

Reflection Paper

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Relationship between your graduation topic and studio topic

This graduation studio of Complex Projects focusses on the development of Beirut after the catastrophic explosion that happened in August of 2020. The studio organises students in groups wherein each student researches a different functional typology. Examples are: housing, leisure, mobility and education. This paper focusses on education, which is later combined with agriculture to form the two main research topics for the thesis.

Relationship between research and design

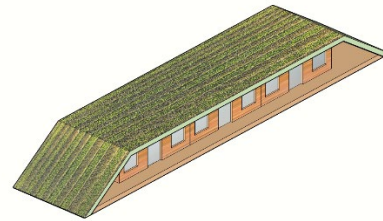
How can agriculture education facilitate the people of Beirut? That is the main question which this article is exploring. The Complex Projects Lebanon is currently in one of the world's worst financial crises in recent history. The hyperinflation of the Lebanese Pound in combination with its heavy dependence on food imports resulted in increased poverty rates. This made it difficult for lower income households to provide meals for their children. The lack of basic nutrition made families to rely on extra financial help from their children, often forcing them to start working at a young age and drop out of school. In an attempt to combat these challenges, the research examines the relation between education and the potential for an improved agriculture sector. The agriculture sector in Lebanon's current sector experiences limited funding by the government which resulted in a lack of knowledge. This makes farmers resort to unsustainable practices that make inefficient use of resources and damage the environment. This creates a missed opportunity as Lebanon is one of the most arable countries in the Middle East with the potential to grow a wide variety of high value crops.

The project aims to combine agriculture and education within one facility which will be the Agriculture Campus, with as goal to provide future generations with improved skills in sustainable farming and thus improve their self-sustainability. The key to more sustainable food production is biodiversity. The design takes inspiration from Strip Cropping, a research that was conducted by Wageningen University (2020) which focuses on a farm layout that balances efficiency and biodiversity. The layout creates strips of which the width varies between 3, 6 or 9 meters; these have shown to improve plant and insect life. The crop groups within the strips will be rotated seasonally in order to maintain soil fertility. The building mass will align with the strips so the crops can rotate over the building. This creates an interaction between the classrooms and the different crop groups which vary every season.

Furthermore, principles within structuralism were used as a result of studying cases studies as the buildings designed by Herman Hertzberger. He uses a single module to build up his project and uses hallways and stairs as study and meeting spaces, rather than solely circulation space. The modules within the project are created by placing three classrooms in a row, aligned with the strip. The strip of crops remains continuous by raising it on top of the module. These modules will be assembled into varying arrangements, creating various interactive spaces in between them.



Strip cropping (Wageningen University, 2020)



Project module (Broersen, 2022)

Research method and approach chosen by the student

There were three main methods used in conducting the research, these are literature research, interviews and casestudies. Various papers and interviews were conducted to gain knowledge about the state of the Lebanese education and agriculture sector, and its potential for improvement. Notable examples are reports from the FAO (Food and Agriculture Organization of the UN) about Lebanon's challenges and opportunities in its agriculture sector (2021) and interviews with Lebanese professors that also express this potential. Cases studies are used to study the programs of Lebanese schools, agriculture schools, and innovative schools like the examples of Herman Hertzberger. Also, a personal visit was made to Warmonderhof Agriculture School in the Netherlands where a employee guided the student around the facilities and explained the logistics within the school.

Relationship between the graduation project and the wider social, professional and scientific relevance.

The lack of nutrition as is a prevalent challenge in Lebanon, but also in a global setting. The thesis is an attempt at addressing the issue through the establishment of an educational institution, and with it the promotion of self-sustainability. The thesis refers to and aligns with Unesco's sustainable development goals, which aim to inspire developing countries around the world to develop in a sustainable manner. The thesis could be an example of one approach, in inspiring future research within the field to address (self)sustainability challenges in developing nations through the lens of architecture.

Ethical issues and dilemmas

In theory, the Agriculture Campus might offer a solution for the high dependence on imports with inflated food prices. However, in practice it remains difficult to estimate how the Lebanese people from lower income families will respond to such education. The values that are being thought at the school might not align with their family culture, which will require more time and effort to understand as a Dutch student who grew up in contrasting circumstances.

A design issue is the use of land, the building encompasses a low-rise building which covers a relatively widespread area. In Beirut, most land is sold by the government to private investors, which will often develop it into luxury high-rise apartment building that provide nothing average citizen. Therefore, it is very unlikely for the government or a local private institution to invest into the Agriculture Campus, even if it has a chance to provide value to the public.

FAO. (2021). Lebanon's agricultural sector: challenges and opportunities.

<https://www.fao.org/publications/card/en/c/CB5074EN/>

Wageningen University & Research. (2020). Strip Cropping.

<https://www.wur.nl/en/project/strip-cropping.htm>