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Taking the Side of Food

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Abstract

This thesis is a collection of a series of separate entries regarding the intersection between agriculture, the food sector, and architecture. Portraying the role of food at our societies in modern history while scrolling back to ancient civilizations by highlighting not only the biological necessity of it but also as a driver for spatial, social and ecological improvements. Research includes several trace of the historical and contemporary entanglements of agricultural systems within the built environment. Thesis examines if architecture can address any of the urgent issues, such as an increased out-of-control consumerism approach through high level production of animal based products, industrialized food production and environmental consequences of such. The study adopts both analytical and hands-on approaches, by combining statistical and historical research within a fieldwork experience. Fieldwork part is in a journal structure which shares the experience of the author during this period of collaboration, thus is finalized with a realized project for a community garden. Built project is supporting the points mentioned during the research part and meets with the need of the local community which has been found out through a survey. Emphasizing that architecture can promote local resilience only when the decision-makers backs the idea. Through this lens, thesis positions architecture as a mediator between food systems and human settlements, which is capable of generating spatial solutions that can integrate productive landscapes and enhance ecological performance. Ultimately, it argues for a reconceptualization of architecture as an agent in shaping sustainable and equitable food systems.

Acknowledgement

To my Family, for your unconditional love and support you have given me throughout the years I was away from home. I am filled with unlimited gratitude.

To my Professors, for your guidance through this journey, which I had no idea where would be the final point, by giving me the academic support and personalized suggestions for such challenging workflow.

To my friends, who I have worked and spend recreational time together. We are on a path to an unknown future, sometimes together and sometimes apart. What I know about this uncertainty is that I am glad to have you with me, you beautiful people.

To everyone, who I came across prior and during this journey for your intentional or unintentional inspiration you have given me.

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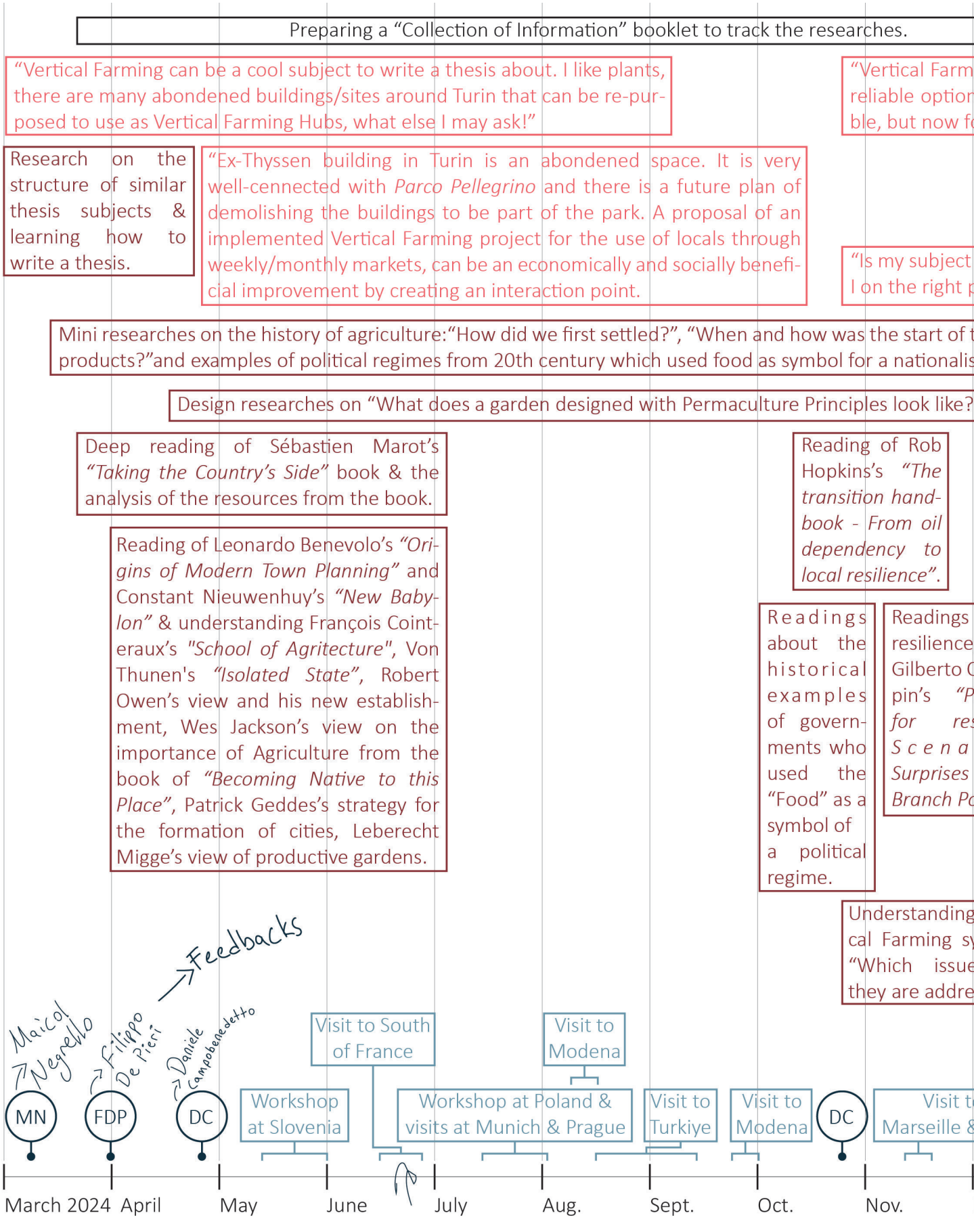

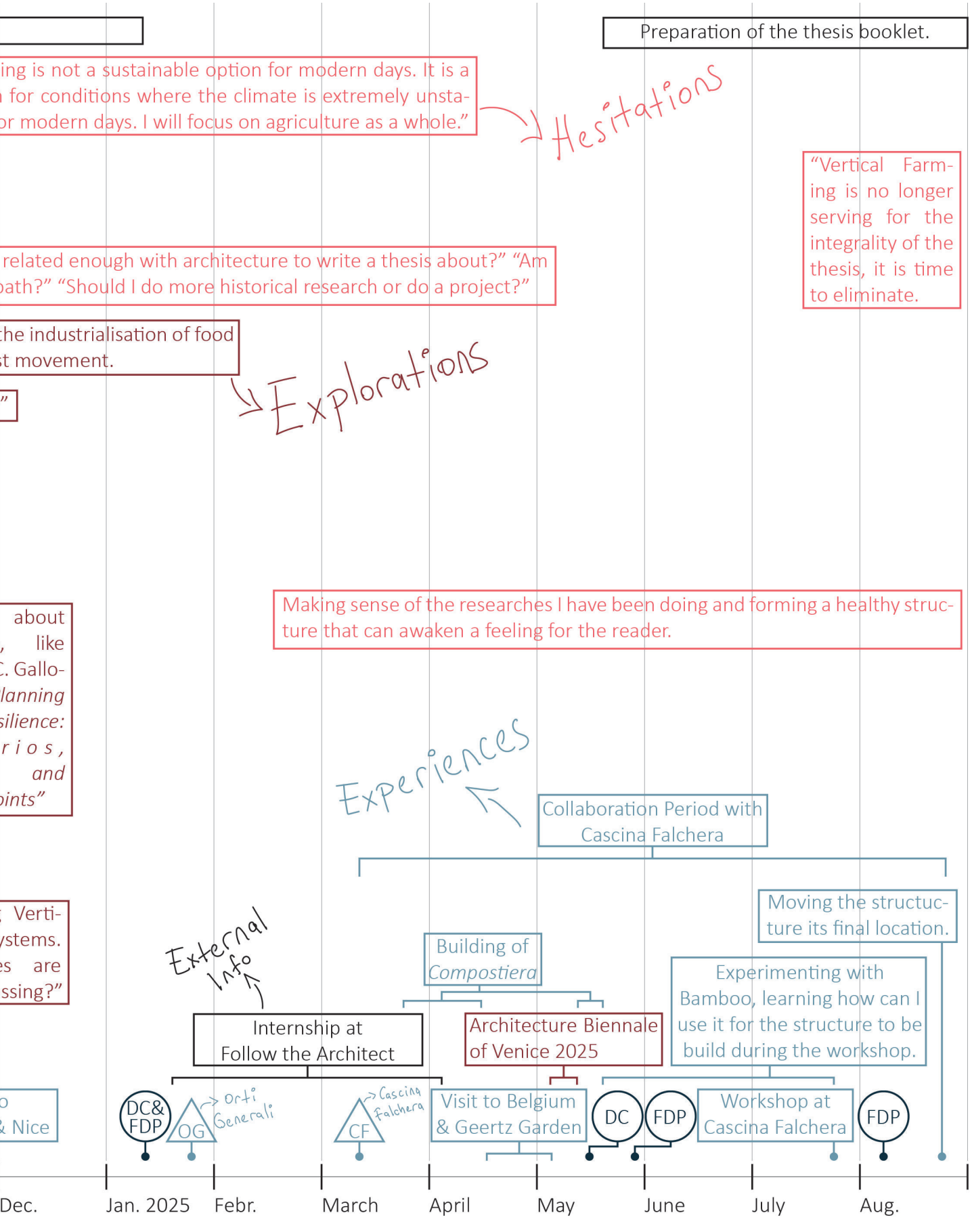
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Introduction

Throughout the thesis on this part of the page you will find the trajectory path of writing this chapter. You will have an insight from the perspective of the author through changing ideas, hesitations and explorations. This addition deserves a recognition because of the shared experiences and emotions during the journey of the creation of this thesis. While researching I found myself completely lost in information several times, where I was no longer thinking for the aim of the thesis but solely reading for my personal interest. This kind of approach allowed me to not have any limitations and follow my interest. By moving without any goal, gave me the space to research without judgement. Often times I didn't use a part of such sources but these few times I was faced with a work which I never would have thought about reading. So I can say I did 'spend' many hours looking and reading about something that is not mentioned at this thesis. So we may call it a 'waste' of time for the sake of the thesis, yet it doesn't change the fact that they did awaken a sense of curiosity of looking and finding and understanding of such unfamiliar subjects.

So, this paragraph can be a preview by the reader as how this 'introduction' part at the beginning of each chapter is working.

"At the following chapter the reader is ... " is an another directional element throughout the thesis. After this phrase, the reader is introduced to the goal outcome of each chapter. This section offers an overall outcome that the author is aiming to give to the reader, in order to connect these 'somehow connected separate entries' at 'Portraying Food' part with the following 'Hands-on Approach'.

"Let no one enter here who is, and intends to remain, ignorant of both the scale and limitations of the biosphere.""...this sentence should also be placed at the entrance of this exhibition (Lisbon Triennale, 2019)."
-Sébastien Marot's quote from his book of 'Taking the Country's Side'.

This thesis work dives into the way we harvest food, way we process it, what we eat as food and overall aims to investigates the question of *"Are there any issues where architecture can address regarding the life cycle of food?".* The thesis work is not organised in a traditional way where there is a form of a story that is preparing the reader to the final chapter, but more of a reconstruction of a fieldwork experience supported by a series of analyses and mini-research experiments that offers an insight on the thinking process of the author. Finalised with a realized project coupled with short essay-like chapters that is building a chain of thought for the readers in to the journey rather than a linear argument. Curation of a sequence of provocations to paint a mental image meanwhile being in a 'punchy style' like of manifestos and a rhythm of a talking has been aimed to be executed. Such style is allowing the subject to not be focused on single research question or point but a mental illustration of the interconnection of agriculture and architecture through historical improvements coupled with a fact-based mini researches. The fieldwork part is leading the reader to observe the collaboration process from a personal viewpoint of the author.

Throughout the thesis a presence of a sense of hesitation that investigates if architecture can address any of the issues that are mentioned at our modern world structure. Thesis offers an exploration view by introducing perspectives from several disciplines onto the subject of food and an introduction of historical information that guides the reader to be more in relation with the role of food during these turning points.

Through this lens, paper positions architecture as a mediator between food systems and human settlements, which is capable of generating spatial solutions that can integrate productive landscapes and enhance ecological performance. Ultimately, it argues for a reconceptualization of architecture as an agent in shaping sustainable and equitable food systems.

PORTRAYING FOOD

Which the reader finds a series of separate entries regarding agriculture, agriculture systems, food products and the role of food in settled societies. To portray the image of food, separate but somehow interconnected several chapters are introduced. Including from statistical data of the carbon emissions of the food products, to use of agriculture as a branch of local resiliency and to architects from 18th century who proposed of using a local by-product from agriculture to construct multi-story house units, to think of agriculture and architecture as a single sector.

Out-of-Control Consumerism

Even though it is the first chapter of the first part, "Out-of-control Consumerism" has been written after doing a research on vertical farming and reading Sébastien Marot's, "Taking the Country's Side". Marot's beautifully edited source is offering a rich source to be more involved with the topic of interconnected relationship of agriculture and city planning, how political regimes can create local resilience or support a more globalized approach and the importance of the right management of the resources through smart design elements.

Since humans evolved their lifestyles to live in settlements, since the Neolithic Era, many planners or political figures have tried to implement their ideology of "how a society should look like if they are going to be self sufficient" on their settlements. Forming a well-connected system between crops and the residential area is one of the primary infrastructure to be applied initially. Remembering one of the major reasons why we stopped the hunter gatherer lifestyle was that it was no longer needed to travel further land to find food. Having an access to a water body and a fertile land were enough to provide for its society through right management of resources. On the side, starting with the research concerning Vertical Farming was to understand its features on how it can minimize the transportation cost, meanwhile creating a 'food factory' kind of infrastructure, that includes all the steps of growing crops in a single space which can be implemented anywhere around the world. It's feature of a controlled space that is allowing any food to be cultivated in a location-independent food production system.

Initiated by such two concepts, forming a 'case' that is coming from a statistical data that is showing if there is a need of change in the sector of agriculture was a tangible and crucial start.

At the following chapter the reader is introduced to a scientific data on the subject that would create the very base to start understanding the issues, meanwhile addressing them through the appropriate initial points that are desired to share.

In 2020, with 5,87 billion tonnes of CO2 equivalent of emissions, **Agriculture (12,4%)** stays as the fourth, 6,24 billion tonnes, Manufacturing and Construction (13,2%) stays as the third, 7.29 billion tonnes, Transportation (15,4%) stays as the second and with 15,18 billion tonnes, Electricity and Heating (32,2%) stays as the first sector to emit the most greenhouse gases (GHG's), out of **47,06 billion tonnes of global.** After analyzing different studies, food production is analyzed not as one but as a hybrid of many sectors, (agriculture, land-use change and forestry, waste, manufacturing and construction, transportation, industry and etc.) which results in a sector responsible for **25 to 30% of global greenhouse gas emissions**, depending on the study we check. Global GHGs including CO2 (carbon dioxide) of 73,79%, CH_4 (methane) of 20,43% and N_20 (nitrous oxide) 6,59%, in agriculture it is focused on CH_4 with 60% and N_20 with the other 40% mainly due to livestocks and the use of fertilisers[1].

If one were to check where such amount of GHG are coming from, detailed study of Poore & Nemecek (2018), could put a light on the way (fig.101), yet it is important to highlight the fact that, their study didn't include post-retail phase where other studies shows as an additional 1.6 billion tonnes of CO_2 equivalents as waste[2]. As a result, directly or

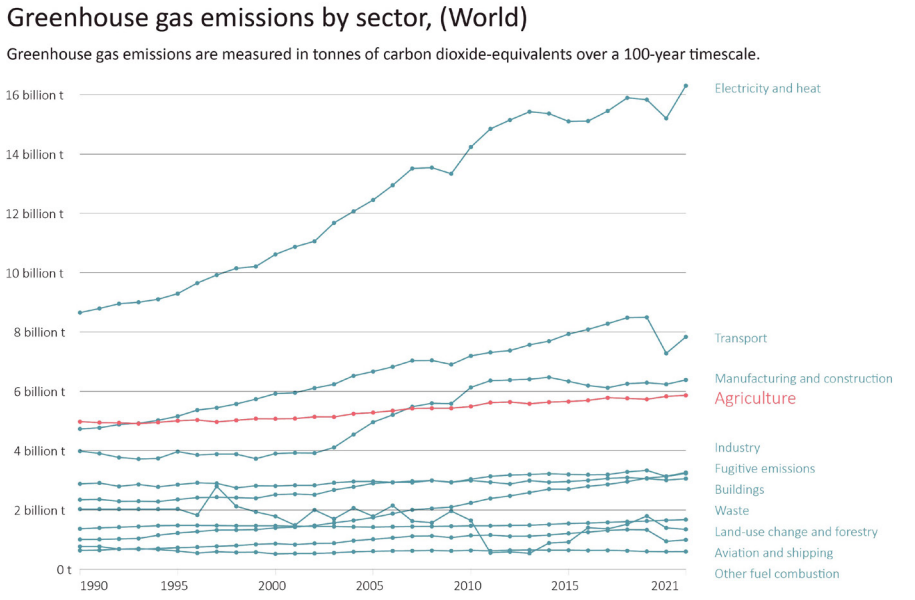


fig 101. Greenhouse gas emissions by sector (World), Our World in Data, "Climate Watch (2024) – with major processing by Our World in Data", 2023.

indirectly, **26% percent of global emissions is sourced by food related products** (fig. 102). It has an equivalent of around 13,6 billion tonnes of carbon dioxide (CO_2) in emissions and If we were to add the additional emission of post-retail phase it would result in 15,2 billion tonnes of CO_2. **The value is almost double the emissions caused by all cars and trucks each year[3].**

Animal products and their feeding stock is taking more or less one-third of the total emission, in food production. Such a high percentage of emission is majorly related to an excess population of mammals that

[1] Ritchie, Hannah et al. "*Breakdown of carbon dioxide, methane and nitrous oxide emissions by sector*", Our World in Data, 2020.

[2] Crippa, Monica et al, "*Food systems are responsible for a third of global anthropogenic GHG emissions*", Nature Food, 2021.

[3] Ritchie, Hannah, "*Cars, planes, trains: where do CO_2 emissions from transport come from?*", Our World in Data, 2020.

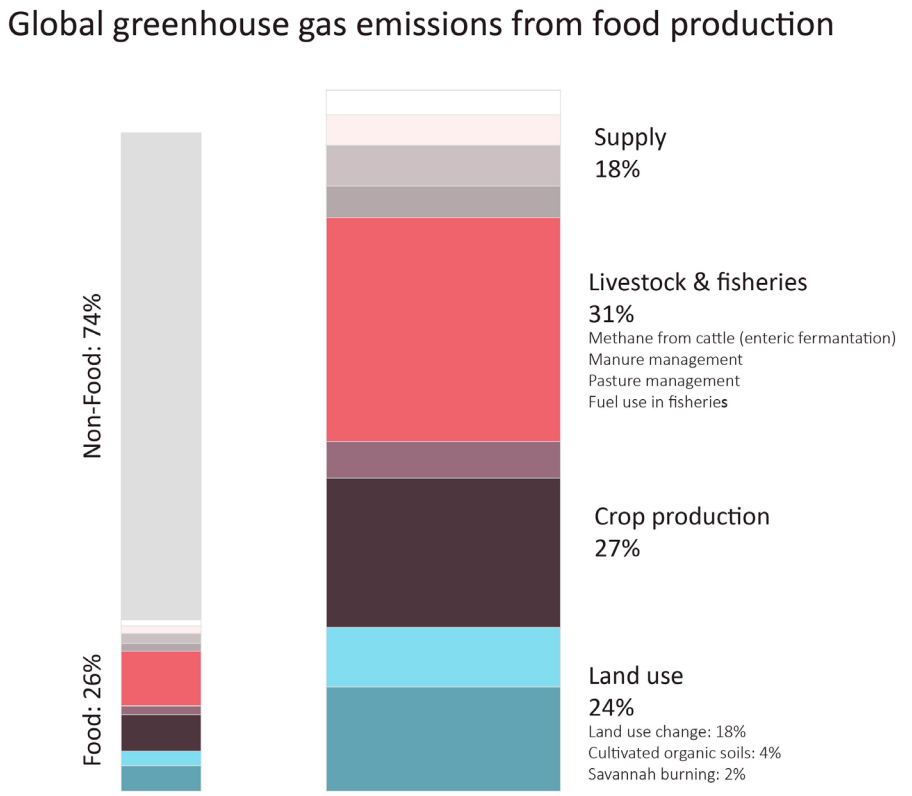


fig 102. Global greenhouse gas emissions from food production (World), Poore, Joseph and Nemecek, Thomas, "Reducing food's environment impacts through producers and consumers", 2018.

are initially populated by humans just for the consumption of humans. Action of such, is not only causing animal cruelty and presence of unregulated farmings, but also a point where an excessive CH_4 production is caused mostly by the cattles (diary and non-diary, 73%), buffaloes (11%) and sheep (7%) with **enteric fermentation** (fig.103). Enteric fermentation is a digestive process of animals which **releases CH_4**. Completely natural process is taking over a huge place in the global GHG emission emitted by agriculture with 40%, (on the side of 15% of manure left on pasture, and 13% of synthetic fertilisers[4]) because of a significant overpopulation of mammals for livestock. In 2018, **94% of mammals** and **71% of birds** (poultry) are grown **for livestock** (fig.104), meaning they are intentionally overpopulated, kept in farms and mainly forced not to move so their meat can be sold at a higher price because of its higher fat content. If overpopulation of livestock is directly responsible of such a large part of the GHG emissions from agriculture sector, a question arises from the circumstances,

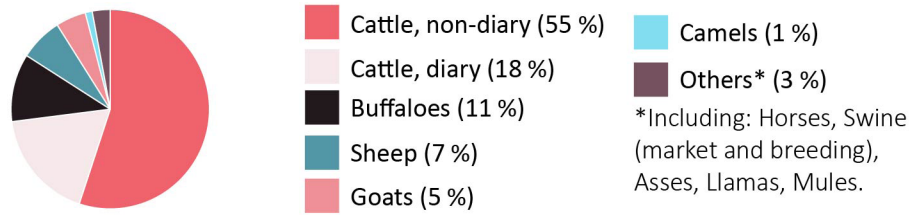


fig 103. Global enteric fermentation by sub-sector, 2001-2011, Tubiello, Francesco N. et al., "Agriculture, Forestry and Other Land Use Emissions by Sources and Removals by Sinks: 1990-2011 Analysis", 2014.

[4] Tubiello, Francesco N. et al., "*Agriculture, Forestry and Other Land Use Emissions by Sources and Removals by Sinks*", FAO Statistics Division Working Paper Series ESS/14-02, 17-67, March 2014.

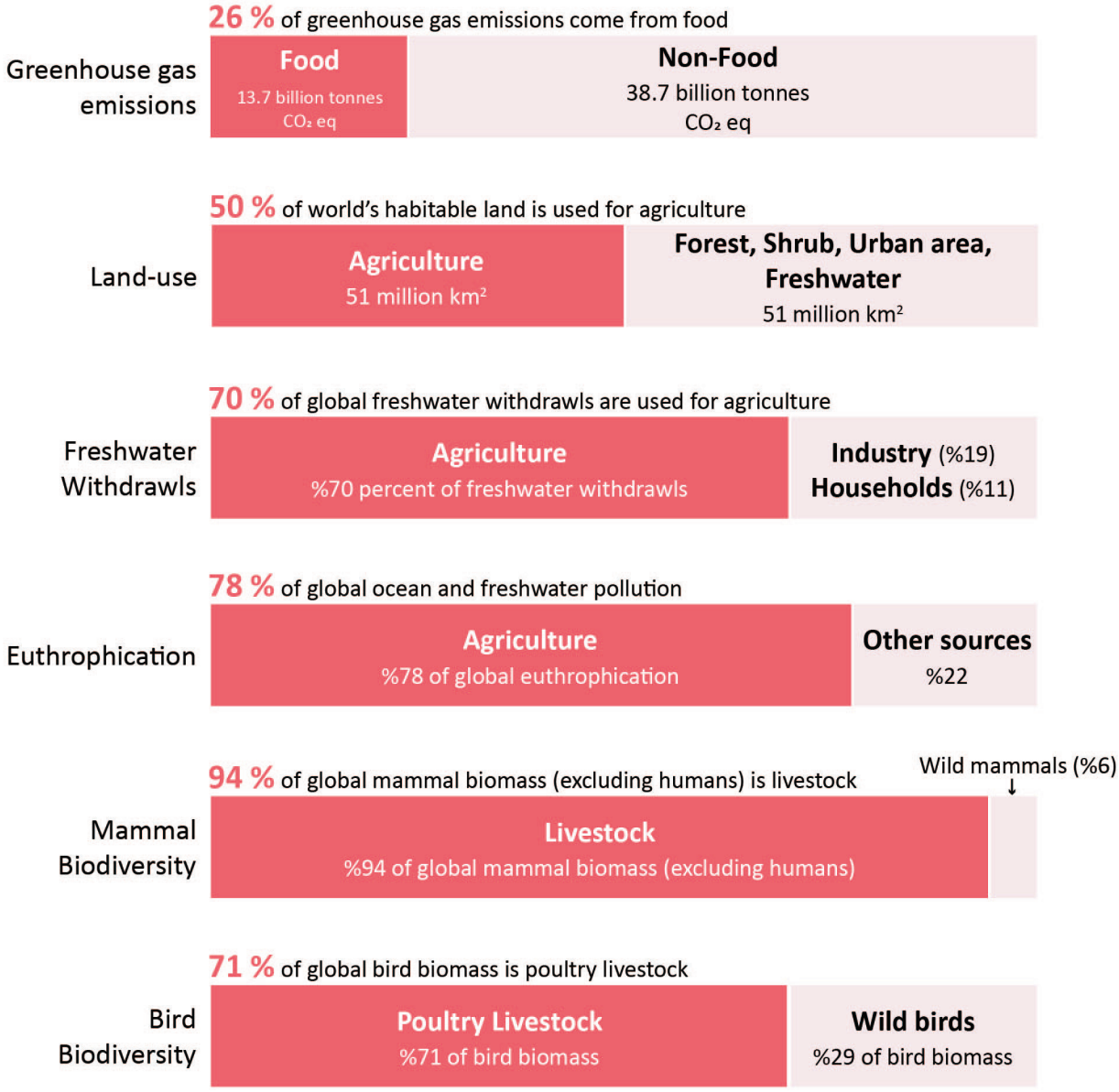


fig 104. The Environmental Impacts of Food and Agriculture, Poore, Joseph and Nemecek, Thomas, "UN FAO; UN ASQUASTAT", 2018.

"Are we in need of such scale of meat production even though there are several alternative ways to replace the nutritions we are getting from livestock?"

In order to investigate and come up with a possible discussion question, we need a deeper look on both the GHG emissions of main food products and a possible other dietary patterns.

Agriculture's impact on the environment, has been put to observation mainly under three key points. Which are; its need for freshwater; being a sector responsible for quarter to one-third of the global GHG emissions; and its enormous use of land. Deforestation to open up a space for livestock to be fed; crops grown specifically for the consumption of livestock; and supply chain, representing the phase of the end product to reach the final consumer, are three tangible reasons.

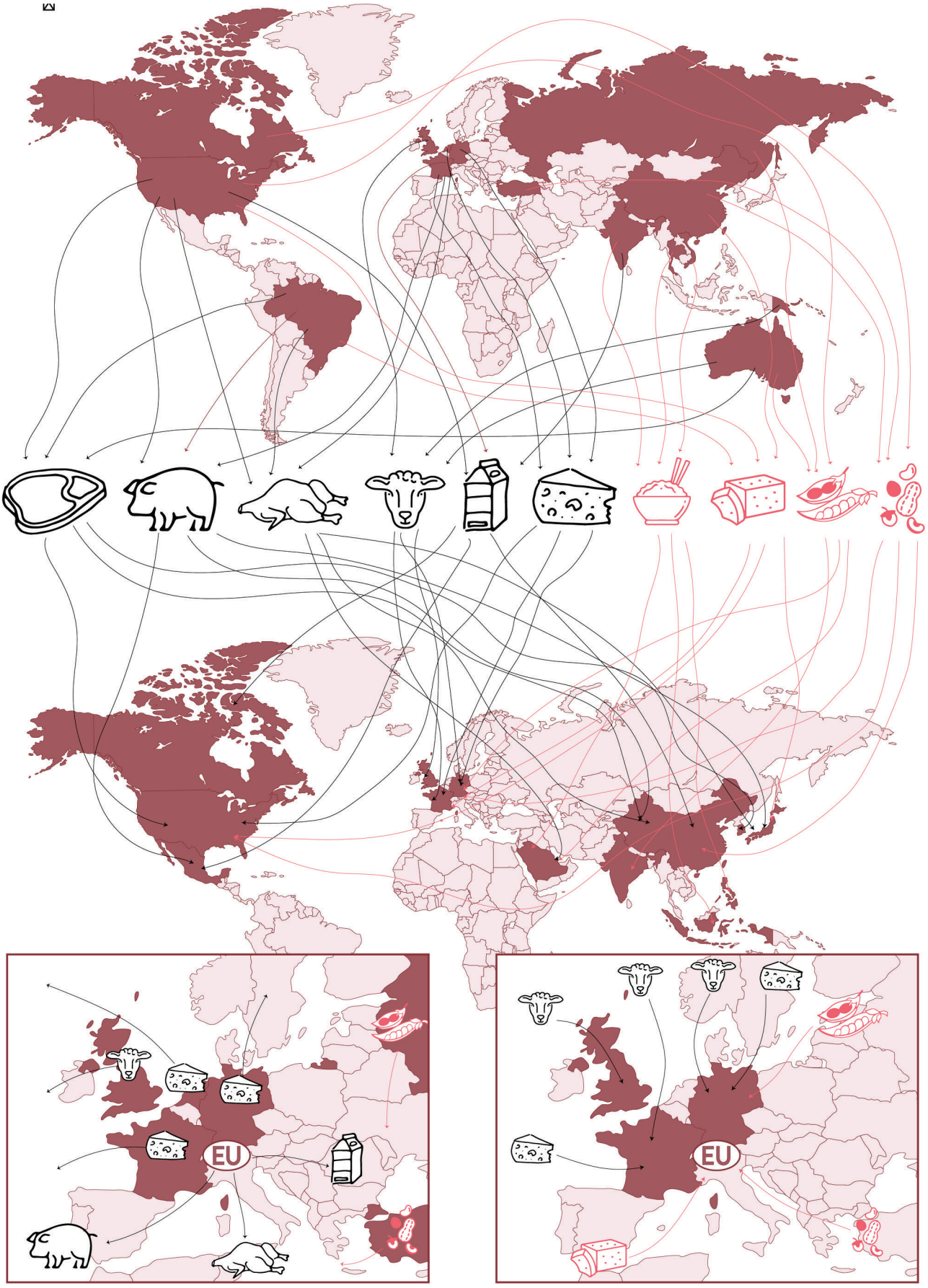


fig 105. World Map of top 10 food product exporters (top) and importers (bottom); Beef, Pork, Chicken, Lamb, Milk, Cheese, Rice, Tofu, Peas/Lentils, Nuts, Drawing by the author, 2023-2024.

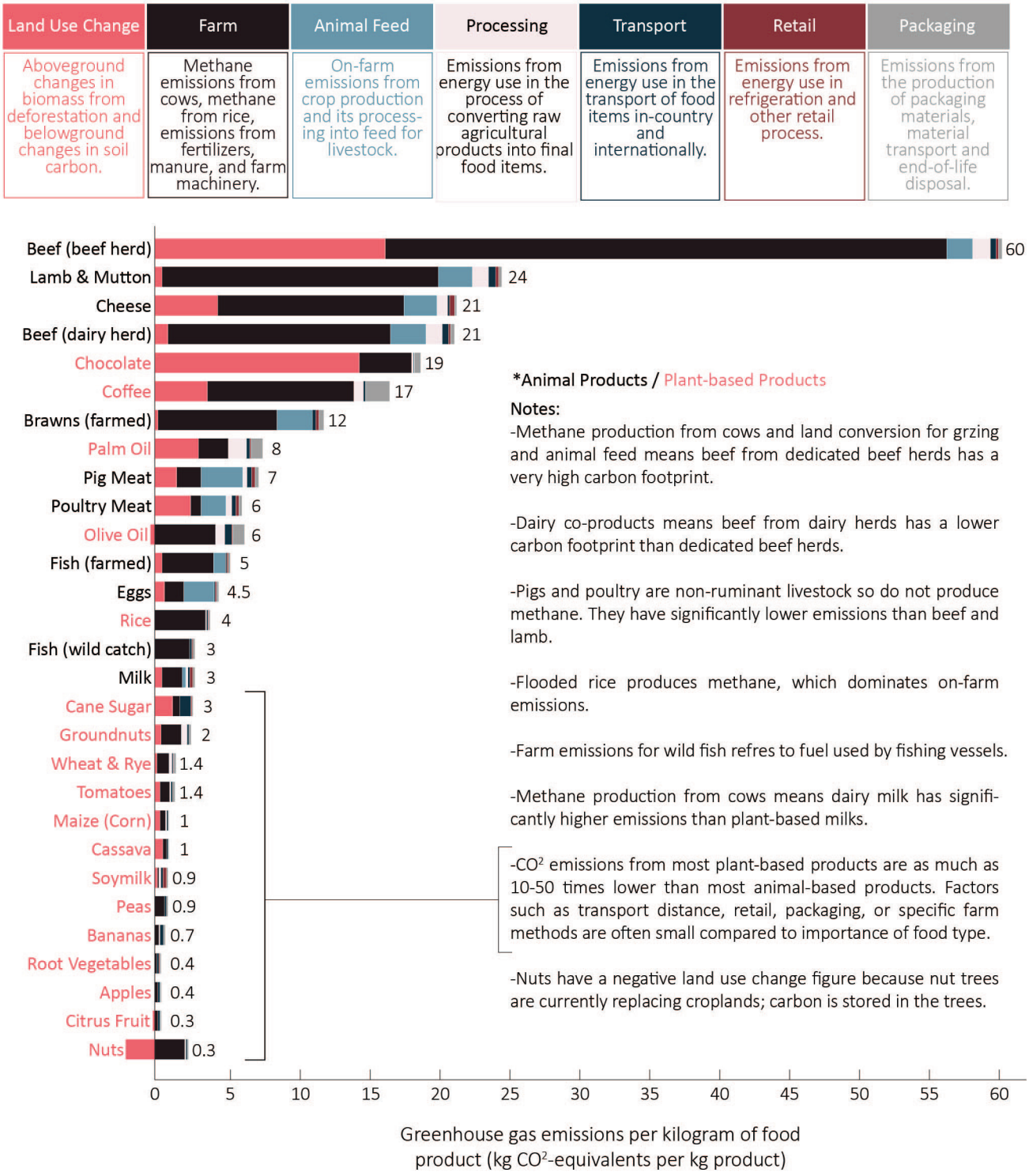


fig 106. Food: Greenhouse Gas Emissions Across the Supply Chain, Poore, Joseph and Nemecek, Thomas, "Reducing food's environmental impacts through producers and consumers", Science, 2018.

Even though it is possible to grow or produce certain products locally, most of which are coming from further-lands or overseas to Europe[5] mainly **due to mass production, monoculturalist agriculture, cheap labour and cheap energy.** Practically, such a system is continuing to grow and it is staying as the 'economically' reliable option for many families in developed nations, but at what cost? Mass produced food varieties tend to use extra processes or chemicals for longer preservation en route and causes GHG emissions of millions of tonnes for transporta-

[5] Valin, Hugo et al., *"Regional Self-Sufficiency: A Multi-Dimensional Analysis Relating Agricultural Production and Consumption in the European Union"*, Sustainable Production and Consumption 34, November 2022, pp 12–25.

tion. Yet these millions of tonnes of GHG emissions are far less likely to be the main reason for total emission for agriculture. The studies are showing that transportation of a food product is covering less than 10% of the carbon emission for each product. For products with high emission like beef, it is as less as 0.5% of its total GHG emission[6].

So, If we were to talk about reducing the carbon footprint of food products, transportation or the supply chain wouldn't be the main topic of the conversation. Our focus would gather around the **land-use change and type of the farmed product.** Products which, in order; beef (herd), lamp&mutton, beef (dairy), cheese, chocolate, coffee and prawns are the ones that are emitting the most amount of GHG emissions per kilogram (*fig.106*). Once they are compared with plant-based options like soy milk, peas, wheat, vegetables, fruits olive-oil or lower GHG emitting animal products like pig meat, poultry meat, eggs, fish (farmed and wild catch) and milk, the difference becomes enormous. **Just by replacing less than one meal per week with beef and dairy for a chicken, fish, eggs or a plant-based alternative, it is possible to reduce more GHG emission than buying all your food from the local market**[7]. That having been said, using the products traveling long-distance is becoming more of an aspect of choice with a small effect of one's carbon footprint. Yet, a small effect on the carbon footprint is not a sufficient reason by itself to say the food-miles are not necessary to care.

To sum up the statistics that have been mentioned, the GHG emission volume of our dietary structure is mainly due to the type of products we consume[8]. The enteric fermentation that happens in animals, majorly cattles, results in the production of meat being the highest impact on the GHG emissions of agriculture. Vegetable-based products have the advantage in GHG emissions when compared to animal-based products (*fig.106*). In this case, according to the study of Risku-Norja et al. (2009), diet change towards completely plant-based foods does have a high **reduction of GHG emission with nearly 50% from agriculture**, but the study also highlights that in case of such a global and radical change towards a plant-based diet, it would end up reducing **8% of the global GHG emissions**. Remark to be made about it is that, **food production is not a sector to start to have a high impact on global GHG but more of an arm of a bigger structure that can have a positive impact on the health of the environment and individuals**.

[6] Poore, Joseph et al., "*Reducing food's environmental impacts through producers and consumers",* Science, New York, 2018.

[7] Weber, Christopher L, et al., "*Food-Miles and the Relative Climate Impacts of Food Choices in the United States",* Environmental Science & Technology, April 2008.

[8] Sandström, Vilma et al. *"The Role of Trade in the Greenhouse Gas Footprints of EU Diets."* Global Food Security, 2018.

Blue Zones & Dietary Pattern

During this chapter, the reader will have a different perspective that on the sociological side of the subject. Blue Zones referring to the five regions around the world which are the home to the longest living people on the world and what are their commonalities, meanwhile Dietary Pattern is the common choice of their diet at their settlements. If longevity would be the starting criteria to correlate with a 'healthy lifestyle', there are couple aspect that are crucial for such. Since the thesis is structured to argue the position of food products and architecture, what is being consumed by them is the main focus. (Longevity, is used not only for a 'long' life but a constant life, meaning in a way the elder are part of a dynamic life in the society rather than being stuck to bed caused by illnesses.)

This chapter has been written in October 2024, after coming across with the documentary of Dan Buettner with National Geographic. Initially it was a documentary that caught my attention because I wanted to spend a relaxed evening with an educative source. I caught many aspects which are very connected with the subject I was doing my research on. Outcomes were very well explained to create an image for the viewer. It's way of handling the food culture was my main interest and woken up a new sensation due to its essence of a documentary, rather than all the article and book sources I was reading in these months.

At the following chapter the reader is introduced to real-life examples from around the world that are the key points of a life without a disease that caused by the lifestyle choices. A lifestyle that is highly accepted by these regions which are evolving around these key points.

fig 107. Map of these five regions mentioned at the documentary and an article of National Geographic, Map by the author, October 31 2024.

Dan Buettner in 1999,who is a journalist and an explorer of National Geographic, him and a team of anthropologists, demographers and scientists were to explore the commonalities of five regions around the world, which makes them special for **having a large percentage of individuals who are of 100 years or older**. These five regions were; **Loma Linda**, California, United States; **Nicoya Peninsula**, Costa Rica; **Sardinia**, Italy; **Ikaria**, Greece; and **Okinawa**, Japan (*fig.107*). Regions with completely different languages and cultures are intersecting in some crucial points some of which are implementable to our everyday life.

Individuals who are living in these five regions are engaging with **physical activities everyday**; by gardening, walking, climbing hills and mountains, maintaining a traditional lifestyle by simply holding back on the mechanical conveniences modern technology brought[1]. Such physical activity that is done everyday is protective for chronic health diseases like type 2 diabetes, heart disease and strokes, on the side of linked benefits of psychological improvement[2]. Another point is, as they say in Okinawa ***'ikigai'*** or in Nicoya ***'plan de vida'***, referring to the sense of purpose or **"why do I wake up in the morning?"** mentality. Purpose in life, either a hobby, career or responsibility to care for loved ones are helping one to move through life with an intention.

Plant-centric diet is an aspect of many of the individuals where meals consist **mostly of plant-sourced food**, with animal proteins being consumed only in **small amounts or on special occasions**[3]. Consumption of **vegetables, fruits, whole grains, nuts, seeds, beans, legumes,** healthy oils such as **extra-virgin olive oil** and a moderate amount of **wine**[4] with

[1] Buettner, Dan et al., *"Blue Zones: Lessons From the World's Longest Lived"*, American Journal of Lifestyle Medicine, July 2016.

[2] Langhammer, Birgitta et al., *"The Importance of Physical Activity Exercise among Older People"*, Biomed Res Int., 2018.

[3] Buettner, *"Blue Zones: Lessons From the World's Longest Lived"*.

[4] Pavlidou, Eleni et al., *"Wine: An Aspiring Agent in Promoting Longevity and Preventing Chronic Diseases"*, August 2018.

loved ones, is aligning with the features of **Mediterranean diet**. Such a diet is associated with **lower risk of 'all-cause mortality'**, 'incidence of depression' and 'reduced cognitive decline'. On the side of a healthy diet, eating not until the stomach is full but **80%** is a simple rule[5] encouraging an awareness and mindfulness to an eating process[6 7].

In conclusion for the blue zones, it is easy to say that eating enough with a healthy diet, regular physical activity and connectedness to one's social surroundings are the crucial points of longevity. Such research, not being fully scientific, is a good representation of the scientific ones, since eating a **plant-based diet**[8], **doing regular exercises**[9], **being connected to your surroundings**[10] and **avoiding chronic stress**[11].

My insight is not to create a list of essential foods that are to be cultivated all around but to give an understanding on how **local plants** in all these different regions are being used **as a large part of the diet**. Sweet potatoes and seaweed soup in Okinawa; *Minestrone* of Sardinia; strict vegetarian eating pattern of Loma Linda; home of Mediterranean diet in Ikaria; and '*tres hermanas*' (squash, corn and beans) of Nicoya; are only a fraction of the well-established foods of these cultures for centuries. What all they have in common is how they are **avoiding the processed products** of modern days large fast food restaurants and supermarket chains being advertised largely. Ultra-processed products have been trending in recent history for the sake of conveniency. Such products having, often times, an artificially made taste and being a main reason for **increased risk of obesity** (+39%), **low HDL-cholesterol levels** (+102%), **metabolic syndrome** (+79%), **higher risk of cardiovascular disease, cerebrovascular disease, depression** and **all-cause mortality**[12].

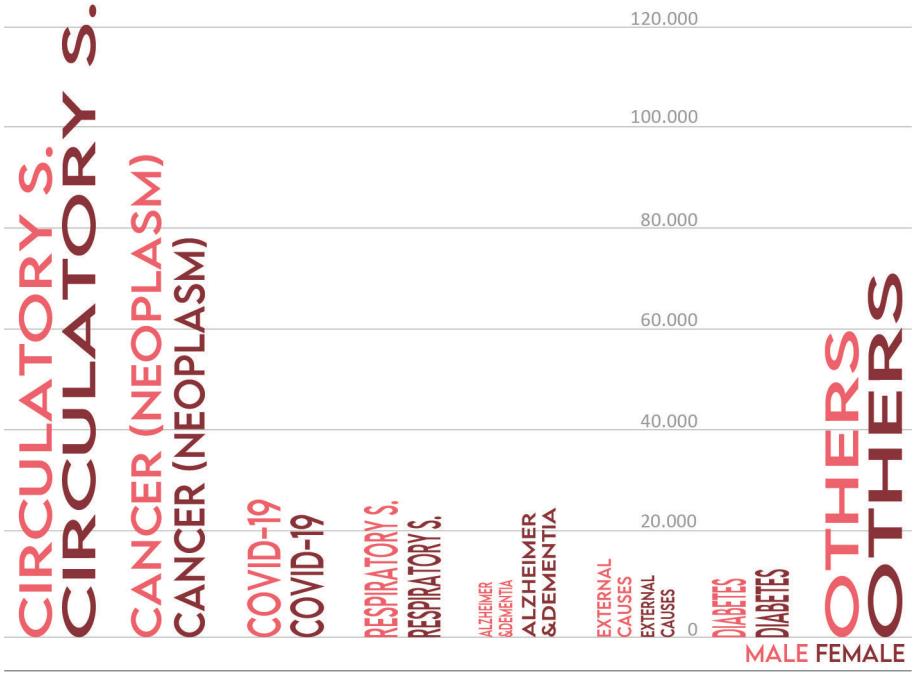


fig 108. Top 7 causes of death for males and females in Italy, Istituto di Nazionale di Statica (National Institute of Statistics, 2022.

[5] Buettner, *"Blue Zones: Lessons From the World's Longest Lived"*.

[6] Martini, Daniela, *"Health Benefits of Mediterranean Diet"*, Nutrients., August 5 2019.

[7] Sepideh, Soltani et al., *"Adherence to the Mediterranean Diet in Relation to All-Cause Mortality: A Systematic Review and Dose-Response Meta-Analysis of Prospective Cohort Studies"*, Adv Nutr., November 1 2019.

[8] Fraser, Gary E et al., *"Ten years of life: Is it a matter of choice?"* Arch Intern Med., July 9 2001.

[9] Reimers, CD et al., *"Does physical activity increase life expectancy? A review of the literature."*, J Aging Res., 2012.

[10] Taylor, Harry Owen et al., *"The state of loneliness and social isolation research: current knowledge and future directions"*, BMC Public Health 23, 2023.

[11] Bartolomucci, Alessandro et al., *"Stress and depression: preclinical research and clinical implications"*, PLoS One., 2009.

[12] Pagliai, Giuditta et al., *"Consumption of ultra-processed foods and health status: a systematic review and meta-analysis"*, British Journal of Nutrition., 2021.

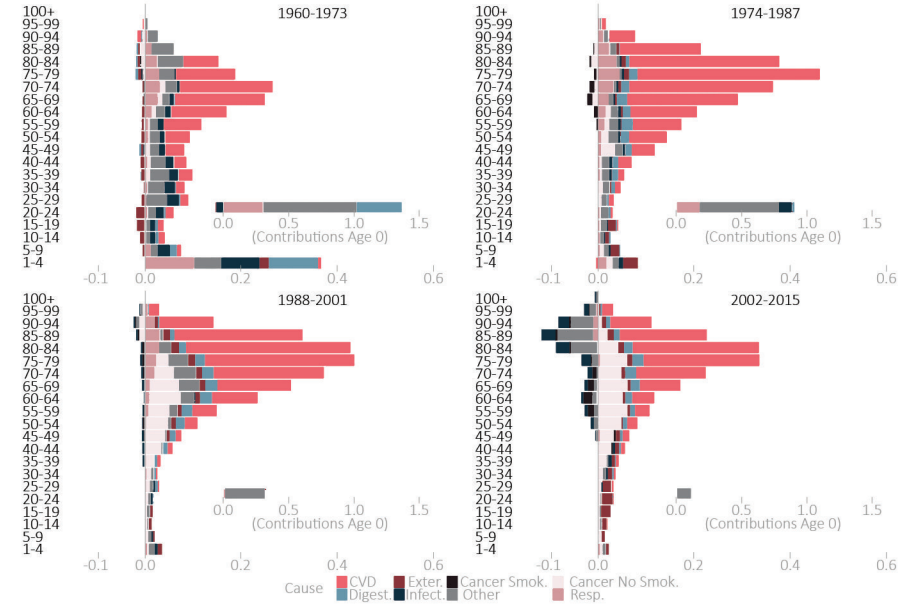


fig 109. Evaluation of age-specific causes of death in the context of the Italian longevity transition-Females, Nigri A et al, Scientific Reports 12, 22624, 2022.

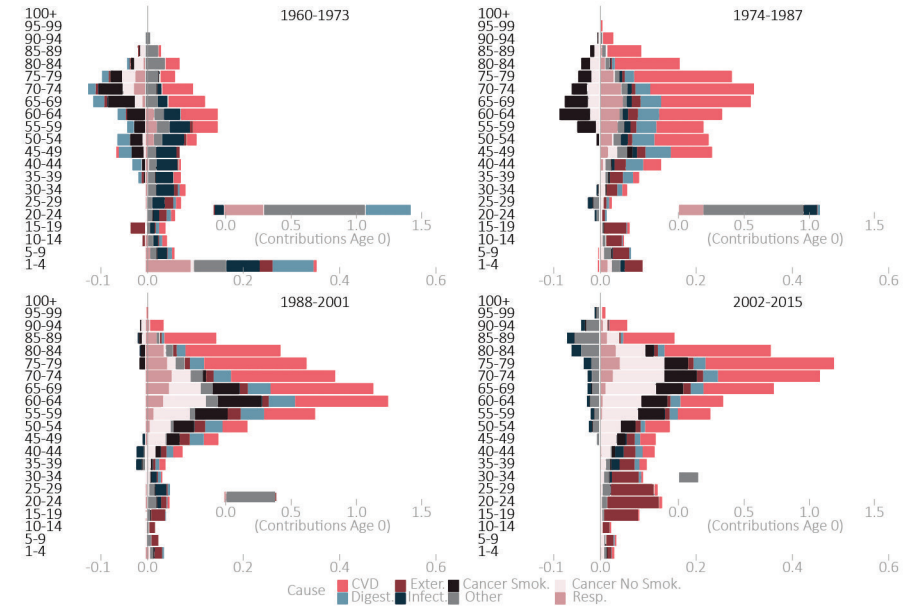


fig 110. Evaluation of age-specific causes of death in the context of the Italian longevity transition-Males, Nigri A et al, Scientific Reports 12, 22624, 2022.

For comparison, likewise in many other regions around Europe, also in Italy, cardiovascular diseases (circulatory system) and cancer (neoplasms) are the leading diseases in mortality rate (*fig.108, 109, 110*). The statistics are showing that throughout the years, since the end of WWII till today, the rate of **death in young age decreased** and **life expectancy has increased** considerably. Life expectancy in Italy is one of the highest in Europe (second only to Spain) and globally. Yet it doesn't change the fact that, is also affected by the changes in the way we produce food and dietary patterns globally. Study of Nigri A. et al. (2022) highlights the rise of cardiovascular diseases and cancer since the end of WWII (*fig.109, 110*), which is connected with a sudden increase of

the life expectancy. Shift from the mortality causes of infectious diseases, to chronic and degenerative diseases, which mostly appears at an older age, was the main aspect of higher life expectancy[13].

Nowadays our perception is a bit different than what it was after the WWII. We don't have as many people dying as hunger, but an increased level of availability in industrially made food products resulted in an increase level of obesity at industrialized nations. Italy has the lowest share of overweight people (%41.3) over 16 years old in Europe, Finland has the highest (%59.5)[14]. Such numbers are higher in countries like U.S.A. (with %75 of the people who are over 25 years old[15]). Increasing numbers of overweight people and obesity since the WWII, has an overlapping timeline with the increasing numbers of the production of industrially made food products and it is one of the main reason of the increasing numbers of such diseases[16]. Such industrially systems can cover the needs for people who are living in extreme conditions, yet them being consumed on such high levels even by the people who has a direct access to fresh food products, are resulting in excess intake of added-sugars, fats and salt, displacing valuable and fresh nutrients.[17]

Conveniency of eating pre-prepared rather than freshly made meals; washing machines rather than washing by hand; driving cars rather than biking or walking are just some of the modern examples of changes happened in our lifestyles in modern times. A daily structure of certain features that are supporting a healthy life for individuals where a symbiotic relationship with our world is present and highly encouraging individuals to exist in a system by supporting their different characteristics is achievable. Such structure is taking ethics as a focal point, where essentials for human survival are met for each individual. Such system that is encouraging the use of fresh products consists a series of some suggestions for one's daily structure.

Plant-based diet, as mentioned, has a benefit on the environment, and several studies are showing its positive effect on human health, especially on type 2 diabetes, cardiovascular diseases, obesity, and metabolic syndrome[18], as mentioned previously. When it comes to healthy life, eating healthy (fruits, vegetables, whole grains, lean proteins (fish, poultry, beans and nuts with limited use of red meat)[19], and low-fat dairy)[20] is not the only a component, but it has been seen that people who are conscious about their food, also tend to be conscious about other components of generally known features of a “healthy life”. Excessive consumption of alcohol, smoking, physical inactivity, eating unhealthy and obesity are some of the major unhealthy behaviours that are recognized by WHO (World Health Organisation) and many more[21]. If one have four or more of these unhealthy behaviours then the risk of mortality is increased by 66%[22]. Awareness created by two of these unhealthy behaviours which are an healthy diet and physical exercise also helps with depression and anxiety which are two of the most growing mental health problems in 2024[23].

[13] Nigri, Andrea et al., *"Evaluation of Age-Specific Causes of Death in the Context of the Italian Longevity Transition"*, 2022.

[14] Eurostat, *"Overweight and Obesity - BMI Statistics"*, last modified July 2024.

[15] McGovern, Gillian, *“Study Finds Nearly 75% of Adults 25 and Older Have Overweight or Obesity,”* Pharmacy Times, July 17 2023.

[16] Popkin, Barry M. et al., *“The Nutrition Transition in High- and Low-Income Countries: What Are the Policy Lessons?”,* Agricultural Economics 37, 199–211, 2007.

[17] Monteiro, Carlos A. et al., *“The UN Decade of Nutrition, the NOVA Food Classification and the Trouble with Ultra-Processing.”* Public Health Nutrition 21, 5–17, 2018.

[18] Almuntashiri, Sultan A, et al., *“Plant-Based Diets and Their Role in Preventive Medicine: A Systematic Review of Evidence-Based Insights for Reducing Disease Risk,”* Cureus 17, February 6 2025.

[19] Harvard T.H. Chan School of Public Health, *"The Nutrition Source – Healthy Eating Plate"*, last modified 2023.

[20] U.S. Department of Health and Human Services and U.S. Department of Agriculture, *"Dietary Guidelines for Americans, 2020–2025"*, Government Publishing Office, December 2020.

[21] World Health Organization, *"Everyday Actions for Better Health – WHO Recommendations"*, Accessed August 8, 2025.

[22] Ford, Earl S. et al., *“Low-Risk Lifestyle Behaviors and All-Cause Mortality: Findings from the National Health and Nutrition Examination Survey III Mortality Study.”* American Journal of Public Health 101, 1922–29, October 2011.

[23] World Health Organization, *“Physical Activity.”,* WHO Fact Sheets, Accessed August 8, 2025.

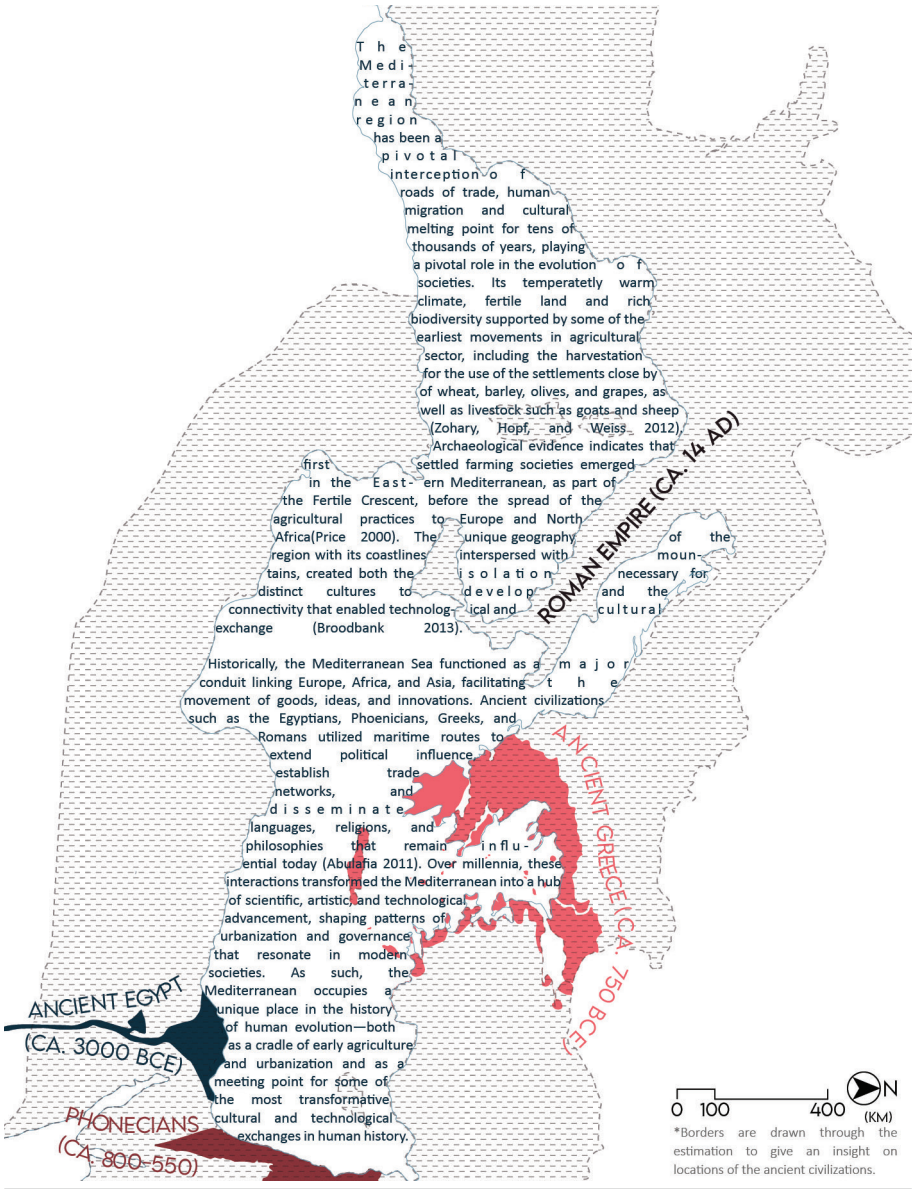


fig 111. Map of the Mediterranean Region, its brief history and locations of the ancient civilizations, Map by the Author, August 9 2025.

To start from already known dietary patterns, the **Mediterranean Diet** is one of the most studied and well-known dietary patterns which has also been linked with its health benefits. The diet has been **recognised by UNESCO as a cultural heritage** due to its strong connection with its climate and land practice which are the products of its geographical location[24]. One of the most influential tradition from the region is the cultivation of olives which are linked with low rates of chronic diseases and high adult life expectancy[25]. High intake of fresh fruits and vegetables, olive oil, whole grain breads and other cereal types, nuts and seeds, beans, honey; moderate intake of dairy products, eggs, fish poultry, wine with meals; and low intake of red meat[26]. Scientific studies indicate the benefits of the Mediterranean Diet, which takes research and analysis from seven countries that are in the region[27]. Collected data showed the diet itself has the potential benefits to type 2 diabetes, metabolic syndrome, obesity, cancer, **cognitive impairment (particularly Alzheimer's disease)** and cardiovascular diseases[28].

[24] UNESCO, *"Mediterranean Diet."* Representative List of the Intangible Cultural Heritage of Humanity, Accessed August 8, 2025.

[25] Covas, Maria-Isabel, *"Olive Oil and the Cardiovascular System."* Pharmacological Research 55, 175–186, 2007.

[26] World Health Organization, *"Healthy Diet.",* WHO Fact Sheets, Accessed August 8, 2025.

[27] Willett, Walter C. et al., *"Mediterranean Diet Pyramid: A Cultural Model for Healthy Eating."* American Journal of Clinical Nutrition 61, 1995.

[28] Sofi, Francesca et al., *"Accruing Evidence on Benefits of Adherence to the Mediterranean Diet on Health: An Updated Systematic Review and Meta-Analysis."* American Journal of Clinical Nutrition 92, 1189–1196, 2010.

Industrialised Food Products

During the researches I was conducting, I came across the historical turning point where large lands for the single crop becoming more popular due to the technological improvement of the machineries. Availability of mass-producible single crop, opened up a highly effective cultivation method that caused large companies to get the largest piece from the cake, meanwhile eliminating the small producers or to include them to their ecosystem. While helping through hard times, where many mouths were not being fed on a daily basis, such occasion became a highly accepted solution for a large part of the population to survive because of its cheap costs, less-intense labour and conveniency of buying from a single manufacturer.

While appreciating its ability to become a rescuer for large part of the society, I want to discuss "What did it take back in return?", "What kind of issues may rise from such level of autocratic entity holding the rights of 'decision-making' about food in a capitalist market?" and "What are the other options that may provide to the community through creating a locally resilient system by minimizing the importation of the products of globalized systems?".

At the following chapter the reader is introduced to a perspective that is pointing out the effect of large single crops to it soil health and to the local economy by pushing exportation.

Farming of one crop at a time is a method, which farmers have been using to increase the efficiency of their land by the utilisation of machinery, which became an option after the industrialisation of many processes likewise in any other sector after the war. It is a controversial method when it comes to drawbacks and advantages. Monocultural farming ideology on an industrial scale, is causing an increase in the risk of diseases and pest outbreaks due to lack of diversity. Lack of control over diseases is resulting in high usage of pesticides and herbicides on a large piece of land which starts a butterfly effect of worms and insects leaving land, birds not being able to find food, which in time conclude in soil degradation and exhaustion[1 2]. So, getting high yields from a piece of land one year after another is later on affecting the yields of next decades and centuries.

Although soil degradation can be solved by additional chemical or organic fertilisers, it adds up to the environmental cost and maintenance cost, meanwhile a well-organised multicultural farming is benefiting a farmer with a lower cost overall and healthier environment for its habitat throughout the years[3]. Environmental cost is not only staying low as a low quality of soil but also the fossil fuels used in order to produce and transport fertilisers, pesticides and herbicides which are adding additional GHGs emitted[4]. Farmers who have invested in industrial scale monoculture may have both financially and practically got the best from their land but such use of non-local additions that have been done may not be the solution any longer.

Frank Uekötter, who is a professor of environmental humanities at the University of Birmingham, has noted;

"Since monoculture has evolved all over the world, you would think there's a vision behind it, but, in fact, this may be the greatest experiment that humans have conducted without a clear blueprint"[5].

Currently naturally produced food system has been overtaken by the industrially produced food products, which are made possible by raw materials coming from mono-culturally cultivated farming lands. Consequently it holds the space for an increase in the number of fast-food restaurants. Accumulated number of fast food restaurants has been resulting in higher intake of processed energy-dense products, refined carbohydrates and sugar sweetened beverages rather than fresh fruits, vegetables, whole-grains and legumes[6] all around the world. Since the industrialisation of food products, feeding people on a large scale has gotten easier in the exchange of additional processes and additives. A system is associated with the potentials brought by the fact that production and consumption sites now can be in an extended linkage. Such scale improvement in the sector, also levelled up the complexity of the system. Now there are more relations between the actors which binds many more to each other. The technological improvements, which later on the text will be covered, allowed the scale of distance between the starting and ending point of a product to grow.

[1] Balogh, Allison, "*The rise and fall of monoculture farming",* Horizon, The EU Research & Innovation Magazine, December 2021.

[2] Pretty, Jules, *"Agri-Culture: Reconnecting People, Land and Nature",* Earthscan, 63–68, 2002.

[3] Altieri, Miguel A., *"Agroecology: Principles and Strategies for Designing Sustainable Farming Systems,"* Agriculture, Ecosystems & Environment 46, 223–24, 1993.

[4] Pimentel David et al., *"Environmental and Economic Costs of Pesticide Use,"* BioScience 42, 750–60, 1992.

[5] Uekötter, Frank, *"The Greenest Nation? A New History of German Environmentalism"*, Cambridge, MA: MIT Press, 189, 2014.

[6] Vareiro, Daniela et al., "*Availability of Mediterranean and non-Mediterranean foods during the last four decades: comparison of several geographical areas"*, Public Health Nutr., 1667–75, 2009.

[7] McMichael, Philip, *"Development and Social Change: A Global Perspective"*, Los Angeles, Sage, 131–36, 2016.

[8] Lang, Tim et al., *"Food Wars: The Global Battle for Mouths, Minds and Markets,* London, Earthscan, 52–58, 2004.


change of the scenery, environment
exploitative behaviour
Only one variety of food per season (4-8 months)
Heavy machinery that needs constant maintenance.
out-of human scale
MASS PRODUCTION
(for export)
Higher possibility of diseases
One crop at a time (limiting soil health)
requires crop-rotation for a long-term care for the health of the soil.

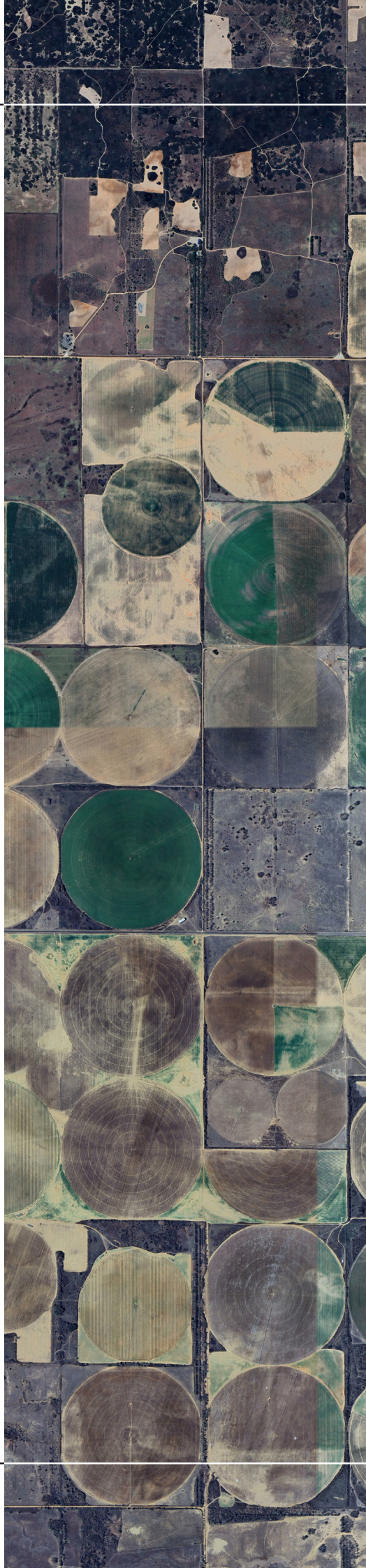
fig 112. Mass Agriculture vs. Local Resilience: An Annotated Comparison, Collage by the author, 2025.

To point out the elephant in the room, likewise any other sector that got affected by the improvements of industrialisation, globalisation therefore standardisation is the most tangible aftermath to our era. Growth in the scale of products that are present in the outcome, brought a huge possibility of decreasing the price which still to this day stays as the primary reason of its consumption rather than the healthier, more ethical alternative products[7]. On the side of its economic viability, industrialised products had also paved the way of having multiple options for an everyday item like Ricotta cheese and leaving the choices to its users. Having multiple alternatives for ricotta focused the attention towards the differences in price and how long it is possible to conserve the product. Rather than the old way where whatever is made locally were in favour.

Creating an economic ease of such on everyday items has been a crucial point for the low and middle class which in many countries were higher in number than the upper class. Upper middle or upper class were able to afford the best quality of a product, so people who were tight in budget and therefore the ones who would consume the most chemically enhanced products. Having a large demand from its consumers is the strength of the industrially made products, and it is the very reason that makes it favour in the market.

Naturally produced products have a bigger margin for advertisement. Meanwhile industrially produced ricotta is thought of as a food without a home, that has no single particular production centre, naturally produced ricotta has the potential to advertise their product just by showing the environment of the cows are getting fed, milked afterwards and made into ricotta we know by using traditional methods which are considered cleaner and greener environments than its alternatives which has cows lined up without the space to move around, getting milked by steel machines in a dark factory.

After all that has been outlined, these facts are the reasons which gave birth to the idea of exploring alternative ways where we can produce food and still make it feasible for every class. I believe that as an aim it stays as a beneficial improvement to modern problems of our society such as the presence of the contrast of food consumption, where obesity and hunger is affecting a large part of the society. Such aim has been tried to be achieved throughout history where people aimed to provide a healthy, balanced and fair diet to their community[8]. People who feed only on bread or potatoes are not valid ways to sustain a healthy life and If there is a method that can provide locally, not chemically enhanced but organically produced goods and a balanced diet to its community, would be the primary choice. Will of creating a space with this innocent aim can open up many doors that would enhance the social bonds within a society.



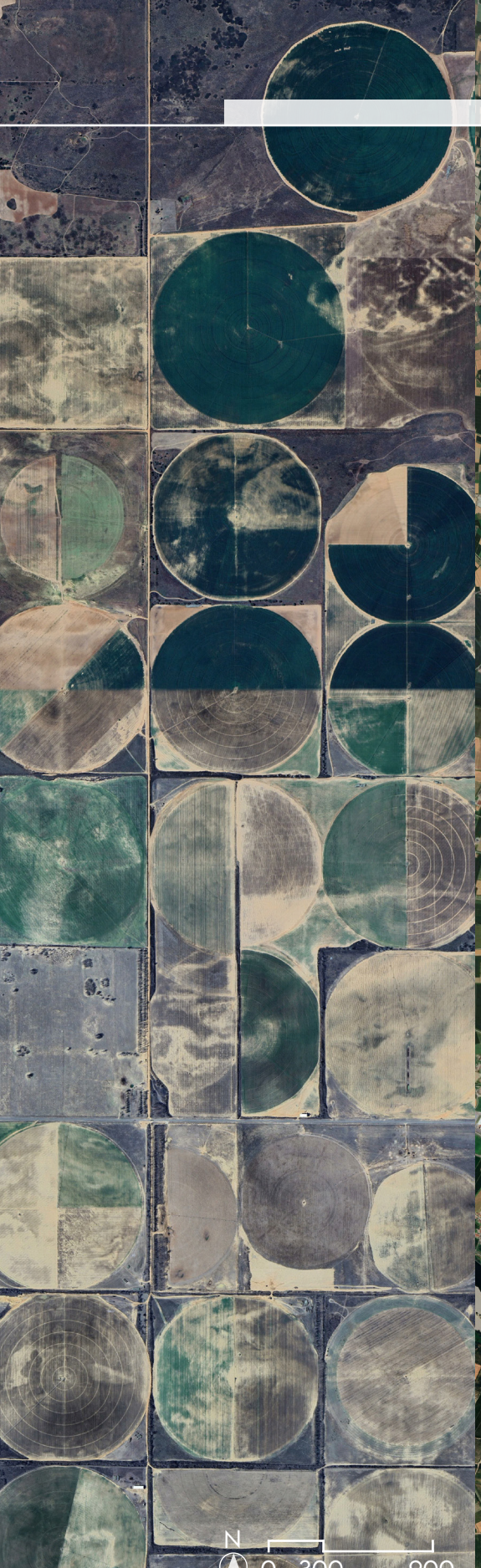


fig 113. Satellite view of Collingsworth County, Texas, USA, 2025, Accessed June 4 2025, https://earth.google.com/.

fig 114. Satellite view of Pianura Padana, Lombardy, Italy, 2025, Accessed June 4 2025, https://earth.google.com/.

Resiliency at Human-scale Settlements

One of my objects throughout the thesis has been to evaluate the value of being locally sufficient towards the essential products of a settlement and the cost it comes with. Food production being the major initial point of the reason why we humans settled on a fertile land, directly linked with the will of being self-sufficient. This chapter investigates what does resilience mean in disciplines of economy, ecology and at last the architectural dimension, while investigating the important points each discipline showcases. This chapter has been re-edited several times during the workflow, because of its cruciality to the research. Finding proper sources for such points haven't been challenging. Rob Hopkins's "The Transition Handbook - From oil dependency to local resilience" was broad source for anyone who are willing to investigates the topic of, the resiliency on a village scale, while leaving out the entities sourced by oil.

Throughout the part, we will have an insight on the position of architecture under the topic of resiliency. Architecture being a 'mainly' decorative discipline, we also have a chance to see its strength on indirectly influencing the decisions made by the decisions makers.

At the following chapter the reader sees the perspective of local resiliency that does not necessarily implies that each settlement 'needs' to be self-sufficient but highlight the benefit of creating a web of decentralized production system rather than a mono-central, mass producing, single handedly operated entity.

If one's aim is to reduce the carbon footprint of their actions, as said, local products are not the primary choice, but the production and consumption of them is resulting in a highly favourable option when we consider also the health and social aspects.

Current world order is supporting the trading of **both essential and non-essential products globally** throughout the year. As mentioned in the first part of the text, economical viability of the available products in current world order are consisting of series of actions such as; taking **marketing** of a product to its centre and encouraging **over-consumption** to customers, **farming of a single product in large scale** because it is efficient and beneficial for exportation reasons, buying mostly **industrially made ultra-processed products** that are high in artificial ingredients can be analyzed under an ideology that is **taking economical profit to its centre rather than the health of human and non-humans.** Such economical profit centered goal is in action through direct and indirect actions that are oriented towards an exploitative approach rather than sustaining a balance between nature and humans. Most tangible way for understanding our effect on nature is that the reduced carbon emissions should be in process not because it is "lawfully forced" but is **supporting a way of living that is in a more ethical, non-exploitative relationship with nature itself.**

Rob Hopkins, an environmentalist writer, is putting the concept of resilience in the center of his book called "The transition handbook, from oil dependency to local resilience"[1]. His take on the subject of creating local resilience, which is also one of the supporting sources and key aims of this part, is having a **'well-designed agroforestry/food forestry plantings' and following permaculture principles** that are crucial for the creation of local resilience. Locally resilient community that is able to

[1] Hopkins, Rob, *"The Transition Handbook: From Oil Dependency to Local Resilience"*, Totnes, Green Books, 2008.

fig 115. Personal and/or family gardens located on the side of the train tracks, photo taken from the train passing from the villages between Parma and Modena, Photo by the author, August 8, 2024.

produce its essential products, is basically our globalised system of production and trading but in a smaller, human-scale version. Globalised system being complex and including many variety of methods in itself, becomes a more simple, easy to understand version when it is done locally. First of all understanding the essentials of a smaller community is easier and most likely has less elements in itself, which makes the production, management and end of cycle phases easier to organise[2].

It is imperative to draw attention, increasing the resilience does not mean to surround the towns and cities with fences, which represent closeness, but is being prepared for a more self-reliant settlement by prioritizing local over the imported. Local resilience is a concept that is used in many fields of study, which gives the possibility to move around freely in between disciplines. Some of the vital elements are as following, as the economist David Fleming highlighted[3];

- If one part is destroyed, the shock will not ripple through the whole system.
- There is a wide diversity of character and solutions developed creatively in response to local circumstances.
- It can meet its needs despite the substantial absence of travel and transport.
- The other big infrastructures and bureaucracies of the intermediate economy are replaced by fit-for-purpose local alternatives at drastically reduced cost.

For a more hybrid understanding of creating resilience on a local level, we can see similar points are being made by Simon A. There are three key features that enable locally resilient systems to bounce back after disruptions. These features are crucial for an ecological system's ability to adapt and re-organise itself.

Diversity

It relates with the number of elements that consist of a specific system and about the connections in-between the elements. Such diversity in a system, enables it to handle the challenges better and ability to adapt when needed. Diversity is a topic we can think of in many branches of our daily life. Company with a diverse investment portfolio is able to control their losses and incomes more than a company with a single investment. Similarly, a diverse ecosystem with many different species is more likely to adapt and then survive the environmental changes[4].

Diversity also means having a variety of different ways to address problems. One community might rely on certain local solutions, while another might find a different set of solutions. Presence of "one size fits all" solutions not working in every community; local knowledge and innovation are crucial for its resilience.

[2] Ibid.

[3] Fleming David, "*Lean Logic, a Dictionary of Environmental Manners*", Unpublished MS., 2007.

[4] Walker Brian et al., *"Resilience Thinking: Sustaining Ecosystems and People in a Changing World"*, Washington DC, Island Press, 2006.

"In a resilient system, individual nodes – like people, companies, communities and even whole countries – are able to draw on support and resources from elsewhere, but they're also self-sufficient enough to provide for their essential needs in an emergency. Yet in our drive to hyperconnect and globalise all the world's economic and technological networks, we've forgotten the last half of this injunction."[5]
– Thomas Homer-Dixon

Modularity

It is an aspect we can consider as a link between systems rather than elements. Failure of a system can result in another failure or downfall of another system, map represent the network of globalised systems. More modularity in the structure of a system, comes with the benefit of self-organisation[6]. For example, as a result of the globalised food industry, where animals and their parts travel across the world, there is an increased risk of diseases like bird flu or foot-and-mouth disease in case of not being stored well. To make the system more resilient and decrease such disease outbreaks, we should consider reducing animal transportation and popularizing the local slaughterhouses and processing facilities. Such a basic solution would encourage the use of local breeds to be the source in local markets, creating both a more localized and less vulnerable food system to challenges it faces along the way[7].

Tightness of feedbacks

It is referring to the response time and the volume of the effect of a change in a single part, on the other parts of the connected system. According to writings of Walker and Salt, "Centralised governance and globalisation can weaken feedback. As feedback lengthens there is an increased chance of crossing a threshold without detecting it in a timely fashion."[8] For example, when we buy products made with the ingredients from over-sea land, change in soil erosion, pesticide effectiveness or low production rate are not something we can easily detect since the production phase can vary. In a localised system, the effect of our actions are more easily rooted back, allowing us to understand the consequences of each actions, unlike at a globalised system. People living off-grid are more likely to be aware of their consumption in energy because they can easily check energy generation by basically just being aware and regular checks to them.[9]

We can observe that the concept of resilience on a local level has couple points which are applicable through different disciplines. Fleming's 'shock that won't ripple through' and Levin's 'Modularity', and mentioning of the 'diversity' are commonalities. Shocks into the system are inevitable and there is no certainty that they will stop forever. The crucial part is how do you handle these points and how you are prepared for it.

I want to add one more feature, as a concept, to these points. In nature, the balance is established through exchange of information within the same entity. Mimicking the same act by forming a constant web of information between different settlements, rather than shipping the

[5] Homer-Dixon, Thomas, *"The Upside of Down: Catastrophe, Creativity, and the Renewal of Civilization"*, Washington DC, Island Press, 2006.

[6] Levin, Simon A., *"Modularity in Ecology,"* Nature 413, 607, 2001.

[7] Howard, Philip H., *"Concentration and Power in the Food System: Who Controls What We Eat?"*, London, Bloomsbury Academic, 2016.

[8] Walker, *"Resilience Thinking"*.

[9] Ibid.

solution to each other offers a stronger bond within settlements which are facing with similar problems throughout their improvement.

By now since we could have a look at the theoretical arguments and guidelines on the ideology of resilience, it is time to get to the architectural scale of the subject. Following are the **diagrammatised practical actions** that can address some small aspects of our daily life and how they can be improved in a way where they support a more resilient system.

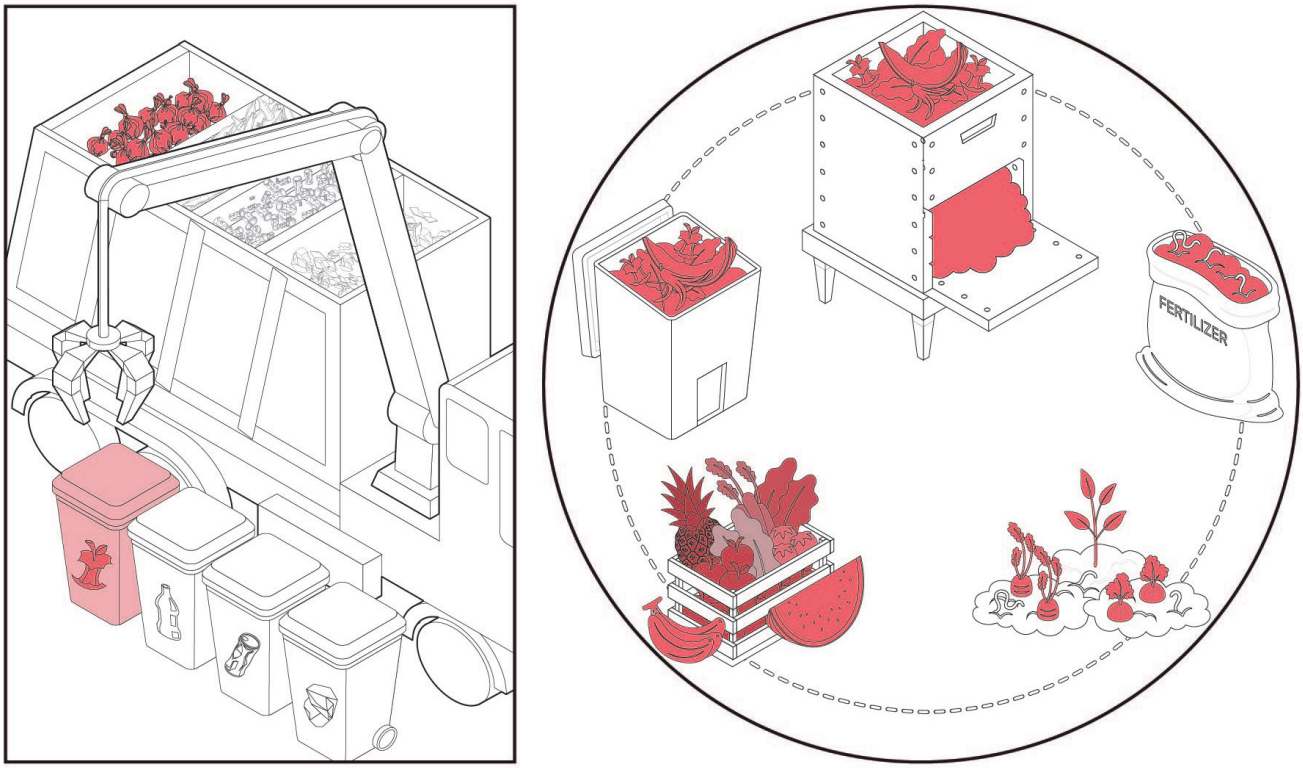


fig 116. Centralised Recycling vs Local Composting. Diagram by the author. 2025.

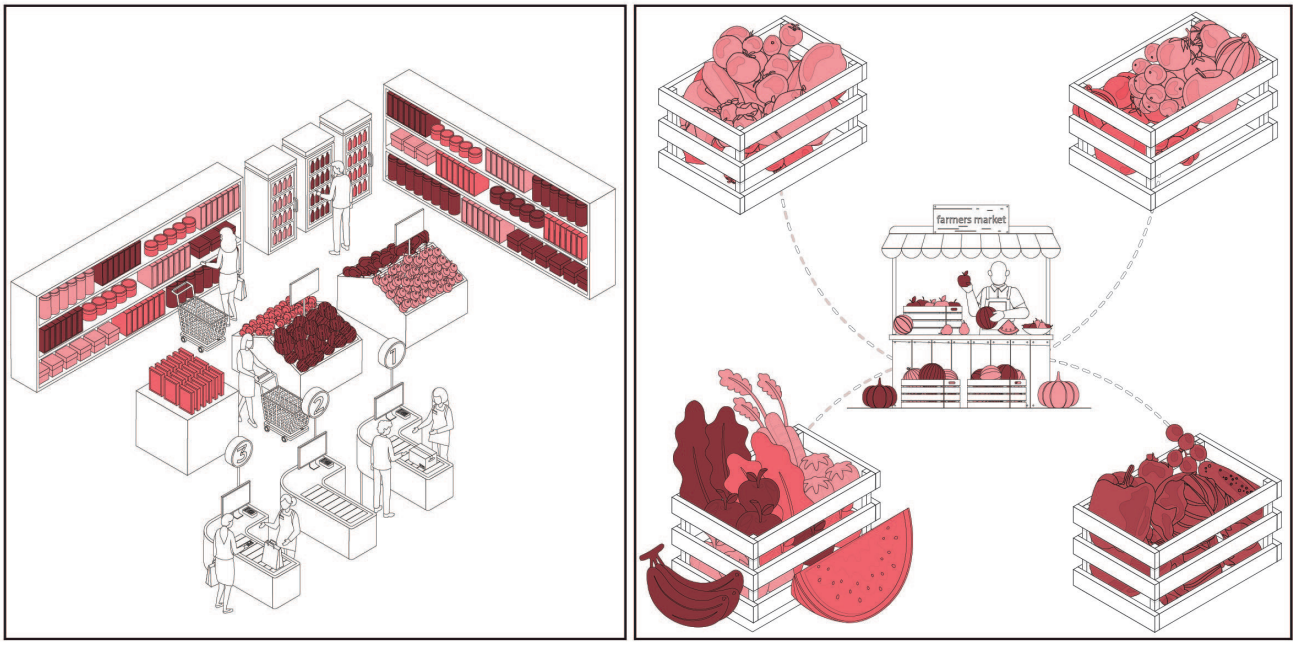


fig 117. Internationally Sourced Products vs Supporting Locally Produced Products, Diagram by the author, 2025.

fig 118. Synthetic, artificially made, 'clean' backyard, OpenAI, Background is an AI-generated image of a realistic backyard garden, Generated by ChatGPT using DALL·E, June 4 2025, https://chat.openai.com/.

fig 119. Permaculture garden that mimics the nature, Photo by Gabriella Herman.

fig 120. Multi-story residential building with concrete structural elements and PVC panels as cladding, Intersection of Corso Unione Sovietica and Corso Eusebio Giambone 10134 Turin, Photo by the author, June 11 2025.

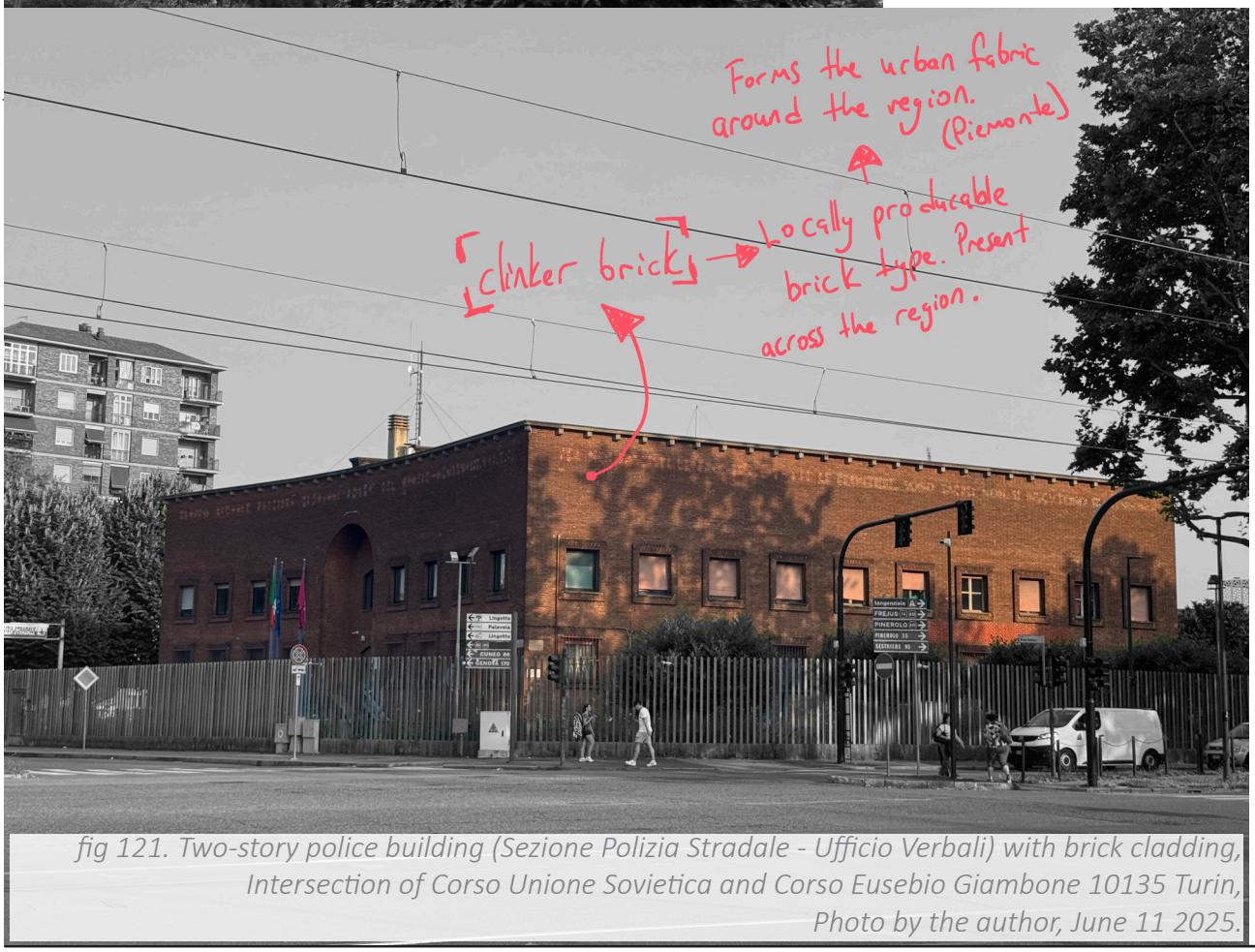


fig 121. Two-story police building (Sezione Polizia Stradale - Ufficio Verbali) with brick cladding, Intersection of Corso Unione Sovietica and Corso Eusebio Giambone 10135 Turin, Photo by the author, June 11 2025.

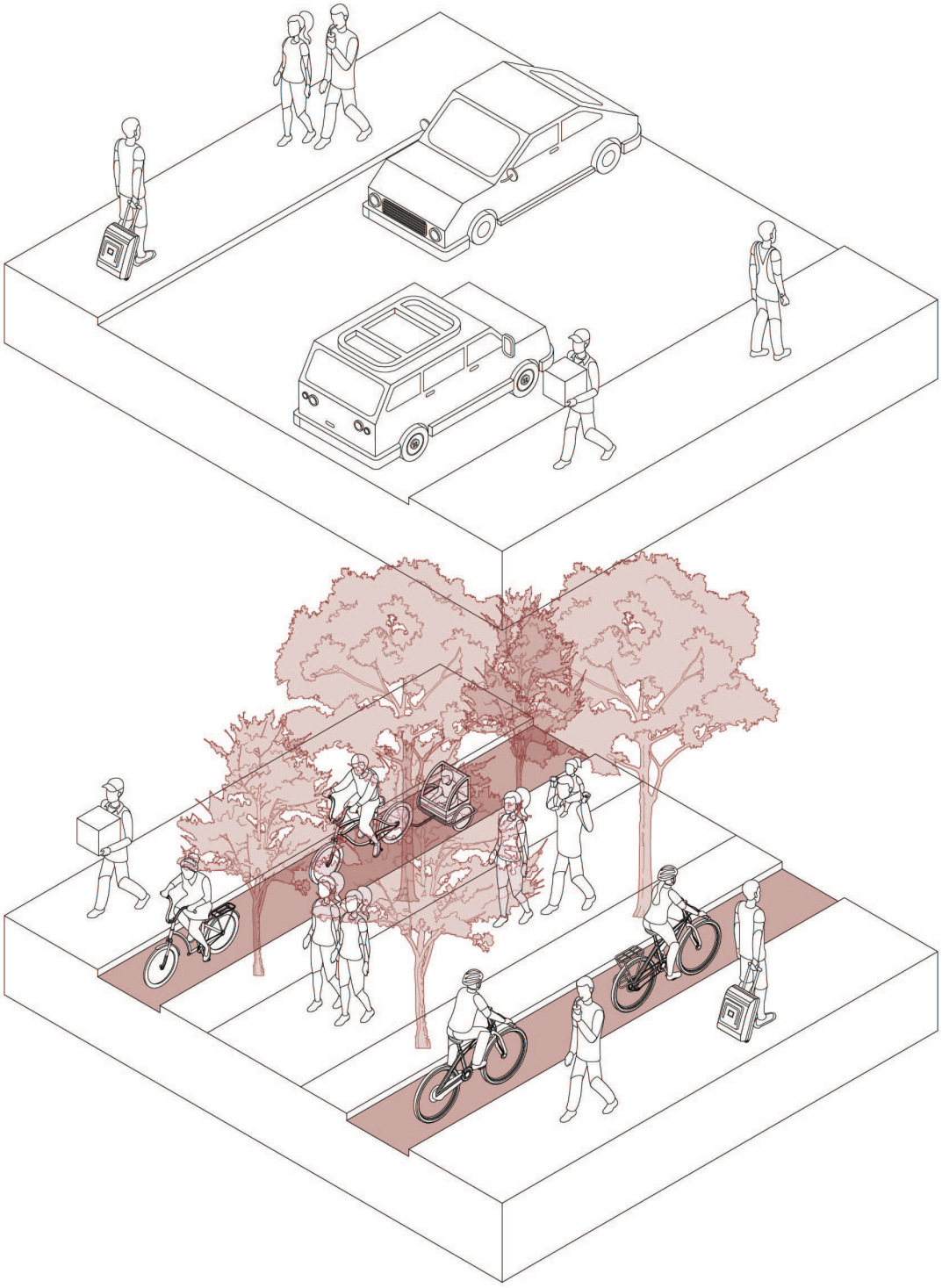


fig 122, 123. Generally imported oil dependent vehicle oriented transportation system vs Zero or close to zero carbon requiring transportation system with increased green area, Photo by the author, June 11 2025.

One of the commonalities in between these actions are that, they are supporting an ideology which is **taking the local products and locally available methods to its center rather than globally available products**. Forming a social structure that is encouraging the formation of infrastructure systems such as the waste management (*fig 116*), commercial services (*fig 117, 120, 121*), public services, agriculture and landscape management (*fig 118, 119*) and transportation system (*fig 122*) within a

settlement, is directly connected to be able to decrease the dependency of the settlement to externally sourced products.

"But why do we need to break the global cycle of such products that are internationally shipped all around? It is cheaper for me to buy it directly from them rather than producing it myself, why would I choose such way?"

There are couple points which are crucial to be discussed. First is the cost of cheap product, that produced in further land, is not including the hidden costs that are paid through pollution, water use, social exploitation, carbon emission [10] and etc. Second set of points concerns the situation which internationally shipping a product is inevitably resulting in vulnerability in the supply chain, in case of conditions like; pandemic like we experienced during Covid-19, extreme weather conditions which is showing its effect globally increasing every year and blockages at the canals or ports like the one on March 2021 at Suez Canal for six days that costed the entire world an estimation of 2-2.5 billion dollars[11]. Third point is about decreased ecological regeneration process that is about supporting building an ecosystem through enriching the biodiversity and building the soil for a healthier crop harvested for every next year[12]. Resulting in a more long-term solution rather than a momentarily solution with an external origin. As the final point to make, there two aspects going hand in hand. Empowering the community through sharing of skills and knowledge which also builds a form of a collective confidence and better adaptation by not importing a standardized solution but a more 'carved specifically for the spot'. This two points are to be considered together since adaptation to the local environment is directly connected with building an exchange infrastructure of information within the local settlement.

Such points are some of the worthy discussion topics to open with the decision makers. On the side of architecture, we are more bounded with the regulations that have been assigned by the law-makers and functions that are needed within the assigned space. Architecture is directly connected with any aspects of our built environment. It is possible to design spaces for agriculture spaces like vegetable plants, fruit trees, legume fields; compost bins, market spaces, public buildings, transportation infrastructure and etc, yet without the publication of a competition by the government or the request of the private clients who are owning the land, as architects we are doomed to work already after the decisions have been made. Architects, planners, designers are capable of creating an image of such locally resilient environments, but without the presence of a sponsor to realize the project, it is doomed to stay as a decorative discipline rather than being a crucial part of a group of disciplines which are crucial for our ever evolving society. That being said, it is important to highlight the fact that being dependent to the decision makers or to private clients doesn't necessarily mean we don't have any power to make a favorable change. Indirectly we have

[10] Carolan, Michael, "*The Sociology of Food and Agriculture*", London, Routledge, 2016.

[11] Davis, Mark M., *"Supply Chain Vulnerabilities in a Globalised World,"* Journal of Business Logistics 42, 117–132, 2021.

[12] Pretty, Jules, *"Agroecology and the Regeneration of Agricultural Systems",* Agronomy for Sustainable Development 38, 41, 2018.

the power to **create a mental image** of the impact of the project to decision makers through our design principles and elements which are shown by visuals.

Starting in March 2020, a declaration of health emergency of Covid-19 pandemic caused several total and partial lockdowns in the whole wide world. As a result of the lockdowns, transit movement was restricted into regional or continental levels in many countries. Limitation of the movement bounded many to travel and trade products across the world. Very reason that prohibits large numbers of people to leave their houses, gives rise to an unimaginable statistic of how, such a scale of limitation in human activities, **can significantly decrease the air pollution** created at many countries. Studies like Kovács and Haidu (2022), that are focusing on the analysis of Sentinel-5P satellite data, at countries like Romania, Italy, France, China, etc. which is used to 'monitor our atmosphere' and provide information on 'forecasting air quality, ozone layer and climate change', is showing that 'degree of densification of regional transport-traffic infrastructure, and population and/or economic development factor' are influencing the NO_2 pollution in the air. **Greater the intensity of infrastructure, resulted in a greater decrease in air pollution**[13].

Such studies indicate, in first hand, the **disproportionate effect of hu-**

[13] Kovács, et al., "*Spatial Effect of Anti-COVID Measures on Land Surface Temperature (LST) in Urban Areas: A Case Study of a Medium-Sized City.*", Időjárás 126, 203–234, 2022.

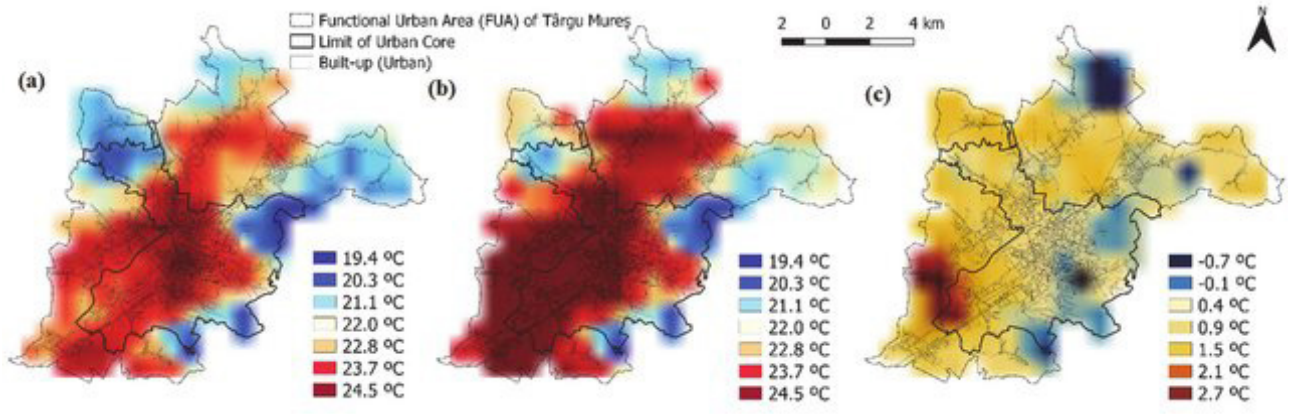


fig 124. MODIS Land Surface Temperature at Târgu Mureș, Romania throughout the years, (a) between 2000-2019, (b) in 2020, and (c) the difference between them, Kovács, et al. 2022.

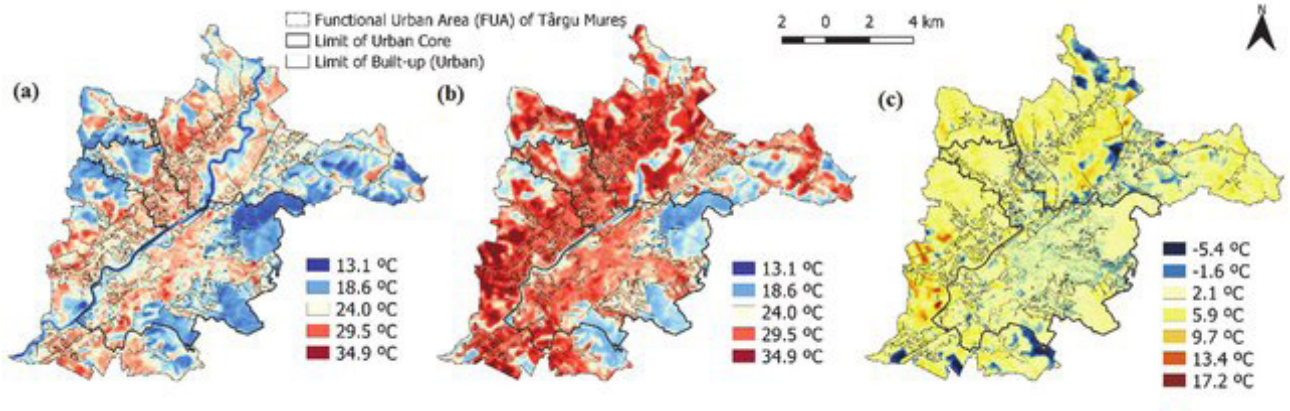


fig 125. Land Satellite Land Surface Temperature at Târgu Mureș, Romania throughout the years, (a) between 2003-2018, (b) in 2020, and (c) the difference between them, Kovács, et al. 2022.

man activities into the very balance of nature. Densification in GHG emissions are resulting in an unbalanced cycle of emitted gases of humans and adsorbed gases by greeneries. Greeneries in similar built environments acting as a passive method of GHG adsorption. GHGs that are not absorbed are resulting in air pollution that requires extra human effort to compensate. Complication about densified points has the potential to be supported by the idea of "decentralising" them. Therefore, a question rises about the structure of infrastructure and the urban fabric of our modern day.

"Wouldn't a system with several nodes that have light load perform better than a single node with a heavy load?"

Highly dense infrastructure nodes and paths become questionable, in the sense where their presence is creating potential points of tension that can result in fracture, in moments of high pressure. An alternative system would be not "centralising" a function but to spread it, so it can make use of its larger area, rather than a single node including all. Using the absorption rate of greeneries around can benefit a GHG emitting system for a better air quality. Same mindset of spreading the nodes of the functions rather than centralising them, because of its "economical benefit", can be investigated through resiliency on a regional level rather than global[14] [15].

[14] Urquiza, Anahi, *"Polycentric Resilience in Urban Infrastructure Systems,"* 2021, Earth's Future.

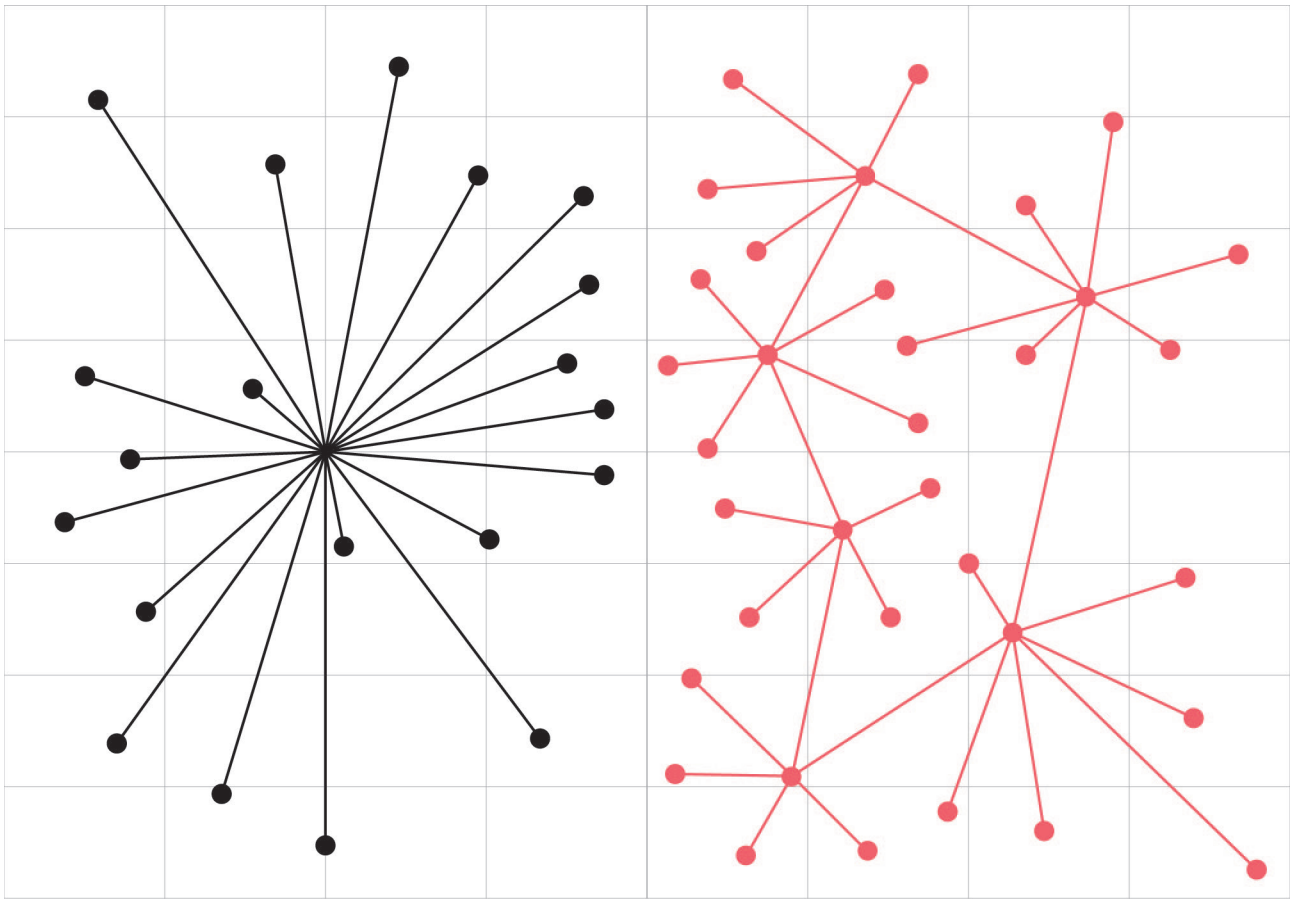


fig 126. Centralised and De-centralised System, Scheme by the author, August 12 2025.

Another event to be point out was as mentioned previously, in March 23rd of 2021, meanwhile the effects of Covid-19 is present ship of Ever Given ran aground to the canal and ended up blocking the traffic for more than six days, it was holding up $400 million of trade each hour. Carrying any kind of product from coconut milk to forklift trucks, from motor parts to Amazon products, the end result was a damage to the entire global economy by $2-2.5 billion. Blockage didn't stay as affected products not only on one ship but 400, which were waiting in-line to continue their trade-route[15]. After the blockade was lifted, wait lines at the ports of Europe got additional hours, and limited capacity of rail routes didn't help to free up a high number of products waiting to arrive at their destination. Some news channels are mentioning that directly and indirectly 30% of the world's container traffic is delayed. Such an event **wasn't the first nor won't be the last time where settlements which rely on imported essential products couldn't get their needs.**

Moments of pressures to infrastructure of transportation, like Covid pandemic or a ship ramming to the land in Suez Canal, have huge impact on the worldwide transportation of products. Not if, but when such an occasion occurs, a way would be to calibrate the way of living to build a **regionally self-sufficient system** for essential products which can have both all the points in tis life cycle at the same land. Trying to come up with alternatives to get resources to people in need **after the failure of infrastructure** is causing **more stress** on both the people and infrastructure. **Resilience for essential products** is necessary not only because of a time of disaster or hardship. It is also a point which would form strong ties within the region, sturdy adaptation skills to a local climate, and **reduction of GHG emissions emitted by the supply chain** process of a product.

[15] Harper, Justin, *"Suez blockage is holding up $9.6bn of goods a day"*, BBC News, March 26 2021.

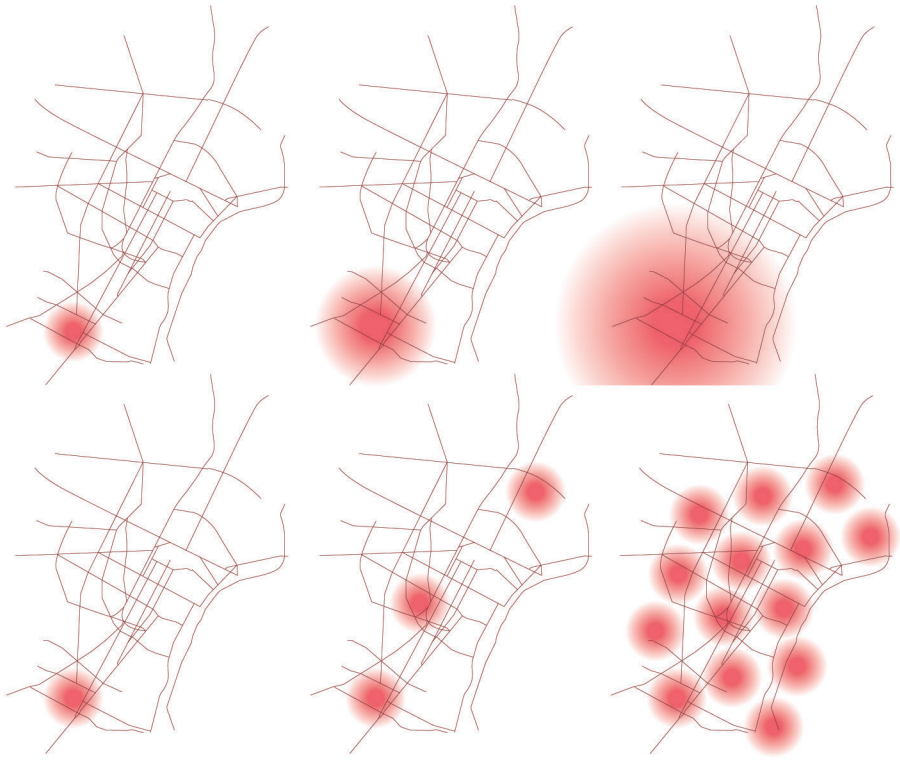


fig 127. Cover area diagram of the difference of single, high energy holding point and multiple, low energy holding points, Diagram by the author, August 8 2025.

Permaculture Principles

Marot's source being the catalytic source, led me to be more explorative towards this mindset. I got to experience these principles at the field through my visits at; a family size farm at Frankolovo, Slovenia, an eco-village at Ardèche mountains and Geertz Garden at Leuven, Belgium. All were different in their locations, yet were following a series of points which are very well-connected with permaculture principles. I would describe their actions by saying;

"They are very aware of the exchange system with nature. Whatever is taking away, needs to go back. Living by the cycle of life... If there is an input, there must be an output as well. We can't consume more than we produce. It would mean someone else is giving away their consumption part to you by force. Order of 1% owning half of the goods and the bottom 50% owning only 1-2% of the worlds wealth is not a system that occurs in nature. Permaculture is working with a mentality that is accepting the sources and not by eliminating a life because it is "unconvenient" for its lifestyle. It accepts the existence of other alive beings and knows well that the system of nature would collapse if a single specie wins over the other. Nature aims for a balance and reacts towards that. If there is an invasive plant dominating an area, through years its prey appears and controls its population. It is rather a slow process if compared by humans will of control the vulnerable."

A family of four, growing their own vegetables and using the locally picked greens from their wild forest. A society at an ecovillage at Ardèche mountains of 10-15 people producing their own food while each has a different specialty and once a decision needs to be made, they gather to discuss the effects to each person if such action is accepted. A garden owned by a high-end restaurant chef who needs people to help with him at his garden, forms an exchange system of work at the field and share of grown vegetables&experience.

***At the following chapter the reader is** introduced to an overarching applicable principles and sees different forms of systems while following the setting of sharing, producing and giving away.*

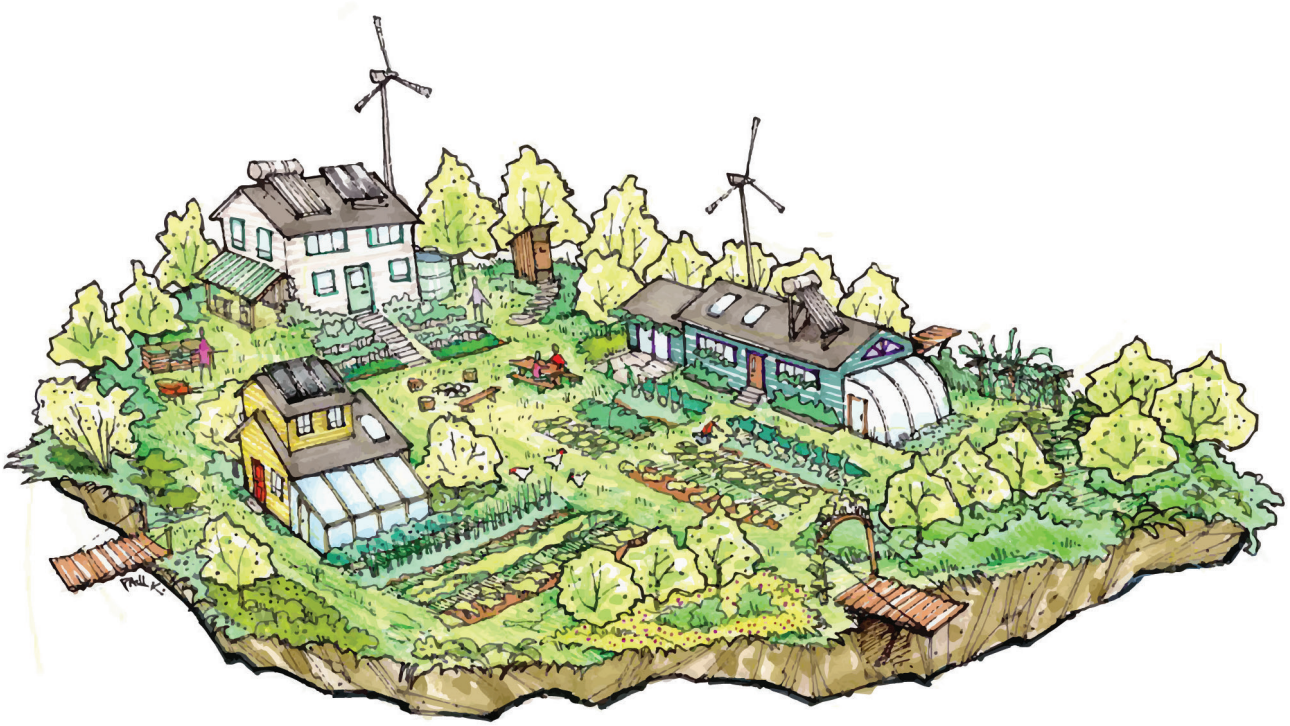


fig 128. 3 unit settlement with permaculture inspired garden, webpage Edhen, accessed August 20, 2025.

In the contrary of the monocultural farming, permaculture is a discipline that is focusing on a life-long resource management, promotes local resilience and variety of products being part of a system that is mimicking the natural ecosystems. Mimicking an already functioning systems requires a high level of understanding the environment and follow its changes throughout the time. Following are the **David Holmgren's Permaculture Principles** which are a series of points that are focusing on these features, and **direct reflections in the form of description on each point by Rob Hopkins**;

1. Observe and Interact[1]

The power of good observation is something not many of us have, and detailed observation of where we are will underpin any actions we undertake. A post-peak world will depend on detailed observation and good design rather than energy intensive solutions.[2]

2. Catch and Store Energy

Energy passes through our natural systems, and is stored in a variety of ways, in water, trees, plants, soils, seeds and so on. We need to become skilled at making best use of these, and move our idea of 'capital' from what we have in the bank, to the resources we have around us.

3. Obtain a Yield

This principle states that any intervention we make in a system, any changes we make or elements we introduce ought to be productive, e.g. productive trees in public places, edible roof gardens, or urban edible landscaping.

4. Apply Self-regulation and Accept Feedback

A well-designed system using permaculture principles should be able to self-regulate, and require the minimum of intervention and maintenance, like a woodland ecosystem, which requires no weeding, fertiliser or pest control.

5. Use and Value Renewable Resources and Services

Where nature can perform particular functions, be it aerating soil (worms), fixing nitrogen(clover) or building soil (trees) we should utilise these attributes, rather than thinking we can replace them. Where nature can take some work off our hands we should let it.

6. Produce No Waste

The concept of waste is essentially a reflection of poor design. Every output from one system could become the input to another system. We need to think cyclically rather than in linear systems.

7. Design from Patterns to Details

We need to be able to keep looking at our work from a range of perspectives. This principle argues that we need to see our work in the wider context of watershed, regional economy and so on,

[1] Holmgren David, "*Permaculture Principles & Pathways Beyond Sustainability*", Victoria, Australia, Permanent Publications, 2002.

[2] Hopkins, Rob, *"The Transition Handbook: From Oil Dependency to Local Resilience"*, Totnes, Green Books, 2008.

so as to keep a clearer sense of the wider canvas on which we are painting, and the forces that affect what we are doing.

8. Integrate Rather Than Segregate

Permaculture has been described as the science of maximising beneficial relationships. In a powered-down settlement, what will become increasingly important is the relationships that we can weave between different elements of the place. Solutions are to be found in integrated wholistic solutions rather than increased specialisation and compartmentalisation.

9. Use Small and Slow Solutions

This principle represents the core argument of his book, that, as Holmgren puts it, "systems should be designed to perform functions at the smallest scale that is practical and energy-efficient for that function."[3] Our solutions will be based on the principle that the smaller and more intensive they can be, the more resilient they will be.

10. Use and Value Diversity

Monocultures are incredibly fragile and prone to disease and pests, more diverse systems have much more inbuilt resilience. Our towns will be much more able to prosper during energy descent if they have a diversity of small businesses, local currencies, food sources, energy sources and so on than if they are just dependent on centralised systems, globalisation's version of monoculture.

11. Use Edges and Value the Marginal

One of the observations used a lot in permaculture is the idea of 'edge', that the point where two ecosystems meet is often more productive than either of those systems on their own. This principle reminds us of the need to overlap systems where possible so as to maximise their potential.

12. Creatively Use and Respond to Change

Natural systems are constantly in flux, evolving and growing. The way they respond to shock, such as forest fires, can teach us a great deal about how we might manage the transition away from fossil fuels. Remaining observant of the changes around you, and not fixing onto the idea that anything around you is fixed or permanent will help too.

These principles are an organization of a framework towards a sustainable future[4]. **The framework is not solely about "How to cultivate food by mimicking nature?" but more of a mindset that can be highly beneficial in economical and social situations.** Framework also creates a worldwide connection between different people and meanwhile the points are cherished, they are also open for slight changes depending on the local ecosystems. Directly and indirectly the ideology has been more acknowledged and finding its crowd meanwhile proving that it is possible to many more.

[3] Holmgren, "*Permaculture Principles & Pathways Beyond Sustainability*".

[4] Ibid.

Agritecture

Initially mentioned at Marot's book, Agritecture has been a subject that is very much related with the 'Hands-on Approach' part which is following the 'Portraying Food' part. This connection is coming directly from the will of combining the two sectors. I argue that these two sectors are inseparable because of their original connection. If we take the focus on this aspect, then the potential of the connection is directly linked with creating a local resilience by using locally available materials for locally needed functions. The will of Cointeraux by spreading the naturally possible method is a mindset that has the potential to be implemented in different settings, likewise the reader will find-out at the 'Hands-on Approach' part.

Historical value of the presence of agriculture being the direct reason of initially settled societies, is highlighting its value for the improvement of architecture. Thinking of a world without a stable society, a constant moving dynamic would have given birth to a different form of architecture which modularity would be the primal design goal rather than comfort or color palette. Yet with the ability to settle down, a form of settled societies started shaping the landscapes.

At the following chapter the reader is going to find-out about a primal way of constructing variety of structures using only a locally accessible, ecological and cheap material, which is pisè. It is important the focus the attention to not only the possibilities the material and method are offering, but also the answer of "Why it was not supported by the government, even though it was a reliable option with all of its offerings?".

Francois Cointeraux was a French architect who was an advocate of rural living and uphold the use of ***pisè***, a construction method which is made by ramming pure earth into hardened artificial stones, in 18th century France. Since it is just made of earth, lime and chalk or gravel, it consists of pretty accessible materials that are commonly in use at rural constructions. Cointeraux's method of *pisè* had nothing to do with the straw and mud walls, which he also considered as "miserable", but it was a conventional masonry method which could be used in multi-story houses[1]. *Pisè* was aiming to be beneficial to the largest class in the society, which would be considered as a social good[2].

For him, architecture and agriculture were two subjects that could be imagined together to create a harmony between the land for food and shelter. He proposed to show how 'one can improve the land while building a small house'[3][4], which formed, in his terms, the connection of

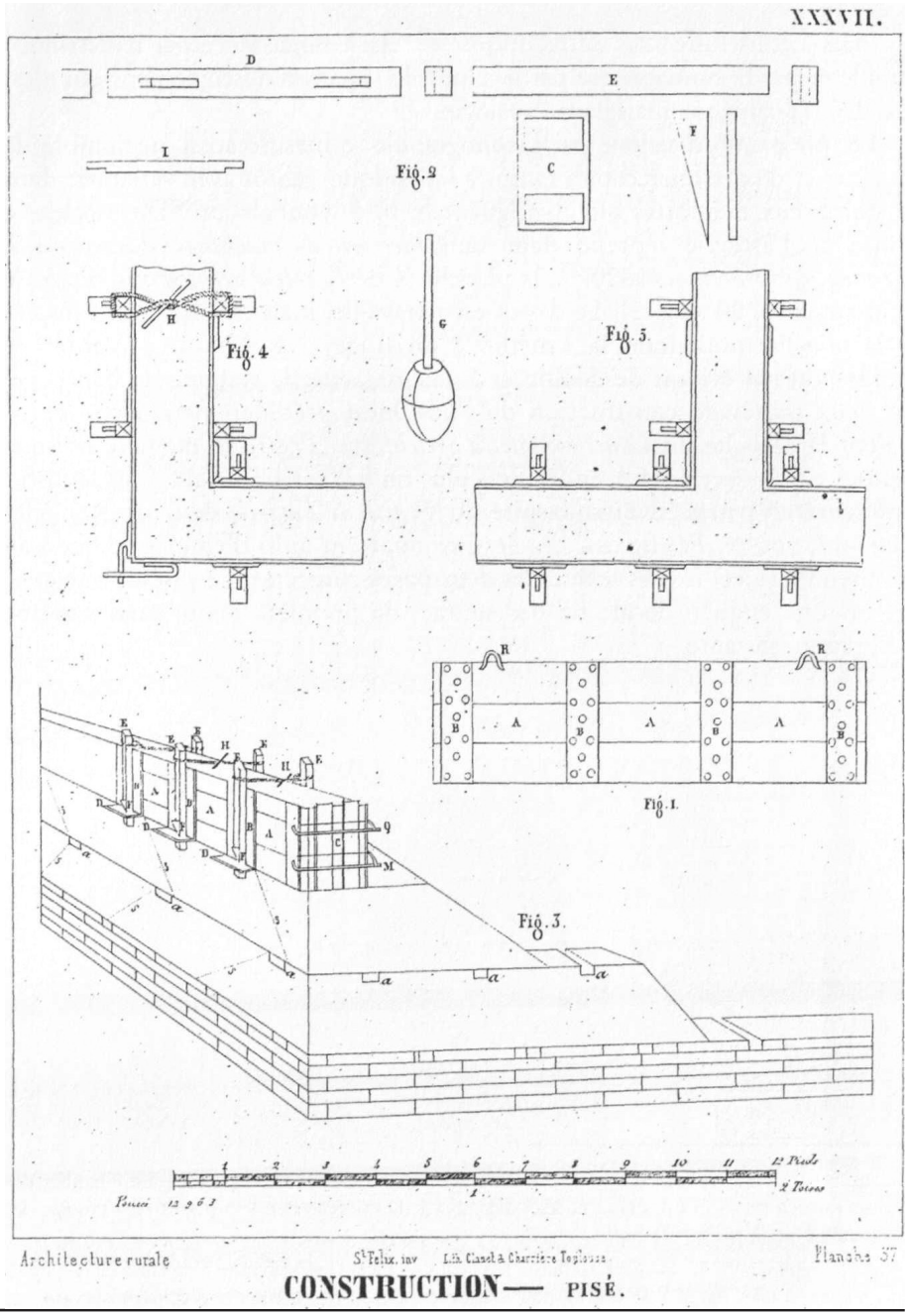


fig 129. Pise Construction, Abbé Rozier, "Pisai ou pisé, Terre battue entre deux planches, au moyen de laquelle on construit les murs des maisons." Cours complet d'agriculture, vol. 7 (Paris: 1793), p 659.

[1] François Cointeraux, *"École d'architecture rurale"*, Paris, Imprimerie de Cointeraux, 1790.

[2] Guillaud, Hubert, *"François Cointeraux et l'enseignement du pisé à Lyon à la fin du XVIIIe siècle,"* Les Cahiers de la Recherche Architecturale et Urbaine, 163–180, 2002.

[3] Marot, Sébastien, *"Taking the Country's Side"*, Lisbon Architecture Triennale, 33-36, 2019.

[4] Cointeraux, *"École d'architecture rurale"*, 5.

[5] Lee, Paula, *"François Cointeraux and the School of 'Agritecture' in Eighteenth-Century France."*, Journal of Architectural Education, 39–46, 2007.

[6] Cointeraux, *"École d'architecture rurale"*.

[7] Guillerme, André, "Les temps de l'eau: la cité, l'eau et les techniques", Paris, Champ Vallon, 215–220, 1983

Agri-culture and Archi-tecture, into **Agri-tecture**. Ground that he held the connection has initially started from the lack of coalition of builders and farmers. Builders not knowing how the effect of atmospheric and celestials on the arrangement of the buildings, and farmers not having the capability to design buildings they need. His aim was to come up with strategies that reunite building and farming skills into one, that he named as "Agritecture". He not only shared his knowledge by works but also with "School of Agritecture" where he taught to his students **'how to work the land for food and shelter'**[5][6]. After the education, his students had the skill set for the constructions of **stable houses, pavilions, belvederes and silos**. However his practically beneficial knowledge hasn't been adopted somewhere else, due to being in a **primitive state that has no chance to be compatible with industrial capitalism of its era**[7]. Cointeraux sought for a harmonization between man and nature through art of earth, but his **disconnection from capitalist demands** and growing emphasis on a **naive idealism** were closely tied to the fact that *pisè* was not commercially profitable. Such naivety left a story that could only inspire future generations.

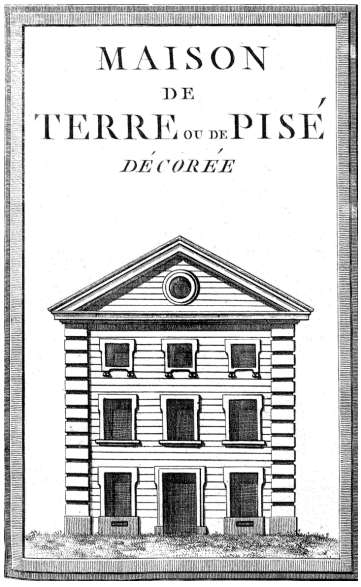


fig 130. Facade of a 'house of a decorated rammed earth', François Cointeraux, École d'architecture rurale, 1793, 2nd edition.

According to Cointeraux, despite his valid arguments on *pisè's* utility as a material in construction, there were two major reasons why it failed. The **elitist academic traditions**, which makes even the most studious ones who couldn't convince themselves to believe the existence of any other possibilities of a subject than the one they teach and taught from an institution, and the **"cookie-cutter" architects**, whom are the designers of buildings which has widely accepted aesthetical and functional features that is commonly repeated in an environment where individuality of each building is ignored[8].

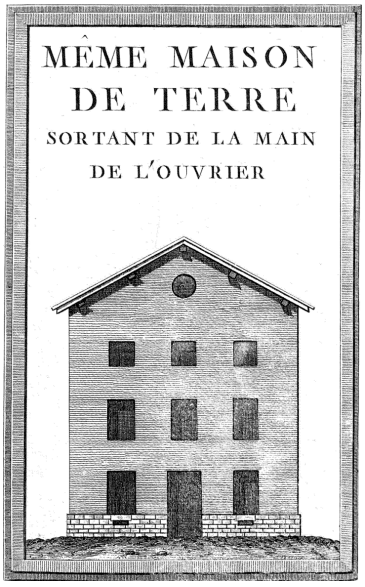


fig 131. Facade of the same house 'made from the hands of a worker', François Cointeraux, École d'architecture rurale.

His aim of being able to construct a house for the large part of the society was not singling out the poor but uniting the poor and rich over the fact that the building is constructed to stay stable and *pisè* was very much a durable and a fire-proof option when done right. *Pisè* has the potential to be an offer to both worlds. The element of an hesitation was the worry of the aesthetics from the perspective of the upper class. To show that such worry was not necessary, he used these two drawings *(fig 130, 131)* at the frontispieces of his book of *École d'architecture rurale* (School of Rural Architecture). Even though both of them were done by the same material, a house that is more desirable by the upper class **could be achieved by the decoration of the facade *(fig 130),*** while the **untouched facade type of house *(fig 131)*** can be used by the lower class to meet with the **cheap housing demand** of the era. I consider his act of creating a possible construction method to such large part of the society, meanwhile of joining two subjects into one to apply the needed practical information from both sectors, as a pragmatic solution that is aiming for the **benefit of the society**[9].

Even though it is for different reasons, his idea of thinking of agriculture and architecture as one, is an important feature that is going to

[8] Guillaud, *"François Cointeraux,"* 170.

[9] Cointeraux, *"École d'architecture rurale"*, plates I–II.

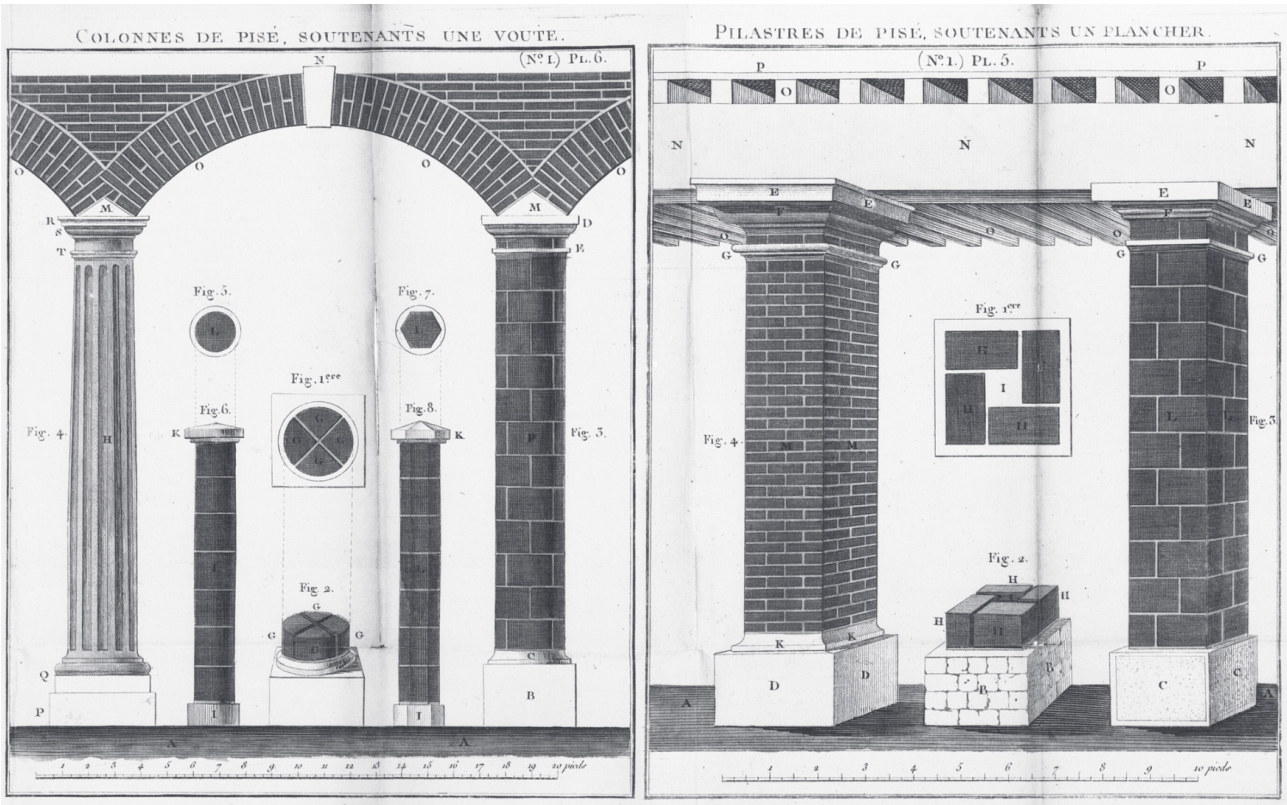


fig 132, 133. (Left) Pisè columns supporting a vault and (right) Plasters in pisè supporting an attic, François Cointeraux, La Ferme, prix remporté de la Société d'Agriculture de Paris, December 28 1789.

be covered in this text. **Food and shelter** being two essential elements and being thought together creates the ability to join them in a life cycle of materials. In a nutshell, products of agriculture being **food** for human and non-human inhabitants and being a useful material for the construction of a **shelter** is the part of **input** form the view of the inhabitants. The organic waste of the inhabitants being a fuel for agricultural goods is resulting on the **output**. Any improvement on the support of such cycle of giving and taking, meanwhile sustaining a symbiotic relationship among the inhabitants and the nature would be a **highly achievable result**.

His work neither a pioneer nor the last time of humans trying to use earth as a construction material. After more than two centruies we still see the presence of researches concerning the material and method. During the Venice Biennale, I got the experience to interact with the Turkiye Pavilion. Exhibit was a collection of several works yet was focused around earth and different methods to get a benefit from it. Likewise Cointeraux's use of *pisè,* two of the works which called **"Bire-Pan"** and "Common-Action Walls" were offering a geometrically diverse form for a better stability all around. Bire-Pan is including **peanut shells, rice husk, sunflower stalk, corn leaf** and two bacterium of ***bacillus pasteurii*** and ***bacillus substilis*** which keeps it ecological features while adding **extra structural strength, water resistance, crack prevention and reduction of the material**[10].

[10] Akipek, Fulya, *"A Research on the Improvement of Soil Building Material with Biological Additives and Factory Production of Soil Building Elements: Bire-Pan"* Istanbul Bilgi University, 2025.

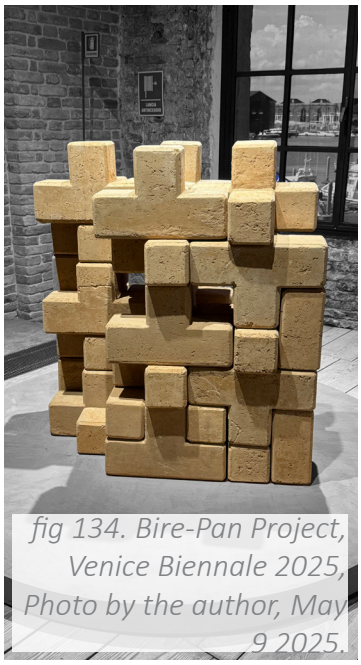


fig 134. Bire-Pan Project, Venice Biennale 2025, Photo by the author, May 9 2025.

Productive Gardens

'Productive Gardens' are referring to the garden ideology on a both single house unit scale and a settlement of multiple units belonged to Leberecht Migge. His ideology was focused around an argument addressing the issues of famine and poverty which was quite presence during his lifetime. He figured the design of the settlements had weak design strategy when it comes to producing own food products. To address this issue he went with an approach of designing a settlement that is highly effective and resourceful. He didn't stay at an architectural scale but also structured these design elements according to a pre-decided way of living. His aim of creating a resilient settlement that can feed it iself throughout the year, was involving a series 'radical' decisions. While his point of view is being supported by focused elements for minimizing famine and poverty on a settlement, it also came by with a series of responsibilities which are not open for debate with the settlers. Such elimination of the right of a decision by the inhabitants, was a clear way of showing its non-democratic elements.

At the following chapter the reader is introduced to a radical settlement that is designed as a whole by an architect with the rules of its own. It is a clear representation of an opposite response for a democratic system, that is taking the decisions of the 'architect', (which in this context the architect is also the ultimate decision-maker) as a higher ruling. Such loss of democracy is being led on the idea of such decision-makers are higher in command and the one to make the decision rather than its inhabitants. Autocracy of such extreme level can be found in many known 'dystopic futuristic' books such as 1984 or The Giver. Seeing such extreme radicality can remind one of a twisted use of power. On the other side of the political and social aspects, the reader is shared with an idea of a design influence that is used at the 'Hands-on Approach' from this chapter.

Leberecht Migge, being a German gardener and a landscape architect, had the idea of designing 'productive gardens' **for every household**[1]. It is important to highlight that, in his lifetime (1881-1935) **he experienced an industrial saturation and the First World War**, which has led to massive impact of **famine** and **poverty** to German society. His involvement in such events has had an impact on his principles on his work resulting in the **productive gardens in the cities** and later on shaped into the Garden City movement in his era[2]. The **Green Manifesto** he wrote in 1919, is a direct product of his background which is suggesting a 'land reform' where **every household would have a house with an independent production garden for independent food supply**[3]. The idea of his, was a solution to problems of his era where trust on a global cycle is absent and self-reliance is a key. On the side of food production, the idea has an extension on the reduction of waste, which has been the main consequence of illnesses to be spread easily[4]. **Managing the waste cycle**, enabling the **reuse of organic material**, in the form of **compost and fuel**, would ultimately be the very solution caused by illnesses.

His detailed guide book of how life and gardening on the countryside could look like, which he published in the previous year in 1918 called *Jedermann Selbstversorger!* **(Everyone self-sufficient!)**. Publication was particularly important touch to strengthen his proposal in case it wouldn't align-well in the mind of authorities using the **nationalist** phases. He provided a series of **typology** of households with different scales and a **size of a garden** they need, with **precise calculations** for both summer & winter gardens and animal farming *(fig 135.)*. **Private garden** close to the house for the **summer vegetables** *(Sommergemüse)* on account of the requirement of intensive care, a **communal garden** outside of the private garden for **winter vegetables** are proposed on account of being cultivated extensively and animal farming taking place in private gardens[5] *(fig 138.)*. **Dry toilet** in a distance from the house to collect the urine and excrement for the usage of compost, on the next of the winter garden for the flowers to use the sunlight. At the southern

[1] Haney, David H., *""No House Building without Garden Building!" ("Kein Hausbau ohne Landbau!")*, Journal of Architectural Education, 2001.

[2] Garrido, David A., *"The Influence of Leberecht Migge in the Creation of the Modern Productive Siedlungen,"* VLC Arquitectura 5, 29–58, 2018.

[3] Poppelreuter, Tanja, *"Migge, Leberecht (1881–1935),"* Routledge Encyclopedia of Modernism, 2023.

[4] Weilacher, Udo, *"The German Garden Reformer Leberecht Migge Believed in Self-Sufficiency,"* ResearchGate, 2019.

[5] Garrido, *"The Influence of Leberecht Migge in the Creation of the Modern Productive Siedlungen,".*

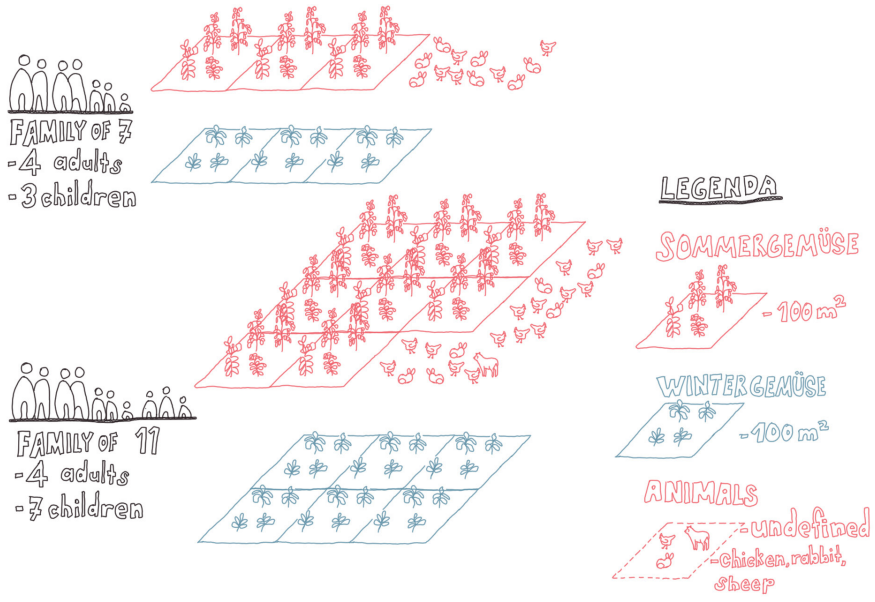


fig 135. Migge's calculations for winter and summer gardens for different household typologies, Drawing by the author, August 23 2025.

end, a **dung silo** *(dungsilo)* collecting the organic waste, transforming it into valuable **fertilizer** to be used in the land *(fig 136.)*. Even beyond the garden's boundaries, his mention of **wild vines** growing on the house wall is demonstrating Migge's commitment to utilizing each available space *(fig 137.)*. Such improvement extends to a **water management** as well, with an underground pipe channeling wastewater from the house directly to the garden, ensuring **nothing** goes to waste. His garden embodies **his belief in efficiency and resourcefulness** on a high level[6].

fig 136. "Knarrberg 34 house with the wild wine, which was still on every house at the time and the mandatory weeping willow", Photo by Bernd Nowack, 1958.

Migge provided a scenario for the Garden House, where he suggested a very primitive form of **social work for the garden in order to sustain cultivation**[7]. Suggesting to use the after work hours where family gathers and **does the necessary chores of the garden together**, is a bare

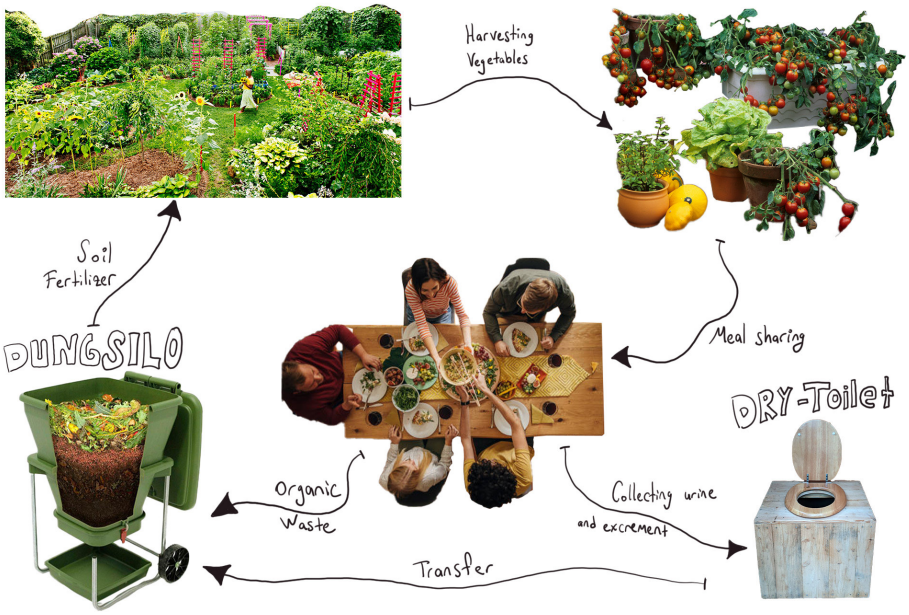


fig 137. Drawing of Migge's plan for the waste management through local composting, Drawing by the author, August 22 2025.

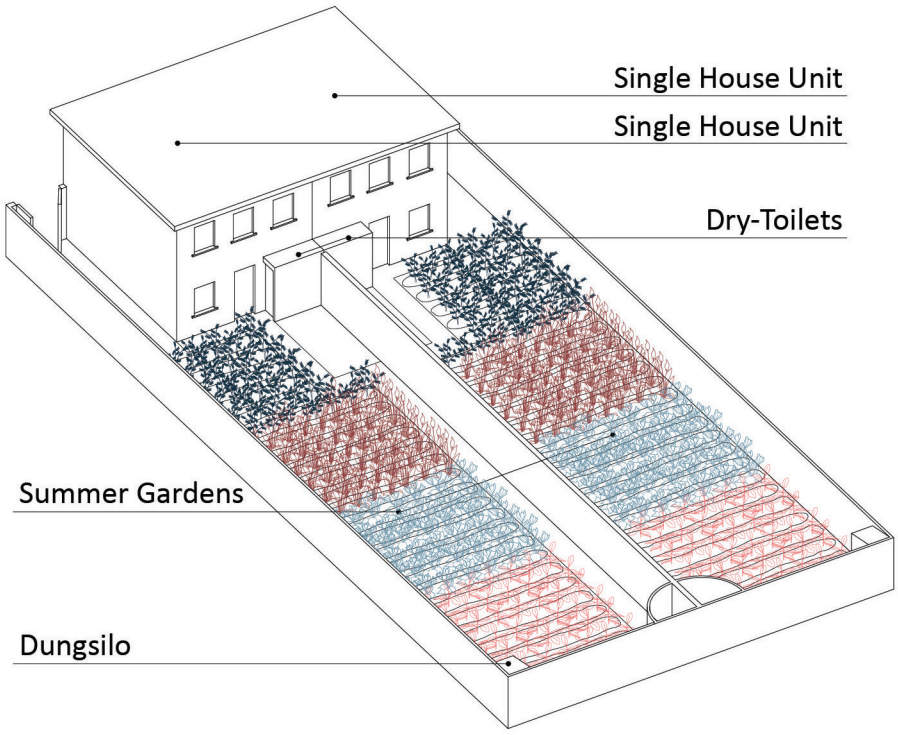


fig 138. An axonometric drawing of a single house unit in Migge's plan, Drawing by the author, August 24 2025.

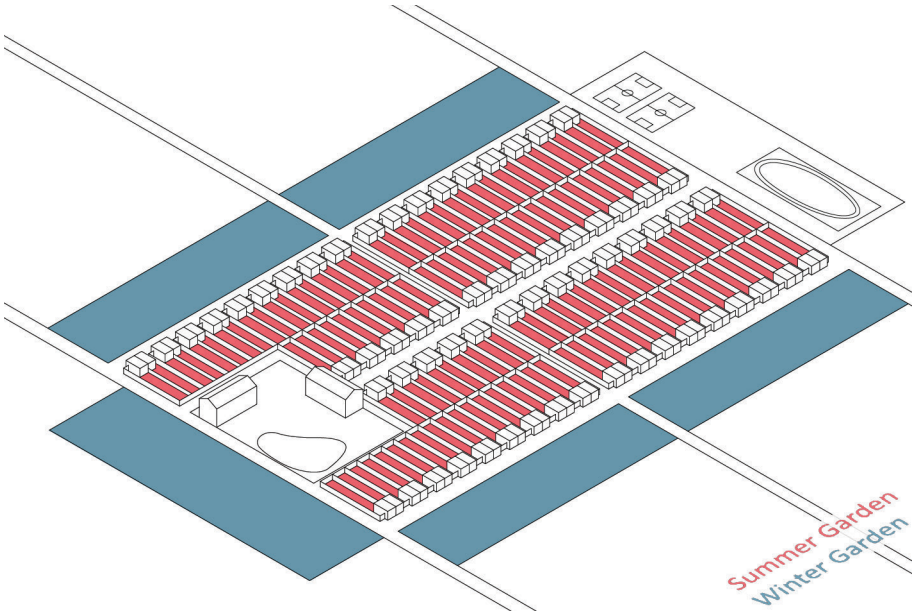


fig 139. Axonometric view of Migge's view for a settlement, Drawing by the author, August 26 2025.

minimum for sustaining the life cycle of the 'privatized cultivation'. In addition he also considered the way these gardens can form an urban settlement that he developed by following the principles of the Garden City movement. His proposal contained not only residential houses with big gardens, but communal spaces with sports fields and other common methods for cultivation like fish ponds. Yet in reality, the housing estate of *Knarrbergsiedlung* in Dessau which **his ideology is realized** with the collaboration of the architect Leopold Fischer, had only the **houses with gardens, a communal square and avenues**. His goal of creating private and communal gardens that users of it can cultivate, developed into a very 'exploitative condition' of his criticism of the urban realm[8].

fig 140. " The Knarrberg in 1976, almost all houses without wild wine", Photo by Bernd Nowack, 1976.

His Green Manifesto can be understood as a return towards the land and an escape from the city, but it is more of a fusion of a garden, dwelling and operating communal spaces which all are embracing the development in technology of its time. Yet, the manifesto is being an extreme document, an attempt of an expert who is trying to realize his own knowledge on a field of political and social problems, which he 'clearly overstepped the bounds of his knowledge and understanding'[9].

Such ideas on the application of gardening techniques to housing on dwellings, are forming what we call "Green Architecture" today. **Starting from agriculture** and later on applying the dwelling into it, forms the **essence** of the work. Theoretical strength of the idea, resulted in a urban realm-like project, which also produced the weakness of the desire to live there. On the aesthetical features; at private spaces, house and the garden have their own boundaries where they don't overlap. From the perspective of an architect, **I believe it has the possibility of being stretched and formed into several spaces where some can hold both of the functions.**

6 Weilacher, *"The German Garden Reformer Leberecht Migge Believed in Self-Sufficiency,"*.

7 Garrido, *"The Influence of Leberecht Migge in the Creation of the Modern Productive Siedlungen,"*.

8 Poppelreuter, *"Migge, Leberecht (1881–1935),"*

9 Haney, *""No House Building without Garden Building!"*

“Food” as a Symbol of a Political Regime

This chapter is a result of a research that I was conducting to understand the effects of socialist political regimes to the residents in that region. What I was initially trying to be more conscious of, was its effect to its residents lifestyles. "How their life was different then what I experience all my life in a capitalist system?". I dived into the history of Italy during its fascist era, which was something I had an idea in its generic form, yet not much on a detailed level. While reading I was trying to find some issues architecture can address to yet everything I was exposed was from the half of the decision-makers and use of their power. I realised that on theory, socialistic regime may give a sense of equality but on practice it is becoming a twisted point due to people on top getting blinded by the power. One of the point that I think that may avoid such blindness could be the large scale of the nations. Governing millions of lives is making the system complex with many small parts that are decreasing the ability to comprehend the amount of people. People becoming statistics after awhile. Minimizing the scale of this regime into smaller settlements would enhance the communication with the decision makers and residents.

At the following chapter the reader is introduced to two European countries which had a socialist reform in their history within 20th century. In both cases the government were using the food products as a tool to impose their reforms to the citizens via everyday items. I see 'food' as a tool that can be used as a uniting element, like the way these leaders used in their politics. Yet it is important to highlight that every human eats and loves good food. At the point of the absence of a common language or a form of communication among two person, food can always be the common ground to unite different cultures. In these two particular cases the aim is to manifest the 'national' dishes to their citizens. I argue that this is possible to do it on a bigger scale. Multiple group of people from different part of the world where they have opposite ideas on politics may enjoy a tasty food together. Such power of food, agriculture and agriculture techniques have a high potential to untie people under a common ground which opens the space for us, architects, to cherish through design that cherish such collaboration.

Carol Helstosky, who is a Professor of History specialized in Modern Italian History, asserting that in fascist Italy, **food was a vital element to bind people to the regime**: not only through the ideas of parsimony and sacrifice, recurrent throughout the *ventennio* (fascist period in Italy of two decades considered as the years between 1922-1943), but also through the **everyday tasks** recommended for the preparation and purchase of food[1]. A strategy that sees the increasing food production as a crucial point for achieving dominance in the Mediterranean region. The idea was that by **ensuring abundant food availability**, a nation could boost its population and ultimately regain its strength after the challenges of the post-war period. Such an approach, linked economic growth with political power, emphasizing the **importance of food security for national advancement**[2].

The regime crafted a powerful message around food. They promoted that food is; **sacred**, a **symbol** of nationalism and **essential** for creating healthy and strong citizens. Their propaganda relied heavily on two key Fascist principles: **tradition and innovation**. They appealed to the nostalgia of simple peasant life while simultaneously embracing cutting-edge food research. This blend of old and new was central to their food-related messaging[3].

1 Helstosky, Carol, *"Garlic and Oil, Politics and Food in Italy"*, Berg Publishing, 41-63 & 127-150, 2004.

2 Ibid, 82–101.

3 Garvin, Diana, "*Feeding Fascism: The Politics of Women's Food Work*", Toronto, University of Toronto Press, 15–39, 2022.

fig 141. Poster for the 4th Reich Harvest Thanksgiving Festival (4. Reichsnährstand), 1937.

fig 142. Poster for the 8th National Competition for the Victory of Wheat (VIII Concorso Nazionale Per La Vittoria Del Grano, 1931.

Due to the fall of international prices of wheat because of the increase of its reachability all around Europe after the WWI, reducing the price of the homegrown wheat was crucial to stop importation. To expand the productivity of 'Italian agriculture', *The Comitato permanente per il grano* (Permanent Committee for Wheat) was founded in July 1925. Their aim was to invest in grain research by rewarding the best crop by competitions, acknowledge the farmers who made improvements to their agricultural practices, giving tax breaks to farmers and encourage modern methods like promoting the use of fertilizers[4]. As part of the 'Battle for Wheat', in 1928, Mussolini himself presented a poem that is focusing on urging people to show love, respect, honour by not wasting the bread, which has been the symbol of hard work, life and sacrifice[5].

On the other side, Germany being ruled by a very similar regime. One of the key points of the Nazi policy makers was the return to whole-grain bread after the recent shift towards the highly refined white bread. Promoting *volksbrot* (people's bread) was a strategic attempt to change consumption production patterns so, the German *volk*, would be in a healthier and stronger body. Such a campaign increased the consumption of the 'patriotic loaf of bread', 50% by 1939[6]. Moreover, to patriotic themes that were used by the Nazi administration was the annual harvest festival where *Blut und Boden* (Blood and soil) were strongly present. Festival that has been held every year in the years between 1933-37, has also been one of the most populated event held by the Nazi's[7]. Such a festival with shows, recitals, folk songs and traditional dresses. Food being the initial need of humans and agriculture wealth becoming the long-rooted derivative of it, allows such radical regimes and anyone in 'power' to use it in their benefit to direct masses of people. The actual act or practice can look like it is for the good of people, but the intention behind their actions is the key element to understand in such moves used by the leaders.

Publishing trending cookery books, like *Il Talismano della felicità* (The Talisman for Happiness) in 1925 of Italy, were showcasing the visible class differentiation in the kitchen. More than 1300 pages of a cookery book was addressed to upper-class women, for the aim of embracing the nationalistic ideas and transforming these ideas into gastronomic knowledge[8]. Like the foreground of nationalistic aspirations, the book was getting the attention of local and regional goods that later on emerged as the traditional regional recipes. In the Preface of the book, it highlighted the modern young woman is able to drive fast cars and speak foreign languages, but the book was aimed to provide the skills they needed for a 'happy marriage'[9]. The upper-class was familiar with the French cuisine, which had a significant meaning of 'refinement and exclusivity'[10], the autarky implied to use Italian ingredients, recipes and food. Foreign words, especially French, were replaced with its Italian translations, which in some cases of upper-class recipe books were not followed due to well-accepted culinary vocabulary. So as a result, recipe

[4] Sambuco, Patrizia, *"The Dynamics, Experiences, and Political Meaning of the Black Market in Second World War Italy,"* Modern Italy 27, 449–468, 2022.

[5] Helstosky, Carol, *"Fascist Food Politics: Mussolini's Policy of Alimentary Sovereignty,"* Journal of Modern Italian Studies 9, 1–26, 2004.

[6] Sambuco, Patrizia et al., *"Food D Discourses and Alimentary Policies in Fascist Italy and Nazi Germany: A Comparative Analysis",* European History Quarterly, 135–155, 2023.

[7] Ibid.

[8] Kashdan, Harry E., *"Il Talismano della felicità and the Making of Italian Cuisine,"* Italian Studies 73, 318–335, 2018.

[9] Kashdan, *"Il Talismano della felicità,"* 322–326.

[10] Morelli, Lidia, "*Le massaie contro le sanzioni",* 64-6, 1935.

[11] Garvin, *"Feeding Fascism"*, 93–110.

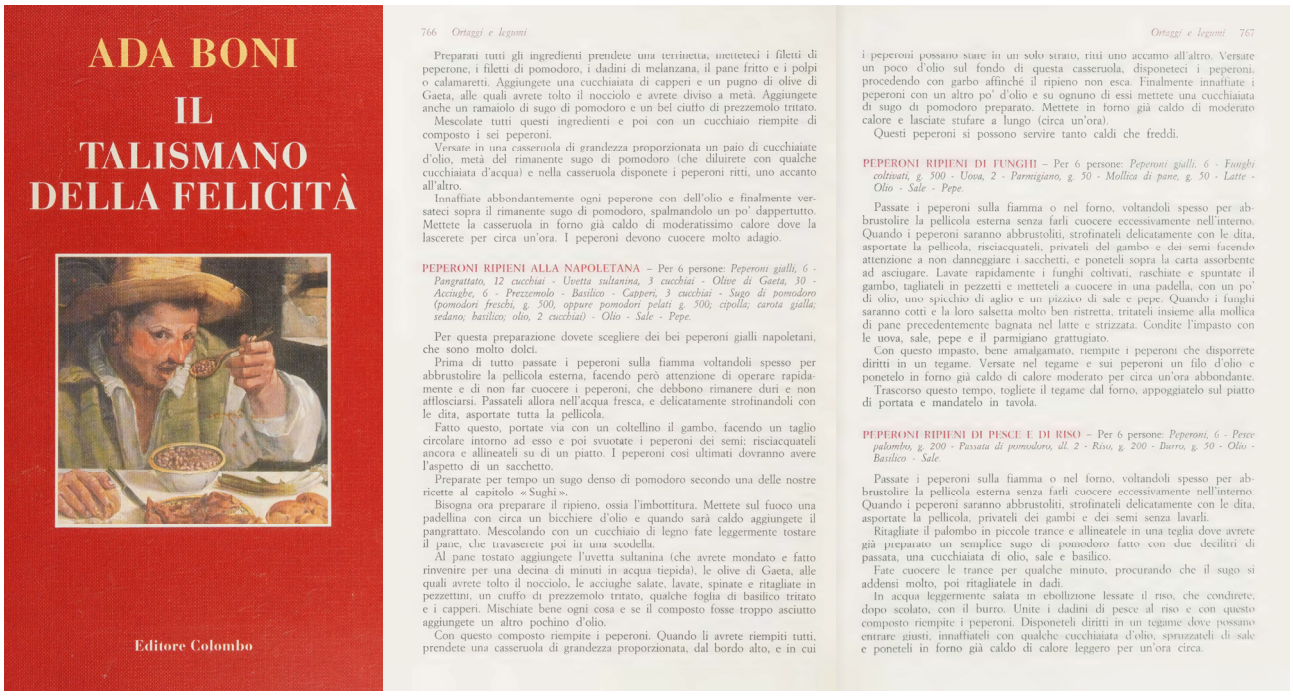


fig 143, 144, 145. Recipe book of "Il Talismano della felicità", (left) cover of the book, (centre and right) 'Peperoni Ripieni' recipes, Ada Boni, 1925.

books for were not in-line with the regulations of the Ministry for Popular Culture and so the **implementation of words like *'lista'* instead of 'menu' has failed**[11].

Cookery books of the middle-class families, when a comparison occurs, were much more in-line with the policies given by the Fascist ministry. *La cucina Italiana della resistenza* which was published in 1936, was containing 194 recipes where ` and widely demonstrating the regional traditions. Likewise, the words and ingredients were to be made Italian. Gin and whisky were no longer in use; foreign anchovies were replaced with Sicilian and Sardinian products; British Marmite with Italian vitaminic extract *Este*[12]; English pickles with a specific Italian brand of pickles. These kind of *ricettari* (cookery books) were used widely to attach everyday practice with autarky where the recipes were used as an instrument to women's labor in domestic environment into a nationalist service[13].

As a 'common point' in between these two similar regimes at relatively close two countries, were not hesitating to use the food a symbol of their regime. Food being a 'uniting' melting point for all classes within their society, gave birth to be used a tool by government authorities. I want to stress this situation of food being used as a tool and highlight that food products has high relatability by every citizen since it is an aspect throughout the day that we all are faced with. Such power the food holds as being an everyday item, makes it a starting point for change.

12 Garvin, Diana, *"Fascist Foodways: Ricettari as Propaganda for Grain Production and Sexual Reproduction,"* Food and Foodways 29, 169–190, 2021.

13 Ibid, 172–180.

Ancient Aquaponic Systems

This chapter is the representative chapter of other alternative farming methods rather than traditional farming. During the 17 months of my thesis journey, I was aiming to create a connection with modern alternative farming methods, under the name of 'Indoor Farming' primarily Vertical Farming, because such methods were the initial point that gave start to my research. Yet day by day, 'somehow connected separate entries' that has been shared so far, were no longer having the desirable connection with such chapter. Such chapter that has a large amount of technical information. I gave start to this journey by saying "Vertical Farming is the farming method of the future and as architects we have the need to acknowledge the need and start designing according to it!". If I was to get stuck with this perspective, I wouldn't have the chance to get to 'portray' the food, which became the primary interest after the initial starting point. I had the desire to cherish food as a concept through more social and artistic features. I am neither an botanist or an engineer. I am an architect whose goal to observe the importance of food since the Neoltihic era and discuss the issues through an architectural perspective. I can see myself being obsessed of proposing a renovation project which aims to transform an abandoned building in Turin and design a Vertical Farming Centers with architectural drawings which I am quite comfortable of doing. I persistently discussed with my tutors to sum up the thesis with such project, yet in this case putting the goal first trying to arrive to the end point was not feasible for me. I learned and got to be more aware of perceptions of different disciplines. I can say that Vertical Farming is not a sustainable option for us because of its high need of energy. This sentence is enough to summarize a research of several pages I wrote and drew. Aquaponic being my favorable method among these alternative methods, I took it as a point to represent the other meanwhile sharing its original practical way.

At the following chapter the reader is introduced to this alternative method of farming and its origin. A method that offers a high applicability for the regions which has a nutritionally rich mud beneath its water bodies that are not re-usable through feasible processes.

The Aztecs were known to have **floating gardens** which are small islands that were called *chinampas,* which we can name more specifically as the **first** version of an Aquaponic systems. At *chinampas* plants are grown on shallows of lakes and are provided with irrigation via canals that is directly connected with the water being pumped from the nearby settlements.

fig 146. Chinampa farming in Tenochtitlans, Wildurbanworld.blogspot, Accessed on August 24 2025.

These floating islands made by **grass** and **reeds** that generally measured between 30 by 2.5 meters. Fenced by using wattle-and-daub method and filled with mud, dredged lake sediment, decaying vegetation and household waste until it is 1 meter above the lake level. As the plants continue growing, their roots would grow deep into water. Once the rafts are settled on the lake, they become a part of the lake ecosystem which supports the vegetation, algae, fish and waterfowl (ducks, geese, swans etc.) **thus using the crucial nutrients for its survival**. This way crops were no longer to be worried over lack of rain and Aztecs were able to use this **nutrient-rich mud** that was collected on the bottom as a **fertilizer** for their crops. Modern day Mexico City and former *Tenochtitlán*, has a water-body and is the home for many rafts which were providing one-half to two-thirds of the food consumed by its residents[1].

Mexico has been a house to high numbers of mangroves and therefore has one of the highest numbers of loss of mangroves. In 2017, federal authorities recognized the mangrove loss and acted on a regeneration project in 81 coastal lagoons with mangrove priority sites and by using the technique of *chinampas*, they reforested red, white and black mangroves on them. As a result of the development, **4680 hectares of mangroves have been restored**[2] at the region. *Chinampas* have the potential to not only be a low-budget, low-technology growing method but also restore the ecosystems. Flexibility of such system is allowing farmers to implement on a land/water body size of their choice for constant production. We are living in times that food security is an everyday issue, such methods are offering ecological and local benefits while following an aspect that has a high ability to restore a habitat[3].

[1] Rey-Hernández, Catalina, *"Chinampas Agriculture and Settlement Patterns: The Contemporary Relevance of Aztec Floating Gardens,"* Blue Papers 1, 90-99, 2022.

[2] International Climate Initiative, *"Restoring Mexican Mangrove Forests Creates Opportunities for Social Development.",* Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection, Accessed August 25, 2025.

[3] Merlín-Uribe, Julieta et al., *"Environmental and Socio-economic Sustainability of Chinampas (Raised Beds) in Xochimilco, Mexico City,"* International Journal of Agricultural Sustainability 11, 216–233, 2013.

HANDS-ON APPROACH

Which the reader finds out about a fieldwork experience by the author, who got the opportunity to design a structure that combines the use of a locally grown agriculture products while being used as a common space which is a need at a community garden project *(orti).* He shares his experience through months of explorations around different countries around Europe, practical experimentations on building materials, interactions with users of different ages and ending it with managing a Self-Building Workshop with teenagers to build a structure on the site.

Introduction to Hands-on Approach

This part, like its location on the thesis, is the part that I wrote the last. During over 15 months of constantly seeing aspects of life which are related with agriculture in both cities, suburbs and villages, I was being exposed to countless sources from my daily life. Constantly evolving ideas on the last part, which from the beginning were suppose to be 'a design project', were to become tangible. I had the chance to travel in Europe during these months and I collected many stories, people, experiences from variety of places along the way. Personal growth workshops I did during the summer of 2024 at ecovillages further into the woods of Frankolovo, Slovenia and Gajrowskie, Poland, opened the space for me to interact with people who are directly involved with agriculture and living a lifestyle of a constant cycle of taking / giving with nature. I experienced an eco-village life at a beautiful community located between the Ardèche mountains and Alps at South of France. I got to know a lifestyle at the suburbs of Modena, Italy. I had the chance to help Geertz, at a local farmer who is cultivating on almost one acre field for the day where I got to know his local and natural techniques and how he interacts with the community. His ability of being able to sustain an organic agriculture field in the suburbs of Leuven, Belgium by having an exchange system of work and vegetables with his young helpers. I much appreciated his ideology to include the community to his garden which creates the space for his 'compañeros' (in his words meaning the people who you eat bread together) to be part of a common goal of taking care of the land, the produces and the animal life on it. Projects and pavilions I got to observe during 2025 Architecture Biennale of Venice, which made me more aware of the current works on the food production sector and how it can effect the perspective of architects/designers/planners.

Initial project idea was to create a 'controlled space' in the function of a greenhouse which was a result of an influence over, thinking vertical farming would be an efficient way of cultivation. Yet after the results of the technical review and recent experiences, I wanted to keep the idea of using verticality on a sector dominated by horizontal axis but taking the spirit that is well-connected with the mother nature.

Which the reader is introduced to experiences that has been collected

fig 201. Zucchini, radish and types of salad from an orti in Cascina Falchera, Turin, Photo by the author, May 22 2025.

fig 202, 203, 204. Green roof simulation, showcasing its technical elements and aesthetics, Munich, Photos by the author, July 15 2024.

Theory without experience is sterile, practice without theory is blind.
-George Jay Anyon

During one of the trips, I got the chance to visit Munich and while going around in the city I came across with the project of Climate Change Garden *(Klimawandel-Gartens) (LWG) (fig. 202,203,204)* by the Bavarian State Institute for Viticulture and Horticulture *(Bayerischen Landesanstalt für Weinbau und Gartenbau (LWG))*. While I was exhibiting the project, has awaken some insights on the citizen dimension. As architects, engineers we are aware of the complexity and simplicity of implementing certain technological interventions. Yet if it is not touching to citizens life **via public exhibitions** that they can experience freely on their will, it can may end up at their minds as "that is a complicated and most probably an expensive choice" which influences its quantity of realizability. Not everyone

fig 205. Disordered collage of inspirations found on Rue des Arts in Marseille, Marseille, Collage by the author, November 16 2024.

has a chance to talk with an engineer or an architect who can direct them, so creating the spaces for them to be more involved with such crucial systems must be one of the priority when trying to spread the knowledge.

Plant interventions at *Rue des Arts* in Marseille, was one of the best intervention I observed in the recent months which are done **solely by the locals**. Having an exceptionally fertile climate for many greeneries, is opening up the potential to put greeneries even on such narrow dark streets. Ground floor serving only for the entrances of the apartments, naturally sets up the whole street for a social meeting area. Respect to that, residents intervention to use low-budget projects on such small scope is praiseworthy.

fig 206. Human-made structure to guide the neighbouring tree to support it to create a skin around to create shade, Venice, Photo by the author, May 10 2025.

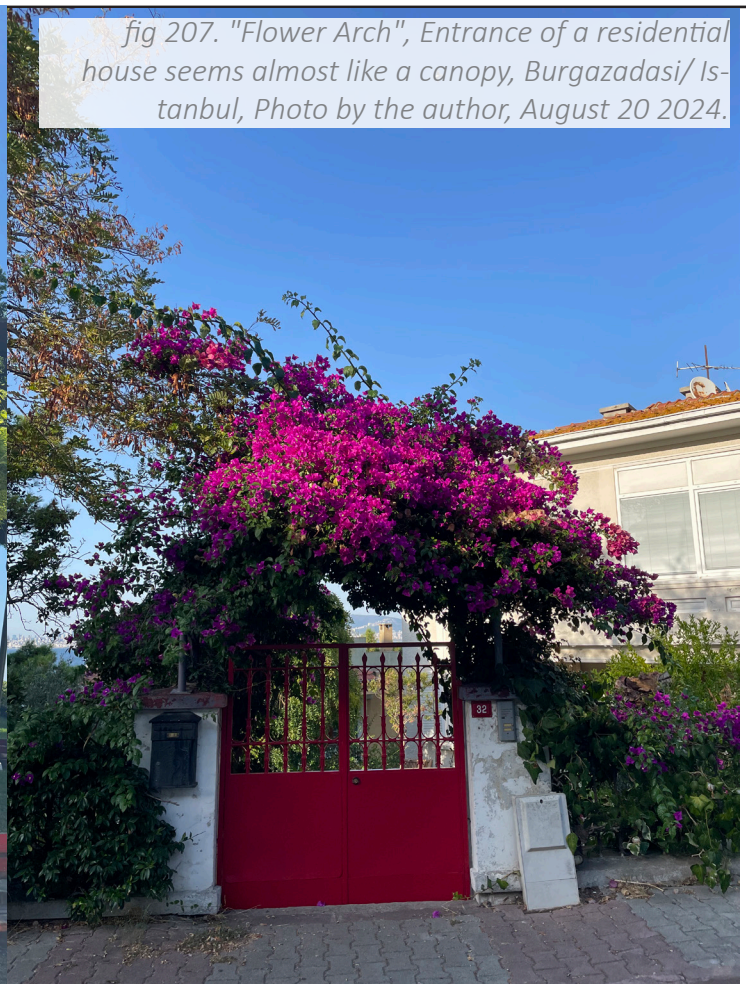
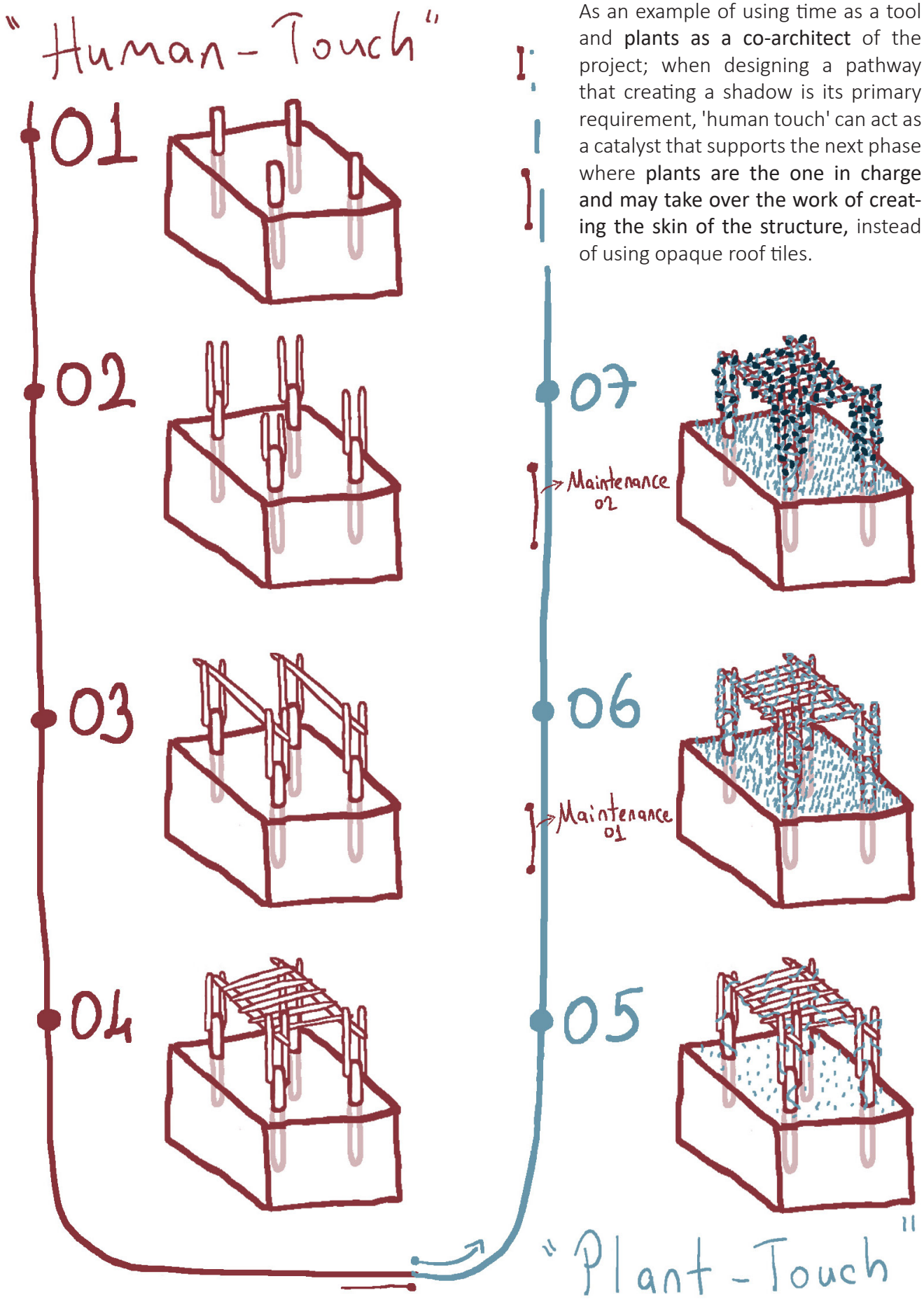


fig 207. "Flower Arch", Entrance of a residential house seems almost like a canopy, Burgazadasi/ Istanbul, Photo by the author, August 20 2024.

'Greenery' framed gateways, is including a design element that I observed in several countries in different forms. It is made possible by ensuring the stable aspect of using the **time as a tool** to form the skin with the help of a secondary architect. There is no exact elevation view. It will be formed throughout the time and once the plant arrives to a point where it surrounded "enough", it will start perform the intention it was thought at the beginning. As architects, designers, engineers, we start with an aim of forming a structure that will have a function. Almost every time when the construction phase is concluded result may precisely be seen and start serving its function. Yet when designing with living organisms, work does not adheres it trajectory this way. There is a point where human touch can arrive to its last step and **afterwards it is up to the alive agent to perform its part as the co-architect.**

After designing horizontal and vertical shading systems for several studio classes to regulate the comfort level within the interior spaces, use of a well-designed greeneries on the facade as a skin always made sense in my mind. Facade covered with plant branches and leaves, are creating the needed porous skin to cover from sun during the warm summer months, and after the autumn season when the leaves have fallen, it opens up the facade for sunlight to enter. This occasion comes with two undesirable cost for some architecture/construction firms, which are the **increased maintenance cost and initial growing time** for greeneries to cover the facade.



As an example of using time as a tool and **plants as a co-architect** of the project; when designing a pathway that creating a shadow is its primary requirement, 'human touch' can act as a catalyst that supports the next phase where **plants are the one in charge and may take over the work of creating the skin of the structure,** instead of using opaque roof tiles.

fig 208. Sketch Diagram of Human&Plant Collaborated Structure, Collage by the author, June 26 2025.

fig 209, 210. Silk Pavilion II, Oxman Design Team, Photo from Fastcompany Website, Accessed on June 25 2025.

Such operation done on natural entities to form a system for them to be present while being a solution to create comfort for another, was something that I initially faced with at the **Silk Pavilion project** done by Neri Oxman and her team. What they have accomplished is holding a meaningful value, proving not only the plant life but **also animal life can have a responsibility when constructing** with the support of a human made base, that acknowledges the needs of the **second architect** and designs depending on the essential support points of them.

fig 211, 212. A vegetative framework integrating trees into a continuous green structure, Parc de Bruxelles, Brussels, Photo from Author, April 22 2025.

Bamboo framework intervention realized on the pathway surrounding the central park of Brussels, is a **simple and primitive** project that is performing its function of creating a more secluded corridor at the pathway that is following its natural curve and supporting **a more clear visual for the users by forcing the perspective of the path.** Meanwhile it increases the amount of shade falling and absorbing more carbon.

fig 213, 214. Plant interventions at CASO, Via Cesare Lombroso 16 10125 Turin, Photos by the author, April 5 2025.

CASO has been a cafe I've been to quite often to study on Saturdays and Sundays. On the side of having a cozy and open terrace space, they have implemented these simple garden boxes *(cassoni)* to get to most from their large terrace located in between buildings. It is limits with fresh spices like rosemary, mint and basil, yet it is possible to cultivate vegetables and flowers with the same technique with the right management and maintenance.

Pavilion of Vertical Connection, on the contrary, is a supporting structure made only to experience the potted plants from different levels.

fig 215, 216. Vertical connection project advertisement exhibition, Milan, Photos by the author, April 7 2025.

fig 217. Wall of greenery, Munich, Photo from Author, July 15 2024.

fig 218. Wall of greenery, Prague, Photo from Author, July 16 2024.

fig 219. Wall of greenery, Turin, Google Maps, Accessed on January 15 2024.

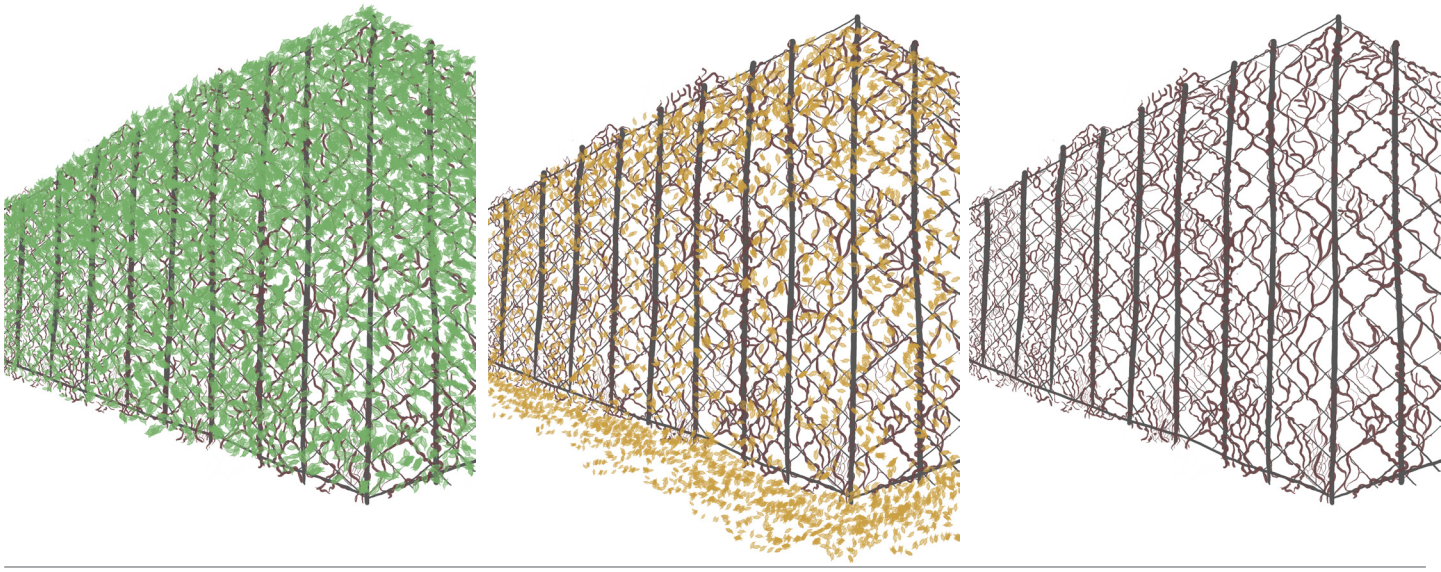


fig 220. Greenery wall through changing seasons (from left to right; summer, autumn, winter), Sketches by the author, January 15 2025.

One of the commonalities I observed through the examples I've shown so far is that, verticality has been an important aspect. Human-made structures were built on this axis rather than horizontal, since gravity is the factor that challenges greeneries to move vertical. Inspirations mentioned above *(fig 217, 218, 219)* are vertical structures that are acting as a wall and in each cases they are added to lessen the visibility between spaces. Yet the visibility changes throughout the year. A wall that is low in visibility in between spaces during summer, in winter months become more visible due to the absence of the leaves. This situation can be used in favour of designers who are willing to use greenery for the shading. Same structure have the ability to create shade from warming sunlight during summer while letting the sunlight pass during the cold months where we are in need of the warmth of it.

fig 221. Geertz's Garden, Leuven, Photo by the author, April 26 2025.

End of April 2025 through my dear friend Aline, I got to know Geertz and visit his garden at the outskirts of Leuven, Belgium. He is a fine dining chef who does cultivation at his almost one acre field by visiting every other day for couple hours. He is accepting youngsters who are coming to help him at his garden for couple hours a week with the exchange of a basket of organic products cultivated from his land. Such exchange of work and goods by eliminating money as the middle man, is creating a stronger bond because people are feeling more connected with what are being harvested[xx].

He showed me around, what is being cultivated at the moment and what are his plans with the place in the future. At the time I visited him, he was preparing one of the greenhouses to hold a cooking workshop, that had a long table spanning from one short side to another. Having such a long table is creating a linear structure where a single product can enter from one side and through different processes or mixes may end up at the other side ready to be enjoyed. Since it was the beginning of the warm months, he was harvesting the products winter period goods at the greenhouses and preparing the greenhouse for the plantings of the warm months products. Together we removed some excess weeds, prepared the soil for planting and planted some fennel seedlings. He is buying the seedlings from a local company who are mass producing them. For his scale of work, it is not worth the struggle and shared that he already tried growing from the seeds where the initial stages of the seedlings where not as durable as the ones he is buying for so few.

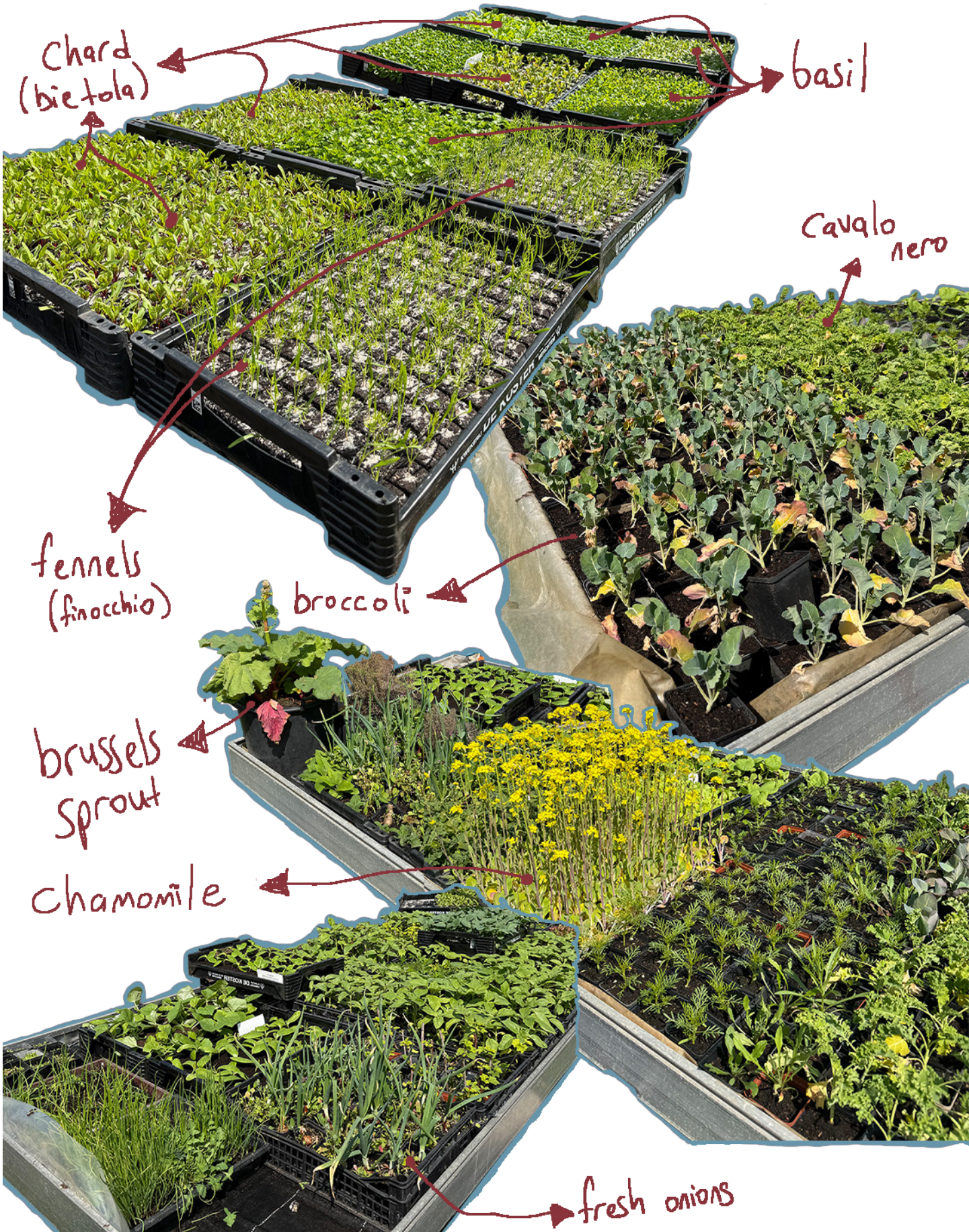


fig 222. Geertz's Garden Collage, Collage by the author, June 29 2025.

fig 223, 224, 225. Geertz's Garden, Leuven, Photos by the author, April 26 2025.

The experience I had at Geertz garden is in the contrary of the previous ones I shared. It was pure agriculture and no building of some kind was involved. Yet it is staying as one of the most influential among them, because the issue of having more work than he can handle by himself, can not be solved through architecture but only through an economic development. It was a clear scene where I remembered what my Professor Fillippo de Pieri once said " What can architecture do to address some of the issues presented? The answer can also be no, architecture is only decorative, we have to address the issue through policy changing, cultural changes and etc."[1]. If he was in need of creating a shade or willing to use the land area more efficiently by moving vertically, I could be suggesting him certain points which are under my expertise, yet it wasn't the situation. There were no point architecture could address. Along the time, this question of "What can architecture do to address these issues I am willing discuss?" got bigger in my head.

[1] *Filippo de Pieri, Review with Ali Haktan Macit, Turin, January 16 2025.*

fig 226. Brussels sprouts and insect attracting flowers, Leuven, Photo by the author, April 26 2025.

Coming back to hometown: List of Community Garden Projects *(Orti)* in Turin

Circoscrizione	Type of Organization	Year	
1	Associations	Cascina Quadrilatero	2012
		Orti della Banca	2022
2	Circoscrizionali	Orti Urbani Parco Sangone	2007
	Associations	L'Orto tra le Case	2022
		Orti Generali	2017
		Orto Wow	2020
		Orto Mennea	2022
	Orti Privati	Strada del Drosso	-
	Orti Spontanei	Orti Residenza Buon Riposo	-
		Orti Spontanei strada del Drosso	-
		Orti Spontanei Parco Sangone	-
		Orti spontanei Strada delle Lose	-
3	Orti Spontanei	Orti spontanei Strada Antica di Grugliasco	-
		Orti Spontanei Pozzo Strada Ferrovia	-
4	Associations	Officina Verde Tonolli	2003
		Orti Al Centro	2015
		Orti delle Raffinerie Sociali	-
		Orti in Piazza	2016
		Orto Urbano	-
		Orti Urbani via Franzoj	-
		Cascina La Luna	2007
		Orto del Centro Diurno	1997
		Viale della Frutta	2016
	Orti Spontanei	Orti Spontanei Parella	-
		Orti spontanei Sacco e Vanzetti	-
5	Circoscrizionali	Cascina Maletta	2011
		Casino Barolo	2009
		Orti di Via Venaria	2005
	Associations	Orto SCIA 131	2015
		Hortus Conclusus	2015
		L'Orto di Matteo	-
		Officine in Terrazza Piemonte	-
		Orto Alto: Fonderie Ozanam	2016
		Orto Mannaro	2014
		Orto Collettivo Massari	2011
		STOrti	2022
6	Circoscrizionali	Orti dei Laghetti di Falchera	2018
		Orti Parco dell'Arrivore	2005
	Associations	Agrobarriera	2016
		Cascina Falchera	2021
		Orto Urbano Lidl	2019
		Orti al Bunker	2012
		Orti Fa Da Noi	2017
		Ortobello al Centro	-
	Orti Spontanei	Via Dorera	-
		Orti spontanei AMIAT nord	-
		Orti spontanei Lungo Stura Lazio	-

Address	Area of the Orti (sqm)	# of Gardens (Ind. + col.)
Piazza Emanuele Filiberto, 10122 Torino TO	200	12
Via Rapallo 20, 10134 Torino TO	-	-
Strada Castello di Mirafiori 262/A, 10135 Torino TO	13000	102
Via Rodolfo Morandi, 10135 Torino TO	1	9
Strada Castello di Mirafiori 38/15, 10135 Torino TC	1000	170
Via Onorato Vigliani 102, 10135 Torino TO	50	17
Parco Mennea, Corso Racconigi, 236, 10141 Torino TO	-	-
Str. del Drosso, 91/int. 13 int. 4/A, 10135 Torino TO	-	-
Via S. Marino 30, 10134 Torino TO	3300	-
Str. del Drosso, 151, 10135 Torino TO	-	-
Across Str. Castello di Mirafiori, 103/B, 10135 Torino TO	-	-
Strada delle Lose, 10137 Torino TO	-	-
10095 Grugliasco, Torino TO	-	-
-	-	-
Via Valgioie 45, 10146 Torino TO	3036	24
Parco Commerciale Dora, Salita Michelanglo Garove, 10144 Torino TO	32	20
Via Fagnano 30/2 -Torino	-	-
Piazza Risorgimento, 10143 Torino TO	200	50
Via Carrera 59, 10146 Torino TO	-	-
Via Franzoj, 10146 Torino TO	1500	50
Strada della Pellerina 22/7, 10146 Torino TO	6000	-
Via Sostegno 33, 10146 Torino TO	600	-
Via Servais Interno 130, 10146 Torino TO	3500	38
Via Madonna delle Salette &, Via Madonna Della Salette, 10146 Torino TO	-	-
Orti spontanei Sacco e Vanzetti, 10146 Torino TO	-	-
Angolo Corso Molise e Strada delle Vallette 59, 10151 Torino TO	3385	26
Via Sansovino 205/19/A, 10151 Torino TO	2780	23
Angolo Via Venaria e Via Druento, 10148 Torino TO	2780	27
Via Sospello 131/A, 10147 Torino TO	2000	30
Via Nole 48, 10149 Torino TO	19	19
Via Giuseppe Vaninetti, 10148 Torino TO	2499	1
Via Giuseppe Vaninetti, 10148 Torino TO	1315	1
Via Foligno 14, 10149 Torino TO	300	1
Piazza Manno, 10151 Torino TO	600	1
Via Massari (tra Via della Cella e Via Massa), 10158 Torino TO	2000	25
Via Delle Primule 18, 10151 Torino TO	60	1
Laghetti di Falchera, Via degli Ulivi, 10156 Torino TO	25000	136
Parco dell'Arrivore, Stada dell'Arrivore, 10154 Torino TO	24000	174
Via Errico Petrella 28, 10154 Torino TO	1400	21
Strada Courgnè 109, 10156 Torino TO	20000	84
Via Bologna 120, 10154 Torino TO	2000	17
Via Paganini 200, 10154 Torino TO	1500	47
Leroy Merlin, Corso Giulio Cesare 424, 10156 Torino TO	1600	90
-	-	-
-	-	-
-	-	-
-	-	-

Circoscrizione	Type of Organization	Year	
7	Circoscrizionali	Orti del Meisino | Borgata Rosa	2001
	Associations	Orto della Brigata Ortica	2019
		St'Orto Urbano	2015
	Orti Spontanei	Meisino	-
		Villaretto	-
8	Associations	Giardino Eva (Giardin8)	2019
		OrtiAlti	2017
		Orti Parri	2018
		Orto Cure Familiari	-
		Our Secret Garden	2011
	Orti Spontanei	Orti spontanei Caio Plinio	-
		Orti spontanei Passo Buole	-
		Orti Botanico di Torino	-

fig 228. Map of Turin showing the Administrative Divisions (Circoscrizioni), Comune di Torino, Turin, Accessed on June 24 2025.

Address	Area of the Orti (sqm)	# of Gardens (Ind. + col.)
Parco del Meisino, 10132 Torino TO	6600	57
Largo Maurizio Vitale, 113, 10152 Torino TO	450	-
Via Andreis Interno 18, 10152 Torino TO	220	1
-	-	-
-	-	-
Via Federico Campana 32, 10125 Torino TO	100	1
Piazzale di Eataly Lingotto, Via Nizza 230/14, 10126 Torino TO	50	40
Corso Massimo d'Azeglio 84-98, 10126 Torino TO	-	-
-	-	-
Via Goito 14, 10125 Torino TO	30	1
-	-	-
-	-	-
-	-	-

fig 227. List of Orti's in Turin with brief infos, Orti Urbani Torino, Turin, Accessed on June 23 2025, https://www.ortiurbanitorino.it

Theory without experience is sterile, practice without theory is blind. -George Jay Anyon

As the second part of the thesis, I will be following a more different path than the previous one. Up until this part, I analysed and argued the subject of food production from a series of different disciplines. Everything that has been mentioned so far, are the very points that have guided me through during the "Hands-on Approach". To construct a sound body of research, the multi-discipline review and practice needs a common ground, where I believe one of the best ways to do it is through a physical installation. Installation of a kind that is not complex, constructible by its users, on the site, through local and natural materials and methods that have been practiced over time. To support the intention of a feasible design project, I went on a field search at the city of Turin and came across two community garden projects. *Orti Generali* and *Cascina Falchera*, are two of 36 community garden projects in Turin, that are being run by same name associations. On the side of this 36 projects, there are 24 more that are spontaneous gardens *(orti spontanei)*, private gardens (orti privata) and constituency gardens *(circoscrizionali)* that are determined by their blocks *(circoscrizione)* of the city[2]. Two that mentioned, have got their financial support from the municipality to increase the cultivable land for the residents. Meaning its indirectly a part of the public sector. Meanwhile, creating an infrastructure of agriculture centers that are supported by the botanics and gardeners, a systemized education centre pops up where residents are more involved and putting their newly learned knowledge on their gardens on the spot.

On record since 1997 but starting from the year 2006, municipality has been putting aside more fund for the purpose which is in parallel of the newly established Orti's in Turin[3].

[2] *Orti Urbani Torino, Accessed on June 20 2025, https://www.ortiurbanitorino.it.*

[3] *Ibid.*

Such kind of *Orti's* are common places to form a sense of community in a neighbourhood scale in several European cities. In Turin most of the associations who are in charge of managing the gardens are organising events to invite people on a regular basis. Sharing the goods you cultivated at your *orti* through months with your loved ones or you cared about is the very sense of the community. Helping each other on similar tasks of the garden and such constant share of information and feedback is creating the social bridge.[4] Some of the *Orti* projects and spaces with similar activities has a lot to share with the others, respect to the their creative ideas implemented at their gardens.

fig 229. Orto WOW, Photo by the author, January 23 2025.

[4] Porter, Christine M., *"What gardens grow: Outcomes from home and community gardens supported by community-based food justice organizations."* J Agric Food Syst Community Dev., July 2018.

fig 230. Orto WOW, Photo by the author, January 23 2025.

fig 231. Re-use of beer cases and shopping carts at Allmende Kontor, Allmende Kontor Website, Berlin, Accessed on January 8 2025.

fig 232. "The A-Frame," Reddit, March 9 2020.

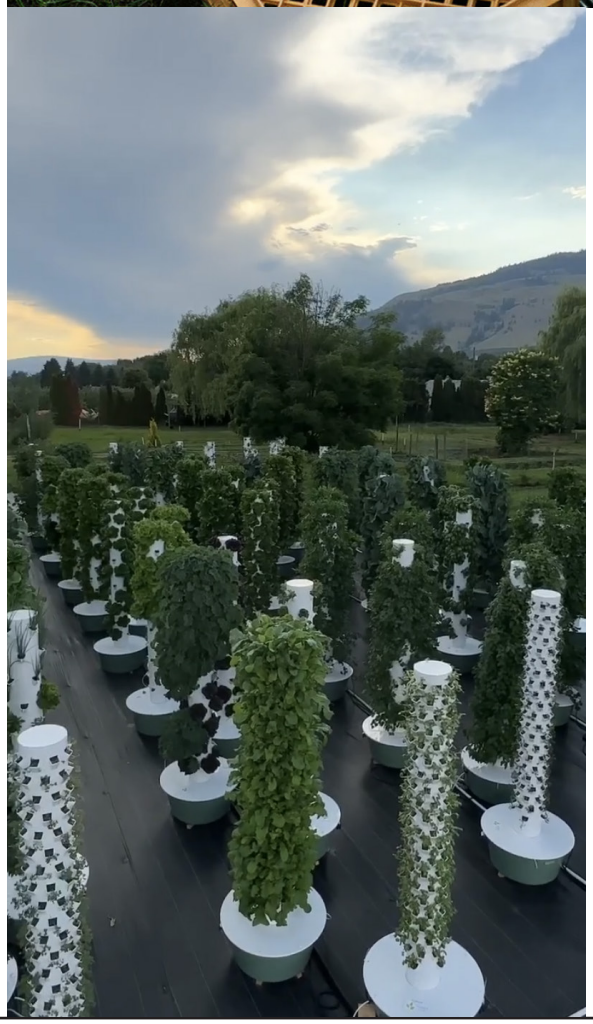


fig 233, 234, 235. Aeroponic Tower Farming Project, Agrotonomy Website, Accessed on January 8 2025.

Case Study | Orti Generali

After receiving a recommendation from my co-tutor Professor Daniele Campobenedetto, I contacted with Orti Generali and set a meeting. At this period of the work, I was already done with the first three parts and were correcting the story line of the written material. Doing a research on multiple disciplines were frustrating and I was getting excited for the fact that at the end I was on something which was tangible and could help me see how such knowledge could be beneficial for me in a more practical sense. My initial expectation was to get to know the "Community Garden" project, since I have never formally been at one. I prepared some formal question in advance like; "How did they end up with this plot?", "How are they funding this organization?", "If they are in contact with the other associations in Turin/Italy/Europe?" and etc. Preparing such formal, simple questions helped me understand the way it is functioning, yet meanwhile we had a chance to talk about the more user aspects.

The first tangible action of an "official" interview with Michela Daraio who was the Servizio Civile of the organization, was on 23rd of January 2025. Like the way you will be able to tell it from the photos ahead, I could document the situation in harsh winter months which led to not being able to observe it during a period where people were using the common places. Such occasion could directly effect the way I observe the 'in-use functions' of some intimate places, but actually throughout the interview not seeing the users helped me create a mental image and elaborate on some potential functions for the places.

Since 2012, the municipality of Turin has doubled the area served for community garden projects around the city. They have been commissioning and opening funds for the implementation of community gardens and at the moment there are 11 different sites. One of the largest ones is located at the south of the city in *Mirafiori Sud* neighbourhood. In 2009 the municipality opened a fund *(bando)* for a community garden project in the city borders of Turin where the founders of *Orti Generali* transformed a land of 3 hectares (more than four football fields) into a functioning urban agriculture model. Agriculture complex is made out of many different parts such as; the 170 separate gardens[1] for the residents use, where 100 more of it are in progress to be added for the

fig 236. Highland Cow at Orti Generali. Photo by the author. January 23 2025.

[1] *Orti Generali Website, "The Project", Turin, Accessed on June 12 2025, https://www.orti-generali.it/il-progetto/.*

summer of 2025. Gardens used by the volunteers, bar and kitchen place called *il Chiosco* that is serving vegan and vegetarian food that are trying to use as much as possible the products they are cultivating[2]. The gardens used by *il Chiosco*, separate lands for the three highland cattles and chickens that are roaming around at the backyard of *il Chiosco*, closed workshop places that are serving to host public, cultural, educational events and workshops, and finally a riverside space of river *Sangone*[3]. Still funded by the municipality, *Orti Generali* serves as a civic center with community gardens that are allowing people who are interested in having a cultivable land for the products of their choice with the waiting list of four years. Residents are restricted to build structures in

fig 237. Back terrace of il Chiosco. Photo by the author. January 23 2025.

[2] *Michela Daraio, interview by Ali Haktan Macit, Turin, January 23 2025.*

[3] *Orti Generali Website. "Courses and Activities", Turin. Accessed on June 23 2025. https://www.ortigenerali.it/corsi-e-attivita/*

fig 238. Chickens hanging out at the main square. Photo by the author. January 23 2025.

their gardens. Having only temporary and assemblable structures which can be removed on request for the next owner of the land and the use of organic fertilizer and pesticide to keep the ecology intact from chemical components are two of the points they highlight with[4]. The community is hosting annual permaculture and organic horticulture seminars[5] for everyone who are interested in learning more on the side of many events or workshops throughout the year like swap days. A study of the climate is being done by the students of *Università di Torino* providing information for their research and analysing data on the climate to organize a timetable of the irrigation system[6].

Before the establishment, there were local people doing informal cultivation of their own on the land next to the river *Sangone* but after the establishment, some continued their work at the assigned gardens. Nowadays, most of the work is about maintaining the land, increasing the cultivable land and hosting workshops to increase the popularity of the place. In *Chiosco* most of the products they are using is either from the land they are cultivating or

[4] *Michela Daraio, interview.*

[5] *Orti Generali Website. "Workshops", https://www.ortigenerali.it/progettazione-in-permacultura-pdc-72h/*

[6] *Ibid. https://www.ortigenerali.it/meteo-negli-orti/*

from neighbouring local establishments. Flour they use is coming from a farm close to *Stupinigi,* beer of choice is *Biova Birra*[7] which is a beer establishment from Turin that is up-cycling the leftover bread, pasta and rice locally collected and made into beer, are some of the products they are using in the bar and kitchen.

Some of the points I would critic is that they are not in direct communication with other community gardens but are attending conferences about organic farming and other related subjects. In my observation, implementing a connection between other community gardens or horticulture organisations for sharing information and creating a web of feedback that can be used in between and by any other new establishments joining the web. Conferences are great for this occasion as well but being able to constantly access a data infrastructure can be used as a more stable and 'accesable on demand' source.

Compost toilet is existing in the lot yet as observed, not many people are using it due to not being adapted to it[8]. Compost toilet is part of a cycle which is connecting what we, as humans, take from and give back to the soil. Soil is a term used as the home of source

fig 239. Back terrace of il Chiosco. Photo by the author. January 23 2025.

fig 240. One of the unused community garden. Photo by the author. January 23 2025.

for the growth of plants and microorganisms, that are supporting a never ending cycle between human, animal and plant life. Securing its protection through nature-mimicking processes are crucial for our survival on this earth. Creating this ecosystem at such welcoming places would open up a conversation for the people who never heard about it, like me who got to use it in Slovenia the Summer of 2024. Without seeing it with my eyes, it could be a process I never got to know.

In my observation the establishment is providing a rich resource of information and an experience on plants and agriculture for especially school trips where kids would have a space to experience a natural environment of a kind still being part of a city. An educational trip has a high potential to spark up an interest in plant and animal life for the kids of any age, which they already are organising. The plot being on the border of the city is resulting in a highly accessible point and being part of the city yet without any visual or sound disruptions it is bringing with, which concludes as an exact spot and serves as a great balance of a city and suburb. If the same plot was more on the outskirts of the city or in a small village, the amount of people who are visiting the land could easily decrease. Same value-decreasing point could happen

[7] *Biova Project Website, Turin, Accessed on June 23 2025, https://www.biovaproject.com*

[8] *Michela Daraio, interview.*

fig 241. Corridor passing from the gardens. Photo by the author. January 23 2025.

fig 242. Tuscan kale (Cavalo nero) in its 'close to harvest' time. Photo by the author. January 23 2025.

fig 243. Picnic place made out of the branches found on the site. Photo by the author. January 23 2025.

fig 244. Greenhouse garden / Workshop space. Photo by the author. January 23 2025.

fig 245. One of the community gardens. Photo by the author. January 23 2025.

if the land was more in the city, the amount of people who were attracted could increase yet the size of the land could be possibly not sufficient.

One of the points that can be improved is the way it is advertised. I think it has the potential to attract young people via well advertised events or workshops. Implementation of different agriculture methods would also increase the knowledge that can be provided to its society, creating the space to have a peak to various ways such as hydroponic and aquaponic systems. Such implementations could be done with a very low budget and repurposing some of the simple things that can be found around such as the big barrels for the water storage unit for the vegetables and a pool for the fishes. Organic compost from the gardens are collected in a common space but with the high volume of compost and the absence of adequate space, all is collected by the waste collection centre of the Turin (AMIAT). This occasion is limiting the producible organic compost that can be reused as an organic fertiliser or pesticide that later to be used again on the land, which

is supporting an ideology of having the start and end point of a product in the same spot. This kind of improvement is a matter of management and is not the most “convenient” way of providing fertilizer and pesticide to land. Yet a small action that is done by the reason of “convenience”, is resulting in an additional cycle of a product. One of the other points that I observed and can lead to the improved use of the resources on the land is, the absence or minimum usage of plants found on the site. Chopped down tree branches are one of the materials that can be used as a fence in their newly arranged 100 gardens. Their use of willow plants into abstract structures on the site were great examples of such that can also be implemented also with the excess wood, branches and any other greenery found on the site.

fig 246. One of the community gardens. Photo by the author. January 23 2025.

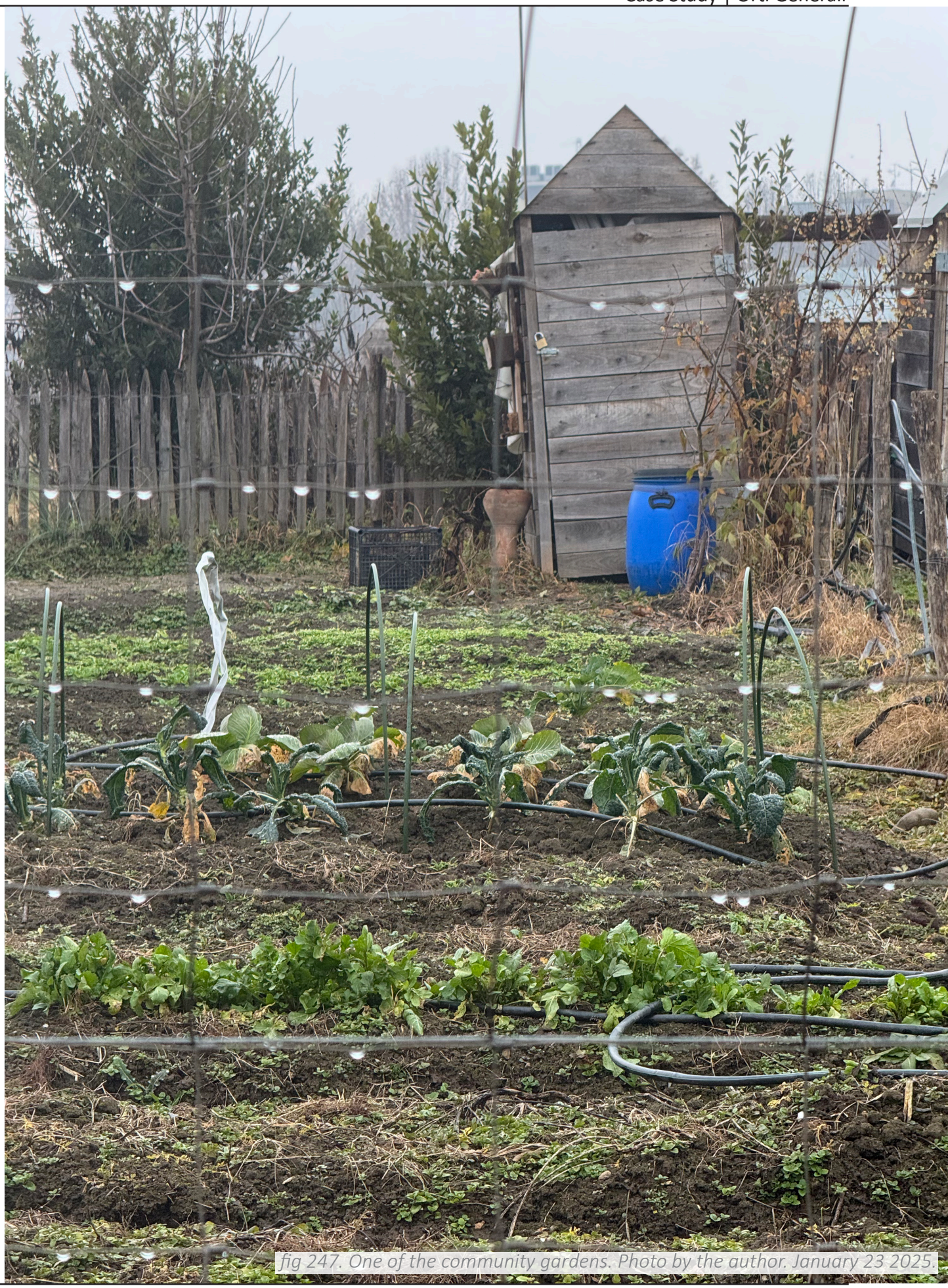


fig 247. One of the community gardens. Photo by the author. January 23 2025.

Case Study | Cascina Falchera

While I was doing my curriculum internship at Follow the Architect, I had the chance to be and observe several construction sites. One of the projects was a renovation project at Cascina Falchera to add a hostel and residential units for people with disabilities. During the first site-visit, the place mesmerized me by its ideology to keep enriching the land they own by implementing and experimenting various types of products and methods, welcoming the youth and beginners to the subject of agriculture, meanwhile creating a direct touch with plants and animals. Having a large land used for a variety of agriculture methods and plants, made me interested in understanding how such a place is functioning and how I can be a part of this creation. I had a chat with Tommaso, who is one of the architects and gave me some base knowledge on the space and contacts I can communicate with for further information.

Before the interview my plan for the last part of the thesis was to suggest a simple intervention of a structure that has the aim of increasing the productivity that can be get from a piece of land by going vertical. Using natural materials, organic shape and having the sole reason of serving an appropriate space for greeneries. During the historical research, I faced with many design elements that I can only describe as simple and 'first thing that comes to mind', like Migge's Garden City which was a single straight road with individual housing units with their own gardens. To have a 'project design' that is more on the contrary of that 'straight lines where efficiency is main focus' but a project that is concerning more about its aesthetical values by imitating organic forms and evoke a sense of naturality. Thinking that it is going to be an 'unrealized' design part of the thesis, would mean I could use complex construction methods rather than primitive ones. Keeping it 'complex' signifying using modern building methods and tools like prefabricated structure parts that can anchor each other easily and manufactured for its use.

As a summary, I didn't have a certain expectation from the interview but was looking forward to learn from the practical examples that are in use, in order to elaborate on its problems that can be discussed through architecture.

Cascina Falchera is a social and environmental innovation hub project located in the north peri-urban area of Turin. Space is carved specifically to prioritize a sustainable environment to educate young minds on agriculture[1]. It was built in the beginning of 18th century, for the usage of the *Falchera* family who were the owner of most of the land around[2], yet through the years the borders of the *Cascina* broadened. Since 1996 it has been the educational center for the environment for school trips, classes, associations and groups of people who are willing to have an experience on farm cultivation methods and transformation of products[3]. The site is on a 14 hectare area with its green area, stables and equipped workshop spaces for kids and youth in relation with zoology and botanics. Its educational purpose and will to attract people who are interested in the subject, results in a well-working place of education and socializing. The project of the community garden is being funded by the municipality of Turin who opened a call[4], like the project of *Orti Generali* in *Mirafiori*. Most of the re-purposed land that is left for community gardens are located on the intersection of highways with greeneries around. There are around 84 gardens with various sizes which are used by the tenants[5].

fig 248. One of the community gardens. Photo by the author. March 29 2025.

[1] *Cascina Falchera Website, Turin, Accessed on June 23 2025, https://cascinafalchera.it.*

[2] *Museo Torino, "Cascina Fossata", Turin, Accessed on June 23 2025.*

[3] *Il Giornale del Piemonte e della Liguria, "Inaugurano i nuovi orti comunitari di Cascina Falchera a Torino," November 10, 2024, https://www.ilgiornaledelpiemonteedellaliguria.it/notizia/torino/inaugurano-i-nuovi-orti-comunitari-di-cascina-falchera-a-torino.*

[4] *Giorgio Prette, interview by Ali Haktan Macit, Turin, March 18 2025.*

[5] *ISPRA, Cascina Falchera – Turin, Climadat Project, accessed June 24, 2025, https://climadat.isprambiente.it/project/cascina-falchera-torino/.*

fig 249. Community gardens during the planting season. Photo by the author. March 18 2025.

The green area on the plot is surrounding the buildings and has been divided into many parts. Within its built walls, there is an educative garden with a land to be used by kids for playing, sitting, running around and a cultivable land for greenhouses that are used for the primary phase of the plants where the seeds are planted in flower pots to be relocated when they grow and a land for experimental products and methods. Nowadays (March of 2025) there is an experiment going on a trial of growing asparagus and use of hay on top of the cultivable grassland, like many others.[6] Such a method is useful to help grass seedlings establish and provide more protecting conditions from birds and burning sun while keeping the soil moist. In one of the greenhouses within the walls there is an Aquaponic System *(fig 253.)* that is used to cultivate parsley, coriander and types of salads. Outside of its walls there is the land for grains where they are cultivating corn and wheat, divided fields for cows, donkeys, rabbits, ducks, a newly established fish farm, snail farm and the community gardens.

[6] *Giorgio Prette, interview.*

Likewise in *Orti Generali*, there isn't a compost toilet and a compost bin for the excess green and brown materials from the site. At the community garden land, a road is following the entrance that is connected to the main *piazza* (square) that is a point of accessibility that is located in the centre point of the other gardens. Even though this *piazza* is the main intersection point of the gardens, there is no function that can create a small social hub that can be used by the tenants to socialize and work. Through conferences or meet-ups around Europe, they are quite present and willing to create a connection with people abroad. Through programmes like, the CoFarm 4 Cities[7] and Interregional Volunteer Youth (IVY), they are making new situations for the interaction of people from different backgrounds and lifestyles, yet with at least one major common feature which is the will to be part of such structure.

[7] *Eco dalle Città, "Cascina Falchera protagonista del progetto europeo Cofarm4Cities," May 16 2024, https://www.ecodallecitta.it/cascina-falchera-protagonista-del-progetto-europeo-cofarm4cities/.*

fig 250. Main square (Piazza) at the Community gardens. Photo by the author. March 18 2025.

This year (2025) in May, Cascina hosted a three day festival of intercultural music by giving voice to local artists and artists from around the world. Cascina was the space provider and the festival production team & local brands were the space renters, by creating new functions and social interaction points within the same space.

fig 251. Parking lot space before the start of the festival. Photo by the author. May 14 2025.

fig 252. Parking lot space during the festival. Photo by the author. May 14 2025.

fig 253. Aquaponic system at the education garden. Photo by the author. March 18 2025.

fig 254. Collage of my first impressions from the Cascina, Collage by the author, July 10 2025.

Collaboration Journal with Cascina Falchera

Our interview started by him introducing me to Cascina and how it works throughout the year. After clearing out the "technical informations" about it, I shared my thesis topic with him and what I have in my mind as part of the last part of the thesis. At this point I had an idea of constructing a vertical structure that can be a supporting feature for climbing plants to form the skin throughout the time. Greeneries that can climb and have a product that are productive for humans, would be my initial project idea. Such structure that can be through naturally degradable materials like wood and bamboo, would have the ability to carbon absorption rather than causing emission. After I shared my "project idea" Giorgio mentioned the Summer Workshop they will hold at Cascina at the end of July 2025, with over 60 participants who are aged between 16 to 30 coming from all over Europe to stay in Cascina for a week. He pitched the idea of actually building the structure I have in my mind at the span of three afternoons during the workshop, which can be a 'gift' they leave to Cascina after their departure. Only If I asked for a million dollars!! I was excited to hear his suggestion and naturally got pulled in the idea of concluding this thesis with a realized project.

Collaboration Journal part is acting as my recordings during the time I've spent at Cascina. After the historical, political and technical research and concluding two interviews at community garden projects, my goal was to go with a design intervention that can be done by not only carpenters or construction workers but also with the youngsters who are coming from different backgrounds. Shaping a workshop that will be build by people who I expect them to have no previous experience on building a structure. Such acception of having no prior knowledge is coming with the responsibility of not only selecting the materials to use during constructing but also the techniques and tools being beginner friendly, safe and accessible. My pathway was clear, starting from the constructing materials, design of the structure and using the trial&error method for the construction techniques and the tools since I don't have many hours of experience on building with hands like a carpenter or a construction worker has.

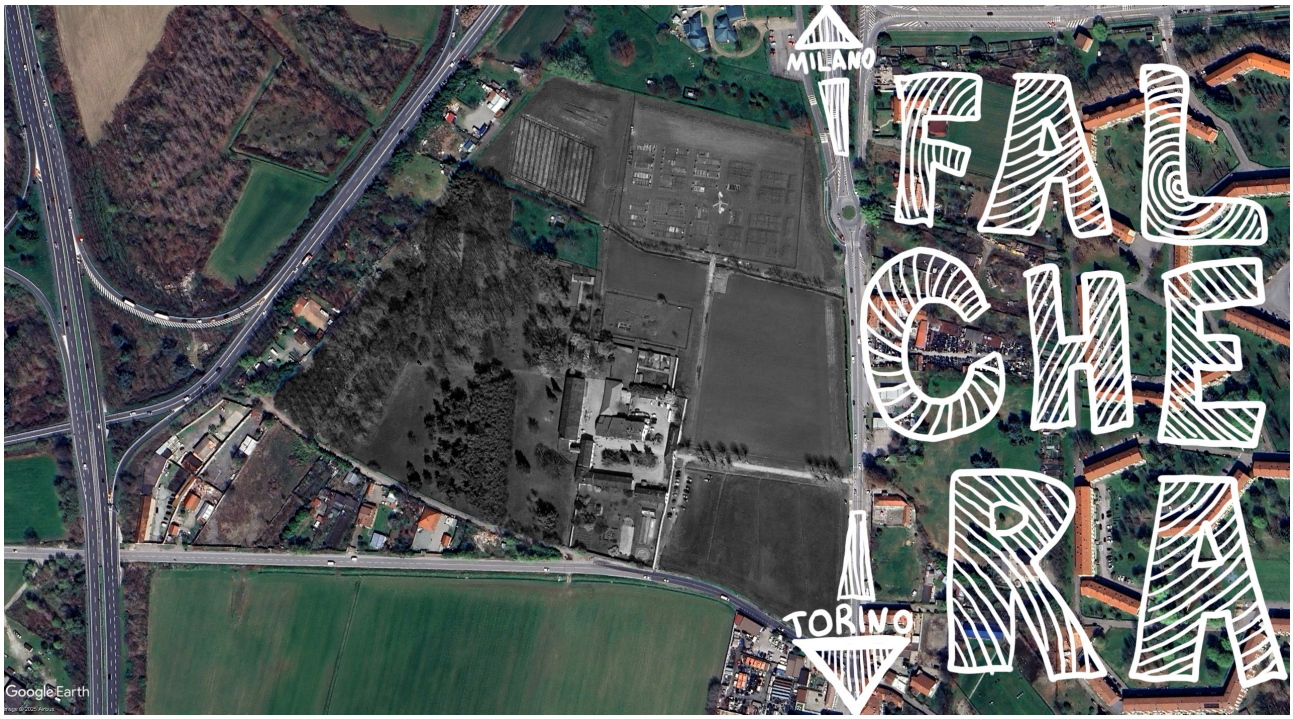


fig 255. Orthophoto of Cascina Falchera, Google Earth Pro - Sketched by the author, August 25 2025.

fig 256. Orthophoto of Cascina Falchera, Google Earth Pro - Sketched by the author, August 25 2025.

*"Designing for the plants, meaning **taking plants as the primary user instead of humans,** was a beautiful intention that I wanted to cherish to its fullest." -Ali Haktan Macit.*

On March 18th, during our interview with Giorgio while we were at the *Orti,* I got to know two of the people I was going to spend most of time with, who were Elisa and Alani. Elisa started as the person responsible from the *Orti* and educational garden and rapidly she become a crucial part of *Cascina*. Following the products on soil, planting the seedlings for the next harvest season at the greenhouses, getting ready for the climate conditions throughout the year, maintenance of the wild plants of the site are just some of her day to day works. Alani is her shoulder to shoulder assistant, who arrived to Turin just a couple of months before from Spain as part of a volunteering program of CoFarm 4 Cities. Two of the most knowledgeable people on botanics, who I bothered countless times throughout the months with random questions of mine.

After deciding on the collaboration for the summer workshop, my initial goal was to remind myself the ideas I have about the structure itself and what I have seen which could be an inspiration. Sketches I had, were simple and expressing a geometrical model from steel, wood or bamboo beams connected with each other, forming an almost parametrical form. Such structures were to create the space for the plants and the variable was the height of the structure. While sketching, I was not considering If they would be build or not, so I was quite generous with the amount of materials I was using and the complexity of the methods of construction. Checking them made me realize that If this structure were to be made by the young people who are most possibly "not highly skilled" construction workers, I needed keep the building methods as simple as possible meanwhile considering the tools and the materials that were at *Cascina*.

At my initial sketches, instead of a traditional farming method of using a plain horizontal land, I wanted to move vertically and overlap the greeneries. Meanwhile moving up, it was important to consider the shadow the structure left. Keeping the structure as porous as possible would mean it wouldn't "steal" any light from the nearing shorter plants. Keeping the structural elements low in density and a transparent skin were crucial for this point. This situation led the project "to not have any secondary structural elements" but only the primary ones. While supporting the structure, primary elements were to be used at its maximum for the plants, which is the result of *(fig. 262)* the double-gutter kind of form.

In my personal life, certain objects that I saw on the streets or at flea markets, would catch my attention and I would think of a way to use them in a way "it was not intentionally designed for". Meaning, an idea of a new function for that object would appear. Unlike most of the stu-

fig 257. Orthophoto of Cascina Falchera, Google Earth Pro, September 1 2025.

fig 258. Site plan of Cascina Falchera, Sketch by the author, September 1 2025.

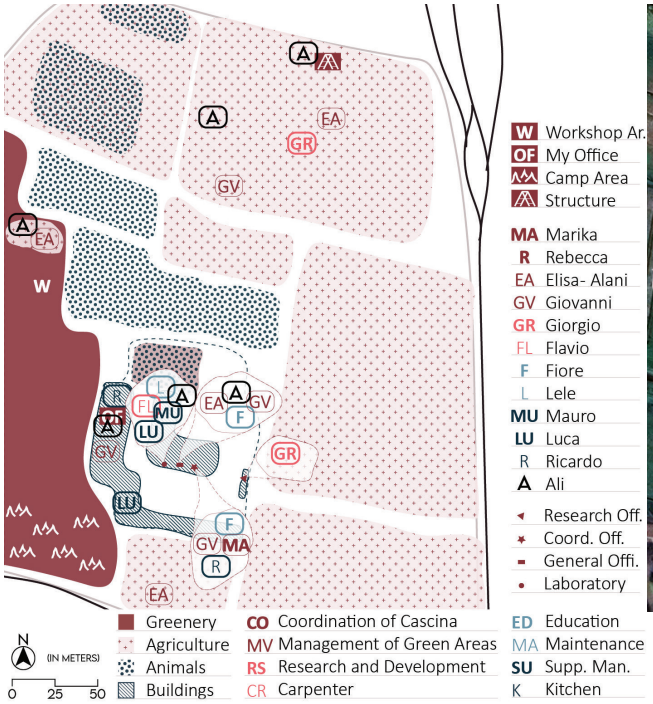


fig 259. Map of Network within Cascina Falchera, Map by the author, September 1 2025.

fig 260. Site layout sketch of Orti at Cascina Falchera, Map by the author, September 1 2025.

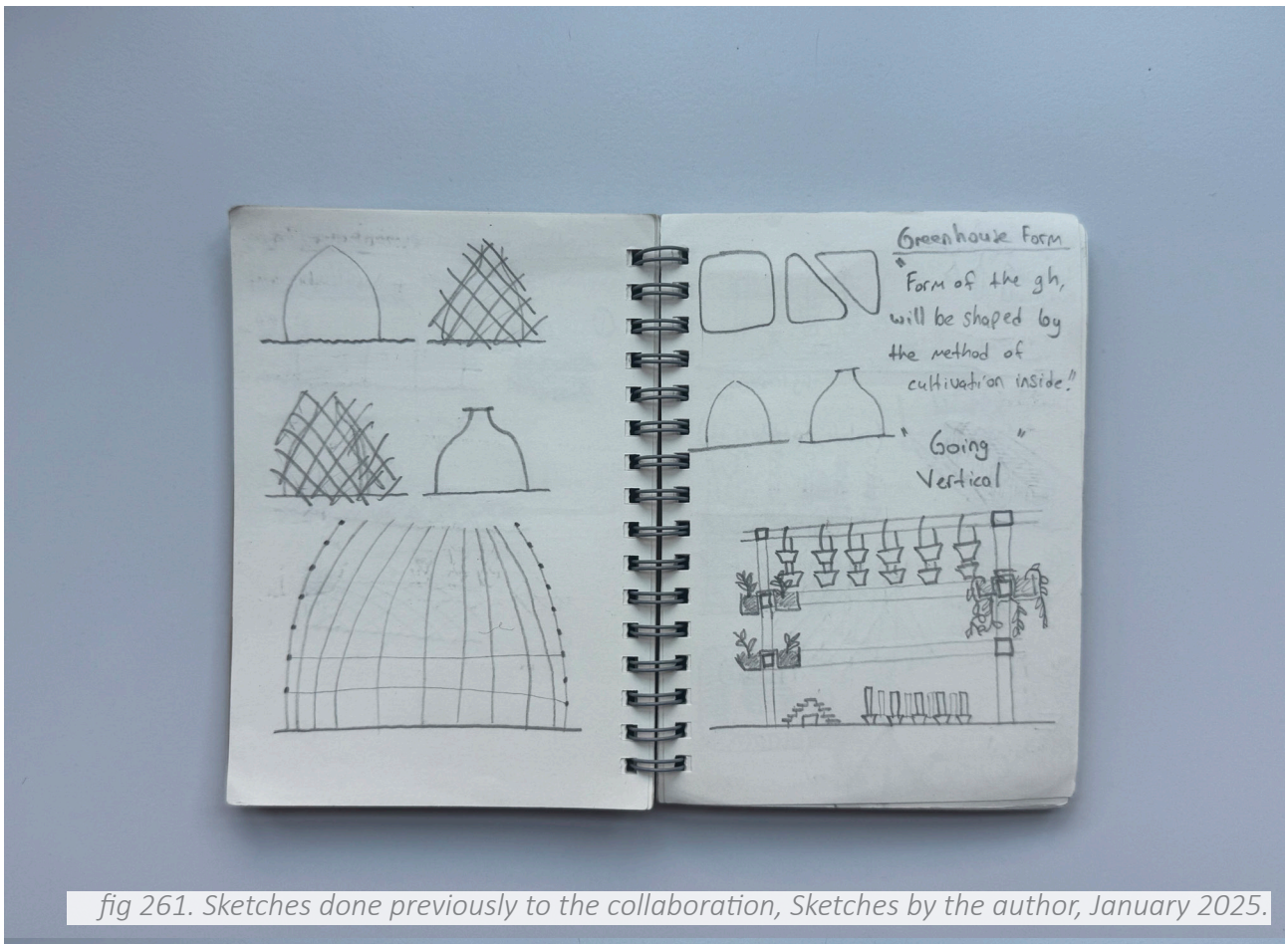


fig 261. Sketches done previously to the collaboration, Sketches by the author, January 2025.

fig 262. Sketches done previously to the collaboration, Sketches by the author, January 2025.

fig 263. Plastic roof panels, Photo by the author, March 18 2025.

fig 264. Large wooden spools (Bobine di legno), Photo by the author, March 18 2025.

fig 265. Worn-out wooden parquets and fruit baskets, Photo by the author, March 18 2025.

fig 266. Leftover stone pavements, Photo by the author, March 18 2025.

fig 267. Broken bench bottom and worn-out woods, Photo by the author, March 18 2025.

fig 268. Chestnut tree branches / trunks, wooden palettes and hard plastic cables, Photo by the author, May 14 2025.

fig 269. Chestnut wood logs and branches, Photo by the author, March 18 2025.

dio works I have done during my degree, I was facing with a situation that I practiced in my own personal time. These new functions would not come out of a need but more of seeing a unique potential in that specific material.

I, naturally, were quite excited to be able to start from the given materials, tools and building methods rather than a blank canvas. Keeping it as "easy to build" as possible is a clear limiting factor for the design, yet it was not a starting limiting factor for the project like the tools to use. I was going to start from the available materials. During my first visit I had the chance to see some of the discarded materials on the site. Mostly they were plastic, wooden fruit baskets, worn-out wood palettes, chestnut tree trunks and branches and unused, some broken objects like chairs and PVC window frames. It didn't take much to realize that it was going to be a challenge.

Respecting to the "Local Resilience" chapter of the first part, having the start and end point of a material was my initial goal. Yet seeing the materials on site, slightly crushed my initial goal of "only using the materials found on the site". Instead of starting to check new wooden beams from a large home improvement and gardening retailer, that would result in high carbon emission because of the processes materials are getting through and the transportation cost, I asked around to find some leftover, second-hand wooden beams. I started with wood because between wood and steel, wooden beams would be a lower, even negative, carbon emitting choice. Wood being a financially more feasible option, was the second confirming point.

A week after our first meeting, Elisa texted me about the need of a compost area at the *orti*, which soon to be our first work together. Compost area *(Compostiera)* is representing the idea of having zero kilometer materials that are closing their cycles. It has the potential to be a solution to many problems of the *orti* yet it requires a certain land area to be collected an managed periodically through simple checking of the compost. Sparing a space for *compostiera* results in a reduced fertilizer use that is imported from further land or over seas, which makes the situation quite tragic because at the end it is soil that can be found on the site as well. On the side of being the environmentally and socially viable option, using the local material back in the local soil is resulting in lower carbon emission[1], improved soil structure[2] and decreased chance of contamination[3]. The function is to collect the green and brown waste material from the *orti* and store them in a ventilated area that is going to be its home from 3 to 4 months. This space can be a pile that is being moved around from one to another. Having three piles next to each other was suggested to allow the distinction of phases to be visible during in-use phase. First step being the initial space, that is filled with the green and brown material to its full. When it loses its moisture and the volume drops to half, the pile moved to the second space.

[1] MeMon B.V., "*Understanding the Carbon Footprint of Organic Fertilizers*", accessed June 29 2025.

[2] David Beaulieu, *"Compost vs. Fertilizer: What's the Difference?,"* The Spruce, Feb 7 2022.

[3] FAO Soils Bulletin No. `79, *"Fertilizers and Their Efficient Use"* FAO, 2005.

While taking the upper part to bottom and bottom to top, this action of displacement and mix of layers acts as a circulation within the compost. After being moved to the second space, we wait for the texture to change and have a brown, fresh earth look alike texture. Then it is moved to the third space and the materials in the third space represent the ones that are ready to be used back at *orti* as a locally produced organic fertilizer. After I performed a simple survey on the critical points to be aware of, I payed a visit the next day to gather the materials I can use to build the three space *compostiera*. That weekend, with the help of the couple volunteers, we have build the most of the main parts of the structure and were left with the supports of the metal wire and the

fig 270. Compostiera end of the first day, Photo by the author, March 29 2025.

fig 271. Compostiera end of the second day, Photo by the author, April 10 2025.

sliding doors. After the second day where I was alone, I adjusted some parts of the metal wire and back support with wooden beams. As a side note, this period was quite busy with my internship and the visits I did in Belgium, so this three day of work was done on the span of month and a half. On the third day, after almost a month of being away, I arrived to a structure seems like taken over by the grass growing up to a meter of height. It was a moment which gave me a perception of how the grass underneath may effect the compost through time. Space I left as a "ventilation area", were to be filled with grass soon. Instead of waiting for it to fill underneath, I jammed the gaps with the grass I've just cut. As a final product it was looking promising with the problems to appear soon because by the time I finished it, there was already a pile of

fig 272. Compostiera morning of the third day, Photos by the author, May 14 2025.

fig 273, 274. Compostiera finished on the third day, Photos by the author, May 14 2025.

organic waste that is the size of 5 modules... To satisfy hundred percent of the need of the compost space, at least five of what I have built for the *orti* is needed.

As a result, one of the points that I've learned from the design and building of a simple structure with leftover materials has been the hardship of utilizing various sizes of materials. While thinking their minor differences would not make much of a difference, because at the connection points of palette underneath and the vertical pieces to support the metal wire, the gaps of 10 cm would create an unnecessary level of pressure to metal wire may causing it to rip throughout the time, is just one of many points that can cause an issue in the future.

During the process of constructing the compost bin, Simona joined the process. She is an urban planning student from Amsterdam doing her masters thesis at *Cascina Falchera* like me. After our initial meet up, we realized that our goals could overlap in the sense where her research and analysis on the needs of the *orti* can be useful for me to design the needed structures that are to be build during the workshop. As a result of her interviews and the informal talks I had with the people who are part of Cascina, having communal spaces at the very square of the community gardens became a clear need. Interaction spaces between the tenants were missing. Simona shares her outcomes from the interviews she held as following: *"The physical setting of the gardens plays an important dramaturgical role in shaping community dynamics. Certain spaces—such as water collection points, tool sheds, or pathways—naturally become sites of encounter, where small but meaningful interactions unfold: gardeners gather to fill watering cans, fetch tools, exchange advice, or simply share a few words in between moments of work. Additionally, and as hoped by the organisers, the broader farmstead also functions as an aggregator for the gardeners, bringing people together in ways that extend beyond the purely agricultural. For example, some gardeners choose to take lunch together at the eating area, especially on Saturdays, transforming the workday into an occasion for social connection."*[4]

Some of the tenants explained their thoughts with these words:
"If they were to organise a volunteering schedule we would give our full support." (Alice & Emanuele)

"And I think it would be nice if it continued in some way. Because it's true that now there's a lot to do with the vegetable garden, there are a lot of things for Elisa to do. But I think it would be nice if we could all get together again." (Tatiana)

"My idea was to be a volunteer. I would like to because, for example, the people who I know from the gardens I have met by painting the tool cabins. And it is pleasant, whoever comes wants a chat without much

[4] Simona Ciciriello, *"A dramatical political ecology of Nature-based solutions"*, Universitei van Amsterdam - Masters thesis for Urban and Regional Planning, Amsterdam, September 2025.

trouble or pretense." (Rossella)

Absence of the communal square has been a significant point of discussion among participants that the lack of common spaces designed for socialising- i.e. tables, benches, or sheltered areas where gardeners can sit together, rest, or simply spend time beyond the tasks of cultivation. This absence itself highlights how the introduction of shared spaces could further consolidate the community, providing physical anchors for informal interactions and collective moments. In response, some gardeners have begun bringing their own tables and benches, informally reshaping the space to better accommodate their needs but unintentionally favoring the individual at the expense of the collective.[5]

I wanted to come up with a module that we can replicate all together during the workshop and by attaching them to each other in different ways can build both communal spaces and the structure, yet the materials to use were still uncertain on the side of the amount of time that is available for the workshop.

Up until this moment I did some experimental 3D modeling to see the potential opportunity and threads for the structure. I planned to use wooden or steel beams that could be connected to each other with metal screws. Design goal of the structures were initially to move on a vertical axis, yet I was also considering that it could perform as a point where humans could enrich. So in every example, a sort of 'path-way' has been thought for the use of kids and adults. I modeled each structure by thinking that plants would be the skin of the structure, so the load bearing columns and beams were the first part I designed. The goal has never been to conclude the structure to its final state but to conclude only the construction phase by the humans and afterwards letting plants takeover. Using 'time' as a tool to build the skin of the structure is a crucial part of the thesis.

[5] *Ibid.*

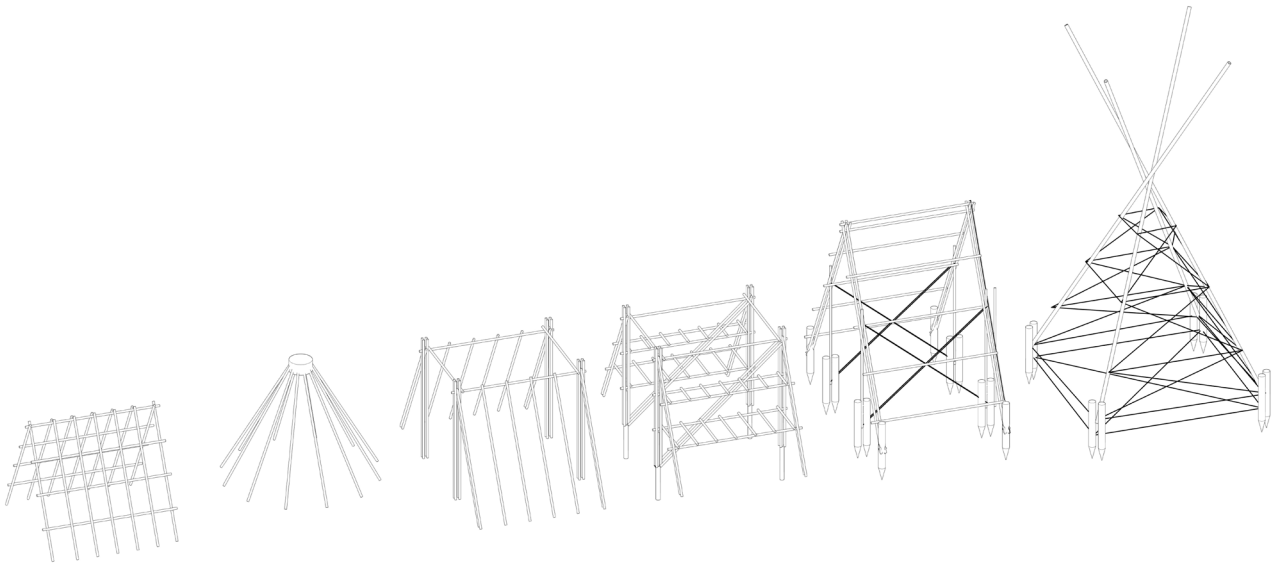


fig 275. Structure design trials, Models by the author, April 2025.

While going around the site with Alani, she showed me a spot where they have been growing bamboo for the past couple months, which are various in size with the dimensions from 2-6 cm in diameter and 200-900 cm in height. Seeing over 40 bamboo trees and figuring there are no 'pre-planned' uses for them, gave me the hope to be able to meet the needs of the materials for the workshop. Having the material on the site also supported the idea of having the same spot for both the start, in-use and most probably the end point of a product. Already harvested bamboo trees were kept outside in nature next to the stables of donkeys. To keep them away from the climatic conditions, which are heavy rainy days of May, I carried them close to the carpenter's atelier under a roof, which gave me the chance to control their weight, diameter and height better. Depending on the sizes, using the thick ones as primary columns and thinner ones as the secondary load bearing elements have been created as a thought.

The months from April till July is going to be the phase where I try to optimize the design of the structures to be done during the workshop. I've mainly spend my time checking the available tools, selection of the materials that needs to be ordered depending If there will a budget for the workshop and with trial and error kind of approach for the way to work on the bamboo. Initial aim was to design a module and then reproduce it during the workshop. Such module that can be used as

fig 276. Bamboo growing area, Photo by the author, June 30 2025.

fig 277. First harvest bamboos next to stables accompanying by Nerina and Martino the donkeys, Collage by the author, Photo on May 14 2025, Collage on June 30 2025.

part of both as the vertical structure for the plants and for a bench to be used at the garden. This aim were to not realized for the first part till June since my inexperience on the practical knowledge of construction by hand. I took the vertical structure as the main goal of the workshop yet to assure the needs of the *orti*, a bench design for the main square was optional yet would be a nice touch.

In order to be aware of the strengths and weaknesses of the bamboo, I wanted to start by experimenting by hand with them in first hand. I communicated with Giovanni and he allowed me to use the space above the restaurant which is an empty, old construction space that was intended to be classrooms yet the process was on hold due to the issues I wasn't aware. Bamboos were moved around from the initial harvested area to a place next to the donkeys (fig. 277) to under an overhang space left in between buildings, so after having "the office", for starters we moved them there after cleaning the floors to minimize the diseases.

Organising the bamboos for the first time depending on their sizes and usability, gave me the conditions to take an itinerary. There were 54 different sizes of bamboo pieces, depending on the project idea I had they were either too less, perfect or too much.

So I wanted to start by building a chair with only bamboo and some hemp rope. I didn't have direct steps that were pre-designed, I wanted it to be a product of momentarily decisions. While building, I was getting to know how to work with bamboo. Along the way it evolved into learning the techniques that can be used by everyone who are a beginner to a simple construction methods. So I have found myself things I can build through these techniques. I made holes with the drill, experimented with rope knots, cut down the bamboos both horizontally and vertically, created 'pegs' that are used as screws that are made out of bamboo and many more. I wanted to be aware of the techniques which are doable at Cascina with the available materials and the tools.

fig 278.

fig 279

fig 280.

fig 281.

fig 282.

fig 278, 279, 280, 281, 282. Fish mouth connection technique trial with a machete and filing tool done by the author, Photos by the author, June 30 2025.

fig 278. 45 degree cut to the axis of the bamboo.

fig 279. Second 45 degree cut to the axis of the bamboo that is symmetrical.

fig 280. Cleaner view of the situation.

fig 281. Trial to attach two bamboos together perpendicularly to each other. At this there are gaps that are caused by the sharpness of the edges and inner layers. It needs to be shaved down with a filing tool.

fig 282. Result after shaved edges and inner layers.


fig 283.


fig 284.

fig 283, 284. Perpendicular connection types trial with two bamboos connected with fish mouth technique (fig. 283.) and cross (fig 284.) done by the author, Photos by the author, June 30 2025.


fig 285.

fig 285, 286, 287. Splitting the bamboo on half by using a machete and a hammer done by the author, Photos by the author, June 30 2025.

fig 285. Aligning the machete on the vertical symmetrical axis of the hole part of the bamboo.

fig 286.

fig 286. Hitting the machete with the hammer from its back after securing the other side with a stable object. When followed the skin structure of the bamboo, it tend to be split easily and straight.


fig 287.

fig 287. Split open bamboo piece.


fig 288.


fig 289.

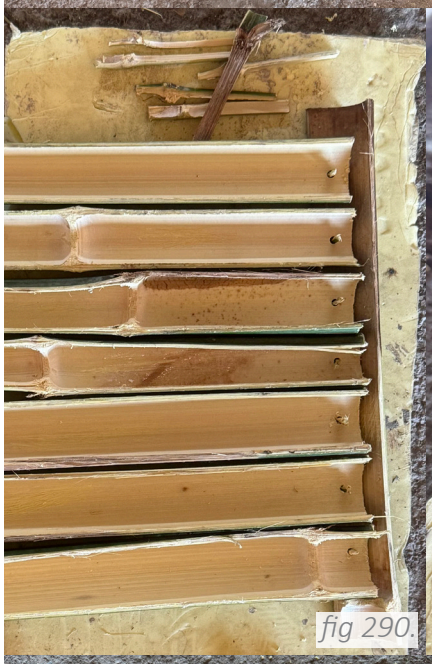


fig 290.


fig 291.


fig 292.


fig 293.

fig 288, 289, 290, 291, 292, 293. Unplanned started chair trial done with done by the author, Photos by the author, June 30 2025.

fig 288. 17 pieces of half bamboos to be connected for the seat of the chair.

fig 289. Bottom pieces aligned on an another half perpendicularly, before drilled holes.

fig 290. Result after drilled holes stabilised with pegs.

fig 291. Closer look to the connection with pegs.

fig 292. Pegs replaced with hemp rope that is connected the pieces together by a worm alike form.

fig 293. Previous method done on the other half pieces to form assemble the structure together.

fig 294, 295, 296. Phone stand done by using the methods of splitting the bamboo and pegs done by the author, Photos by the author, June 18 2025.

Throughout these practices, I got to know the strengths and the weaknesses of the material. While trying out new methods, weeks and months passed and it allowed me to observe the changes on the material throughout the time. Phone stand, which I took my phone as a reference when built, opened up double the initial size and changed color. Seat changed color and got more durable since it was more exposed to oxygen and to warm air of summer season. Cross-connected bamboos lost their color and got more durable day by day.

Fish mouth technique went successful and it was going to be one of the techniques to be use because of its ease of doing, needing less tools and less knowledge with a high outcome as an anchoring type. The weakness of it was that, the geometry were clean but not stable when a small a horizontal force were applied. I first tried to use the knotting technique with the hemp rope (*fig 283*). Later on I was going to continue with an another technique made with bamboo pegs which would eliminate its weakness.

The way bamboo is, with its spherical end, proposing a durable and enclosed space in its core. As primary and secondary supporting ele-

ments it is appropriate for the use, yet if the function is to create more, of something that I can call as a "skin", it can be achieved by splitting it open. Using a similar geometrical structure of the roof tiles, where they go in and out to manipulate the way water is moving to, was my goal yet first I needed to figure is, if splitting it open with the tools that are available is possible and if it is beginner friendly or not. Seat part of the


fig 297.


fig 298.


fig 299.

fig 297, 298, 299. Seat of the chair, phone stand and cross connected bamboos after their initial made day, Photos by the author, July 10 2025.


fig 300.


fig 301.


fig 302.


fig 303.


fig 304.

fig 300, 301, 302, 303, 304. Trial of foundation system created by attaching the bamboos to a chestnut tree, with metal screws and drill done by the author, Photos by the author, June 18 2025.

chair trial was a phase where I got excited by its complex rigid structure but when it was time to add its second layer of half bamboos it required an another form of connection then the hemp rope. First method I used with the bamboo pegs (*fig 290*) was a better option because of its high stability to anchoring perpendicular bamboo. I changed the anchoring type to hemp rope (*fig 292*) instead of the pegs while continue doing it because the second layer of the half bamboos were being obstructed by the pegs. I couldn't think of cutting the extra piece of pegs, yet later on I faced with the same issue when working with the hemp rope. If I would cut down the extra part of the pegs such problem could be avoided. Once they are cut, the second layer would be added by using the same method of anchoring to an another perpendicular bamboo piece with pegs (*fig 290*).

If bamboo has no direct touch to soil, its duration can be elongated drastically. This information in mind, when creating a structure that is going to be built at a community garden where soil is the only pavement, forming an appropriate system for the foundation is necessary if the longevity is one of the goals. For this occasion, I decided to use a durable type of wood which is the most resistant to soil. Thankfully there happened to be a chestnut tree branches ready to be used at Cascina. While trying to connect two bamboos on the opposite sides of the chestnut branch, I used a drill with a metal-end that was appropriate for the wood yet its over-durable structure were enough to get on hold of the piece and take it away from the drill. In order to take the metal-end out, I needed to cut down the branch with a drill machine with a different end, because the machete were not helping and the electrical machine were not available at the time.

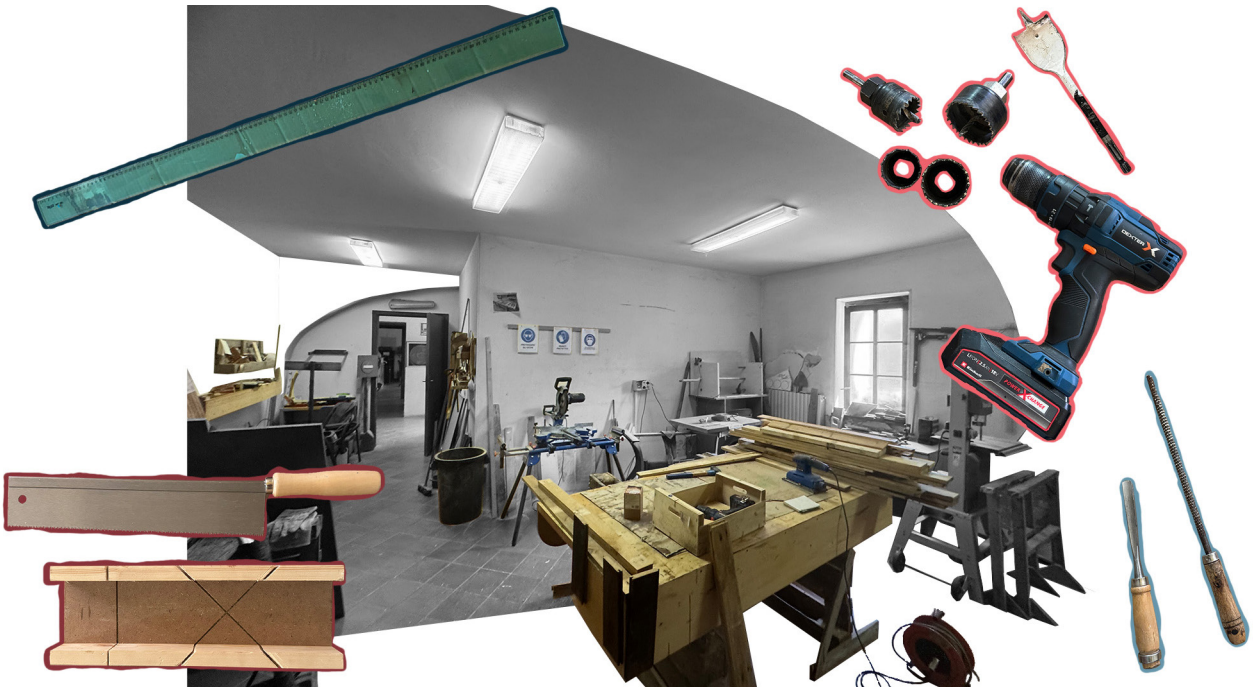


fig 305. Tools used during the phase of prototype creating and with Flavio's Laboratory where all are stored, Collage by the author, July 13 2025.

If I were going to use any pieces from the chestnut tree, it was clear that I needed to keep in mind that working with it is risky and best used if not modified at all or slightly. Only issue was that chestnut was the only preferable available material that can be used after bamboos, so I wanted to give it an another try to be sure to cross it out of the list.

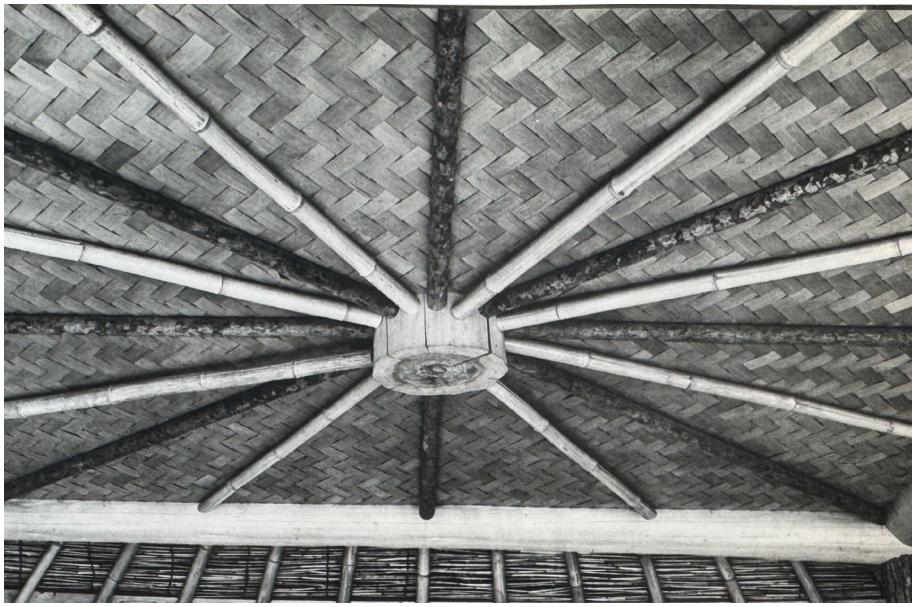


fig 306. Inspiration for the following prototype a load bearing ceiling structure with bamboo, Bamboo, Austin&Ueda (1970), "Bamboo", Weatherhill, New York & Tokyo.


fig 307.


fig 308.


fig 309.


fig 310.


fig 311.


fig 312.


fig 313.


fig 314.

fig 307, 308, 309, 310, 311, 312, 313, 314. Trial of using a chestnut tree trunk to use it for shorter structures done by the author, Photos by the author, July 10 2025.

This time the aim was to use the durable, heavy chestnut tree trunk as a horizontal force to connect bamboo legs that are anchored to it through appropriate holes (*fig 307-314*). During this trial I got sure of the hardships of using the chestnut as a design element. The inspiration (*fig 306*) I used was promising and I was trusting the potential of the end product (*fig 313-314*), yet the process of drilling the holes was a proper nightmare with the tools that were available for me at the time. It was requiring a high level of muscle work and variety of tools that were being used one after another. Low feasibility caused by these points, became the reason of crossing the chestnut as an available material to use during the workshop. On the side of decision of not using it, I want to highlight the aesthetics of the prototype was quite appealing and has become an element that I want to realize with necessary tools and a laboratory.

Dates of the workshop were close, with the knowledge and experience I got during these last weeks were to be used to decide on the final version of the prototype. I was going to construct a structure that is using only bamboos as a material, tools which are available and can be used by everyone, methods that are not complicated can be done by everyone and were to be build by the youngsters who, as I initially thought, as people who never have used such tools and/or build something it.

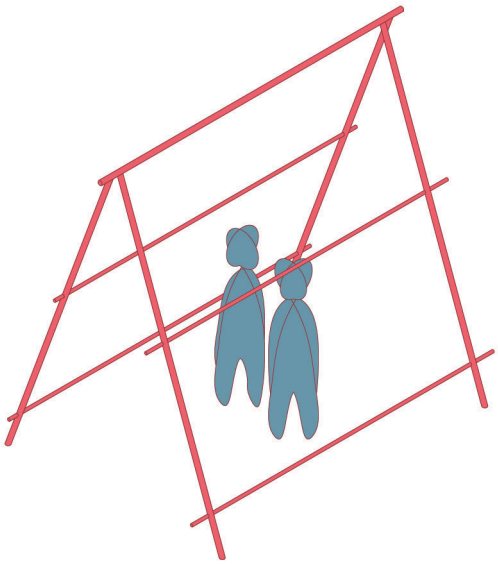


fig 315. Triangular Trellises Structure Model, Drawing by the author, July 10 2025.

Throughout the collaboration I have been sketching some design elements, tools and methods that I liked and thought were feasible. It was going to be a triangular trellises structure (*fig 315, for more check the chapter of Self-Building Workshop Project Guideline*) that is going to be wide and high enough for two adults to pass through while holding hands. This simple starting point was enough to understand the dimensions of the structure pieces. A design that is using an 'intimate' moment to be cherished through architecture while creating a support for greeneries. Such geometrical shape is not only to be cherished by two

people but due to its triangular form, If sat down to the ground would provide a wider place for many more to interact with each other while being on the grass ground.

Building techniques that I have decided were the 'fish-mouth' method (*fig 317*) of connecting the bamboos together perpendicularly while adding an anchoring piece in between which I call as the 'junction' (*fig 316-330*) and using bamboo 'pegs' (*fig 318-321*) as the function of the screws. For the tools we will need hand tools like a drilling machine with several ends for different purposes, smoothing tools, ruler and markers (*fig 305*).


fig 316.


fig 317.


fig 318.


fig 319.


fig 320.


fig 321.

fig 316, 317. Fish-mouth technique done by the author, Photo by the author, July 4 2025.

fig 316. Bamboo piece located in a Miter Box and prepared for two diagonal cut with the hand-saw.

fig 317. Two diagonal cut later on smoothed with a fining tool.

fig 318, 319, 320, 321. Bamboo pegs done by the author, Photo by the author, July 4 2025.

fig 318. Single bamboo stripe, a hand-saw and a chestnut branch piece to be used as a hammer.

fig 319. Stripes need to be positioned perpendicularly to the ground and by locating the hand-saw over it with a desirable thickness, start hammering it down with the branch from the other side.

fig 320. Once it is cracked down, it is going to be easier for it to move.

fig 321. Result of a sliced bamboo stripe, that needs to be smoothed from one edges.


fig 322.


fig 323.


fig 324.


fig 325.


fig 326.


fig 327.


fig 328.


fig 329.


fig 330.

fig 322-336. Work process for the trail of the 'Junction' technique done by the author, Photos by the author, July 4 2025.

fig 322. Drilling machine, chisel and two bamboo pieces.
fig 323. Checking if the hole-saw drill end is as thick as the thinner bamboo piece.
fig 324. Aligned pieces and ready to make the hole on the thicker bamboo piece.
fig 325. Hole cut-out from the thicker piece.
fig 326. Controlling if the bamboo is fitting clean and tight to the whole.
fig 327. Drill end changed to the brad point drill.
fig 328. The hole made on both the thin and thick bamboo like shown.
fig 329. Bamboo peg located into the hole, hammered down and extra pieces are cut down.
fig 330. Finding the leg bamboo piece that will enter over the interior piece.
fig 331. Leg piece modified to be fish-mouth.
fig 332. Another hole made with the drill for the next bamboo peg.
fig 333. Inserted bamboo peg needs to be hammered down for a tighter connection.
fig 334. Side view of the bamboo peg.
fig 335. Extended piece are cut-down with a hand-saw.
fig 336. Stabily connected two bamboo piece to each other.


fig 337.


fig 338.

fig 337, 338. Trial product of the prototype that is basically a product of the 'Junction' technique being done four times on a single bamboo piece the legs of the structure done by the author, Photos by the author, July 4 2025.

In order to experiment with the techniques and tools before the workshop and to have a visual model, I performed a full-process simulation of the model in a smaller scale. The first simulation product that I have built, had a problem with the length and angle of the legs which was resulting in a wide and unstable structure when a vertical force was applied. During the second simulation product (*fig 337, 338*), I was more precise with the length of the legs and used thicker pegs for more stability, yet while marking for the angle of the legs I have made an error that resulted in, again, wide legs that were not stable when horizontal force were applied. The goal was to have 45° between two angles when viewed from the front instead of 90° like seen (*fig 337*).

During this experience I got to know how the recently harvested bamboo is easy to modify, through cuts or hole cuts, but not the most durable when modified and put under force. Unlike the recently harvested bamboo, dried bamboo was way more durable yet once tried to modified, requires higher level of care because once cracked there were no coming back, due to cracks are the very reason of low level of durability. Stacking properly, ventilating well and a controlled drying conditions are essential for a healthier process to dry the bamboos. Throughout the time I have spent experimenting, I kept the bamboos at the 'office' to dry for a higher durability and avoidance of the fungal or insect infection but throughout the time I didn't observe a proper drying process which are caused by the humid air, due to the air condition generators placed at the space, and low sun exposure. If it was possible to place the bamboos at a place where the sun exposure was higher and had a lower humid air content, would have been a healthier process yet it wasn't a possibility due to the absence of an available space or a machinery for such process. One of the other way to treat them would be to make a fire and burn them for a short period of time to decrease the attractive content for the fungi and insects, yet due to the prohibition of making fire at Cascina it wasn't a possible way to treat them.

fig 339. Bamboos left on the transparent facade of the 'office' that I used for several weeks for drying purposes, Photo by the author, July 11 2025.

I am satisfied with the techniques I have used because they are the traditional methods and imitation of other material techniques but through its own strength as a material. The selected tools were giving the possibility to be used by everyone with a minimum level of knowledge. Such ease of use is supporting the idea of being formed in a local way instead of being in need of a manufactured in a factory after specific processes, pre-fabricated modules or complex machinery. Yet same is hard to say for the drying process since it didn't result in a healthy drying process with a completely dried bamboos.

One of the other issue was the treatment process of the bamboo. Since I was working with freshly harvested bamboos, in order to use it in an outside environment which it will be exposed to rain, it was a crucial process. One of the two most feasible way to treat them was to soak them in a pool full of a mix made by borax and water where the bamboos were placed horizontally for several days and dried in an appropriate space where the ventilation and a certain level of sun exposure. Other way would be to introduce the same mix to one of the edges when placed up-right at a similar pool where the mix moves slowly through the nodes, lowering the attractiveness of the cellulose structure for the fungi and insects. For both ways, primarily the need of a such tank that is big enough to hold the necessary bamboo pieces and having no budget to buy the necessary amount of borax were the reasons why the processes couldn't have been done. Such absences of the elements were going to leave the bamboo unprotected from such dangers. As planned the structure will be located at the community garden and since the seedlings are still growing, it will be exposed to sun during the month of august, which in a way may help for the drying process yet

won't be the most desirable process.

So the dates of the workshop arrived and I went to Cascina to meet with the people and arrange the timetable for the week. I set ready enough material to build 2 structures which would need 10-15 people in total. So depending on the amount of people willing to join, we were going to build either one or two of them. Due to not having enough tools, it wasn't possible to host a workshop for all 50 people but during these workshop times, couple workshops were going to be presented and whoever wants to join to one could choose on their wish. Such organization helped in a way because performing a construction workshop for such many people would be a tough start for me as it was going to be my first time hosting a workshop.

fig 340. fig 341.

fig 340, 341. Locations of the tents at the backyard of Gelateria, Photos by the author, July 21 2025.

Monday

(If confused, check the terminologies used at the chapter of Self-Building Workshop Project Guideline)

I have arrived early to Cascina to put my tent for the next days where I got to meet with some of the early arriving Belgium team which were two teams, team from the French speaking side of Belgium and Flemish speaking side. They were more than 20 people and something caught my eye. Most of the participants were 16-17 years old and were coming with their leaders who were so few. This occasion was something I was not expecting but was prepared for with the ease of techniques and tools to be used during the workshop. Until the evening I got to meet with the other arrivals from Germany, which were coming from Berlin and Bremen, Ireland and Norway who were only two leaders and were going to be two of the people who I will spend most of my time and help me the most during the workshop. In the evening we all had the dinner together and made a small gathering with the leaders only to get to

know each other. Some were living in the suburbs where they are very much living with the nature itself and being in direct contact with the both plants life and animal life and others were coming directly from the cities without much contact. Every group was bringing a workshop to do throughout the week. As the representative of the hosting team, I introduced the idea of the 'Bamboo Workshop' and got an immediate positive return from the leaders where they were saying it would be valuable part of the workshop. There were two more suggestions for the workshop of Tuesday, which were going to be done between 10-12 am. After the introduction we made a small 'getting to know each others names' game with all the participants and like the Belgium team also other teams were mostly teenagers of 16-17 years old. Overall most were divided into their own groups and were not interacting with each other much.

Tuesday

After the first night we all met again for the breakfast, sat down with the leaders to check up on the participants and talk about the rules for the duration of the workshop since we were going to be a community together for the next 7 days.

Before 10 am, all there of us who were going to conduct the workshops, did an introduction to everyone and there were 11 volunteers for the 'Bamboo workshop', which was a great number to build two structures. My initial assumption was that 2 days with 10-15 people were going to be enough to build both of them. The amount of people needed is coming from the step-by-step guide I created before the workshop which was showing the overlapping phases of different parts of the work. On the side of that, amount of time needed is coming from the experiment I did while building the prototype. By myself I was able to do every step of the small scale model in 1.5 hours, yet now building with many participants was requiring the time to explain the safety protocol, tools, steps, why we are doing them and of course primarily we were going to do a ten times bigger version of it which could create an issue of logistics and management.

We started by carrying the bamboo pieces from the 'office' to the workstation and getting the necessary tools from the laboratory which I previously contacted with the person in-charge about the hours we will be needing the tools for.

(for the step-by-step guideline, check the chapter of Self-Building Workshop Project Guideline that has the guideline which have been followed during the workshop.)

Later we continued with the first steps which was requiring to have 3 different teams with different tools to be done at the same time for the maximum efficiency since they were not connected with each other. I was going around and visiting each group while they were doing


fig 342.

fig 342. Marked bamboos are in progress to cut-down holes for the interior pieces, Photo by the author, July 22 2025.


fig 343.

fig 343. Other end of the legs are cut down with the angle of 22.5°, Photo by the author, July 22 2025.


fig 344.


fig 345.

fig 344, 345. Leg pieces are cut using the 'fish-mouth' technique, Photos by the author, July 22 2025.


fig 346.


fig 347.

fig 346. Inserted interior pieces to the beam, Photos by the author, July 22 2025.

fig 347. Suitable interior pieces are being cut and nodes with stems are getting cleaned, Photos by the author, July 22 2025.

their tasks and was sharing the experience I got from the trials I did. Youngsters were eager to use their hands and it was giving me a joy to see them being motivated to work on it for that two hours. For some groups, the task were shorter than the others so with them we would continue with the next steps.

fig 348.

fig 349.

fig 348. The condition of the two beams after the end of the first day, Photo by the author, July 22 2025.

fig 349. The condition of the leg pieces that are cut in fish mouth technique at the end of the first day, Photo by the author, July 22 2025.

At the end of the first day we were able to finish until the *Step 3.1* (check *chapter of Self-Building Workshop Project Guideline*) except the bamboo pegs, because when we first started the chisel was not enough to split the bamboo open since this time we were using a thicker bamboo than the one that used for the prototype. The needed material was either a more durable chisel or a machete which were not available, so I left the step of creating the bamboo pegs to next day. Ahead of us we had the steps including the last touches of the preparation of the beam, smoothing the leg pieces with fish-mouth cut ends, splitting the bamboo into bamboo pegs and finally attaching the leg pieces to the beam. I observed the path as almost as planned but slightly slower. I was able to communicate with the youngsters and if there would be a language barrier, there were enough people to help with the translation.

Rest of the day, there were other workshops and informal time spent with the participants. Every evening there was an another team who was cooking which was allowing them to share a piece food from their culture. After the dinner met again with the leaders and talked about the next day and the scheduling of the day. Since the structure was not finished, I offered to do it again the next morning at the same time.

Wednesday

We started the day same way as yesterday and met up with the leaders after the breakfast. We all introduced the workshops for the day. This time there were more appealing workshops for the teenagers which dropped the number of participants to 6. Such decrease was going to effect the flow of the work, so from the beginning I decided to continue with only one structure rather than the initial two.

We were going to continue with the leftover steps that I have mentioned before, but the issue with the pegs was still present so I spared the time before breakfast to find the essential tool for the bamboo pegs which happened to be a more durable chisel rather than the machete. We started by selecting which beam to continue which was the one that had tighter interior pieces inserted (*fig 352*), since it is one of the most important point that provides the stability for the whole structure.

fig 350. The workflow of couple workstations from the second workshop day, Photo by the author, July 22 2025.

fig 351. Using a brad point drill end to align the two holes which are going to be used to insert the rows into legs, Photo by the author, July 23 2025.

fig 352. Closer look on one side of the beam where one leg is already inserted and stable with the peg and the next leg is in-progress of a 'fish-mouth' technique, Photo by the author, July 23 2025.

We continued to smooth the leftover fish-mouth edges of the leg pieces while starting with the bamboo pegs and making the holes to insert the row pieces into legs (*fig 352*). While working on them I realized that some of the ends of the legs were not cut towards the right direction which was meaning that we needed to cut all of them again with the same length so once the structure is up-right, won't lean towards one way. For such control we started to place them on a layout to see where are the anchoring points and the length of the legs.

fig 353. The template in-progress, for the structure during the second workshop day, Photo by the author, July 23 2025.

fig 354. Cutting the holes from the leg pieces for rows to be inserted, Photo by the author, July 23 2025.

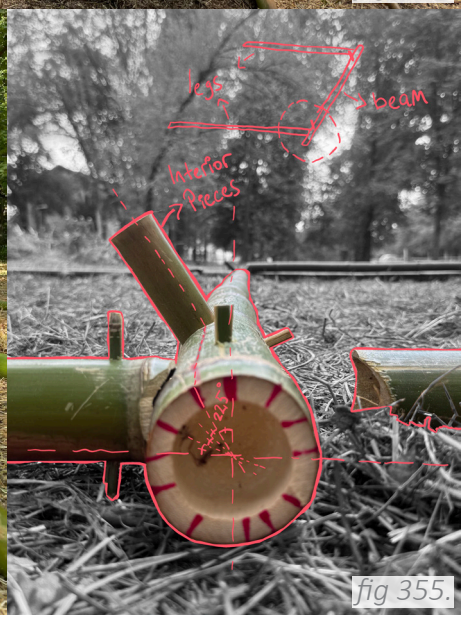


fig 355. Marked beam side that is missing one side of the legs, Photo by the author, July 23 2025.

At the end of the session, we had all the legs with proper cuts, all the holes were made but some were a bit to tight which were to be widened for the rows and bamboo pegs were to be screwed as the final step before rising it up-right.

So it was the end of the second workshop session and it wasn't finished and was still in need of small touches. We were going to need an another workshop day to be able to rise it safe and sound. To be able to do as such I came back to the workstation during the afternoon hours. Since the plan for the afternoon was to go on a city tour around Turin, I was alone to do so. Such free time meant I could finish all the last touches except rising the structure itself which we could do it the next day in half an hour. I widened the holes at the legs for the rows, inserted them and made sure every piece was an appropriate size. I made sure all the leg pieces were the same length and were cut with an angle of 22.5° to-

wards the appropriate side. At the end I was able to do the adjustments in one hour and it was ready to be lifted for the session of tomorrow. During the after dinner meeting with the leaders I have mentioned that it wasn't necessary to take up a full session but only half an hour, this way youngsters could join the other workshop more freely.

fig 356. One side of the structure is attached to the beam and other side is ready to be risen for the last pegs to be inserted at the end of the second workshop day, Photo by the author, July 23 2025.

Thursday

After the breakfast, group went to a swimming pool as planned and were back around 2:30 - 3 pm. This time we were four which was enough to do the last final push. After attaching the second side to the beam we needed to rise the structure on it's feet. While two person were holding the risen legs, other two were to hold the beam. We started by rising the beam around 1 meter of the ground while the two legs which were laying on the ground were the rotation centers. While using the rotation centers as the main support from the ground, two risen legs were to hold stable since their own weight could damage the junction. E voila!...

It was on its feet safe and sound. I could see the element of surprise at their eyes, they were not expecting the structure to be as tall as it was. Since they were seeing the pieces on the ground laying, they didn't expect it to be that tall yet since the beginning it was going to be over 3 meters once in up-right position.

During the workshop I got to use my social skills in both an informal way during the chats outside of the workshop and formal way during the workshop where I was the one who manages the steps through. During my studies and my personal life in recent years, I found myself in many occasions where the words were not the best way for me to express myself. During this four days I got to experience and improve myself on this such soft-skill, yet I see that I still have some way to go. I got used to chatting with other architects or designers where I have more

fig 357, 358. Structure made during the workshop ready to be placed on its spot with the participants of the Thursday workshop session, Photos by the author, July 24 2025.

common terminology to use in such situation, yet with the youngsters who didn't have a similar vocabulary, was a challenge to be on the same page. When the issue of miscommunication was continuing, I chose the way of showing graphically what I was mentioning. I observed that the youngsters were quite slow to understand at first because they were not used to such representation, yet after the second time we could communicate easier. Which I observed that they were glad to use their hands and I hope that it sparked some interest in them.

Throughout the workshop days I got to work with different group of youngsters so I found myself explaining similar things over again, which allowed me to practice and have more clear communication with them through days. At the end of the fourth day, we had a dinner all together and I left the *Cascina* to them for the left over three days of Summer Workshop where they continued with different workshops and activities around Turin.

After having couple weeks off from *Cascina* I came back to move the structure to *orti* at a different spot than its intented place for an easier implementation of the next step *(fig 359).* After the workshop the structure was to be put at its intended place and was to be ready for supporting the plants. Yet there was an another step which wasn't possible to do during the workshop because of the limited time we had, which is to create more supporting points. There were two design options for this, which were either using the thinner bamboos to be located perpendicularly to the "rows" or a rope tied around the structure. When I

fig 359. Structured moved to a free space, Photo by the author, August 4 2025.

fig 360, 361. (Centre) Structured is tied around with the rope on a vertical axis, (Right) tied around on a horizontal axis, Photos by the author, August 9 2025.

look back I would have take my time and locate the bamboo sticks rather than using a rope because up until this point the structure has been done with only bamboo and I would have like to continue to do so. Yet in order to attach these bamboo pieces, I would have need to make one sided holes on the row piece which would not be a wise decision on the long run since it would collect water through rainy days. Also having an unused rope as material, was going to make the process easier and smarted so I went with this option.

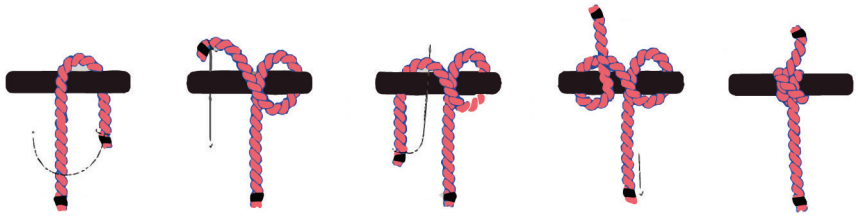


fig 362. Clove hitch knotting method, theknotsmanual.com, Scheme by the author, August 6 2025.

On a single day I tied around the rope around by using simple knotting method of clove hitch. I basically started by tying a knot to the bottom row and threw the rest of the rope to the other side and after wrapping around the other bottom row piece. I repeated the process 13 times to be done with the vertical axis. Later on I used the leftover rope to do the horizontal axises for a higher amount of interaction points at the bottom for the young plants to get a hold on easier.

So by this last step the structure is concluded. The next step is to locate structure at the desired spot at the *orti*. Up until this moment during the collaboration journal, I got to know the bamboo and methods to modify it to my desire. Design process was a result of a technical knowledge of the material but the next step will be a result of the survey and a site analysis for the decision of the location of the structure.

So to scroll back to the initial goal, I started by doing a project that takes plants as the primary user and support their growth on a vertical axis. This aim is coming directly from taking the needs of the plant as a starting point rather than the needs of the humans. By moving on a vertical axis, through a triangular geometry, the land area is increased for the use of the climbing plants.

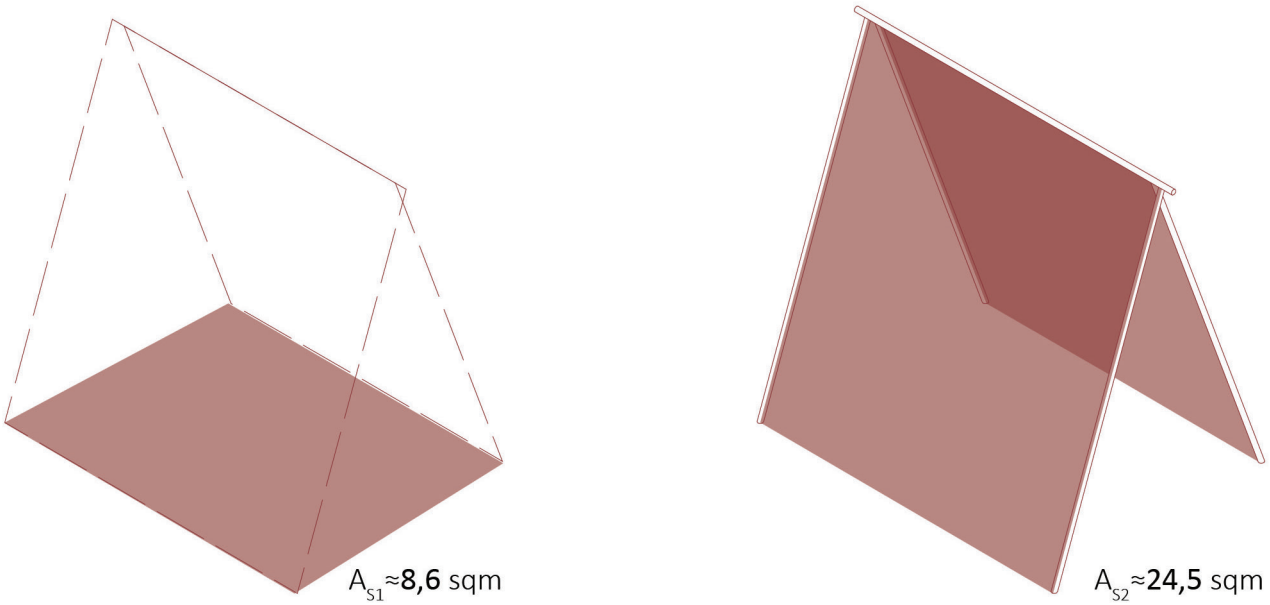


fig 363. Schematic diagram showing the increase of the surface area through building a structure over the land, Scheme by the author, August 29 2025.

This design choice of going on a vertical axis to increase the surface are that is usable for the plants, also has become a crucial intersection of need of two species of users. The potential of such powerful design move is creating an overlapped space for plants and humans to interact in a symbiotic state. While plants are covering the structure through time, humans at the community garden who need a bit of shade can enjoy the space under the structure. Once the structure is covered by the plants within the duration of 6 to 12 months, will be the only covered space at the *orti* which can provide a shade during the warm months.

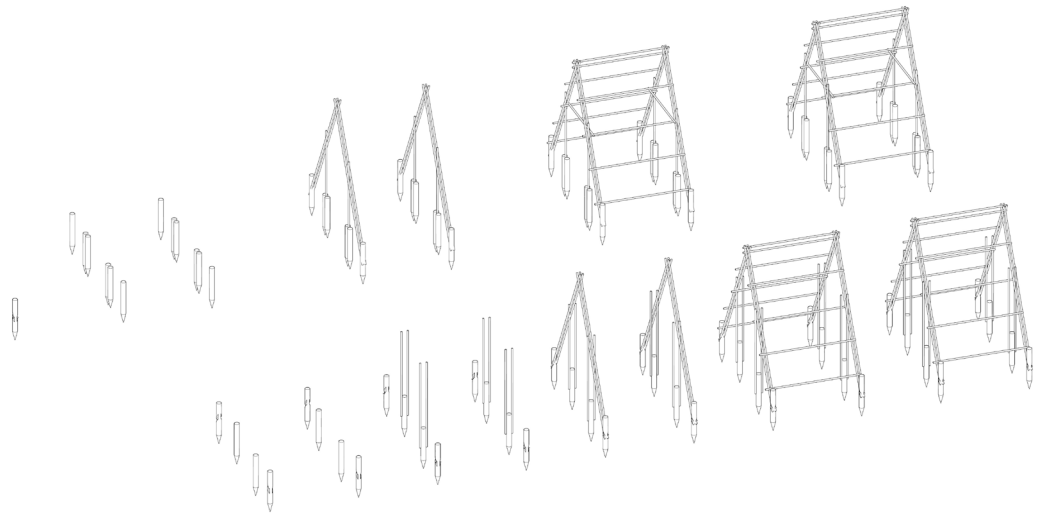


fig 364. Trial of construction flow of different models, Models by the author, April 29 2025.

As mentioned before, as a result of the survey Simona held, an absence of a communal space is keeping the tenants at their own gardens doing their own work, and only creates a point of interaction when they borrow the common tools that belong to the *orti*. This need of a 'communal space' has found a response through an implementation of the structure.

So the first architectural part concerning the construction of the structure was a different branch of the field respect to the following decision making for the location of the structure. The decision process was a product of a basic understanding of the main axises and necessary water source location. *Orti* has two main walking paths which are intersecting at the *piazza* (square) which was the initial space I was considering. Yet after talking with Elisa about the location we decided to not occupy the main *piazza* with such structure but locate it somewhere else that people can see and arrive easily. The objective of the decision was to leave the main *piazza* more free and a symbolic common garden where there are more sitting places and some plants like strawberries, basil, mint and other types of spices. Symbolic garden would be low on height but wide in space which would carry and cherish its geometrical features. If the structure would be located at the centre it would also cherish its feature by being tall as well yet it would decrease the creation of a possible 'second' common area. By locating the structure still centric yet away from the *piazza*, signifies its role as the 'second landmark'. As a third option we also consider to locate it on the side of the main axis, where it wouldn't block the way when the lawn mower is passing. Also the height would prevent it sunlight to arrive to neighboring *orti*'s. Through the process elimination of alternative choices, the optimum position of its has been decided.

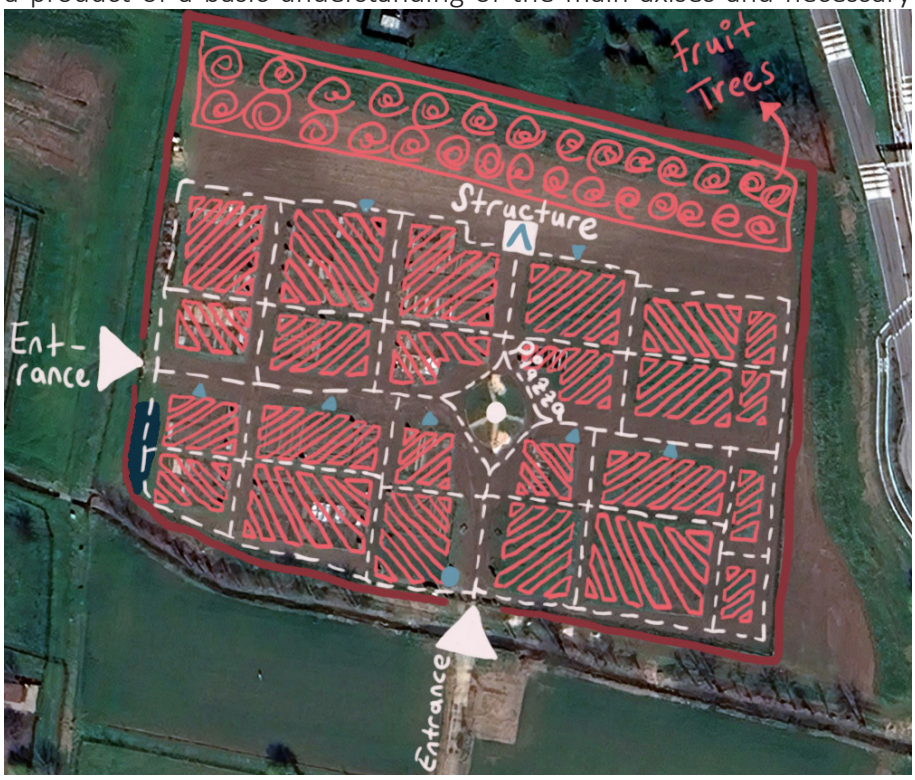


fig 365. Layout plan of the Orti, Sketch by the author, September 1 2025.

On 31st of August, I moved the structure to its decided location and the phase of human construction came to an end. Next phase of forming the skin of the structure was going to be done by the plants. The decision of which plants to be planted under the structure were selected by a discussion I did with Elisa and Alani in May. I shared my intentions of planting a plant that would climb to the structure, produce a type of product that can be consumed by the people and preferably grows fast. Three plants they mentioned that were possible to grow were *fagioli viola* (Purple Queen beans), Ipomea and Amaranth. *Fagioli viola* is a purple colored type of bean which can be used as any other beans. Ipomea is a blossoming plant that form tubers which can later on be used as sweet potatoes. Amaranth on the side is a type of a grain which is gluten-free and can be used as rice. Beginning of july Elisa and Alani planted *fagioli viola* to be later on moved under the structure when in it is in its final location. Yet the weather conditions of heavy rain and heat effected them and they never ended up getting out of the soil. In the beginning of September, Elisa planted all three and some other experimental seeds to later on move under the structure to host its first guests.

Even though during this thesis I couldn't cover what will happen in the next months, the structure will be part of the *orti* and host its first human and non-human guests as soon as possible.

fig 366. Structure in its final location on the day of the last human touch phase, Photo by the author, August 31 2025.

fig 367. Structure in its final location on the day of the last human touch phase, Photo by the author, August 31 2025.

fig 368. Collage work showing the (left) end of human touch phase and (right) the in-use phase of th

e structure after a certain improvement of the plants who created its skin, Photo by the author, August 31 2025.

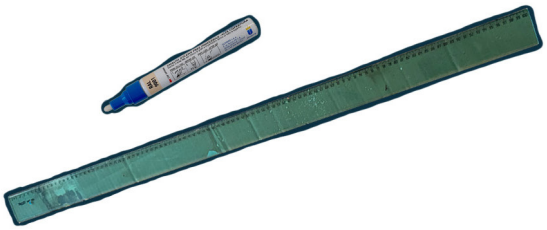
Self-Building Workshop Project Guideline

This guideline is created for the 'Bamboo Structure' Workshop that is performed at Cascina Falchera. Aim of the self-buiding workshop is to build a structure made out of bamboos which are harvested at Cascina Falchera, to be used by both the plants and humans. A trellises structure shape is chosen for its structurally stable feature especially to balance the horizontal forces.

PROCESSES & TOOLS

MARKING

We will be using a ruler and permanent marker to mark our reference points and lines.



CUTTING

We will be using a fine hand saw to cut down the bamboo pieces and a miter box to be more precise when cutting the edges with an angle.

CUTTING HOLES

We will be using a drilling machine for cutting out the holes. There are three different types of bits which are (from top to bottom) Brad Point Drill, Hole Saw and Flat Drill.

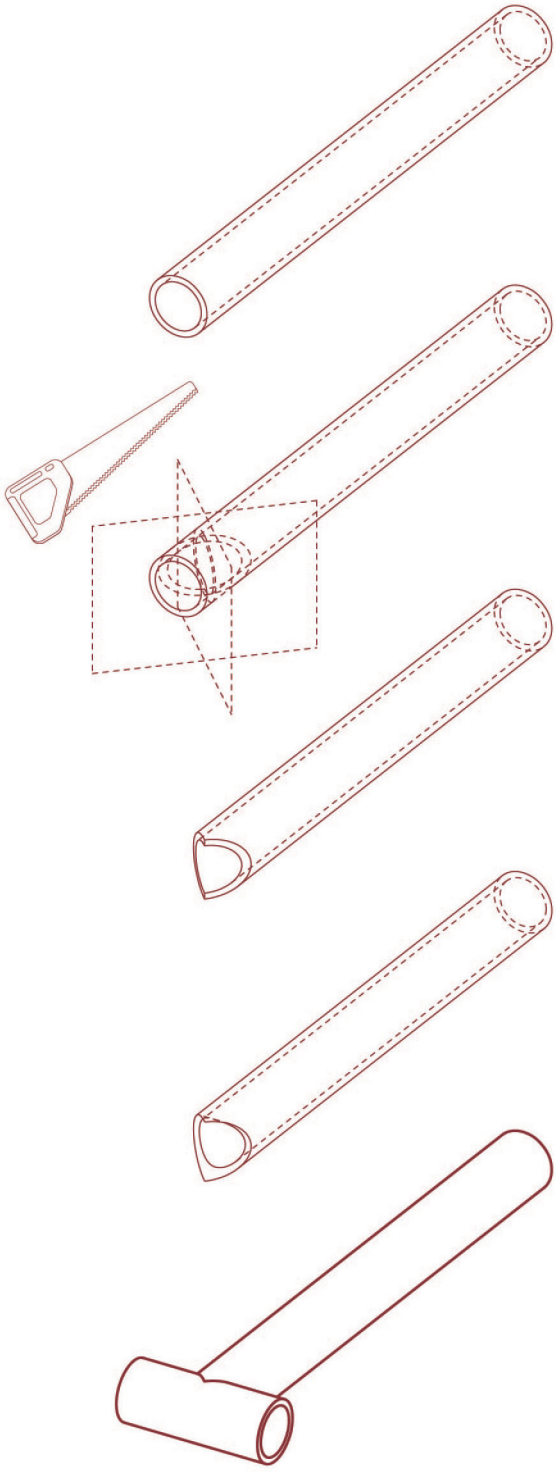
SMOOTHING

We will be using Chisel to smooth the split bamboo pieces and a Fining Tool to smooth the edges.

fig 369. Tools needed for the self-building workshop, Drawing by the author, July 18 2025.

FISH MOUTH

To initiate the modifying phase of the bamboo pieces to be able to connect them to each other, we start by cutting the end of the bamboo in a 'fish mouth' style. The name is coming from its shape that resemble the **mouth of a fish**. Through this method two bamboo pieces are fastening to each other at a desirable angle, for this project we are using only the perpendicular connections which is including two symmetrical cut, following the axis.



1) Selecting the desirable bamboo piece.

2) Two symmetrical **45° degree cuts** that are following the axis of the bamboo.

3) Desirable shape to arrive at this step is a symmetrical cut so if it is not symmetrical, better to adjust the cut.

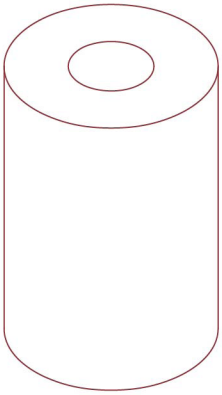
4) Grating the inner part and the sharp corner for it to fit cleanly. To have a precise connection, checking how it is connecting with the second bamboo is advised.

5) Here is a carved fish-mouth end that can be used for the 'Junction' step.

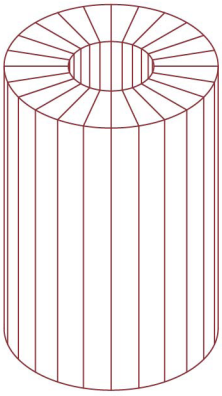
fig 369. Fish-mouth method guidelinefor the self-building workshop, Drawing by the author, July 18 2025.

PEG

To be able to stabilize the bamboo connections, we won't be using screws but the bamboo itself. By **splitting the bamboo vertically** into 0.2 - 0.5 cm of strips, we can form the bamboo screws that are being called as 'pegs'. Once the strips are ready, one of the edges must be sharpen so once it fits to the pre-made holes it can fasten the anchors.



1) Selecting the desirable bamboo piece which is at least **10 cm long** and preferably **thick**.



2) Splitting the bamboo with the help of the **chisel and a hammer**.

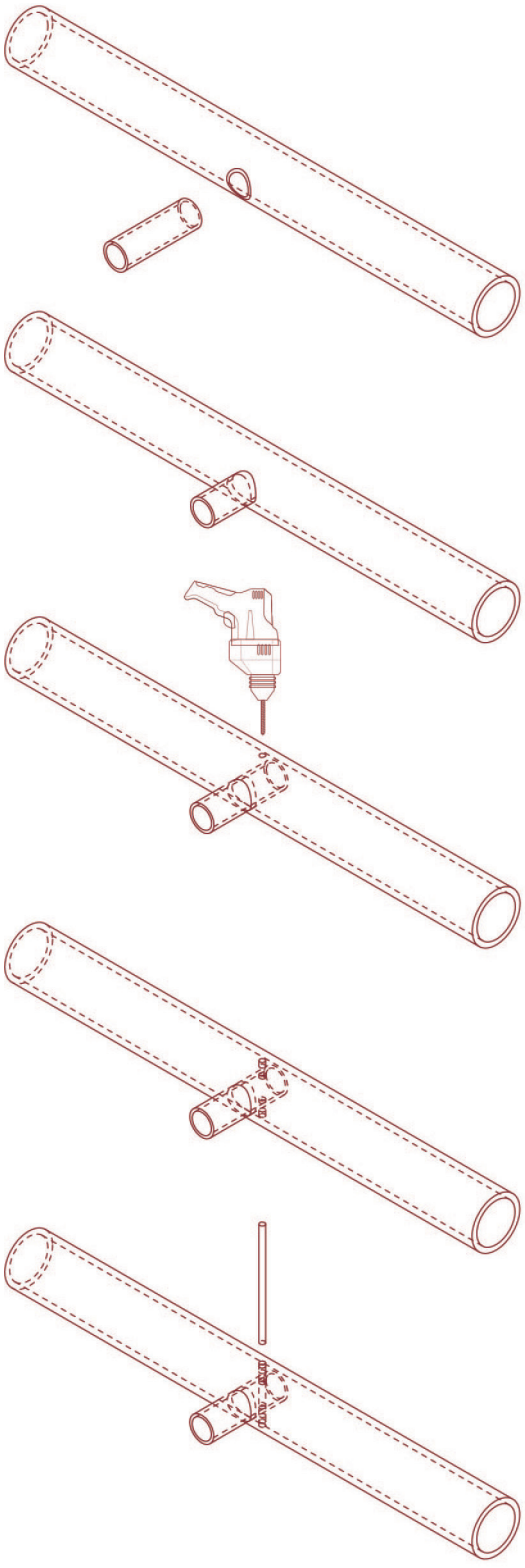
3) Singular piece of split bamboo is **sharpened** by using the **chisel**.

4) A single peg is ready!

fig 370. Producing a peg guideline for the self-building workshop, Drawing by the author, July 18 2025.

JUNCTION

To form a stable connection in between two perpendicularly connected bamboo pieces, we will be using a smaller, **interior piece of bamboo** that is **anchored by two pegs**. After seeing the first two techniques



1) Selected interior piece, which is the **size that can fit inside to the attaching bamboo**, used as a reference for the size of the hole saw or the flat drill bit that will be used to make a hole.

2) Try to see if the interior piece is fitting inside the hole **precisely.** It's better the use a drill bit that is slightly smaller than the diameter of the interior piece. Once cut the hole out If its not fitting cleanly, try to enlarge the hole by using the fining tool.

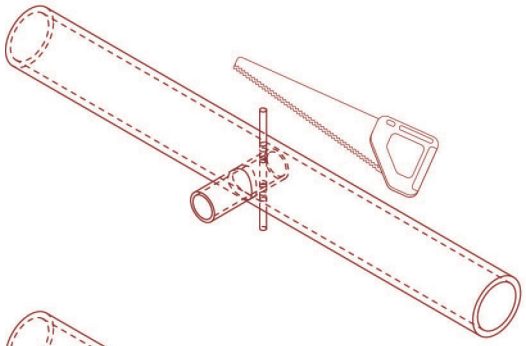
3) Once it is in position, use the drill to make a hole that is **perpendicular** to the axis, by going through **all the layers** (in total four layers).

4) Four holes must be **aligned well** for the next step.

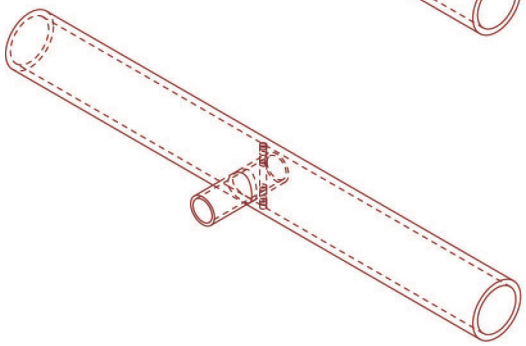
5) Pre-made peg piece, with the help of a hammer, passes through all the layers and **tightly** connects them together.

fig 371. Junction method guideline for the self-building workshop, Drawing by the author, July 18 2025.

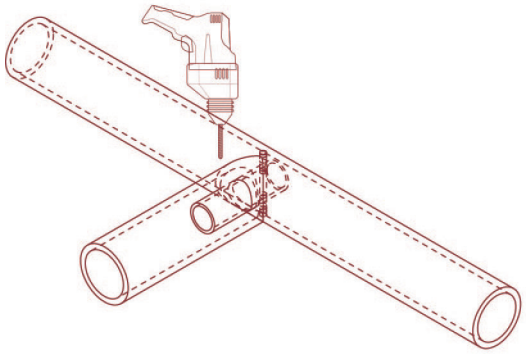
which are the formation of fish-mouth end and bamboo pegs, 'Junction' phase is using both of these techniques. Main idea is to **create a connecting piece at the anchor point that is stabilised by the pegs.**



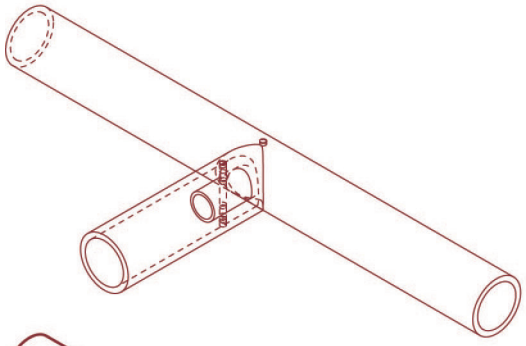
6) Extra pieces of the pegs is better to be **cut down** so doesn't catch on anything while in use. Better to leave around **0.5 - 1 cm above the surface** so in case of a slip, stays still.



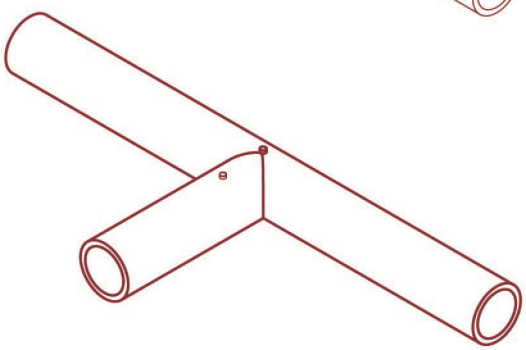
7) Stably positioned interior piece is **ready!**



8) Second bamboo piece is located over the interior piece. Once **tightly together**, same steps are followed.



9) Once the peg is well-positioned and the extra pieces are cut down...



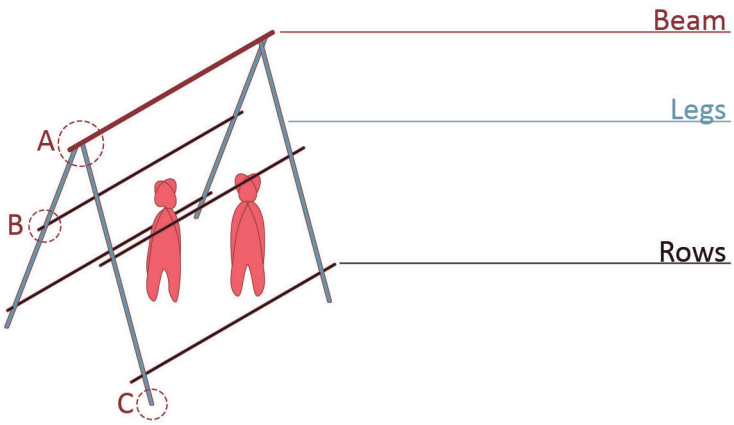
10) ... E voila!!

fig 372. Junction method guideline for the self-building workshop, Drawing by the author, July 18 2025.

STRUCTURE MODEL

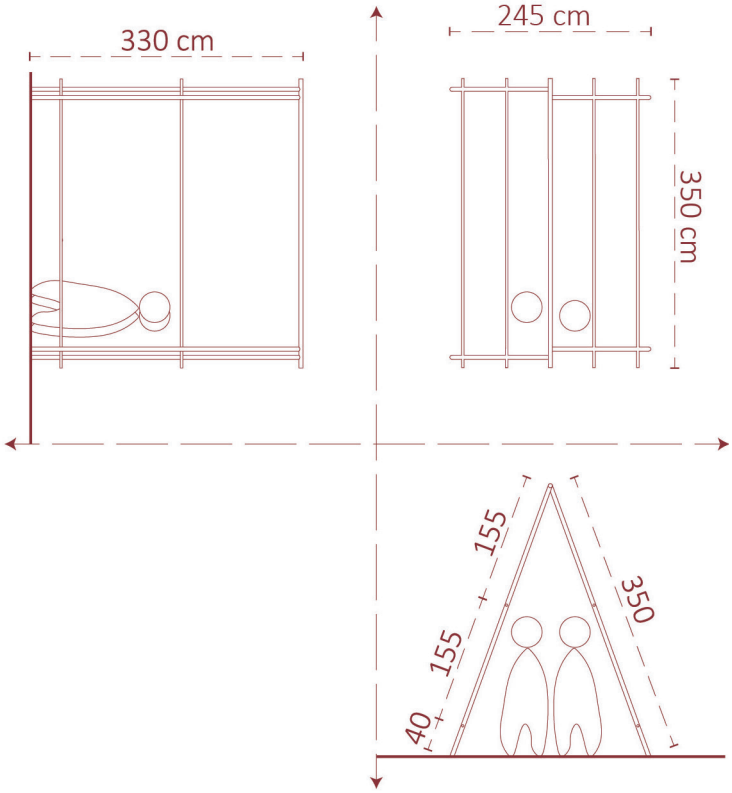
MAIN PARTS

Main three elements of the structure are as shown. Beam has four connection points with the Legs that are anchored to each other with the Interior Pieces. Legs are the middle element that are connected to both Beam and Rows, which is resulting in the most amount of work that is to be done on them. Rows are inserted to the holes at the legs.



DIMENSIONS

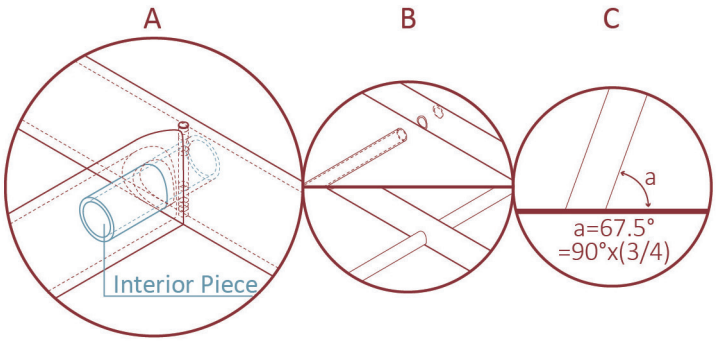
The dimensions are decided considering the measurements of an average human body. Trellises form of the structure is allowing people to have a wider space when they sit down, which is a crucial part of the design by motivating its users to interact with the ground and plants. It is wide enough to allow two people walk pass together hand-in-hand. Elongated edges of the row pieces are too high and too low for kids to hit their head if they are running around the structure, meanwhile is slightly higher than the average height meaning its either too high for them to hit their head or at a level that is realizable by taller people.



ANCHOR POINTS

Three anchoring types are as shown.

A is named as the 'Junction' technique. **B** is simply sliding a bamboo piece directly into the pre-made hole. **C** is representing the angle of the connection with the ground. Its complementary angle being 22.5°, represents that once the edge is cut with an angle of 22.5° will be parallel to the ground.



STEP-BY-STEP WORKFLOW

Workflow is following a step-by-step structure that is allowing to couple parts of the work to be done simultaneously, for a high efficiency of the time spent during the building phase. Meanwhile the first couple steps are being done simultaneously towards the end, phases will overlap.

1.1) Bamboo Pegs
Description: Pegs are crucial for the stability of the anchor points for the structure. Since producing several pegs at the same time has high ease, it is one of the first steps.
Tools: Hammer and Chisel.
People Needed: 1-2 person.

fig 373. Structure model for the self-building workshop, Drawing by the author, July 18 2025.

1.2) Marking the Beam
Description: The main beam will have the most work on it so marking the reference lines and later in points will be useful throughout the next steps.
Tools: Marker and Ruler.
People Needed: 1-2 person.

1.3) Interior Pieces on the Beam
Description: Interior pieces are the crucial for the anchoring points. They need to have the thickness which is less than the diameter of the gap of the legs.
Tools: Hand saw.
People Needed: 1-2 person.

1.4) Modify the Legs
Description: Four leg pieces will touch the ground with an angle of 22.5° so in order to have a more stable contact with the ground, it is better to make a cut with the same angle.
Tools: Hand saw and miter box.
People Needed: 1-2 person.

fig 374. Structure dimensions for the self-building workshop, Drawing by the author, July 18 2025.

2.1) Cutting Holes from the Beam
Description: The interior pieces must enter the beam tight for the maximum stability. In order to do achieve such stability, same size as of the interior piece, must be cut as a hole from the beam.
Tools: Drill Machine with the hole saw or the flat drill bit.
People Needed: 1-2 person.

fig 375. Anchor point to be used for the self-building workshop, Drawing by the author, July 18 2025.

2.2) Fish-Mouth the Legs
Description: After being cut from the side that touches to the floor, four leg pieces must be cut in the technique of the fish-mouth to be attached tightly to the beam.
Tools: Hand saw and miter box.
People Needed: 1-2 person.

3.1) Drilling Through the Beam and Interior Pieces
Description: In order to stabilize the interior piece that has been inserted through the hole on the beam, there is a need of a hole that can be made by the drill perpendicularly to its axis. (If confused, check the third and fourth step on the 'Junction' technique.)
Tools: Drill machine with the Brad Point Drill Bit.
People Needed: 2-4 person.

3.2) Marking and then Cutting Holes from the Legs to Insert the Rows
Description: Two sides of the legs must be marked on the same level and cut holes to insert the row pieces.
Tools: Marker, Ruler, Drill Machine with the Hole Saw or Flat Drill Bit.
People Needed: 2-3 person.

4.1) Inserting the Pegs to Connect the Interior Pieces with the Beam
Description: Inserting the pegs to connect the interior pieces with the beam. (If confused, check the fifth, sixth and seventh step on the 'Junction' technique.)
Tools: Hammer.
People Needed: 1-2 person.

4.2) Drilling Through the Legs and Interior Pieces
Description: Same action that has been done at the 3.1 point, needs to be done for the legs and the interior pieces. (If confused, check the eighth, ninth and tenth step on the 'Junction' technique.)
Tools: Drill Machine with the Hole Saw or Flat Drill Bit.
People Needed: 2 person.

5.1) Inserting the Pegs to Connect the Interior Pieces with the Legs
Description: Inserting the pegs to connect the interior pieces with the legs. (If confused, check the fifth, sixth and seventh step on the 'Junction' technique.)
Tools: Hammer.
People Needed: 1-2 person.

6.1) Sliding the Row Pieces to their Places on the Legs
Description: Legs already have holes for inserting the row pieces. Sliding them to their places.
People Needed: 1 person.

7) Creating More Intersection Points
7.a) Tying the Hemp Rope
Description: To support the plants more coherent throughout the time they are growing, it is important to give them a lighter structure than points than the leg and row pieces. To achieve that a hemp rope will be used to create a web throughout the structure for the maximum intersection points.
Tools: Hemp Rope.
People Needed: :)

7.b) Creating a Grid Frame From Bamboos

7.b1)Inserting the Vertical Grid Piece

Description: To support the plants more coherent throughout the time they are growing, it is important to give them a lighter structure than points than the leg and row pieces. To achieve that the bottom row bamboo may have a series of one sided drills which are wide enough to add thinner bamboo pieces. To stabilize the upper part, the same technique that is used to stabilize the row pieces are used, which is the sliding-in method. By sliding the grid piece from top down until the bottom row piece, we stabilize the vertical grid piece. For the next step, cut holes on the same level on each bamboo pieces depending on the desirable number of grid pieces.

Tools: Drill Machine with the Hole Saw or Flat Drill Bit.

People Needed: 2 person.

7.b2) Inserting the Horizontal Grid Piece

Description: Insert the horizontal grid pieces one by one through vertical grid pieces.

Tools:-

People Needed: 2 person.

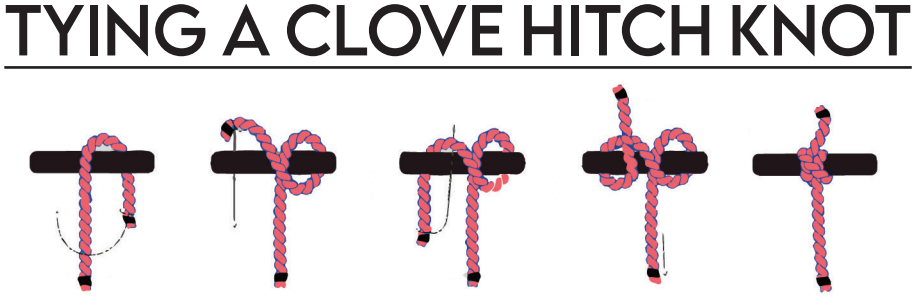


fig 375. Tying a clove hitch knot guideline for the self-building workshop, theknotsmanual.com, Drawing by the author, July 18 2025.

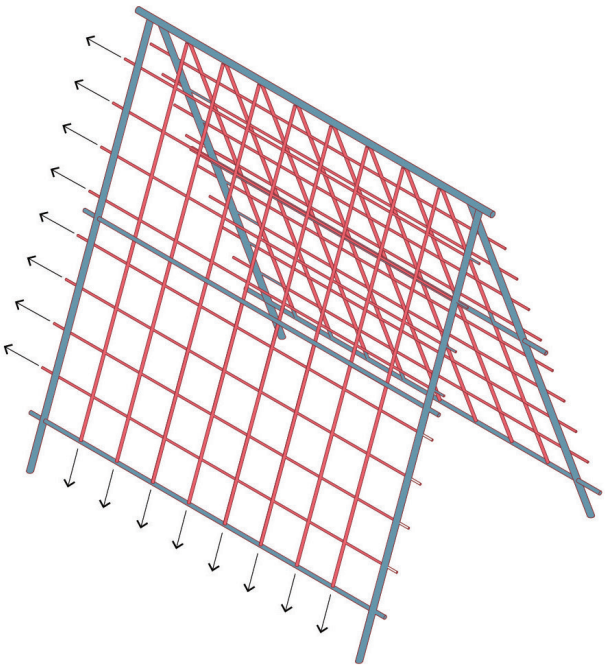


fig 376. Grid frame structure drawing for the self-building workshop, Drawing by the author, July 18 2025.

Conclusion

Conclusion chapter has been written, as its name, as the last chapter which aims to conclude the collection of entries and the fieldwork. Vertical Farming was the first tangible topic I got to know through its technical properties. Through the months I realized that Vertical Farming is a method to be used in extreme conditions where traditional farming is not possible, which is a result of an analysis on carbon emission of four main methods of cultivating (Traditional Farming, Greenhouse Farming, Vertical Farming)[1]. Via a suggestion of my colleagues and my tutor Professor De Pieri, I got to be more involved of the history of food production with Marot's Taking the Country's Side which is a series of several entries regarding different topics that are heavily illustrated[2]. This source led me to be more involved with important points in history regarding agriculture by taking it to the focus. Observing the importance of agriculture for architecture from his point of view, gave me the spark to research more about different disciplines connection with agriculture. Such start gave birth to several other researches from 19-20th century planners views for small self-sufficient settlements to medical papers about the healthy dietary patterns.

At the following chapter the reader is introduced to the conclusion. A conclusion that is representing a phase up until the delivery day of the thesis but not the final step of neither the food related research nor the final state of the project.

[1] Blom, Tess et al., *"The embodied carbon emissions of lettuce production in vertical farming,greenhouse horticulture, and open-field farming in Netherlands",* Journal of Cleaner Production, 2022.

[2] Marot, Sébastien. Taking the Country's Side. Lisbon Architecture Triennale, 2019.

"Taking the Side of Food" has been written to curate a sequence of **inquiries, field notes,** and **prototypes** rather than a linear argument. It 's structure allows reader to join the chain-of-thought of the author who moved between data and practice, history and making. The focus from the side of architecture of thesis that architecture can mediate between food systems and human settlements not only by housing “food functions,” but also by **setting up relationships between plants, people and infrastructure**.

Writing a thesis gave a start to an exploration of the subject of plants and their production within the settlements. Such interest is a product of my personal interest in plants and observation of their crucial role in generating cities with less urban heat islands. Through my studies I got introduced and got into the implementation of technological improvements within the city for a more sustainable living spaces. Yet, I was always interested on the part that **such sustainable structure is unfeasible without a well-designed greeneries** into settlement. Through this element of curiosity I have put my focus on systems that would support an ideology that focuses on the side where **plants are the primary objective** by supporting their implementation. Such greenery scene can come with various types of plant but I took the focus on the side of agriculture, which is directly linked with an **increased level of resiliency**.

Thesis investigated several economical and social benefits of increased resiliency meanwhile using architecture as a decorative tool to create a mental image in the mind of users and decision-makers. Architecture can tackle the excess carbon emission of agriculture sector by supporting systems that, h**ave plant-based approach and are adapting more agrarian techniques**.

fig 401. Denes, Agnes, "Agnes Denes among her wheat crop on the Battery Park landfill", 1982. Photograph. Courtesy Leslie Tonkonow Artworks + Projects. The Guardian, “A field of wheat on a $4.5bn patch of New York,” July 18, 2022.

The first part of "Portraying Food" mapped the cultural and political charge of what and how we eat. Food is not neutral matter. It has been **mobilised as a symbol** and **infrastructure** revealing how diets can be governed as surely as streets or schools. From that angle, the thesis re-

sisted technology-oriented solutions. An initial enthusiasm for Indoor/ Vertical Farming was tested and tempered under current circumstances, because it has high energy intensity that undercuts its sustainability side. Early readings has widen the lens to agrarian techniques that hybrid of ecology and economy, such as ancient aquaponic logics of chinampas, where floating fields stitch nutrients, water, and cultivation into a circular system. The point is not to create a sense of nostalgia but operability with low-tech, reparable systems that scale by replication, not gigantism, like mass production.

If the first part drew a portrait, the second part put hands in work. The Hands-on Approach pursued situated experiments in Turin's productive landscapes by observing two case studies of community garden projects. The Self-Building Workshop answered with method as much as an object. Constraints were constitutive, materials available on site, techniques safe for first-time builders, tools that could be borrowed, a process that was aiming to teach and spread a knowledge meanwhile responding to a demand of a social interaction space for the tenants and a supporting structure for climbing plants. The resulting triangular bamboo trellis treats plants as primary users while gifting humans shade and passage, a gentle symbiotic sharing space. Its geometry increases productive surface area vertically. The span of the passage make a walk-through arbor. The joints (fish-mouth, peg, junction) can be taught, repeated and repaired. The desire of leaving a "gift" to the place was not only the structure that was left behind, but a script others can replay.

The guideline used for the Self-Building Workshop sorted into steps, tools, and roles so that the build could scale by participation. A rope grid replaced a bamboo lattice to balance effort with effect since it is lighter to make and form more touch points for climbers. This was not a compromise but a choice calibrated to time, labor, and safety. Design here is not a fixed object, unlike an architectural scale project but is a choreography of feasible actions that communities can perform.

Importantly the work stayed honest about limits, I kept the hesitations, exploration, an overall a sense of journey through changing pieces to communicate with the reader on a personal level than a work that hides its mistakes and advertises "Everything went great!". Trials with chestnut trunks and unusable bamboo techniques produced an impractical prototype given the available tools, an insight that only making can deliver to its builder. The *compostiera*, built from leftover wooden palettes, revealed a scale of mismatch between capacity and demand, pushing the project to think and learn to design systems and relationships rather than single showpieces. I don't consider these frictions as failures but as feedback loops that refined both design and governance.

Across the research and making, several propositions crystallize:

-"Decentralizing by design", favoring systems that replicate in small units so that maintenance and knowledge remain local and legible.

-"Teaching the detail", a joint that can be learned is a joint that can be kept on the site, construction details are social technologies that passes around.

-"Programing what's in-between", shade, benches, and paths, when aligned with productive elements, convert gardens from land into common areas.

-"Designing with non-human users first", taking the side of food meaning primarily sizing, spacing, and sequencing for plants and soil, and secondarily forming a way of living around them for humans.

Then what does it mean for architecture to “take the side of food”? It means moving from representational motion to reproduction of cycles, relations, and habits through widespread adoption of small changes and numerous enough of them to matter. Meaning to treat form as a agent for operation and detail as a contract for care. Accepting that sustainability is not a single object by the action of 'ribbon-cutting', but a practice that springs by hands—requiring a collective effort—, seasons—adapting to cycles of growth—, and iterations—improving through trial and error.

If architecture is to be an agent in 'shaping sustainable and equitable food systems', it must design not only "for" communities, but "with" them. Not only spaces, but capacities; not only buildings, but relations. In that sense, the work here is modest in object and ambitious in effect. The side that this thesis has taken is clear.

The following pages are photographs I have taken during the span of 17 months which couldn't find its place in the thesis but has an element of individual story and aesthetics.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Bibliography

Akipek, Fulya. A Research on the Improvement of Soil Building Material with Biological Additives and Factory Production of Soil Building Elements: Bire-Pan. Istanbul Bilgi University, 2025.

Altieri, Miguel A. “Agroecology: Principles and Strategies for Designing Sustainable Farming Systems.” Agriculture, Ecosystems & Environment 46 (1993): 223–24.

Balogh, Allison. “The Rise and Fall of Monoculture Farming.” Horizon, The EU Research & Innovation Magazine, December 2021.

Bartolomucci, Alessandro, et al. “Stress and Depression: Preclinical Research and Clinical Implications.” PLoS One, 2009.

Buettner, Dan, et al. “Blue Zones: Lessons from the World’s Longest Lived.” American Journal of Lifestyle Medicine, July 2016.

Carolan, Michael. The Sociology of Food and Agriculture. London: Routledge, 2016.

Cointeraux, François. École d’architecture rurale. Paris: Imprimerie de Cointeraux, 1790.

Covas, Maria-Isabel. “Olive Oil and the Cardiovascular System.” Pharmacological Research 55 (2007): 175–186.

Crippa, Monica, et al. “Food Systems Are Responsible for a Third of Global Anthropogenic GHG Emissions.” Nature Food, 2021.

Davis, Mark M. “Supply Chain Vulnerabilities in a Globalised World.” Journal of Business Logistics 42 (2021): 117–132.

Eurostat. “Overweight and Obesity – BMI Statistics.” Last modified July 2024.

Ford, Earl S., et al. “Low-Risk Lifestyle Behaviors and All-Cause Mortality: Findings from the National Health and Nutrition Examination Survey III Mortality Study.” American Journal of Public Health 101 (October 2011): 1922–29.

Fraser, Gary E., et al. “Ten Years of Life: Is It a Matter of Choice?” Archives of Internal Medicine, July 9, 2001.

Garvin, Diana. Feeding Fascism: The Politics of Women’s Food Work. Toronto: University of Toronto Press, 2022.

Garvin, Diana. “Fascist Foodways: Ricettari as Propaganda for Grain Production and Sexual Reproduction.” Food and Foodways 29 (2021): 169–190.

Garrido, David A. “The Influence of Leberecht Migge in the Creation of the Modern Productive Siedlungen.” VLC Arquitectura 5 (2018): 29–58.

Guillaud, Hubert. “François Cointeraux et l’enseignement du pisé à Lyon à la fin du XVIIIe siècle.” Les Cahiers de la Recherche Architecturale et Urbaine (2002): 163–180.

Guillerme, André. Les temps de l’eau: la cité, l’eau et les techniques. Paris: Champ Vallon, 1983.

Haney, David H. “‘No House Building without Garden Building!’ (‘Kein Hausbau ohne Landbau!’).” Journal of Architectural Education, 2001.

Harper, Justin. “Suez Blockage Is Holding Up $9.6bn of Goods a Day.” BBC News, March

26, 2021.

Harvard T.H. Chan School of Public Health. “The Nutrition Source – Healthy Eating Plate.” Last modified 2023.

Helstosky, Carol. Garlic and Oil: Politics and Food in Italy. Oxford: Berg Publishing, 2004.

Helstosky, Carol. “Fascist Food Politics: Mussolini’s Policy of Alimentary Sovereignty.” Journal of Modern Italian Studies 9 (2004): 1–26.

Holmgren, David. Permaculture Principles & Pathways Beyond Sustainability. Victoria, Australia: Permanent Publications, 2002.

Hom er-Dixon, Thomas. The Upside of Down: Catastrophe, Creativity, and the Renewal of Civilization. Washington, DC: Island Press, 2006.

Hopkins, Rob. The Transition Handbook: From Oil Dependency to Local Resilience. Totnes: Green Books, 2008.

Howard, Philip H. Concentration and Power in the Food System: Who Controls What We Eat? London: Bloomsbury Academic, 2016.

International Climate Initiative. “Restoring Mexican Mangrove Forests Creates Opportunities for Social Development.” Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection. Accessed August 25, 2025.

Kashdan, Harry E. “Il Talismano della felicità and the Making of Italian Cuisine.” Italian Studies 73 (2018): 318–335.

Kovács, et al. “Spatial Effect of Anti-COVID Measures on Land Surface Temperature (LST) in Urban Areas: A Case Study of a Medium-Sized City.” Időjárás 126 (2022): 203–234.

Lang, Tim, et al. Food Wars: The Global Battle for Mouths, Minds and Markets. London: Earthscan, 2004.

Langhammer, Birgitta, et al. “The Importance of Physical Activity Exercise among Older People.” Biomed Research International, 2018.

Lee, Paula. “François Cointeraux and the School of ‘Agritecture’ in Eighteenth-Century France.” Journal of Architectural Education (2007): 39–46.

Levin, Simon A. “Modularity in Ecology.” Nature 413 (2001): 607.

Marot, Sébastien. Taking the Country’s Side. Lisbon Architecture Triennale, 2019.

Martini, Daniela. “Health Benefits of Mediterranean Diet.” Nutrients, August 5, 2019.

McGovern, Gillian. “Study Finds Nearly 75% of Adults 25 and Older Have Overweight or Obesity.” Pharmacy Times, July 17, 2023.

McMichael, Philip. Development and Social Change: A Global Perspective. Los Angeles: Sage, 2016.

Merlín-Uribe, Julieta, et al. “Environmental and Socio-Economic Sustainability of Chinampas (Raised Beds) in Xochimilco, Mexico City.” International Journal of Agricultural Sustainability 11 (2013): 216–233.

Monteiro, Carlos A., et al. “The UN Decade of Nutrition, the NOVA Food Classification and the Trouble with Ultra-Processing.” Public Health Nutrition 21 (2018): 5–17.

Morelli, Lidia. Le massaie contro le sanzioni. 1935.

Nigri, Andrea, et al. “Evaluation of Age-Specific Causes of Death in the Context of the Italian Longevity Transition.” 2022.

Pagliai, Giuditta, et al. “Consumption of Ultra-Processed Foods and Health Status: A Systematic Review and Meta-Analysis.” British Journal of Nutrition, 2021.

Pavlidou, Eleni, et al. “Wine: An Aspiring Agent in Promoting Longevity and Preventing Chronic Diseases.” 2018.

Pimentel, David, et al. “Environmental and Economic Costs of Pesticide Use.” BioScience 42 (1992): 750–60.

Poore, Joseph, et al. “Reducing Food’s Environmental Impacts through Producers and Consumers.” Science. New York, 2018.

Popkin, Barry M., et al. “The Nutrition Transition in High- and Low-Income Countries: What Are the Policy Lessons?” Agricultural Economics 37 (2007): 199–211.

Poppelreuter, Tanja. “Migge, Leberecht (1881–1935).” Routledge Encyclopedia of Modernism, 2023.

Pretty, Jules. Agri-Culture: Reconnecting People, Land and Nature. London: Earthscan, 2002.

Pretty, Jules. “Agroecology and the Regeneration of Agricultural Systems.” Agronomy for Sustainable Development 38 (2018): 41.

Reimers, C. D., et al. “Does Physical Activity Increase Life Expectancy? A Review of the Literature.” Journal of Aging Research, 2012.

Rey-Hernández, Catalina. “Chinampas Agriculture and Settlement Patterns: The Contemporary Relevance of Aztec Floating Gardens.” Blue Papers 1 (2022): 90–99.

Ritchie, Hannah. “Cars, Planes, Trains: Where Do CO_2 Emissions from Transport Come From?” Our World in Data, 2020.

Ritchie, Hannah, et al. “Breakdown of Carbon Dioxide, Methane and Nitrous Oxide Emissions by Sector.” Our World in Data, 2020.

Sambuco, Patrizia. “The Dynamics, Experiences, and Political Meaning of the Black Market in Second World War Italy.” Modern Italy 27 (2022): 449–468.

Sambuco, Patrizia, et al. “Food Discourses and Alimentary Policies in Fascist Italy and Nazi Germany: A Comparative Analysis.” European History Quarterly (2023): 135–155.

Sandström, Vilma, et al. “The Role of Trade in the Greenhouse Gas Footprints of EU Diets.” Global Food Security, 2018.

Sepideh, Soltani, et al. “Adherence to the Mediterranean Diet in Relation to All-Cause Mortality: A Systematic Review and Dose-Response Meta-Analysis of Prospective Cohort Studies.” Advances in Nutrition, November 1, 2019.

Sofi, Francesca, et al. “Accruing Evidence on Benefits of Adherence to the Mediterra-

nean Diet on Health: An Updated Systematic Review and Meta-Analysis." American Journal of Clinical Nutrition 92 (2010): 1189–1196.

Taylor, Harry Owen, et al. "The State of Loneliness and Social Isolation Research: Current Knowledge and Future Directions." BMC Public Health 23 (2023).

Tubiello, F. N., et al. "Agriculture, Forestry and Other Land Use Emissions by Sources and Removals by Sinks." FAO Statistics Division Working Paper Series ESS/14-02 (2014): 17–67.

Uekötter, Frank. The Greenest Nation? A New History of German Environmentalism. Cambridge, MA: MIT Press, 2014.

UNESCO. "Mediterranean Diet." Representative List of the Intangible Cultural Heritage of Humanity. Accessed August 8, 2025.

Urquiza, Anahi. "Polycentric Resilience in Urban Infrastructure Systems." Earth's Future, 2021.

U.S. Department of Health and Human Services and U.S. Department of Agriculture. Dietary Guidelines for Americans, 2020–2025. Washington, DC: Government Publishing Office, December 2020.

Valin, Hugo, et al. "Regional Self-Sufficiency: A Multi-Dimensional Analysis Relating Agricultural Production and Consumption in the European Union." Sustainable Production and Consumption 34 (November 2022): 12–25.

Vareiro, Daniela, et al. "Availability of Mediterranean and Non-Mediterranean Foods during the Last Four Decades: Comparison of Several Geographical Areas." Public Health Nutrition (2009): 1667–75.

Walker, Brian, et al. Resilience Thinking: Sustaining Ecosystems and People in a Changing World. Washington, DC: Island Press, 2006.

Weber, Christopher L., et al. "Food-Miles and the Relative Climate Impacts of Food Choices in the United States." Environmental Science & Technology, April 2008.

Weilacher, Udo. "The German Garden Reformer Leberecht Migge Believed in Self-Sufficiency." ResearchGate, 2019.

Willett, Walter C., et al. "Mediterranean Diet Pyramid: A Cultural Model for Healthy Eating." American Journal of Clinical Nutrition 61 (1995).
World Health Organization. "Everyday Actions for Better Health – WHO Recommendations." Accessed August 8, 2025.

World Health Organization. "Healthy Diet." WHO Fact Sheets. Accessed August 8, 2025.

World Health Organization. "Physical Activity." WHO Fact Sheets. Accessed August 8, 2025.

Credits

All drawings and photographs are produced by the author.

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Fig 102, 104, 106. Poore, Joseph et al., "*Reducing food's environmental impacts through producers and consumers",* Science, New York, 2018.

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In p 24.
Fig 108. *Istituto di Nazionale di Statica (National Institute of Statistics, 2022.*

In p 25.
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In p 56-57.
Fig 136, 140. Bernd Nowack, Alte Heimat: Die Knarrberg-Siedlung in Dessau-Ziebigk, Altes und Neues von Bernd Nowack, Dessau, October 15, 2013, *" Knarrberg 34 Anfang der 70er Jahre. Die Trauerweide mußte leider wegen Morschheit gefällt werden."& "Der Knarrberg im Jahre 1976, fast alle Häuser schon ohne wilden Wein (Ich ganz links mit Musikerkollegen meiner Band Yo-Yos)"*, blog post, accessed September 4 2025. https://barrynoa.blogspot.com/2013/10/alte-heimat-die-knarrberg-siedlung-in.html
.
In p 59.
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Fig 306. Austin&Ueda (1970), *"Bamboo"*, Weatherhill, New York & Tokyo.

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Fig 401. Denes, Agnes, *"Agnes Denes among her wheat crop on the Battery Park landfill"*, 1982. Photograph. Courtesy Leslie Tonkonow Artworks + Projects. The Guardian, "A field of wheat on a $4.5bn patch of New York," July 18, 2022.