

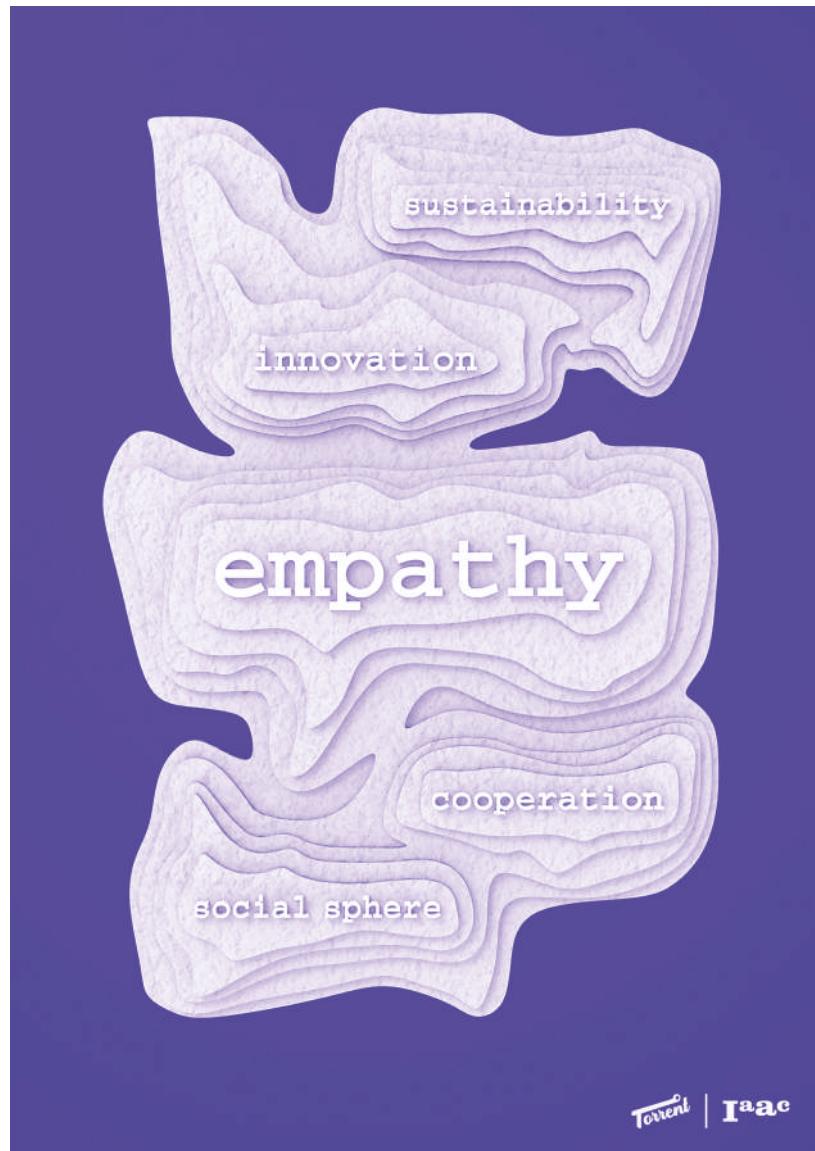
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# /chapter.0

defining  
the\_basis



# /my fight

My main fight is based on the empathy concept. Nowadays, our society has many problems because people forget about this value. No one puts his/herself in other people's shoes and everyone looks after the own interests. Many things would change if people would try to understand the realities of others, the situations they have to live through, the issues some people have to put up with. With empathy, wealth would be distributed in a better way, nobody would judge those outside the standards, we would all think more about our environment and society would work much smoothly.

As a designer, I want to bring the concept to my field. I believe that good design only makes sense if it is empathetic, if it has a function to improve living conditions, if it is capable of helping. And don't get me wrong, design based only on aesthetics is a relevant art form but, from my perspective, form always has to be tied to function, and this has to be the main goal.

Our creations are what define our environment, and the more empathetic our environment is, the more empathetic we will be.

# /personal\_development\_plan

I would like to focus my strong personal development plan on the idea I had when I decided to choose this master's degree, which was to discover new fields and explore many different areas. My intention was to improve my resources as a maker, learning more about electronics and programming, materials and prototyping machines.

After these reflections I have realised that I also want to learn about other fields such as project documentation and communication, working with communities, discovering the world of AI, biology and agriculture, etc.

In conclusion, my personal development plan will be founded on getting to know in depth all these topics that I haven't yet had the opportunity to deal with and then be able to use them in my professional future.

In addition I have developed the process of analysis and reflection on myself and my expectations for this master's degree. As you can see in the diagram below, this process consists of 4 steps. The first two are the result of the work we did in the first Design Studio session and two others come out of the subsequent personal work. The subjects developed in this diagram are the following:

1. Description of my identity in terms of skills, knowledge and attitude.
2. Concepts that caught the attention from my classmates after doing the meetings and talking about our skills, knowledge and attitude.
3. Desired professional identity based on my vision and on the conversations with my classmates.
4. What I want to learn from the courses I will take during this master's degree.



# 1 skills knowledge attitude

modelling  
learning facility  
resolute

3d printing  
design vision  
handcrafting

engineering  
digital fabrication  
socio-cultural sphere

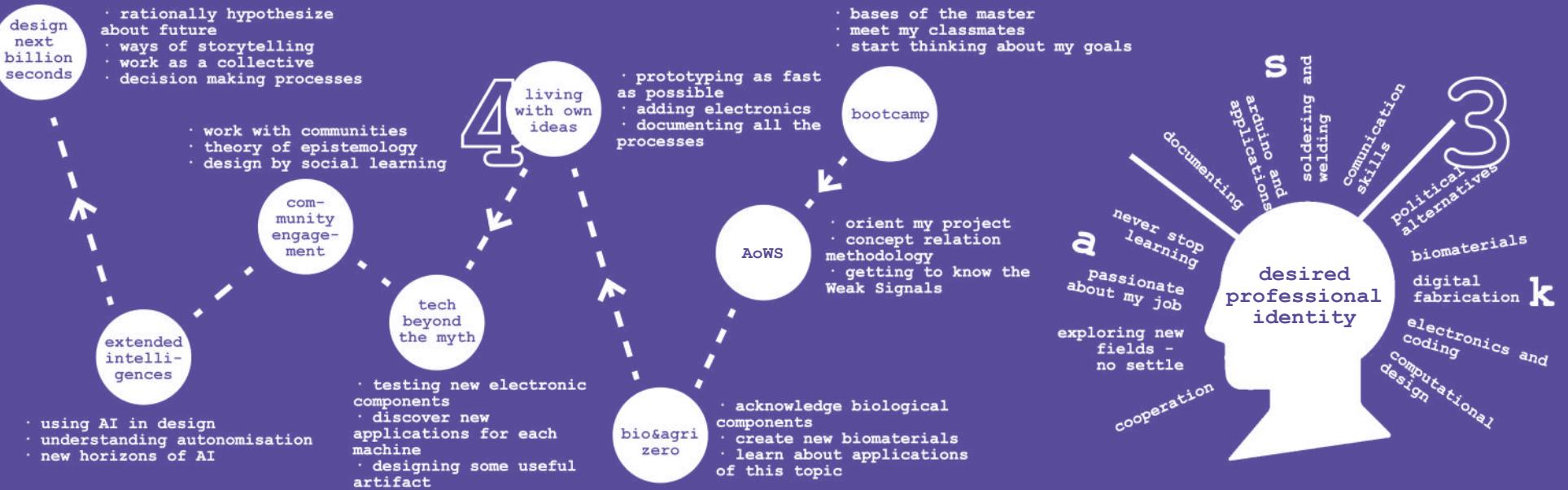
politics  
design

open-minded  
empathetic  
always aiming to learn

cooperative  
ambitious

# 2 meetings with classmates

communication skills	keen on working with her own hands	fashion knowledge
looking forward to challenging herself	experience creation and storytelling	
passionate about biomaterials	interested in learning Grasshopper	handcrafted ceramics
skilled in conceptualising and graphic design	interested in cognitive science and cognitive psychology	



# /chapter . 1

research  
through  
design

# /setting\_a\_workspace\_

One of the first tasks we had to do for the Design Studio was to create our own Workspace considering four main topics: materials, tools, infrastructure and people. These are the four pillars that sustain any design project. Reflecting on this subject, I started listing all the resources I had around me that could be useful in any of the main areas I wanted to focus on.

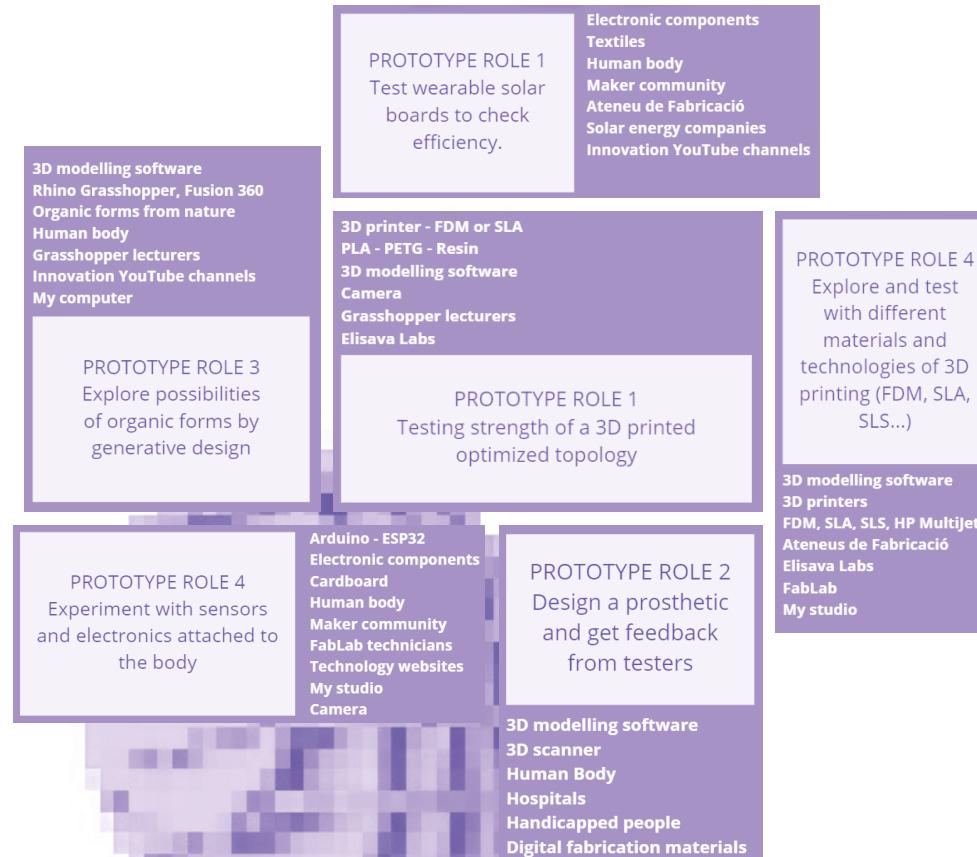
About materials, I thought of all the elements we use at Ateneu de Fabricació and that are commonly used also in any FabLab. However I also added some others that I might want to explore as textiles and metals.

Regarding the tools, I also took into consideration all the machinery FabLabs have, also adding some electronics, programs and objects to help with the documentation.

In terms of infrastructure and people, I listed some of the spaces where I would like to develop my project but also some places and people I can get information from or help in case I need it.



# /roles\_of\_prototyping



The roles of prototyping describe different ways of doing research through design. During this first term of the masters, we have been presented to four of them that are maybe the most significative ones:

- Role 1.** Prototype as an experimental component.
- Role 2.** Prototype as a mean of inquiry.
- Role 3.** Prototype as a research archetype.
- Role 4.** Prototype as a vehicle for inquiry.

In this case, I used my Design Space to apply some of these roles of prototyping in order to get some information from the experiments. On the left, one can see how different roles are related to different topics (that I will comment later on the review of my Design Space), and also the necessary elements of the workspace I just explained that need to participate so as to make the experiment happen.

It is crucial to define which is the role of a prototype in order to get the appropriate information. For my experiment, I used *Role 1* and tested the strength of a 3D printed topology (pages 33-34).

# /chapter.2

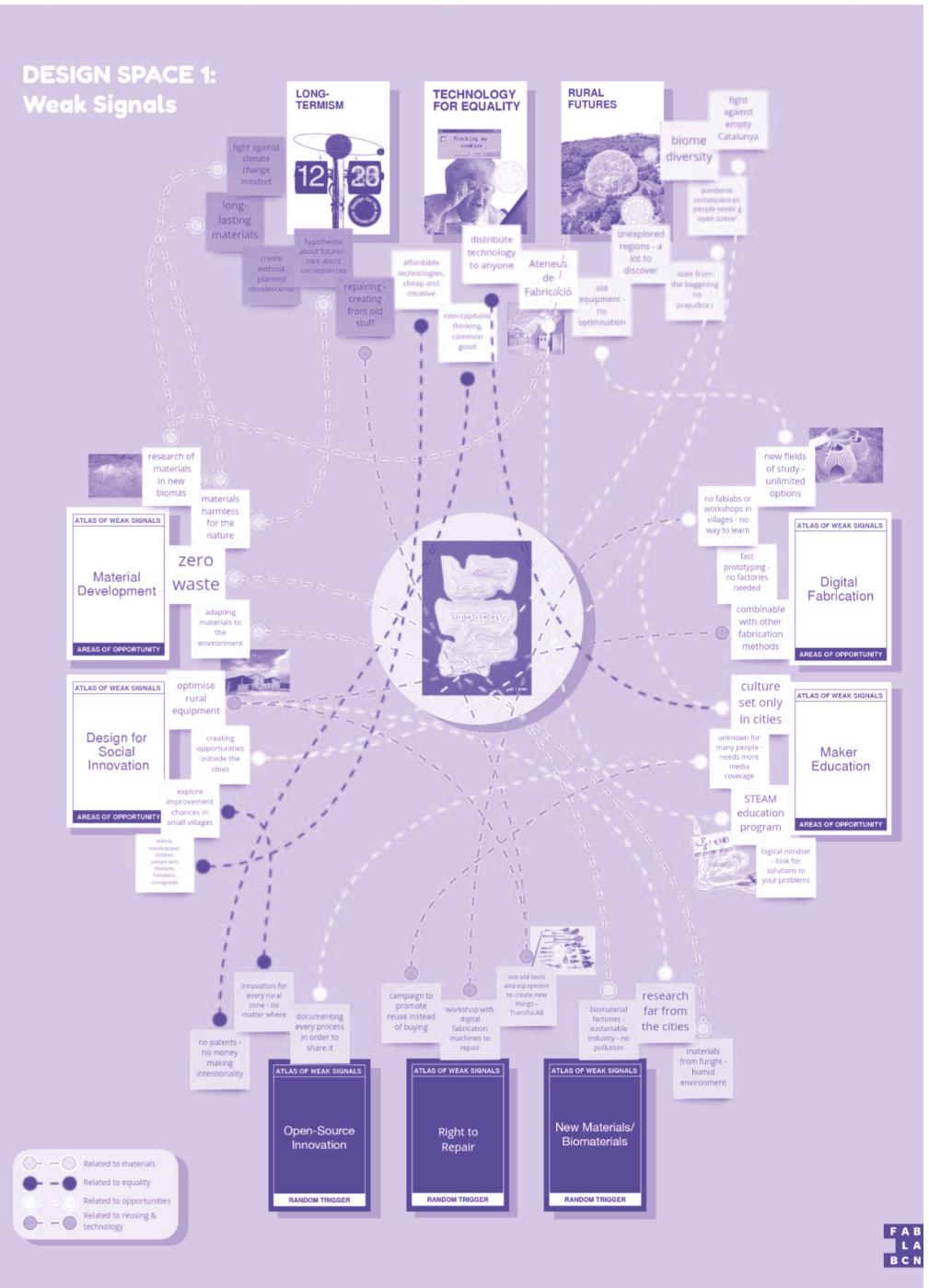
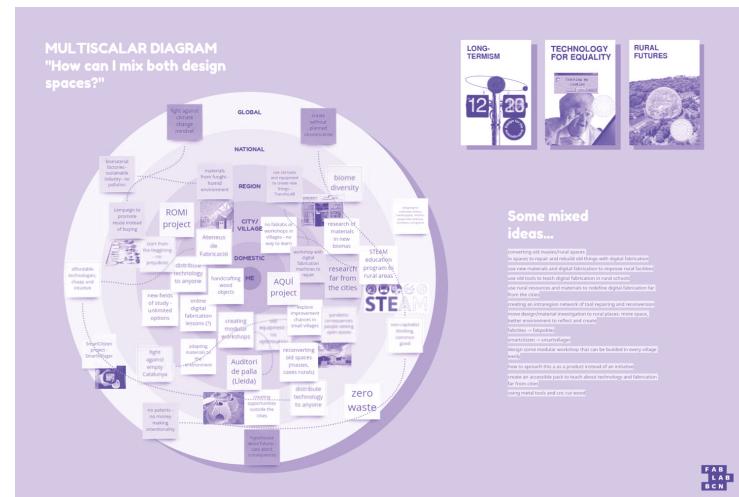
creating\_  
design\_spaces

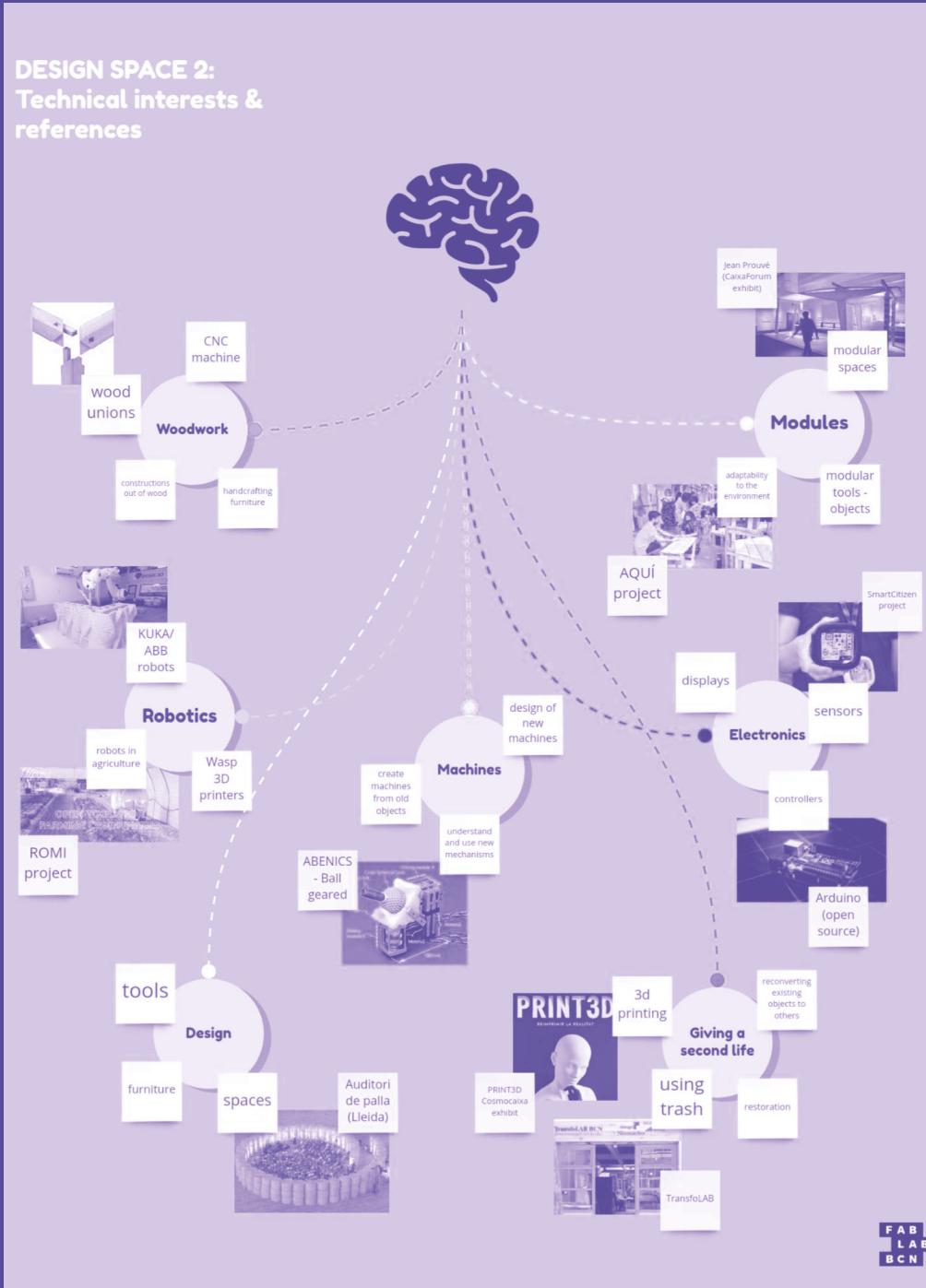


# /design space.v1

In this first Design Space created during the AoWS week, I took as main topics *Long-Termism*, *Tech for Equality* and *Rural Futures*. I wanted to explore this fields in relation to digital fabrication, right to repair and maker education, while at the same time enhancing the idea of decentralization and distributed desing.

The multiscalar diagram below recaps all these concepts into the different scales, adding some references from existing projects and has some ideas of what could be done.





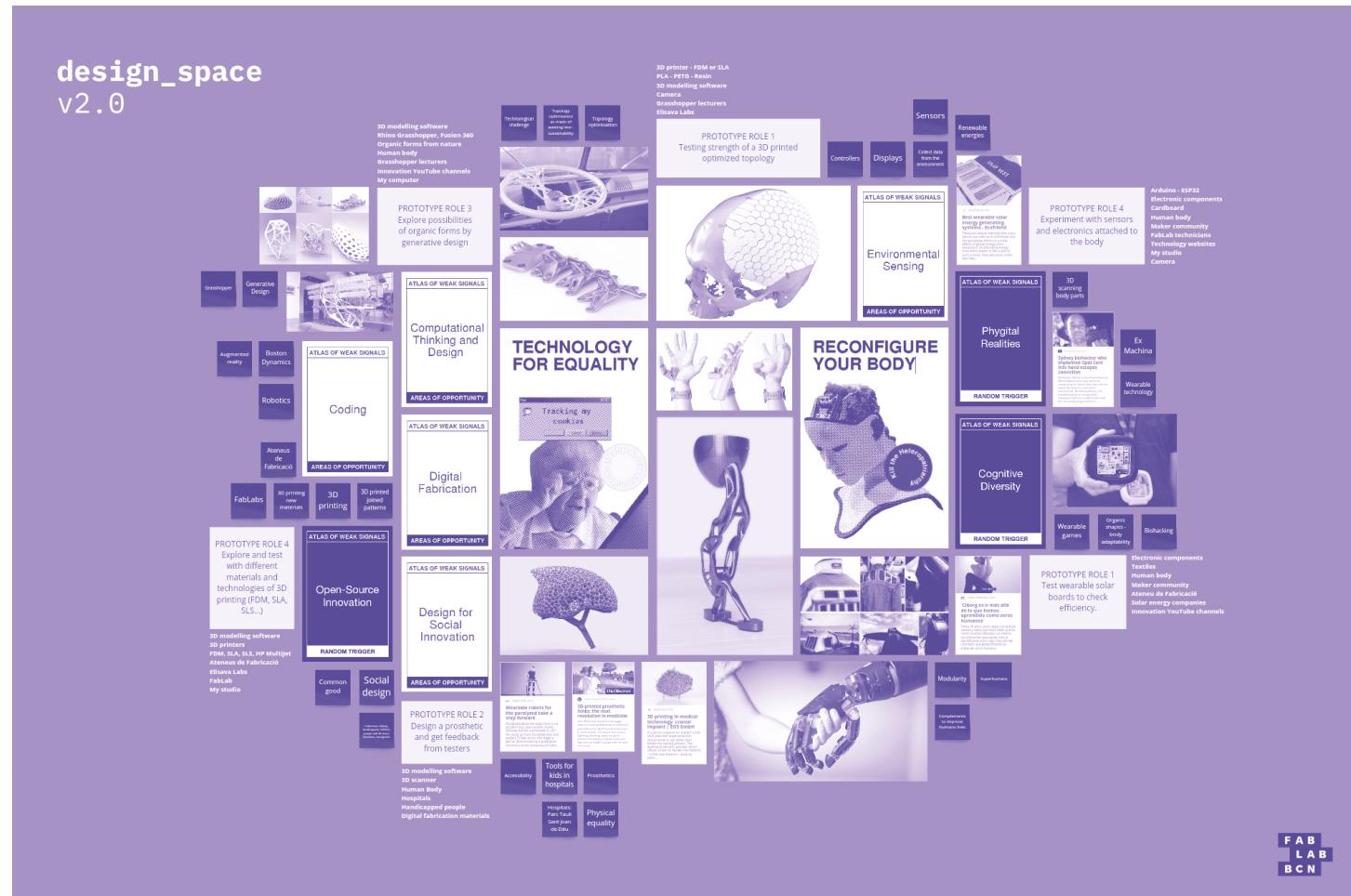
# /areas\_of\_interest\_

Together with the first Design Space, I developed also this graphic that explains what are my interests in terms of technologies and themes I would like to include in my future projects. I created this diagram in order to define those interests that are not related to an specific topic but can be applied to any of the subjects I may or may not choose to work on.

We can summarize all these topics into two main conceps: engineering and design. These have always been my two passions in regards to my professional career, and every year I try to explore different branches of them. My interests now in terms of engineering would be electronics (sensors, controllers, coding...), creating new machines for diverse tasks, and robotics related to the creation of art (FabLab's KUKA, for example). Regarding design, I'm interested in the creation of spaces and products, organic and generative design and modularity.

Finally, I certainly want to dig into the topic of giving a second life to obsolete or broken objects or tools. Also redesigning them to make them last longer, maybe this time doing some other function.

# /design space.v<sup>2</sup>



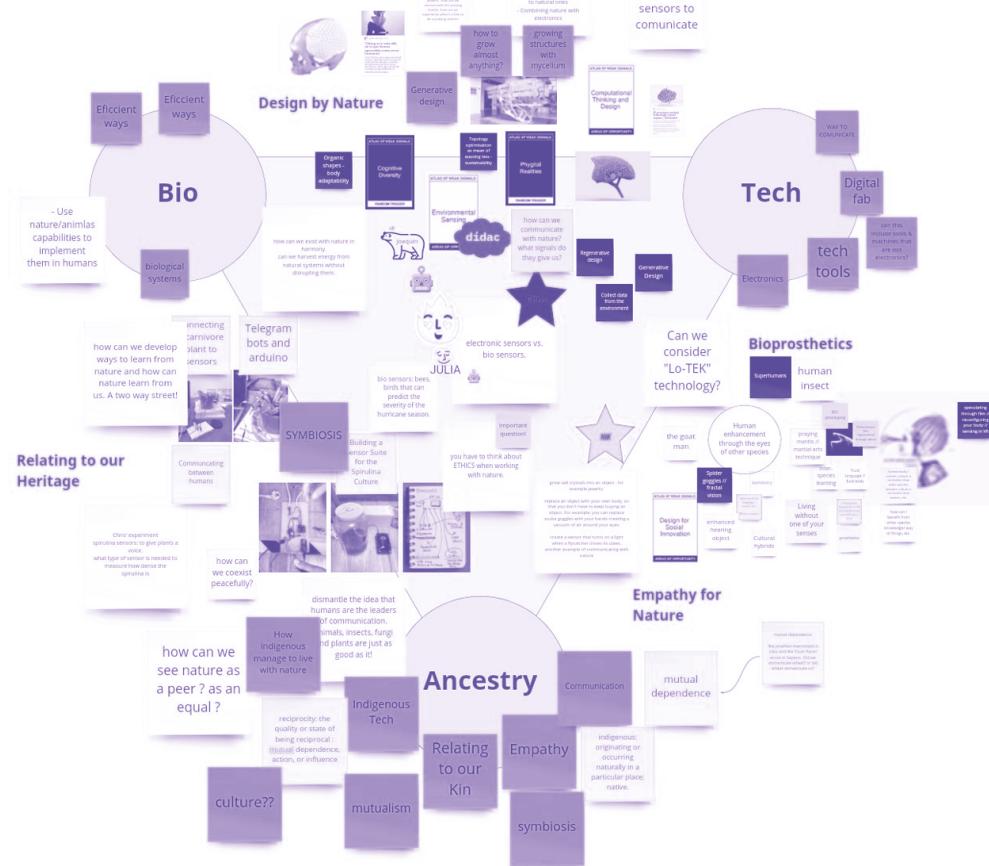
The week after AoWS, I found myself a bit lost with the topics I had chosen. I didn't feel motivated enough to explore more those fields so I decided to restart from scratch.

This second time, I kept the weak signal of *Technology for Equality* (as it is a topic that really catches my attention and that I want to investigate) but added another quite different from the others that I didn't even have considered before: *Reconfigure Your Body*.

The way I related this two subjects was based on using technology to help those people with some kind of disease or dysfunction related to the body. Nowadays, we can see some prosthetics created with generative design and some others done by 3D printers. This is becoming a reality in medicine and I found it really interesting.

On the other hand, I was also thinking of doing something with wearable devices and environment recognition. I wanted to know more about people who call themselves cyborgs and how this could improve someone's life.

# /collective\_space



After having our own Design Spaces, we created a Collaborative Design Space called *Bio*, *Tech* and *Ancestry*. In discussion, we felt that these three concepts generally grouped together, in one way or another, the concepts of our projects. The *Bio* part encompassed everything related to nature and living things, organic forms and biomaterials. Technology referred to electronics and mechanics, but also to innovation techniques and processes. Finally, *Ancestry* grouped the ideas of connection with the past or with other species, it also relates to empathy and the spiritual part.

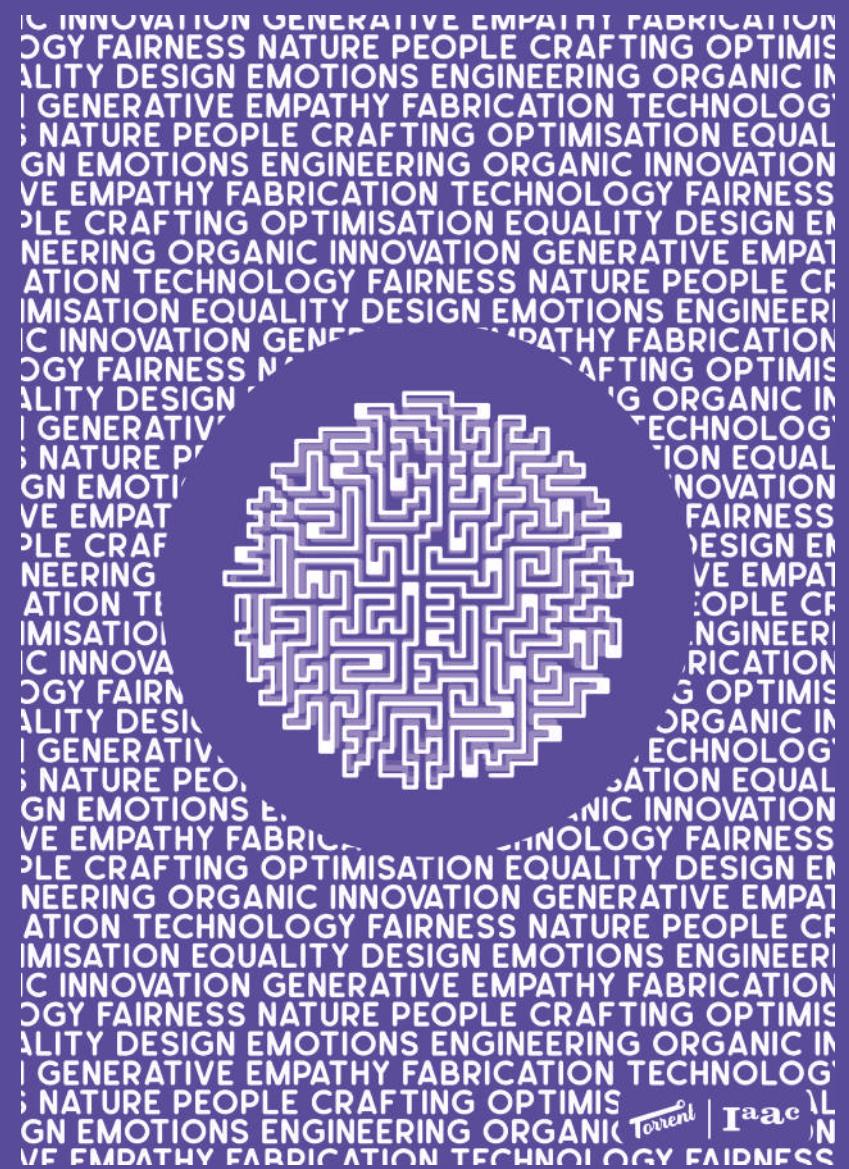
In my case, my project would be situated between *Bio* and *Tech*. As I defined in my second Design Space, my main objective was to achieve organic shapes, perhaps adapted to the human body, modelled with generative design and topological optimisation and also adding some electronic components. This idea is a clear mix of these two concepts, the study of human biology and natural forms with 3D design technology that allows you to obtain computationally developed models and the electronics.

# /state\_of\_the\_art -

In preparation for Design Dialogues we had to do an update of our poster we made at the beginning of the term related to our struggles. In my case, this was an opportunity to reflect on what I had been working on so far and whether or not I liked the path I was taking for my final master's project.

During these three months I think my interests have been changing a lot and I still haven't found the topics I would like to work on from now on. I developed a first Design Space about the rural world that didn't convince me and I changed it completely. Then I started another Design Space related to wearables and prosthetics and now I don't see very clearly that this is the path I want to follow.

I'm constantly rethinking my interests and the problem is that they are obviously changing as I learn and evolve throughout this master's degree.



//////////

# /state\_of\_the\_art\_

This, even though it is a problem given that in some things I fall behind and I can't teach how my work is going because it simply doesn't go, it is also making me learn and I am understanding that whatever I do in the future has to be something I enjoy, something that makes me feel good and that I can learn about different fields.

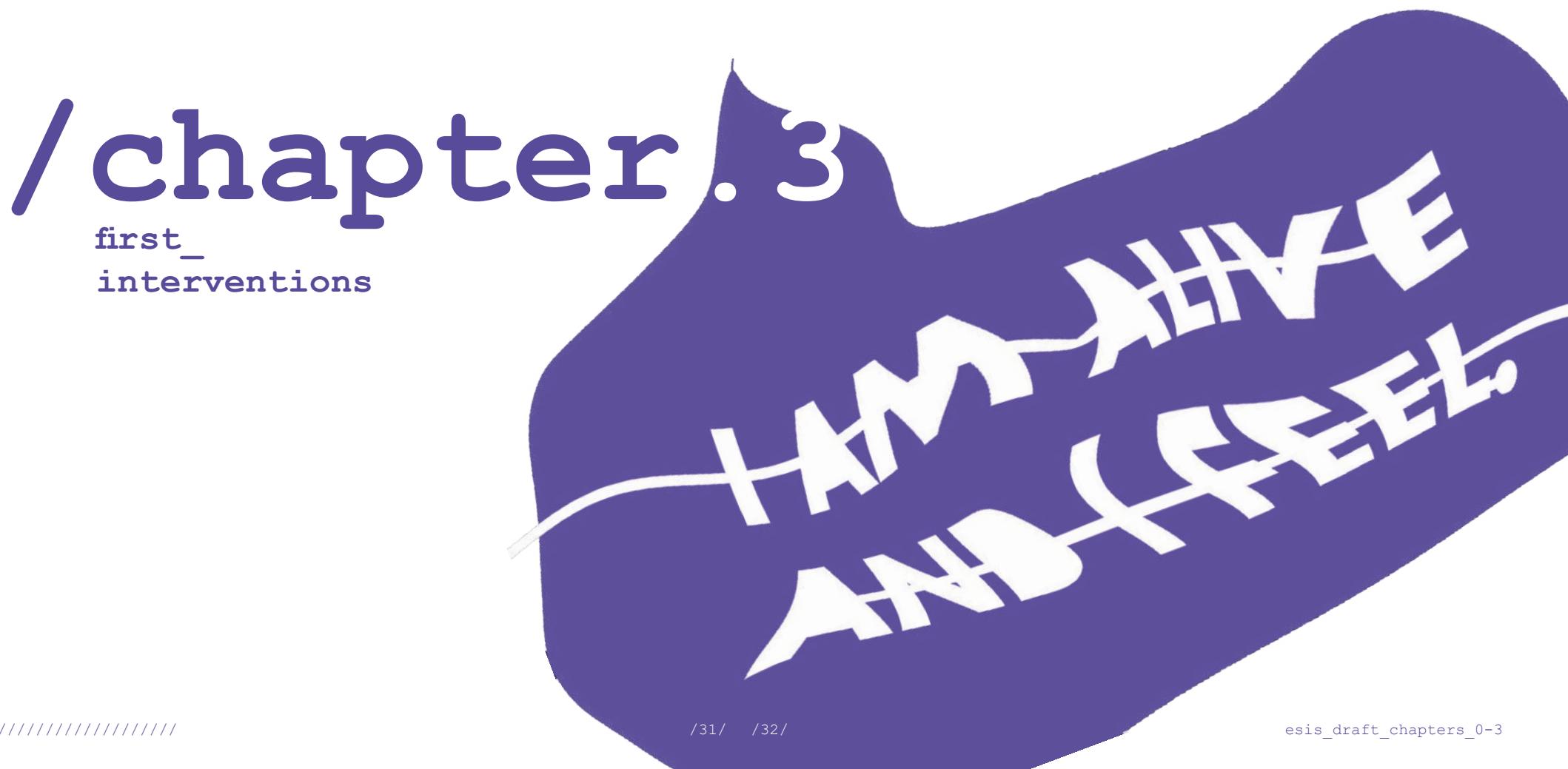
Also, thanks to the Plant B project, I have been able to see that what I really like is making things with my own hands, making with different machines and processes, designing scenarios and projects that look good and have a use.

On the other hand, I have realised that giving a second life to an object that is worn out or broken is something that I really like, and that it can also help to extend the life of something that was previously considered rubbish. I think this idea can point into something social, either because I'd be reducing waste but at the same time because this repaired elements could be used by someone who needs them.



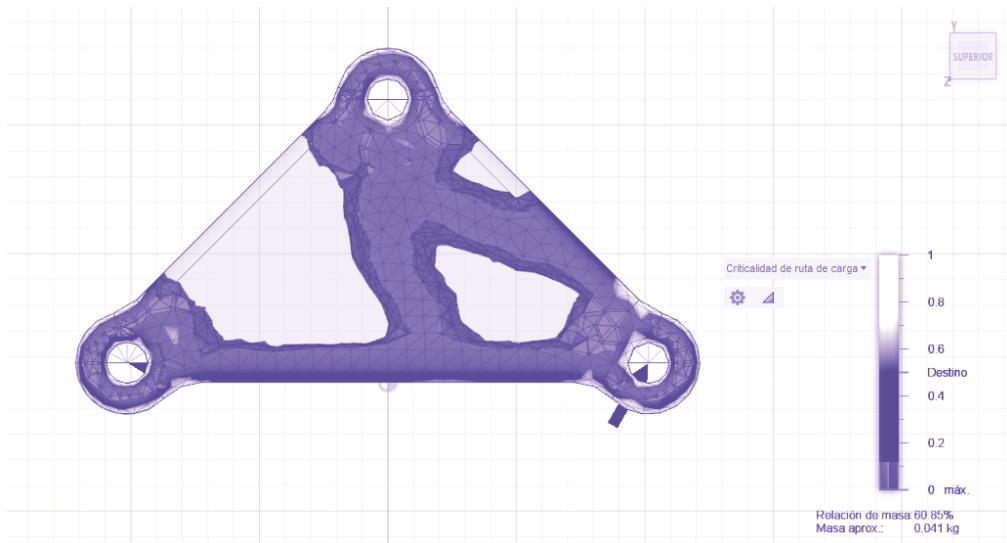
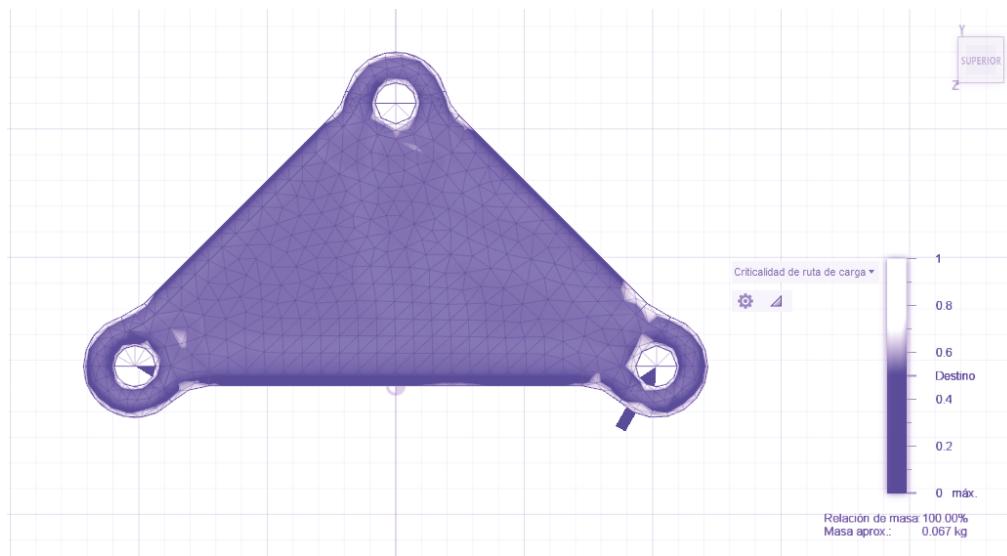
Finally, I want to keep exploring technology in all its meanings, I want to work with generative design and Grasshopper to give this second life to the trash I am talking about, combining repair and design. I want to play with the machines in the labs of ELISAVA and FabLab, and I want to learn about electronics and programming, going beyond the typical exercises to make something applied and useful.

I know that there is a lot of work to do and that it is not going to be easy, that's why I wanted to show this kind of labyrinth in the centre of my poster, and that I have many things in mind, but I know that I always end up finding the way and that in the end I will be happy and I will feel fulfilled with what I do.



# /chapter.3

first  
interventions



# /first experiment

For this experiment I used Fusion 360 to carry out a first test on topological optimisation in 3D printing. I modelled a very simple part where I applied some forces and after doing the structural analysis I used the generative design tool to optimize the part and leave only the necessary material so that the part can withstand the same stresses. In this case, the optimized topology's mass was only the 60% of the non-optimized one.

Finally I printed the two parts, the non-optimised one and the optimised one, and made an initial strength test with the resources I had at home and trying to apply the same forces that I had established in the previous structural analysis.

The purpose of this exercise was to check if 3D printing, in this case FDM, can be a suitable medium to develop generative design and topological optimisation projects, two of the main topics of my Design Space and with which I would like to work more in depth. The next step would be to create a more complex and organic shape and see if 3D printing is still a possible manufacturing method in this process.

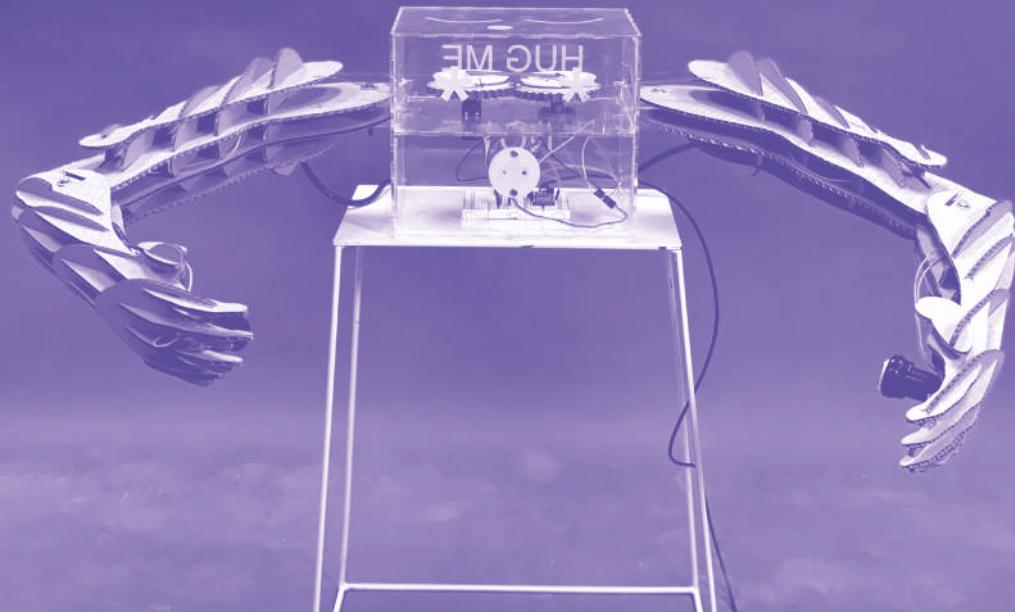
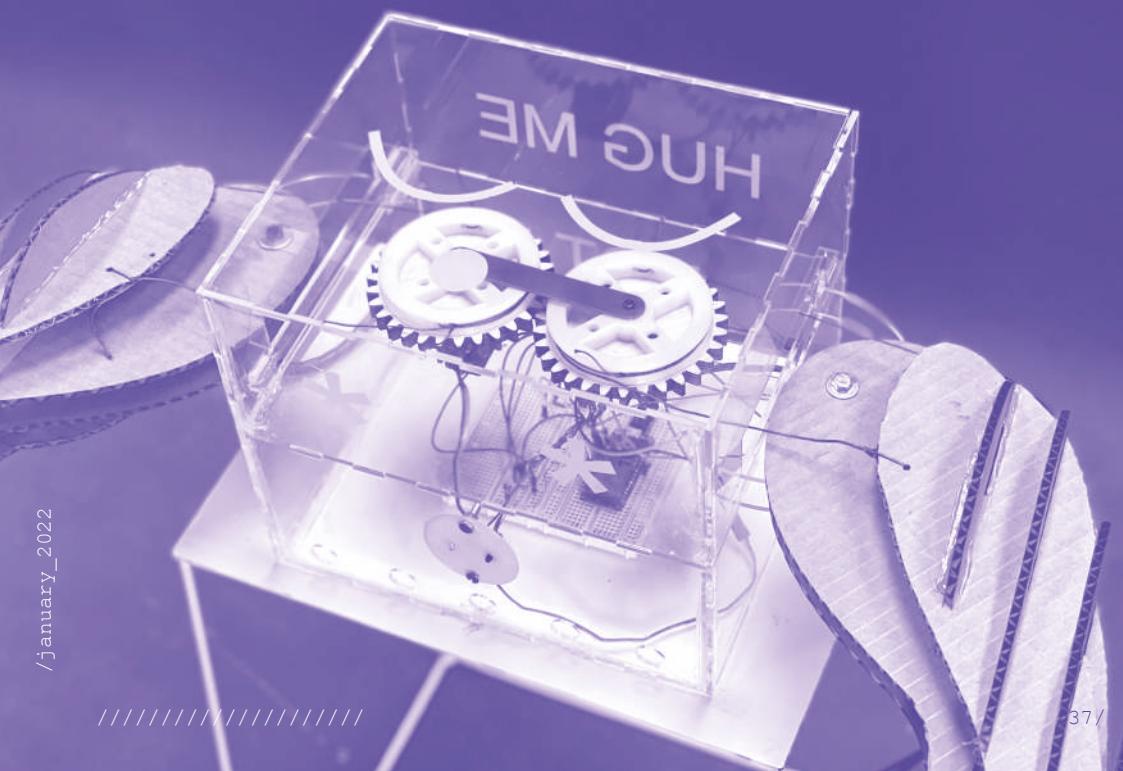
# /wearing\_weights

This intervention consisted in experimenting for 24 hours what First Person Perspective means, within the framework of our Design Space if possible. In this short period of time we had to pose a question we wanted to explore and accompany it with a personal experimentation exercise. In my case I chose the question "What if some parts of our body were heavier?".

My main intention was to find out how I would feel if some of my body parts were heavier, and also to check if it would be comfortable or uncomfortable. Gathering this information was relevant to my project as my idea focuses on wearables and prosthetics, and having a sense of what it's like to have weight attached to your body is essential. Also to empathise with those people who have to carry extra weight due to basic needs or illnesses.

Clearly, putting yourself in the situation of your object of study is not only beneficial for gaining first-hand knowledge of the context, but also brings spontaneous and unexpected knowledge that you cannot get from working externally. Also, by being the instrument yourself, you can empathise directly with your target and feel what they feel.





# /hug\_me\_ not

HUG ME NOT is a project born on the second week of Tech Beyond the Myth, devoted entirely to the workshop Almost Useless Machines. The aim of this workshop was to create a machine that was not very useful. A machine that was functional but not practical or useful in itself. It had to be an artefact created and thought from a feeling that we wanted to transmit to the user.

Our group, formed by Anna, Fiorella, Marina, Paula B., Rei and myself, decided to base our project on the emotions of desperation, anticipation and discomfort. In order to transmit these feelings, we thought of a machine that would give hugs but where the arms would never close nor would they ever touch the person they were theoretically hugging.

We created this machine using many different technologies (laser cut, 3D printing, Arduino, etc.) programs and materials. At the end, we managed to have this weird machine that pretended to give hugs using a quite complex flow diagram and a well-thought mechanism to move the arms. It was nearly mind-blowing seeing this project and the others and realising they had all been made in less than three days.

# /plant b\_- project -

For the final Design Dialogues event at the end of term 1, Joaquin, Chris and I teamed up for the collective design intervention. We are interested in the intersection between music, collaborative jamming, nature and how these things can be combined. We wanted to research how engaging in an intimate collaborative setting with plants could foster a meaningful inter-species connections. For that, we decided to enable an inter-species jam session, where the plants would be both musicians and instruments.

With the help of the MakeyMakey, some plants from the Fab Lab office and Ableton Live, we managed to get a first minimal viable product for a few classmates to test out. We managed to extract some interesting insights from these experiments. First of all, it was intriguing to see how the sounds produced did not only dramatically change the perception of the users towards this plant, but also the interaction that comes with it. Secondly, the perception of the experiment as a whole changed according to what musical mood we were aiming for: There proved to be a much different vibe between mysterious, atmospheric synthesizer and bell chimes samples on the one hand and some pulsing electronic lead synths on the other hand.

Throughout the process of making and developing our scenario, we kept changing ideas and details that we had previously considered. It was a process of discovery and also of adapting to the time we had, iterating on design and operation. The changes were mainly due to the fact that we were more and more clear about what we wanted to transmit and how we wanted to do it, an aspect that was obviously not very clear at the beginning.

The response to our intervention was overwhelming and for all of us everything but anticipated. We were fortunate to witness some very special moments of intimate interactions between passersby and plants to make music together. Especially children were absolutely enchanted by the concept of singing plants and were the most fearless when it came to interacting with the plants. Often, adults would be shy at first - but after inviting them in to join, they usually lost their initial hesitancy. Throughout all ages and genders, people were amazed by this way of interacting with plants, which was new for almost all of them.



