KALAMAJA MAJA

A House in Northern Tallinn

Alvar Aronija, abstract

KALAMAJA MAJA is a housing cooperative located at Vabriku 49 in the city district of *Kalamaja*. The building features 12 dwellings, 2 commercial spaces and a sauna. The building seeks to respond to the existing cultural and traditional contexts, while solving contemporary obstacles in an environmentally conscious form.

Due to Estonia's strategic location by the Baltic Sea and the Gulf of Finland, it has been the subject of many occupations and foreign rule. Although gaining (and regaining) its independence during the 20th century, the vernacular and traditional Estonian architecture has for the most part been ever present for as long as Estonians have inhabited the area. I've chosen to illustrate this history through eight dwellings. The investigation of these case studies have resulted in models, plans, sections, and elevations, as well as more in depth texts found in the pre-diploma.

Around a thousand years ago Estonia was mostly an agrarian society represented by the *Rehielamu* (1000 - 1850) and didn't industrialize until the end of the 19th century. This sudden rise in industry also accelerated urbanization and cities saw a housing shortage. The older urban typologies that represented the feudal system as the *Vanabalti Maja* (1700 - 1900) were replaced with tenements of the *Lenderi Maja* (1880 - 1920), and *Tallinna Maja* (1920 - 1940) types that housed the emerging working class. These typologies feature the traditional Estonian masonry stove, both as a means of heating and cooking.

By the end of the Second World War a third of the housing in Tallinn was lost due to bombing and subsequent fires. During the Soviet occupation these vacant lots were filled by the rational and egalitarian proto-prefab typology of *Khrushchyovka* (*Хрущевка*, 1950 - 1970). This soviet typology graduated to a more comfortable *Brezhnevka* (*Брежневка*, 1970 - 1990) and saw the emergence of Tallinn's vast satellite cities of *Lasnamäe*, *Mustamäe*, and *Õismäe* during the 70s and 80s.

The 00s saw an economic boom in Estonia as trade between neighbouring Sweden and Finland opened after the Estonian restoration of independence. This saw the transformations of many industrial areas near the city centre that were left vacant after the fall of the Soviet Union. These newly transformed industrial complexes featured rather capitalistic dwellings that - unlike their Soviet counterparts - catered to a much narrower section of the demography. An example of this development is the *Fahle Maja* (2006). The Estonian economy recovered to pre-recession levels by 2012, and by the second half of the 2010s the economic boom had worn off. Since then the economic growth has been slowing. The *Kalevi Panorama* (2019) and similar investment projects being completed around the end of the 2010s are the remnants of the economic boom.

The main means of energy production in Estonia is based off fossil fuels. Estonia has large deposits of oil shale and makes it the only country in the world to have it as its primary energy source. Oil shale is a sedimentary-rock with high levels of kerogen. Oil extracted from oil shale can be used as a substitute for crude oil but is much more costly both environmentally and in production.

According to EDGAR (Emission Database for Global Atmospheric Research) Estonia produced 18.6 tons of CO2 per capita in 2018, being the highest in the EU over Luxembourg (16.9 ton co2/cap) and The Netherlands (9.5 ton co2/cap). EU emissions per capita averages to 6.78 tons. Renewables in Estonia make up 28,6% (2015) according to EREA (Estonian Renewable Energy Association). Although Estonia meets the '*Europe 2020*' and the '*20-20-20-target*' - strategies set by the European Commission - It's emissions needs to lower further as the CO2 per capita is one of the highest in the world.

There are three main topics I wish to address in this diploma project.

Firstly, there are two main shifts in the history of Estonian dwellings. One occurring after the second world war as construction of wooden structures cease in favour of socialist mass housing projects, and the second occurring after the break up of the Soviet Union and the introduction of the free market economy. Contemporary dwellings in Estonia are often interest-motivated and marketed as a 'lifestyle'. Although traditional wooden housing from a century ago are becoming increasingly popular, the market favours concrete, glass and *chic design*. I see a potential in traditional architecture to inform contemporary dwellings.

Secondly, the economic growth is stagnating, bringing with it slowing of the real estate. Already fewer building permits are being given out to new projects, a trend that is most likely to continue in the coming years. As a result we'll see fewer large housing projects. The motivation for the dwellers to move houses will slow as well. Therefore dwellers will reside in their homes for much longer. Here lies an apparent requirement for dwellings with high adaptability to different household configurations.

Thirdly, Estonia needs environmentally friendly and effective buildings. As previously stated, Estonia has a tradition for firewood stoves. Estonian masonry stoves in apartment buildings fell out of favour with the introduction of natural gas heating provided in the Soviet *Khrushchyovkas* during the 50s. Although many single family homes are still built with masonry stoves, new apartment buildings with masonry stoves are uncommon. An apartment building with masonry stoves will drastically lower the heating costs and energy consumed, overall lowering CO2 emissions. 50.6% of Estonia is covered by forests and has a growing forestry industry. Furthermore the act of lighting a stove will bring with it a tangible connection to the temperature in the home.

The site of the project lies is *Kalamaja* (lit Est. Fish house), a city district in Northern Tallinn. This area is known for its prominent and well-preserved wooden architecture in the styles of *Lenderi Maja* and *Tallinna Maja*. Since most of the WWII bombing was focused on southern Tallinn, the *Kalamaja* region remained incorrupt. The funding of *Telliskivi Creative City* south of the railyard also helped gentrify the area, in turn prompted refurbishments on the existing wooden structures. It is now an attractive district for living and leisure and is often regarded as the hipster district of Tallinn.

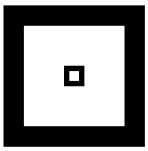
The address of the site is Vabriku 49 and has been vacant for some time since the 60s. The building standing on the site was symmetrical to the building on the south-eastern side of the site - Vabriku 47.

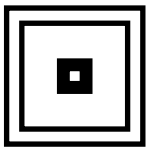
My proposal features a cuboid building propped on a base which itself is sunken into the ground. The building is comprised of a ground floor containing two commercial spaces and a sauna, and three floors of dwellings. There is an additional floor on the roof for storage. The three floors of dwellings cantilever from the base on all sides creating a canopy by the base of the building. The dwelling floors themselves feature a double skin; one facade running vertically along the lines of the base, and the second running on the perimeter made of glazing. The space between these two skins house the winter garden which functions as an extension of livable spaces on the inside. Each floor contains four corner-dwellings of the same size (75 sqm) and configuration. The building is built out of cross laminated timber elements with the exception of the base which is concrete.

The dwellings feature a central core containing the masonry stove and the bathroom.The core features both water and airways. Surrounding the core is the kitchen, corridor with storage, and three living spaces - all with large sliding doors leading to the winter garden. The winter garden features glazing that can be opened and folded back the full length of the facade. The three living spaces along the winter garden are all the same size, which helps with flexibility and use of the rooms.

Upon entry, you're presented with an unobstructed view through the kitchen, into one of the three living spaces, then the winter garden, and the outside beyond.

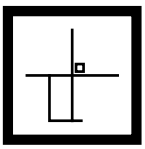
The organisation of the apartment is based off a central source of heat - a point in the middle of a square. Here lies the relationship between the two elements - heat source, and the perimeter wall. One of these elements must become heat retaining (ie. massive) as to efficiently heat the space.

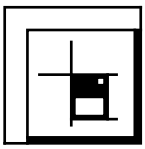




Conventional building strategies involve creating a massive perimeter wall as to achieve low R-values, and a heat source with low heat retention. This strategy achieves an even temperature distribution in the space, but in turn sacrifices a possibility for an open facade as perforations compromise it's efficiency

The antonym of that scenario is a massive core with high heat retention, and two thin outer walls with high R-values. In this scenario the heat is concentrated in the space immediately around the core and gets cooler the further away one moves. The air between two outer walls will help slow the escaping warm air, but in turn allow for a light and open facade.





The dwellings in the project are based off the latter example. Given the Estonian seasons of warm summers and cold winters the living situation will vary in an apartment of this configuration. During the warm summer nights as one is seeking for cooler spaces the bed may be dragged out into the winter garden for a comfortable night of sleep. Or on the contrary, during winter the dweller can close winter garden (which by this point can be used as extra storage for pickled harvest), throw on more wood into the stove and move their bed next to the heat retaining wall.

This project tries to solve many challenges: acknowledge and respond to the traditional and cultural heritage of Estonian architecture and way of life, creating flexible spaces for dwellers that can live in their dwellings for a long time, and also provide an environmentally conscious and economically efficient building that stands in relation to its context.