

Building the Ecotone

Introduction

With this project, we want to develop a new form of neighborhood where agriculture, building processes and cooperative housing come together as an alternative to low-density and car dependent suburban housing. We want to address the issue of the suburban sprawl based on the continuous construction of detached homes and the ensuing degradation of agricultural areas, woodland and biodiversity. The dream of a single family house with a private garden is no longer sustainable. The only way to replace this individualistic dream is to propose something stronger, a living and productive Ecotone based on cooperation and in close relation to nature.

The word “Ecotone” was first coined by the naturalist Alfred Russel Wallace to describe the transition area between two biological communities. It is a combination of the word “ecology” and the Greek word “tonos” or tension. In other words, it is a place where ecologies are in tension. Located between city and countryside, between man and nature, Hjertelia is a perfect example of such a meeting place. It is a sharp boundary line where synergies have to be created, where the city can expand without degrading soils, where agriculture can meet biodiversity and a vibrant community can take place in a metabolic way.

Our approach does not only apply to Hjertelia but to the entire Hønefoss area. In order to respect the Sabima 2013 criteria of land degradation neutrality, a minority of Hjertelia’s land area is planned to be built. Moreover, we intend to compensate all loss of land by introducing green spaces in downtown Hønefoss. To do so, we need to rationalize and optimize the area dedicated to vehicular circulation and parking spaces. We rely on the overall Hønefoss mobility strategy of creating a continuous network of footpaths and bicycle paths along with new bridges. This way, we can blur the border between urban and rural environment by introducing biodiversity in the city of Hønefoss and connect the downtown to Hjertelia through sustainable transportation.

With the current COVID crisis, we have witnessed an unprecedented development in home offices. This has had two main consequences: a wide call for nature and outdoor space, and an increased isolation of workers. We believe Hjertelia can be a response to this situation by creating a living and working environment directly connected to nature and to a dynamic community. To avoid the trap of building a “dormitory village” we need to create the condition of a mixed neighborhood before densifying it. This new district has to grow in an organic way, the residential function being only one of the elements that make a city.

The long delay before the arrival of the new train line gives the possibility of a staged development of the site before the actual demand of new housing in Hønefoss. This allows us to activate the site and make it known as a new district of the city before actually building housing.

During the very first phase of development, we will focus on the cooperative development of organic farming in Hjertelia. We firmly believe that a sense of place can only arise if there is a deep sense of community and shared values. To do so, we want to develop the already existing community gardens and extend them to the entire site.

Once Hjertelia has become this “organic agricultural hub” connected to Hønefoss, we will foster the metabolic development of the neighborhood through prototyping. In this phase, workshops and 1:1 prototypes will be built to serve as an attraction to the area, making it known and preparing it for future densification. In this phase we will not propose an actual building but a framework of development.

The last phase will be the implementation of the housings themselves. Hjertelia will become a large scale test for a sustainable, productive and inclusive community, connected to Hønefoss yet having its own autonomy. Cooperative production of housing will be at the center of this stage with a wide offer of residential typologies and residences for people of all ages while offering flexible spaces for work and other activities.

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Phase 1: Community

The arrival of a new railway line in Hønefoss will obviously be a powerful leverage for undergoing a major transformation of Hønefoss and its surroundings. However, the delay of the line has made the private investors cautious making the municipality unable to trigger the numerous plans of intense development of Hønefoss and Hjertelia. With this project we want to put an end to this status quo by proposing actions that the municipality will be able to take at once in order to create a positive dynamic of development.

The very first action is to connect Hjertelia to Hønefoss through a new path for bicycles and pedestrians only. It will run from the new bridge between Schjongslunden and Hjertelia to a new central plaza built around the old school. This plaza is the heart of the future neighborhood and will concentrate all the public buildings of Hjertelia.

Surrounding the plaza, the site will be divided in agricultural plots to restore Hjertelia to its primary agricultural purpose. The analysis of the site shows that agriculture have evolved a lot the past 50 years and that theses plots do not fit anymore to grain cultivation. Indeed, today, an average wheat exploitation is 50Ha. Being 5Ha big, the site will never be able to generate an acceptable income for farmers. Nevertheless, a classic fruit exploitation is around 4Ha and a classic market garden is around 1 Ha. The idea here is to recreate appropriate plots close to city center and to develop new operating models directly connected to economic opportunities. Hjertelia could become a model for the agricultural sector in a suburban region.

The overall lay-out is based on an 8m square grid, oriented following the slop of the site in order to maximize the solar gain for the crops. This 8m grid is based on the average width of market garden plots. The unique situation of Hjertelia and the quality of its arable lands make it the perfect place for food production. Nonetheless, we can't follow the classic agriculture model based on monoculture that took place here. A new paradigm based on community-supported agriculture and small-scale organic farms should be developed.

The old-school is the perfect place to implement trainings in organic agriculture. We will refurbish it to host classes and a new neighborhood centre where share-holders will meet to discuss the future development of the site. Among the actors involved are not only the Hjertelia Council but also the neighboring famers, the Kragstad farm and the inhabitants of the future housing development which will form a local committee in charge of the local development of Hjertelia. For young generations, the area will become an appealing example of new operating models and thus encourage them to pursue a working life in agriculture.

This first public building of Hjertelia will also host a community restaurant and a market hall. They will both open during week-ends and provide a commercial opportunity for all the organic farms of the area. Not only the products of Hjertelia will be sold but also those of neighboring farms. During the no-market days lectures and events may be organized in the magnificent scenery of Hjertelia.

In our scenario, Hjertelia is set to soon become a regional hub for community-supported agriculture and a place of debate and exchange around the new ways of producing food. It is planned to become an alternative to intensive monoculture. Its close proximity to woodland and ravine allow it to become an ecotone between agricultural and natural spaces.

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Phase 2: Attraction

In this phase, we will prototype solutions in a local test-and-try attitude to bring amenities and attractions to the area. The whole site will become a building school focused on sustainable technologies like rammed earth and timber construction.

Next to the former school and the market hall, we will build a workshop that will become the third public entity of the plaza. As for the agriculture school, the workshop will provide visitors with vocational training in rammed earth and wood construction. It will provide with the production capacity to build 1:1 prototype on site. The current craze for low-tech building processes like wood-frame, rammed earth construction or thatch need to be promoted. Partnership has to be created with the local construction sector, but also with architecture and engineering universities.

The 1:1 prototypes are conceived as exo-skeletons that will provide a structure on which the future housing will be grafted. They are designed as rammed earth towers and will host the services and the future vertical circulation to the housing units. The site is thus prepared for future implementation of housing without preconceived conditions of density or timeline. This allows a flexible metabolic development of the site.

This whole phase will not only put Hjertelia on the map as a manufacturing hub, it will also transform it on a large scale test area for modern settlement. This test and try method gather share-holders and future inhabitant around a « pratical utopia ».

The workshop will also host a reparation Fab-lab to spread the culture of repair and reuse among citizens. Along with a reflection on building processes, this will trigger an interest on manufacturing processes at large. A start-up incubator could also take place to promote economic initiatives on sustainable manufacturing.

This building development of the site will be limited to the land strips left over by crops. Hjertelia has to become an ecotone between city and nature and to do so constructions should not obstruct cultivation nor destroy biodiversity.

These production capacities will also allow to populate the site with amenities and public services that will benefit directly to Hønefoss and the whole area. Simple cabins will be built on the south part of the site in direct connection with the forest and the ravines to host visitors from outside Hønefoss, with work places connected to nature or sauna house. Playgrounds are to be implemented on the central plaza wich can also be used as a the stage for music or even construction festivals.


Phase 3: Hjertelia village

Thanks to the social and productive super-structure built during phase 1 and 2, the site will finally host a self-built housing development. The final phase will be a large scale test for modern settlement. The housing blocks will be built in a metabolical process around the exo-skeletons by groups of builders. The flexibility given by the design of the earth towers allow a wide range of form and typologies, from small individual apartments to duplex of even stacked houses.

The choice has been made of very vertical housing blocks to minimize footprint in order to leave as much land as possible for cultivation. Compact housing units up to 4 levels are an alternative to the classic row houses scheme and achieve a high density on site. Pathways are shaped between housing units connecting the fields and composing a fine network of green corridors.

All the building elements are prefabricated on site and, apart from the vertical circulations and services

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made of rammed earth, all the housing are planned as timber constructions and will comply with the highest energy and environmental standards. The massive use of timber allow us to aim for a complete carbon-neutral production process and together with the rammed earth structures allow a very high level of recyclability and reversibility.

Far from the technician ideology that drove the building industry for the last decades, we want to return to low-tech technologies in building and agriculture. The approach allow us to propose both a contemporary and environmental character to this neighborhood. By rooting it in the local processes of building and growing food, we avoid the trap of having a completely disconnected, off-the-ground project.

Energy consumption is maintained very low thanks to the solar gains through the important glazed areas. Photovoltaic electricity production comes from rooftop solar panels. Overheating in summer is avoided by external blinds. The rammed-earth structures act as ventilation chimneys and provide housing with natural ventilation. Moreover the thermal inertia of those massive elements allow a temperature control throughout the day and the use of free-cooling at night. Zero primary energy is planned to come from non renewable sources.

The ground floors will be occupied by collective program: co-working spaces, offices, collective kitchens, laundry or kindergarten and eventually housing. This flexibility allow the housing units to be used by people of all-ages by creating communal places to eat, meet and interact for students or elderly people. Gardens are created in between housing blocks and all apartments or houses have a direct view towards the fields and the near forest.

Wastes will be managed in a sustainable way through a circular reuse of organic wastes. The reparation unit inside the workshop will be be accessible to all residents of Hjertelia to promote the reuse of objects.

A third public building will take place on the piazza next to the agricultural school and the workshop. This "house for all" will gather all actors interested in the production of housing. It will be a place of exchange between future residents, the public authority and private developers. This community house will work as a small town hall of Hjertelia, providing assistance to the vulnerable population living on the sites and hosting the community council of the area.

Conclusion:

Our project is a prototype for the future development of Hjertelia, not only in terms of spatial organization but as a proposition of cooperation in agricultural development, housing construction and local governance. This pilot project can constitute a framework of development for the whole Hjertelia area and severals plots can host this development scheme.

Developpers can be associated to this model which allow high density without degrading arable lands. The housing typology can evolved and be built by local contractors instead of group of builders. Whatever the development scheme chosen by the local authority, this project has to be community-driven and the criteria of land degradation neutrality has to be paramount. The agricultural lands must be primarily used to host an important biodiversity and the housing should have the smallest possible footprint.

If those conditions are met, Hjertelia is to be a model of productive ecotone where nature, agriculture, manufacturing and housing interact with each others and grow in a metabolic way.

This the way our project should be understood: as an example of attitude rather than a rigid design.