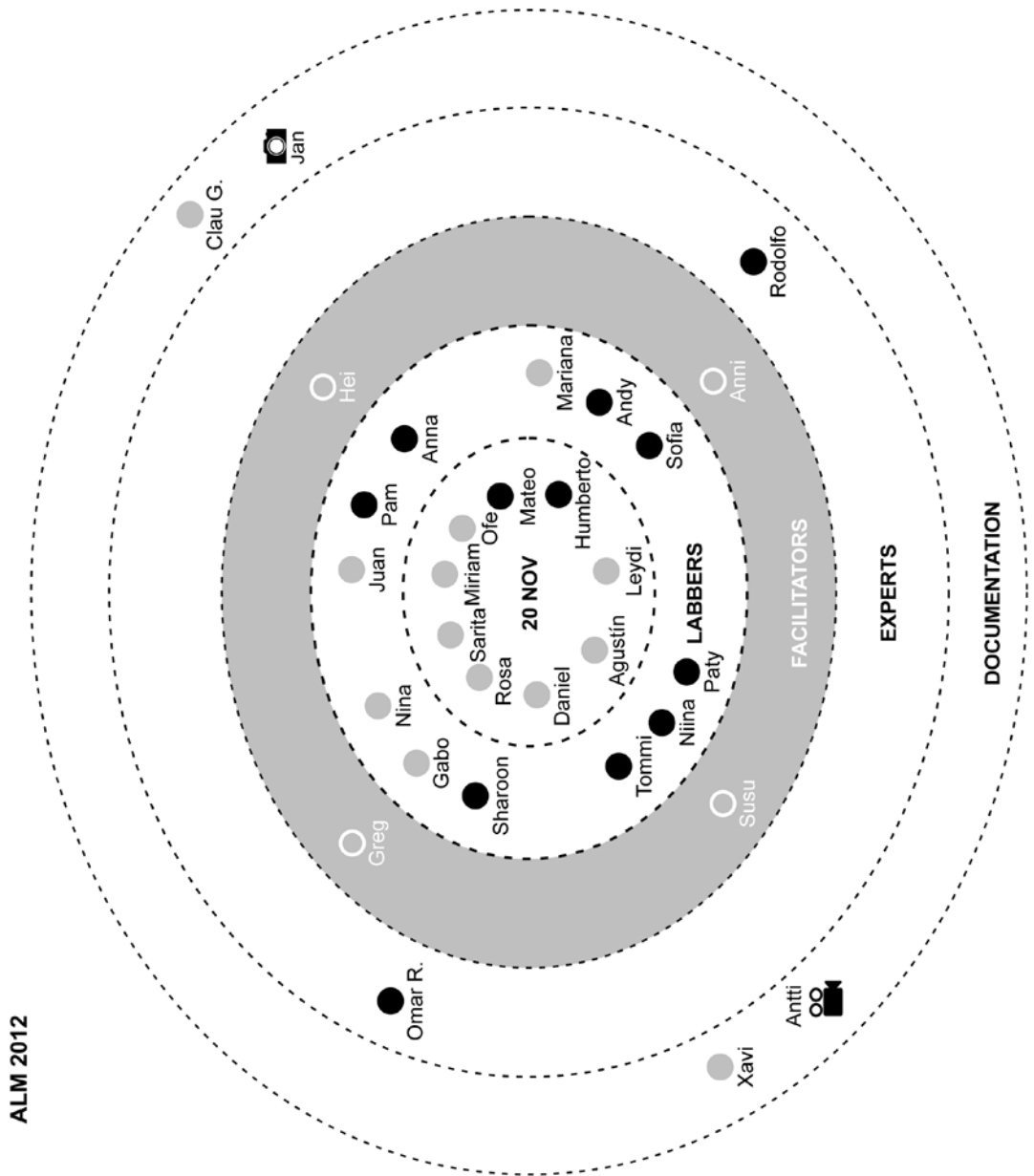
Figure 36. ALM 2012 network. Designers are shown in gray. The only experts that travelled to the site are Rodolfo Alvarado, Omar Rojas, and Susu Nousala (also a teacher and researcher). By Claudia Garduño García.

The day we arrived, as a lucky strike, we were allowed to observe a meeting that the artisans would hold with a lady representing the municipality's Ministry of Tourism, which was crucial because it enabled the team to make many connections very quickly. When the meeting finished, the team was able to talk to several artisans and to arrange meetings with the head of each artisan group. Soon after, the team learned that all adult women know how to weave hammocks and embroider clothes, and that most of them are active makers and are organised in artisan groups. Additionally, a group of women started making soap from the honey of an endemic bee (melipona), and two groups that included men had been working wood for the previous five years. These are some of the people met by the labbers and the descriptions the latter wrote for their presentations in Mexico City and in Helsinki:

Agustin is a farmer at 20 de Noviembre. He injured his leg 15 years ago. After that tragic event in his life, he asked his wife for hammock making classes. As he was now physically challenged he needed to think of another activity to gain some income.

At first, his wife was sceptical because you need to walk around the loom when making a hammock, which he couldn't do. After she agreed on teaching him, he started experimenting with different weaving techniques. He even started designing and creating his owns methods. Now he is the one teaching his wife and others. However, even

Figure 35. Agustín, one of the best hammock makers in Calakmul and in Mexico. Photo by Jan Ahlstedt.

Figure 37. Sarita is the keader of the most formal group of textile makers called "Las Amapolas". Photo by Jan Ahlstedt.

if he is a really good teacher in the 'hammock making art', he has been denied holding workshops, because he doesn't know how to read.

"When I was young I dreamed about my wife, now I dream about hammocks"

Sarita *is a textile maker. She invited us to come to her workshop and so we did. When we arrived there, we were impressed by all the beautiful things she made: shirts, dresses, belts and even bags. She told us how happy and proud she was with her work and products, because she was the leader of a successful group of textile makers called "Las Amapolas".*

These ladies were so innovative; they came up with the idea of making men's clothes (with patterns specially designed for them). They are also so open to learn new things that they actually take different types of courses to improve their skills. Sarita, for example, knew how to use the internet and had it as a tool to gather information and making contacts for her products. Her passion to succeed really inspired us. So, we began to wonder how we could take all the other artisans to that level. We were really inspired by this lady and her passion to succeed.

Sarita is a great example of a younger generation taking the initiative in helping the community. She has managed to get herself in a network called "Red de Turismo" which is a tourism program that covers marketing and purchase strategies. When she joined this network formed by men, women, youngsters and elderly who live in the surroundings of Calakmul Biosphere, she became the leader of several women within the community. They are all indigenous farmers and producers of organic items (e.g. organic tint for fabrics).

What made her very interested in joining the network was that it was formed to attract visitors and governmental support to their Eco-tourist community projects, due to the lack of interest of institutions in promoting them. The network is promoted on a website[134], and on a printed catalogue, which was financed by SEDESOL, by initiative of Naturada AC.

"I'm 27, but people in the community usually tell me that I seem much older, as I've learned many things, through my experience"

134   http://www.redcalakmul.com/red.html

Several artisans from El 20 have won prizes at local, state, and even national craft fairs. However, the team was surprised to consistently hear the same story from most of the artisans: that their craft-making was not a meaningful source of income; that what they got from their sales mostly covered their travel expenses, and the rest was used to buy materials with which to keep the craft-making process alive.

The team also identified that the community was interested in developing eco-tourism, and that a large group of people from El 20 had formed a tourism cooperative. The certified tourist guide, Humberto, as their representative, would take tourist groups to visit archaeological sites, and he would also include a walk through the jungle to observe the local flora and fauna, and a visit to El 20 to eat lunch and buy crafts. Humberto explained that they needed more tourists in order to make their museum (a French donation) work properly. The National Institute of Anthropology and History explored Rio Bec, an archaeological site within their territory, from which it collected some pieces that would only be exhibited if they proved they had sufficient visitors.

Many of the labbers would report in interviews that I had with them while we were in Calakmul that, at first sight, it seemed like the people of El 20 lived happy lives, and there was no need for us to come and try to change that. This is the same that happened to the labbers in Shanghai. On the one hand, it is true that there are aspects of their lives that people living in rural communities appreciate; for instance, the artisans spoke with true passion about their crafts. On the other hand, people who live in a condition of marginalisation find happiness and satisfaction in little things, which is what Amartya Sen and Martha Nussbaum call the adaptive preferences phenomenon. One of the most memorable stories from the field trip is that of Andy repairing a car; several things can be drawn from this story, and this is how he recalls it[135]:

> Andy: "As a freshman, we start studying Mechanical Engineering, our professor says, okay guys, now that you start studying mechanical engineering, now everyone around you, all your relatives and everybody will expect that now you suddenly know how to repair a washing machine and a car. And I thought yeah… I guess that's how it goes, but then I thought nothing more about it.
>
> But the first thing we arrive in 20 de Noviembre, Claudia comes, hey, Andy, there's this washing machine that's broken, and we had a look at it and there

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135   As he described it in the discussion panel that took place on 9 September 2014 at Caisa Cultural Centre, Helsinki, Finland, during the 'Crossing Boundaries Exhibition'

was not much we could do about it at the time and then I can't remember if it was that same day or the day after and a car breaks down and Andy, come on, there is a car, and it was really fun. Luckily there was, uh, what's his name, electricity?

Claudia: Rodolfo

Andy: Rodolfo! From one of the Mexican universities, and we had a look at it and we found out what the problem was and then we found a spare piece from another village or something and well, we didn't find it, there was loads of people helping, but we managed to get the car running, it was, yeah, something. Interesting.

In an interview that took place in El 20, Mariana built on Andy's story. While Andy and Rodolfo were fixing the car, Mariana was translating the conversation for Sayuri, Ofelia's daughter; therefore, she witnessed the whole event. She recalled finding it hard to hold back her tears, as it was precisely at that moment that she noticed that people in El 20 might actually need very little help and their lives would be much easier, but we normally do not give, even that little.

Later on, while in Zoh-Laguna, I complimented Andy for having helped the community with that small fixture, and I also told him it had been very touching for Mariana. Rather than being pleased with the compliment, Andy shared a reflection through which he happened to synthesise the most difficult problem Aalto LAB Mexico would deal with. He pointed out that expecting outside help was not a very sustainable practice. He would instead appreciate it if some local people would learn to do the job themselves. In fact, after fixing that car, he told the kids around him that they could learn themselves, hoping to get them inspired.

Without Andy and Rodolfo, the car would have been stopped for months, as no one in the community could fix it, and taking it to Xpujil was simply too expensive. If they learned to fix it, their lives would be easier, which can be seen as an expansion of capabilities. The main problem was that, at least until then, no one seemed curious enough to learn. Andy had friends who learned to fix cars as kids, and it was hard for him to believe that something similar had not happened in El 20. Perhaps people in the community did not always have cars, or the parts are not sold nearby, or they do not have the money to buy them; but it is also possible that this is showing the effects of a life of marginalisation and limited choices and a paternalistic state: a case of adaptive

Figure 38. Andy checking the engine of the truk, Rodolfo (green shirt) watches from further distance. Mateo (black shirt) watches from close distance. Herson (orange shirt), picks from the side. Nico (brown shirt) listens. Photo by Jan Ahlstedt.

preferences. Sustainability, in this case, was very much about inspiring the people of El 20 to tackle their issues by themselves.

However, this very simple task for Andy was the first thing that we, the visitors, could do for our hosts; it was our first kept promise. And as small as it was, it was sufficient to make Mariana notice a remediable situation of injustice. Mariana and Andy were living experiences that cultivated their capacity for noble feelings, to quote John Stuart Mill (2014 [1863]), or their sense of justice, to quote John Rawls (2009 [1971], 41).

Figure 39. Community "Centauros del Norte", where the seed of the ramón tree is being used to cook all type of food, from cakes and cookies, to coffee-like beverages. Photo by Jan Ahlstedt.

In the original plan, in the morning of 7 November 2012, we would leave El 20 and visit three other communities. However, given that some of the labbers were feeling ill, we had to change our plans. We visited only Centauros del Norte, where a small group of women, with the help of the municipal government but in very limited conditions, were making use of the seed of a tree that grows in their jungle (ramón) to make all types of food, from cakes to coffee-like beverages. We arrived in Zoh-Laguna in the afternoon and continued with the workshop by brainstorming *what do we want to solve?*

Conceptualisation: synthesis, ideation, visualisation

We really did not have much time, so we needed to make wise use of it. During our stay in El 20, Greg and Hei had facilitated debriefing sessions, through which the teams had shared with each other what they had learnt. Therefore, by the time we arrived in Zoh-Laguna, at least some reflection had already taken place.

Greg asked the labbers to brainstorm *areas of opportunity*; basically, what they thought Aalto LAB Mexico could be about, things that could be improved in the community. These were listed as broad topics, like: ecosystem, safety, resources, generations, administration, and empowerment, among others. What followed was the longest brainstorming session within the whole process.

In relation to those areas of opportunity, Greg asked the labbers to generate *how might we* (HMW) questions, a common step within IDEO's processes, which has also been included in their HCD toolkit (IDEO, 2011, 114). Hundreds of HMW questions were generated, so the following step was to cluster those that were similar. Finally, everyone voted for those that better synthesised the 'design challenges', and that needed to be at the same time desirable, feasible, and viable.

The HMW questions with the most votes were separated from the rest and clustered by similarity. It seemed that the team wanted to focus on four main topics. Greg and Hei took those clusters of HMW questions and from them, they drew some insights that would help the team justify the relevance of each of the questions. These were the selected questions and the insights that justify them[136]:

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136 All these process summaries were taken from the ALM 2013 presentation made by the labbers at the end of their field trip, and from Greg Perez's notes from the workshop in Calakmul.

1. Insight: 20 NOV is one community, but it is made up of several micro-communities that aren't well connected to each other.
a. How might we bring together the needs of the community to enable acting out as one?
b. How might we leverage the sharing of best practices through connecting different interest groups?
Comments: The labbers had spoken with the representatives of several artisan groups, and they had learned that basically each artisan buys their own material. The main responsibility of the leaders of the groups is selling everyone's crafts. There was no collaboration among groups, and there were potential connections among them (e.g. gathering all the women and buying fabric wholesale would be less expensive, and there was also the potential to create productive chains by linking the honey producers and the wood artisans, given that wood products are finished with bee wax).

2. Insight: Neither the community of 20 NOV nor the municipal administration know how to best articulate some of the communities' key needs.
a. How might we increase knowledge in market relations, value of labour and goods, and technology?
b. How might we reinforce their network outside the community?
c. How might we better communicate the fundamental needs of 20 Nov to the municipality?
Comments: The municipality supports its communities, but often what they provide does not match what the community needs.

3. Insight: The craft-based focus of 20 NOV has very little to do with "ecotourism" but it is mostly dependent on tourism to sell their goods.
a. How might we unify both the story, history, and methods of their products to create a unique experience for 20 NOV?
b. How might we help 20 Nov identify more local, sustainable methods of production and tourism that have a positive impact on the environment?
c. How might we better connect the rich ecological and archaeological assets of Calakmul to the rich creative capabilities of 20 Nov?
d.How might we capture and communicate the uniqueness of their community and work?
d. How might we help 20 Nov shift from a primarily tourism-based economy to a creativity-based economy?
Comments: Some people in the community had been trained as guides for

Figure 40. HMW brainstorm session. Photo by Jan Ahlstedt.

eco-tourism, but the community was not fully prepared for that. Although the living of most of people in the community did not depend on selling crafts, they only sold crafts to tourists, which were not numerous. Increasing the number of tourists would enable them to sell more crafts and keep this process alive, and also to earn money to pay for other things (e.g. electricity bills and transportation).

4. Insight: The creativity and product innovation are unique to 20 NOV, but they are possessed by individuals who do not document their methods.
   a.How might we establish a culture of knowledge sharing?
   b. How might we encourage the community to create more opportunities to share their craft with young people?

   Comments: Some of the artisans were innovative, like Agustin, who was willing to teach others the stitches he had invented, but the municipality would not allow him to do this because he did not know how to read and write. Additionally, there were some crafts that were done mainly by older women, and the girls did not seem interested in learning. These situations endangered the existence of both innovative and ancient cultural practices.

The following morning was used to continue with the conceptualisation phase, but in the afternoon we visited two communities that had been expecting us since the previous day: *20 de Junio,* where they were developing a large eco-tourism project, and *Nueva Vida,* where they were making organic soaps and shampoos, and already selling them to supermarkets. This is how the process continued:

The HMW questions with the most votes (above, ***in bold***), became the starting point for the ideation process, for which the labbers conducted yet another brainstorming session. Ultimately, they concluded that 20 de Noviembre could:

• Increase the extent of sharing knowledge and learning
• Create a unified way of working together and internalise a unique community identity to invite small-scale ecological tourism

Through more concrete actions like:

• Creating a '20 NOV' ***cultural brand***

> This proposal aims to empower 20 Nov's identity, and differentiate it from other artisan communities in the area. If all their crafts were sold under the same brand and with the same logo, whichever product that was sold would be advertising the rest. Besides marketing possibilities, sharing a brand could also mean sharing logistics and saving some money. Different textile groups could order their material together and get some wholesale price; they could ease the access to government programs, seek Fair Trade certification, and create a common fund for health and education. Besides the brand and logo, the labbers proposed the installation of points of purchase and the creation of mixed products that would require several artisan techniques.[137]

• Promoting themselves as a ***community tourism*** destination (rather than ecological tourism)

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137 Although this was a very solid idea, it was a very traditional western solution. There was the risk that it would transform the value of money from instrumental to intrinsic. Later on, in the reflection period, and before starting ALM 2013, I constructed a design brief that would maintain the instrumental value of money (for the sake of something else).

Figure 41. The seected HMW questions were separated to continue with the ideation process. Photo by Jan Ahlstedt.

This idea is very closely linked with the cultural brand; it proposes offering tourism based on the human capital of 20 Nov. Visitors are already attracted by the archaeological sites nearby, but the crafts and the local gastronomy could be offered to visitors as part of an experience. The labbers proposed that by implementing some small actions, this idea could get started; 20 Nov could build a map of their town that would show where people lived and what they did, and the ones that were already working in tourism could take their clients on tours that would show the different craft processes in the town.

• Generating physical platforms and spaces for **_knowledge sharing_**

The labbers identified valuable skills in both the youngsters and the elderly. While the former operated computers and phones, the latter mastered skills acquired through practice, related to their traditional crafts such as embroidery or weaving. Both types of skills were found valuable, for which reason, the labbers thought of some ways in which people in 20 Nov could share their knowledge with one another. The labbers believed that Comisaría Ejidal (Government house) could become a hub – a meeting centre for all. It could have a board to keep track of meetings, workshops, and other activities, in order to make interaction among groups easier. Additionally, the labbers proposed that the representatives of

Figure 42. The labbers (Anna, Gabo and Pam), preparing some material that would help them communicate their concepts to the people of El 20, during their presentation. Photo by Jan Ahlstedt.

They all expressed appreciation of the interdisciplinarity of the team and acknowledged that its value relies on bringing in various different perspectives that enable a broader analysis and perhaps a better understanding. The design students from Mexico learned that design could deliver something a lot more complex than a product. The engineering students realised that sometimes 'problems' are not fully determined, that in social contexts, they will face a fuzzy front end, and that addressing the social side is also very relevant. Students in the fields of the humanities and social sciences, for their part, acknowledged the value of design and engineering minds, which are oriented to action and to improving a certain situation rather than merely understanding it. Business students appreciated design as a field that transmits value, other than monetary. Finally, all non-design students (but also design students) highlighted the role of the facilitators; several of them became really interested in human-centred design and scenario visualisations.

> **"This engineering and designers' mind is so important. Now I'm seeing how much it is needed, for example in the community people have this engineering and designers' minds because they can kind of construct ways how to deal with the water and they can come up with how to make a hammock; it's imagination and creativity use of the resources that are at hand. It's been eye opening for me to see the impact…" -Sofia**

"And I learned how design is actually transmitting all the other values here because it is such a big part of the everyday life." -Anna

Through their observations, experiences, and discussions, the students were also able to understand 20 de Noviembre and its challenges a little better. They knew that the trip had been too short and that there was no hope to change anything in that short period of time. However, all the labbers felt privileged and grateful to the people of El 20 for having been invited into their homes. While being treated with kindness (i.e. a family gave their master bedroom to a group of labbers), the labbers grew in humility. They felt appreciated and welcome, and so inferred that their sole visit was bringing something to the community. Most of them described the moment in the community as a reciprocal relationship, where all parts brought in something special and learned from one another. The value of the labbers as visitors was that of bringing an outsider's perspective, as a consultant or even a psychologist (as described by the labbers), which helps the locals make sense of the current situations that might have become *obvious* to them, and therefore were no longer reflected on or *could not be explicitly expressed*. At the same time, the labbers got to reflect on their own ways of living (i.e. on how unsustainable they are), and (the Finnish students) even started thinking that developing Aalto LAB type of project in their own country could be, in fact, useful.

Ultimately, the labbers had gained a great sense of commitment: they wanted to pay it back to the community in the form of concepts that they would find genuinely useful. Their hopes were high because they had identified great potential in the people of El 20; they met passionate artisans who were (like) *entrepreneurs*, *designers,* or *engineers* within the community, and who were very skilful and hardworking. So, the labbers knew that they needed to be persuasive in their presentation and inspire at least one person who would take over the task of continuing the projects. Furthermore, the labbers started to have in mind the final presentation of their trip, which would take place in UNAM, and they started to imagine what the project could turn into. When transcribing and analysing the interviews that took place in Calakmul, I noticed that what Anna described, is basically an assemblage:

*I think the project will be more defined in the future; that **the project is able to tackle certain problems in the future**, by choosing certain areas in the community to tackle actual engineering problems like **electricity** or the **bridge**, or then the **communication** things or then the **branding** and the **products** and the **sales**, or then developing the **tourism** and the products together; you can really see these different paths coming out of what we've done here. Because now it's a huge entity which we are trying to present to them and to others in the*

Figure 43. Personal formal interviews with each of the labbers were conducted by Xaviera Sánchez de la Barquera and by myself. Photo by Jan Ahlstedt.

*final presentation, but from this, something very actual and concrete can come out. And **you can really gather together designers and engineers to do actual work and build things and design things, if that is what the community allows and wants.***

Validation

The team had agreed to return to 20 de Noviembre in the afternoon of Friday 9 November to present their work. Thus, they dedicated the morning to finalising the concept ideas and to making drawings that would help them convey their ideas to the community. The labbers had invited the artisans with whom they had conducted interviews to attend the event and to carry samples of their products to be photographed. Around 25 persons attended the presentation; mainly artisans and mainly women. Different craft products were arranged around the room, generating the atmosphere of an exhibition space. Baltazar González, the municipal president of Calakmul, arrived towards the end of the presentation. The labbers were nervous, but they were also excited. The presentation took place in Spanish and consisted of:

- Welcome words (Claudia)
- Introduction (Hei / translation: Claudia)
- Team Cultural Brand (Pam and Gabo)

- Team Community Tourism (Marianna and Sharoon)
- Team Knowledge Sharing (Paty)

For the welcome words, I integrated the views and feelings of some of the labbers, which I had collected during the interviews that morning:

> *We are very grateful for your hospitality, we feel honoured that you opened the doors of your homes to host us, despite us being a group of strangers. Some of us come from Finland, one of the most developed countries in the world, and they were surprised that here, you are happier than many of the people they know in Finland.*

We have learned a lot from you, we have received so much from you, that we would like to contribute back with something you might find useful.

In just two days, we found many opportunities, we believe that by connecting potentials, you can be stronger; you are very talented, together you can do much more.

Quoting Anthony, we would like to be the midwives of a project that will help you tackle your greatest challenges. We want to help you to give birth to that project, and we wish that you will be the ones to take care of it and see it grow.

Given that time is so short, our vision of 20 de Noviembre might be very limited and even mistaken. If so, we'd like to be corrected, we want to get all your comments in the most honest manner. And in the most honest manner, we tell you that we would love to know if any of the things we came up with have been useful.

Before introducing their concepts, Hei showed a drawing of three concentric circles; the core represented an individual, the second ring was dedicated to the family, and the third ring represented the community. The government and the market were represented as two external elements that needed to be bridged. The diagram visualised the idea that tied all the following presentations together: that all members in the community should collaborate more closely, and that together, they should look for better means to collaborate with the external entities (modifying existing relationships, and creating a new assemblage).

Pam and Gabo started their presentation by thanking the people of El 20 for their generosity and kindness, and by encouraging them to interrupt at any time to comment

Figure 44. The Mexican labbers presented the concepts to the audience, formed by people from El 20 and Baltazar González, the Municipal President of Calakmul. Photo by Jan Ahlstedt.

or ask questions. They started by introducing the slogan "Juntos somos uno" (Together, we are one). They talked about several possibilities in which different artisans could collaborate with each other at different levels. For example, on the lowest level of collaboration, artisans could share a marketplace, and at the other end, they could generate a brand and logo that would help them share the stories behind the products. They showed a prototype that had been made by the team mentored by Susu: a wooden box that contained a little bag made of fabric, which for its part, contained a bar of soap. A honeycomb logo was engraved in the lid of the box, as an example. Pam explained that this product contained three different products; thus, if it was sold to a tourist, three different artisans would benefit at once. In addition, this would let the artisans increase their prices, and the extra money could be invested in relevant matters for the community (such as health-related matters).

Humberto, who oversaw tourism within El 20, commented that this idea was very much in step with their plans. In the spirit of working together, they had recently established a tourism cooperative, which should become an axis around which all different craft sectors could operate. He acknowledged that in the past, they had tried some things and failed, but he was positive that they could improve both their products and their services to receive national and international tourism.

Mariana and Sharoon also started by thanking the community for hosting them. They introduced the idea that rather than aiming at ecological tourism, El 20 had great potential to develop its community tourism. They believed that other people would enjoy our type of visit, staying with local people. Building on the idea presented by Gabo and Pam, they stated that if El 20 constructed a sense of community and if they could communicate that to the outside world, there would be no need for the artisans to travel to Xpujil to sell their products; tourists would visit them instead. They proposed, for example, installing a map somewhere in the entrance, which could show where different families and artisans lived, so that visitors would know where to buy each type of craft. Additionally, they believed that a tourism centre could be installed either in an old or a new construction.

Ofelia liked that vision of the community, where people would be interested in visiting them to buy their products. However, she emphasised that reaching that vision depended upon implementing everything Mariana and Sharoon were suggesting. She thanked them for their ideas. Finally, Paty introduced the concept of knowledge sharing through an interactive presentation, by asking questions to the members of the audience. Through this dialogue, she made the point that the people of El 20 would largely benefit from receiving training on different skills, such as repairing cars. Some of the means for exchanging knowledge included a community centre, a bookshelf, a tools library, and a bulletin board.

Baltazar González, the municipal president of Calakmul arrived in the middle of Paty's presentation. When she finished, Mariana and Pam helped me to update him on what was going on. Subsequently, Baltazar took the floor and said:

> "Look, I believe that many things can be done. There it is, you are looking at it. What must be done is killing the ego, egocentrism, because you have had in your hands many things that are being explained here. You have had a craft house; you have had a guest house. Nonetheless, we are in the 21st century, it's been 15 years since we became a municipality. Programs come and programs go, and we haven't organised ourselves. And there is a diversity of activities here; you have forestry, tourism, a unique gastronomy within the 82 communities. You also have your regional clothes and the Mayan language."

His speech fired up the artisans. Soon we were in the middle of a heated discussion in which the people and their government accused each other of making mistakes in the

past. Additionally, since this was the first time that Baltazar had visited El 20 within his presidency, someone saw the opportunity to ask the government (and probably also us) for materials and supplies for their crafts. I intervened. The discussion that day was about the ideas that were being presented, which were also the matters to which we could contribute. We needed them to be very honest and let us know if what we proposed made any sense to them, and if we had their permission to carry on with our part of the work.

Perhaps not surprisingly, it was then, when the artisans felt attacked by the government, that they united. Representatives from different artisan groups raised their voices to argue that although in the past they had failed, time had passed, and they had learned. They thought it was time for the government to give them another chance. Humberto went back to the "Together we are one" slogan, and encouraged his community to follow that path. It is possible that the artisans were just being polite to us, or that they were looking for governmental support, and thus their declarations of willingness to work together. Nonetheless, some documents verified the creation of a tourism cooperative, as mentioned by Humberto, and we had all witnessed their disposition to work hard. We also could not be sure that the people of El 20 had completely understood the proposals of the labbers, but we let them know that upon our return to Mexico City, we would present the project to potential stakeholders who could help us in continuing the project. They replied that they expected us to return to El 20, and as a proof of faith, they decided to keep the labbers' drawings there, at the Comisaría Ejidal.

What happened next was a true gesture of kindness that filled us with certainty that the community had appreciated our visit and wanted us to give continuity to our work. After the presentation, Leydi invited us over to her place, she had a surprise for us:

Leydi *is a lovely and warm person. She woke up one morning at 4 to make a birthday cake for one of our team! She's a widow with three sons and feels she has "to be both mother and the father to (her) sons, sometimes that's really*

Figure 45. Leydi baked a cake and invited us over to her place to eat it before we left. Photo by Jan Ahlstedt.

tough". She provides for them by doing wonderful textiles and she really has a positive attitude. Her only issue is that there is no infrastructure to sell her goods i.e. not enough customers come to the village to buy and no marketing knowledge[138].

While we were eating the cake, Humberto (Leydi's brother) sang us a song in Mayan, which, he said, meant that they were happy that we came and they wanted us to go back and work with them again.[139]

By the end of the field trip, due to the people's response, I was comfortable with asking the labbers to prepare a presentation that would share their learning experiences, but that would also persuade the authorities from the universities, the embassies, and the municipal government of Calakmul to help us keep our promises and give continuation to Aalto LAB Mexico.

Reflecting, refining, rebriefing

Back in Mexico City, the labbers had the weekend to get ready for the presentation at UNAM. Their concepts had been validated by the community, but this was the opportunity to give continuation to ALM by persuading some members of the audience to support it. The labbers would, in fact, give two presentations: the first one included virtual communication with Finland, because while Mrs. Anne Lammila, the Ambassador of Finland in Mexico, was present in UNAM, Mr. Agustín Gutiérrez Canet, Ambassador of Mexico in Finland, was at Design Factory. Later on, the labbers would present to the authorities of UNAM, Tec de Monterrey, the municipal president of Calakmul, the students in UNAM, and the general public.

Rather than giving the same presentation they gave in 20 de Noviembre, the labbers worked hard to generate a proposal that would allow collaboration between 20 de Noviembre and education institutions, government, NGOs, and private institutions in Mexico and Finland. Their presentation was applauded by the audience, the ambassadors expressed their appreciation and support, and the representatives of the universities expressed their wish to give continuation to the project.

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138 This is how the labbers introduced Leydi in their presentations in Mexico City and in Helsinki.

139 In the film by Antti Seppänen, here: http://acs.aalto.fi/2012/aalto-lab-mexico-video/

Figure 46. ALM 2012 presentation at CIDI-UNAM, Horacio Durán Auditorium. Photo by Jan Ahlstedt.

By acknowledging the potential to engage different actors within the network with the community, the El 20-ALM assemblage became evident. El 20, the N_0 assemblage, is a community with its own way of living, where some things work extraordinarily well, and where other things that can be described as basic, do not even exist. What was clear was that the community finds pride in being who they are, and that they wished to maintain their practices. So, the overall challenge of ALM is to find ways of filling the gaps that community members identify while preserving their cultural practices. The means to do this was to make use of the available resources in El 20, but also to integrate other actors and institutions that we had met through the process into the assemblage (N_1).

In the following months, a couple of workshops were run with the Mexican labbers in order to integrate the reports of our experts, Omar and Rodolfo, but also the expert observations of the labbers, into the ALM 2012 report, which would outline the following steps for ALM. This happened for various reasons; the first reason was that we had not been able to gather all the relevant information by making use of IDEO's human-centred design methods. The fact was that people were simply unaware of some issues (i.e. technical matters, like their electric installations being unsafe). Furthermore, while the labbers had generated proposals that could be taken over by members of the community if they wished to, the engagement of stakeholders gained in their presentation at UNAM actually enabled ALM to make bigger plans for long-term collaboration.

Once again, echoing the process of ALS, during these workshops, we took over the task of envisioning the best possible scenario for the community. We started by asking what El 20 might become once all the different proposals had been implemented, including the ones that the labbers presented to the community, the collaboration possibilities they introduced in their presentation in UNAM, and the ones by Omar and Rodolfo. We started by listing all the proposals, and continued by clustering them by topic. Next, we started visualising all the proposals implemented in El 20 on three different scales:

- The big picture: The whole community.
- The creative identity: All artisan groups.
- Livelihood: Each household.

In these ideal visions, all the systems had to describe closed loops in order to be sustainable. We were able to identify that some systems were already working properly, while others were only partially implemented, and some were missing completely. The three diagrams showed the ideal flow of *capitals*, but these flows were colour coded in order to indicate the status of each of those flows (existing, partially existing, or non-existent).

The labbers had studied neither the Greek household nor the Greek oikonomy, but they had observed an alternative way of living that is not based on the money economy. Unlike what happens in the city, the people of El 20 largely live from what they produce. However, unlike in Ancient Greece, the people of El 20 enjoy certain public services (e.g. electricity) that have to be paid for with money, and sometimes they lack access to some services because they cannot afford to pay for them. It is almost as if they lived between two different worlds. The ideal vision showed the manner in which the community gained access to those services, such as healthcare and education, by improving existing practices or by creating new relationships with members of their assemblage (e.g. UNAM and Tec de Monterrey).

The term used by the labbers was *livelihood*, which belongs to environmental studies, but was introduced by Pam in their final report as follows:

> Sustainability also has to do with livelihoods. '**A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living**. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the

Livelihood
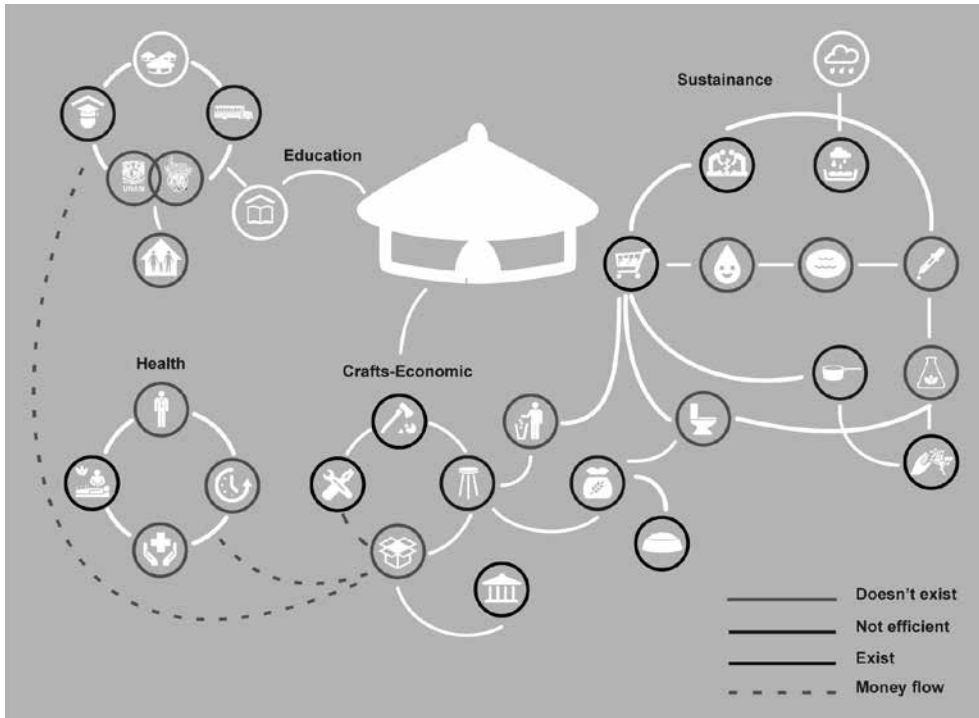
Figure 47. Livelihood diagram, representation of an ideal future for El 20, which assesses the status of different flows of different types of capitals. Source: ALM 2012 Report.

natural resource base' (DFID, 1999). Livelihoods are likely to be vulnerable. The vulnerability context of a livelihood frames the external environment in which people exist. People's livelihoods and the wider availability of assets are fundamentally affected by critical trends as well as by shocks and seasonality, over which they have limited or no control. The livelihood framework identifies five core asset categories or types of capital upon which livelihoods are built. Increasing access to these assets may help to support the livelihoods and eliminate poverty. These are:

- *Human capital: skills, knowledge, health and ability to work.*
- *Social capital: social resources, including informal networks, membership of formalized groups and relationships of trust that facilitate co-operation.*
- *Natural capital: natural resources such as land, soil, water, forests and fisheries.*
- *Physical capital: basic infrastructure, such as roads, water & sanitation, schools, ICT;*

and producer goods, including tools and equipment.

• **Financial capital**: *financial resources including savings, credit, and income from employment, trade and remittances.*

So, a sustainable livelihood must be able to cope with problems related to agriculture, climate change adaptation, disasters, food security, gender, health, natural resources management, social protection, water and sanitation, etc. As we see, sustainability has to do not only with ecology, but with many other themes. The application of knowledge from different disciplines is necessary to come up with sustainable solutions either in livelihoods or in any other context. As the labbers continued to write their final report, I was also reflecting on the community and on the continuation of the project. I started envisioning a strategy for implementing all the proposals, which made up the ideal vision of El 20. This will be explained more thoroughly in the following section.

Understanding El 20, rethinking poverties

Following Max-Neef (1989), it was then possible to rethink the poverties and richnesses of this community, whose livelihood is closer to an oikonomy rather than an economy. The subsistence of most families in El 20 is not dependent on money; their work within their own lands provides each family with their main sources of nourishment: corn, beans, and squash (most times, also chili). Some of them also have livestock. Their diet is complemented with other crops, including fruits and vegetables that are grown in their parcels or in their home yards, where they also have chickens and turkeys that provide them mainly with eggs and, on more special occasions, with meat. Furthermore, they are allowed to hunt if they find prey on their own lands, which means that on a lucky day, they might eat deer, pheasant, or other local species. Most of the water they use is harvested from the rain; otherwise, it is extracted from the wells or, in the case of drought, it is distributed by the municipality. Rather than speaking of this as a subsistence farming community, we could talk about it as a self-sufficient one, at least to a certain extent, and especially if the weather is benevolent. However, the community also makes use of some services that have to be paid for with money, and here is where a mismatch is identified. Everyone in the community has a series of strategies for making money. Some of them are practised within each family, like livestock[140], which is a currency

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140 Livestock is a delicate topic though, since although it is profitable, it is one of the most unsustainable practices in the region, and one of those that is being discouraged by environmental programs, including the Territorial Sorting

'Oikonomy in 20 de Noviembre'	
Activity	Gain "Output"
Agriculture	Self-sufficiency
Rainwater harvesting	Self-sufficiency
Poultry	Self-sufficiency
Forestry	Lowly profitable
Livestock	Profitable
Apiculture	Lowly profitable
Artistry	Lowly profitable
Employed outside El 20	Profitable

Table 13. The subsistance of people in El 20 depends on a mix of activities.

Public Services in 20 de Noviembre		
Service	Quality	Cost
Healthcare	poor	Variable
Education	poor	Free
Transportation	N/E	N/A
Elictricity	poor	High
Water	N/E	N/A
Communication	Very poor	High

Table 14. Not all services are available in El 20, some of them have poor quality and others result too expensive. (N/E Nonexistent; N/A not applicable).

that helps them pay big debts. Others, like the apiculturists, gather the production of several families and sell it to a single buyer, then they distribute the earnings. Through the forest preservation programs, the government pays some money to the ejido, which is later distributed among the families of the ejidatarios. From the latter, they do not earn much; moreover, this is a type of practice that Max-Neef (1989) would criticise for promoting dependency rather than reinforcing autonomy.

With the money they earn, they pay the fees charged by their services providers. Actually, the only bills that get delivered to their addresses are the council tax and the electricity bills, since no other service is available (like running water or gas delivery,

Analysis of Calakmul (Arreola et al. n.d.).

which are common services in urban areas in Mexico), and they struggle to pay those[141]. Furthermore, the money they gain is insufficient, which prevents them from having access to other services. This is because most of the services, including junior high school, high school, and the nearest basic hospital, are located in Xpujil, (15 km away from El 20), and with no public transportation service available, people have to either make use of their own vehicles or then take a taxi, which charges 60[142] pesos for a single ride (in Mexico City, a single ride in the metro costs 5 pesos). Additionally, often the services that are offered in Xpujil are insufficient (like in the medical emergency described at the beginning of this work), which requires people to travel further away or even obtain them from the private sector. Hence, not having a salary results in them being marginalised, because it prevents them from enjoying certain services. For most people, it might be more than obvious that if they do not pay taxes, they do not enjoy any benefits from the state. However, what is less obvious is that the two systems or paradigms within which their lives develop are incommensurable.

The government would not grant a salary to all subsistence farmers in the country, and so grant them access to the healthcare and social security systems, at least not in the near future. However, there could be some way in which the community could actively participate in counteracting the situation of marginalisation in which they live. As the Zapatists pointed out, it is unjust to have people dying of perfectly curable diseases. ALM could become the facilitator of the process through which they would reconnect their existing resources or capitals, and build new relationships within and outside the community to ultimately achieve the expansion of their capabilities.

Challenging the Mindset
(Mexican labbers in Finland, another way of building a team)

The greatest achievement of ALM within the involved institutions was its incorporation as a project within the Master of Arts program in Creative Sustainability at Aalto University School of Arts, Design and Architecture, by request of Susu Nousala and a decision by Tiina Laurila. This guaranteed the continuation of the project, which was something we had hoped for since the beginning, but which at that time was difficult to

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141 Mobile phone bills were not mentioned as one of their main expenses, but we can see their use is growing; however, they use prepaid services.

142 By 2015, the cost was 80 pesos.

imagine. Towards the end of ALS, Sotamaa's view of the future of Aalto LAB included the possibility to develop a new one in a different location on a yearly basis. Therefore, this was the first time that we were faced with the possibility to turn the project into a longitudinal one. Most of the Mexican labbers expressed their wish to continue to be involved in the project, and their preference to continue working under the name of ALM. Based on Nousala's research on social adaptive complex systems, we started looking at the possibility that students would participate in the project for a period of one and a half years or more. However, most of the time this is not realistic, for even highly motivated and committed students ultimately graduate. As part of the negotiations within the universities, the opportunity to have the Mexican labbers and new students visiting Finland to attend a summer workshop at Aalto University emerged at the beginning of 2013. Nousala and I saw an opportunity to integrate the summer workshop with the overall Aalto LAB framework, which would make the process more reciprocal, although it could be argued that the people of El 20 should also have travelled to Mexico City and to Finland (perhaps in the future, and if that is what they want to do). In any case, the identified opportunity was to integrate the workshops in the recruitment process. During this period of time, the students would meet each other and we would have the opportunity to observe them working together.

From 3 June to 14 June 2013, Susu Nousala hosted a summer course called "Challenging the Mindset", in which I acted as an assistant. We had 18 students altogether, who came from Aalto University, Tec de Monterrey, and UNAM. The main topics of the workshop were water and governance, which would be tackled throughout various short workshops that took place at Aalto Service Factory, Aalto Design Factory, Aalto Media Factory, and in Suomenlinna. Every time, the students would work in small teams, and there were new teams for each activity. The short workshops included participating in the Global Governance Jam, a 6-hour product development project (PD6), a visit to the water treatment plant in Viikki (Viikinmäki), and several lectures. The lecturers and workshop facilitators who kindly collaborated in the course were: Pekka Korvenmaa, Sandra Viña, Tuuli Mattelmäki, Mikko Heiskala, Jung Joo Lee, Andy Clutterbuck, Suvi Hjorth, Olli Varis, Lasse Granroth, Kalevi Ekman, Janne Saalovara, Brenda Vertis, and Markus Wikholm. The workshop was documented by Antti Seppänen, Jan Ahlstedt, and Roman Lihhavtshuk[143].

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143   The video filmed and edited by Roman can be seen here: http://acs.aalto.fi/category/cs-experience/?-filter=challenging-the-mindset

Figure 48. (pages 268-271) Challenging the Mindset workshop took place in Aalto Service Factory, Aalto Media Factory, Aalto Design Factory, and in other locations within Helsinki. Photo by Jan Ahlstedt.

Photo by Jan Ahlstedt

Aalto LAB Mexico 2013-2014

This was the first time in the history of Aalto LABs that the project (s) had *continuation*. In fact, at some point, we doubted if the whole design process would be named Aalto LAB, or if Aalto LAB referred to a diagnosis only. Some of the Mexican labbers who had expressed their wish to remain involved voted for the former option. So, the idea was to proceed with the design process through a second learning cycle. Continuation gave us hope that this time, we would achieve the implementation of the projects.

This time, because we had a clearer understanding of the context, we could build clearer briefs. This task was largely my responsibility as project manager, mentor, and the researcher in Design as Freedom. My decisions were based on the work of ALM[144] 2012, and mainly the labbers' report and the reports of the experts, Omar and Rodolfo. The opinions of teachers at ALM, Susu at Aalto, and Omar at Tec were also taken into consideration, as well as my research interests. During our visit to El 20 in 2012, we were aiming to conceive feasible projects that could very easily be implemented in the community without much involvement from other stakeholders. However, the positive feedback gathered at the presentation in Mexico City made us believe that the universities and the embassies were being integrated into the assemblage, which enabled us to tackle some issues that we did not consider before (e.g. water sampling).

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144 See Appendix II

The labbers of 2012 had generated three main concepts: cultural brand, knowledge exchange, and community tourism. Rodolfo's report focused largely on infrastructure. Omar exhorted us to focus on water. Through the workshops that ran after the trip, we envisioned how the labbers' projects and the suggestions of the experts could make an ideal El 20.

My job was integrating those into a few project briefs[145]. I tried to respect the work of the labbers as much as possible. Knowledge exchange and community tourism included designing a space. There was the chance to develop some architectural experiments that would take into consideration Rodolfo's observations regarding infrastructure (water, waste management, energy), but also those of the architects and designers (the loss of Mayan heritage). The Cultural Brand project had the noble goal of uniting the community; but I was concerned about the possibility of conveying an intrinsic value of money. In their presentation in the community, the labbers had mentioned the possibility of using the extra money for very necessary matters, such as medical emergencies. I also used the designCAPITALIA framework to analyse the story presented in the preface. The conclusion was that better access to the healthcare system was a priority. At that moment, I did not understand the relevance of studying water, but I trusted Omar's expert opinion.

We would soon encounter the difficult problem of integrating new labbers after the design process has already started[146]. It seems to be easier to spread the attitude than to transfer (practical) knowledge. Although the new labbers wish to build on the work done by the previous ones, they are also sceptical about their findings and wonder if we are working on the right track; a rather important role. All in all, these types of projects cannot be advanced without visiting the site.

The ALM 2013 (design) team

This time, Aalto students were selected by two different means: some were directly invited given their performance in the *Challenging the Mindset* workshop, and others wrote an essay as an application. On the Mexico side, all the participants of the summer workshop were invited. However, for external reasons, some of the Mexican students refused the

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145 Some working materials for this process can be seen in Appendix 2.

146 We dedicated an article to the subject. See: Berg, Kajamaa, and Garduño, 2014.

invitation or ceased their participation early in the process. Finally, given that the only design student from Tec de Monterrey had graduated even before the summer workshop started, a new designer was recruited with the approval of Constantino Landa, the head of this program. So, finally, the team of labbers was as follows:

Name	University	Field	Nationality
Ismo Sutela	Aalto University	Bioproduct Technology	Finnish
Suvi Kajamaa	Aalto University	Creative Sustainability/ Design	Finnish
Theresa Berg	Aalto University	International Design Business Management/ Design	Finnish/ Swedish
Flynn	Lewer	Creative Sustainability/ Architecture	New Zealander
Gabriel Calvillo*	UNAM	Industrial Design	Mexican
Juan Vértiz*	UNAM	Industrial Design	Mexican
Isela Ramírez	Tec de Monterrey	Industrial Design	Mexican
Pamela Chantiri*	Tec de Monterrey	Engineering in Sustainable Development	Mexican

Table 15. The labbers of ALM 2013. * Participated in AML 2012.

The overall structure changed as well. Rather than having a single team divided into two units and conducting physical meetings every week and virtual meetings within the units every other week, this time, three briefs for three subprojects[147] were generated

147 Creating these briefs was my task, but it resulted from working together with the students in the workshops mentioned in the previous section and integrating 'my expert' insights, mainly concerning my training as a designer and the wider understanding I had gained about the community through several

and the labbers were subdivided into three teams, with members both in Mexico and in Finland, who communicated every week to work on their particular subprojects[148]. Furthermore, each subproject had its own facilitator (Xaviera, Areli, and Lucero) and an interdisciplinary group of experts ranging from law to architecture, biology, and engineering.

El 20 had also become the central case for a course taught by Omar Rojas, whose first year students spent a semester generating proposals around the topics of energy, water, waste management, and food production. Alastair Fuad-Luke, the expert design facilitator who agreed to join us on our trip to Calakmul, assisted Design Your Action (a design-led NGO co-founded by Xaviera and Areli and others) in facilitating a workshop called 'Sustainable Livelihoods',[149] which integrated Omar's students and the labbers from Aalto.

After visiting El 20 in 2012, some youngsters from the community got in touch with the ALM team through social media (Facebook). They can access the internet when they climb the tallest mountains within their lands or when they travel to Xpujil. While exchanging messages with them, ALM was challenged to a football match, an activity that became extremely significant within our process for various reasons. First of all, it added to the reciprocal relationship between locals and visitors; rather than asking them to participate in each of the workshops that the labbers had planned, the visit started by getting us engaged in the activities they wanted to conduct. Very few within the ALM team had practised football, and no one was used to even standing in the sunlight in that heat. However, everyone was surprised how well the team played 'as a team'. Moreover, the labbers observed that by showing ourselves to be silly and vulnerable (evidently, ALM lost the match), we managed to overcome some initial barriers and perhaps lost the quality of 'strangers'[150].

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visits I made on my own.

148 This was largely a practical decision; transportation in Mexico City is not easy, which was preventing the labbers from attending the meetings that were held at the other university.

149 This workshop worked as the prototype of the Perspectivas Potables workshop, which took place a week later (and will be described later), as a parallel activity to the LAB, and as one of the means through which the experience could be shared with a wider audience; in this case, the workshop was for NGOs and members of the public sector, and the sponsor of Alastair Fuad-Luke's trip to Mexico was the Ministry of Foreign Affairs of Mexico.

150 It is relevant to point out that while a trusting relationship started to be built in 2012, there were many new faces in 2013, and especially the ones who were in EL 20 for the first time truly appreciated the experience as an activity that efficiently bridged locals and visitors.

Here is a fragment of Alastair Fuad-Luke's narrative of the match[151]:

> *Suddenly, the LABBERS team started to get some shape with some co-ordination on passing. I was impressed. Tussles for the ball and comical incidents mixed in equal proportion and the heat brought out a real sweat in the LABBERS (while the community footballers looked like they were just having a stroll!). After a hot 40 minutes a half-time break was called, score 2:2 I think. Action recommenced with an agreed shorter 'half' of 20 minutes (!) full of much shouting and laughter. Fittingly it was one of the talented teenagers who clinched the winner just before the final whistle blew. Final score 4:3 to the community! We gathered for a photocall then all enjoyed ice yogurt and a cold coke in the welcome shade of the public stand.*

A movie night was another informal collaborative activity that was planned in advance. Omar, who was unable to join the trip, lent a projector for this purpose. While there, other matches (football and volleyball) were organised. There was time for visiting other communities and the archaeological site of Calakmul, but most days were spent in El

Figure 49. The football match.Photo by Jan Ahlstedt.

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151 The full story can be read here: https://aaltolabmexico.wordpress.com/2013/11/13/friday-november-1st-by-alastair-fuad-luke/

20. This time, however, ALM did not stay to sleep in El 20[152] (apart from one night when *the guys*, Juan, Ismo, Flynn, and Gabo, did). The nights were spent in Zoh-Laguna, where the team had time to reflect on and discuss what had happened through the day, and to build their team spirit, of course.

The most heated discussion took place on the night of Monday 4 November, after ALM's fourth visit to El 20. For the first time on the trip, there was a somewhat structured discussion, during which several issues were raised by the labbers and facilitators. While most of those will be introduced independently in the following sections, an overarching one for all the teams (including that of 2012) is that of the role of ALM in the community:

Why are we here?

The new labbers were concerned that they did not notice that any of the ALM 2012 proposals had been implemented. But actually, there were some small changes. For instance, Agustín, the master hammock-maker who was unable to teach workshops with support from the government because he could not read or write, had already imparted a workshop; some women had learned new stitches and some elderly men had learned a practice that was previously reserved for women only. Rosa, for her part, had taken a loan and bought a large amount of thread for weaving hammocks, which she was also selling to other women in the community. Those actions might or might not have been inspired by ALM 2012, but they definitely bear a resemblance to the actions proposed within their concepts of knowledge sharing (the workshops) and cultural brand (buying craft materials wholesale).

Nonetheless, these small changes were invisible to their eyes and in the eyes of the community. In their talks with the local people, they perceived that the community was unaware of the motive for our visits. Juan recalled his conversation while walking with Victor, a teenager who seemed very puzzled by our visit and directly asked why we were there. Juan could only reply that we wanted to see how they did stuff; he had no clear answer to give. As they continued walking, Juan picked up a stone that caught his eye, and asked Victor what it was. It was limestone, but Victor could not understand what could be special about it, until Juan said it was really beautiful. As they continued walking, Victor helped Juan to find more of those stones[153]. While reflecting on this

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152 In 2012, several of the students from Aalto fell ill; each of them for a day, possibly due to heat stroke.

153 This was the object that Juan brought to the "Lo que amamos del 20 de Noviembre" (What we love

story, we arrived at the conclusion that ALM's greatest contribution to the community, as had somehow been discussed already in 2012, was to function as a mirror. By visiting El 20 and showing our appreciation, the people of the community could reflect on valuable matters that, for some reason, they did not pay too much attention to, perhaps because they were part of their daily life. As Theresa, Suvi, and I reported on a paper presented in the Relating Systems and Design 3 Conference in Oslo in 2014: "By being in the field, the design team worked as a mirror that reflected the positive qualities that the community had but did not see as valuable" (Berg, Kajamaa,& Garduño, 2014)[154]. So, if Victor planned to leave El 20 when growing up, perhaps he was reflecting on the identity of the community and even feeling proud to belong to it. He could still leave the community, but he could be released from any feeling of shame, speaking in an ideal manner.

Going back to the description of the process that was followed during the second edition, the period in El 20 had the same participants in the same sub-teams as in the preparation period. However, sometimes more than one team joined in with an activity, especially during the exploration phase. The visit to the community ended with an open presentation to the community, where the three projects were introduced.

This time, there was also a presentation back in Mexico City, but rather than having it in either of the Mexican universities, the Ambassador of Finland hosted this event at the official residence of Finland in Mexico, which guaranteed the neutrality of the event[155]. Additionally, nearly at the beginning of ALM 2013, we got in touch with *Transformadora Ciel*, a crowdfunding platform (run by Coca Cola) that worked in close collaboration with Tec de Monterrey. They encouraged us to submit the project to their platform, so this was an another factor to be considered throughout the process.

The following part of the book will describe the teams, briefs, processes, and projects in an independent manner, so that separate sections are used to introduce the Water project (the main recommendation of Omar Rojas in ALM 2012), the Artesanía para el Bienestar project (a twist in the Cultural Brand project, which maintained the instrumental value of money), and the Eco-Hostel project (a project that took a stand

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of El 20), which will be described in Cultural Brand project section.

154 Which can also be observed in the fragment (7:38-7:57) of the video (Retrieved June 13, 2016.): https://www.youtube.com/watch?v=0U7ve8zjqj0

155 UNAM and Tec de Monterrey are the two best universities in the county and are not used to collaborating; hosting the event at neither of their facilities guaranteed neutrality.

against the new and inappropriate homes that were observed in El 20, and sought to rescue their Mayan identity while enriching the tourism industry).

Water project

"Ecosystem services are elements the environment provides through its natural processes, including soil, water, and biogeochemical cycles, as well as the goods and services upon which humans depend for their livelihoods" (Chantiri et al., 2014). As it was described earlier, the livelihood of the community is extremely dependent on their ecosystem services: they practice subsistence agriculture and hunting, and they harvest rainwater. Even their economic activities (those that generate money) are dependent on them: they sell products made of wood. Furthermore, this is applicable even to eco-tourism. It has been pointed out that these practices contribute to the community's self-sufficiency; nonetheless, its high dependence on ecosystem services makes it highly vulnerable to climate change (ibid.). The relevance of focusing on the topic of water was continuously addressed by Omar. Life on the planet depends primarily on water, and although at first glance Calakmul is free from water-related problems, the interviews that he conducted during our visit in 2012 indicated the opposite. The head of the reserve in the Biosphere of Calakmul, José Alberto Zúñiga Morales, pointed out that their research indicated that "the water resource is being compromised owing to current changes in the region's climate conditions" (Chantiri et al., 2014). Additionally, Baltazar Gonzalez (the municipal president but also the former director of the Biosphere of Calakmul), described Calakmul as a mountain, the highest point in the region; it attracts a lot of rain, but then the rainwater flows to the lower parts or otherwise filters into the ground.

The climate in the Yucatan Peninsula consists of periods of high rainfall and periods of low or no rainfall, including long drought seasons that evidently affect agriculture, but also contribute to the generation and propagation of forest fires. The predictions for the region for 2020 are that the total annual precipitation will vary between -3 and +3%, while the average temperature might increase between 0.6 and 1.2°C. By 2050, the precipitation levels might vary between -10 and +10%, and the average temperature will rise by between 1.0 and 2.0°C (INECC, n.d.).

People from the region, which is the case of the people of El 20 (whose 'motherland' is located about 400 km north from where they are now), are used to harvesting rainwater

Figure 50. The water harvesting system that most houses in El 20 have, with the 12000 litres water tank, and the PVC tube connected to the rooftop. Photo by Jan Ahlstedt.

and to storing it for the drought season. In the city of Campeche, for example, there is a statue of a man and his donkey, which carries a barrel. The plate reads that the barrel contains rainwater, and that those men used to sell it, because people preferred its taste. This practice might be related to the common knowledge in the area, and it is also reported by GTZ (Arreola et al., n.d.) that the soil in the Yucatan Peninsula is very rich in limestone, causing rainwater to get physically polluted as soon as it drops. The ground water exceeds the permissible amount of limestone (between 60 and 300 mamsl), for which reason it is not considered suitable for drinking or for irrigation (Government of Campeche, 2005, in Arreola et al., n.d., 13). The most ancient method of obtaining water was to dig wells, and many households still have a well, but nowadays they know they should not drink that water because, in the long run, it may cause kidney and bladder stones. They started harvesting rainwater in plastic containers and buckets, and in large black rotomolded plastic water tanks like the ones that can be seen all around Mexico.

There were several other concerns around the topic of water. The first one relates to water as a human right: "[o]n 28 July 2010, through Resolution 64/292, the United Nations General Assembly explicitly recognised the human right to water and sanitation and acknowledged that clean drinking water and sanitation are essential to the realisation of all human rights" (UNDESA, 2010). We did not know the source that people used for

drinking water, or which purification methods they used; but most strikingly, we did not know the quality of the water. Second, we knew that they are subsistence farmers and that their agricultural cycles fully depend on the rain cycles. They do not have any irrigation systems. Therefore, it could be inferred that a drought season might leave them not only without water, but also without food.

There were several other concerns around the topic of water. The first one relates to water as a human right: "[o]n 28 July 2010, through Resolution 64/292, the United Nations General Assembly explicitly recognised the human right to water and sanitation and acknowledged that clean drinking water and sanitation are essential to the realisation of all human rights" (UNDESA, 2010). We did not know the source that people used for drinking water, or which purification methods they used; but most strikingly, we did not know the quality of the water. Second, we knew that they are subsistence farmers and that their agricultural cycles fully depend on the rain cycles. They do not have any irrigation systems. Therefore, it could be inferred that a drought season might leave them not only without water, but also without food.

There were too many questions to answer, and addressing all the water-related issues in the community was a project that could take several years to develop. Omar, for example, had found out that if a *jaguey* (artificial lagoon) was to be made, a meteorological unit needed to be installed to monitor the area for at least a year, which, in addition, would make the project very expensive. In any case, this was the situation within which the labbers would generate their project starting on 11 September 2013.

Preparation period

The labbers that were selected for this project were Pamela Chantiri (Engineering in Sustainable Development), Ismo Sutela (from the School of Chemical Technology), and Isela Ramírez (Industrial Design). The facilitator was Xaviera Sánchez de la Barquera and the experts who assessed this team were Omar Rojas, Fernando Méndez González from Universidad Autónoma Metropolitana (Mexico), Jussi Alaputto from Business Professionals Group (Finland), Renata Fentón and Hiram García from Isla Urbana (Mexico), and Pablo Monterrubio from Proyecto Tierra (Mexico).

A few days after the kick-off session, Omar and I visited El 20 with the main purpose of collecting water samples from several of their sources (well, plastic container, concrete

Name	Institution	Field	Role	Nationality
Xaviera Sánchez de la Barquera	Design Your Action (NGO)	Design	Facilitator	Mexican
Omar Rojas	Tec de Monterrey	Biology/ Engineering in Sust. Dev.	Expert	Mexican
Fernando Méndez González	Universidad Autónoma de México	Biology	Expert	Mexican
Jussi Alaputto	Business Professionals Group	Business	Expert	Finnish
Renata Fentón	Isla Urbana	Design	Expert	Mexican
Hiram García	Isla Urbana	Engineering	Expert	Mexican
Pablo Monterry	Proyecto Tierra	Engineering/ Sustainability	Expert	Mexican
Claudia Garduño	Aalto University	Design	Facilitation / research	Mexican
Alastair Fuad-Luke	Aalto University	Design	Facilitation/ Research	British
Susu Nousala	Aalto University	Design	Teacher/Re-search	Finnish

Table 16. The experts and facilitators of the Water project.

tank) in a couple of houses in El 20, in order to be tested in Mexico City. However, the results of the analyses would take a few weeks[156]. Pam agreed that a crucial matter for moving forward was to know the quality of the water, but she and Xavi had been in El 20 in 2012 and therefore had some first-hand experience of water usage in the community (they had carried water in buckets to wash themselves and flush toilets). Therefore, this

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156 Fernando Méndez González, from Universidad Autónoma Metropolitana (UAM) helped us with these analyses.

time, they started by discussing issues like limestone in the soil, organisms in water (like dengue), water harvesting, and the different uses of water.

Early in the process, the Water project team agreed that a feasible outcome that could make an impact and improve the quality of life of the community would be to deliver a water management plan by mapping the whole system. In order to do this, they needed to answer several questions, including (as reported by Pam):

- Where does the water come from?
- How is it collected?
- How is it transported?
- What is it used for?
- What is the water quality?
- How is it disposed of?
- Can it be reused?

Jussi Alaputto had introduced several solutions created to ameliorate water related problems in the agricultural context. Renata Fentón and Hiram García introduced several successful cases by Isla Urbana, which are retrofit technologies that collect, filter, and purify rainwater even to a drinkable quality. However, although the labbers grew their knowledge on different technologies that could solve water-related problems in rural areas, they still had many questions to answer.

The results of the analyses were sent just before Pablo Monterrubio visited the team. Pablo was able to interpret the numbers right away and conclude that the samples did not show that the water quality was terrible, but it could definitely be improved.

The labbers used the rest of this session for brainstorming and for analysing what they already knew[157]. They discovered that a way of mapping the water system was to identify the different water sources, users, and uses. At this point, they were also able to relate each use to the quality specified by the Mexican legislation (NOM). Therefore, they could start visualising a map that would communicate the right way to manage the water system in the given context.

The presence of coliform organisms was not surprising, but the hardness of the water, which was found in all the tests, continued to puzzle the whole team, even in the last

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157 Or what they thought they knew, as will be shown in the description of their visit to the community.
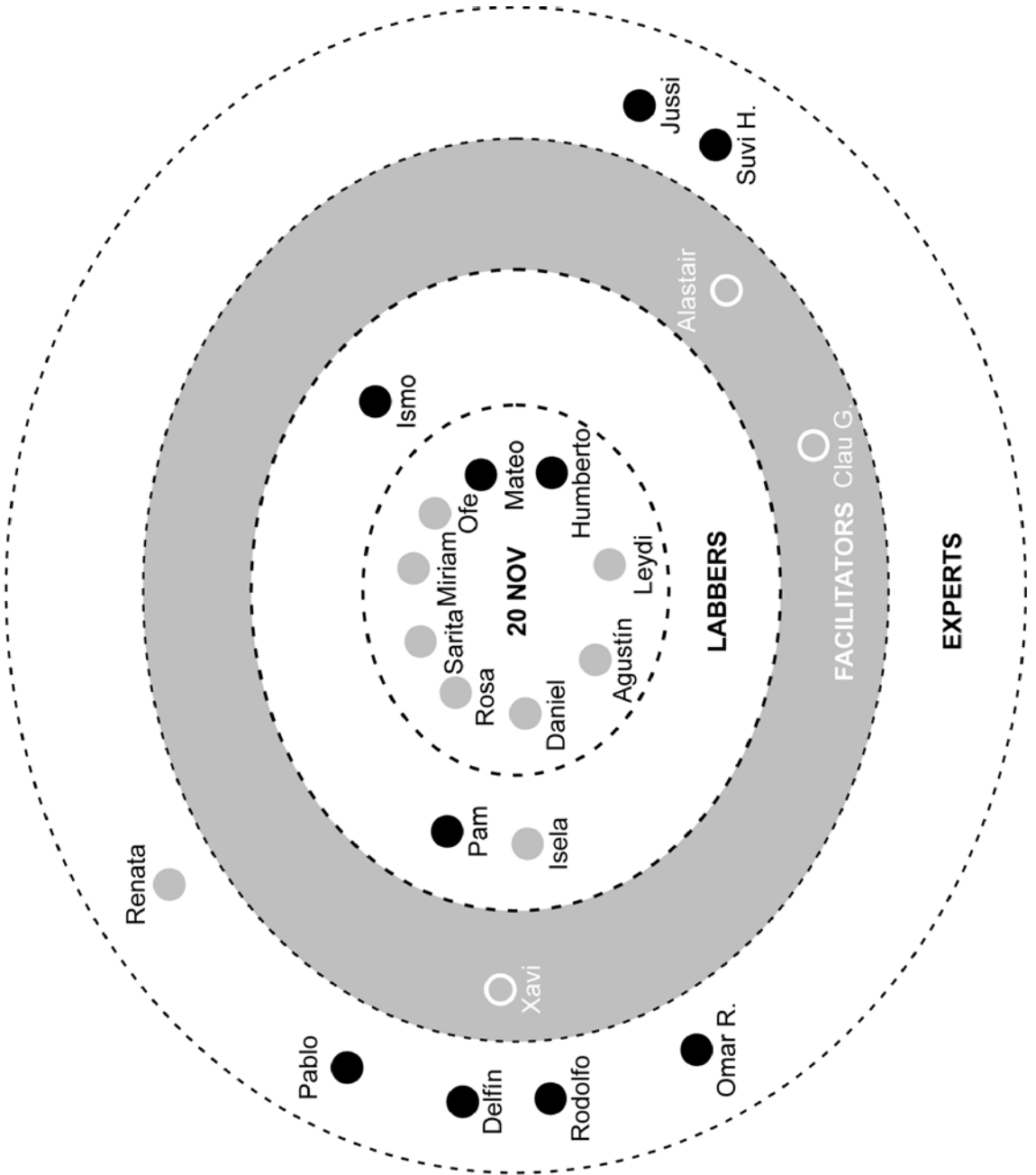
WATER

Figure 51. Full network ALM 2013- Water. By Claudia Garduño García.

session when everyone was in Mexico City, getting ready for the trip. The samples had been taken from several sources within two households, so there were samples from the concrete water tanks, from the rotomolded plastic containers, and from the wells. Furthermore, one household boiled the water for human consumption while the second filtered it through a cloth. All the samples showed that the water was hard, and this was not what the team was expecting.

With the help of Alastair Fuad-Luke, the team reflected that it rained so much that the rooftops were necessarily washed by it, which could refute the theory that it was dragging dust from the rooftops. However, other experts like Rodolfo Alvarado believed that it was possible that the dust had generated sediment on the rooftops. Another theory was that the plastic containers could be dirty.

A third theory was that there could be some type of error when taking the samples. This seemed very probable given that we were not able to travel with a chemical substance that would fix the water samples (because that were not allowed on the flight). The alternative was to keep the samples cold, which was a difficult task in Calakmul. The samples were kept in a refrigerator while in El 20, and in a freezer in Zoh-Laguna, in order to ensure that they arrived cold in Mexico City. Only later we were notified that the samples should not have been frozen as this might kill microorganisms. Furthermore, if a definitive conclusion was to be made about water quality in El 20, the sample had to be as large as 90% of the households[158].

In any case, purifying hard water that also contains microorganisms is not simple or cheap. If water is boiled in order to get rid of microorganisms, the amount of water lost through evaporation makes the water even harder. However, microorganisms have to be removed or made safe. It can be said that there was at least one unidentified element in the assemblage that was preventing people in the community from enjoying a basic human right. ALM had to either identify that element and find a way to get rid of it, or, at the very least, find a way to overcome its effects. Two methods that had been researched during the preparation period were identified as possibilities: chlorine and UV filtering.

Before travelling to Calakmul, the team decided that they would spend their first days in the community understanding the current situation[159]. For this purpose, they wanted to

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158 This information was revealed in an informal conversation with a biologist working in Calakmul.

159 This also happened with the other teams, as will be seen in the other sections.

conduct a workshop at which local people would help them map the current situation, and later they wanted to observe the process from within by collaborating with people in their household water-related practices. They would later make sense of what they learned in the community, to finally deliver a best practices manual.

Visit to El 20

Once in the community, the labbers proceeded with their plan of conducting an exploration that would let them understand the current situation in order to identify good and bad practices and be able to deliver something that would positively affect the quality of life in the community. They first conducted a workshop with 7 women, at which they asked about the water sources and its uses in El 20.

Later, they visited some families and asked for permission to collaborate in performing chores; specifically, they helped in washing the dishes. While the labbers found it impressive that the people of El 20 were so open to share their intimacy with them, they also noticed that there were *trespassing protocols* (as Lucero described them). First, it was very difficult for the people of El 20 to allow their hosts to participate in the daily chores, but it was also very strange to see a tall man like Ismo getting involved[160].

After conducting these collaborative explorations, the labbers were somewhat confused. They were expecting that all the information they researched before their visit to El 20 would be news in the community; but to a great extent, it was existing knowledge. However, they found that the practices varied from house to house, and that although the water from the concrete tank should not be drunk, some people drank it. Furthermore, they only observed and surveyed a tiny part of the community, so their results could not be definitive. However, they learned that "20 de Noviembre residents use water as a resource to satisfy their basic needs, which are as follows: drinking, cooking, cleaning, personal hygiene, washing clothes and dishes, farming and irrigation" (Chantiri et al., 2014).

The labbers were determined to find out more about the current situation and to learn how aware people were of the water situation. Conducting interviews and participant

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160 Activities in El 20 are greatly gendered. Men mainly work in the fields and women take care of household chores, and while craft-making was originally a women's activity, in El 20, this differentiation is somewhat diffuse. Cloth embroidery continues to be an activity designated to women, but men (mainly elderly) have got involved in hammock weaving, and wood products involve both genders (the furniture makers, though, are only men).

observation required a lot of time, and that was something they did not have. Perhaps inspired by design probes (Mattelmäki, 2006), they improvised a set that would let them survey houses much faster. They made 'cards' representing users and uses, and they also depicted the sources. Then they asked people to place the cards in accordance with their practices.

After conducting interviews in 17 households, 15% of households in the community, the labbers concluded that some people were aware of contamination issues in the water and "have preventive sanitary practices (like boiling water or buying bottled water), but most of them do not" (Chantiri et al., 2014). Therefore, all those people are lacking a basic human right (ibid.).

What the team proposed is what Chantiri et al. (2014) describe here:

To cope with this problem, the ALM team finalised a proposal named 'Water Project'. The main objective of the project is to ensure water safety for the wellbeing of all community members. To achieve this, three main proposals were defined:

• Water purification techniques (filtration, use of chemicals, boiling)
• Amelioration of rainwater harvesting systems (enlargement for more water storage)
• Construction of a *jaguey* (human manufactured reservoir)

The water purification techniques are used to achieve better water quality, as well as the safe and complete use of rainwater and a substantial reduction in people's expenses for bottled water. Expanding the rainwater harvesting systems ensures enough water supplies for a long period (even in dry seasons) for the community members. Constructing a *jaguey* prevents jungle animals that are looking for water from entering residential areas.

The three above-mentioned proposals require further research, development, and funding. However, by making use of co-design tools, ALM was able to identify immediate actions that will reduce the risk of consuming bad quality water. Once students and experts shared their information about the hazardous situation, the community members became engaged in identifying best practices to achieve positive changes in order to face their own problematic – in this case, water quality and supply owing to shifts in climatic conditions.

Before leaving the community, the labbers built the prototype of a rack to hold bottles at the right angle for UV filtration, which was introduced to the community as an
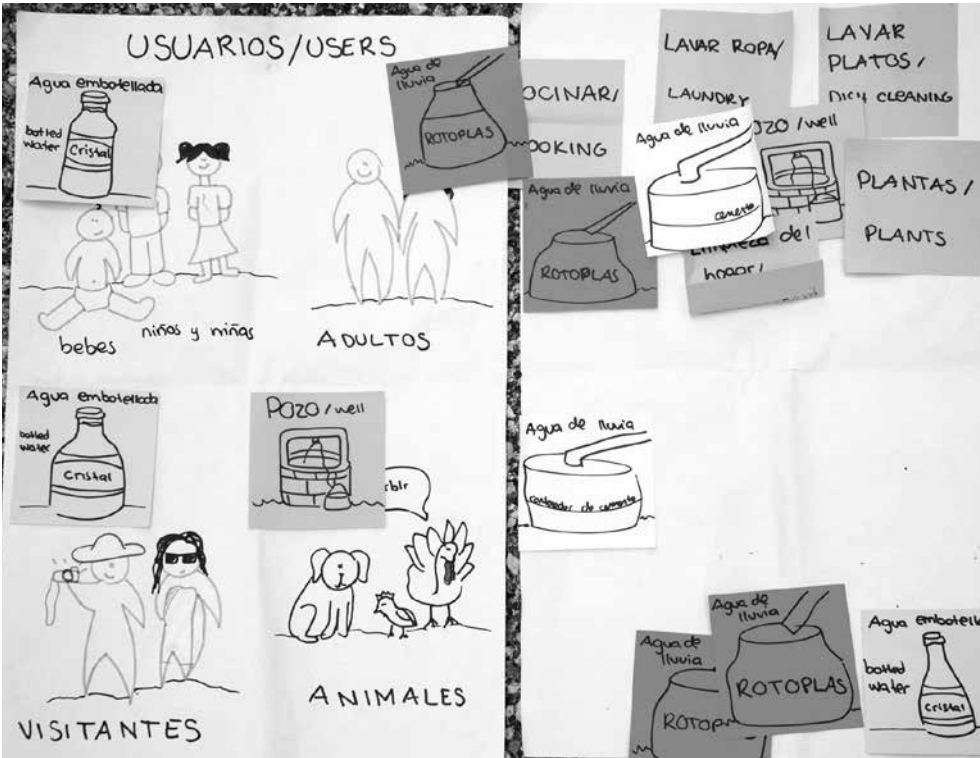
Figure 52. Design probes (Mattelmäki 2006) were developed as a tool to fasten the interview process. In each household, the inhabitants could relate the different sources with the users and with the uses. Photo by Jan Ahlstedt.

alternative for purifying water, and which would kill microorganisms and, although it would not make the water softer, at least would not make it harder and would not add any flavour (as is the case with chlorine)[161]

After the Visit to El 20

Upon our return to Mexico City, Alastair Fuad-Luke, in collaboration with DYA, facilitated a workshop called "Perspectivas Potables" (Freshwater Perspectives)[162]. This workshop was highly diverse because of the backgrounds of the participants; some were students (not the labbers, though), members from different NGOs, and researchers[163] from various institutions. Among the most relevant insights from ALM's perspective were:

• That a great part of underground water in Mexico is (physically) polluted with fluoride and arsenic due to the geologic conditions.
• That a great number of freshwater sources in Mexico are owned by multinational corporations.

The conclusion of the workshop was that these insights (and others) should be made transparent; then different organisations could collaborate in ameliorating the situation. Furthermore, these facts are evidence of the value of projects like the ones conducted by Isla Urbana, and the traditional practices of communities like 20 de Noviembre. In Mexico, or moreover, in a region of the world where water is scarce, research projects concerning harvesting and purifying rainwater are essential. The partial results of the Water project of ALM were presented in Bangalore, India, at the conference "Design for Sustainable Well-being and Empowerment", which took place from 12-14 June 2014, under the title *Aalto LAB Mexico: Co-designing to Maintain Ecosystem Services* (Chantiri et al., 2014), a piece written in collaboration by Pamela Chantiri (labber), Xaviera Sánchez de la Barquera (facilitator), Claudia Garduño (researcher and project coordinator), Susu Nousala (teacher and researcher), and Omar Rojas (teacher and expert). In this paper,

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161 Although the labbers explained to the community members that water bottles could not be too thick, and therefore preferred certain PET format, in the final presentation, they were warned that PET is a permeable material (it has tiny holes) which could collect bacteria, for which reason, when following up with this project, this information should also be shared with people in El 20.

162 A collaboration between Tec de Monterrey's program in Engineering in Sustainable Development, the alumni association DEDeSS, and the Commission for Habitat, Environment and Sustainability from the Collaboration Mechanism between NGO's and Mexico's Federal Government.

163 The participation of members of the public sector was expected, but not fully achieved. A representative listened to the results of the workshop, but he did not participate it.
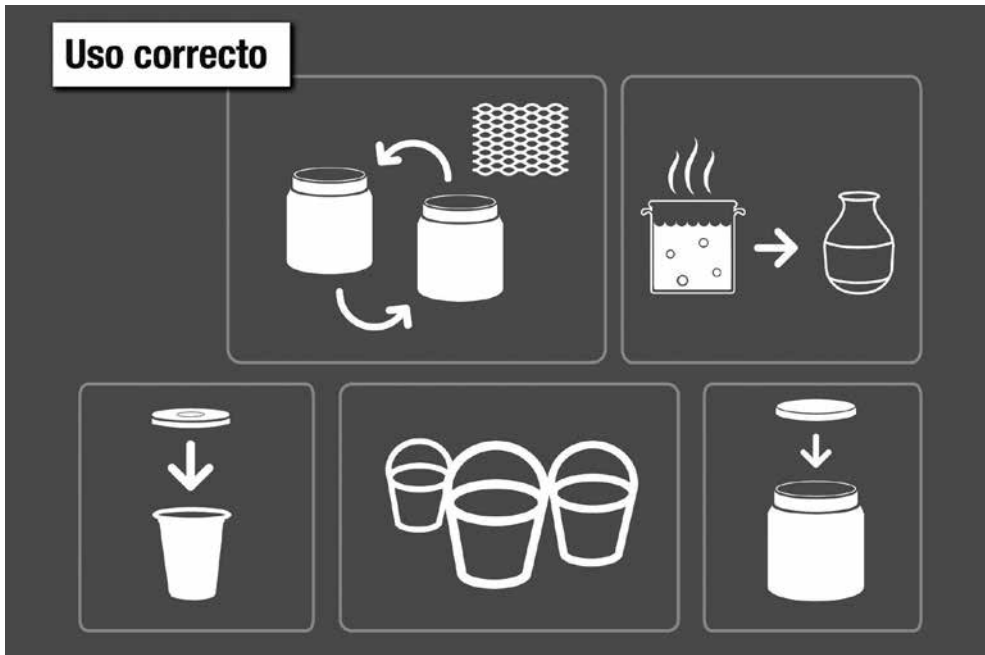
Figure 53. When the students shared their learning with the community members, the latter were able to identify best practices for mitigating their water problems. Source: Slide made by the LABBERS for ALM 2013 presentation.

environmental scientists acknowledge the role of designers in a collaborative project with the local people, while designers acknowledge the role of environmental experts in a sustainable project. Rather than declaring the end of the project, it states that continuation is necessary and desirable. During a visit to El 20 in April 2014, I observed that something had changed in a household from where Omar and I had taken samples back in September 2013. These people had shown us that they drank water from any of their sources, and that they filtered water with a piece of cloth, such as the kid's T-shirt. At that time, they were drinking water from a commercial dispenser, which evidently is not the best alternative. Nonetheless, this proved that awareness was being raised.

Between August and September 2014, I held meetings with Saija Holmen and Matleena Muhonen, whom I met through Pekka Korvenmaa. They coordinate a program run by the research program in Water and Environmental Engineering in the Department of Civil and Environmental Engineering at Aalto University School of Engineering. The program is called Sustainable Global Technologies (SGT), and it is a "multidisciplinary educational program at the Aalto University in Finland. SGT Program offers an elective 20 credit special module in sustainable global technologies" (SGT Program 2011). With approval from Tiina Laurila, it was agreed that Aalto LAB Mexico would become one

Figure 54. Isela and Ismo building a rack for placing bottles and using UV light to kill microorganisms.Photo by Jan Ahlstedt.

of the case studies within the SGT program between January and May 2015. At the beginning of September 2014, Matleena and I submitted a funding application to the Ministry of Foreign Affairs of Finland through Aalto Global Impact, which was signed by the dean of Aalto University School of Business, Ingmar Björkman. In December 2014, we got a positive reply from the Ministry; ALM 2015 was grantednearly 28,000 euros, and the Water project would be its main topic. However, this will become clearer for the reader after reading the section on the Eco-hostel below.

From Cultural Brand to Artesanía para el Bienestar

The second brief that was given to the labbers of 2013 was mainly based on the Cultural Brand (CB) concept that was generated by the labbers of 2012 already in El 20. Although this concept had the main goal of uniting the artisans and the community, it was a traditional western solution in the sense that it was essentially a set of business management strategies. Furthermore, although it was not the intention to make the community more dependent on a money economy, the concept showcased money as an end (intrinsically valuable), rather than as a means. In 20 de Noviembre, the value of money is different from the value of money in urban centres, given that their livelihood is not fully based on a money economy, and this is seen as one of their strengths, as it is a source of self-sufficiency. It seemed to me that a set of business strategies to increase

the amount of money earned by the artisans of El 20 would be more suitable if it showcased money as a means to something else (instrumentally valuable), something meaningful and valuable in itself. Therefore, the challenge given to the labbers of ALM 2013 was to design a strategy through which the people of El 20 could gain access to healthcare services in Mexico, by making use of the cultural brand concept and by finding opportunities in the Mexican legislation system. This section further explains the rationale behind the brief. The Cultural Brand project was created by the labbers of 2012 in response to what they observed in the field. It was through a meeting that a representative of tourism held with the artisans of El 20 that ALM realised that the artisans struggled to manage their craft industry. Most of what they earned from selling their craftwork was reinvested in buying materials for the next fabrication process. This is not seen as a problem by many of the artisans, since their livelihood is dependent on their agriculture rather than on their crafts. However, there are some, including single mothers, who are more dependent on money than the majority of the families in El 20.

Some artisans told us that they have tried to increase their sales by travelling to the nearest town, Xpujil, or to the surrounding cities, mainly Chetumal or Campeche. Nonetheless, this is not profitable at all; the trips tend to be costlier than their crafts. The artisans are organised by groups, and while some groups gather all the artisans that practise a type of craft in the community, like the soap or furniture makers, others practise the same crafts, which is especially what happens with embroidery and hammock-weaving. A person who must visit a city, either to go to the hospital or for some bureaucratic reason, normally makes the most of the visit and buys materials for the crafts. They are commonly given money by other artisans, who ask them to buy some materials for them as well. However, since these materials are heavy and voluminous, especially the thread for weaving hammocks, the amount of material that can be transported is always limited by their means of transportation.

The concept of a cultural brand was one of the main proposals of the labbers of 2012. The main aim was to bring the artisans together, so that they could become stronger. One of the direct manners in which this would happen was txhrough sharing logistics (materials, distribution), and therefore reducing costs. Furthermore, the cultural brand would more closely link artisans who were already related, like the case of the productive chain in the wood industry[164], which also shared a relationship with apiculture, given that the finishing is done with wax. Additionally, the cultural brand would enable the

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164 Where the sustainable management of the forest would enable them to trace a tree through the whole process, consisting of the mill, the furniture makers, and the craft makers.

creation of mixed products involving several workshops, such as a wooden box containing a bar of soap and an embroidered towel. During the workshops held after the visit to El 20, ALM imagined an ideal scenario, where all concepts generated in ALM 2012 were put in practice, but also where all the greater challenges were overcome. In this vision, the community had gained access to the healthcare system and to institutions of higher education and communication systems. In this ideal scenario, their craft production was seen as an activity with the potential to generate the type of organisation or the necessary monetary resources to achieve that vision. Therefore, the challenge was to link the artisan production in El 20 with access to healthcare[165]. The overall question

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165 Healthcare was selected because it was a seen as a greater priority than education or communication. Additionally, as could be understood from the story told at the beginning of this work, the "Seguro Popu-

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Figure 55. (right and left) A variety of crafts are made in El 20, fom furniture and small wooden objects to cloth embroidery, hammock weaving, jewellery, and painting. Left photo by Claudia Garduño, the rest by Jan Ahlstedt.

was if better management of their craft industry could enable them to gain access to the healthcare system. The supposition that this could be possible was based on the fact that the government designs special programs for rural areas, and even more so for indigenous populations. Therefore, a cooperative is a common entity by which people organise themselves, and which offers greater fiscal benefits than a company. Many of the artisan groups had started the process of constituting themselves as a cooperative, but only one, Luum Bec, a cooperative for ecotourism services, was already functioning[166]. As in the other two projects, there were too many questions that needed to be answered, especially given that the Mexican healthcare system is very complicated. For example, it was not known whether there were other ways to gain access to the Mexican Institute of Social Security, if, for example, a cooperative could become affiliated or if a special policy had been enacted regarding the indigenous population. This was the starting point for the Cultural Brand team.

Preparation period: The tangled Mexican healthcare system and being critical with CB

The original team of labbers for the Cultural Brand project were Francisco Blockstrand (Engineering in Sustainable Development), Sharoon Negrete (Humanities and Social Sciences), Suvi Kajamaa (Creative Sustainability/Design), and Theresa Berg (International Design Business Management/Design). However, for personal reasons, Francisco and Sharoon dropped out within the first few weeks. This was really problematic, because the team was left without anyone who had been to El 20, and without anyone who could research the Mexican legislation about indigenous towns and access to healthcare. Lucero De la Huerta, who was meant to work as a facilitator, played a much more active role to fill in for the missing team members. Gabriela Yáñez (doctoral student in Public Policy at Tec de Monterrey) and I also supported the team. The experts that were consulted within the process were Lilia Alonzo (lawyer at White & Case Mexico), Juan Ledón (Ecosite), Irma Uribe (Public and Social Policy in Fundación Idea), Oscar Person (assistant professor at the Department of Design, Aalto University), and Ariadna Stamatio and Piero Torio (designers and owners of Peek Toys).

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lar" (Popular Insurance) did not really work in practice.

166 The process of establishing a cooperative costs money, which they cannot pay; they are also afraid of acquiring fiscal obligations that they could not fulfil. The one cooperative that was functioning was formed by the whole governing body (ejidatarios), and it had been the means to get funding for the construction of bungalows for tourists. However, they ran out of money before finishing the construction.

Name	Institution	Field	Role	Nation-ality
Lucero de la Huerta*	UNAM	Industrial Design	Facilitator	Mexican
Gabriela Yáñez	Tec de Monterrey	Doctorate in Public Policy	Expert	Mexican
Lilia Alonzo	White & Case (Mexico)	Law	Expert	Mexican
Juan Ledón	Ecosite (NGO)	NGO–Public sector collaboration	Expert	Mexican
Irma Uribe	Fundación Idea (NGO)	Public and Social Policy	Expert	Mexican
Ariadna Stamatio	Peek Toys	Architecture	Expert	Mexican
Piero Torio	Peek Toys	Industrial Design	Expert	Mexican
Oscar Person	Aalto University (ARTS)	International Design Business Management	Expert	Swedish
Claudia Garduño*	Aalto University	Design	Facilitation assistant/ documenta-tion/ research	Mexican
Alastair Fuad-Luke	Aalto University	Design	Facilitation/ Research	British
Susu Nousala	Aalto University	Design	Teacher/Re-search	Finnish

Table 17. Experts and Facilitators of Aalto LAB Mexico 2013- Artesanía para el Bienestar.
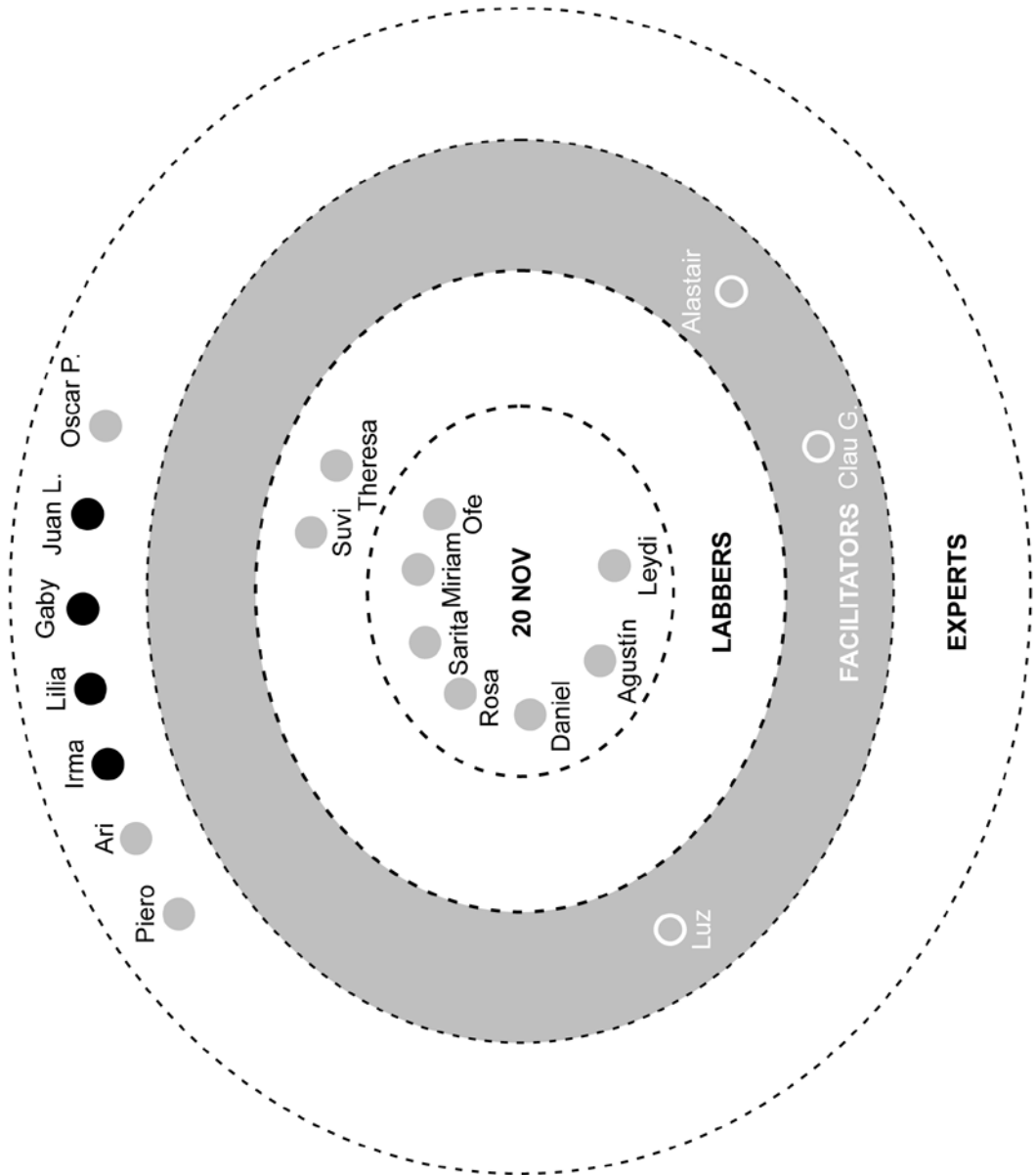
ARTESANÍA PARA EL BIENESTAR

Figure 56. Full network ALM 2013- Artesanía para el Bienestar. By Claudia Garduño.

Evidently, the unexpected modifications in their team caused Suvi and Theresa to struggle and suffer more than needed. However, both of them joined ALM with a great sense of commitment and high expectations of creating outcomes with "real value and impact" (Theresa). Moreover, they expected to learn from and with other teammates and from the community, and that ALM would become a life-changing experience. Although it was hard to catch up with the labbers who had been part of ALM since 2012, and while this was only possible when in El 20, their level of excitement at visiting El 20 was maintained, and even grew, while they advanced their research and identified the questions that could only be answered while there.

So, the preparation phase for the Cultural Brand team "was dedicated to understand how the Mexican healthcare system works and more specifically, to identify the possibilities that an indigenous community has within it." (Berg, Kajamaa, & Garduño, 2014). The first expert consulted was Lilia Alonzo, who advised the labbers on the sources that could be reviewed; this was not the moment to turn themselves into lawyers, but to figure out the possibilities granted to the community through the Mexican legal system.

Soon enough, the team would conclude that the healthcare system in Mexico is very complicated, and even if they managed to understand it fully, most likely, it would be modified (the new government came to power in 2012, and there could be changes anytime regarding the Seguro Popular, for example).

In the meantime, Suvi and Theresa struggled to understand life in the community and even the brief since, from a 'Nordic' perspective, the fact that a national healthcare system is not universal does not make much sense. It was also not clear why the artisans were the focus of the cultural brand concept, as Suvi and Theresa would comment later. I did not anticipate that this would be difficult to grasp, but I grew up in a country where having access to healthcare services is nearly a privilege, and I had closely followed the development of ALM 2012. This was a very relevant moment for ALM, not only because it showed that the process of transferring knowledge was rather difficult, but because it validates the participation of outsiders for the benefit of a local community. This echoes Amartya Sen's take on Adam Smith's figure of the *impartial spectator*: the perspective of Theresa and Suvi enabled us to say that a national healthcare system that is not universal, although legal, is unjust. The challenge, therefore, was to *design* a strategy that would make the situation less unjust.

Theresa and Suvi asked Oscar Person, assistant professor in the Department of Design at Aalto University School of Arts, Design and Architecture, for advice. A brief talk

with him encouraged them to continue working and to make the best use of their skills. Therefore, they reviewed the concept of cultural brand and concluded that it would most probably not be very beneficial to integrate all the artisans in a single brand. The quality of artisans and crafts could be variable, which could end up affecting the most skilful ones. Furthermore, they thought that the lack of money could be framed as a challenge to increase profits rather than that to reduce costs. Within different strategies to achieve the former, they identified marketing, branding, improving quality, generating a business concept, offering services for tourists, sharing logistics, and selling and producing together. Suvi, for example, wondered if the stories behind the products are communicated when they are sold outside the community.

However, although they were able to conceptualise various strategies that would enable the artisans of El 20 to gain a greater income, they started questioning the side-effects they could have in the community. Suvi and Theresa wondered if other valuable features of the community would be put at risk. Although they were positive that something good could come out of their work, they were struggling with the process (perhaps just the common frustration that is experienced in Aalto LAB preparation period). Suvi summarised her feelings with these words "… I want us to do well and at the same time, I understand we are working with a pretty difficult task".

At the same time, in Mexico, Lucero consulted Irene Soto, and together Lucero and I met Irma Uribe, a true expert on how the different social policies and programs work in Mexico. We learned that the best public service is granted by the Mexican Institute of Social Security (IMSS) and that many types of organisations can be affiliated. The drawback is that the employer has to pay a monthly fee for each employee. However, Irma explained to us that there was a new possibility to be affiliated to the IMSS by paying a voluntary yearly fee, which was much higher than the Popular Insurance fee[167]. However, given that each of them covered different diseases, the best coverage was achieved by a combination of both. So, the sum of both fees revealed how much money was needed by each artisan group, individual, or family.

Building on Suvi and Theresa's rationale, we concluded the session with Irma by stating that a *health stamp* or certification could be the means by which the artisans could increase their profits and, through them, gain access to the healthcare system. Furthermore, it could be the start of a long-term strategy through which they would gradually learn to

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167 According to their research, IMSS cost between 1420.15 and 3733.30 pesos per person and Seguro popular, only 50 per year.
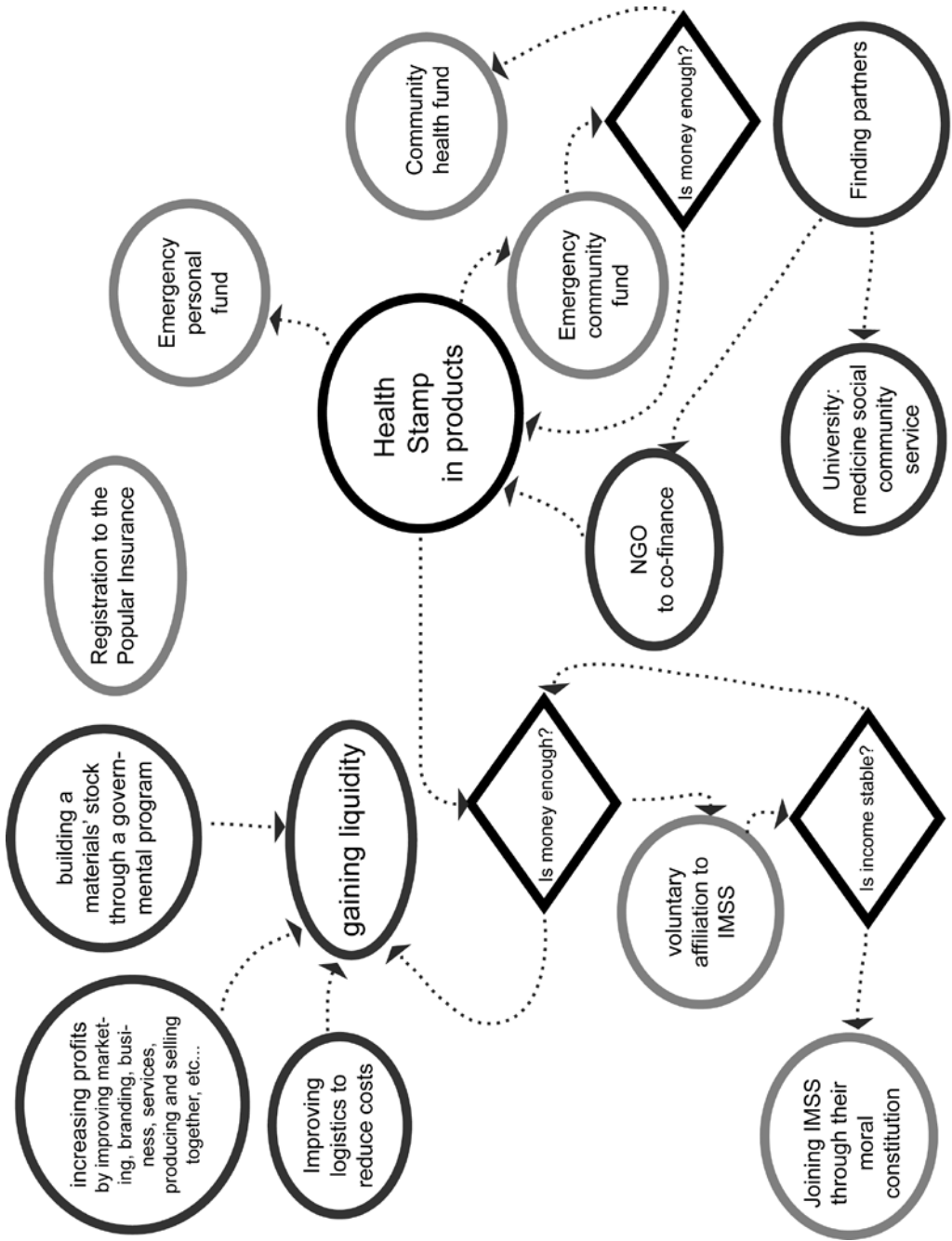
Figure 57. First visualization of how the craft production in El 20 could become the means to gaining access to the health care (and social security) system. By Claudia Garduño.

manage their craft industry and ultimately constitute a company or society, and become fully affiliated to the social security system, if that was what they wanted.

On 16 October 2013, the full ALM team, including the experts, conducted a virtual meeting to get to know what everyone had been working on for over a month, and to give feedback to each other. It became clear that increasing El 20's profits would provide them with the most direct and fastest access to the healthcare system. In fact, visualising a system through which the health stamp could work was already possible, as can be read from this piece extracted from the blogpost of 23 October[168] 2013:

> Therefore, the Cultural Brand concept has evolved. We know that we are dealing with at least two things that are or can be connected: the brand in itself and health. The Cultural Brand can be rethought as a "health stamp": all the artisans can sell their products with the stamp; the stamp increases the price of the products, but that money is dedicated either to a personal or communal health fund. In that manner, there is no need to worry about different products and diverse quality among similar products. This idea could actually be co-funded by some NGO working with health matters.

The role of money in El 20 was a factor that was brought up at that meeting. ALM truly did not know if helping the artisans to increase their profits was the right thing to do, or if this was pushing them towards consumerism. Furthermore, would there be another way to gain access to healthcare that would not involve money? This was a true matter of concern, as was expressed by Theresa:

*Suvi and I have made a list of questions of understanding when it comes to the branding part. We realize that we still are missing essential understanding. We try to categorize the issues with the artisans and how it relates to healthcare. We seem to be stuck in the issue of understanding what role money has in the community. If our mission will be to help them make more money, then we can work on many things and I believe we could really help to make that happen **but** I believe that the issue is more complex and don´t want to come there with a capitalistic mindset. So, the challenge is to find a way to understand their culture well enough and understand the role we can play.*

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168 The full post can be found here: https://aaltolabmexico.wordpress.com/2013/10/23/our-first-glimpse-linking-health-and-craft-production/

Figure 58. Suvi and Alastair introduce the idea of the exhibition "Objects of love" during the workshop called "Sustainable liveihoods!, ran in Tecnológico de Monterrey by Design Your Action (DYA). Photo by Jan Ahlstedt.

Figure 59. uan presents the stone that he collected with Victor, during the "What we love of 20 de Noviembre" exhibition. Photo by Jan Ahlstedt.

Another matter that was brought up was whether the team had to think deeper and, instead of focusing on healthcare, should focus on well-being.

Just like the other sub-teams of ALM 2013, given that for most of the labbers, this was going to be their first visit to El 20, the Cultural Brand team decided to start their work in the field by exploring the place and trying to soak in the local culture. In order to achieve this, they decided to organise a collective exhibition 'What we love about 20 de Noviembre' or 'Objects of love', which was a concept generated during the workshop called 'Sustainable livelihoods'[169]. The idea was to ask the labbers and people from the community to bring their favourite item from El 20, so that locals and visitors could share a common experience. Afterwards, they would continue by exploring health in the community and then planning and developing a co-design workshop with the artisans. Their final remarks would be delivered to the community on the last day, during the presentations.

Visit to El 20: the emergence of Artesanía para el Bienestar

'Lo que amamos del 20 de Noviembre' was the activity that followed the football match. So, in the afternoon of Friday, 1 November 2013, all the labbers walked around the community inviting everyone to participate in the exhibition the following morning. There were no restrictions except that the objects needed to be transportable.

On Saturday morning, several women and children showed up in the Comisaría Ejidal with their objects; the labbers had collected their items too. Most of the women brought products they had made themselves, like hammocks, huipiles (dresses), bags, and jewellery made from seeds. Some of them had brought their pieces with the clear intention to sell; but many of them also showed the product of their work with a sense of pride. At least, that is what we understood from their speech, given that everyone had to explain why they had chosen their items. The labbers, for their part, had brought craft pieces they had bought from the artisans (or made with the artisans, in the case of Alastair), but also elements from the surroundings, like flowers (colour and happiness) and corn (self-sufficiency). Every time a labber introduced an object, their role as a mirror was put into practice. Some highlighted the vibrant colours, the nature, their

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169 With participation by the labbers from Aalto and Omar Rojas's students, and facilitated by Design Your Action and Alastair Fuad-Luke, the prototype of the 'Perspectivas Potables' workshop, as described in the introductory part of ALM 2013.
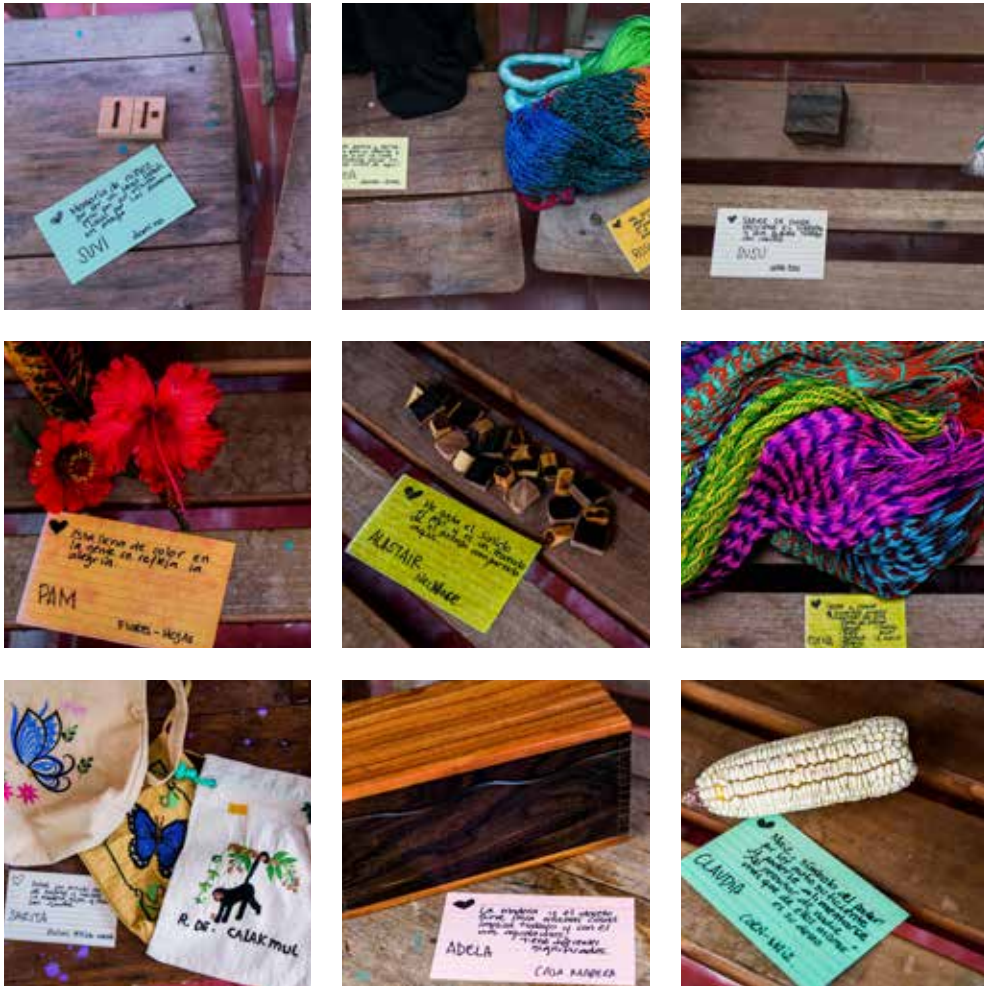
Figure 60. Some of the items selected by both ALM team and people from 20 de Noviembre. Photo by Jan Ahlstedt.

craft-making, their capacity to feed themselves, their quality as football players, and the rock found during a talk with Victor.

When everyone had introduced their items, some of the kids decided to participate and showed their toys. Afterwards, the children were engaged in making a sign for the exhibition, while all the objects were set on display for a few hours.

One of the achievements of the exhibition was to bring different artisan groups, specifically those who did not get along with each other, together. On the practical side, this event allowed Suvi, Theresa, and Lucero to meet different artisans who they could

later visit to conduct some interviews and observations, and even to participate in the craft-making process. For the sake of communicating the story of their process (mainly in their presentation in Mexico City), Suvi and Theresa classified the artisans into three groups. The first were those *passionate artisans,* like **Rosa**. Rosa has a big family, most of her children are grown up, and she has several grandchildren. Two of her children attended university education in Ciudad del Carmen, and she was able to support them by selling hammocks, a great achievement considering that in order to make some profit, she has to sell at least three blouses, for example. She is also one of the women who cooks for ALM and is the head of one of the artisans' groups. Her role in the group is collecting products from other women, so that she can put them on display for the tourists who are taken by Baltazar or Humberto to eat at her place. When Ismo tried to give Rosa more money than she was asking for a hammock, she refused. In 'What we love about El 20", she took one of her hammocks and she explained that she enjoys weaving those when she feels sad, *because as she weaves, she leaves all her sorrows behind.* Finally, just before we left, she gave one of her crafts to each of the members of ALM as a gift and a symbol of her gratitude that we had kept our word and had gone back to El 20 to work with them, which brought some of us to tears.

The second type of artisans are those who are *more organised*. It can be said that all the groups have received aid from some government program in the past. However, only few of them have managed to achieve a somewhat solid organisational structure and to keep healthy relationships with external stakeholders (NGOs or government institutions). They have a leader and workers; they work together in a workshop with machines; and they also have a store for displaying their products. This is the case of Sarita, who has the largest textile workshop in El 20, or Ofelia, the head of the wood artisans.

Figure 61. Doña Rosa shows a hammock during the exhibition "What we love of 20 de Noviembre". Photo by Jan Ahlstedt.

Finally, there are those who are visionaries and who, rather than being very good at a traditional craft, enjoy inventing new

things. Commonly, these artisans have been awarded prizes for their designs in state or national competitions. If they collaborate with more artisans in a group or workshop, they are called "the designers". This is the case with Miriam, Agustín, and Daniel.

These observations were useful in Theresa and Suvi's reflections on the value of money in the community. They could infer that there were different perspectives around its value, so it would be more indispensable for women[170] artisans who were single mothers of small kids than for those with a large family where several men worked together on the family harvests. The team also identified another opportunity to act aas a 'mirror' when they noticed that the stories behind the production of their products was never communicated by the artisans while they were selling them. Suvi and Theresa were certain that the narratives entailed in the crafts made them unique. For instance, when they learned that the wood used by the artisans is collected with the support of the National Forestry Commission (CONAFOR), where only fallen trees can be collected, which is also the manner in which the forests are cleaned in order to prevent forest fires, they concluded that this story has to be shared with the buyers (Berg, Kajamaa, & Garduño, 2014).

If the artisans somehow incorporated those narratives into their products, they could increase the price of their products and raise their profits, which would enable them to create a communal fund for health. However, this is a concept that the team finalised only after researching the healthcare system while in El 20.

Dr. Claudia Mena is the physician who visits the community once a month. Suvi, Theresa, and Lucero were extremely lucky that her visit to El 20 coincided with ALM's. It was only by speaking with her that the team was able to visually map the

Figure 62. Dr. Claudia Mena during a monthly visit to El 20. Photo by Jan Ahlstedt.

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170 They also noticed that most of the people they met and talked to were women, and that on one occasion, when one of the husbands was present, the environment was a bit tense. It is, in fact, difficult to meet the men, given that they leave for their fields as early as 4:30 am and, when they return to the community, if they do not have a meeting at the Comisaría Ejidal, they normally stay at home to rest.

Figure 63. Within their exploration, the team asked Martha to teach them how to make jewellery out of corn leaves and seeds. Photo by Jan Ahlstedt.
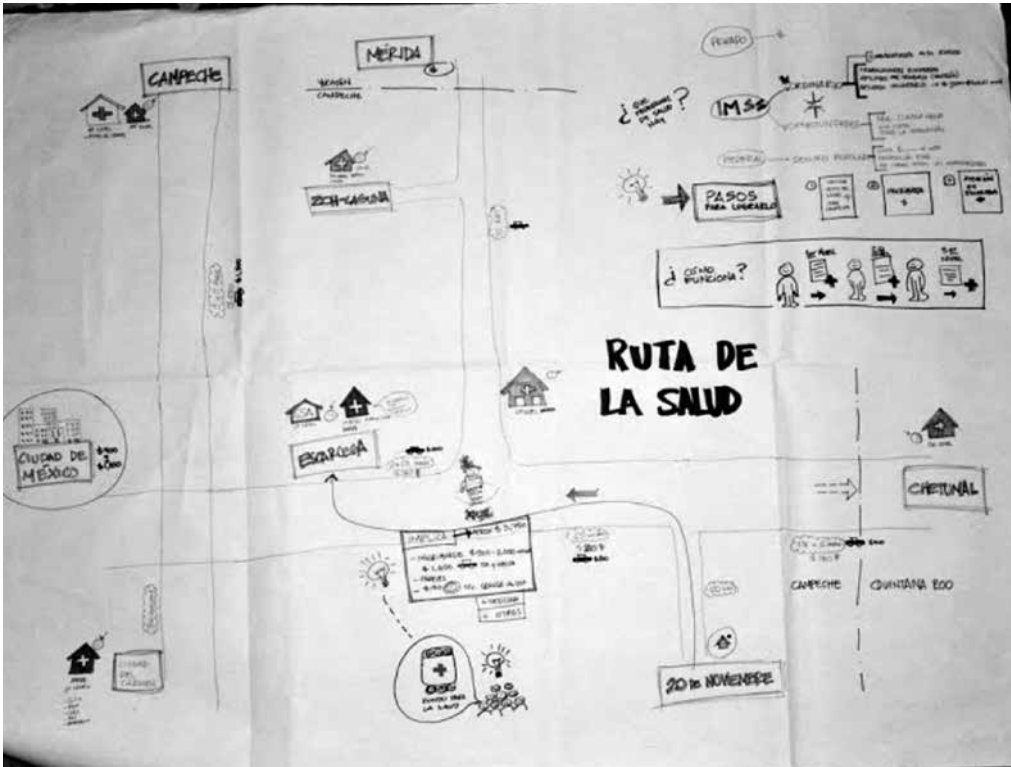
Figure 64. By combining research that Lucero conducted before the field trip and the information gained from interviewing Dr. Mena and the inhabitants of El 20, the team was able to map "The health route". Photo by Jan Ahlstedt.

healthcare route, which was especially complicated for El 20 because the community is located on the border between two states. This contributed to their perspective that fieldwork brings, among other things, the benefit of meeting the right stakeholders, which also enables the framing of highly complex matters, and which cannot be done from a distance (Berg, Kajamaa, & Garduño, 2014).

Then, unfortunately, Alastair suffered an accident and broke his collar bone. Fortunately, it was not too serious and he was insured and had the means to face the emergency. Evidently, his experience provided the team with a user's perspective. Susu and Gabo took him to the hospital in Xpujil, but given that the x-ray machine was broken, he had to be taken to Chetumal. The whole trip was made by taxi and cost nearly 5000 pesos. This indicated that the community was not prepared to handle medical emergency situations; if members of the community have a serious health issue, this is a huge financial and logistical challenge.

On Thursday, 7 November 2013, Suvi and Theresa woke up very early to get ready for the co-design workshop to which they had invited several artisans. At the workshop, they aimed to gain new information and to engage the artisans in visualising the integration of the narratives into the products. They, for example, asked the artisans to draw their self-portraits and to write something about themselves on some tags that were attached to products they had made. They also asked the artisans to draw some of the animals that live in Calakmul, which could be embroidered using well-known techniques, but which would give a unique character to their blouses. One of the most memorable quotes of the trip came from Agustín during that workshop: "Sometimes you can't turn on your own light bulb by yourself", which showed that he had at least got some inspiration from his participation.

This workshop, Suvi emphasised, was made possible because of the trusting relationship that had been created through their stay in the community; it could not be organised on the first day, and perhaps not without engaging in informal activities like the football match. Her hope was to have introduced some *business and design thinking*. The team collected the material gathered from the workshop, and finalised the strategy of the health stamp. They defined two main goals for their presentation, which would be their final activity in El 20:

1. The prices of their products could be increased through storytelling.
2. The prices of their products could be increased for a good reason.

As tourists, they appreciated the stories behind the products and were willing to pay more for them. The narratives behind the products could be incorporated in various ways, and they showed the examples created in the workshop to communicate the idea to other people who had not attended. On the other hand, there was the possibility to label some of their products with the health stamp. The health stamp would make a product more expensive, but the extra amount would be saved in a common fund for healthcare emergencies. The first goal within the long-term strategy was to raise enough money to cover an emergency (5000 pesos). If, through the implementation of the health stamp, they were able to raise enough money, the next step was to pay the voluntary fees for IMSS.

Upon our return to Mexico City, Theresa and Suvi continued to be dissatisfied with the name of their project. Cultural Brand was not descriptive anymore. So, after much deliberation, they decided to rename the project 'Artesanía para el Bienestar' (Artistry/ Craft for Well-being). They concluded that:
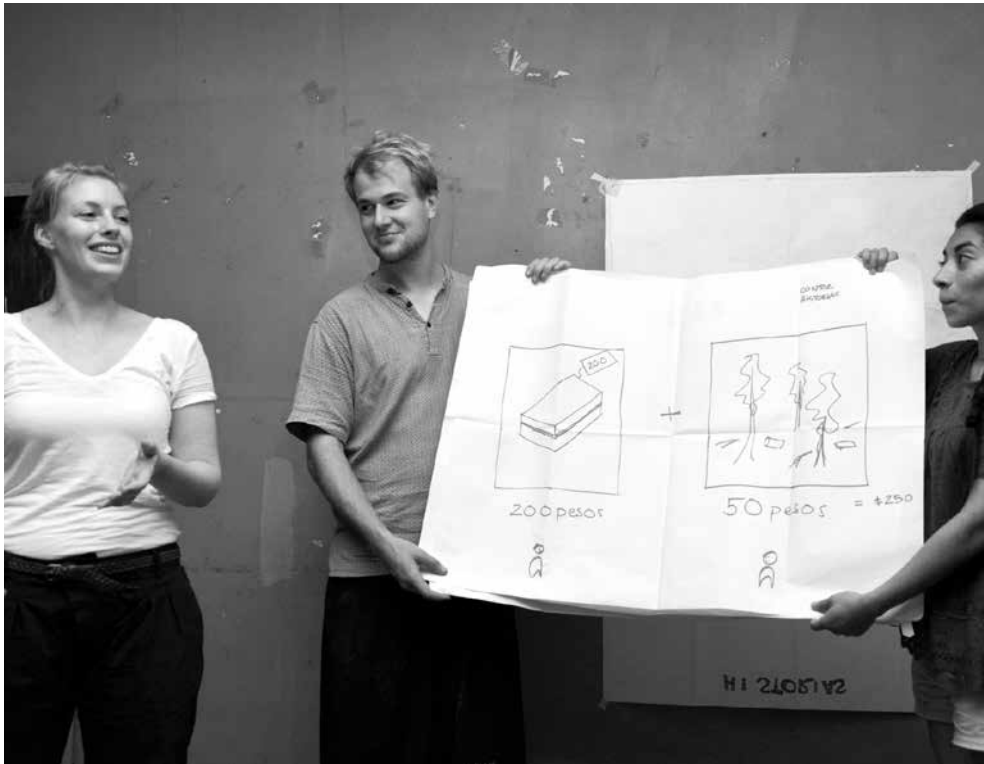
Figure 65. If the artisans of El 20 incorporated the narratives about the making of their products, theycould easily ask more money for their crafts. Photo by Jan Ahlstedt.

The concepts that emerged in the field aimed to empower the community to lead their own planning and implementation processes. Business was introduced as a possibility for cultural exchange and for the preservation of the craft skills and cultural narratives, rather than as a tool for profit only. Wealth and security were conceptualized as a communal capital to be grown, rather than as an individual goal. This fits in the context of 20 NOV, where family units are strong and where barter is currently practiced (e.g. chickens are used as a currency). So, "Artesania para el Bienstar" is more than just a design concept; it is a process that empowers the community to be the owners of their future development. This, which might come across as a self-evident component of a development process, is an extraordinary starting point in a context where people have got used to be passive, having being managed from the governmental top-down (paternalistic) perspective which for decades disregarded their cultural and historical heritage. (Berg, Kajamaa, & Garduño, 2014)

Picture 66. The first Peek Toy figure wearing the wooden headdress made by Miriam. Photo by Jan Ahlstedt.

After the visit to El 20

> *I am a pretty sensitive person and for me it was pretty difficult to leave Veinte. I hope to have a possibility to return one day. I would really love the opportunity to continue the work somehow. I am actually a bit amazed how personal the relations somehow evolved, I feel a bit empty, I think I left some part of myself in the jungle. I felt that the people in the community were honestly happy to work with us and they are also looking forward to the continuations.* (Suvi)

As mentioned above, the labbers of ALM 2013 presented their work at the residence of the Finnish Ambassador in Mexico City. Ariadna Stamatio and Piero Torio were in the audience. They had been involved with ALM as experts since 2012, but at this point, the collaboration became closer, as they expressed their willingness to help ALM prototype Artesanía para el Bienestar. What follows is a brief description of Peek Toys (2014) and their relationship with ALM since 2012.

Peek Toys is a recently constituted Mexican enterprise that produces designer toys. The uniqueness of their concept is that their figures are inspired by Mexican indigenous cultures and each of them is dressed and decorated by artisans from those indigenous groups. Peek Toys pays a fair salary to the artisans, and part of their profits is reinvested in their communities. We met Ariana and Piero (through Rodolfo Alvarado) when they were just starting. The first of their figures would be a Mayan man, but they had not yet established contact with a Mayan community that could take over the task of decorating them. We agreed to take their first piece to El 20, and ask a wood artisan (Miriam Cahuich) to make a head-dress for the toy.

In 2013, Peek Toys joined Transformadora Ciel, the same crowdfunding platform to which we would subscribe at least one of ALM's projects. They were part of our discussion on whether asking for money from a corporation like Coca Cola was the right thing to do. (This story will be told later in the Eco-hostel section.) Peek Toys' crowdfunding campaign had been successful, which enabled them to start the production of the Mayan figure. With the purpose of marketing their brand, they wanted to have wooden replicas of their toy. Through ALM, Peek Toys commissioned this work to Ofelia's workshop.

On the ALM 2103 trip, we collected these figures, which were amazing art pieces. Ofelia asked us to tell Ariadna and Piero that they had produced these figures with much love, that they learned a lot in the process, and that they hurt themselves but laughed a lot. They enjoyed the project very much and believed that the payment was

Figure 67. (Upper-right) Miriam is showing us the wooden Peek Toy figures that they made for Ariadna and Piero. The quality of the work amazed us. Photo by Jan Ahlstedt.

Figure 68. The Peek Toy that Ariadna and Piero sent with us to Ofelia's workshop, and Miriam's sketches. Photo by Claudia Grduño.

Figure 69: Sketching with Miriam. Picture by Jan Ahlstedt.

Figure 70. (Above) The spines on the trunk of a young ceiba tree. Photo by Jan Ahlstedt.

Figure 71. A ceiba tree without the spines.Photo by Jan Ahlstedt.

fair. Furthermore, they appreciated that they were offered work and wished all the best to them. More pieces would have been made if the saw had not broken and if Miriam had not fallen ill, because she did most of the work, although everybody collaborated: each person made one nose (for that reason, all the noses were different), Sayuri made the hands, Ofe made the legs, but Miriam herself made the helmets. They ruined many pieces, but the project had given them a lot.

By the day of the ALM 2013 presentation, Peek Toys had already started operating and they were closely connected with El 20. By the end of it, Ariadna and Piero expressed their willingness to invest the money they would anyway reinvest in the community in Artesanía para el Bienestar.

The process of refining Artesanía para el Bienestar continued after that trip to Mexico. It has been slow, mainly because everyone (Suvi, Theresa, Ariadna, Piero, and the artisans of El 20) is based in a different location. However, at the beginning of 2014, Theresa and Suvi created a small set with instructions for Ofelia and Miriam. They were asking them to think of a symbol for health or well-being in El 20, and to draw some sketches to design the stamp. They also attached examples of existing stamps.

During the trip to El 20 that took place in April 2014, Theresa and Suvi's petition was communicated to Miriam and Ofelia. Soon enough, they concluded that a ceiba tree would be the right example. This tree grows spines when it is young and loses them as it grows. We concluded that, at least for now, the health stamp should portray a young ceiba. The following day, we conducted a brief drawing session. Miriam prefers not to be watched while she works, but she was encouraged when I also started drawing. She finally drew the tree. Then we agreed that she would take photocopies[171] of all the drawings, so she and I could both keep some. When she handed me the copies, I noticed the new proposal.

After that trip, I shared the material with Suvi and Theresa, and Theresa digitalised the drawings. What was still pending was the consolidation of the partnership between Peek Toys and Ofelia's workshop, in order to prototype the health stamp concept. Furthermore, a strategy had to be generated, so that the stamp concept could be scaled to cover all the artisan groups in El 20 (and beyond?). The ideal case that was discussed earlier in 2014, with Ariadna and Piero, would be to have artisan groups paying it forward; so, Peek Toys

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171 This family owns a printer-copy machine, and offers that service in the community. Photocopies are constantly required.

finances Ofelia's workshop, and then Ofelia might finance Daniel's, and so on. However, these were just the starting plans.

However, Suvi and Theresa were determined to share what they had learned from the visit to EL 20. I assisted them in writing an abstract entitled *Benefits of Design Practice in Fieldwork: How "Artesanía para el Bienestar" (Artistry for Well-being) emerged in the field as a concept to improve access to healthcare in a Mayan community in Campeche, Mexico*[172] (Berg, Kajamaa, & Garduño, 2014), which was accepted and presented at the conference "Relating Systems and Design Research 3", which took place in Oslo, Norway, from 15-17 October 2014.

Figure 72. The sketches made by Miriam in El 20 were digitalized by Theresa in Finland.

Eco-hostel

Designers and architects might get confused by the highly eclectic style of the houses in El 20, as happened to those, including me, that visited the community in February 2012

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172 Many of the reflections introduced in this section arose when preparing that abstract and presentation, but some that have not been mentioned yet are the *expanded capacity to deal with uncertainty* and the *two-way mirror perspective*, which will be discussed further on in this work.

Figure 73. There are many types of constructions in El 20: the typical Mayan house (top left), The ones with Polish influence (top right, bottom left), and those built (or partly built) out of bricks (bottom right). Photo by Jan Ahlstedt.

during the Mayan Workshop organised by UNAM. In general, each household is built within a piece of land of 20 x 40 metres; approximately half of the land is left unbuilt and works as a yard, where people keep chickens, turkeys, dogs, and edible plants like Chaya, and orange trees. Among the houses, three different construction styles, often in combination, can be observed:

- Walls made from vertical wood sticks (bamboo-like) and rooftops made from palm leaves
- Walls made from wooden planks and rooftops made from corrugated tin
- Walls made from bricks and rooftops made from corrugated cardboard

The floors are made of polished cement, and the roofs, regardless of the material they are made from, are gabled and high.

Entering a typical house, the first space one encounters when coming in from the street through the main entrance is a common area that works as a living room. These living rooms are commonly furnished with wooden chairs, sofas, and hammocks. Additionally, big televisions and sound systems that consist of various speakers are showcased in display cabinets made from solid wood.

The different spaces within the house are divided with short wooden walls that do not reach the ceiling. Hanging cloths work as doors for the toilets and bedrooms. Some bedrooms have beds, but all, including these, have hammocks, which are preferred by the people of El 20, especially in the hottest seasons.

Several houses have both latrines and flush-toilets; the former are commonly built as a separate structure within the yard while the latter are inbuilt as a room within the house, on top of sceptic tanks. The toilets are flushed with water that is collected from concrete tanks or from wells[173] using buckets. Those bathrooms also have a designated space for washing, an activity for which they also need to carry water in a bucket. In the hot season, this water is not warmed up, but in winter time, a pot of water is heated on an outdoor fire or on the kitchen stove, to be mixed with the rest of the bucket.

The kitchens, like the living rooms, are a gathering space, but more intimate than the living rooms, given that visitors are commonly accommodated in the former while families[174] gather in the latter. The kitchens are typically built from wood and have direct access to the yard. They might have up to three stoves: a gas burner, one built by the Ministry of Social Development (SEDESOL), and the original ones built by the villagers, which continue to be the ones they prefer. These are placed in the furthest corner (the corner formed by the walls that delimit the house's perimeter, not the ones that separate inner spaces), and are made of wood. These could be described as a box of 100 cm x 100 cm x 30 cm with legs, so that the tallest point reaches some 80 cm in height. The box is filled with tightly compressed ash, on top of which a pair of twigs are lit from the tip. The gas burner is used on few occasions, for example, when it has rained so heavily that rain filtered into the kitchen and made the woodstove wet. The stoves built by SEDESOL do not heat enough, say the women, and are therefore used as tables.

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173 See the Water project

174 Kindred, and not just nuclear families

Figure 74. Kitchens are a gathering space. In the picture, Ofelia and Mateo are serving pibipollo, a special dish made of corn and chicken, which is cooked underground as part of their Mayan Day of the Dead traditions. Photo by Jan Ahlstedt.

It is common to have refrigerators, but these are not commonly placed in the kitchen, which is also the case with the simple electric washing machines. The furniture that makes the kitchen a gathering space are the big tables, numerous chairs, and a hammock.

Ofelia and her group have a small shop next to their workshop, which is built in the traditional Mayan style, like the ones in which they lived in Dzitbalché, Calkiní, from where they emigrated around forty years earlier. Ofelia says that her grandparents' home in Dzitbalché (where they have lived for more than 70 years, and still do at over 100 years of age) is very similar to her little store, but that the floor is made of compacted earth, rather than cement.
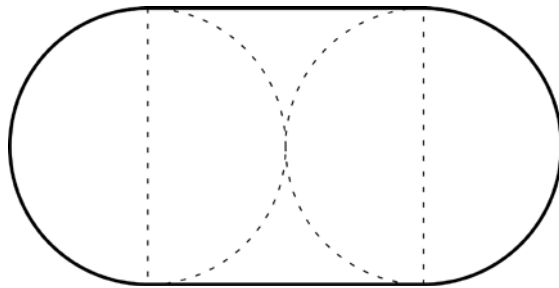
Figure 75. Top view of a traditional Mayan house, as described in Rivas Gutiérrez, 2012, 27.

In fact, this is the traditional Mayan style that is exhibited in the Ethnography room at the National Museum of Anthropology in Mexico City. Mayan houses can be square, but in El 20, as in the museum, the shape results from the intersection of three figures: two tangent circles and a square inscribed between its touching halves[175] (Rivas Gutiérrez, 2012).

The main structure is made from the hardest woods they can find in the jungle, for example, zapote. This structure carries the roof, which starts with a skeleton made from thinner logs than those of the main structure. When the skeleton is ready, between 10 and 20 guanos (a palm leaf) per metre are woven into the structure. They build the roof first, in order to develop the rest of the construction process in its shade. The only wall is made of bamboo-like sticks, called *tulum*, which are placed vertically covering the full perimeter except for the door space. The tulum sticks are held together with a mixture of mud and hay on the bottom part (which covers around a metre and a half of the height) and the upper edges are woven with thin twigs.

Similar structures can be found around El 20, but always agglomerated with structures built in either of the other two styles. When architects and designers visit El 20, there is a shared concern that the traditional Mayan style is at risk of disappearing. However, the eclectic style of El 20 can be easily understood through a quick review of the history of the place since the rrival of the settlers.

By the time the first settlers of El 20 arrived in about 1971, a company dedicated to the forestry industry, by the name of Caobas Mexicanas (Mexican Mahogany), was already well established in Zoh-Laguna (Gobierno de Calakmul, n.d. b). This company was managed by Polish migrants, who built the houses in their own national style, which still exist in Zoh-Laguna. They have four gable roofs and the walls are made from mahogany planks. However, they also have porches with fences, which is probably due to the influence of the neighbouring country and former British colony, Belize. The second generation of houses, or the second extension of the original houses of El 20, seems to have been highly influenced by the style developed in Zoh-Laguna (back then, a wealthy economic centre and the place where children from within the region would attend a boarding school).

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175 According to Rivas Gutiérrez (2012), each house was built according to the measurements of each man. So, when the elderly decided that a young boy had finished growing, they measured his height and divided it by half, and that would be the base unit, vara. A house would measure 6 varas because a bigger or smaller house would make him live uncomfortably. Nonetheless, this practice has been lost in El 20.

Figure 76. The traditional Mayan house at the National Museum of Anthopology in Mexico City (INAH). Photo by Claudia Garduño.

Adolfo Balfre explained to us that Polish houses have thermal qualities that, in Poland, are mainly necessary because of the cold. In Zoh-Laguna, the very high Polish rooftops keep these houses fresh, despite being made from corrugated tin. Nonetheless, really high rooftops require more materials, and are therefore more expensive. Making them lower in order to make then cheaper caused the original design to lose its thermal properties.

The cement floor and the other manufactured construction materials were introduced in more recent times, largely through the implementation of government programs for the development of *the most highly marginalised* regions in the country. According to CONEVAL (2010), Calakmul is within the most highly marginalised municipalities in Mexico, and therefore a beneficiary of those programs. Among the different criteria that are measured before concluding that a population lives in poverty condition, two relate to the topic of housing: access to basic services and quality of living spaces. These are the indicators that measure poverty. A home is poor if any of these characteristics is present:

Basic services	
Service	**Indicators**
Water	*From a well, river, a public faucet from another home*
Drainage	*No drainage, or goes into a river, lake, sea*
Electricity	*No electricity*
Cooking fuel	*Wood or coal and no chimney*

Table 18. Homes in Calakmul are poor according with CONEVAL (2010), they lack access to several basic services.

Quality of living places	
Categories	**Indicators**
Rooftops	*Made from waste materials or cardboard*
Walls	*Made from mud, bamboo or palm, cardboard, metallic sheet, asbestos, or waste material*
Floors	*Made of compacted earth*
Overcrowding	*More than 2.5 inhabitants per room*

Table 19. Homes in Calakmul lack quality according with the indicators defined by CONEVAL (2010).

In accordance with those indicators, many homes in El 20 are poor. The new constructions in El 20 were built as part of a program to tackle poverty, as can be read from the plates that were installed on the *façades*. These structures are labelled as part of the *Program Solidarity Campeche*, a collaboration between the Federal Government, the State Government, and two decentralised organisations, the National Dwelling Commission (CONAVI) and the Federal Mortgage Society (SHiF). The Government of Campeche annual report of 2011-2012 points out that a total of 1555 dwellings were built in the state of Campeche during 2011, with the collaboration of three construction agencies (including Ecoblock Internacional (Échale a tu Casa, n.d.)), under the modality of assisted self-construction on one's own land (Gobierno de Campeche, 2010). The programs usually work in the form of a mutual agreement, where the government gives the construction materials and mentors the process, while the people contribute labour.

On its website, Échale a tu casa explains how its architects co-design ecological archetypes with people from a community, in accordance with the local climatic conditions, type of soil, and respect for their traditions. However, the archetype that can be seen in El 20 was designed for Xpujil, which despite being located only 15 km away from El 20, and sharing climate conditions, is the most urban town in Calakmul, and is not Mayan.

During ALM's visits to El 20, Miriam hosted us in her house, built with support from that program. She explained to us that the house was already designed, but people could decide on which side they preferred to place the bedroom. The construction of the main structure was

Figure 77. Plate placed on the facade of a house built as a collaboration of the Federal and State governments. Photo by Jan Ahlstedt.

assisted, and later each family was left to finish the work. Miriam, for example, has designed wooden windows and doors with engraved animals and flowers. These new constructions, however, did not replace the original structures of El 20; instead, they were added to the intricate complexes into which their homes transformed after various construction periods. These newer spaces do not seem to be used very much, in so far as they were commonly the empty spaces where different families hosted the members of ALM.

Adolfo Balfre and Samuel Brugger, whose research we found out about during ALM 2012, explore the possibility to reintroduce a bamboo species endemic to Calakmul into the forest, but also as an economically profitable activity by turning it back into a construction material. In the past, it had been widely used even in houses; nowadays it is so devalued that it is considered an invasive weed, which is the reason it has nearly vanished. This, in effect, resonates with ALM's reflections on development and poverty[176], which are not the only examples of research concerned with the rigidity of those definitions and their effect in the region. James Davidson (2002)[177] observed the

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176 See Understanding El 20, rethinking poverties

177 Flynn found this paper during the preparation period.

Figure 78. Miriam's decorated windows. Photo by Claudia Garduño.

exact same phenomenon in Guatemala that Balfre and Brugger observed in El 20. The materials that could be extracted from their lands were not valued as highly as those that are industrially manufactured. The Mayan traditional house, a construction that was totally adapted to that weather, a construction of low environmental impact and easy maintenance, and furthermore, a construction that was *designed* by these people (Rivas, 2012), is nowadays *the house of the poor*, and therefore undesirable (Davidson, 2002). No one wants to be stigmatised as poor; people want houses of (industrially manufactured) material(s), even if the spaces will not be used. Hence, they are merely symbols of status.

ALM noticed that the government did not have a comprehensive or holistic enough perspective of the region (or perhaps, the country). Some of their programs, like the concrete water tanks and the concrete floors, had been very welcome and quickly adapted into daily lives, but others had been very disappointing. Furthermore, these social programs seem to be completely detached from the environmental programs that other government entities run simultaneously in the area. In the end, while the biosphere reserve promotes programs and actions for the environmentally sustainable forestry industry in neighbouring communities, the social programs promote a lifestyle of greater environmental impact. For example, while the Calakmul Biosphere designed a dry toilet that is suitable for the biosphere and that has been installed on the archaeological sites,

the housing programs, in accordance with the national indicators, deliver flush-toilets despite the lack of a drainage system.

It can be argued that a national policy of that kind (with very specific indicators that value form over function) might just not be suitable for a country that is as environmentally and culturally diverse as Mexico. In fact, it seems that great potential gets wasted when designing for the development of indigenous towns without inviting them to be part of that process. The indigenous people are wise, they are experts on their own lives. This does not mean that one should expect them to hold all the answers, it just means that they know their ecosystems very well. If all that wisdom was used in the process of tackling their everyday challenges, it might even happen that we would suddenly envision a very alternative future that could be, at the same time, environmentally and ethically sustainable. A great opportunity to answer the call was made in *Agenda 21* (UN, 1992), for a global movement in which communities would define local actions towards achieving sustainable development.

> The brief, therefore, was to design an archetype of a sustainable household for El 20, which could become a construction model. So it would inspire people to make adjustments in their own homes and to make new constructions accordingly. It had to take into consideration both climatic conditions and locally available materials, and also the community's cultural heritage. In that sense, the design had to pay respect to the local wisdom and rescue the elements that make the Mayan house so suitable for that environment and its climate. If they were evaluated as appropriate, elements that the community adopted throughout time, like a firm floor and the water collection system should also be considered. Finally, new elements could be added; for example, following the talk by Rodolfo Alvarado (2012) about 'Democratization Through Solar Energy', photovoltaic panels could be used in order to release people from their struggle of paying the bills.
>
> The archetype would also become a living experiment, so that if something became inappropriate, it could always be modified. The construction could not be a privately owned house, but a community building owned by no one and by all. (Garduño, 2014)

The encountered opportunity that would satisfy all constraints and the community-owned architectural project, and that could give continuation to the proposals from

ALM 2012, was to dedicate this construction to tourism[178]. Therefore, it was named the Eco-hostel.

Preparation Period

The team of labbers for the Eco-hostel project were Juan Vértiz, Gabriel Calvillo, and Flynn Lewer. Areli Maciel was the facilitator and the consulted experts were Arch. Jorge Calvillo (lecturer in sustainability at Universidad Iberoamericana in Mexico City), Adolfo Balfre (designer and lecturer at UNAM, conducting the bamboo project in Calakmul), engineer Rodolfo Alvarado (expert in electricity from ALM 2012), engineers Pablo Monterrubio and Antonio Jacintos (from Proyecto Tierra), M.A. Kana Nakanishi (member of Aalto University team for Solar Decathlon 2010), and biologist Delfín Montañana.

Name	Institution	Field	Role	Nationality
Areli Maciel	UNAM	Industrial Design	Facilitator	Mexican
Jorge Calvillo	Universidad Iberoamericana	Architecture and Sustainability	Expert	Mexican
Adolfo Balfre	UNAM	Industrial Design	Expert	Mexican
Rodolfo Alvarado	Yectlahuilli	Clean Energies	Expert	Mexican
Pablo Monterrubio	Proyecto Tierra	Sustainability, architecture, engineering	Expert	Mexican
Antonio Jacintos	Proyecto Tierra	Sustainability, architecture, engineering	Expert	Mexican

178 Furthermore, since the beginning of the project, the promotion of Calakmul as a tourist destination has become a priority at a national level. Ex-president Felipe Calderón designated resources for the archaeological site (Hernández 2014b), and there was the naming of the place as a Mixed Heritage by UNESCO. Nonetheless, large investments in tourism could also mean a risk of fast development, environmental damage, and displacement of communities, as has happened in Cancun.

Kana Nakanishi	Aalto University alumni	Architecture and Design	Expert	Japan
Delfín Montañana	Universidad del Medio Ambiente	Biology	Expert	Mexican
Claudia Garduño	Aalto University	Design	Facilitation assistant/ documen- tation/ research	Mexican
Alastair Fuad-Luke	Aalto University	Design	Facilitation/ Research	British
Susu Nousala	Aalto University	Design	Teacher/ Reseaarch	Finnish

Table 20. Experts and Facilitators of Aalto LAB Mexico 2013- Eco-hostel.

Juan and Gabo had become very much used to working together, mainly during their trip to Helsinki (Juan fell ill before the trip to El 20 in 2012 and missed it entirely). As usual, communication with Flynn was difficult mainly because of technical problems (which they solved by sharing video recordings of the sessions). However, Flynn was very active in conducting individual research and getting ready for the trip, as can be seen from his various blog posts. He quickly adopted the attitude that is sought from a labber before travelling to the site. He dedicated his post of 24 September to reflect on the *Impact of western cultural values on traditional Mayan housing* (Davidson, 2002); a fragment of Flynn's blogpost can be read here[179]:

The opening question is directly relevant:

> *"Can 'traditional' building practices synthesise with non-traditional methods of construction in enabling Western practitioners to design culturally appropriate small-scale public housing in non-Western and Indigenous built environments?"*

179 Read the full text here: https://aaltolabmexico.wordpress.com/2013/09/24/impact-of-western-cultur-al-values-on-traditional-mayan-housing/
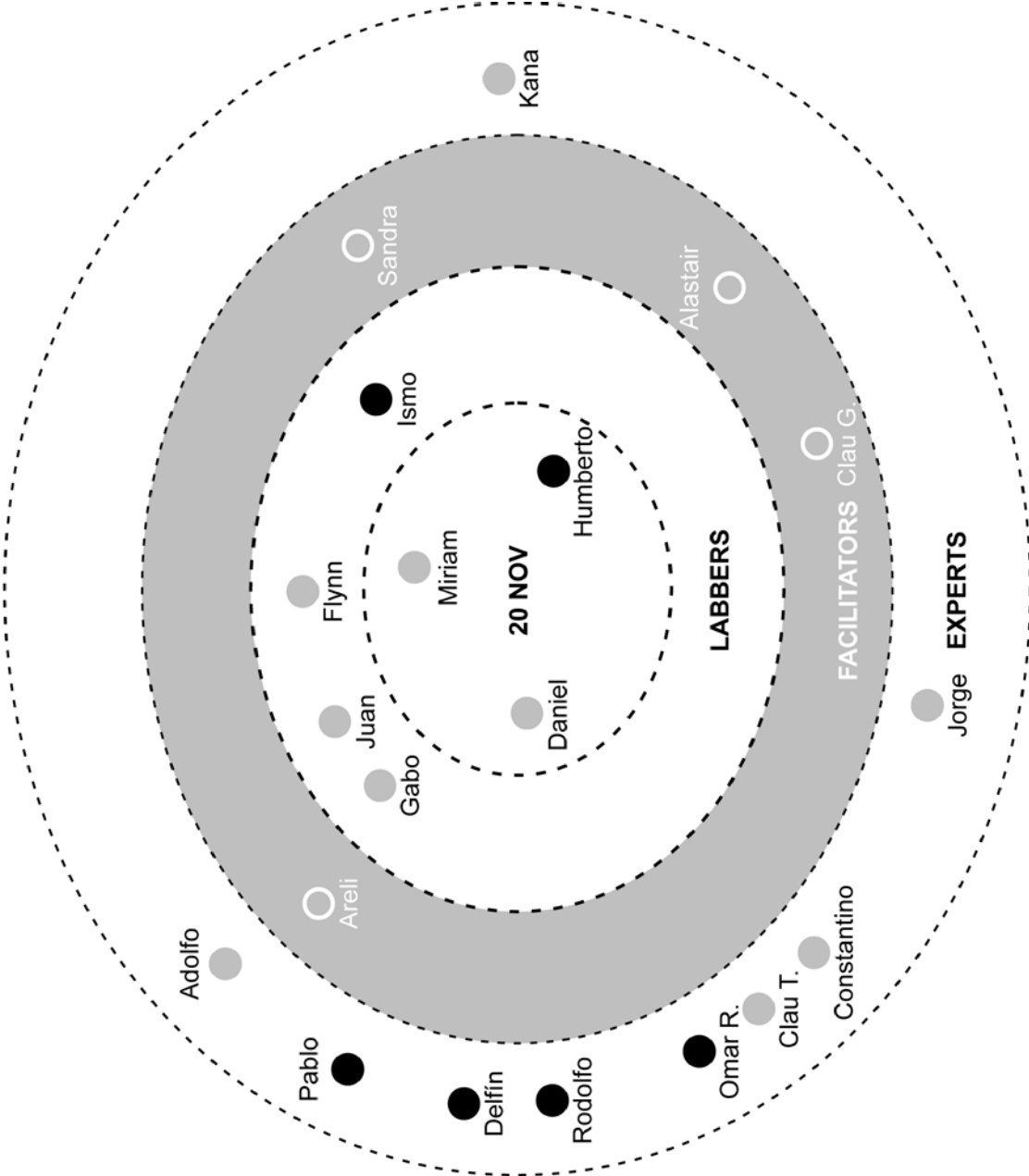
ECO-HOSTEL

Figure 79. ALM 2012- Ecohostel full network.

> *James references a UN Habitat for Humanity project in Guatemala, with the main point being that such projects are ultimately insensitive and inappropriate to the local communities – and that this is a direct result of being defined by western cultural values in the first place. He also noted during his research of the region that while the imposed western housing solutions came to signify elevated social status, (and this was appreciated by communities he interviewed), these buildings did not engage with traditional behaviours, (which the Maya communities still practice). For example, the storage and drying of local food staples in the roof space and traditional cooking methods were incompatible with the concrete and tin buildings of UN Habitat for Humanity.[180].*

Very early in the process, Arch. Calvillo advised the labbers to make use of their preparation period in order to develop four main tasks: getting to know the place (or site analysis), a catalogue of local materials, a catalogue of technologies, and the conceptualisation of proposals. Later on, they identified the need to define how the proposals would be introduced to the community and how to engage them in the process.

With the help of Adolfo Balfre, two main concepts for the Eco-hostel were identified:

• The completely new building is to work as a hostel in the community.
• The whole community of El 20 is conceptualised as a hostel by making use of the existing infrastructure and services.[181]

Rodolfo Alvarado communicated his observations concerning electricity in El 20: that they pay too much for electricity because a lot is lost because of poor installations. Furthermore, they do not have any devices that prevent electric accidents. Finally, a lot of energy goes into craft-making (operating the machines and workshops), and they do not earn very much from those crafts, which is not competitive. However, he considered it was possible to somehow mix the traditional Mayan house and the new concept and achieve a more efficient use of electricity.

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180 Fuad-Luke would later observe that the labbers seemed even afraid to propose anything to the community, as will be described in the following section.

181 Since ALM had stayed there before, it was evident that some people were ready to host visitors and that some women were ready to feed large groups (in 2012, 23 persons stayed in El 20 at the same time).

Pablo Monterrubio and Antonio Jacintos introduced the perspective of the tourist and, for example, their need to communicate while in El 20, but even the means to book a room in the Eco-hostel. An internet connection seemed indispensable. Furthermore, if tourism was to be truly ecological, the internal capacity of the community to receive visitors (i.e. how much extra food and water they had each year) had to be estimated.

Kana Nakanishi, who was visiting Mexico from Japan, explained the design of the house with which Aalto University competed in the Solar Decathlon 2010, and introduced the concepts of energetically self-sufficient and lowest-possible carbon footprint.

In the joint meeting that took place on 16 October 2013, Juan, Gabo, and Flynn presented what they had learned from talking to the experts, and showed some diagrams of their early concepts. They had arrived at the conclusion that this would be the place where visitors and locals would interact and therefore the *knowledge sharing*[182] proposal could be integrated into the space (i.e. researchers could stay in the community for a long period).

Alastair Fuad-Luke pointed out that the word 'host' is embedded in the term 'hostel', which is then a more interesting term than 'hotel' and which is open to possibilities. Within a host–guest relationship, the distinction fades and people might ultimately become friends. Delfín Montañana added that by getting in touch with others, we transform ourselves, and he introduced the metaphor of a living being, where perhaps the community could be seen as a seed and ecotourism would become the water that would help it bloom.

When the ALM team got together in Mexico City, and in step with the other two teams, the Eco-hostel project agreed that the first thing to do in El 20 was to talk to the people involved in tourism, find out more about the plans in the community, and visit the existing infrastructure. Later on, they hoped to role-play tourists with people from the community, and finish by mapping the tourist's experience with the people already involved in tourism. Once in El 20, their plans had to be somewhat adjusted.

Visit to El 20

Once in El 20, the labbers decided to start their exploration by visiting Humberto, the representative for tourism in the community. They looked for him at his home in the

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182 See ALM 2012

afternoon after the football game, but he was not in El 20. After explaining that they wanted to see everything related to tourism in El 20, his nephew, Victor, agreed to lead the group towards some huts that had been made for tourists to stay in but were never finished. The road is muddy, he warned the group.

In order to get there, we had to continue walking along the main road that takes us into El 20, which does not connect them with any other communities, only with Rio Bec, a Mayan archaeological site that has not been explored much but that still attracts a few tourists every now and then. However, it is only possible to drive there during the driest months, because the rest of the year it is too wet and muddy and cars get stuck.

We understood the road could get much muddier, and form a layer of up to 50 cm. That day, it was possible to walk, but not easy, except for Victor who did it effortlessly despite wearing sandals. After walking for about a kilometre, we deviated into the jungle a few hundred metres and we reached an area where several constructions made of rock and Mayan rooftops had been started, but remained unfinished. The team concluded that these huts were too far from the community, and considering the condition of the road, tourists could be afraid of staying there with no means of communication. Staying in the community would be more appealing, at least while the means of communication remained as such.

Figure 80. Gabo, Juan, and Flynn interview Daniel, the construction expert in the community. Photo by Jan Ahlstedt.

Coincidently, the day the team found Humberto, he was expecting some representatives from an NGO called Pronatura to talk about their tourism plans. These persons were making a diagnosis in different communities because they had some money left that had to be applied to projects, and they wished to know if there were any projects to finance. Thus, they were visiting several workshops around the community. Humberto took this team to the top of a mountain within his family land. This experience was later described by the labbers as *the complete opposite to the mud trip*. The whole community can be seen from there; the smoke coming from the houses gave them the feeling that the community is alive.

Most importantly, Humberto spoke of his plan to build a reception/information centre for tourists, where the artisans could sell their crafts. This idea was so similar to the Eco-hostel project that we immediately spoke with the people of Pronatura about the possibility of collaborating in the near future[183]. The team, however, was concerned about certain things. First, there were too many similarities between the community's tourist reception and the Eco-hostel, and they wondered if what they heard from Humberto were the actual plans from the community or if he was repeating the suggestions he had heard from the labbers the year before. Would that be good or bad? In any case, Humberto held an official position within El 20's governing body, which meant that his idea was supported by all the ejidatarios of El 20. Therefore, our concept was in step with El 20's plans. Another big concern was how to ensure that, this time, the construction would be finished and would be used as planned (unlike the cottages by the mud road)?

Next, they spoke with key persons in the construction field, like Daniel and his brothers, who besides running the furniture workshop, build houses in El 20 and other communities (including Xpujil and El 20). They also talked with some other young men who had experience working in construction and with Miriam. Through these talks, they were able to identify the elements that best perform for different functions; for example, the palm rooftops are fresher and easier to maintain and replace but can get burnt accidentally, while metallic rooftops are better for harvesting rainwater and are 'fire proof'.

Later, they invited people to join them in some brainstorming sessions. As visitors, the labbers could easily think of the elements that tourists would require, but people from the community could better identify the elements and infrastructure that already existed. Furthermore, they were better at imagining what the place could be used for while there

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183 This would become rather difficult in the following months.

were no tourists. For these sessions, they prepared two sets of cards with sketches. The first set illustrated the products and services that tourists require (food, accommodation, toilet, shower, transportation, communication, maps); the second set represented the existing attractions of El 20 (its people, the jungle, apiculture, furniture, hammock-weaving, embroidery, wild animals, sports facilities, a school, Mayan pyramids, and starry nights). Although not many people showed up, it was from brainstorming with a couple of elderly people that they concluded that a key function of the hostel was offering the infrastructure needed for children to do their homework.

Eventually, the team realised that they were not designing an Eco-hostel, but a unifying element with the potential to bring different groups and industries together. The hostel would follow the current disaggregated model (i.e. tourists accommodated in residents' places across the village), but the construction would work jointly as facilities for managing their tourism industry, and as a communication centre with computers and internet. Therefore, it would simultaneously become a place for children to do their (computer-related) homework[184].

Flynn was the only architect in the team, and he was hesitant to propose anything because of the notion that it would be imposing the labbers' ideas. Alastair recalls encouraging him by pointing out that sketches, drawings, models, or anything else would open a conversation, and through those practices they could encourage the local people to draw their own sketches or build their own models.

And so they did. They spent the morning of the presentation day in Zoh-Laguna, refining their ideas and preparing materials that would facilitate the interaction with the audience. Flynn made the top and frontal drawings of a house that integrated the preferences of the people of El 20, as learned from their field activities. The house had the Mayan shape, but the rooftop was partly Mayan and partly metallic, to collect water. They used cards with sketches, like the ones that had been used in the previous brainstorming session. During the presentation, they asked people in the audience (around 25) to place the elements that they considered necessary (crafts, furniture, computer, telephone, toilet, etc.) within Flynn's floor plan. The Eco-hostel team left El 20 with a very clear concept of what the project could be like.

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184 This was especially relevant for those attending junior high school and high school in Xpujil, and who have to stay there to do their homework, which requires computers or internet, many times until it gets dark. The road is, of course, a risk, since it is a freeway, but there is also no way to let the mothers know that they will be late, which makes them terribly worried, not to mention how expensive it might be for them to travel back.

Crowdfunding the Eco-hostel

It was through Gabriela Yáñez that ALM got in contact with Mauricio Luna, from the crowdfunding platform *Transformadora Ciel*[185]. Since our first meeting, Mauricio had expressed his belief that Aalto LAB Mexico had a great chance of raising the money through their platform.

Deciding whether asking for money from a corporation like Coca Cola was the right thing to do, was not easy, though. We discussed it in several sessions during the preparation period. Coca Cola bottles are most likely among the main sources of pollution in El 20, and very likely, one of the reasons why the diabetes rate is high (this happens all over Mexico, but it was also confirmed by Silvia Mora, who, as wife of the municipal president, Baltazar González, was the head of the Municipal System for Integral Development[186]).

When we spoke with Ariadna Stamatio and Piero Torio, they encouraged us to apply, for this platform offered the advantage of covering half of the initial sum if, and only if, the other half was raised through the platform. This meant that only half of the sum had to be raised through crowdfunding. Moreover, if the company was making a profit in the community and causing undesirable side effects, it seemed fair to have it sponsor a project that would actually benefit the community. With the mentoring of Ariadna, Piero, and Mauricio, it was decided to submit the Eco-hostel project to the platform because it was the most tangible among the three, and the one that could show benefits in the relatively shortest time.

Nonetheless, given that the platform's regulations would change, the project had to be submitted to their website the very day ALM landed in Mexico City from Calakmul; and the submission included a video. Meeting this deadline was only possible through the amazing work done by Antti Seppänen.

From that moment onwards, ALM had a month and a half to raise the money, 100,000.00 MXN, in order to get a total of 200,000.00[187]. "All contributions were somehow rewarded; some with a picture taken by Jan Ahlstedt, the photographer who

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185   Coca-Cola's crowdfunding platform in Mexico

186   In Mexico, the spouses of the heads of government direct the system at the different levels (i.e., the president's spouse is the head of the National System for Integral Development).

187   At that moment, a total sum of around €11,700.00.

documented each of the field trips, or with a craft piece made in El 20. The team actively promoted the project in their social media and by organizing an exhibition in Helsinki. A few members of the community were able to follow the progress of their campaign through their visits to Xpujil. In the end of December 2013, the monetary goal was reached becoming the first joint accomplishment of ALM and El 20." (Garduño 2014).

The unexpected happened while designing

In January 2014, the process for the architectural design finally started. This was made official in Tec de Monterrey through Arch. Claudia Tamayo's social community service, in which Pam and Isela participated, and where Juan and Gabo became external advisors (so that they could officially work inside Tec de Monterrey). They also recruited an architecture student, Alejandro Jiménez. The process was supervised by Arch. Jorge Calvillo, Arch. Juan Carlos Alvear (teacher at Tec de Monterrey), and Arch. Valerie Auvinet (teacher at Universidad Iberoamericana).

Name	Institution	Field	Role	Nationality
Jorge Calvillo	Universidad Iberoamericana	Architecture and Sustainability	Expert	Mexican
Juan Carlos Alvear	Tec de Monterrey	Architecture	Expert	Mexican
Valerie Auvinet	Universidad Iberoamericana	Architecture and Sustainability	Expert	French
Claudia Tamayo	Tec de Monterrey	Architecture	Expert	Mexican
Jan Ahlstedt*		Photography	Documentation	Finnish
Antti Seppänen*		Film making	Documentation	Finnish
César Corral*	Welltec	Mechanical Engineering	Expert	Mexican

Claudia Garduño*	Aalto University	Design	Facilita-tion/ research	Mexican

Table 21. Experts and Facilitators of Aalto LAB Mexico 2014- Eco-hostel. * Participated in the trip.

The labbers worked for several months having in mind a specific site that had been agreed with Humberto as the best location. They thought of the architectural program, the materials, the flows of people, the shape, the dimensions, the orientation, the equipment, and so forth. The first time they met Arch. Juan Carlos Alvear, they were harshly criticised for not being able to justify each and every one of their design decisions. Rather than remembering this as a bad experience, Isela recalls being treated professionally and noticing that Alvear acknowledged that they were determined to carry on with the project; thus they were not treated as students but with much respect.

After that meeting, they continued working on the proposal, but they were just starting to feel more confident with their proposal when the unexpected happened. Due to inexplicable communication issues, Pronatura, the NGO that was willing to collaborate with us in the project, and with which we had kept in touch, had suddenly been pressured by people from El 20 in order to start the construction. ALM tried to postpone the beginning of the construction by sending a letter to the community through Miriam and Daniel. Nonetheless, construction was started a few weeks before ALM's visit.

Evidently, this was a moment that made all the labbers feel very discouraged. At that moment, I was in Helsinki, so we conducted virtual meetings. That day all of them thought that this was the end of the project and there was nothing else to be done. However, there had to be a way in which all their effort of the past few months (and the previous year and a half) could be put into practice. First of all, we agreed that they knew a lot about the community and that the research they had continued to develop in order to define the design requirements had to be necessarily applicable to other locations in the community, given that they were, in fact, designing an archetype. In just a few minutes, these highly creative students were able to come up with various alternative plans, but whichever we chose in collaboration with the community, the next step was to organise an extraordinary visit to the community.

Figure 81. Construction sponsored by Pronatura, and built by the ejidatarios of El 20 through 'fajinas'. Photo by Jan Ahlstedt.

Learning the politics of El 20

The morning after I landed in Mexico City, Juan, Gabo, and I left for El 20. We did not know exactly what we were going to do, but we needed to talk to the different parties involved. As we arrived in the community, we drove past the construction sponsored by Pronatura, and went directly to Ofelia's house, as usual.

By chance, the governing body of El 20 met the same day we arrived, and we were able to raise our concern. We started by summarising the journey that ALM and El 20 had walked together throughout those two years, putting special emphasis on how the crowdfunding campaign had become the first of our joint accomplishments, that it had been through their crafts and our networks that the funds had been raised. We proceeded to talk about the Eco-hostel project itself, and the plans we had for it, but that since there was already a construction on that site, we wanted to evaluate the alternatives.

These men reported that the construction that had been started would be used as a store by the artisans, mainly the women. However, they were extremely interested in the proposal of having computers for the children, and mentioned that we could be given another piece of land. We clearly stated that, although the vision was to integrate internet in the building, this was now far from our reach, but we would make the best use of the

resources, including expertise, time, and money. There would be a community meeting the following day, and we committed to deliver some proposals by then.

The following day was spent in generating proposals and evaluating them through a SWOT analysis. ALM could, for example, buy a piece of land in El 20 and build the Eco-hostel, but if we did that, the community would not have a sense of ownership, which would go against our principles. Another choice was to continue the construction that had been started, but when we talked with the construction experts of El 20, we found out that its quality could be very poor.

Briefly, this construction was made by the ejidatarios and funded by Pronatura. The original plan was that Pronatura would give the money for the materials, and the men would bring in labour. However, they only used part of the money for buying materials, and used the rest of the money to pay *fajinas*[188]. This meant that groups formed by four men would take daily turns on the construction site, and they hoped to finish within one round (there are about 70 men). However, since there are no drawings or plans, and not everyone is skilful, what gets made one day can be unmade the following day. They had run out of money and materials, and the construction was not finished. Furthermore, the gaps between the tulums (bamboo-like sticks) were too wide, which would have caused the space to be too dusty for the computers.
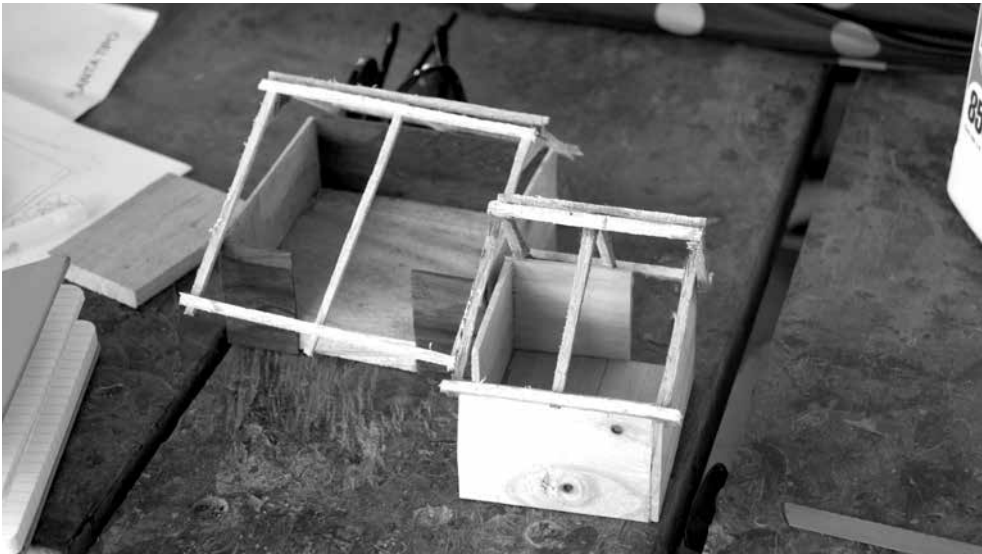
Figure 82. Mock-up that Gabo and Juan built with Miriam and Sayuri. Photo by Claudia Garduño.

188 *Fajina* is a word used in the Yucatan Peninsula to describe work that is shared by the members of the community and that is performed for the benefit of the community.

Figure 83. The new piece of land that the ejidatarios designated for the construction: an old water collector formed by a 900m2 platform, and a water tank (diameter 8m). Photo by Claudia Garduño.

In the end, we agreed that the best choice was to designate a new piece of land. Our friends in the community advised us on which was the right language to use. Only then did we understand the greatest of our mistakes: not learning the political language and manners in El 20. We had been using the words community and ejido indistinctly, but they convey two very different meanings. While community refers to everyone in El 20, ejido specifically refers to those with decision-making power, the ones that are members of the governing body. So, each time we presented our proposals to the community at the end of our visit, and although people appreciated them, they had not been officially approved. So, besides the new piece of land, the ejidatarios had to agree that:

- ALM manages the construction (by contract[189]).
- Women of the community will manage the project when the construction is finished.
- The community should give the project (Eco-hostel unifying element) time for it to work properly.

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189 By contract meant that we could choose who in the community would develop the construction; that it would not be built through fajinas. Evidently, we would make a contract with Daniel, the construction expert.

When we introduced these proposals, together with a rough mock-up of what could be built, which would not include a space for selling crafts, the idea was liked. However, there were not enough ejidatarios in that meeting. The few that were there agreed to call to an extraordinary meeting the following day.

The next day, within an hour, the ejidatarios granted ALM a much larger space for the development of the project(s). The new site was an old and broken water collector, a 900 m² platform with a 150 m³ hole in the middle: the water collector.

During our taxi ride on our way to the airport in Chetumal, we talked about how intensive the visit had just been, and how much politics we had learned; but we also shared the nice feeling that something great was about to happen. In a week's time, we would be back in 20 de Noviembre, and the construction would begin.
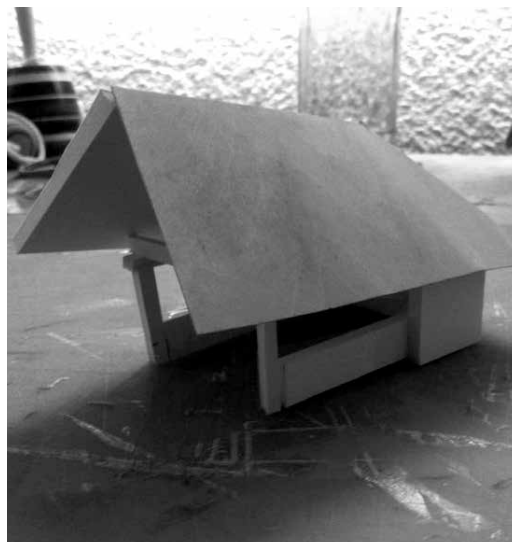
Redefining the Eco-hostel in a week

Why do it in a week? Why not postpone the trip to El 20 for the construction? There were three powerful reasons. First, we were close to completing two years of work with the community, and none of the projects had reached the implementation phase; by starting the construction, we were able to keep our word. Second, the contract with Coca-Cola obliged us to start making use of the money within a few months of getting it; and third, the documentation team, Antti and Jan, was ready to spend that time in Mexico with the aim of keeping a record of this stage, and their flights had been booked. Hence, we decided to carry on with the original plan.

It was through the mentorship of the experts, mainly that of Arch. Calvillo and Eng. Alvarado, that the team was able to apply the design requirements for El 20 to the new site. Evidently, this was not straightforward, as the new site had specific characteristics that had to be taken into consideration. The project was simplified as much as possible, to ensure that it would fit within the budget and that the project would be manageable. The new site was much bigger than the original one, and had a lot of potential for building something really interesting, but we would start by making use of one corner, designing a self-standing and functional structure that could later be extended. So, rather than building several rooms, we decided to build a single room structure, and its dimensions were adjusted so that a simple structure would be enough to carry its weight. Just before leaving for El 20, ALM conducted a meeting with Juan Carlos Alvear, Valerie Auvinet, and Rodolfo Alvarado. While most matters had been solved adequately, there was one question that continued to puzzle everyone: We did not know anything about
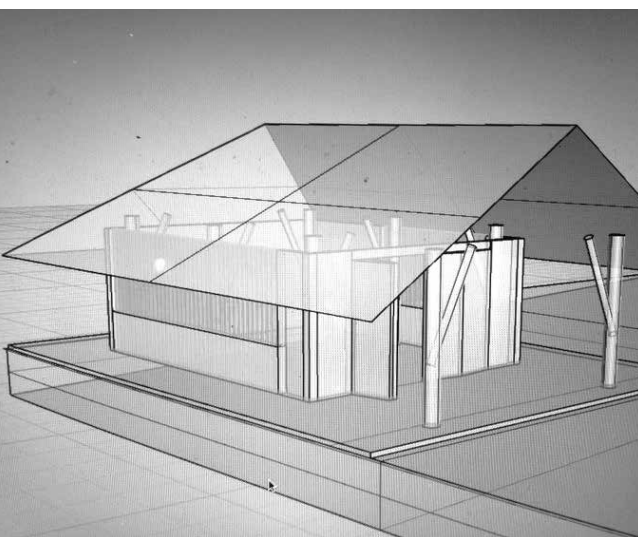
Figure 84. 3D-model by Gabriel Calvillo.
Figure 85. Mock-up by Juan. Photo by Juan Vértiz.

the platform. It could be very solid and made of rock, in which case it would be rather easy to make the structure stand by building the foundations within it. However, that was not likely to be the case. Many years ago, the aljibe (water collector) cracked and the water filtered into the ground, possibly through the walls, damaging the platform. This would only be known once a hole was dug to check whether the ground was loose or wet, indicating that the structure was not firm enough. The risk was that by digging and building the foundation on one edge, the soil in between would move irregularly and could ultimately cause the structure to break.

The meeting did not finish until we got several ideas on how to solve the problem of an unstable platform. ALM was then as ready as possible for the following visit to El 20. Big hopes that the project would get built were shared within the team, although we all knew that the worst-case scenario, of not being able to do anything at all, was also likely.

Co-designing the Eco-hostel

In the middle of April, we left for Calakmul. This was the longest stay of the ALM team in El 20, and it lasted two weeks. This time, the team did not include visits to other communities or archaeological sites. Isela, Gabo, and Juan were the only labbers who were able to travel; Antti and Jan documented the process, and we got assistance from engineer Cesar Corral, from Welltec Mexico, who worked in the area and visited us for

a few days. I was there as a facilitator/researcher. As early as possible, we got in touch with Daniel and we showed him the work that had been achieved during the week. Juan and Gabo had one computer with them, through which they were able to show the 3D model of the proposal, but we had also printed some first renderings. After having a quick first look, Daniel decided to go to the platform and put the first hole in place, and by doing so, to confirm the status of the platform. Just as we were expecting, it was not in the best condition. However, we did not have to mention any of the solutions that the ALM experts had recommended if that was the case. Daniel and his team started talking out loud among themselves, reaching the conclusion that deeper holes needed to be excavated for the foundations and that a layer of stones would need to be removed to be mixed with cement. They carried on working by drawing the perimeter of the structure and marking the places where holes would be made for the foundations.

Everyone helped that first day in cleaning the platform of plants and even trees that had started to grow within it. However, soon enough we realised we would not be of much use, and we developed a working rhythm. Part of Daniel's team carried on working on the platform, Daniel spent the day on his land in the jungle, finding the best trees for the structure[190]. The labbers spent the day planning the details of the structure, including

Figure 86. Everyone cleaning the construction site. Photo by Jan Ahlstedt.

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190 We also learned that the process of extracting the wood is not simple, for both cultural and practical reasons. The local belief is that wood has to be cut during moonlight to prevent it from carrying insects; and it is just impossible to drag it out of the forest if it has been raining, due to the mud in the road.

windows, hinges, doors, and cabinet for the photovoltaic equipment. Jan had time to visit people in their homes and give them prints of pictures he had taken on his previous visit[191]. It also became part of our routine to spend some time playing with the children.

While playing with the children, one of the girls gave Juan a flower. This is how he tells the story:

> *… A girl gave me a flower as a gift, so I decided to keep it on one of my notebooks without looking what was written there. After a couple of days I opened it and read what the last thing I wrote was: "Turn hours into flowers" with the flower she gave me under it. So, that was the exact moment when I realized that all the work of two years turned into a big beautiful flower.*

"Turn hours into flowers" was the last piece of advice that we got from Arch. Juan Carlos Alvear before leaving for El 20. He had said it in reference to the little time we would have in the community. Now, as Juan rightly pointed out, it had taken us nearly two years to reach what we were looking for. On the one hand, we were finally implementing a project, and on the other, it was being done through a *perfect co-design*, as explained in Chapter 5. The labbers and the construction experts of El 20 were sharing an equal level of engagement in this process.

Evidently, the deal at which we arrived during our political meeting with the ejidatarios included some compromises. Respecting the design and all its different experiments required expert builders; however, this prevented more people from the community from getting involved in the process. Now, after one and a half years of research, through the interviews, the brainstorming sessions, and the presentations to the community, we had collected the voices of a larger number of people, including women and children. Furthermore, as Sanders and Stappers (2008, 12) state that not everyone becomes a designer, because not everyone is equally creative, we did not think it was necessary to involve the whole community in this particular process. Daniel and his brother Rogelio were the most skilled for these particular matters, and during our visit, they were as active as the labbers in designing the Eco-hostel.

Every night, the team met Daniel to check progress. He had many years of experience in construction work, which made him very knowledgeable. Sometimes, the clumsy

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191 In fact, more people started inviting him over to their places to have pictures taken, which granted ALM access to various homes we had not visited before.

Figure 87. (right) Only César (with the pick) was helpful in the construction site. Picture by Jan Ahlstedt.

Figure 88. (left)The rest of us worked in solving design details. Picture by Jan Ahlstedt.

Figure 89. Petal of a flower given by a girl, and quote by Juan Carlos Alvear. Picture by Jan Ahlstedt.

Figure 90. A night meeting with Daniel and Rogelio, to check the design of the Eco-hostel. Photo by Jan Ahlstedt.

mistakes of the inexperienced labbers would make him laugh out loud[192]. He and Rogelio (who is also very skilful and experienced) would meet us to discuss the design, count the materials needed, and estimate whether the project was still within the budget. When we knew how much of each manufactured material was needed, we made a trip to Xpujil to order it from there. When a larger problem was encountered, everyone went to sleep with it in mind. Then in the following meeting, we shared the ideas we had got to solve it.

By the end of our visit, all the foundation holes had been excavated and all the guano leaves for the rooftop had been cut and taken to the construction site. Most of the industrially manufactured materials were bought, and a bank account was opened for Daniel, so that he could take care of buying what might still be needed. Basically, all the design details were solved and the drawings were printed and given to Daniel.

The last interviews in El 20

Before we left El 20, I conducted personal interviews with the labbers, a group interview with some members of the community and the labbers, and immediately afterwards, a last group interview with the labbers. These materials were recorded on audio and video. What follows are descriptions of the two group interviews.

Interview with El 20 and ALM: The whole team

This interview took place in 20 de Noviembre, on 18 April 2014, around the dining table in an informal manner. The labbers were the first ones to speak and to express their gratitude for having being received in El 20, which already felt like their home. They also expressed their satisfaction in the learning process that had taken place in the community; they explained that they had sometimes learned more from the artisans of El 20 than they are taught at the university.

The people of El 20 replied by expressing their gratitude that ALM had chosen to work in 20 de Noviembre and to conduct a project that would benefit the whole community. They were also thankful for developing the whole process, from an idea to a plan, a project, fundraising, and implementation. Past experiences in El 20 have ended as simple plans or as projects that suddenly cease. Ofelia, for example, recalled discussing the need to build a community house with Gabo and some other labbers, but she felt

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192 For example, the ventilation holes were so big that a child could easily crawl through them.

that the people in the community had their arms crossed. They had some ideas, but they lacked the commitment to turn them into projects. Daniel put special emphasis on the existence of the drawings and on the importance of showing the people that it is possible to make the construction look like the drawing, as a metaphor that when a project is planned well-enough, its results are successful.

At this point, the locals had clearly not appropriated the projects. They said that they did not feel like they had contributed much to their development, except by expressing their needs. The labbers replied that first of all, without their consent, they could not be there; if the community had not opened its doors, they would have never identified those needs to be turned into projects; and most importantly, without their support and advice, the political problem could not have been solved and there would have been no project at all. The crucial input of the locals was much more evident to the visitors.

Miriam, who is generally very reserved, summarised the relationship between the labbers and the community with a single word: friendship. This is especially touching if one has John Rawls's words in mind: "Among persons who never acted in accordance with their duty of justice except as reasons of self-interest and expediency dictated there would be no bonds of friendship and mutual trust" (Rawls, 2009 [1971], 427).

Interview with the labbers in El 20

When the conversation with the people from the community finished, and as we walked back to our hammocks, the labbers continued talking. They were very touched by what they had just listened, by realising that ALM was making an impact in the lives of the people of El 20. Miriam's observation about friendship was especially appreciated. They were also astonished by Ofelia's observation that she had not contributed much. It was clear to all the labbers that without her, nothing could have been done.

Juan, Gabo, and Isela were not earning any credits for that extraordinary trip to El 20; in fact, they were making use of their Easter holidays to be there. They were unable to identify whether being designers (as all of them are) made them sufficiently stubborn, or if it was simply a personality trait; but they expressed their determination to see the construction finished and the project running. They felt committed to being involved in it until that happened, and to intervene in the future, after they had graduated, if it seemed like the project was dying.

They would have liked to have their fellow labbers with them all the way to the end. Gabo was certain that it was only because of the high interdisciplinarity of the team that they were able to understand the complex challenges of El 20 so deeply. Isela, for her part, was convinced that it was by the incorporation of the students from Aalto that they were able to pay attention to things that were obvious to their Mexican eyes, both good and bad, including the awkwardness of having a doctor visiting the community only once a month, or not having universal access to the healthcare system.

As had happened to the people of El 20, through their participation in ALM, they witnessed that things that seem impossible can be achieved, like raising the funds through crowdfunding. These experiences made them feel comfortable with trying new things. Juan, for example, believed that it would be possible to replicate the LAB in another place; he knew it would not be easy at all, but difficult does not mean impossible.

When I raised the final question, if the freedom of the community was growing through ALM, they hesitated.

Isela thought that perhaps freedom was not the right word. ALM was helping them to start something new, and to implement it and take care of it, to develop the whole

Figure 91. The last interview with the labbers in El 20. Photo by Jan Ahlstedt.

process. The community was becoming more *courageous* at the moment of expressing their needs, proposing solutions, and fighting to make them happen (like with the political issue). Juan and Gabo believed that enlarging freedom in the community could take much longer than two years, and that it would depend upon the close collaboration between different members of the community. In their ideal vision, every artisan starts collaborating to finish the project.

I never shared my historical research about the debate on freedom, nor my own definition of freedom, with the labbers, as I did not want to influence their observations. Nevertheless, their observations are not far from what was expected. Isela used the word *courageous*, one of Aristotle's virtues or excellences; moreover, in the words of Amartya Sen (2009, 283): "The hopelessly deprived people may lack the *courage* to desire any radical change and typically tend to adjust their desires and expectations to what little they see as feasible. They train themselves to take pleasure in small mercies[193]", hence, courage would be needed to prevent the worst cases of adaptive preferences. Furthermore, Isela's description of being courageous, starting something new, implementing it, and taking care of it, is very close to my take on Design as Freedom, in which design is a means of exercising one's freedom to build the life one has reason to value.

On the other hand, Juan and Gabo were right in stating that the goals had not yet been achieved. Going back to Andy's story of fixing a car, the community was still very dependent on us, outsiders. Nevertheless, this did not mean that the project had failed; this simply indicated that the project had not yet finished. ALM would need to reach the point where the level of engagement of the community was larger than that of the *visitors*. When the community took full control of the projects, it would be time for ALM to leave the field.

Building the Eco-hostel

When we left El 20, in the early morning of Saturday, 26 April 2014, Daniel took full responsibility for the construction process, but he kept us constantly informed. Through WhatsApp, he sent new questions and pictures. Miriam also documented the construction process; she sent pictures through Facebook.

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193 My emphasis

Figure 92. Some pictures sent by Miriam Cahuich at different stages of the construction. Published in Garduño 2015 (121).

One of these brief conversations I had with Daniel would become one of the most memorable moments of the whole experience, as it captured the instant when Daniel appropriated the project:

- Daniel: Have you seen the status of your construction?
- Claudia: ☺ my construction? YOUR construction!
- Daniel: Ours, we are a team!

By the end of 2014, Daniel and his team had nearly finished the construction of the Eco-hostel. The only thing that was missing was the installation of the solar panels.

During the first week of February 2015, I travelled to El 20 with Rodolfo Alvarado and his assistant, Raúl Hernández. TThey had managed to get sponsorship from a company called SOLAR ACT, which consisted of a solar panel and some LED lamps to beinstalled in Eco-hostel. Every day, they worked very hard, from early morning until late at night. While they worked, I talked with them, and they explained to me that they were doing

some experimentation within their installation. For example, they used aluminium cables, rather than copper cables, to connect the lamps; they also divided the circuits into two: the one that connected the lamps was direct current (DC), while the one that connected the power outlets was set for alternating current (AC).

Rodolfo had also kept in mind an idea that had emerged in one of the sessions with the labbers in Mexico City some months before. If the batteries were kept in a movable device, this could work as an emergency power plant. When we told this idea to Ofelia, she said this could be very useful, as one of her sisters had experienced a power blackout in the middle of a session with a dentist that had visited El 20. I helped them to design this cart, which was welded together in El 20 by David Cahuich Huichin.

On the very last day, they finished work at 4:00 am. Everything had been installed but the lamps, as by mistake, SOLAR ACT did not send a piece (a driver) that was needed to connect them. We overcame the panic when they agreed to sponsor Rodolfo's trip back to El 20 later in the year to continue with the installation. A taxi would pick us up at 5:30 to take us to the airport in Chetumal, so there was really not much point in sleeping.

Besides the installation of the lamps, there were other relevant matters to solve,

Figure 93. Rodolfo and Raúl (Yectlahuilli), and Rogelio (El 20), installing the solar panel on a base that Sayuri, Miriam and I made at their workshop. Picture by Claudia Garduño.

Figure 94. The batteries were installed in a movable device; hence, it can become an emergency power plant if needed. Photo by Claudia Garduño.

which had not been budgeted this time, like the installation of internet. Juan had been conducting research on how to deliver an internet connection in rural areas, and had contacted some NGOs who had done it in Mexico. But this was still at a very early phase.

This construction only made use of a corner, 60 m^2 of the platform, with a total area of 900 m^2; moreover, the original function of this platform was being an *aljibe*, or a water collector. ALM 2015 would take place as a collaboration with Sustainable Global Technologies, and the architectural project could become a platform for other experimentation. I was constructing the brief for the next labbers, and it seemed that they could focus mainly on advancing the Water project; therefore, they could focus on fixing and enhancing the aljibe, but also on integrating technologies like high-quality dry toilets, and a shower space that ritualised the bucket shower practice of El 20.

Photo by Jan Ahlstedt

Crossing Boundries

*C*rossing Boundaries: Co-designing with a Mayan Community was the title of an exhibition about ALM that took place in the month of September 2014, as part of a larger exhibition at Caisa Cultural Centre, organized by the Embassy of Mexico in Finland. The project to design the exhibition became a summer workshop by the Creative Sustainability program (CS), supported by Tiina Laurila[194]. The task given to the students was to present the most humane side of the project, thus focusing on its intention rather than on it being an academic or research project. The title was proposed by the team in allusion to all the different boundaries that get crossed through ALM.

Suvi Kajamaa managed the project, in which the participants were Heta Happonen, María Ferreira Litowtschenko, Julia Bushueva, and Briana Romero. The team was mentored by Anni Hapuoja, Brenda Vértiz, and Susu Nousala. Antti Seppänen participated in the exhibition with a 10-minute video[195] about the 2-year process, which portrayed the preparation processes, the visits to the field, the results, and the reflections. Jan Ahlstedt selected and edited some of his best shoots from El 20 to complement the exhibition.

The exhibition was an excellent occasion to revise all types of materials that were created during the process[196]. The team that was in charge of designing the exhibition space

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194 The CS program sponsored the exhibition.

195 Which was financed by Aalto Media Factory

196 This was Constructive Design Research as Showroom (Koskinen et al., 2011) facilitating a process of analysis.

had to gain a wide understanding of the project, and it was agreed that a visual timeline would be the most efficient way to communicate the story. Moreover, that was the structure that was followed in the exhibition, and in an overall manner, also within this text. Suvi, who had suffered during the knowledge transference process from 2012 to 2013, observed that creating an exhibition would be an excellent manner of getting new labbers acquainted with the project. Heta and Maria, for example, became experts on ALM, and even expressed their wish to be part of the project in the future: they just needed to meet the people of El 20 and see the monkeys in Calakmul!

The exhibition was a very effective means of communicating the project to a wider audience. Rather than keeping it as merely academic research, the collaboration between Mexico and Finland was shared in a friendly and very visual manner. Within one month of the exhibition, the Embassy of Mexico dedicated one full week to all types of activities in order to celebrate Independence Day. ALM was given a slot to give a presentation; nonetheless, rather than holding a presentation, the labbers of 2012 and 2013 were invited to participate in a discussion panel[197].

The panel

The labbers from Mexico were asked to respond to any or all questions[198] in a written manner, in order to be represented at the event[199]. In the end, we had participation from 12 out of 17 labbers. The event was facilitated by Alastair Fuad-Luke, and Tuuli Sotamaa and Anni Hapuoja were present within the audience. The aim of the event was that the labbers would share their experiences of having participated in the LAB, which followed the overall goal of the exhibition. Every labber had crossed many boundaries; some had never worked on an interdisciplinary project before; others had not had an intercultural experience; for most, it was the first time to get engaged in a design-led project. Additionally, the close collaboration among the people of El 20, the students, facilitators, experts, and documenters had challenged hierarchical structures.

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197 An event that was also sponsored by CS program

198 There were only 4 questions: (1) ALM overall learning experience; (2) A specific story, memory from the visit to El 20; (3) Your wishes for the LAB in the future; (4) Has the LAB somehow influenced your personal future plans? The labbers from Aalto were also sent these questions in advance.

199 However, here, I will also introduce some of the insights shared by the Mexican labbers during the interviews that took place in April 2014, while in El 20.

First, the students were required to work with students from fields they were not used to working with. They also had to collaborate with students from other universities, and with students from different countries. The whole team travelled to work with the people of El 20, in a context that was not familiar to any of them. On top of that, the projects required collaboration among different sectors, including private companies, governments, and NGOs. It was by constructing mutual or reciprocal relationships that boundaries got traversed, and those were also the experiences that the labbers recalled as the most significant. If the process was reconstructed based on the labbers' experiences, it would start with a group of people who share a motivation to do something meaningful for other people. However, the only manner in which one can do something meaningful for others, is by acknowledging that, in the beginning, nothing is known about them. Therefore, the first thing to do is to learn from those others. The process deals with a high level of uncertainty that cannot be avoided, but one can learn to handle oneself in uncertain situations. Design facilitators and design methods like IDEO's HCD toolkit (2011) are excellent means of approaching other people and learning from them.

Throughout that process, all the individuals involved built various mutual or reciprocal relationships (which might or might not last very long) in which both parties learn from each other, and acknowledge each other, like the labbers appreciating the slow rhythm of El 20, the food, the honesty of its people, and their warmth. Furthermore, they also learned to appreciate each other's disciplines, like engineers validating designers as facilitators of human-centred processes, or designers acknowledging that without all those disciplines represented through their fellow labbers, they could have never gained such a complex understanding of El 20.

Nonetheless, it is also impossible to avoid reflecting on one's own life, or what has been described as the double-sided mirror perspective (Berg, Kajamaa, and Garduño, 2014). Most labbers arrived at the conclusion that their visit to El 20 was relevant because they were helping the people of El 20 to see what they did not see: to appreciate what is valuable and what they do not see as such[200]. But the people of El 20 also inspired the labbers to reflect on and evaluate their own lives. That two-sided mirror perspective opens up a discussion around the adaptive preferences phenomenon. By bearing in mind that people might simply get used to living lives of limited choices, even when living in deprivation, while working within a *marginalised community,* one should expect to encounter them as contented. However, beyond questioning whether people truly live as happily as they declare, the labbers seem to encounter their own adaptive

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200 See ALM 2012, ALM 2013 the story of Juan, Victor and the Stone.

preferences, their getting used to overconsumption and to insatiable lives, and start wondering why they are not as happy, if they have a lot more[201]. In fact, they are able to point out the elements that caught their attention about the community life, like how people talk to each other, unlike in cities; or how the upbringing of children is practised in a communal manner, while in their own context (Finland), it is rather normal to live distanced from one's own nephews. Some of them even questioned their lack of time for playing football with their friends during the week.

In the end, when so many boundaries have been crossed, and prejudices have been overcome, the mindset has changed and some things will never be the same, including, for example, Andy's conception of death after having spent the Day of the Dead in a cemetery in Mexico City. The experience might inspire some small changes, like acquiring the custom of greeting the neighbours, or, as an engineer, bearing in mind that one can learn much from people, not being sufficiently satisfied by a trip where one does not engage deeply with the local people, or joining a football team. Moreover, the experience might inspire some big changes that most certainly have an effect on the rest of their lives. Being impressed by human-centred design, they might have decided to study human-centred information systems (Tommi). Having learned to manage uncertainty, they could have increased their confidence and become entrepreneurs (Andy, Gabo). After *understanding the goodness of people,* they might have got the courage to join similar projects in other parts of the world, like India or Africa (Niina). Some might have got interested in pursuing a Master's in Development Studies in Geneva (Sofia). Others might have decided to take the challenge of learning from the users and engaging them in the design process, even in a very local context (Suvi). Finally, others might have looked for a job working in indigenous communities in Mexico (Juan).

Tuuli Sotamaa declared she was happy to listen to the labbers of ALM, because that was precisely what Aalto LAB was meant to be about. In order to change the world, or someone's world, one has to understand what happens there by visiting and experiencing the place and by learning from the people. The three outcomes expected from Aalto LAB would be, said Sotamaa, what happens there, what happens to the labbers, and making it visible (sharing the experience). Aalto's interest was that people would come out as better people and that the very small group of people who think a bit differently would start changing Aalto within Aalto.

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201 This also happened in ALS, during our visit to Chong Ming Island, when a 70-year-old man riding a bike passed by and held a conversation with us. He gave us a piece of advice, that "the most important thing is to be happy with your own life."

> *- Tommi: "Or word: **possibility**"*

> *- Niina: "I'd say that it is an **impact that goes both ways**. I would say that the people in Mexico affected us as much as we affected the community there or even more."*

> *- Andy: "I'd like to bring it down to **it's just all about people. Like, us people, them people, I mean, not only them, but us, as a bigger general."***

> *- Alastair: "There were comments about the **humanness** and **humanity."***

> *- Andy: "Yes, and the **warmth** and the **love**."*

> *- Suvi: "I'd just say, **engagement, relationships, and continuation**."*

> *- Theresa: "I'd say **engagement** and **empathy**, and maybe **humbleness** that you need to come up with something good."*

> *- Ismo: "Yeah, I think I agree with all of those." -Laughs- "But I also want to say that it's been great to **see how the Aalto LAB evolves**, and I think that is something that you need to keep in mind, **that if you just kind of pick a target and try to go that way**, and then, do it your way and maybe change it a little bit and see what develops, I think that is something what happened in so many places that you need to be able to use it."*

Many of the members of the audience were researchers, students, or professors at Aalto University and had some background knowledge on the project; others might have seen the exhibition that was displayed outside, in the corridors. The panel managed to communicate the true spirit of ALM, and according to the comments that I got from some of them, the panel was a highly emotional event

It has been argued that it might be too soon to evaluate if the Water project, Artesanía para el Bienestar, and the Eco-hostel have brought some meaningful benefits to the community, although it is possible to assess the potential that they have in enabling them (Garduño, Nousala, and Fuad-Luke, 2014). As it was rightly pointed out during

the event, the voice of the people from El 20 was missing. It was true that the event was planned only a couple of weeks in advance and that there was no sufficient budget to invite the people of El 20 to visit Helsinki. However, we could have thought of different ways of bringing the voices into the event, as we did with the Mexican labbers. ALM would continue, and one of the main goals, from that moment onwards, has been to have some people from El 20 joining the team to present the project in Helsinki.

Figure 95. The discussion panel with many of the labbers, and facilitated by Alastair Fuad-Luke. Photo by Jan Ahlstedt.

Photo by Jan Ahlstedt

Conclusions and final remarks

This final chapter summarises, discusses, and interprets the main findings and contributions of this research project by confronting the main theoretical elements with empirical data and by looking at those confrontations through the four different lenses of this research (the alternative driving principle for design based on philosophical elaboration, the design process in EI 20, the pedagogic program, and the researcher's own experience). This chapter also determines the limitations of this research, and frames recommendations for the future. First, in step with Sen, Nussbaum, Max-Neef, Jackson, Victor, Hillgren, and Fuad-Luke, among others, this research has contributed to strengthening the stance that there is not enough justification for keeping the goal of economic growth at the core of design (where good design is good business), or more generally, at the core of human life. This research promotes the notion that although design is transforming itself and is already achieving incredibly much from being complex, collaborative, empathic, and sustainable, if the design discipline does not challenge the relevance of economic growth, it remains constrained by it. Moreover, it seeks to evaluate good design by analysing if it is doing the right thing. This argumentation has been largely based on a historical analysis of relevant moral doctrines; additionally, since the centrality of economic growth is significantly spread worldwide, it was assumed that exploring *what* design could deliver in practice, which would be more valuable than monetary capital, depended upon finding people living in an alternative paradigm.

The visit to Chong Ming Island during the Aalto LAB Shanghai project confirmed, at least partly, the assumption that some people live different lifestyles and value things

differently. This background project was used to set the requirements for the location where ALM would take place. It must be acknowledged that these requirements restricted the exploration (ALM would not take place in an urban-industrial society, living immersed in the money economy), and that the Design as Freedom principle was constructed in response to what was being observed in practice through the development of ALM. Advocating for an alternative paradigms accounts for advocating for plurality, defending the belief that people should be allowed to be who they are, and to live how they want (for instance, the life that Sayuri, as a teenager in El 20, considered to be *normal*). Therefore, not only freedom, but a very specific conception of freedom as a guiding principle for design, is drawn in response to the contexts in which the Aalto LABs have taken place. In the end, what can be demonstrated is that freedom is a valuable end that design could aim to deliver; however, since it has not been tested in a different type of context, it cannot be ultimately proved that it is universally more valuable than economic growth. However, this is where the voices of the labbers become relevant; these participants who have been raised and live immersed in the prevalent paradigm have reflected deeply about these matters, and at least in some cases, they have decided to make certain changes in their lives. In the end, Design as Freedom is merely a reasoned alternative to choose.

The second contribution is, precisely, the construction of Design as Freedom as an alternative driving principle for design. Advancing, growing, or nourishing human freedoms without hindering the freedoms of others (including other species and non-living elements) is seen as a key means to reduce injustice (an idea borrowed from Sen and expressed in Fuad-Luke's terms). The specific understanding of the concept of freedom was generated through a historical exploration of the philosophical debates on the topic, along with the development of ALM. Such understanding borrows the *centrality of freedom* from Amartya Sen, its interconnectedness with the concepts of *morality* and *reason* from Immanuel Kant, and its triadic construction *agent-intention-lack of constraints*, from Gerald MacCallum (1967). Additionally, Manuel de Landa's (2013 [2006]) *assemblage thinking* is applied as a means of navigating two seemingly contradictory paradigms, *human freedoms* and *Sustainability*. Thus, this is not a limitless type of freedom, but one that is rationally self-constrained by individuals who acknowledge the freedoms of others, in accordance with the moral codes defined democratically by their society. Moreover, Sustainability plays a major role, setting a moral limit to human freedoms that is not merely anthropocentric.

Again, this alternative principle was constructed in response to what was observed and learned from the Ejido 20 de Noviembre (El 20), located in Calakmul, Campeche,

Mexico, where ALM takes place. Being an indigenous community, the high appreciation for their right of self-determination might not be surprising. Nevertheless, this empirical finding supports Sen's perspective that towns should be left alone to deliberate what type of life they want to live, and which freedoms are basic within their lifestyle. If ALM had approached the community with Martha Nussbaum's universal list of individual basic capabilities, we might have missed self-determination, only for the reason that it is a collective type of freedom. Not using Nussbaum's list, nonetheless, does not disregard the possibility that a community will perceive as basic the exact ten capabilities described by her. The list might be useful at different times of the process, but the respect for plurality required conceptually by Design as Freedom is better achieved if the first approach to the community is as neutral as possible, following ethnographic research methods.

In *Aalto LAB Mexico: Exploring an Evolving Poly-disciplinary Design Pedagogy for Community Well-being and Empowerment with(in) a Mayan Community* (Garduño, Nousala, & Fuad-Luke, 2014), which was an early attempt to explain the ALM framework, we developed an exercise that enabled us to evaluate whether ALM was on the right track. By making use of Nussbaum's list of capabilities, we reasonably assessed ALM and identified the capabilities that were potentially enlarged. We concluded that most of the capabilities in the list were being affected both from the perspective of the design team and from the perspective of the participant end-users within the three projects or through ALM processes[202] (Garduño, Nousala, & Fuad-Luke, 2014).

Indigenous-local-rural communities are also characterised by their high (direct) dependence on natural resources and ecosystem services. In fact, their right of self-determination is highly linked to the autonomous management of such resources and services. For the people of El 20, as for many other indigenous communities around the world, the environment has an intrinsic value. This observation directly contributed to the high regard that Design as Freedom has for Sustainability. However, although El 20 is an indigenous community, and the people also highly regard their own culture, they do not live in total isolation. Centuries have passed while they have been adopting elements from the dominant paradigm (religion, embroidery, televisions, mobile phones), so that these are also valued elements within their lives. In contrast, there are also some human constructs from the prevailing paradigm that have a direct negative impact in their lives, causing marginalisation (laws, social programs, taxes).

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202 The effect that ALM might have on the right of self-determination of towns could not be assessed from the list, given that it is centred on the individual.

Capability	Water system	Artesanía p B	Eco-hostel	Participants and Users	Design team
Life	x	x	x	x	
Body health	x	x	x	x	
Bodily integrity	x	x	x	x	
Senses, imagination and thought	x	x	x	x	x
Emotions	x	x	x	x	x
Practical reason	x	x	x	x	x
Afiliation	x	x	x	x	x
Other species	x	x	x	x	x
Play	x	x	x	x	x
Control over ones environment	x	x	x	x	x

Table 22. The capabilities from Nussbaum's list that each project can potentially enhance. Source: Drawn by Claudia Garduño. Published in Garduño, Nousala & Fuad-Luke (2015, 377).

The model of assemblage has been a very useful unit of study. It cuts across the natural and social realms, enabling the assignation of certain *rights* to elements that normally do not have them, such as culture and those belonging to the natural environment (biotic and abiotic). Moreover, it also enables the visualisation of constraints that prevent people from achieving their intended lifestyles. Thus, the assemblage enables the integration of Kant's and MacCallum's conception of freedom.

Theoretically, any society with a connection to place can be conceived as an assemblage, and assemblages can be delimited through biomes and culture. Each assemblage could democratically define the basic freedoms that they need to grow and the gravest injustices to be fought, and there would be a general agreement to self-constrain ourselves to never consume natural resources at a faster pace than they can repair themselves. Following the rationale of Nussbaum (who follows Rawls), it could be said that this conceptual framework is thin enough to allow a plurality of moral perspectives, and given that this perspective is shared by indigenous towns globally, it is potentially universal. However, demonstrating that is beyond the scope of this research project. It could be argued, nonetheless, that if our fellow (global) citizens value their natural environments for their own sake, and instrumentally because their lives depend upon their ecosystem services, practising the characteristic overconsumption (tightly linked to environmental depletion) of the dominant paradigm is nothing but a terrible injustice. This last remark will be of central importance below, where the discussion turns to the implications of the ALM as a pedagogic program.

Now that the main elements of freedom, as understood within this research, have been discussed, what follows is a discussion of the notion of *Design* as Freedom. When design is described as the process that takes a system from an initial situation N_0 to a more desirable situation N_1 (Findeli (2001) expressed in the terms of Strawson (2005)), it is very close to the description of freedom that integrates Kant's system and MacCallum's triad. The concept of reason, rationality, or intention, which is a capacity that belongs to human beings in so far as only they can act as agents, is comparable to the process of designing. When designing, one goes from identifying what is needed and/or desired (making a diagnosis), to finding the manner to accomplish it (conceptualising a strategy), to putting it into practice (implementing it). Moreover, through designing, one is enabled to do something and/or released from the constraints that prevented one from doing it. Therefore, design can be seen as exercising freedom.

Through design, one can expand other freedoms; virtually any other freedom. Therefore, in step with Dong and Nichols (2012), design can be described as a basic capability, or

perhaps even as a *meta-freedom*. Moreover, following John Rawls's suggestion that a sense of justice is fundamental to human beings, and that "… one who lacks a sense of justice lacks certain fundamental attitudes and capacities included under the notions of humanity" (Rawls, 2009 [1971], 428), and by considering that one of a designer's greatest skill is precisely an ability to imagine what does not exist yet, it can be concluded that designers can and must acknowledge their duty to contribute to the expansion of freedoms and the reduction of injustice in the world.

Oscar Hagerman has stated that in an ideal world, local rural communities have their own experts in design and other matters, and are thus able to tackle their own issues. When this vision becomes a reality (if it ever does), the best that experts might do for these communities is to approach them with humility and engage them in participatory processes. If design is a *meta-freedom*, it is of paramount importance to grow this freedom in as many communities and individuals as possible, and since normally there are no trained designers living in the most marginalised communities in the world, the natural strategy is to engage these people in collaborative design processes. Moreover, although the capacity to design is crucial, it is not sufficient for exercising Design as Freedom. Within its collaborative processes, Design as Freedom requires the generation of relationships with different stakeholders who commit to doing their parts, becoming part of the assemblage, and allowing things to happen.

Thus, similar to the thinking of Pelle Ehn (2008), the design process is seen as the creation of new relationships among humans and non-humans in order to achieve something that was not possible before. An assemblage is the beginning state of the system. The assemblage, however, is not stable; as it constantly changes, conditions within the community change, social policies and regulations change, and the design team, which becomes part of the assemblage, is adjusted accordingly. It is possible that eventually, the community will generate stable relationships with members of the design team or within a wider network; the idea is that throughout the process, the community will have constructed the (somewhat stable) assemblage needed for the achievement of certain freedoms.

If a practical design project had been planned with the sole objective of observing Design as Freedom in practice, it would have been sufficient to determine the types of competencies and instruments required to operate a co-design process that would adopt the project's principle as its agenda (a proposal inspired by Keinonen (2011), Dorst (2008), and Lee (2013)). However, there were not too many effective project possibilities available, and the one that was available, Aalto LAB in Mexico, had one big

compromise attached. Nonetheless, what originally seemed to be a big constraint ended up generating what might be the greatest contribution of this research: the Aalto LAB meta-framework.

By also paying extensive attention to the expansion of freedoms of the designers who visit a local community, the pedagogic dimension of ALM enabled the observation of what we have called *the double-sided mirror perspective* (Berg, Kajamaa, and Garduño, 2014), which refers to how the different groups learn about themselves by looking at each other. Ultimately, the co-design process, which originally aimed to empower the people from the community, was framed as a process that also enables the empowerment of the designers. Having observed this, it can be assumed that Design as Freedom would be a mutually empowering experience even if the pedagogic component was disregarded (that is, if it did not involve students, but experts only).

It is easier to theoretically separate the Aalto LAB meta-framework into the pedagogic program and the design process; in practice, they are so tightly integrated that all participants learn (to design) by designing; also, by designing, they learn (about many other topics). The discussion below focuses largely on what is created in this shared space and through the double-sided mirror perspective, but first, there are some implications directly related to the pedagogic dimension that must be addressed.

First, the universities proved to be neutral actors when developing the initial diagnosis in the community. If a private company had sponsored ALM 2012, this would have very likely affected the conceptualisation of the sub-projects. The collaboration with companies is not undesirable, but ALM has shown that it is more suitable to integrate them in later phases, when clearly defined projects might match their interests. Hence, the specific projects define the types of companies that must be contacted, and not the other way around. Second, what is encountered in the field through Aalto LAB are interesting research challenges that are in the need of very specific sets of skills and knowledge (i.e. how to purify hard water in the simplest manner, if possible, by making use of resources existing in the site). Those challenges, in combination with a meaningful cause, are not terribly difficult to fund. Third, in step with Walker et al. (2009), it can be stated that through these types of projects, universities have the effective possibility to be shaping agents of change. If the need of the contemporary generation of students to contribute to making the world more sustainable, and the almost inherent feeling of students that they can change the world, were added to Walker et al.'s (2009) statement, the notion that universities can contribute to the growth of global justice is made much stronger. The former might imply, again in step with the views of Rawls and Sen, that it

is the duty of universities to do what they can to contribute to global justice, and thus to offer their students the opportunities to engage in these types of projects (and this might also be extended to different types of actors, such as the duty of private companies or of the public sector).

In contrast, pedagogic projects like ALM have a controversial side. Having a group of the most privileged global citizens visiting a highly marginalised indigenous community can easily become an imperialist practice. However, in this case, it was a means to counteract the effects of the current world dynamics, in which caring about the latter is nearly impossible if they remain an abstract concept in the minds of the former. This encounter led us towards a highly difficult philosophical debate. People should be enabled to live the lives they have reason to value, which implies that different people might value different lives; however, people living in conditions of marginalisation might claim to be contented while suffering from a situation of adaptive preferences.

However, further to exploring whether there should be a universal list of capabilities, the double-sided mirror perspective faced the labbers with the possibility that global-urban-industrial-western societies lack the capacity to be contented[203]. They realised that they could benefit from adopting some of the practices that are kept alive in the community, which could inspire more sustainable behaviours, and which is a reason to support the continuation of the Aalto LAB (i.e. an organic diet, fewer belongings, frequently playing football with members of one's own community). Furthermore, rather than concluding that the people of El 20 are deprived but contented, they realised that these people have good reasons to be satisfied with their own lives. It can be argued that if their living standards are not dignified, it is because the current world dynamics have caused them to be excluded from some social systems; but they live their lives with dignity and integrity, since they have not been untruthful to themselves and have not been responsible for being socially excluded.

The pedagogic component in the framework enables the design process to avoid some timeframes that would be imposed by governments or by industry. In fact, it can be said that the whole process benefits from this lack of time constraints. The co-design process by which Design as Freedom is put into practice is necessarily a longitudinal process for

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203 In a similar manner to Paulo Freire's (2014) Concientizacao, the labbers encounter a dichotomy of the privileged and the marginalised, in which they belong to the former. Unlike Freire, this relation is not linear; labbers are not responsible, or at least not directly responsible, for the condition of marginalisation of the community. Nonetheless, they acknowledge the injustice and feel committed to changing that condition.

various reasons, including the fact that a lot of research is required. Most importantly, the project can be developed only if trust is built within the groups (Garduño, Nousala, & Fuad-Luke, 2014), which seems to be directly related to the level of engagement of participant end-users, and which is constructed little by little through all types of activities, such as playing football.

In this work, the term co-design is used to convey a longitudinal process in which designers and participant end-users acknowledge each other as equals, enabling the emergence of reciprocal relationships, causing both parties to learn from each other. In this empowering co-design process, participant end-users start the project as future users who provide inspiration and information (Mattelmäki & Sleeswijk Visser, 2011); thus, in its beginning, the design intervention is closer to human-centred design. While the project is being developed, and trust is built, the level of engagement of participant end-users grows, and eventually they match the level of engagement of the design team in what has been described as a perfect co-design moment. However, co-design aiming at empowerment is fulfilled not when all stakeholders participate in an equal manner, but when the participant end-users become the designers of their own projects.

The discussion about this co-design process and its double-sided mirror perspective continues by focusing on the sub-project that has been developed furthest, the Eco-hostel; and on the experiences of Gabo, who is considered an ideal labber, and Daniel, the member from the community who has, so far, most actively engaged in ALM.

Back in 2012, at the very beginning of the project, Gabo wrote an application essay in which it was made clear that he belonged to those students whom I have called Children of Brundtland. In that, he acknowledged that his field of study, industrial design, had great potential to make the world a better place; he was critical towards the industry and stated that human systems should mimic the natural world. He saw ALM as an opportunity "to learn how I can help to change society", and he stated that "using my skills and creativity to help people and our planet" is "a moral obligation".

At around the same time, I travelled to El 20 and met Daniel. I showed him the report from Aalto LAB Shanghai and explained to him how we had come up with some nice ideas in China, and that we intended to do something similar in El 20. He seemed flattered by the idea, and even excited. The truth is that from that moment on, we could count on him.

During our visit to El 20 for the initial diagnosis that same year, Daniel was one of the hosts for the labbers. He was also visited for a long interview, given that he is the representative of the furniture-makers group. In Daniel, Gabo saw a very skilful designer who produced very creative pieces. However, through the process, he also started thinking differently about design; for the first time in his life, Gabo thought about design in a systemic manner. He was somewhat overwhelmed by the intangibility, but he was excited because they were generating very interesting concepts.

The following year, Gabo was eager to continue participating in the project. He did not care if he earned credits or if he had official support from his university. He worked on the Eco-hostel project and, based on his experience, he was certain that Daniel had to be interviewed. Daniel was not interviewed merely as a participant end-user, but as an expert in construction. Daniel explained which materials were better for certain purposes. The ALM team maintained communication with Daniel through digital means from that moment onwards. Daniel was aware of the state of the crowdfunding campaign; moreover, he had to produce several wooden stools to reward our donors.

At the beginning of 2014, Gabo and I travelled to El 20 to collect the crowdfunding rewards. We had got the money from Coca-Cola, so we could pay each artisan for their work. In the following months, several architects mentored the ALM team on the technical aspects. At the same time, Daniel sent news from El 20. He urged us to visit them when he thought that the construction of the Eco-hostel was being jeopardised; this time, Gabo and Juan travelled with me. Daniel was part of the group of people who advised us on the topics and language to use in our meeting with the ejidatarios. Two weeks later, Gabo was working with a computer, showing Daniel how the construction could look like; Daniel was making corrections to the master plans, and unsolved details were sorted out as a team. Later, when it was time for our team to go back to the city, Daniel and his construction team took over the project.

During those months, Daniel's understanding of design and of ALM evolved. In April 2014, he made an interesting contribution, stating that the people of El 20 needed to learn how it was possible to conceive a project idea, make a project plan, and implement it according to the plan (Design as Freedom). At this point, however, he did not feel that he had participated much, which could be linked to a feeling of lack of ownership. Nevertheless, in the conversation that we held through WhatsApp some months later, he expressed a sense of shared ownership.
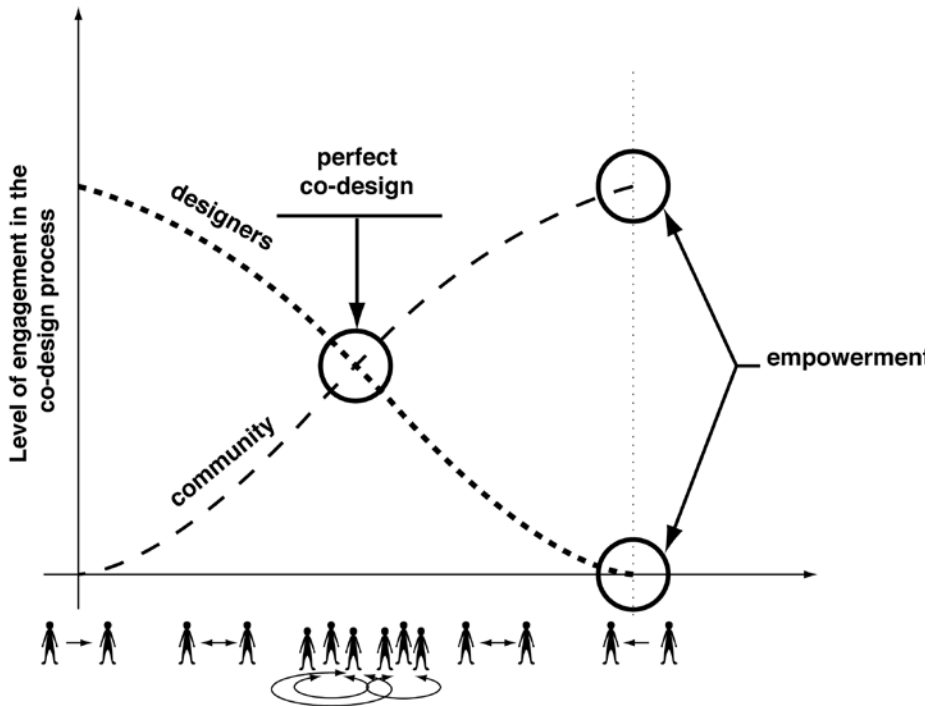
Figure 96. Level of engagement in the co-design proces by Claudia Garduño.

The part of the project that was planned to be implemented with the funds earned from the crowdfunding campaign is finished, but the project continues. Gabo expressed his interest in continuing to be involved in ALM even after graduation. This is an extract from Gabo's final reflection in the autumn of 2014:

> As I said before, to talk about ALM is to talk about a learning experience and if I had to simplify what I learned during this whole process it is how important it is to believe in what you're doing and not to give up until you achieve it. It was difficult to keep working in a project where we couldn't see it materialized for a long time, where labbers and experts were coming and leaving, where we didn't have the budget that we really needed, where we had to deal with long bureaucratic and political processes. It has been difficult, but every time I go to El 20 I forget about all those things, I forget them because I can see that little by little we are achieving something and that the people of the community feel part of it. I'm not sure how big the impact of this project is going to be, I'm not even sure if we are going to help to make El 20 a better place (there is still a long way to go), but I'm sure that all the people that have
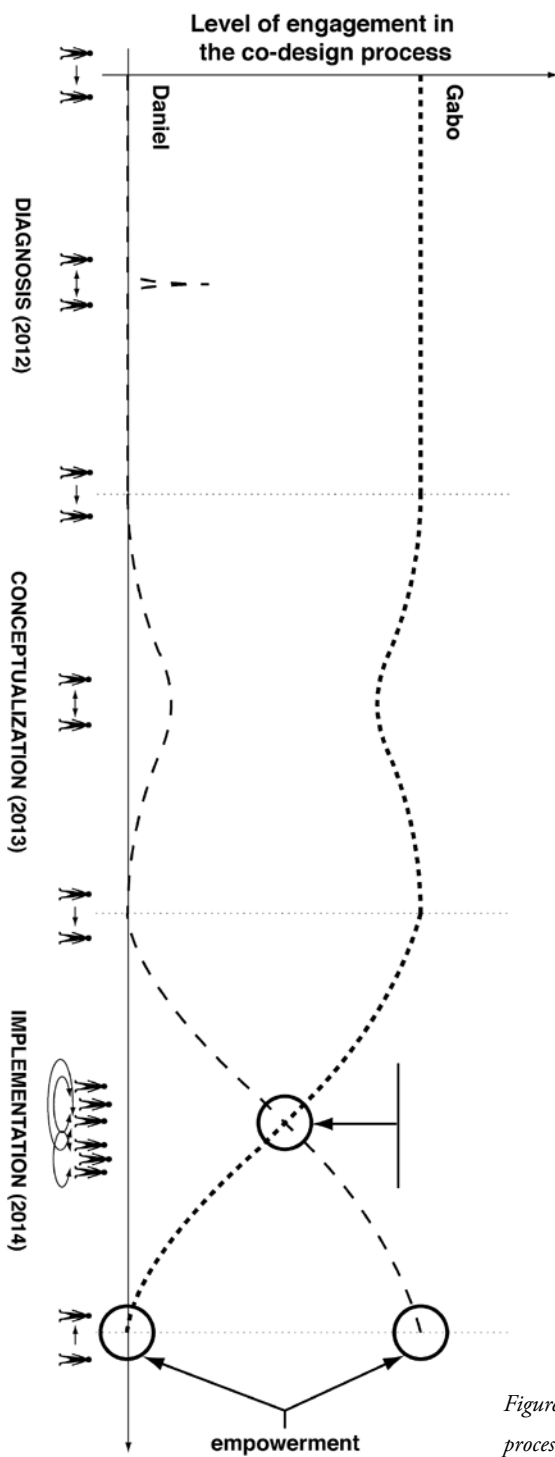
Figure 97. Level of engagement in the co-design proces by Claudia Garduño.

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been closely involved in this collaborative process will agree with me when I say that it has been a life-changing experience.

What can be learned from this story is that a shared experience or a collaborative effort to achieve a common goal is a means towards building a shared sets of values, despite the diverse origins of the individuals involved. The designers and the participant end-users shared both authorship and responsibility[204], and they also enabled each other. Both groups acknowledged that the process had demonstrated that, although it was not easy, it was possible to develop a project such as ALM, and that it would not have been possible without each other. At the very least, they gained courage and would be willing to start something similar anew.

Another matter that must be discussed is politics, for collaborative design practices have historically been observed in their political implications. The most evident encounter of this type occurred in 2014, just before the construction of the Eco-hostel started. In some cases, designers might be informed beforehand about how local politics works; nonetheless, this is very difficult to grasp from afar. Perhaps mistakes cannot be avoided; in fact, they are a great way to learn. Once again, generating trusting relationships with local people is crucial, since they can guide the political process in the community (like Daniel or Ofe). From this experience, we learned that there will always be conflicting voices; however, in El 20, these matters are dealt with by the board of ejidatarios, who vote for the final resolution.

There is a political side in the assemblage, too. It would not be fair if the relevant elements in the assemblage were determined by a single person or by a single type of stakeholder. In my view, co-design gives room for participative democracy. The elements in the assemblage are identified through design processes that tend to be as collaborative as possible, and human centred, at the very least. The design team is highly pluralist (intercultural, interdisciplinary, intersectorial, interinstitutional), and there are different voices within the community, too. When all these different experts deliberate, they uncover causal links that might not be very evident in a more homogenous group of people. Moreover, as the project goes by and the design team goes back to the community, the contextual understanding grows; with time, more elements and relationships are added to the assemblage.

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204 This is an observation of Alastair Fuad-Luke.

Finally, there is the delicate topic of having involved a big corporation, such as Coca Cola, in a project that aims for freedom within an indigenous community. As recalled in Chapter 8, most members of the team were hesitant to even participate in this crowdfunding campaign. Nevertheless, the involvement of big corporations does not go against the concept of Design as Freedom. Within this principle, different stakeholders have different effective opportunities, and they have the duty to do what is within their power to contribute to global justice. Already in ALS, we conceptually constructed models in which funding came from a joint effort between private companies and the public sector.

The exploration of Design as Freedom through Aalto LAB Mexico is not fully measurable nor quantifiable, perhaps this is not even desirable. Nevertheless, at least some descriptions by the participants indicate that it has been a powerful experience that has somehow transformed them. No one might understand them better than myself. I have been involved in Aalto LAB projects since 2010, and although I was a labber only in ALS, during this research, I have been a participant observer, sometimes a labber, a facilitator, an expert, a documenter, and all the time, its project manager. I have spent my reflection periods contrasting the rich experiences in the communities with some masterpieces from great philosophers.

In a similar way to Gabo, ALM has changed my life. My process started with the honest need to find a way in which the design discipline could collaborate in making the world a better place. I was fully aware that what I dreamed about sounded incredibly naïve to most of people, simply because it did not follow conventions. However, it must be agreed that I am not fully responsible for who I am, and I cannot explain why I became especially conflicted when I learned about the externalities caused by the design profession; but I know this feeling was too strong to be ignored. I believed that this was the *right* thing to do.

Before ALM started, I did not want to develop it in an indigenous community. This might be the most difficult part to convey to readers who are not from Mexico, but it all comes down to admitting that I was afraid of the unknown. As was the case for the Mexican participants in general, the indigenous people were unknown to me. I used to think that leaving them alone to live their lives amounted to paying them respect; but now I think that I was wrong, because doing nothing was politically stating that I supported their marginalisation. This impression started to change when I visited El 20 for the first time. While the project advanced, the distinction was no longer scary; it

became as natural as noting that one labber was an engineering student and another one was studying business. So they, in El 20, are Mayan; we are Mexican, Finnish, German, Chinese, New Zealanders, Americans … we are diverse, we are human.

Designers who blindly agree to contribute to the capitalist economic system might claim that they are not ultimately responsible for the externalities of a project. However, if that is the case, their process is not really free; the design outcome is not really theirs. Through ALM, I have been able to define and exercise my very own rational plan, and I am convinced that design can do much for and with people who, unjustly, live in conditions of marginalisation (of all kinds). It has been worth so much that I am convinced that this is to what I want to dedicate my professional life.

Therefore, I am confident in stating that it is important for the design community to release design practice from the tight constraints imposed by the capitalist economy, and to explore contributions that might not be economically profitable but might ultimately be more meaningful. Moreover, it can be said that design schools around the world have the opportunity and the duty to shape their students into agents of change. Even when the labbers end up working in industries or in government, rather than in NGOs, they will most certainly do it with a developed empathic sensibility and humility. However controversial projects like ALM might be, because of their implicit imperialistic nature, if they are developed with care and respect and over a long period, it is likely that the local people will become active participants and that there will be a point where external design teams will no longer be needed. Maybe then, the world will be a little less unjust.

Limitations

Design as Freedom supports the self-determination right of people, communities, villages, towns, and cities. By co-designing with the people of El 20, ALM aims to encourage indigenous people to raise their voices and to play the leading role in deciding their own future. Rather than seeing themselves as mere beneficiaries of paternalist programs, they might acknowledge their capacity to become active participants in the design of social policies.

Nevertheless, in this research, there is a clear imbalance in the empirical accounts gathered from the labbers and those gathered from the people of El 20. This fact might

cause the reader to question whether ALM has in fact co-designed or, in step with Crocker (2008, 341), whether the role of outsiders as facilitators has been pure rhetoric, and the projects in ALM have completely been drawn from the labbers' minds.

There have been, in fact, some limitations in collecting the voices from the community. First, one cannot demand the same from the students at a university who are validating credits from the project, and from people who have been very kind to host us in their homes but are busy with their daily occupations. Additionally, as stated above, trust building is a long-term process; we have observed that each time, more people open up and each person opens up more. According to the meta-framework, none of the ALM projects has completed its design process; thus, we would expect that in the coming years, we will be able to gather more of the views of the people of El 20. The pedagogic component of ALM, and its extra-official nature, has not allowed the labbers to spend long periods in El 20. Boni and Perez Foguet (2008, 351) suggest that in development work, students should spend a minimum of two months in the location; in ALM 2012, students spent three days in El 20: nine days in 2013 and fourteen days in 2015. At this point, coordinating students form three different universities to spend several months in the field seems very complicated, especially if the project is not made somehow official in all the universities. Another fact is that many of the conversations that were held between the people of El 20 and the labbers could not be recorded extensively, considering that some students were asking questions while others were translating for non-Spanish speakers. These conversations, nonetheless, were synthesised into sentences on sticky notes and became part of the design process.

For my part, with the aim of keeping the process natural and avoiding an artificial feeling, I chose not to record most of my conversations in El 20. Thus, the data was reduced to notes that I made at the end of the day. Additionally, during the visits to El 20 with the full ALM team, I also became a translator, which made documentation more difficult.

Another limitation that also relates to the imbalance between the voices of labbers and the voices of the people of El 20, is about the matters of participation and ownership. Very few people in El 20 have engaged deeply enough to share a sense of ownership. Design as Freedom has been clear about targeting communities, rather than individuals, so it is evidently desirable to see more members of the community engaging very deeply with the ALM projects. Nevertheless, given that choice itself is highly appreciated, having the possibility to participate in the design process shall not force anyone to do so.

ALM is ongoing, and it is unquestionable that the full implementation of the projects requires the active participation of the people of El 20. Clearly, if they participate, they will generate a sense of ownership. It is certainly the hope that ALM will help them put an end to 500 years of subjugation, and that they will shape their lives and their community to their own taste, and in harmony with their own culture and natural surroundings (which is not in conflict with the implementation of new technologies).

Recommendations for future research

The Design as Freedom principle was constructed in response to the location where it was to be observed through the Aalto LAB Mexico project. It is an alternative paradigm, but not the only one that could be generated. Other researchers and research projects could focus on advancing justice through dignity, or perhaps by exploring some of Aristotle's virtues.

Throughout this research, we observed the opportunity to link the concepts of design, prudence, and Sustainability (perhaps based on the work of the Spanish philosopher, Adela Cortina). There was also no time or space to explore Kant's concepts of beauty and the sublime.

The pedagogic approach of Aalto LAB Mexico was also very open, so as not to influence the design process too much. In further editions, the teachers or facilitators could choose to keep better track of certain aspects. For example, there could be an assessment made at the beginning, regarding students' lifestyles, and something similar at the end, to track whether the project inspired them to change some things. Moreover, it would be interesting to track whether the project has had a long-term effect on the labbers (many years from now).

ALM has not reached the moment of evaluating the effect of the projects implemented in El 20. There will be the need to design a tool for such a task. It would also be desirable to make use of assemblage thinking in a very different type of location, such as an urban centre, and to explore whether this enables designers to truly embrace the principles of Sustainability.

Photo by Jan Ahlstedt

Epilogue

After we returned from El 20 in November 2013, and after the students from Aalto left for Finland, I stayed in Mexico with one major concern: raising 100,000.00 MXN through the crowdfunding campaign, in order to get a total 200,000.00 MXN and, with that money, to build the Eco-hostel. A little more than a week before the deadline, I was getting ready for a trip to Cancun, where my family and I were going to spend New Year, and we were still short by 60,000.00 MXN. The two-day road trip and the first few days in Cancun were full of anxiety, and it was nearly a miracle when, on Wednesday 31 December, at 4:00 pm, two hours before the deadline, we reached our goal. I remember closing my laptop, leaving the hotel room at last, and going for a swim in the Caribbean.

Later on, when I got in touch with Susu Nousala to break the news, she told me she also had very good news for me. For the past few months, as teacher of Aalto LAB Mexico at Aalto University, she had been collaborating with a group of researchers from within Aalto in a funding application for Tekes, with a project they had called The New Global[1], which was formed by Aalto LAB Mexico and several other projects.

This is what was published on the TEKES website[2]:

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1 http://newglobal.aalto.fi/

2 http://www.tekes.fi/en/whats-going-on/news-2013/tekes-provides-funding-for-two-new-strategic-research-openings/

The New Global: Co-Creating Frugal and Reverse Innovation in Complex Global Systems

Rapid population and economic growth in emerging markets is leading to a shift in global dynamics. The need to serve this growing middle class, despite increasing scarcity of natural resources, will trigger future innovations that are resource scarce, affordable as well as socially and technically smart (*frugal innovation*). When these innovations are adapted to the condition of developed economies (*reverse innovation*), they may be disruptive and very price competitive.

The New Global project aims to build Finnish national capabilities to engage in frugal and reverse innovation so as to benefit from their future market potential both in emerging and developed markets.

The required knowledge and capabilities will be generated through action research. Pioneering companies, ranging from start-ups, SMEs and larger companies, join to co-create, rapidly prototype and test innovations in selected emerging economies. The project takes a systemic approach, engaging multiple stakeholders and disciplines in the innovation process.

The New Global project combines the advanced knowledge in the different schools of Aalto University in the areas of inclusive business, renewable energy technologies, design thinking, architecture and water engineering. A well-established global network of partners allows for innovation activities that are deeply embedded in the local contexts of emerging markets.

When I read this, I immediately thought that the aims of The New Global were very different from those of Aalto LAB Mexico. While Aalto LAB Mexico supported the money-less economy (oikonomy) of El 20, The New Global spoke of emerging economies and potential new markets. Over time, this disparity became evident.

When we were getting ready to travel to El 20 to start the construction of the Eco-hostel, in the spring of 2013, The New Global refused to sponsor all of what was still needed for this quest, including the transportation of experts from Finland, part of the documentation costs, and a little extra for the construction itself. As Susu explained, this funding had very tight regulations, and could not be used for any of those matters.

At that point, it was clear for me that The New Global and Aalto LAB Mexico would have to become two different projects, and that I needed to find other ways to keep ALM alive. At the end of May 2014, I met Pekka Korvenmaa, whom I asked for help. Pekka put me in touch with Saija Holmén, who was another student of his, and with Matleena Muhonen. Together, they had taken care of the Sustainable Global Technologies program (SGT), which is run by Olli Varis in the department of Water and Civil Engineering in the School of Engineering.

I first met Saija, and a few weeks later, I had a coffee with Matleena. We agreed that ALM and SGT were very compatible, and we decided to submit a joint funding application to the Ministry of Foreign Affairs of Finland. Aalto Global Impact supported this application, as did the School of Business. We submitted the application half an hour before the deadline, on 8 September 2014, and at the beginning of December, it was announced that we had got the funding.

Matleena needed a mentor for ALM in Finland because SGT had three other case studies. We decided to invite Anni Hapuoja to play this role. We met her just before I left Finland. As was expected, she was glad to join. Elina Lehikoinen, a former student of SGT and a water engineer, was invited to mentor the team as an expert in the field.

A few days after we got the news from the ministry, I travelled back to Mexico. At the beginning of January, Matleena started the selection process for the new labbers from Aalto, who, this time, had to be students of SGT. Given that most of the former Mexican labbers had graduated, a little later than in Finland, we started the selection process in Tec de Monterrey and in UNAM, through an open application. Gabo was the only labber who continued in the team, although by then, he was more an expert than a labber.

Name	University	Field	Nationality
Tuulikki Peltomäki	Aalto University	Landscape Architecture	Finnish
Tanja Phil	Aalto University	Water Engineering	Finnish
Ingrid Nobre-Amraoui	Aalto University	Environmental Engineering	Finnish/Brazilian
Bilen Gebremichael	Aalto University	Environmental Engineering	Ethiopian
Anuj Singh	Aalto University	Creative Sustainability/ Business	Indian
Trang Nguyen	Aalto University	Creative Sustainability/ Business	Vietnamese
Ekaterina Ohotnikova	Aalto University	Creative Sustainability/ Design	Russian
Gabriel Calvillo	UNAM	Industrial Design	Mexican
Guillermo Castillo	UNAM	Doctorate in Evolutionary Ecology	Mexican
Alin Flores	UNAM	Architecture	Mexican
Alejandra González	Tec de Monterrey	Industrial Design	Mexican
Alan Ríos	Tec de Monterrey	Architecture	Mexican
Nayeli Ramírez	Tec de Monterrey	Engineering in Sustainable Development	Mexican

Name	Institution	Field	Role	Nationality
Matleena Muhonen*	Aalto University	Architecture	Teacher	Finnish
Anni Hapuoja*	Aalto University/ Muotohiomo	Architecture	Facilitator	Finnish
Claudia Garduño*	Aalto University	Design	Facilitator/ Project manager	Mexican
Elina Lehikoinen*	Aalto University	Water Engineering	Expert	Finnish
Omar Rojas*	Tec de Monterrey	Engineering in Sustainable Development/ Biology	Expert	Mexican
Rodolfo Alvarado*	Yectlahuilli	Clean energy	Expert	Mexican
Raúl Hernández*	Yectlahuilli	Clean energy	Expert	Mexican
Jan Ahlstedt*	Freelance	Photography	Documenta-tion	Finnish
Antti Seppänen*	Freelance	Film making	Documenta-tion	Finnish
Zita Floret	Aalto University	Creative Sustainability/ Architecture	Expert	French
Suvi Kajamaa	City of Vantaa	Creative Sustainability/ Design	Expert/ former labber	Finnish
Alastair Fuad-Luke	Aalto University	Design	Expert	British

Josefina Mena-Abraham		Architecture/ water treatment	Expert	Mexican
Delfín Montañana	Universidad del Medio Ambiente	Biology	Expert	Mexican
Damaris Garza	EVI	Water systems/ Economics and business	Expert	Mexican

Table 23. (page 384) Labbers 2015. The ones from Aalto University had been part of the Sustainable Global Technologies Program since September 2014. The ones from Mexico were selected through an open application.

Table 24. (page 385-386) Experts and facilitators of ALM 2014. * Participated in the trip.

The brief that was given to the labbers described all the missing stages of the overall project as was subscribed to the Ministry of Foreign Affairs, but they were asked to focus mainly on the Water project. The preparation period took place between January and April 2015. While the labbers made a research plan for the field, which included borrowing laboratory equipment from their universities in order to test water samples in situ, Omar Rojas announced a surprise. He had got in touch with Professor Bustamante, from Tec de Monterrey, who had been leading a research project with his students with the aim of making a satellite internet system powered by the sun more efficient. Their aim was to install the system in some rural community in Mexico, and they had already agreed that the community would be El 20. Just before the field trip, Professor Bustamante decided that his student, Brenda Hernández, would join us.

Coincidently, a few weeks before, Jack Fermon, from Google Mexico, had got in touch with us through Zuleika de Alba, from Tec de Monterrey. Jack manages an educational project that aims to provide all schools in Mexico with an internet connection by making use of very cheap technology. He would have liked to join the labbers on the trip to El 20, but there was a long bureaucratic system they had to fix beforehand with the Ministry of Education. Thus, we decided to postpone this field trip.

The Mexican labbers had arranged some activities for the labbers from Aalto, which took place in Mexico City, including a workshop on the construction of dry toilets and a visit to a residential area with Arch. Josefina Mena Abraham, where she had implemented a water treatment system that worked with bacteria.

When in El 20, Nayeli, Guillermo, and Tanja established a laboratory at Rosa's place. Altogether, the team defined a research plan by dividing the community into quadrants and dividing themselves into two sub-teams, one dedicated to investigating the quality of the water, and the other taking care of the sanitation part. In the meantime, Rodolfo Alvarado and Raúl Hernández installed the lamps in the Eco-Hostel, then called *La Casita*; Brenda checked the existing equipment, such as antennas, with which the school had been equipped at different times; and I visited several artisans and gave them some Artesanía para el Bienestar stamps that Peek Toys had printed for us, and with which we agreed they would prototype the concept for a few months.

The ALM 2015 presentation in Mexico City took place on Friday, 24 April 2015, at Piso 51, in Torre Mayor. The event started with a discussion panel around the topic of International Cooperation for Development and Water. The panellists were Anna-Emilia Hietanen from the Embassy of Finland in Mexico, Arch. Josefina Mena-Abraham, biologist Delfín Montañana, Arch. Loreta Castro, and Laura García Querol from the Mexican Agency for International Cooperation and Development.

After the field trip, the students from Aalto created a final report as an assignment for SGT[3]. The Mexican students, for their part, made a thorough project plan and submitted it to a national competition, Premio CEMEX-Tec[4], in the category *transforming communities*.

From 23-27 May 2015, the president of Finland, Mr. Sauli Niinistö, visited Mexico. The joint press release that the presidencies of Mexico and Finland published after the visit mentioned that: "Both countries welcomed inter-institutional collaboration between Mexican and Finnish Universities such as the National Autonomous University of Mexico, Tec de Monterrey and Aalto University. Likewise, they emphasized the relevance of the projects 'Aalto Lab Mexico', 'New Global Mexico' and 'Aalto Design Factory'."[5]

From 27-29 May 2015, I travelled to Xpujil, Calakmul, where I met Jack Fermon and Alexandre Jacquet from Google, and José Rubén Martínez from Únete[6] (an NGO that develops software to reinforce the learning process of elementary school students, and

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3 http://www.sgtprogram.fi/wp-content/uploads/2015/06/ALM_2015_REPORT_FINAL_small1.pdf

4 http://www.cdcs.com.mx/

5 From: http://www.presidencia.gob.mx/comunicado-conjunto-mexico-finlandia/ My own translation.

6 http://www.unete.org/

Figure 98. (top to bottom - left to right): The 'scientists': Tanja, Nayeli, Elina, Guillermo, and Brenda setting up the lab at Rosa's place. A workshop with the kids. A co-design workshop with women, teenagers and children. The Eco-hostel and its lights working. The stamps printed by Peek Toys. A stamp set on a wooden box. The audience in Piso 51. The panelists at Piso 51.

that provides rural schools with the necessary equipment). My role was to take them to El 20 and introduce them to the community, so that they could test their home-made equipment. These preliminary tests turned out satisfactorily, and based on those results, Google increased the budget of the project; hence, Jack decided to take a little longer to develop the equipment and to take it to be installed in El 20 later in the year[7].

On 6 February 2015, and thanks to the Ambassador of Mexico in Finland, I had a meeting with Mrs. Norma Pensado, Brenda Vértiz, who worked as Mexico country manager for Aalto New Global, at the Ministry of Foreign Affairs of Mexico. Later in the year, on 15 June 2015, we had a follow-up meeting with representatives from:

- Mexican Institute of Water Technologies (IMTA)
- Mario Molina Research Centre
- Ministry of Agrarian, Territorial and Urban Development (SEDATU)
- National Institute of Forestry, Agricultural and Fishery Investigations (INIFAP)
- Ministry of Agriculture, Livestock, Rural Development, Fishing and Nourishment (SAGARPA)
- Collegium of Postgraduates (COLPOS)
- Ministry of Foreign Affairs (SRE)
- Institute of Mexicans Abroad (IME)
- Ministry of the Environment and Natural Resources (SEMARNAT)
- National Water Commission (CONAGUA)

We received feedback on the projects, and they offered support and mentorship for their continuation.

The SGT program course State of World Development took place from 14 September to 15 October 2015. On 14 September 2015, I was the first invited lecturer on the course, and the nearly 100 students on the course were the first audience to listen to a presentation on Design as Freedom; apparently, they found it interesting. Aalto LAB Mexico 2016 has already been announced as a case study within the SGT Studio course between January and May 2016.

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7 The full story can be read here: https://aaltolabmexico.wordpress.com/2015/06/12/google-this-is-el-20/

On 3 October 2015, Premio CEMEX-Tec hosted its award ceremony at Tec de Monterrey in the City of Monterrey. ALM 2015 was awarded second place.

From 14-21 November 2015, some of the Mexican labbers travelled to Helsinki, Finland, in order to present the results of their process to the Ministry of Foreign Affairs.

This research project had to finish at some point, but this does not disrupt the collaboration between the people of El 20 and the design team. The assemblage keeps on evolving.

At some point in the summer of 2015, it hailed strongly in El 20. Some rooftops were damaged. The children got very scared, because it happened while they were at school. A tree nearly fell on top of Ofe's place.

When the Sun came out, Ofe asked the men to use the chainsaw and take down the tree to prevent an accident. Then she asked them to make a big table with that wood. She also asked them to make the kitchen a little bigger, in order to fit the table. When I was there with the team from Google, I complimented her on the renovation. She told me that she had that table made for us, so that when we visited them with the big team, we would all fit. ALM is ongoing.

Appendix I

History of Mexico

I t is believed that Mesoamerica, one of the six locations where civilization originated in isolation (Diamond, 2005), originated from groups of hunter-gatherers who migrated from Siberia through the Behring Strait around 14,000 years ago (González, 2010). It took many years for these nomadic groups to descend from Alaska, domesticate local species (e.g. corn, beans, chili, squash, tomato, cacao, et al.), make their culture more complex, raise their quality of life, and accumulate knowledge (Bernal, 1981, 128). The first traces of Pre-Columbian civilizations date from 1600 BC, and from that moment until the Conquest of Mexico by the Spanish, several different *cultures*, including the Olmec, Mayan, Teotihuacan, Mixtec, and Zapotec, emerged throughout the current territories of Mexico and Central America.

Mesoamerica was worth conquering because, in contrast with other settled regions of America, like California, its population was numerous, they accumulated wealth and were used to the payment of tributes, they had some technical advancement, and the Spanish could make use of those existing structures (Carrasco, 1976, 287). However, although all the Pre-Columbian civilizations shared practices, beliefs, and altogether a cosmo-vision (paradigm), they were not politically unified (168). The Aztec (or Mexicas) who founded Tenochtiltan, the current Mexico City (on a lake), had been the dominant tribe for only 52 years, which meant that other subjugated tribes paid them tribute (Tannenbaum 1968 [1951], 20). That is largely the reason why a group of barely 300 Spaniards were able to defeat the Aztec empire; the subjugated tribes fought on the European side. The other advantages that the invaders had are what Jared Diamond
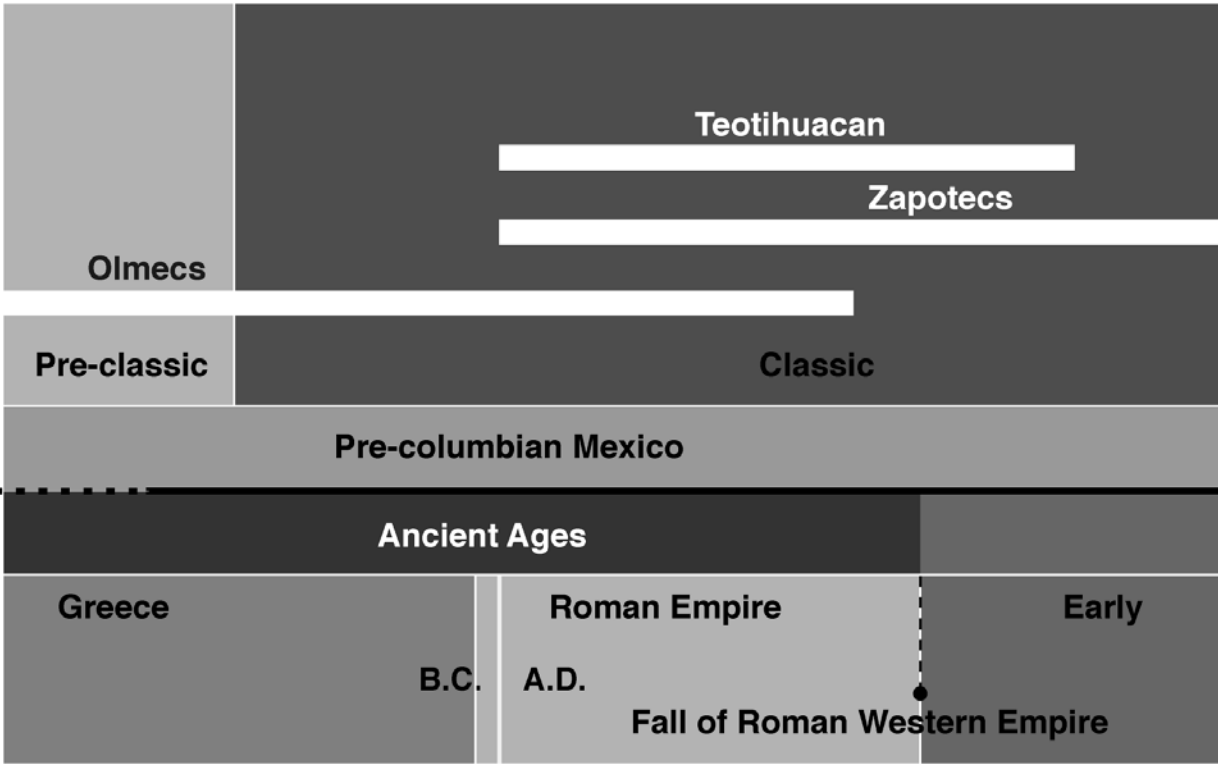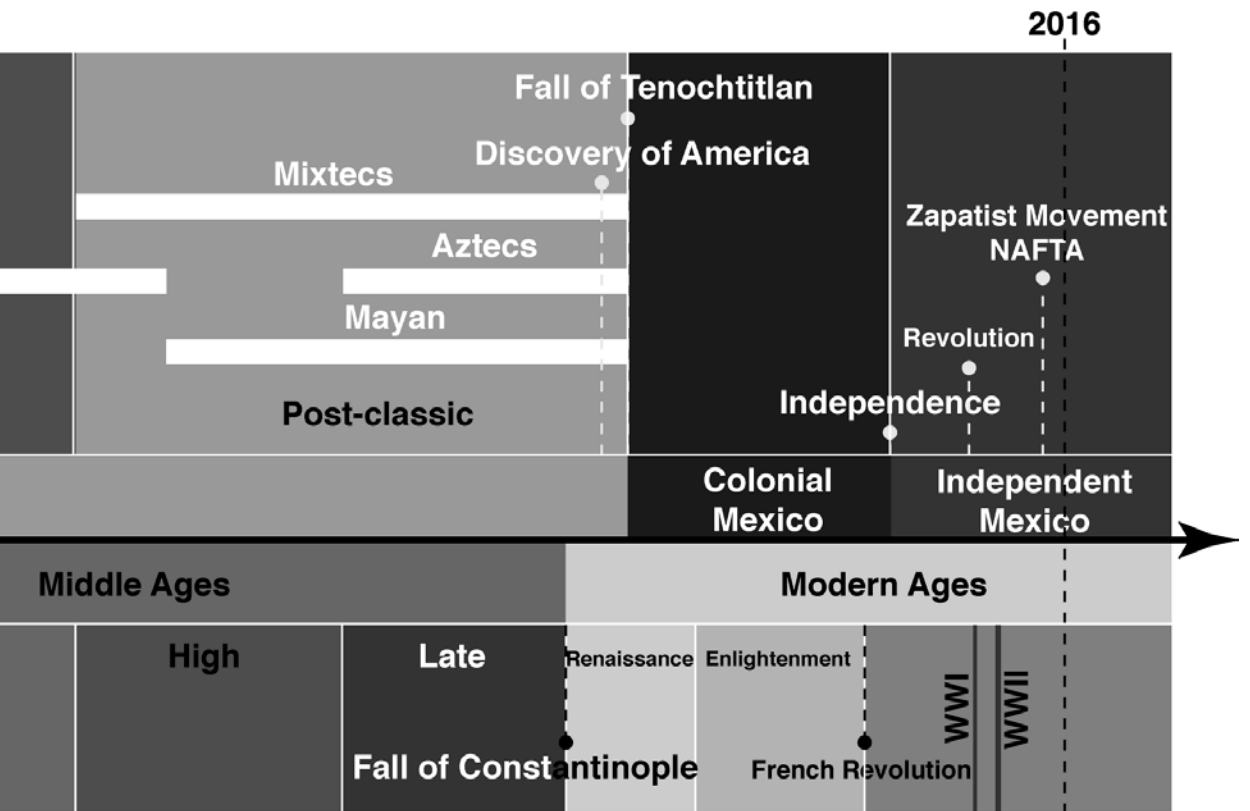
Teotihuacan

Zapotecs

Olmecs

Pre-classic

Classic

Pre-columbian Mexico

Ancient Ages

Greece

Roman Empire

Early

B.C.

A.D.

Fall of Roman Western Empire

Figure 99. Timeline comparing Western History and the History of Mexico. Drawn by Claudia Garduño.

2016

Fall of Tenochtitlan

Discovery of America

Mixtecs

Aztecs

Mayan

Post-classic

Colonial Mexico

Zapatist Movement
NAFTA

Revolution

Independence

Independent Mexico

Middle Ages

Modern Ages

High

Late

Renaissance

Enlightenment

WWI

WWII

Fall of Constantinople

French Revolution

(1999), in his critical perspective, describes as instruments of colonial domination: guns, germs, and steel.

Once that domination was achieved, after the fall of Tenochtitlan in 1521, the Spanish started the process of *civilizing* the natives, which for Spain in times of Inquisition, was a synonym of evangelisation. The Catholic Church had the mission to gather more followers by conversion, including in Spain, where they had recently defeated the Moors. After only 40 years, the *Viceroyalty of New Spain* (as the Spanish named Mexico) had become the largest Catholic nation of its time (González, 2010, 19). The missionaries, many of whom are described as defenders of the natives, taught some indigenous people to speak, read, and write Spanish, and reciprocally learned their languages. Many indigenous words were adopted by the Spanish language (e.g. *tomatl*- tomate -tomato, *aguacatl*- aguacate- avocado, *chocolatl* – chocolate, and the names of places). Nonetheless, and although this blending process generated a syncretic Catholicism that somehow incorporated local rituals, the Spanish were (or tried to be) careful in maintaining the Spanish terms for key concepts; for instance, the word God was never translated as *teotl* (Moreno, 1981, 330–331).

People also mixed. Leopoldo Zea (1990) points out that this was an exclusive characteristic of the Catholic colonisation, which contrasted with the Protestant colonisation that occurred mainly in the current territories of Canada, the United States, and parts of Central America. However, this fact, which can be relatively described as a gesture of tolerance, brought a huge contradiction, as the Spanish established a highly racist caste system that derived from four main racial groups: the *Peninsular Spanish*, the *criollos*, the *Indians*, and the *negroes*[1]. The Peninsular Spanish were the most privileged, as the highest caste, because they had been born in Europe; they were followed by the criollos, who were children of Spanish parents but had been born in the New World. Following these were the Indians (Christopher Columbus mistakenly claimed to have reached India and called the natives Indians; nowadays the accepted term is indigenous), who, largely thanks to the work of missionaries such as Fray Bartolomé de las Casas, were considered human beings, and who were allowed to additionally maintain their own stratification systems, at least to certain extent. Last were the negroes, who were brought from Africa, who were slaves, the lowest caste, and who were considered property.

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1 I am making use of the original terms, with full acknowledgment of their actual incorrectness, in order to illustrate how racist the system was, and also to explain the origin of racism that unfortunately still exists in Mexico.

Overall, the privilege system was very easy to understand: the whiter the better. The system officially acknowledged and was able to name sixteen different castes that resulted from the mixture of the four main groups (Tannenbaum 1968 [1951], 16); nonetheless, since genetics are more complex than that, and one's features do not necessarily match those of one's parents, people would trick the system whenever possible and avoid the payment of some tributes.

Among the casts, however, the *mestizos* should be highlighted. Mestizo means mixed, and it originally referred to a child who was conceived by an Indigenous-European couple. Later in history, the word would be used to imply action (*mestizaje*) and to describe the process by which the population went from having an indigenous majority to having a mixed majority (Carrasco 1981 p288). Rather than remembering this historical period with grief, the *mestizaje* started to be described as the clash of two cultures that gave birth to a new one, which enabled people to feel proud of belonging to the *race of bronze*[2]. Whether this perspective truly helps Mexicans and, more widely, Latin Americans to overcome what others, like Octavio Paz, characterise as "the rape of an Indian mother by a Spanish father" (Gallo, 2009, 71), and whether it actually helps everyone, especially *the indigenous*, has been widely contested (Tannenbaum 1968 [1951], 15; Marcos, 1994 in Volpi, 2004).

Mexico, was under Spanish domination for three centuries. During that time, they established an authoritarian and intolerant culture; intolerant towards scientific illustration, towards Protestantism, Islam, and Judaism, and towards the indigenous (Larraín, 2005). The indigenous people, for their part, developed what Jorge Larraín describes as the *appearance of obedience*, where rules and principles are simultaneously acknowledged and disobeyed. When their temples were destroyed and new ones were built from the ruins, they pretended to adore the new god while secretly continuing to adore their own (47). All these elements, says Larraín, continue to be part of the identity crisis of the Latin Americans.

Paulo Freire (2000 [1968]) points out that revolutionary movements are not born from within the oppressed, but are started by someone within the *oppressors* who gains consciousness about the unfairness of the situation. As a matter of fact, the independence movement of Mexico was not started by the indigenous, who were concentrated mainly in rural areas, held the least fertile lands, and worked the land of the Peninsula Spanish

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2 For example, to this day, the slogan of the National Autonomous University of Mexico is "Por mi raza hablará el espíritu" ("Through my race speaks my spirit").

or criollos through a kind of feudal system. The independence movement was started by criollos, who mainly sought to end the mercantilist economic restrictions imposed on them by the Spanish motherland, which had become stricter, in order to reinforce the figure of the King over that of the Viceroy (the representative of the King in the colonies). The mestizos who joined the movement were influenced by the ideas introduced by the thinkers of the Enlightenment, and by the revolutionary movements of the 1700s, including the War of Independence of the 13 British colonies in America of 1776, and the French Revolution of 1789. The liberators of Mexico, however, added a couple of clauses to those revolutionary ideals: they promoted the abolition of slavery and equality among all men (or the end of the caste system).

In 1821, eleven years after the independence movement started, Spain signed the independence of Mexico; Mexico declared itself an independent and Catholic country, and home equally to all, the Peninsula, the criollos, Indians, and negroes (González, 2010, 33). However, this did not mean that peace or stability had been achieved. The nineteenth century was characterised by a series of confrontations between two groups, the liberal (also called the federalists or the Yorks) and the conservatives (also called the centralists or the Scottish), who held different and, in many cases, opposite ideologies and visions as to how the region had to transform itself and build its own *modern* identity. The liberals thought that Mexico had to follow the model of the United States of America, while the conservatives continued to support the model of Spain and other European nations (35), which Sarmiento described as the greatest possible contradiction – substituting one foreign cultural legacy with another (Larraín, 2005, 43).

Those who were the most conservative, and who gave a voice to the Catholic Church, were convinced about the need for a European monarch. In the world, these were times of imperialism, and Mexico, despite its independence, was constantly seen as a territory in dispute. The country was invaded three times by the United States, and through these conflicts, but mainly after the Mexican-American War of 1846-1848[3], Mexico lost more than half of its original territory to its northern neighbour. France, for its part, invaded Mexico twice. In the Second French Intervention (1862), Napoleon III sent Maximilian of Austria to become Emperor and turn Mexico into a French protectorate, contradictorily, by invitation of the *Mexican* conservatives.

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3 The original dispute regarded the property of Texas but ended up in the annexation of Arizona, New Mexico, and Alta California (the current states of Arizona, California, Nevada, Utah, New Mexico, and parts of Wyoming, Kansas, and Oklahoma). Ulysses S. Grant, a commander of the US force, referred to it as "one of the most unjust [wars] ever waged by a stronger against a weaker nation". (Cockcroft, 1992)

On the other hand, the most liberal groups believed in national sovereignty; but even *they* sought inspiration in Europe. Benito Juárez García (1806-1872) was the first, and to this day, remains the only indigenous president of Mexico. His duty started after the Mexican-American War, which had left Mexico bankrupt, and which also motivated the invasion by the French[4]; in fact, when Maximilian was crowned Emperor by the conservatives, Juárez was still president for the liberals, and acknowledged by the United States (González, 2010, 40–41). Juárez aimed to construct a truly Sovereign Mexican Republic, and in doing so, borrowed some ideas from the French. He separated the State and the Church, which had remained the largest land owner and banking institution (Cockcroft, 1992, 27); additionally, he established a secular education system, and attempted to push the technological development of Mexico by entering the international market. Juárez expected foreign investment to come in return, but that did not happen; all Mexico could sell to the industrialised nations were primary goods, just like every other Latin American country (Larraín, 2005, 55).

It might be difficult to understand that Latin Americans, who had once vehemently fought for their independence from the Europeans, were then longing to become European-like. The fact is that, after living for three centuries under the domination of a strict caste system, those ideas had grown roots of their own in Latin America. Compensating for racial inferiority continued to be a practical goal, regardless of how much the laws had changed. In step with the appearance of obedience discussed above, and although the early constitutions had officially abolished slavery and had declared all men to be equal, in practice, society remained highly stratified. The indigenous had remained at the bottom of the social structure; most of them continued to live in their own isolated rural communities, and continued to be seen as barbarians.

Mexico's political struggle never really ceased. In the following episode, General Porfirio Díaz (1830-1915) forced himself into power and became a dictator. By 1910, Díaz had been ruling and shaping Mexico in the image of France for 30 years. Throughout this period, he evidently pushed the modernisation of the country through the development of ports, railways, the mail and telegraph, and the introduction of electricity, and by making Mexico one of the world's main producers of cotton, sugar cane, and henequen. Moreover, this was an era of relative peace, economic recovery, scientific and artistic development, and reconciliation with the Church (González, 2010, 44–47). Nevertheless, the economic strategy resulted in very little opportunity for political participation and in huge social inequality, mainly because all the developments were being sponsored with

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4 Mexico had debts with France.

foreign capital; for example, the whole infrastructure (electrical, railroads, mines, etc.) belonged to either American or European companies. Furthermore, in the countryside, foreigners and a few wealthy Mexicans were pushing the indigenous peasants to sell their lands[5], and workers were being exploited. Once again, Mexico was being run by foreign hands and people's discontent was growing.

The Mexican Revolution started on 20 November 1910[6]. It was a very complicated episode with multiple actors fighting for multiple causes that were not necessarily shared by all. The movement was started by Francisco I. Madero (1873-1913), with the intention to end Díaz's dictatorial regime. However, a second group of revolutionaries, who were led by Emiliano Zapata (1879-1919), fought under the motto "Land and Liberty", meaning that the land should be owned by those who worked it, mainly the indigenous. Later on, a group led by Venustiano Carranza (1859-1920) would pursue the establishment of a new constitution. Despite the chaotic nature of the revolutionary movement, it brought several consequences, including the promulgation of the current constitution in 1917, the establishment of a democratic election system (with no re-election), and the distribution of land[7].

This was also the moment when the national education system engaged the artists in fighting illiteracy. José Vasconcelos (1882-1959) invited them to imprint the walls of public buildings with history and human values, giving birth to Mexican muralism. Diego Rivera (1886-1957) and David Alfaro Siqueiros (1896-1974) appreciated the plan created by Vasconcelos and supported the idea that art should be free and for the people; moreover, they believed that art should play an even greater role, that "a truly Mexican art must be created to help advance the Revolution's original goals of land for the landless, workers' rights, genuine popular democracy, and national ownership of natural resources" (Cockcroft, 1992, 60). Rivera, for example, filled his murals with pre-Hispanic figures, symbols, and beliefs; he idealised the indigenous and negated the European; however, at the same time, he embraced modernist and positivist thoughts, and machines and technology were represented as means for emancipation.

For a while, Mexico flirted with communism. Lázaro Cárdenas, who was president of Mexico from 1934-1940, had a project that Tannenbaum interpreted as the transference

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5 Which they had been granted through Juarez's reformations.

6 Preceding even the Russian Revolution.

7 The agrarian law has gone through a series of reformations ever since, but land has been distributed in several periods, like in the 1970s, when 20 de Noviembre was founded.

of political power to the peasants. It was about building a nation out of independently governed towns, where every individual could participate in tackling the problems of their own communities (Krauze, 2010). It was not quite communism nor socialism, but the reactivation of the old indigenous agrarian system (Carrillo Puerto in Krauze, 2010).

Nevertheless, as time passed by, Mexico reached a certain political and economic stability, and as the world became bipolar, Mexico aligned with its northern neighbour, the United States (Larraín, 2005). The socialist ideals of the Mexican Revolution, therefore, did not last long within Mexico's new political agenda. The special treatment that Rivera and Zapata had given to the indigenous was once more forgotten and replaced by a project to unify the country, which was inspired by the world trend from 1957 to 1991, and which consisted of the development of social policies for integrating the indigenous and non-indigenous populations (INALI, 2013).

Spanish was made the only official language, including in schools. In consequence, and in order to secure their children's education, parents who would have otherwise spoken their native language at home, spoke only Spanish instead[8], which in the long run endangered the existence of many native languages[9]. The mestizo was reinforced as a romantic symbol, as "both the unconscious carrier of European culture to Indians and the natural link between the racial and linguistic groups in Mexico" (Tannenbaum, 1968 [1951], 15). Nonetheless, this *official* interpretation of history excludes native people who, in many cases, stayed in the rural areas, and at least partly refused westernisation (it can be said that the Spanish evangelised the whole territory). Their constant struggle is the tension between being proud bearers of their own identity and having the desire to quit their identity and gain access to otherwise neglected privileges; in some cases, the indigenous do not want to be acknowledged as such (Duquenoy, 2011).

In Mexico, 1994 was an emblematic year. President Carlos Salinas de Gortari had signed the North American Free Trade Agreement (NAFTA), which would come into force on 1 January (Volpi, 2004). Little did he know that a group of indigenous people from Chiapas had spent about a decade training to become an army (Legorreta, 2007), the Ejército Zapatista de Liberación Nacional[10] (EZLN), and that they had decided to attack that very day. At 3:00 am on the day when Mexico was the focus of international

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8 This was confirmed in our informal conversations in 20 de Noviembre.

9 In 2003, the indigenous languages were acknowledged as official within Mexican law, although the Constitution has only been translated into a few of these (INLI 2013).

10 Zapatist Army of National Liberation

attention because of its triumphant neoliberalism, hundreds of militants gained control of several government buildings within the southern state of Chiapas (Vopli, 2004).

The indigenous Zapatist movement started as an armed protest against the historical marginalisation committed by the Mexican government. Furthermore, they fight for their right to self-determination; that is, their right to constitute themselves within the country as a different alternative (Marcos in Scherer, 2014 [2001]). They walk against "the world that hegemoni-zes and homogenizes not only the country, but the whole world"; instead, they mark the differences, "the cultural difference, the difference in the relationship with the land, among people, with history, with the other"[11] (ibid.). They are against private property and the money economy because they have kept alive their traditions of common property, barter, and non-mechanised agricultural systems; and because of that, it is impossible for them to achieve what NAFTA required them to do: to compete with big transnational producers (Volpi, 2004).

The Mexican Government did not know how to react. The army counterattacked at first, but by January 12, they called a ceasefire (Volpi, 2004). The conflict continued as a war of words led mainly by Sub-commandant Marcos (a mestizo) through a series of letters sent to the government and to the Mexican intellectuals. At first, his words were not taken too seriously and the movement was criticised for its unnecessary violence. As events unfolded, and while Marcos continued to write and act as the voice of the indigenous, he started earning respect from intellectuals and journalists in Mexico and in the world.

Although some efforts have since been made, like the formation of the National Commission for the Defence of Indigenous Towns (CDI), and through it the creation of social programs specifically for the indigenous, in practice, the conflict is much more difficult to solve. To this date, the claims of the Zapatists have not been resolved. In fact, many might even argue that "the conditions of injustice, misery and lack of democracy that caused the movement of 1994 continue to be the same in all the country, now aggravated by the criminal violence[12]" (Raúl Vera, as quoted in Rodríguez García, 2014).

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11 My own translation

12 Vera is referring to the drug traffic war that began around 2008.

Apendix II

Planning Documents ALM 2013

These are working documents that were produced while defining the project briefs for Aalto LAB Mexico 2013.

The designCAPITALIA tool was used to map what happens when people from El 20 suffer a medical emergency, where they sell their lands to pay the hospital costs. In a more desirable situation, the community makes use of their craft production to gain access to healthcare services (Figure 100, see page 404-405).

The diagram maps different areas of opportunity in El 20, the topics where further research is required, the possible outcomes regarding each topic, and it identifies where funding is necessary (Figure 101, see page 406-407).

Lencho's DAUGHTER, 1 year old falls ill. She screams in pain. The diagnosis (in Xpujil) is that one of her kidneys is not working properly; a physiological defect she's carried from birth. The girl is taken to Chetumal, where she can be operated, but they must pay 150 000 MXN. They are subscribed in the Popular Health Insurance, a Federal program, but they are told that this is only applicable at one's own state of residence. El 20 is located in the state of Campeche, and Chetumal is located in the state of Quintana Roo.

Next, the girl is taken to the hospital in the city of Campeche, but that hospital is not properly equipped. They are told to take the girl to Mérida, in the state of Yucatán. In there, the operation costs 60 000 MXN.
The family is desperate. Ofelia promises her sister to gather money and in El 20, she starts asking their friends to loan them some money. A friend loans her 10 000, another 2 000, and she borrows some more from the Municipal Palace in Xpujil. They gather 17 000, but no more.

In Mérida, doctors are having a meeting. Ofelia's sister breaks in and kneels. She says 17 000 is all they've got begs for someone to do the surgery and save her daughter. A Japanese student, moved by the scene stands up and promises to save the girl and operate her with that money despite not being a specialist. Ofelia's sister will never forget the face this Japanese student. The surgery goes well, but the posterior treatment is too expensive. Lencho has to sell his LAND.

Today the girl is 3 years old; they have to carry on some special hygienic care, but she runs like every other child. Ofelia still owes 1700, but she'll soon pay it back.

What is **FREEDOM**?

What we are living now
Living the way you want to
No one obligues you to
Freedom of speech

What is **MARGINALIZATION**?

Poverty, lacking the benefits from the city:
- Communication services
- transportation
- health
- tubed water   **GROW**
- medicines
- TV- education

VISION

Accessing services, **managed by the commune** (ejido)

GROW services
MAINTAIN autonomy

	DIMINISH	MAINTAIN	GROW
CURRENT	LAND	LIFE	HEALTH CARE
ENVISIONED THROUGH ALM		LIFE LAND	HEALTH CARE CRAFT PROD.

LIVELIHOOD:
A means of supporting one's existence, esp. financially or vocationally; **LIVING**
(www.thefreedictionary.com)

AUTONOMY:
Self-government or the right of self-government; **self-determination.**

Freedom to determine one's own actions, behaviour, etc.
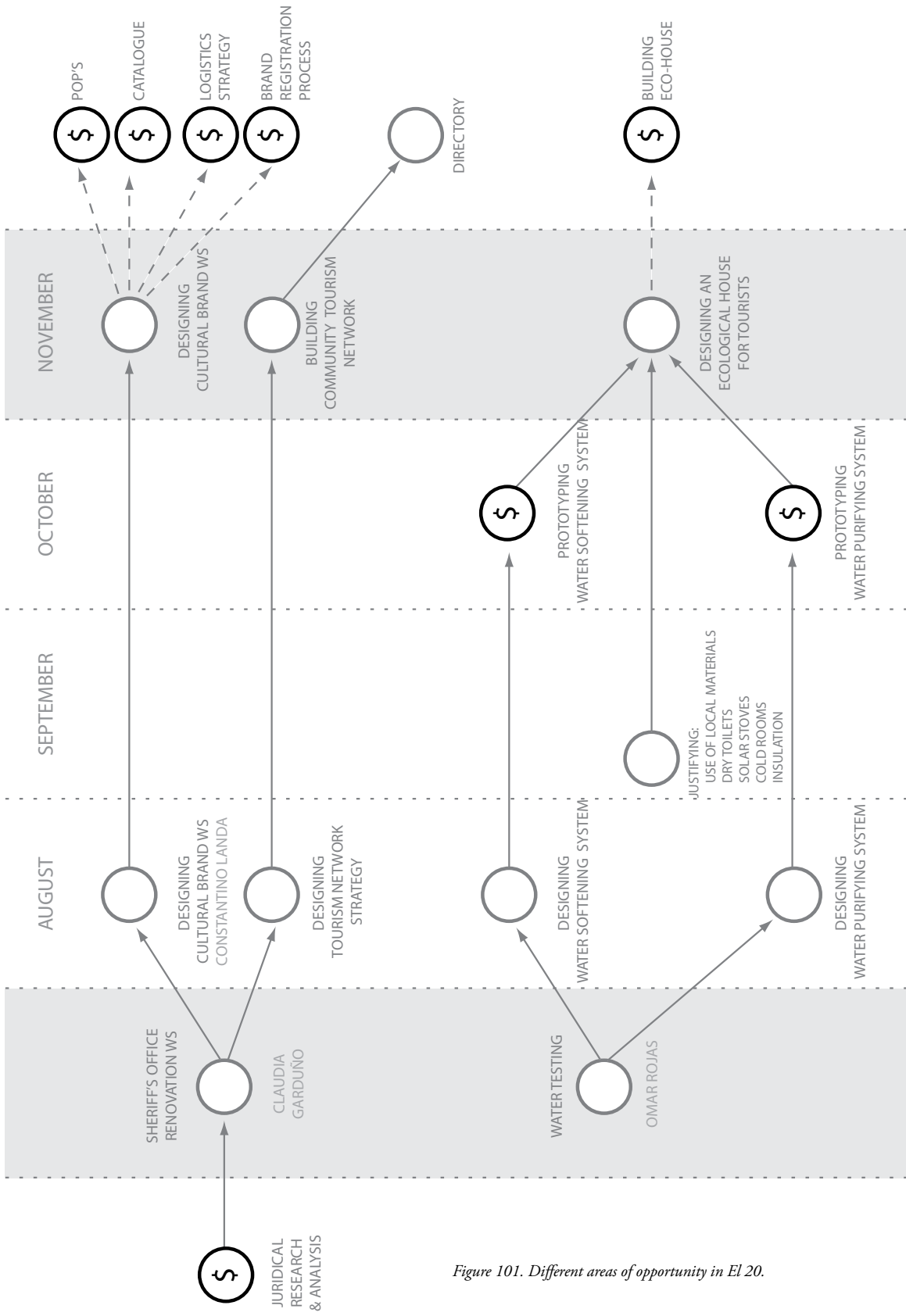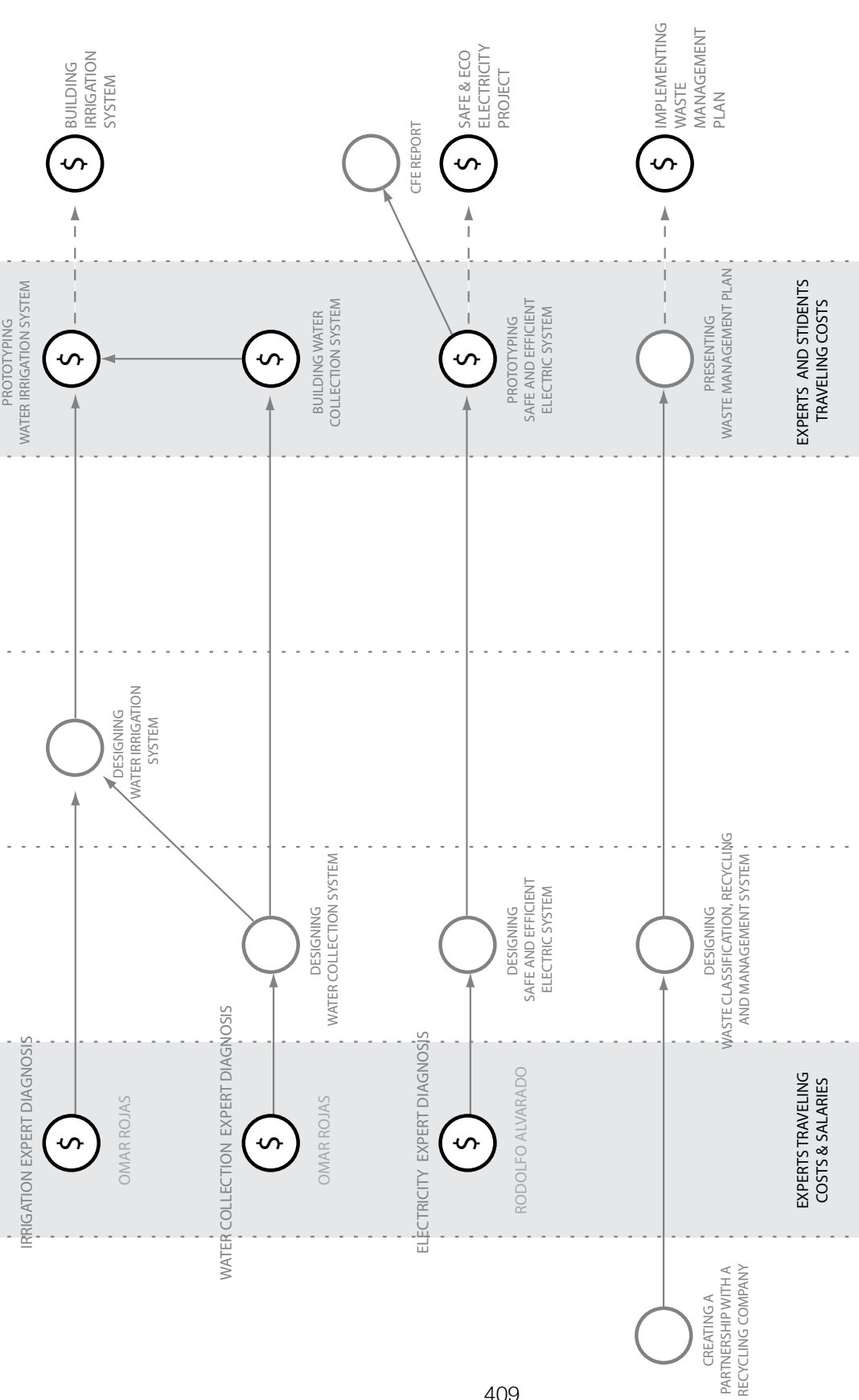(www.thefreedictionary.com)

Figure 100. designCapitalia tool.

CREATE

DAUGHTER

SOCIAL

HUMAN
PHYSICAL/
PHYSIOLOGICAL
EMOTIONAL
CULTURAL
SPIRITUAL
SYMBOLIC
MENTAL/
PSYCHOLOGICAL
OR
INTELLECTUAL

LIVING

TERRESTRIAL
BIODIVERSITY

MAINTAIN

TERRESTRIAL
BIODIVERSITY

LIVING

INTELLECTUAL

ECONOMIC

COMMERCIAL

HEALTH CARE
SYSTEM

SOCIAL
ECONOMIC
CULTURAL
INFRASTRUCTURE
SYMBOLIC
POLITICAL

PUBLIC
ECONOMIC
POLITICAL
INFRASTRUCTURE

HUMAN
EMOTIONAL
SYMBOLIC
CULTURAL
PHYSICAL/
PHYSIOLOGICAL
MENTAL/
PSYCHOLOGICAL
OR
INTELLECTUAL

PEOPLE

HUMAN

LIVING

$

ECONOMIC
INTELLECTUAL
MANUFACTURED
MAN-MADE
GOODS

COMMERCIAL

CRAFTS

GROW

PHYSICAL/
PHYSIOLOGICAL
CULTURAL
EMOTIONAL
SPIRITUAL
SYMBOLIC
MENTAL/
PSYCHOLOGICAL
OR
INTELLECTUAL

HUMAN

CULTURAL
SYMBOLIC
ECONOMIC
POLITICAL
INTELLECTUAL –
PROPERTY

SOCIAL

INFRASTRUCTURE
POLITICAL
ECONOMIC

PUBLIC

SYMBOLIC
EMOTIONAL
CULTURAL

HUMAN

GEOLOGICAL –
NON-ENERGY
MINERALS
HYDROLOGICAL
ATMOSPHERIC
SOLAR

NON-LIVING

ECONOMIC
INFRASTRUCTURE

COMMERCIAL

AUTONOMY

SYMBOLIC
CULTURAL

SOCIAL
ECONOMIC
POLITICAL

INFRASTRUCTURE

TERRESTRIAL
CARRYING
CAPACITY
TERRESTRIAL
BIODIVERSITY

LIVING

LAND

CULTURAL
INFRASTRUCTURE
SYMBOLIC

SOCIAL

HUMAN
SYMBOLIC
ECONOMIC
CULTURAL

MAINTAIN

MAINTAIN

407

POP'S

CATALOGUE

LOGISTICS STRATEGY

BRAND REGISTRATION PROCESS

DIRECTORY

BUILDING ECO-HOUSE

NOVEMBER

DESIGNING CULTURAL BRAND WS

BUILDING COMMUNITY TOURISM NETWORK

DESIGNING AN ECOLOGICAL HOUSE FOR TOURISTS

OCTOBER

PROTOTYPING WATER SOFTENING SYSTEM

PROTOTYPING WATER PURIFYING SYSTEM

SEPTEMBER

JUSTIFYING:
USE OF LOCAL MATERIALS
DRY TOILETS
SOLAR STOVES
COLD ROOMS
INSULATION

AUGUST

DESIGNING CULTURAL BRAND WS CONSTANTINO LANDA

DESIGNING TOURISM NETWORK STRATEGY

DESIGNING WATER SOFTENING SYSTEM

DESIGNING WATER PURIFYING SYSTEM

SHERIFF'S OFFICE RENOVATION WS

CLAUDIA GARDUÑO

WATER TESTING

OMAR ROJAS

JURIDICAL RESEARCH & ANALYSIS

Figure 101. Different areas of opportunity in El 20.

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BUILDING IRRIGATION SYSTEM

CFE REPORT

SAFE & ECO ELECTRICITY PROJECT

IMPLEMENTING WASTE MANAGEMENT PLAN

PROTOTYPING WATER IRRIGATION SYSTEM

BUILDING WATER COLLECTION SYSTEM

PROTOTYPING SAFE AND EFFICIENT ELECTRIC SYSTEM

PRESENTING WASTE MANAGEMENT PLAN

EXPERTS AND STIDENTS TRAVELING COSTS

IRRIGATION EXPERT DIAGNOSIS

DESIGNING WATER IRRIGATION SYSTEM

WATER COLLECTION EXPERT DIAGNOSIS

DESIGNING WATER COLLECTION SYSTEM

ELECTRICITY EXPERT DIAGNOSIS

DESIGNING SAFE AND EFFICIENT ELECTRIC SYSTEM

DESIGNING WASTE CLASSIFICATION, RECYCLING AND MANAGEMENT SYSTEM

OMAR ROJAS

OMAR ROJAS

RODOLFO ALVARADO

EXPERTS TRAVELING COSTS & SALARIES

CREATING A PARTNERSHIP WITH A RECYCLING COMPANY

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The team

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2.	Agustín	22.	Hei	42.	Rodolfo
3.	Alastair	23.	Humberto	43.	Rosa
4.	Andy C.	24.	Irma	44.	Roy
5.	Andy	25.	Isela	45.	Sandra
6.	Anna	26.	Jussi	46.	Sarita
7.	Mrs. Anne Lammila	27.	Kana	47.	Sayuri
8.	Anni	28.	Leydi	48.	Sharoon
9.	Antti	29.	Luz	49.	Ismo
10.	Areli	30.	Mariana	50.	Jan
11.	Ariadna	31.	Mateo	51.	Jorge
12.	Baltazar	32.	Mikko	52.	Juan
13.	Claudia	33.	Miriam	53.	Sofia
14.	Constantino	34.	Niina	54.	Susu
15.	Daniel	35.	Nina	55.	Suvi
16.	Delfín	36.	Mrs. Norma Pensado*	56.	Theresa
17.	Eetu	37.	Ofe	57.	Tiina Laurila
18.	Flynn	38.	Oscar Hagerman	58.	Tommi
19.	Gabo	39.	Pam	59.	Tuuli
20.	Gaby	40.	Paty	60.	Xavi

Photo taken from: https://embamex2.sre.gob.mx/finlandia/images/EmbajadoraNP.jpg

Glossary

Aljibe. Spanish for cistern.

Ceiba. Tree that grows in parts of Mexico, Central America, and South America. The Mayan consider it to be sacred; they call it the tree of life.

Comisaría Ejidal. This is what people in 20 de Noviembre call the building where they host their internal government meetings. However, they also host other types of events.

Ejido. A model of land property where ownership is collectively shared by ejidatarios.

Ejidatario. Each of the persons who collectively own an ejido. In the case of 20 de Noviembre, the ejidatarios are typically male heads of households whose families were among the original settlers of the community.

Fajina. In the southeast part of Mexico, this word means community work. In 20 de Noviembre, the governing body decides when something has to be made, and assigns each person a turn. Some examples of tasks that can be developed through fajinas are road maintenance work and cleaning the school.

Jaguey. Mayan word that describes a man-made massive water collector or artificial lake, and that in the area, is easy to build due to the composition of the soil.

Labbers. Students who are part of Aalto LAB team.

Livelihood. The way in which a group of people provides for themselves. In urban contexts, people have jobs and earn a salary, with which they acquire food and shelter, among other services. In rural communities like 20 de Noviembre, people sustain themselves through a mixture of activities, including agriculture, livestock, apiculture, and hunting.

Monte. Mountain. In 20 de Noviembre, they use the word to refer to the areas where vegetation has remained intact or nearly intact, where it is not used for livestock or agriculture. Moreover, those parts are commonly mountains that surround the valley where the houses have been built. Vopli (2004 p. 44-45) explains that mountains play a relevant role within the indigenous cosmogony, always associated with the idea of divinity, revealed knowledge, and the idea of improvement.

Nopales. A flat, oval, edible cactus.

Acronyms

ALM. Aalto LAB Mexico

ALS. Aalto LAB Shanghai

CS. Master's program in Creative Sustainability from Aalto University.

CONEVAL. National Council for the Evaluation of Social Development Policy of Mexico (Consejo Nacional para la Evaluación de la Política de Desarrollo Social).

CONANP. National Commission for Natural Protected Areas of Mexico (Comisión Nacional de Áreas Naturales Protegidas).

CONAFOR. National Forestry Commission of Mexico (Comisión Nacional Forestal).

DYA. Mexican Civil Association founded by Xaviera Sánchez de la Barquera, which bases its functions on the principles of participatory design, to find collaborative, innovative, relevant, and effective solutions to complex situations in society.

El 20 / 20 Nov. / Ejido 20 de Noviembre. The community where ALM takes place.

IMSS. Mexican Institute of Social Security; the government organisation that assists with public health and social security, under the Secretariat of Health.

LCA. Life-Cycle Assessment

SEDESOL. Secretariat of Social Development. (Secretaría de Desarrollo Social)

SGT. Sustainable Global Technologies program at Aalto University School of Engineering.

S.PSS. Sustainable Product Service System.

Tec. Monterrey. Institute of Technology and Higher Education, Mexico City campus.

UNAM. National Autonomous University of Mexico.

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This work explores freedom as an alternative driving principle for design. Based on philosophical discussions, freedom is seen as tightly linked to morality, leaving room for sustainability, which for its part, is understood as a moral ideal that implies justice in the environmental and social spheres. The model of assemblage is introduced as a unit of study, which enables the treatment of users and their environments to be the initial situation for a design intervention. By generating new relationships among elements, a better assemblage is achieved.

The Design as Freedom principle is observed in practice through a project called Aalto LAB Mexico (ALM). ALM is developed in a marginalised, rural, indigenous community in the municipality of Calakmul, in the state of Campeche, Mexico. ALM identified the emergence of a double-sided mirror perspective, in which the design team and the participant end-users reciprocally inspire each other to reflect deeply, and assess and even change their own ways of life. Design as Freedom is a longitudinal co-design process that aims for the mutual empowerment of participant end-users and designers.

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