
FOOD
VS.
CITY

FOOD vs. CITY

> RE-ARRANGING THE URBAN AND RURAL

U+A/DL
MASTER THESIS IN ARCHITECTURE
Chalmers University of Technology
Gothenburg, Sweden.

Anna Weber, Spring 2013

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Examinor: Ana Betancour

ABSTRACT:

We have lived in cities for thousands of years, but yet we are as dependent on food as we ever were. Food is the source to our existence and the cities we live in would not exist without farming.

The city-centric population is due to double in 2050 and when it does, all the arable land on the planet will not be sufficient with the need for food. Yet we appear to live to live independent from the land that feeds us.

In a Swedish perspective the relationship between the land and the city is most urgent in the region of Skåne. The region has the most arable land in Sweden and it is also where the land gets the most exploited. To reclaim exploited arable into food production again is nearly impossible.

The current growing city transforms its surroundings into hardscapes (agriculture land turned into asphalt or buildings) which pushes food production further away from the consumer. The source of food is in another country, the process of making the food is controlled by a few large companies and the consumer meets the food in car-bound big box areas around the cities.

It is necessary to involve all steps of food production in our cities, to increase food knowledge, to localize the food-chain and to prepare for the future.

This thesis explores strategies and prototypes for how land and city can be treated with same value, how the urban and rural can co-exist instead of being conflicting. The site is located in the south-west of the region between the two major cities Malmö and Lund, and is defined by the existing infrastructure and its proximity to rail bound communication

CONTENT:


01
SPONSOR
Rath's
CEDAR VALLEY
BACON
Swift's
Premium
HAM
SKINNED

BACKGROUND

To understand how the food and the city are bound together we must understand their common history. Agriculture and Urbanism was born at the same time and ever since the development of our cities have been marked by their source of food.

The point of departure for this thesis has been the dicision by the County Administration Board of Skåne to aim for zero exploitation of arable land.

A dicision that would change the perspective on what we consider when developing cities today.

1.1 HISTORY

Timeline showing crucial events in history that has shaped the relationship between the urban and the rural, between the food and the city.

HUNTING AND GATHERING SOCIETY

Humans lived bound to nature as hunters and gatherers. Hunting for animals and gathering plants, nuts and seeds. Lived in herds of 3-6 families (approx. 20 people) and was not settled, moving around to find new places for food.

THE BIRTH OF AGRICULTURE AND URBANISM

About 1200 years ago was the birth of both agriculture and urbanism. When humans discovered grain and learned to tame their source of food they could settle and form a city.

THE ROMAN EMPIRE AND THE FIRST FOOD MILES

Rome had in 1st century AD more than 1 million inhabitants. To be able to feed this large population would be impossible if they did not have their sea access. They got hold of huge grain reserves and imported food from far away.

900. Crop is no longer wild, it depends on humans for survival.

1550. The first chocolat arrives in Europe.

≈ 1750 Tegskifte
Land reform. All farms got equal land area calculating equal soil quality.

≈ 1850 Storskifte
1807 Laga skifte
1827 Tegskifte
Each farmers share was collected and placed in one ideal place. Poorer soil was equal to more land and vice versa.

1956. Southgale - the first enclosed shoppingmall by Victor Gruen.

FOOD

1900
POPULATION IN SWEDEN 4,6 MILLION
50 % works as farmers

INDUSTRIALIZATION AND ITS INVENTIONS

With industrialization came the train, before this animals had to walk in to the city themselves and now ways to preserve food was invented, such as the tin can and the refridgerator.

MORE INVENTIONS IN A MODERN WORLD

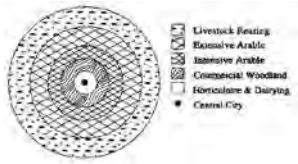
After industrialization, everything changed and bringing food into the city was no longer a big effort. Animals could for the first time exist anywhere and grow any size. The car and the shopping mall that really marks more or less the end of an apparent relationship between the food and the city.

MORE INVENTIONS IN A MODERN WORLD

After industrialization, everything changed and bringing food into the city was no longer a big effort. Animals could for the first time exist anywhere and grow any size. The car and the shopping mall that really marks more or less the end of an apparent relationship between the food and the city.

2000
POPULATION IN SWEDEN 8,9 MILLION
1,5 % works as farmers

1826. The isolated state - Johann Heinrich von Thünen. Analyze of the pre-industrial city as surrounded by a farm belt. If the city were on a river it would distort the organization and stretch along the river instead.



CITY

1.1 HISTORY

KITCHENS

1910

1920

1930

1940

MALMÖ CITY

1910

1920

1930

1940

1950

1960

1970

1980

1950

1960

1970

1980

Protester mot byggnad på åkermark

PROTESTS AGAINST BUILDING ON ARABLE LAND.
Sydsvenskan 2nd of October 2008

"Ge åkermark skydd som riksintresse"

GIVE ARABLE LAND LEGAL PROTECTION,
Sydsvenskan 23rd of May, 2009

Nollvision ska freda åkrar från nybyggen

A VISION ZERO WILL SAVE FIELDS FROM NEW SETTLEMENTS.
Sydsvenskan 26th of June 2012

Viktig åkermark byggs bort i Skåne

IMPORTANT ARABLE LAND IS LOST TO EXPLOITATION IN SKÅNE
Kristianstadbladet 4th of January 2013

”Vi behöver mer åkermark”

WE NEED MORE ARABLE LAND
Sydsvenskan 3rd of February 2013

1.2 POINT OF DEPARTURE

The wish from the County administration Board of Skåne to ban exploitation on arable land.
A decision like this means that the city cannot grow like it has always grown.
A decision like that means that something is wrong in the relationship with the rural and the urban, that they are two opposites that is conflicting
and are not linked together.

What is the background for a discision like this, 1.3-1.5 presents the underlying issue on a global, national

Länsstyrelsen
Skåne

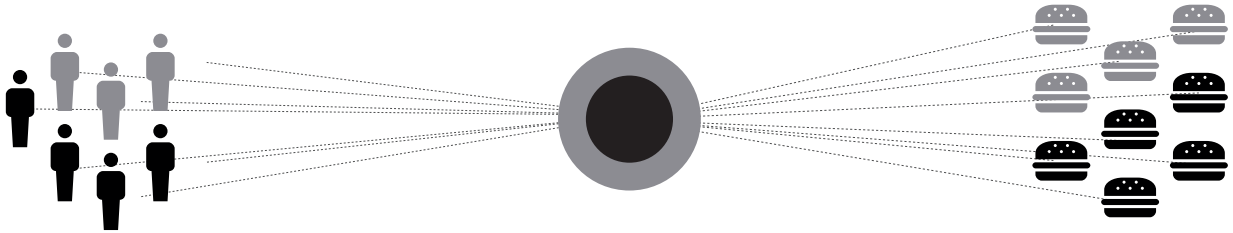
1.3 WHY - GLOBAL?

If we look at the global situation regarding food and cities we can see that we are facing a challange.

By 2050 the population on the planet will reach 9.1 billion people. This growing population..

..will migrate from rural to urban areas and by 2050 - 70% of the population will live in cities.

In order to feed this larger, urbanized population food production must increase by 70 %.

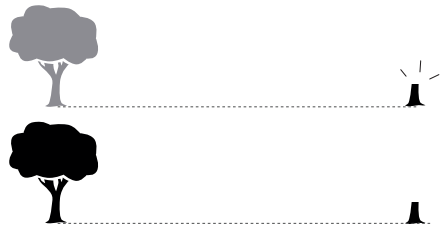


Today nearly 40% of the globe is covered with agriculture...

..and 70 % of the fresh water on the planet is used for agriculture.

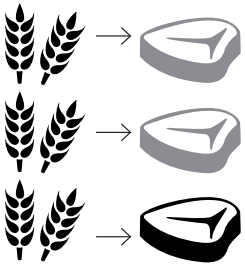
The expansion for more farmland will mainly take place in sub-Saharan Africa and Latin America. A considerable part of this land will come from..

.. rain forrest clerance. In other developing regions, almost all suitable land is already in use.

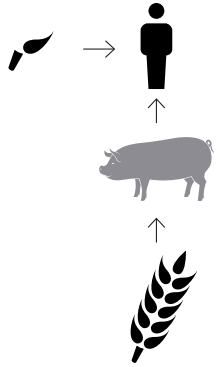


1.3 WHY GLOBAL?

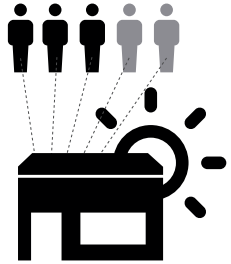
Pattern of food consumption throughout the world is getting more similar and by 2050 the meat consumption will have doubled..

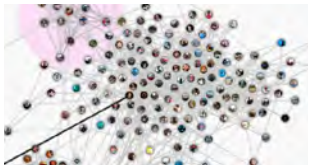


.. this is a problem because meat is an environmental costly food to produce. It takes 11 times more grain to feed a person if it passes through a cow first.

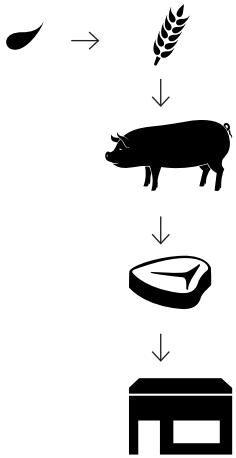


The urbanized population will to further extent live in a global summertime where they can enjoy the possibility to buy fresh salmon 24/7 all year around.

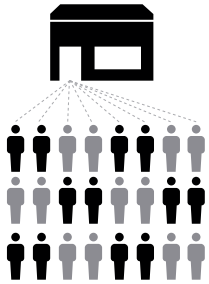




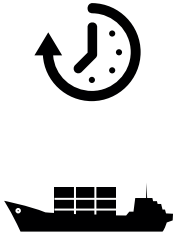
To make this possible the city relies on ‘food clusters’, companies that controls the food from gene to shelf.



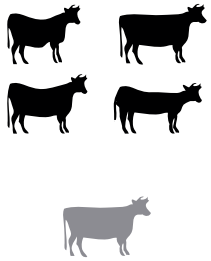
The source of food is becoming more concentrated and never in history have so many been fed by so few.



To make it possible to feed the growing city food production relies on transport, efficiency and just-in time eliveries.

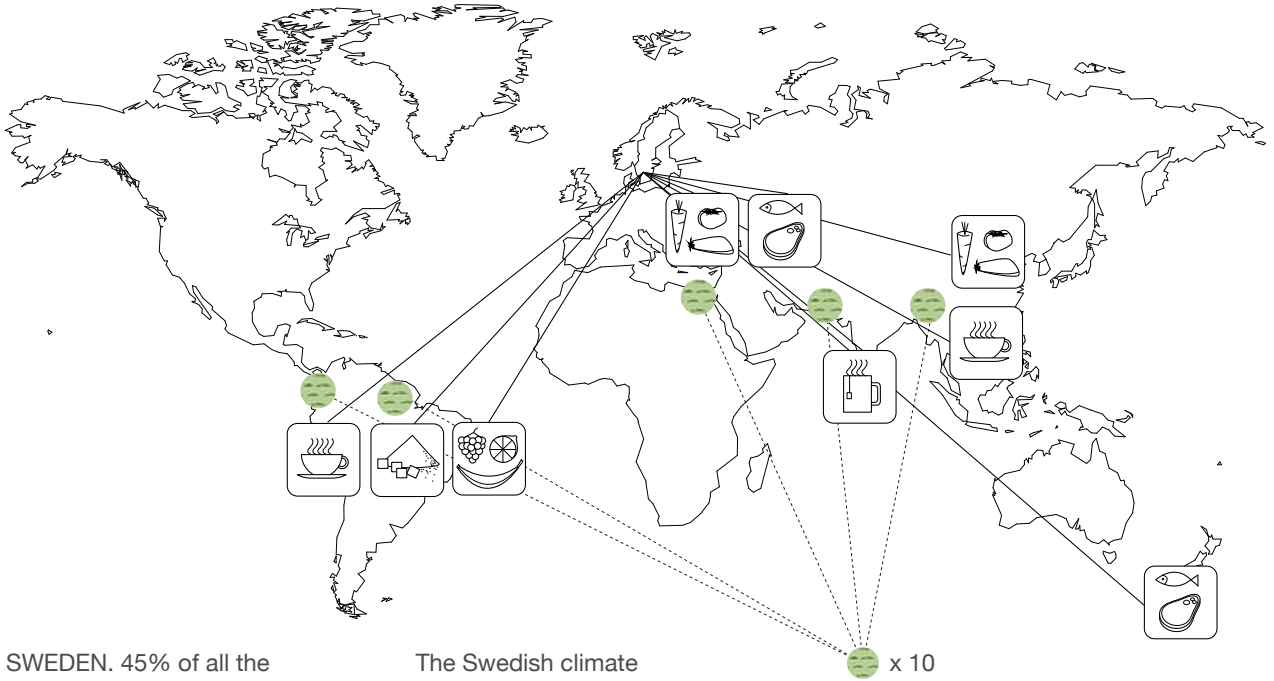


In the name of efficiency the variety of foods worldwide are reduced. Over 90% of the milk in America comes from one breed of cows. variety, 90% of the eggs comes from one breed of hen.



1.4 WHY - SWEDEN?

If we look at the Swedish perspective we see that we lack of knowledge. For more than 50 years, Sweden has had a constant increase in food access, but we dont ask where food is from.



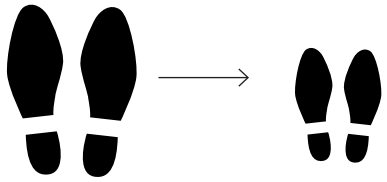
SWEDEN. 45% of all the food consumed in the country comes from import, in 1995 the figure was 25%.

The Swedish climate implies good acces to water and less extremes of drought compared globally.

x 10
The loss of 1 ha arable land in Sweden is compensated with 10 ha of land elsewhere.

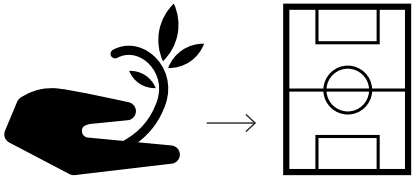
Sweden is a food aware country, in 2011 365 cookbooks were released and on TV 25 cook-shows were screened every week. .

.. in the same year 1 million tonnes of food were thrown away.



An avarage swede has a footprint of 0.4 hectars..

..available on the planet is 0.3 hectars per person.

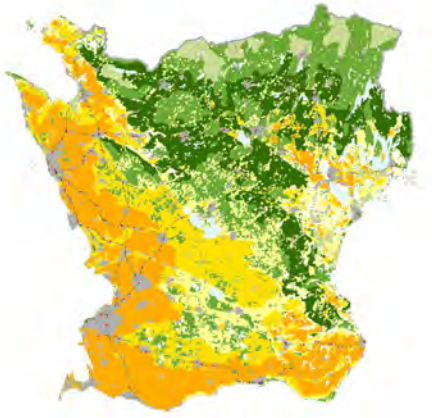


The sales of organic and ecological products keeps increasing..

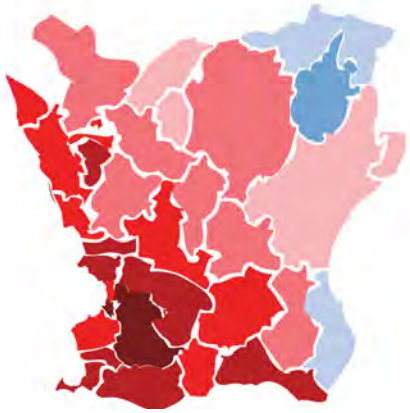
.. but between 2006 and 2010, 3000 hectars of farmland was exploited in Sweden.

1.5 WHY - SKÅNE?

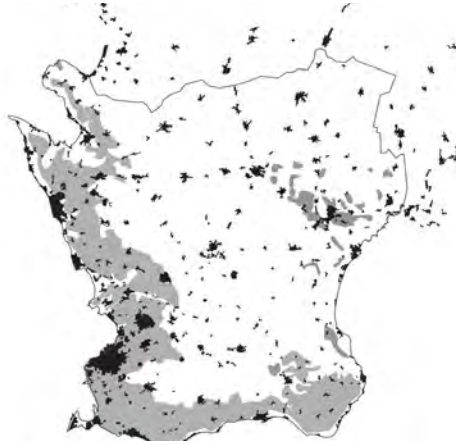
If we zoom in further and look upon Skåne it is clear that arable land has no value. Skåne is one of the most expansive regions in Sweden and has a rapid population growth.



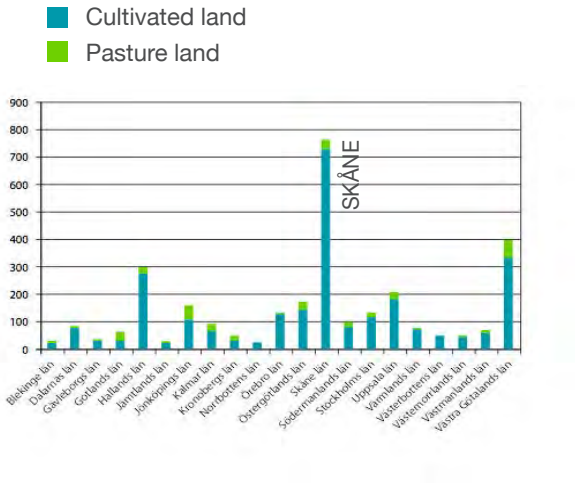
LAND USE. Yellow is arable land and green is forrest. The darker yellow is the most valued arable land.



POPULATION GROWTH.



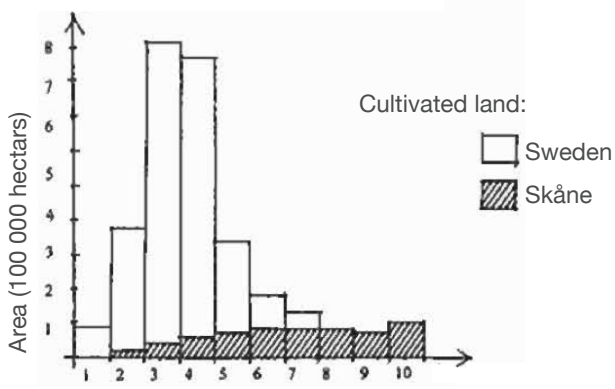
CITIES + ARABLE LAND.



ARABLE LAND. Graph showing the exploitation of cultivated- and pasture land per county in Sweden between 2006 and 2010. The most arable land is lost in Skåne.

1..2..3..5..6..7..8..9..**10**

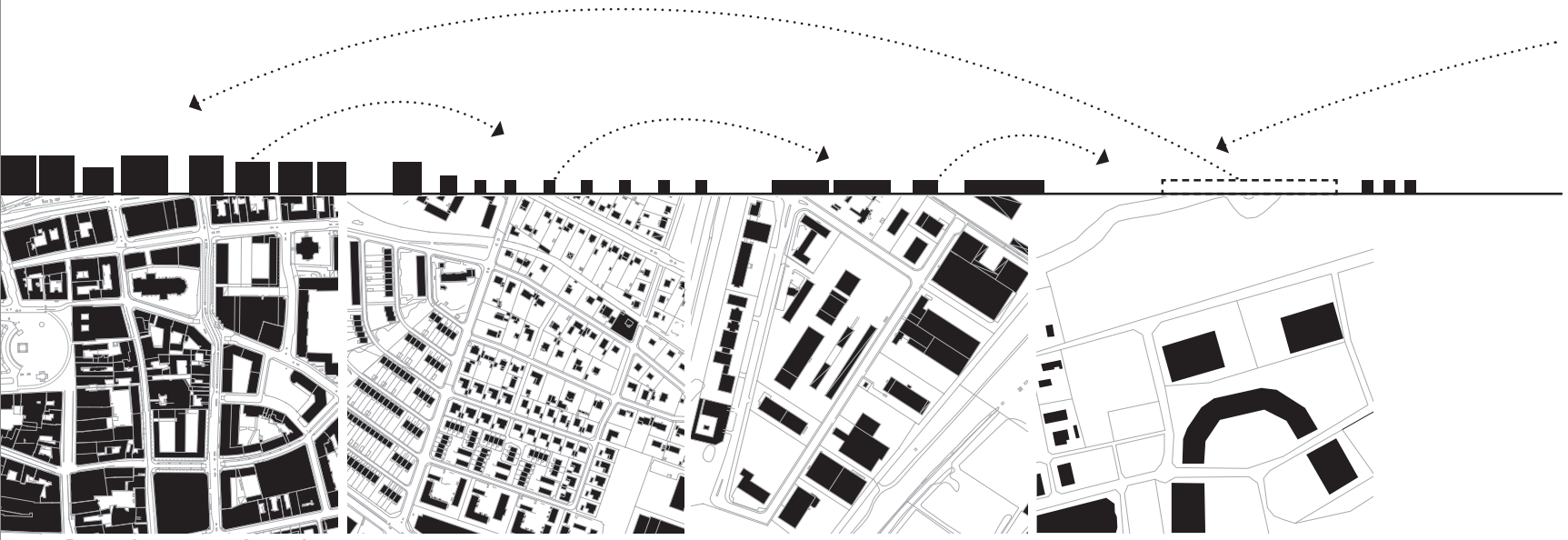
GRADING SYSTEM. Sweden has a grading system for arable land, where 1 has the lowest production value and 10 has the highest.



Distrubution acc. to grading

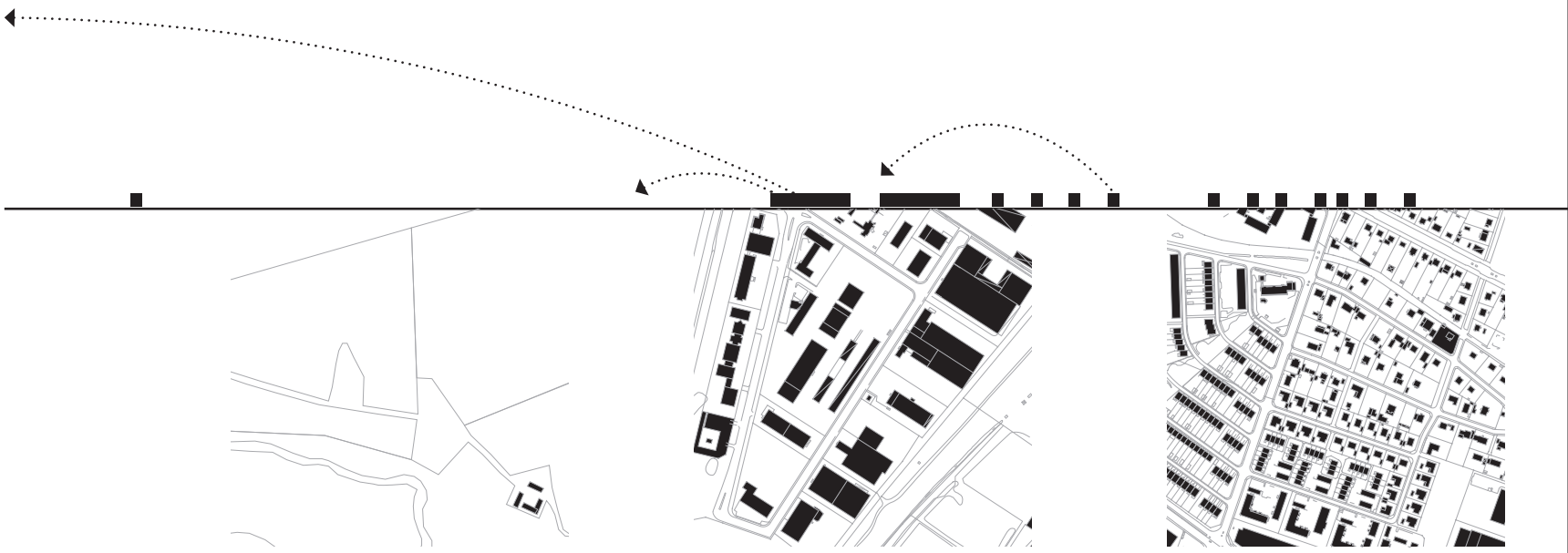
DISTRIBUTION ACCORDING TO GRADING. Graph showing the distribution of arable land in Sweden/Skåne according to the grading system. The best soils in Sweden are found in Skåne.

1.6 URBAN TO RURAL



CITY **DISTRICT** **SUBURB** **BORDERLAND**

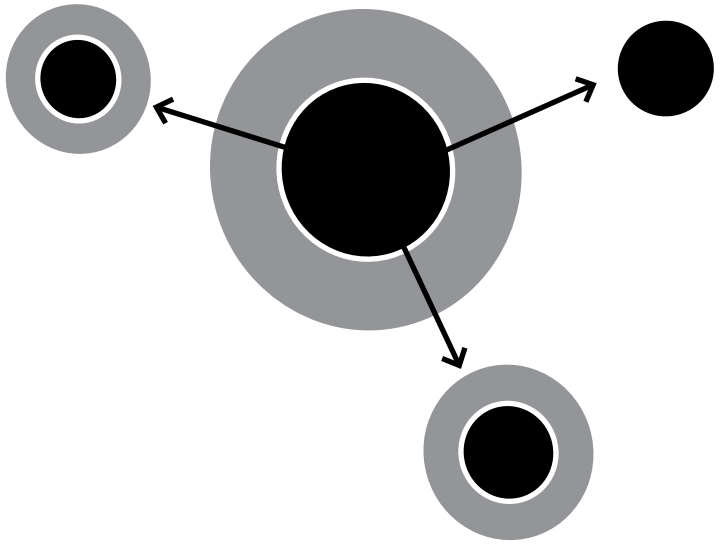
SHOPPING - PUBLIC SERVICE - MEETING PLACE - SHOPPING - WORKPLACES - FOOD



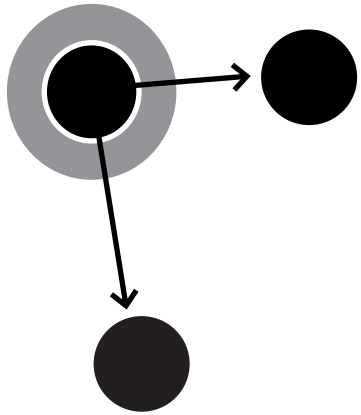
RURAL RURAL RURAL BORDERLAND TOWN

RAW MATERIALS - RECREATION - WORKPLACES - HOME - SHOPPING - PUBLIC SERVICE

1.7 SYSTEMS

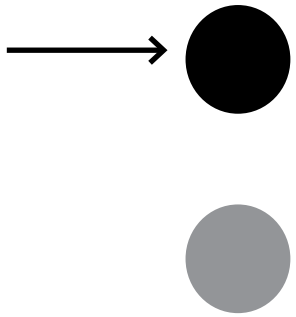


CITY

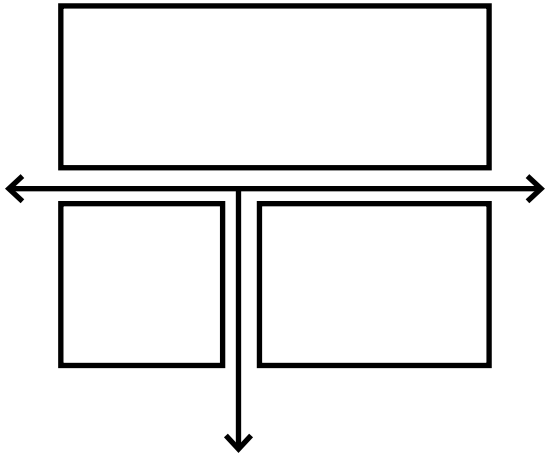


VILLAGE

LINEAR VILLAGE



SETTLEMENTS



AGRICULTURE

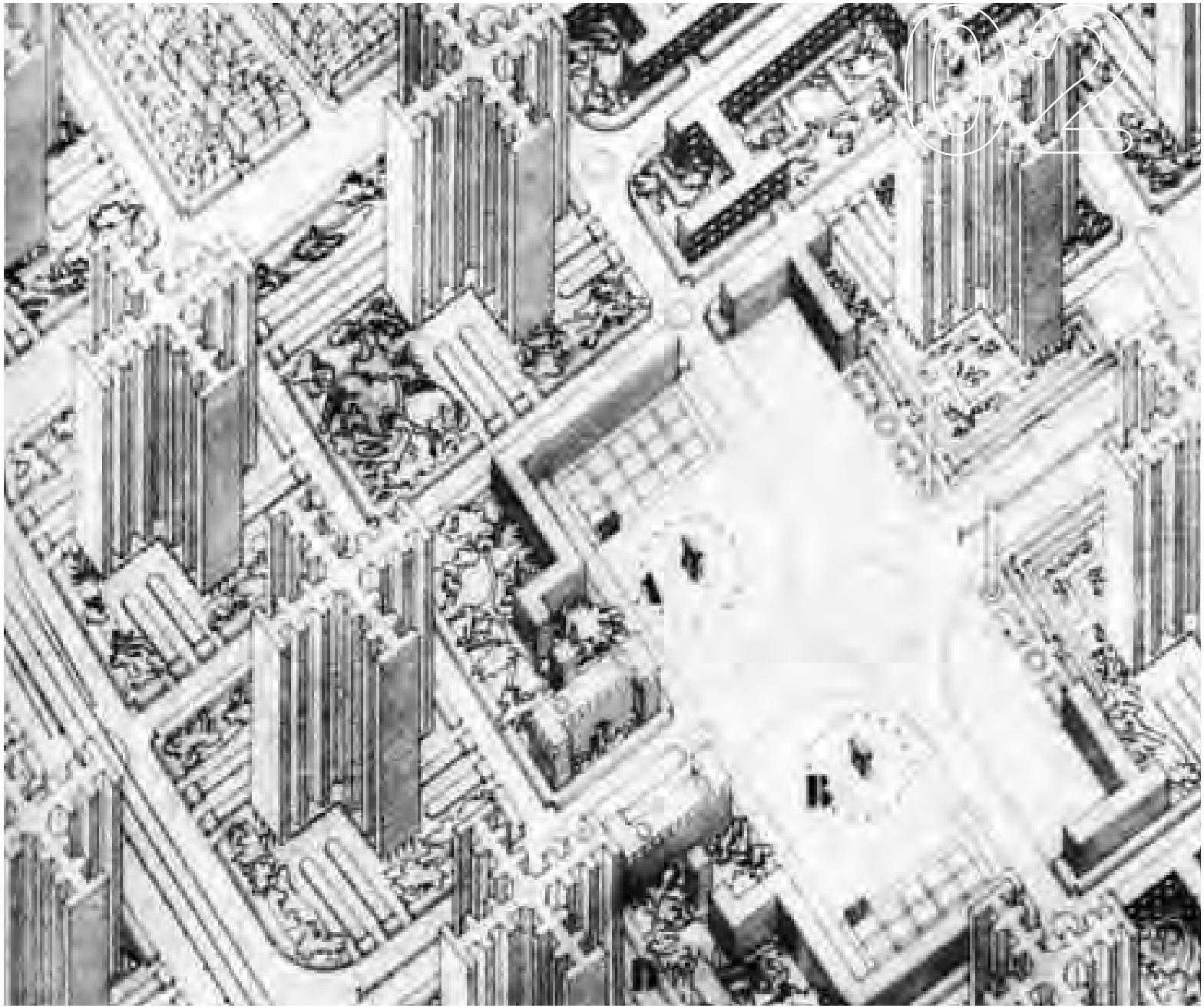
1.8 BORDER LAND

BORDERLAND WHERE URBAN MEETS RURAL

BIG BOX AREA AS A BORDER

INFRASTRUCTURE AS A BORDER

RECREATION (GOLF) AS A BORDER

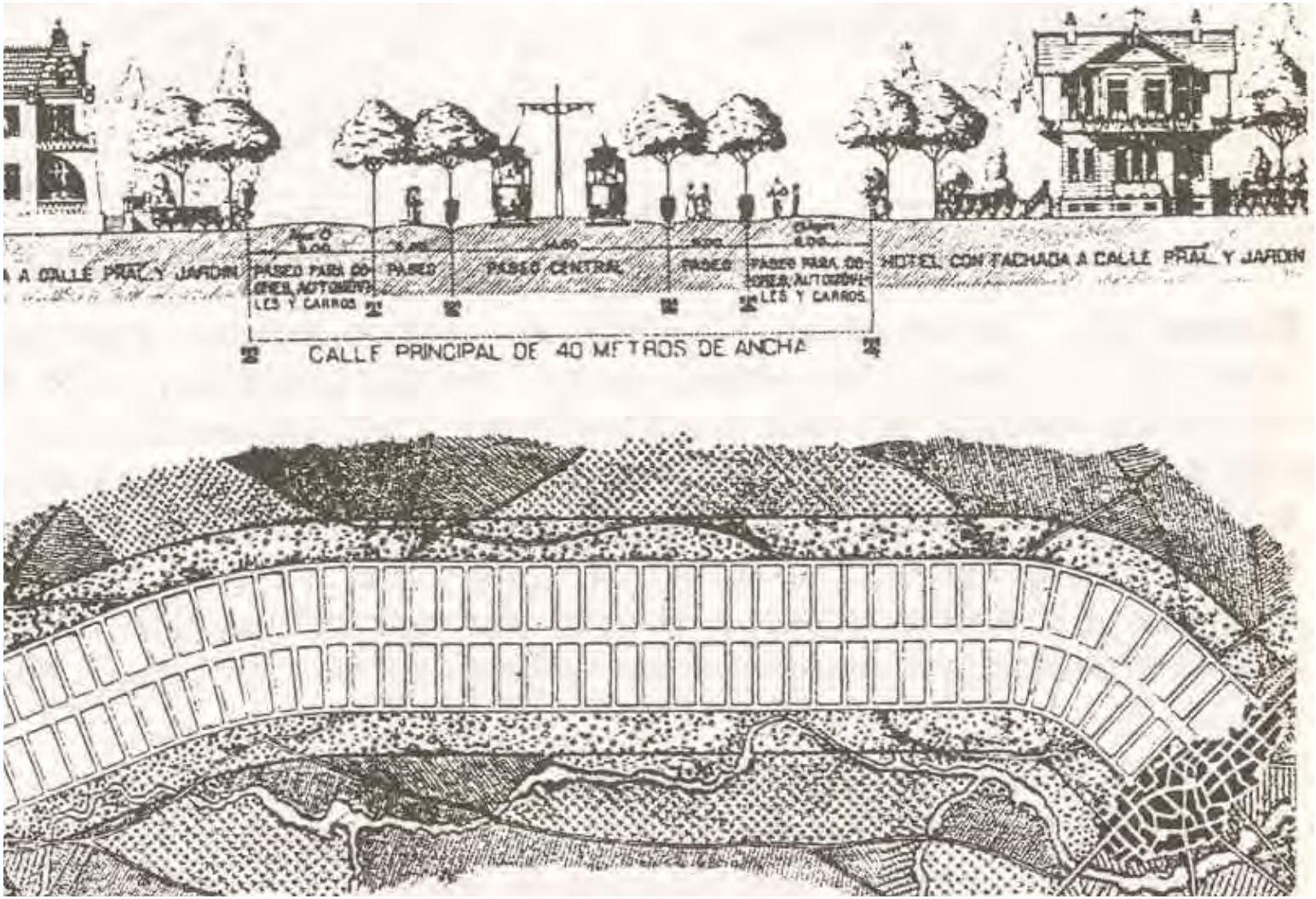


02

REFERENCE PROJECTS

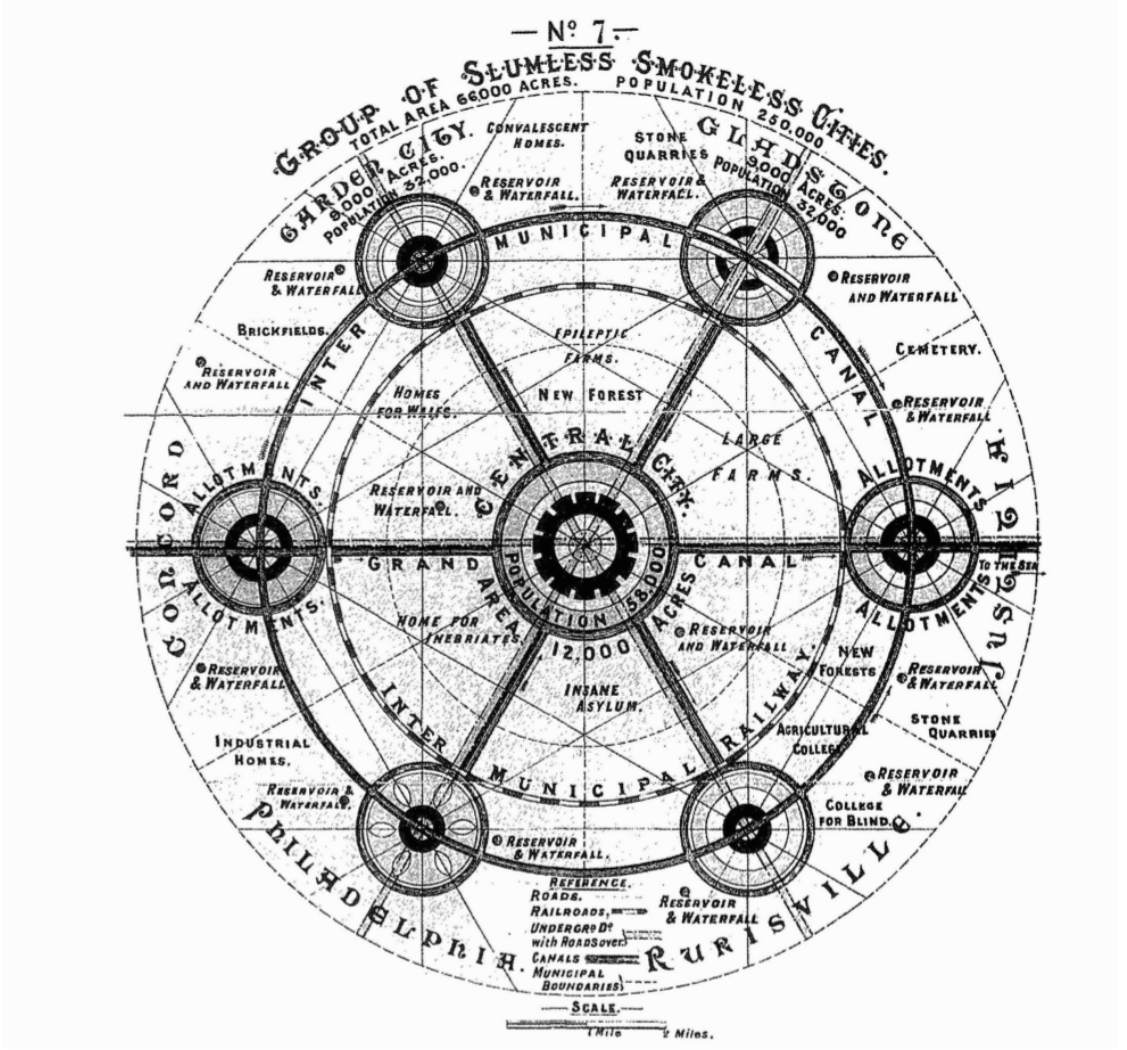
2.1 ARTURO SORIA

LINEAR CITY



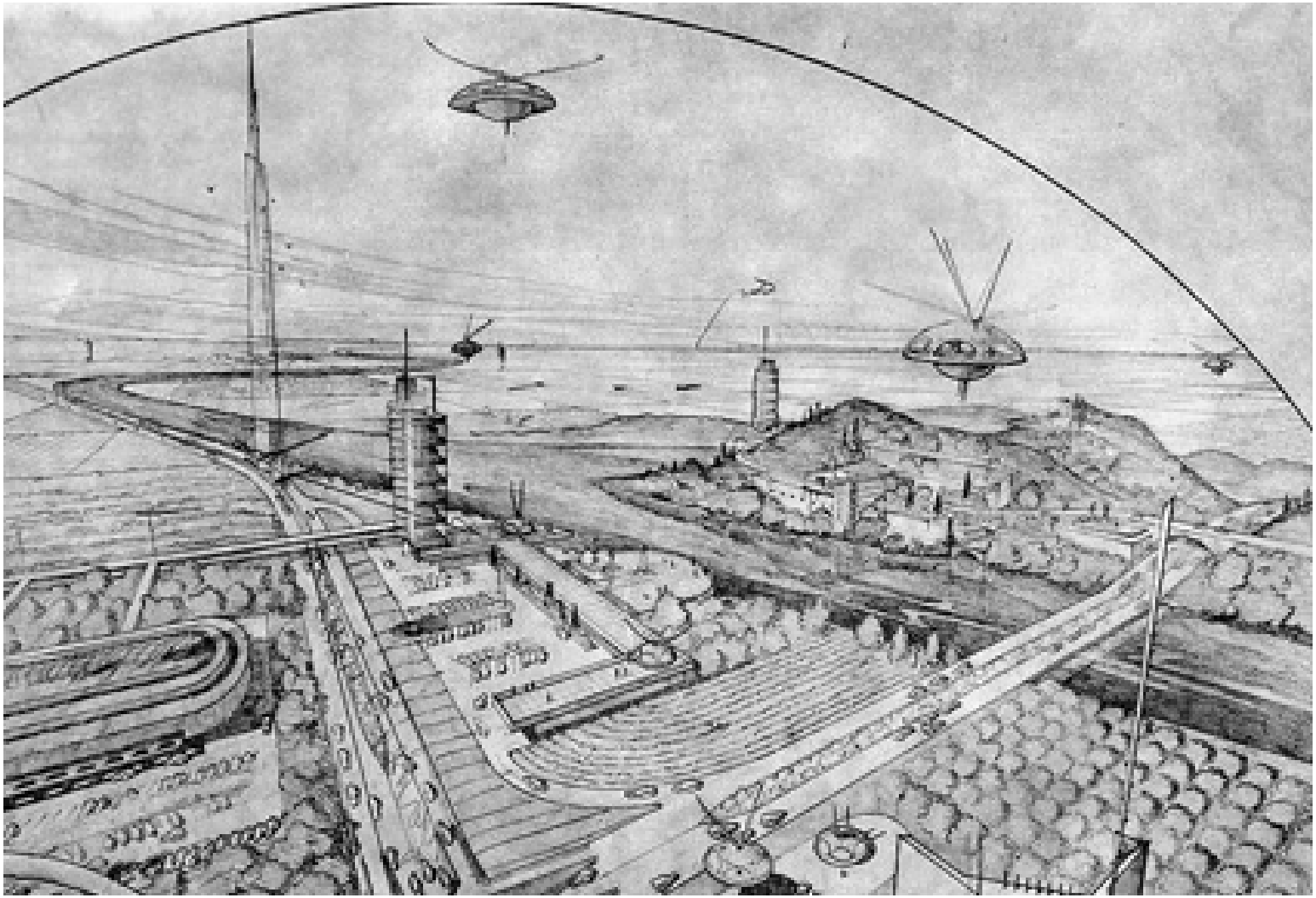
2.2 EBENEZER HOWARD

GARDEN CITY



2.3 FRANK LLOYD WRIGHT

BROAD ACRE CITY



2.4 CAROLYN STEEL

SITOPIA


03

SITE

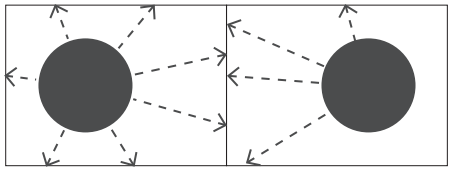
Many cities are located in the most arable areas, which is not a coincidence. Arable land produces food, and citizens need food.

The conflict between the city's expansion and the cultivated land lies within the city's relationship to food.

3.1 SITE STRATEGY

CITY GROWTH TODAY:

Physical distance from urban to rural grows.

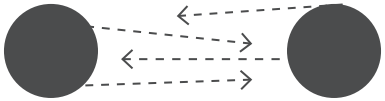


Thinking inside the municipality box

Growing a distance

PROPOSED CITY GROWTH:

Higher exposure between the urban and rural

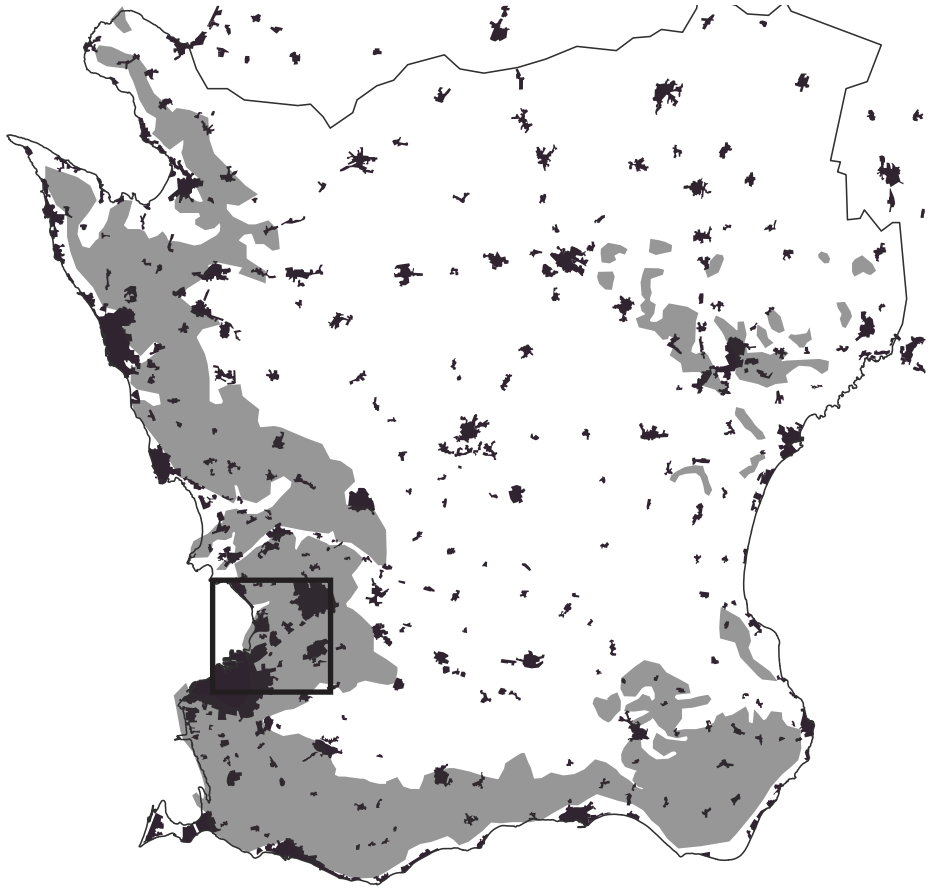


Thinking outside the municipality box

Growing the distance

3.2 A SITE

With the strategies in mind, the area for further focus is marked with a square in the map below. The area is chosen considering the two major cities in the region and is where the conflict between urban and rural is greatest.



3.2 A SITE

Based on the conditions in the zoomed in area a site is chosen for further studies. The selection is based on following:

BUILT STRUCTURE
The area between Malmö and Lund has been heavilty exploited. And the cities allmost came to grew together. The footprint of the built structure is all on arable land of high value.

HEIGHT DIFFERENCIES
Height differencies in the area.

CULTIVATED LAND
The map shows the cities and infrastructure as holes in the agricultural patchwork. It is also visible how Malmö and Lund almost grew together.

INFRASTRUCTURE
The infrastructure highlights the footprint of the cities, and what impact is has on the land.

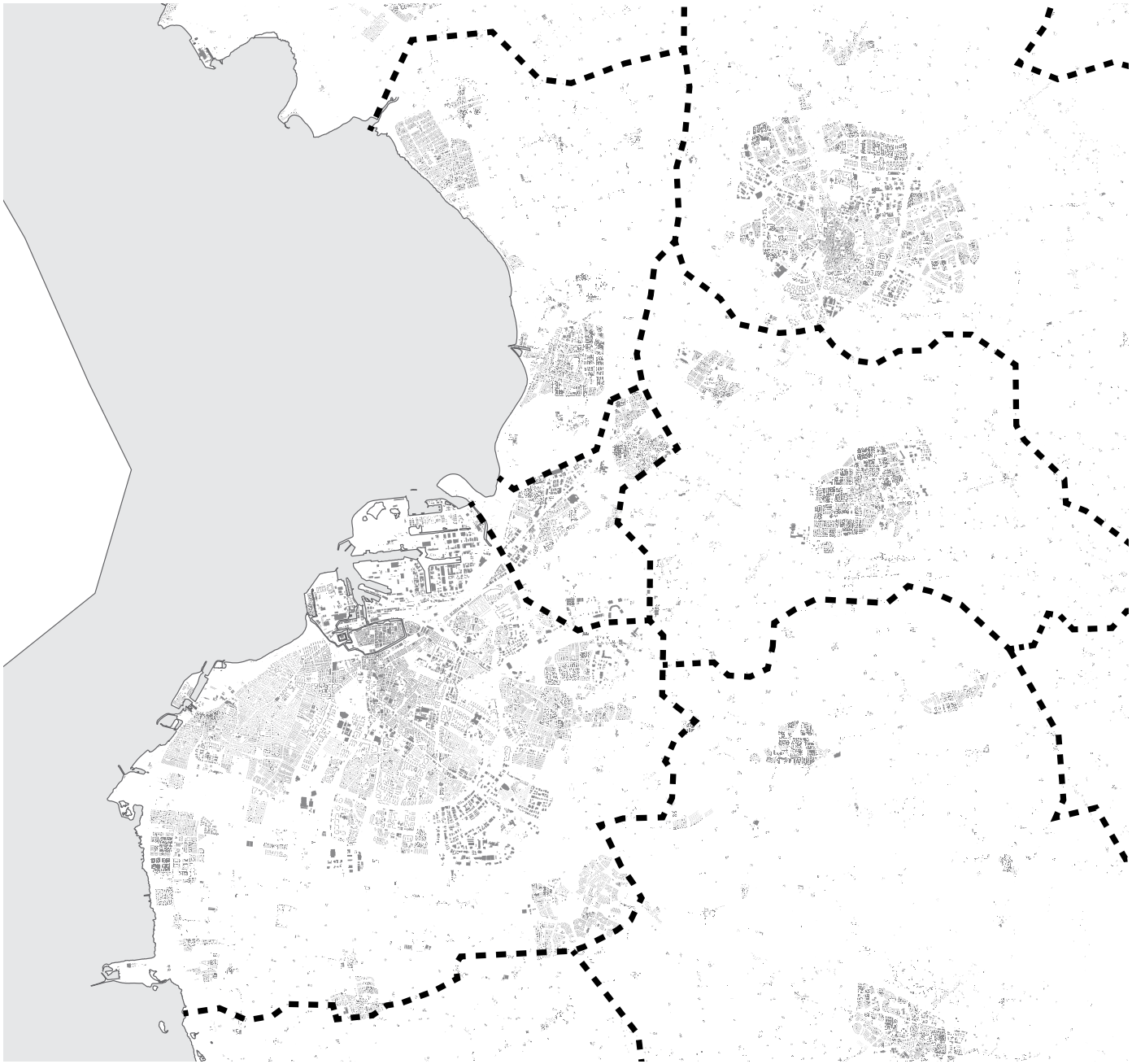
MUNICIPALITIES
Significant for the region of Skåne is the number of municipalities, as the map shows the about 10 km long stretch cover almost 4 municipalities.

BUILT STRUCTURE

HEIGHT DIFFERENCIES

CULTIVATED LAND

INFRASTRUCTURE



MUNICIPALITIES

3.3 URBAN VS. RURAL

LUND MUNICIPALITY

The city of Lund must exploit arable land in ability to grow. Motor way E22 were built in 1954 and at the time it was the first motorway in Sweden. The expansion of the railroad (Västkustbanan) took place mainly in land of the highest value. The best soils are found around the city of Lund, wich creates a conflict between the interest of agriculture and the expansion of the city.

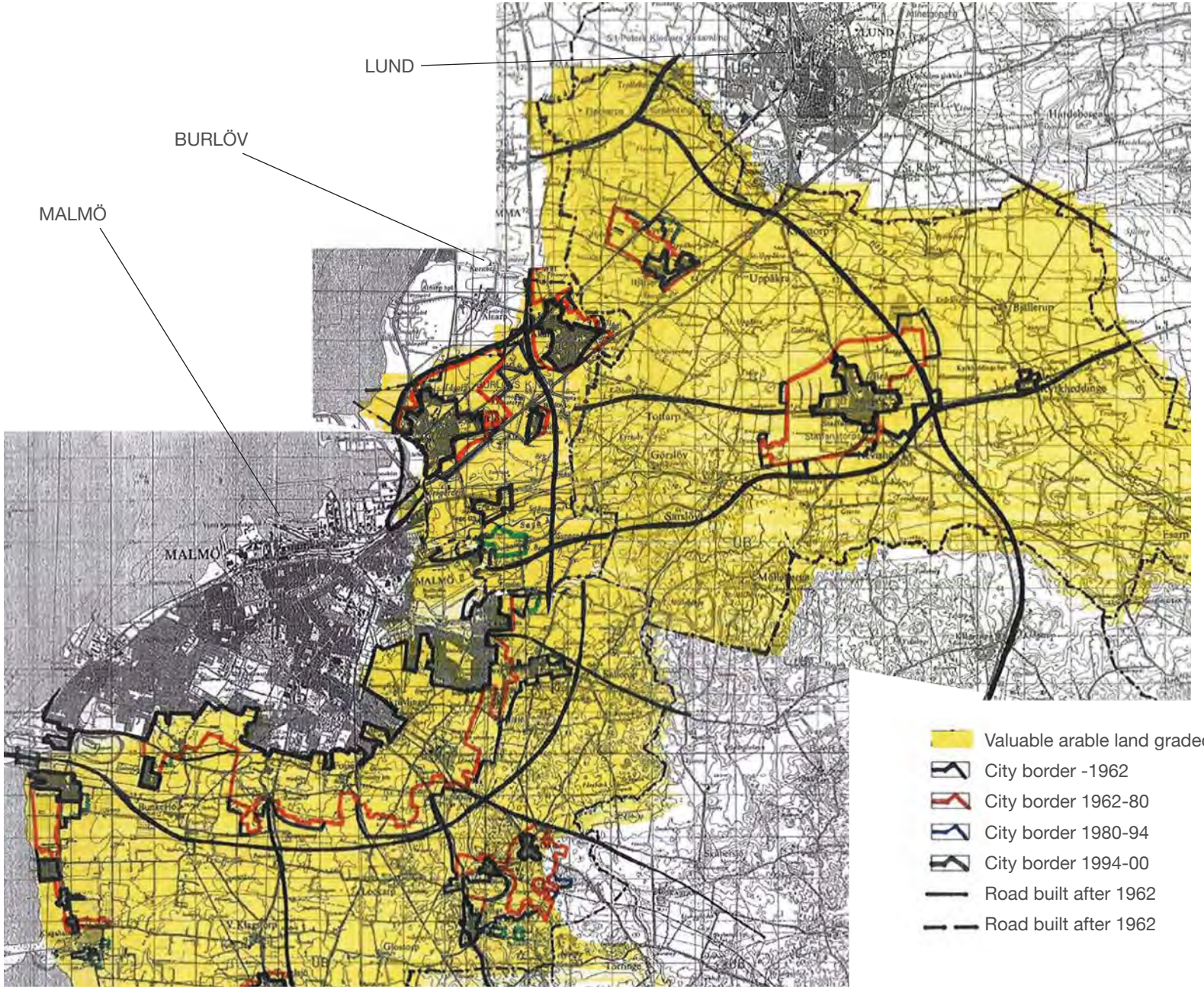
BURLÖV MUNICIPALITY

Burlöv is the smallest municipality according to size in Sweden and all of the area is covered with the most valuable arable land, among the best souls in Sweden. The minicipality has been heavily exploited. The towns Arlöv, Burlöv and Åkarp has been growing a lot during the time period between 1960-2000. The municipality is a pronounced city area, even though it is surrounded with arable land. The conflict between

MALMÖ MUNICIPALITY

Malmö Municipality is relatively small based on the population. Half of the municipality consists of city. All the expansion of the city and its infrastructure takes place in the highest valued arable land. Within a closer future the expansion of the city can take place within the outer ring road (E6). The outer ring road has involved extensive exploitation. [1]

1 ISSE 1402 -3393, 2001:45 - “Skånes värdefulla jordbruksmark -tätortsexpansion och utbyggnad av infrastruktur på högt klassad åkermark från -från 1960 till nutid”.


LUND
BURLÖV
MALMÖ
Valuable arable land graded 8-10.
City border -1962
City border 1962-80
City border 1980-94
City border 1994-00
Road built after 1962
Road built after 1962

3.4 THE SITE


1500 m

3.4 THE SITE

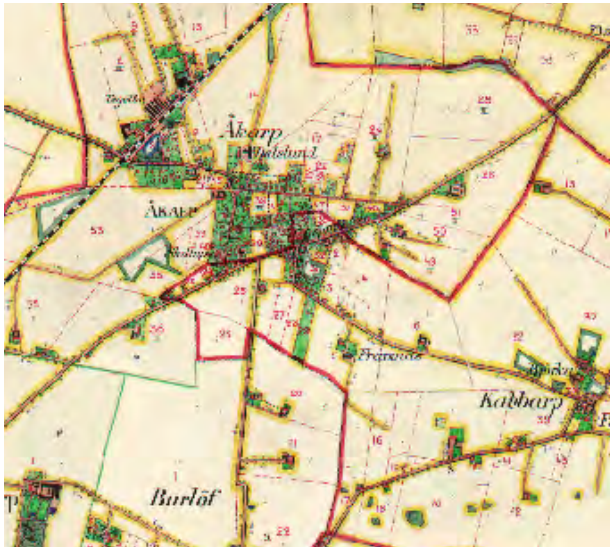
ARLÖV. The city of Lund must exploit arable land in ability to grow. Motor way E22 were built in 1954 and at the time it was the first motorway in Sweden. The expansion of the railroad (Västkustbanan) took place mainly in land of the highest value.
The best soils are found around the city of Lund, wich creates a conflict between the interest of agriculture and the expansion of the city.

ÅKARP.
The city of Lund must exploit arable land in ability to grow. Motor way E22 were built in 1954 and at the time it was the first motorway in Sweden. The expansion 54 and at the time it was the first motorway in Sweden. The expansion

HJÄRUP. The city of Lund must exploit arable land in ability to grow. Motor way E22 were built in 1954 and at the time it was the first motorway in Sweden.
The expansion of the railroad (Västkustbanan) took place mainly in land of the highest value.
The best soils are found around the city of Lund, wich creates a conflict between the interest of agriculture and the expansion of the city.

3.3 LAND TRANSFORMATION

6 maps showing the transformation of Åkarp and its surrounding from 1910 - 2010. The landscape patchwork grows and new infrastructure is added. [1]



1910


1940

1 Lantmäteriets GEO-data, http://www.lantmateriet.se/templates/LMV_Page.aspx?id=26483

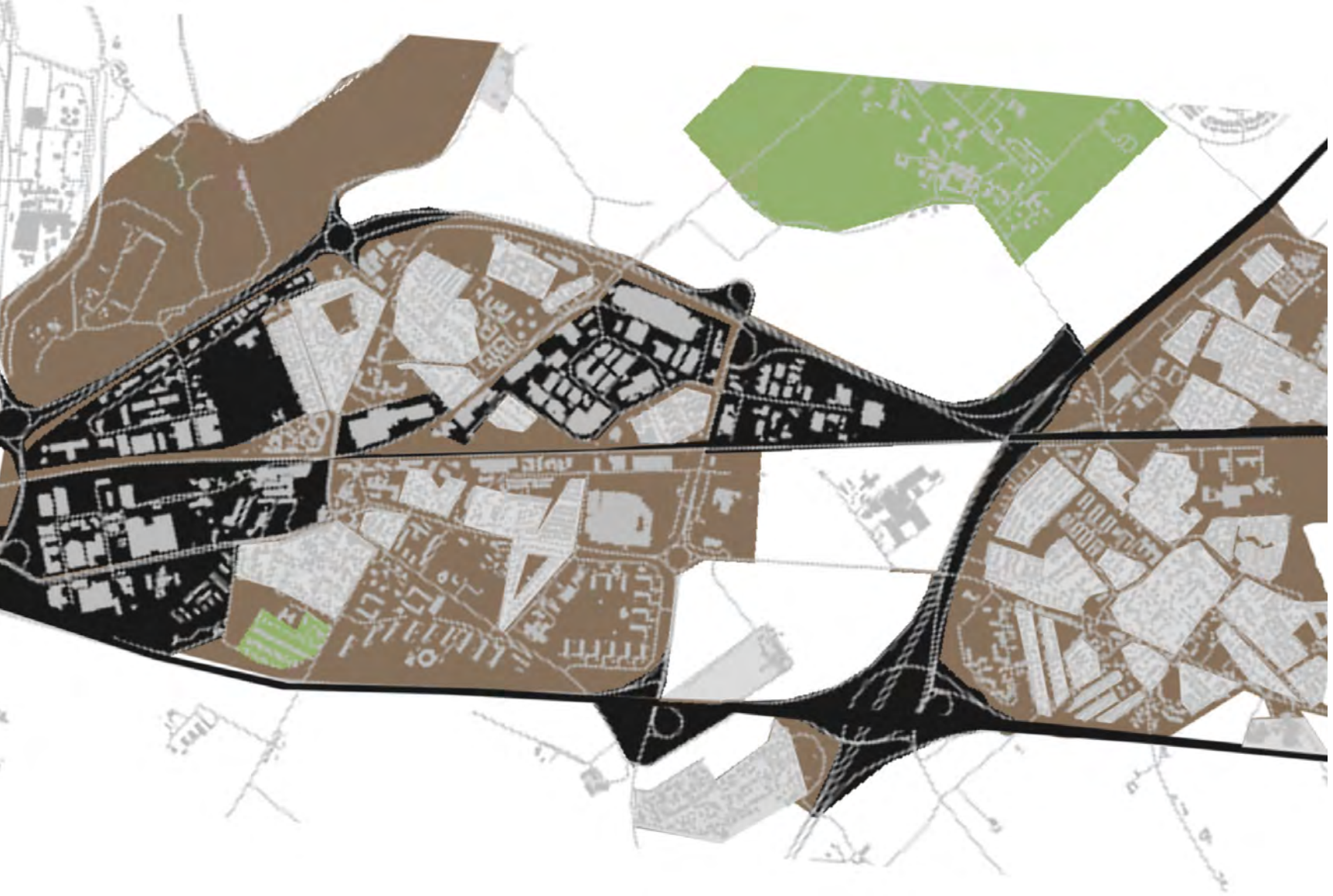
1960

1973

1980

2010

3.4 LAND USE



FOODPRODUCING / ACCESSABLE

FOODPRODUCING / UN-ACCESSABLE

NON-PRODUCING / ACCESSABLE

NON-PRODUCING / PRIVATE

NON-PRODUCING / UN-ACCESSABLE

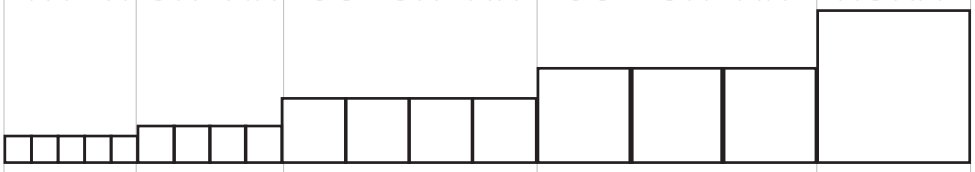
04

ANALYSIS

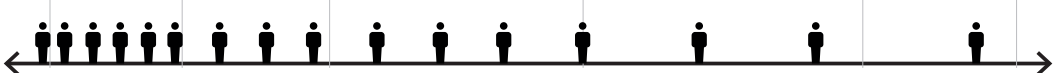
The physical relation between the urban and the rural - correlated with the system of food supply.

4.1 TRANSSECT URBAN VS RURAL

CENTER URBAN | SUBURBAN | SUB-URBAN | RURAL



SMALL BLOCKS	LARGE BLOCKS
HIGH DENSITY	LOW DENSITY
ALLEYS	ROADS
SIDE WALKS	NO SIDE WALKS
ALIGNED FACADES	ROTATED FACADES
HARDSCAPE	GREENSCAPE
DOMESTIC ANIMALS	LIVE STOCK
ALIGNED TREES	TREE CLUSTERS
LIGHTENED SKY	NIGHT SKY



LINEAR RELATIONSHIP

FOOD CONSUMPTION

FOOD PROCESSING

FOOD SOURCE

ICA

RESTAURANT

HEMKÖP

RESTAURANT

COOP

ICA

DAIRY COWS

PIGS

EGG LAYING HENS

TOMATO PLANT

WHEAT

FISH

CENTER URBAN SUBURBAN SUB-URBAN RURAL

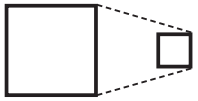

05

FOOD-CITY (STRATEGY)

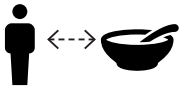
The physical relation between the urban and the rural - correlated with the system of food supply.

5.1 INTERGRATE FOOD WITH THE CITY

Strategy is to intergrate food with the city, to merge the urban with the rural.



REDUCE SCALE
of both the urban and the rural – now they scale of both are growing independently, and large scale fields cannot merge with a large and dense city.



GET CLOSER
with a reduced scale, the distance between the food and the city can shrink, which would benefit them to exist in equal terms.

MAKE VISIBLE
When food is closer to the consumer the relationship between the two will grow. The consumer represents the city and the food represents the food production.

INCREASE KNOWLEDGE
A visible food production increases food knowledge, and people who knows about food – care about food.

INVOLVE
In order to create a lasting relationship between the food and the city the food has to be involved in the city, to encourage people to be a part of food production.

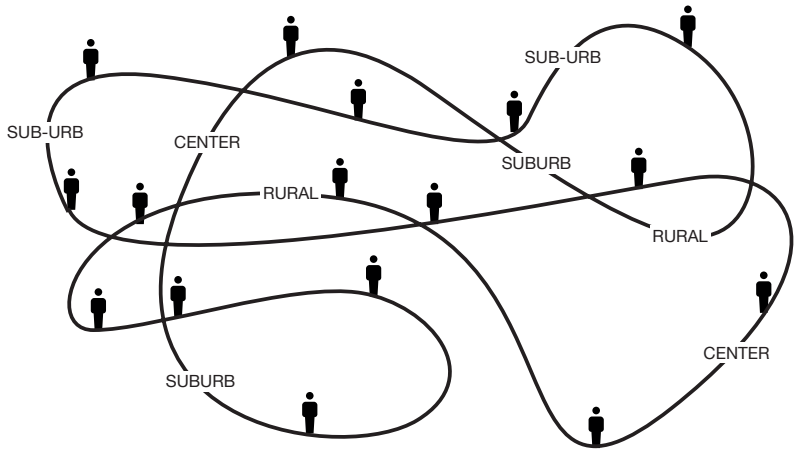
VALUE LAND
In order to merge the food and the city, arable land must be given more value in planning for a city. And food production should favor in land use.

5.2 MERGE URBAN AND RURAL

With the strategies in mind, the area for further focus is marked with a square in the map below. The area is chosen considering the two major cities in the region and is where the conflict between urban and rural is greatest.

TODAY'S RELATIONSHIP: LINEAR

BIGGEST PROBLEM: **SCALE & DENSITY**



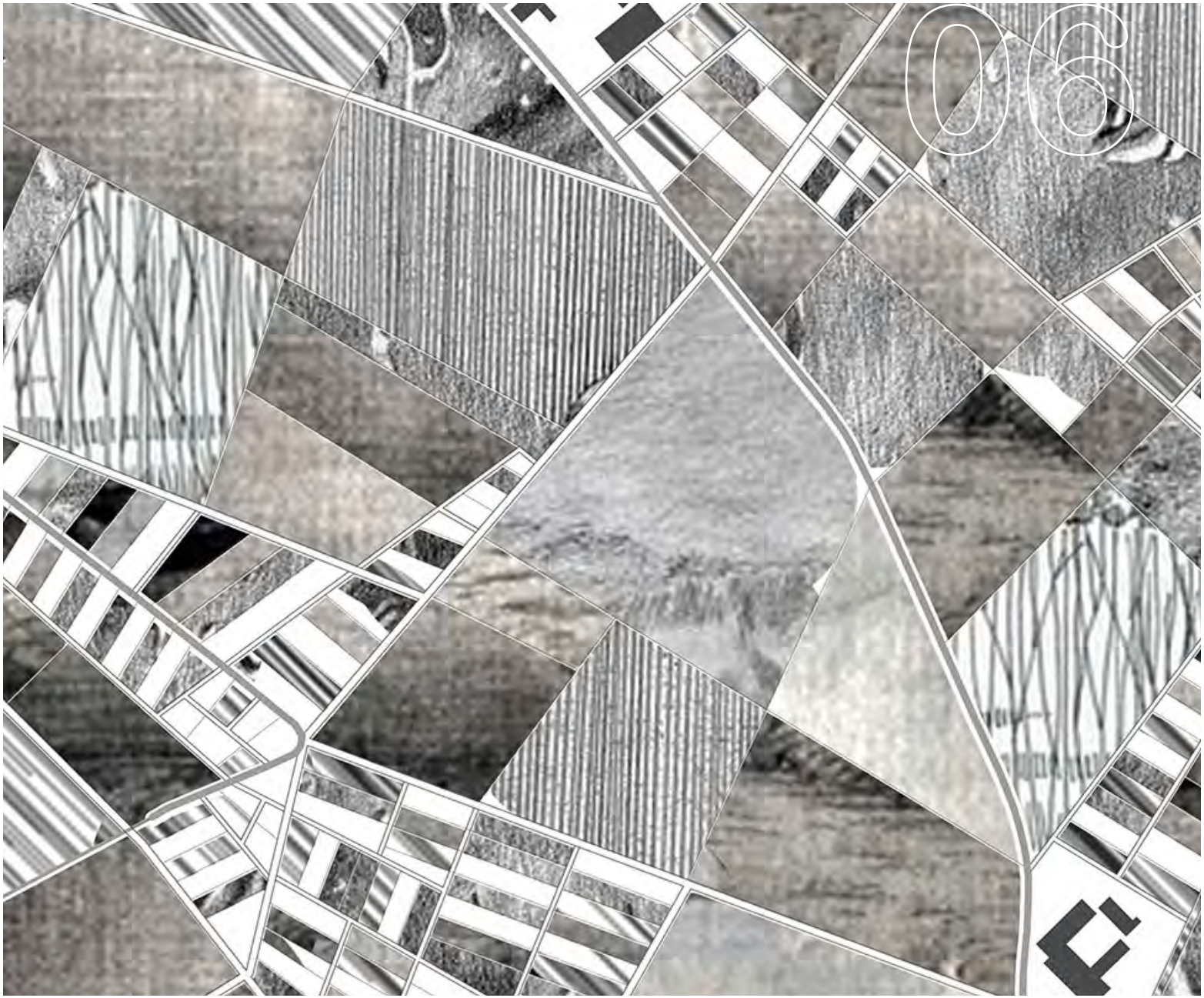
TOMORROW'S RELATIONSHIP: MERGED

MAIN FOCUS: **ADJACENCY**

5.2 MERGE URBAN AND RURAL

The proposed zero exploitation on arable land would further segregate the food from the city, the urban from the rural and the food production from the cunsumer.

.. strategy is to merge food and city - to blur the urban and rural and create possibilities for them to merge to co-exist instead of conflict.


06

FOOD-CITY (IMPLEMENTATION)

[L]
LARGE

DISTRIBUTION

Merge the scale and density of the urban and the rural in the large scale.

[M]
MEDIUM

CO-EXIST

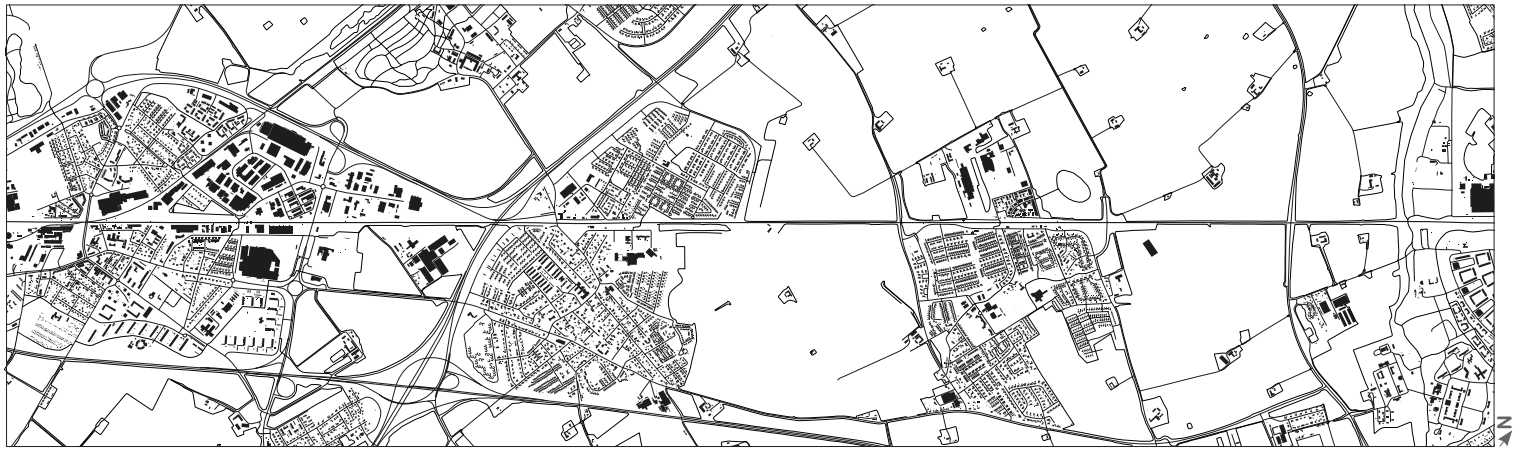
Value arable land by merging city and food typologies in a building scale.

[S]
SMALL

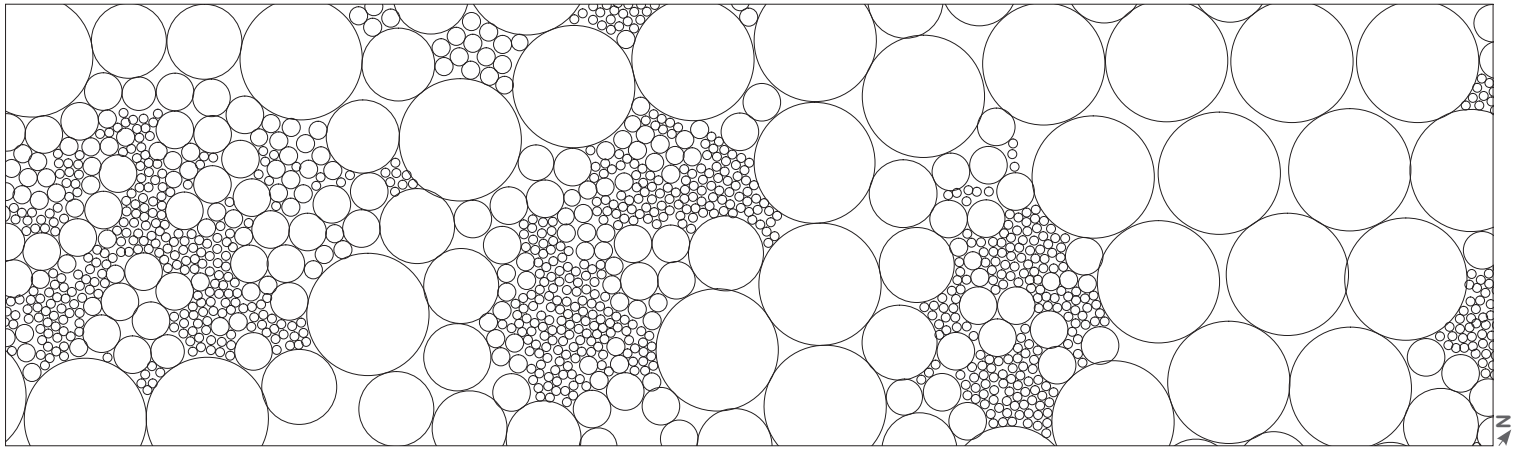
PROGRAM

Merge program by including food production and the source of food in the city.

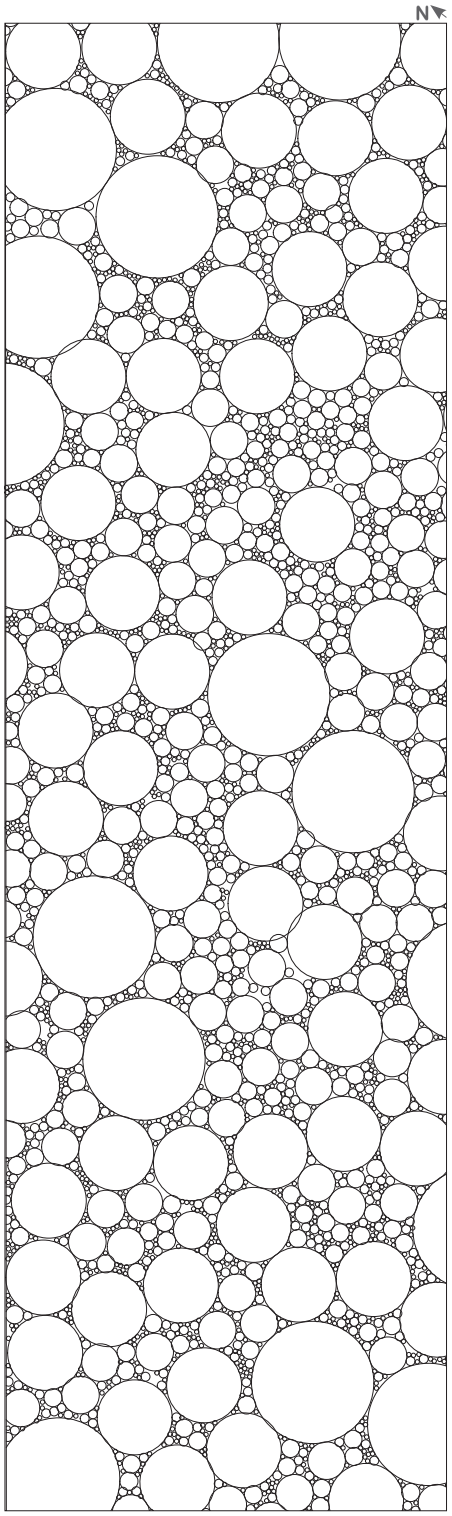
6.1 SCALE & DENSITY



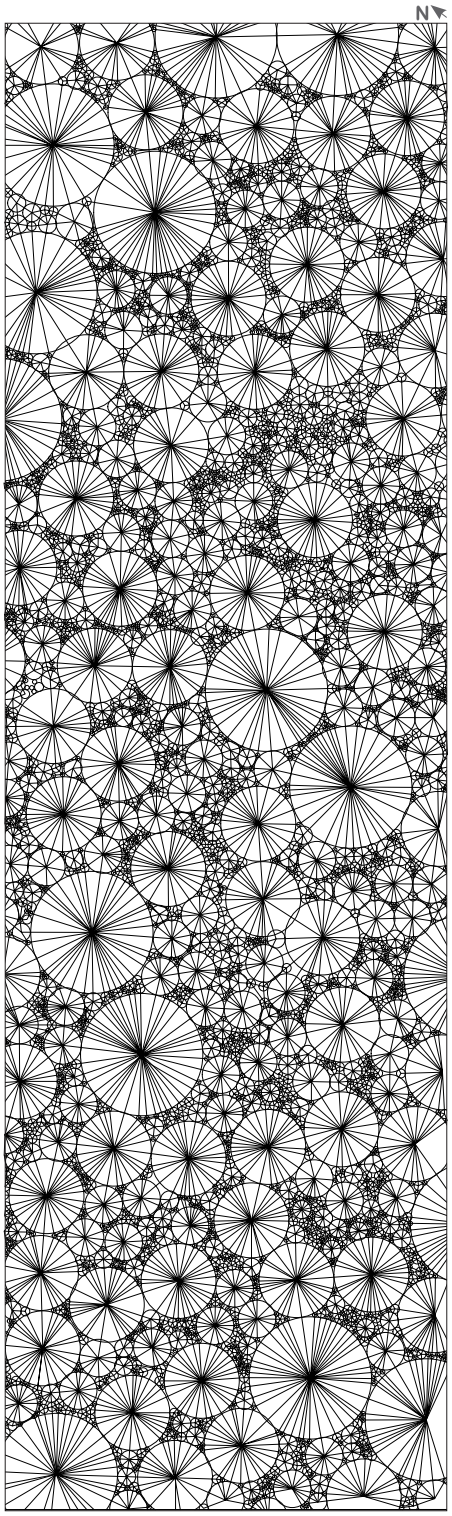
EXISTING SITE
[1:30 000]



1] EXISTING SCALE AND DENSITY
relationship - low exposure
between the different scales and densities.
[1:30 000]

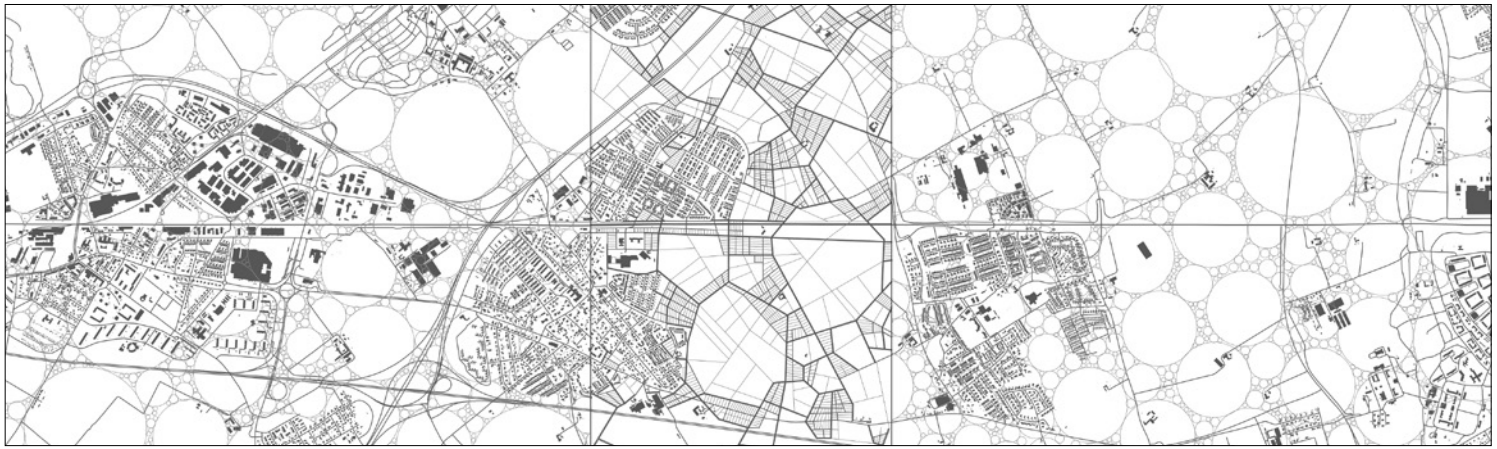


2 MIXING SCALE AND DENSITY.
[1:30 000]

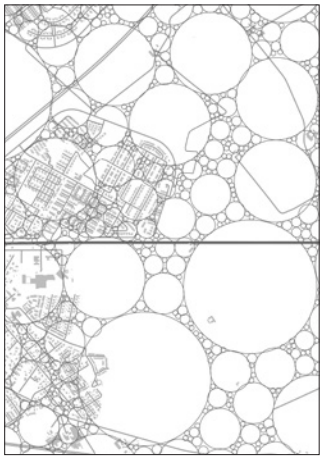


3 INCREASED EXPOSURE
Higher exposure between
different scales and densitys.
[1:30 000]

6.1 SCALE & DENSITY



Scale and density distribution [1:30 000]



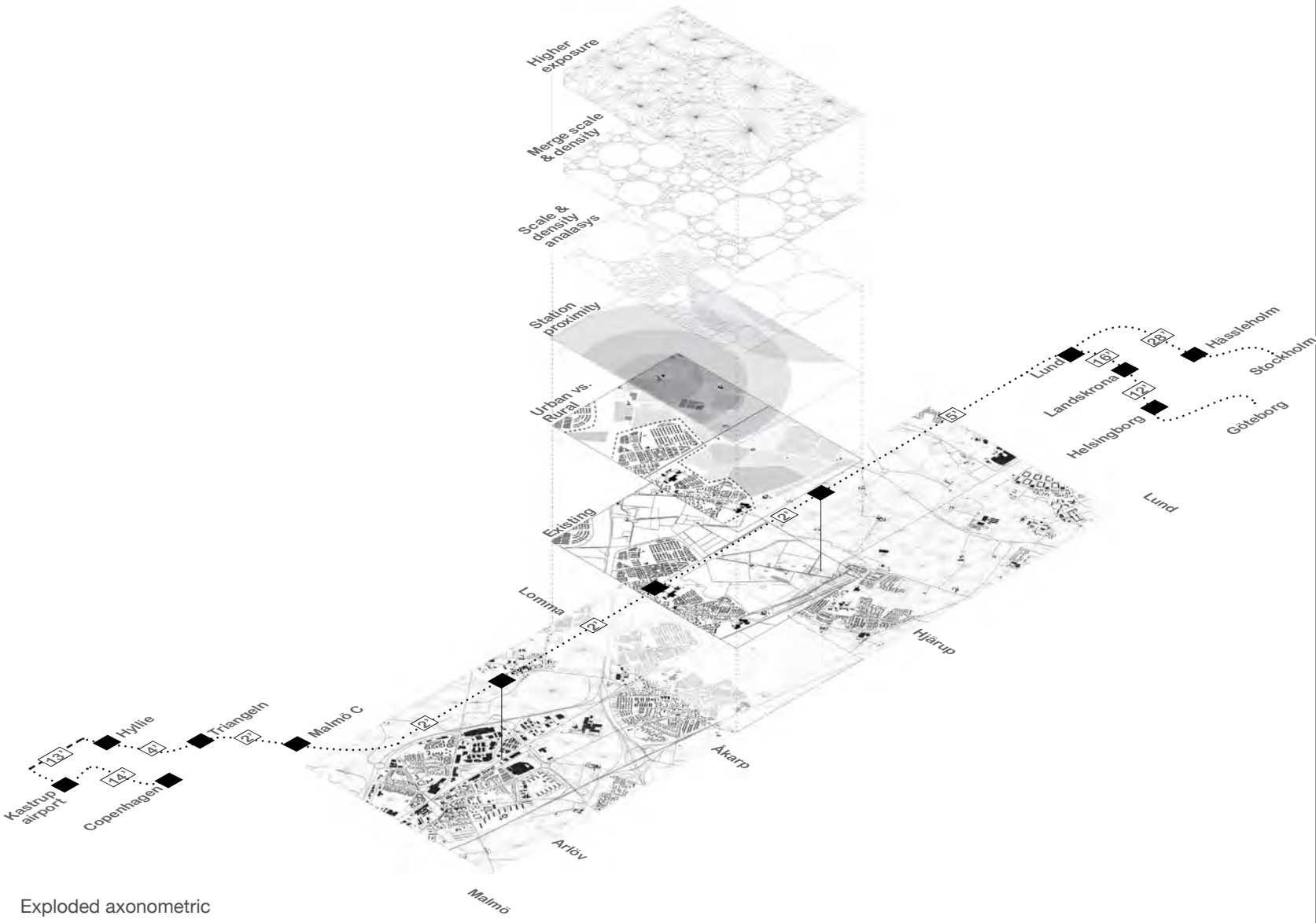
Zoom in area

Main division

Sub-division

Sparse - density

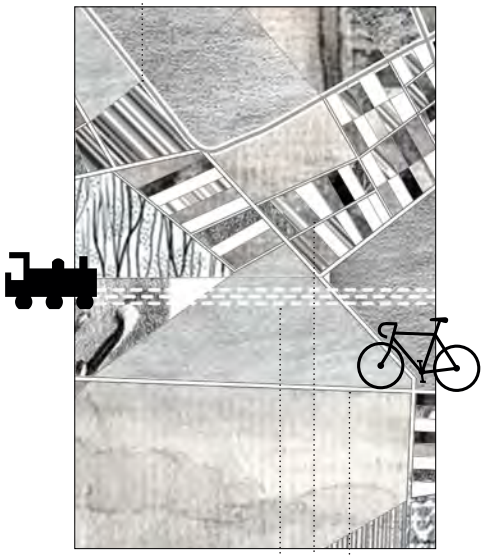
4]



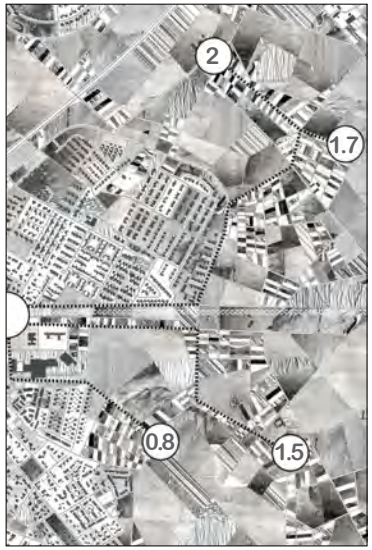
Exploded axonometric

6.2 CO-EXIST PATCHWORK

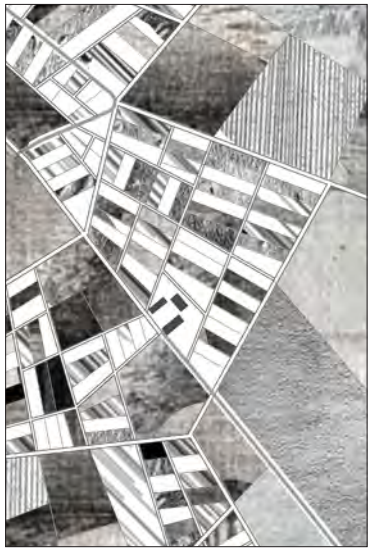
PATCHWORK LEGEND:



Existing city covering

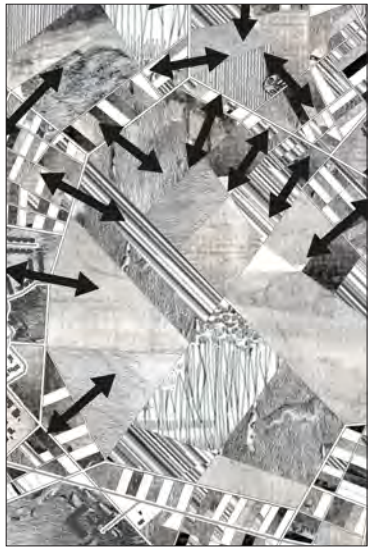


Proximity to trainstation (km)



Plot division

Rurbanize - blurring the urban - rural border

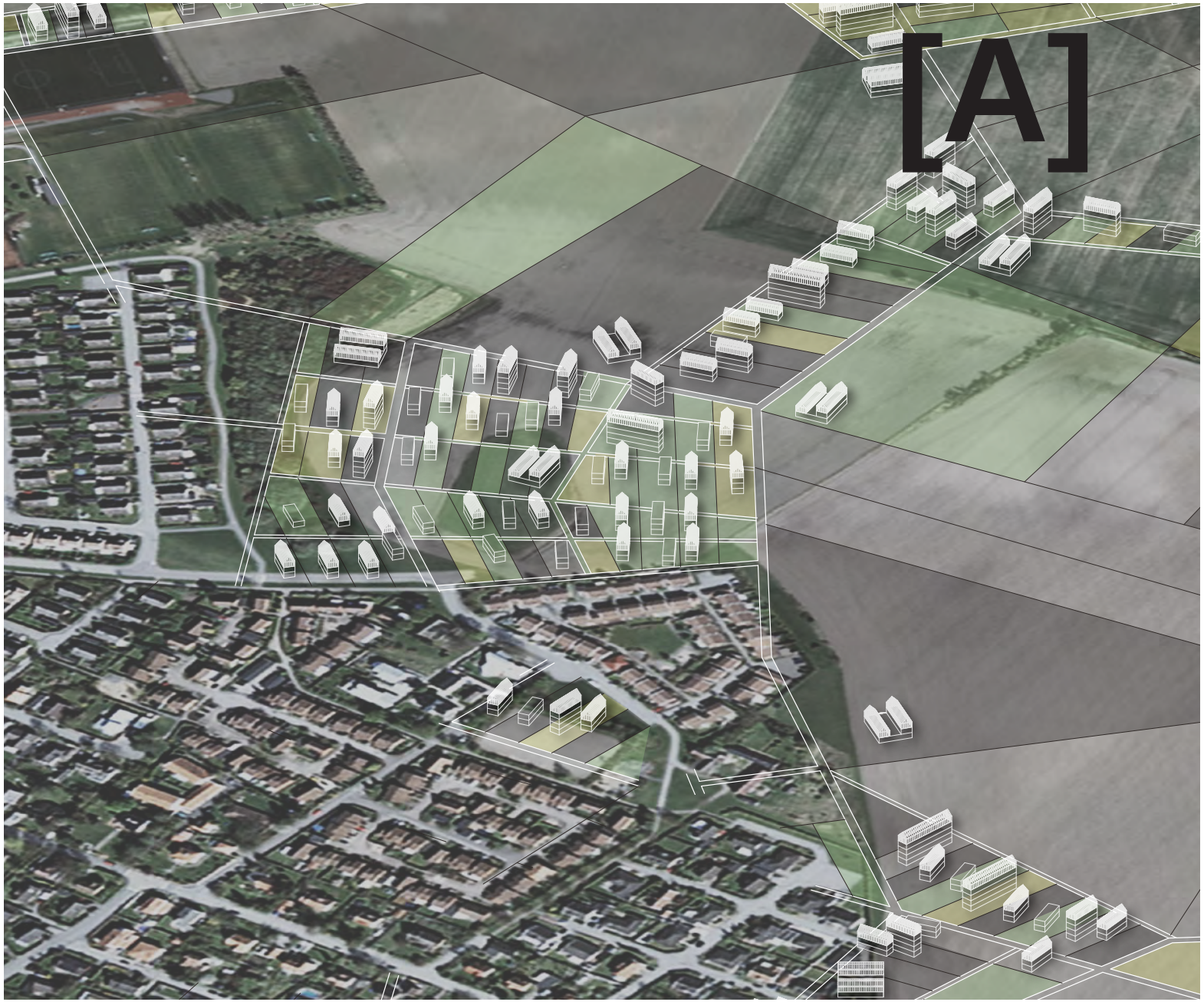


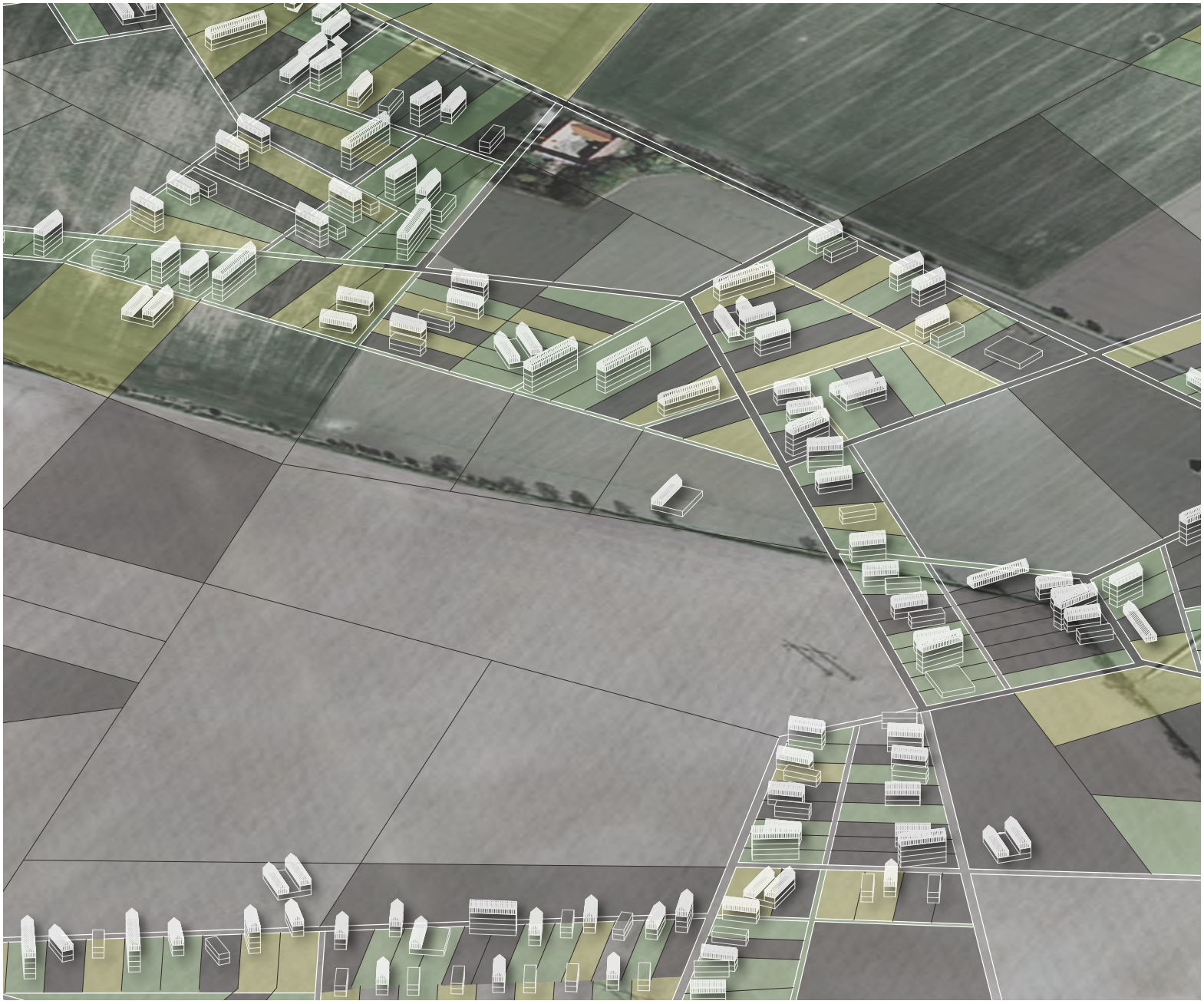
Higher exposure between urban and rural scale and density

Reprogramming

6.2 CO-EXIST PATCHWORK

Redefining the urban and rural relationship by a re-arrangement of the existing linear relationship between the scale and density of the urban and rural.


[A]



COMBINATIONS

CITY PROGRAM
MAINTAIN

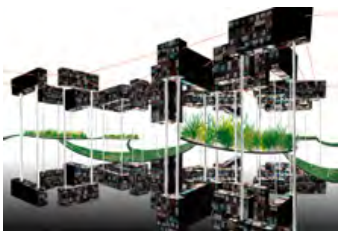
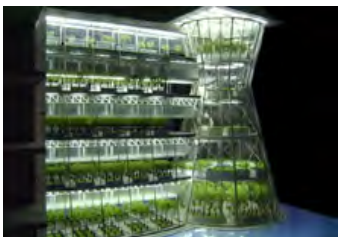
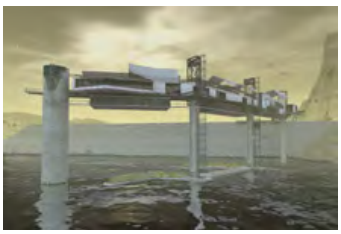
FOOD PROGRAM
MAKE USE OF

COMBINATIONS

V A L U A B L E . A R A B L E . L A N D . V A L U A B L E

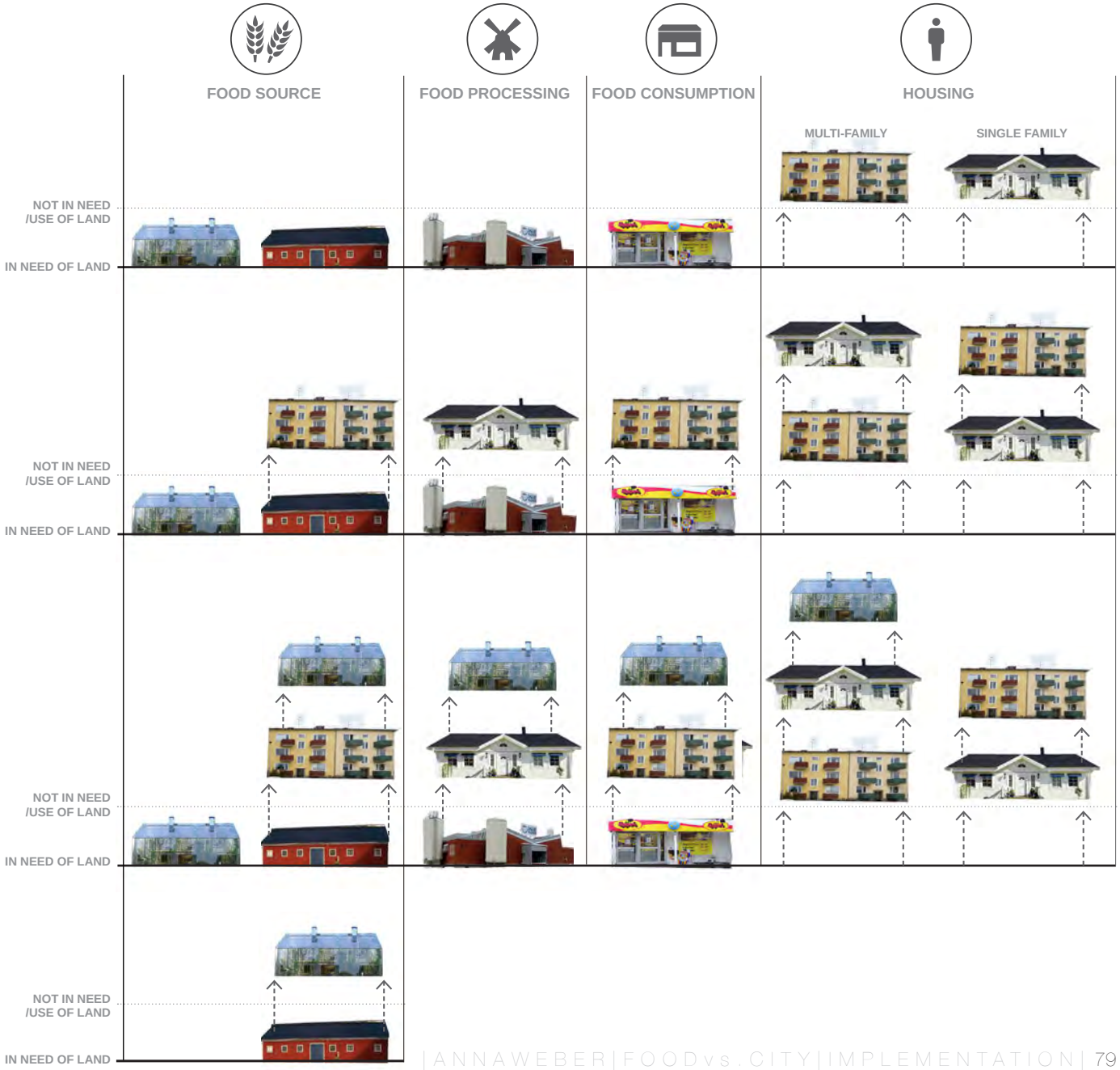




6.3 CO-EXIST

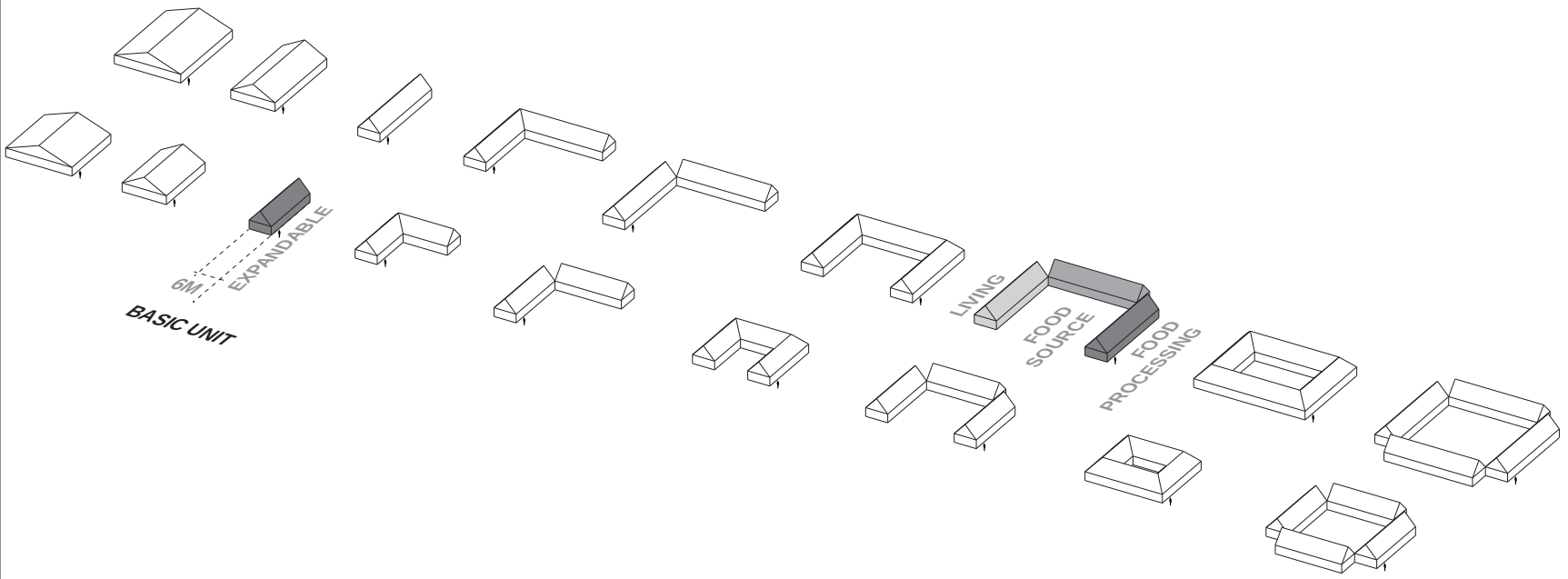
[M]


FOOD SOURCE
FOOD PROCESSING
FOOD CONSUMPTION
HOUSING
MULTI-FAMILY
SINGLE FAMILY
NOT IN NEED /USE OF LAND
IN NEED OF LAND
NOT IN NEED /USE OF LAND
IN NEED OF LAND
NOT IN NEED /USE OF LAND
IN NEED OF LAND
NOT IN NEED /USE OF LAND
IN NEED OF LAND

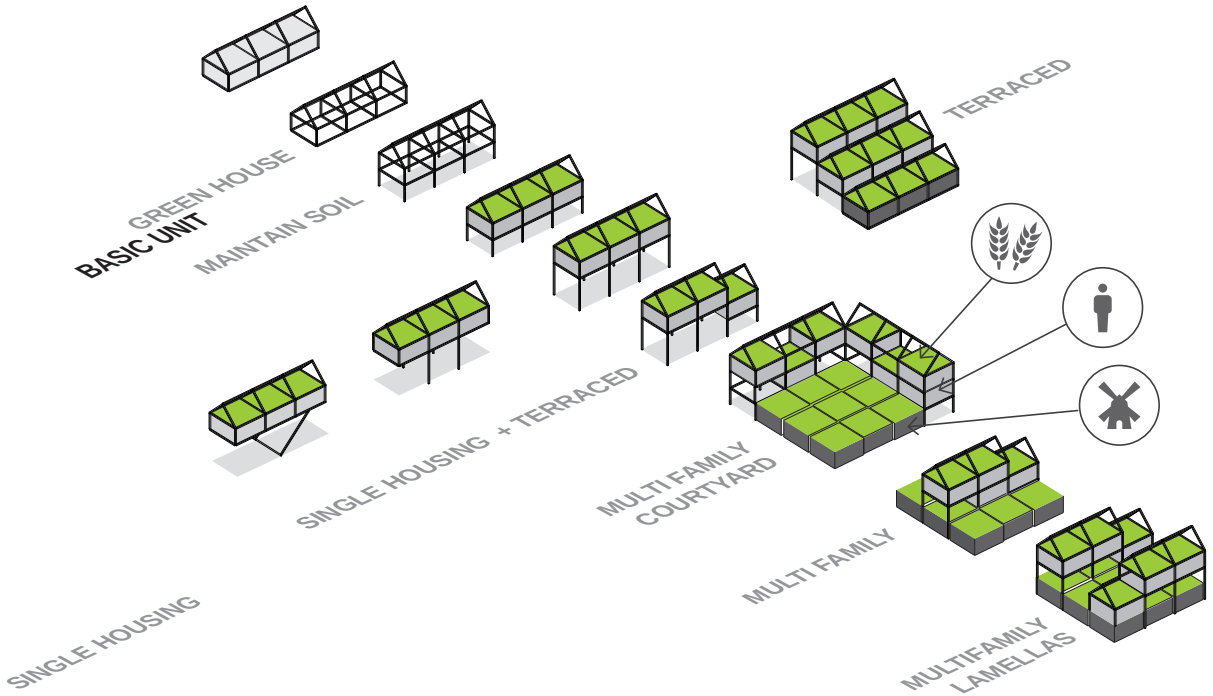
6.3 CO-EXIST

[M]

EXISTING TYPOLOGIES

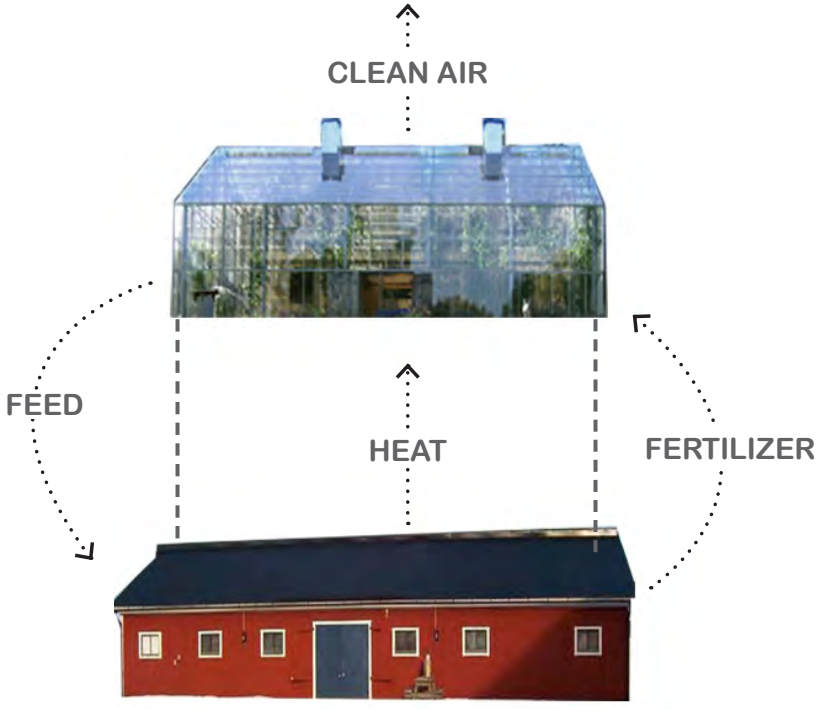


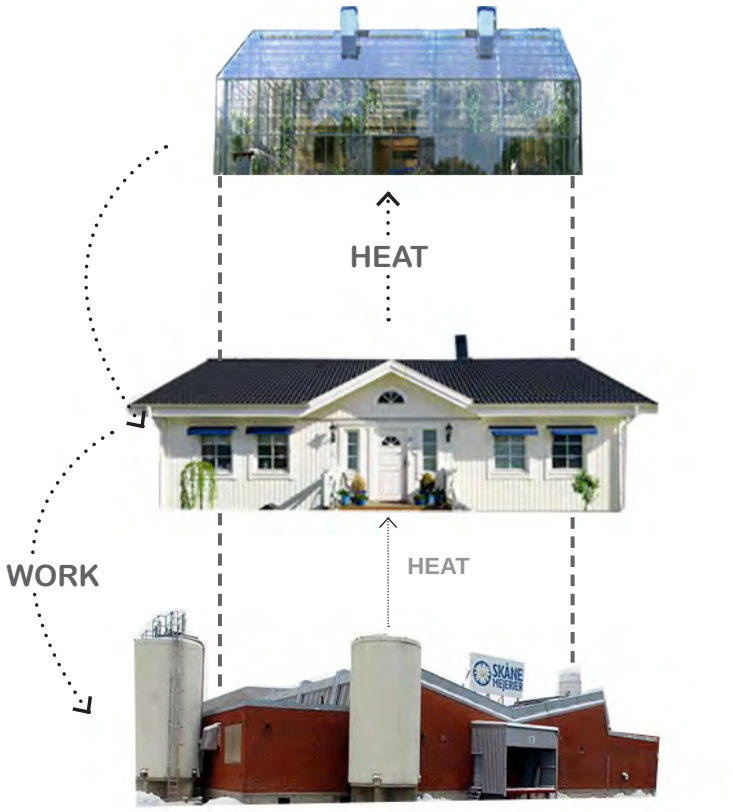
CO-EXIST TYPOLOGIES



6.4 CO-BENEFIT

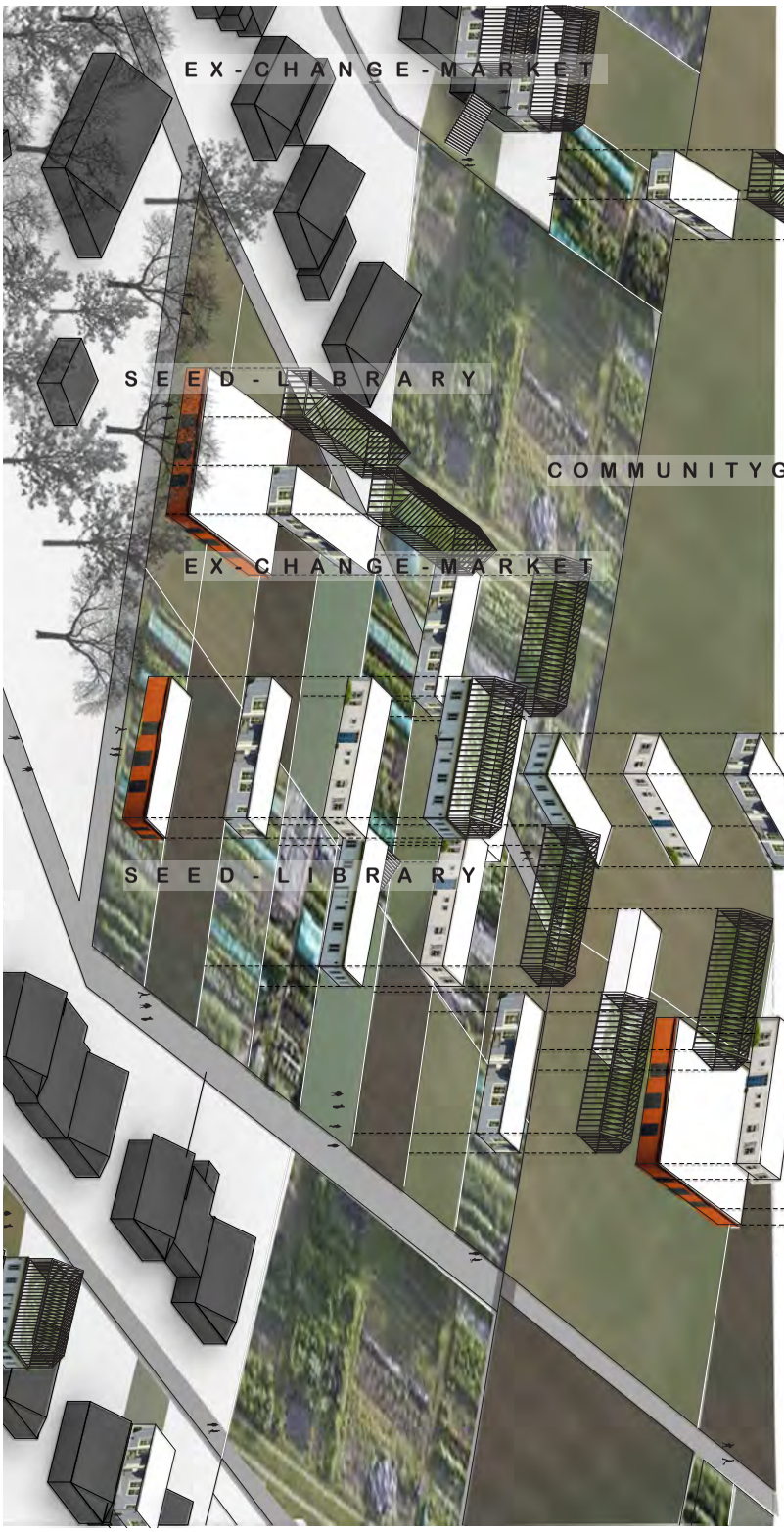
[M]




HEAT
WORK
HEAT
SKÅNE MEJERIER

[B]

ROOM-FOR-RENT
CO-EXIST-RESIDENTS-TO
USE-ALREADY-BUILT-UPON
EFFICIANT-LAND-USE
LAND-USED-FOR-FOOD-PROD



MULTI-FAMILY-HOUSING

MULTI-FAMILY-HOUSI

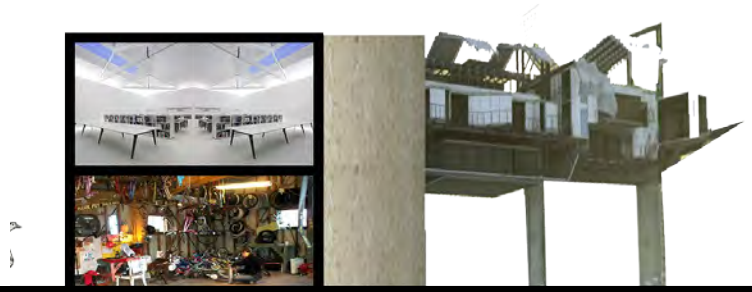
COMMUNITYGARDEN

RURAL+URBAN+GREEN

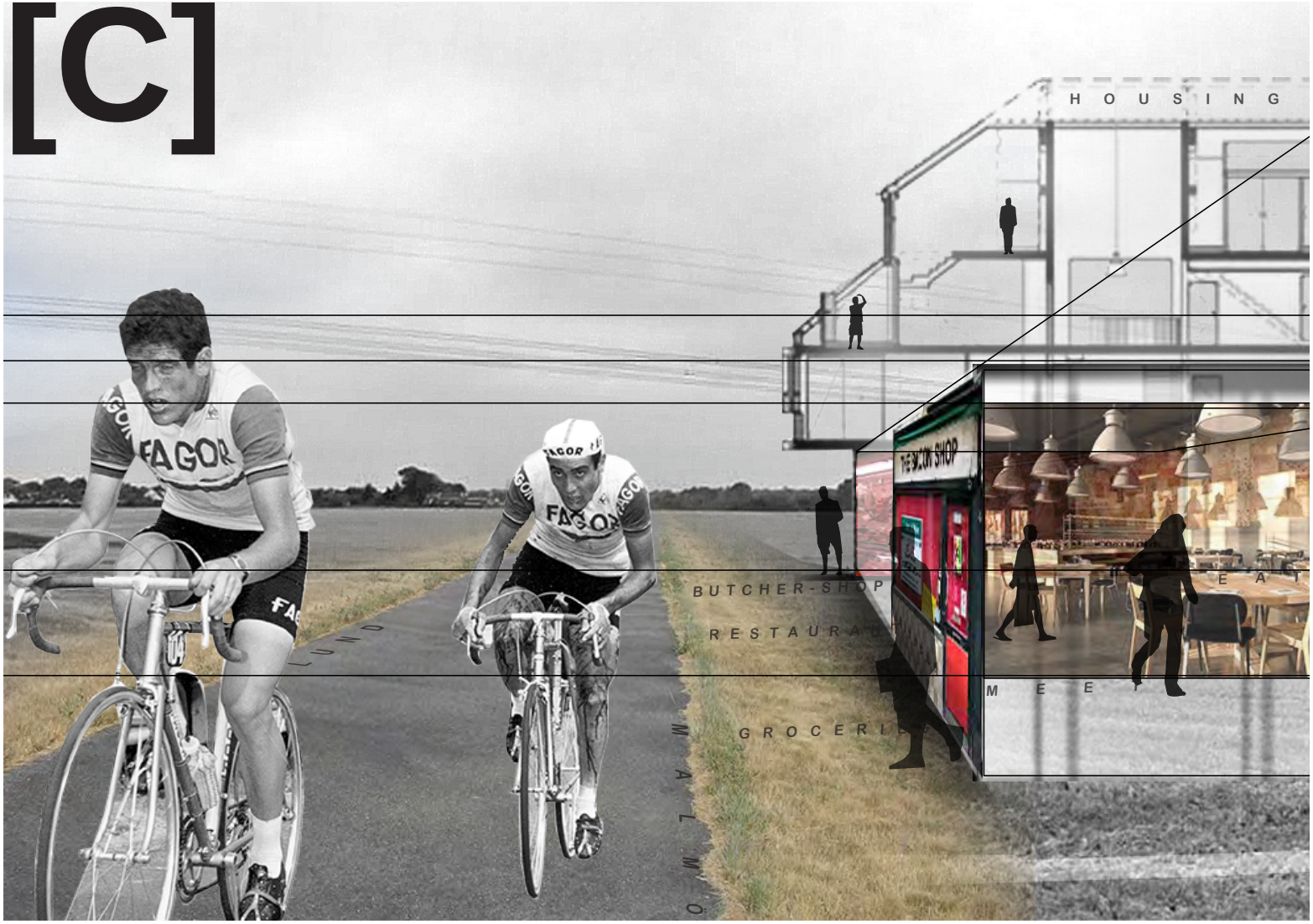
MULTI-FAMILY-HOUSI

RURAL+URBAN+GREEN

[C]



[C]

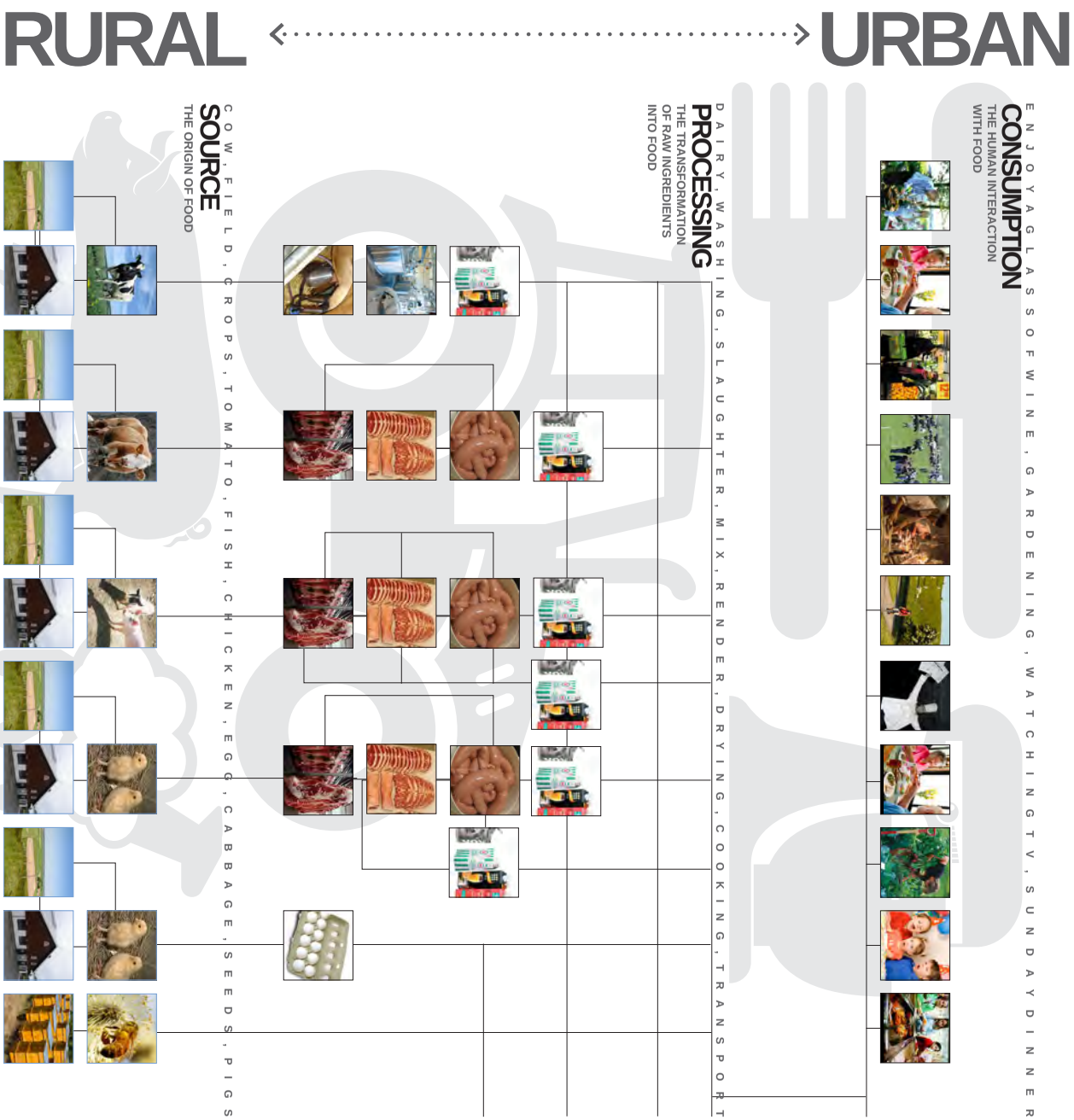



SLAUGHTER
LIVESTOCK

6.5 PROGRAM

Merge program by including food production and the source of food in the city.

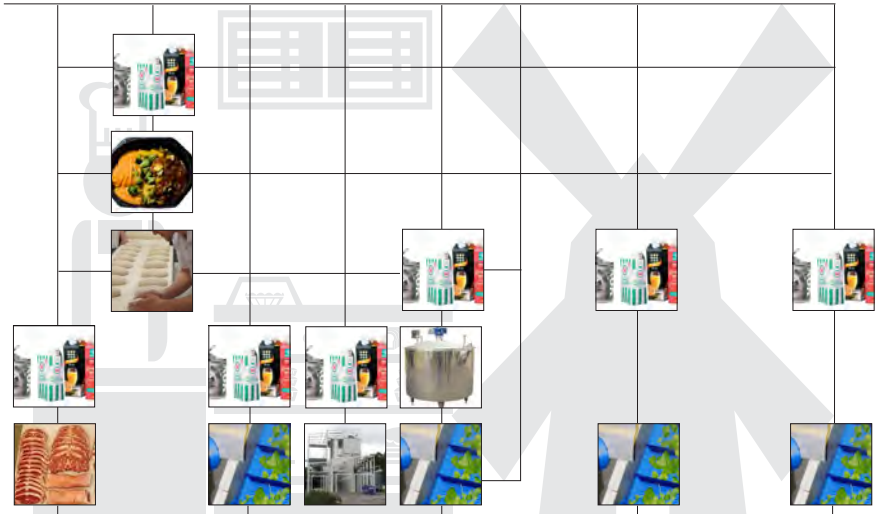
[S]



GROCERYSHOPPING, PREPAREAMEAL, BIRTHDAYCAKE, BUYINGHOTDOG, POPCORNATTHEMOVIES

URBAN

PACKING, PICKLING, SMOKING, FREEZING, CUTTING, ROASTING, PASTEURIZING, PREPARATION



BEE, APPLE, BANANA, BROCCOLI, SHEEP, HERBS, SHRIMPS, LEMON, LIVESTOCK, MUSHROOM, LAMB, EGGS

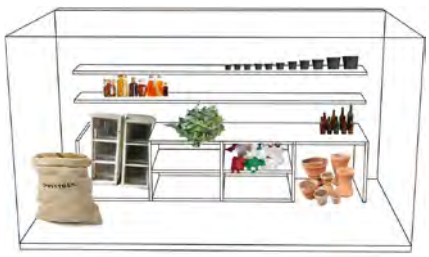
SEA-FOOD SEA-FOOD SEEDS FRUITS VEGETABLES PLANTS

RURAL

6.6 PRO-FOOD UNITS

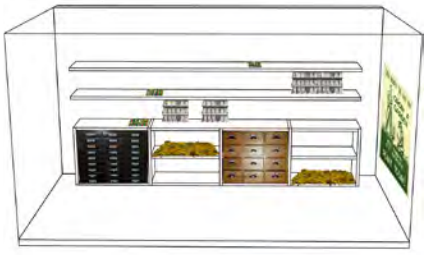
[S]

To spread knowledge about food, to make it accessable and bring it back in to the city.



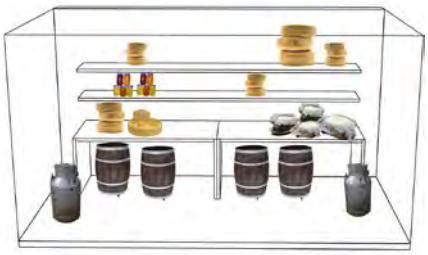
EX-CHANGE MARKET

EXCHANGE, GIVE, SELL REPAIR, RENT
OLD WINDOWS, JARS OR POTATOES



SEED LIBRARY

COMMUNITY LIBRARY FOR SEED EXCHANGE.
BORROW - GROW - RETURN

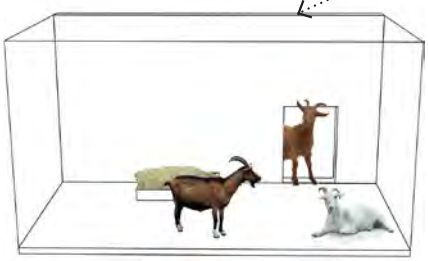


DIY - PROCESSING

FOOD PROCESSING WORKSHOP.
JAM, CHEESE OR SAUSAGE

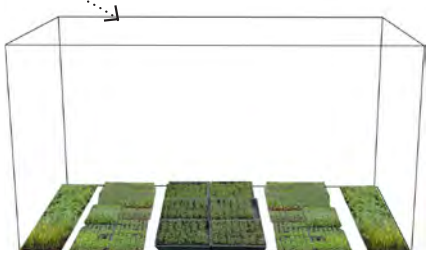
DIY - FARMING

BASIC START-UP TOOLS FOR CREATING CULTIVATED LAND AND MAINTAINING IT.
WHEELBARROW, SHOVEL OR RAKE



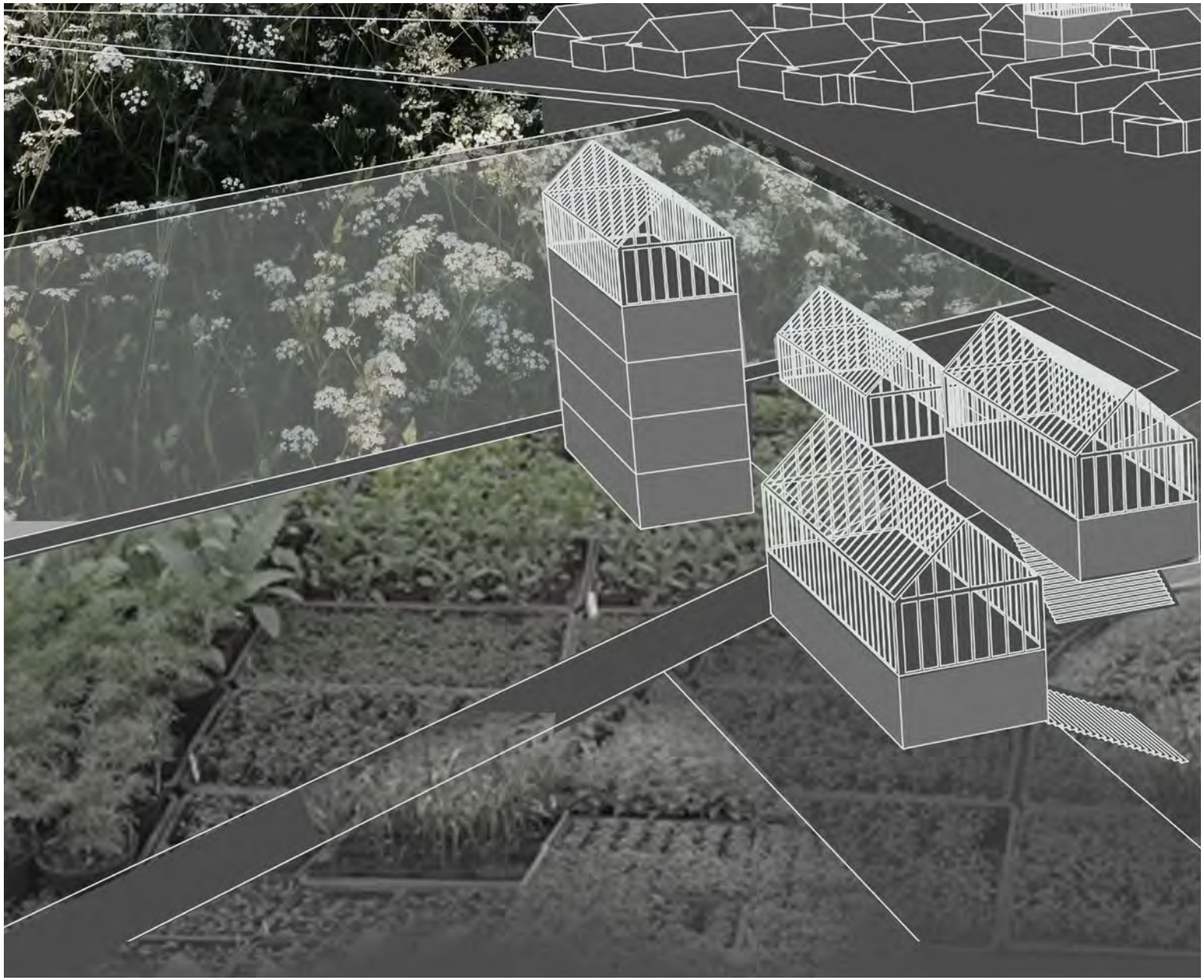
RENT A GOAT

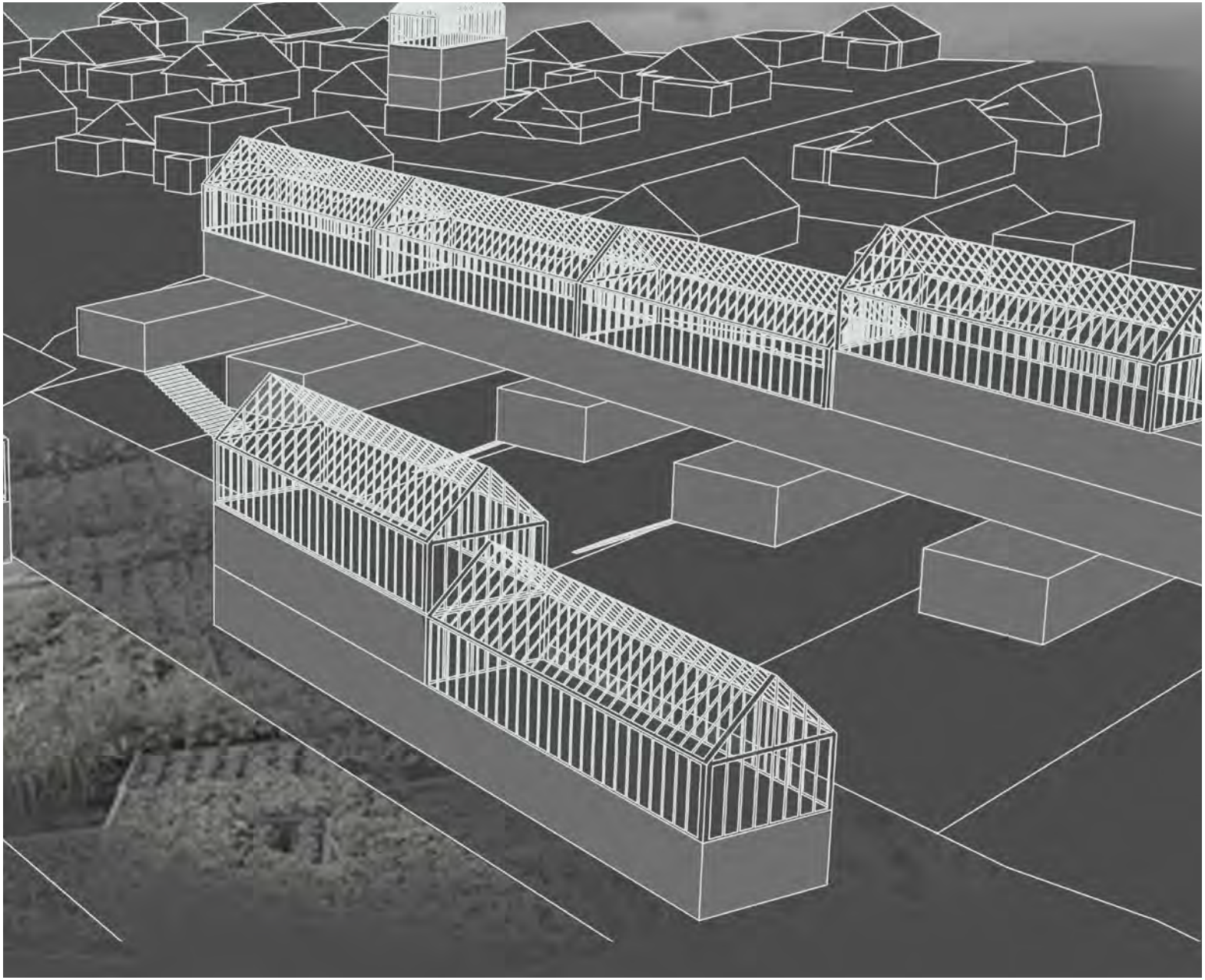
COMMUNITY OWNED ANIMALS
GOAT / HENS / RABBITS

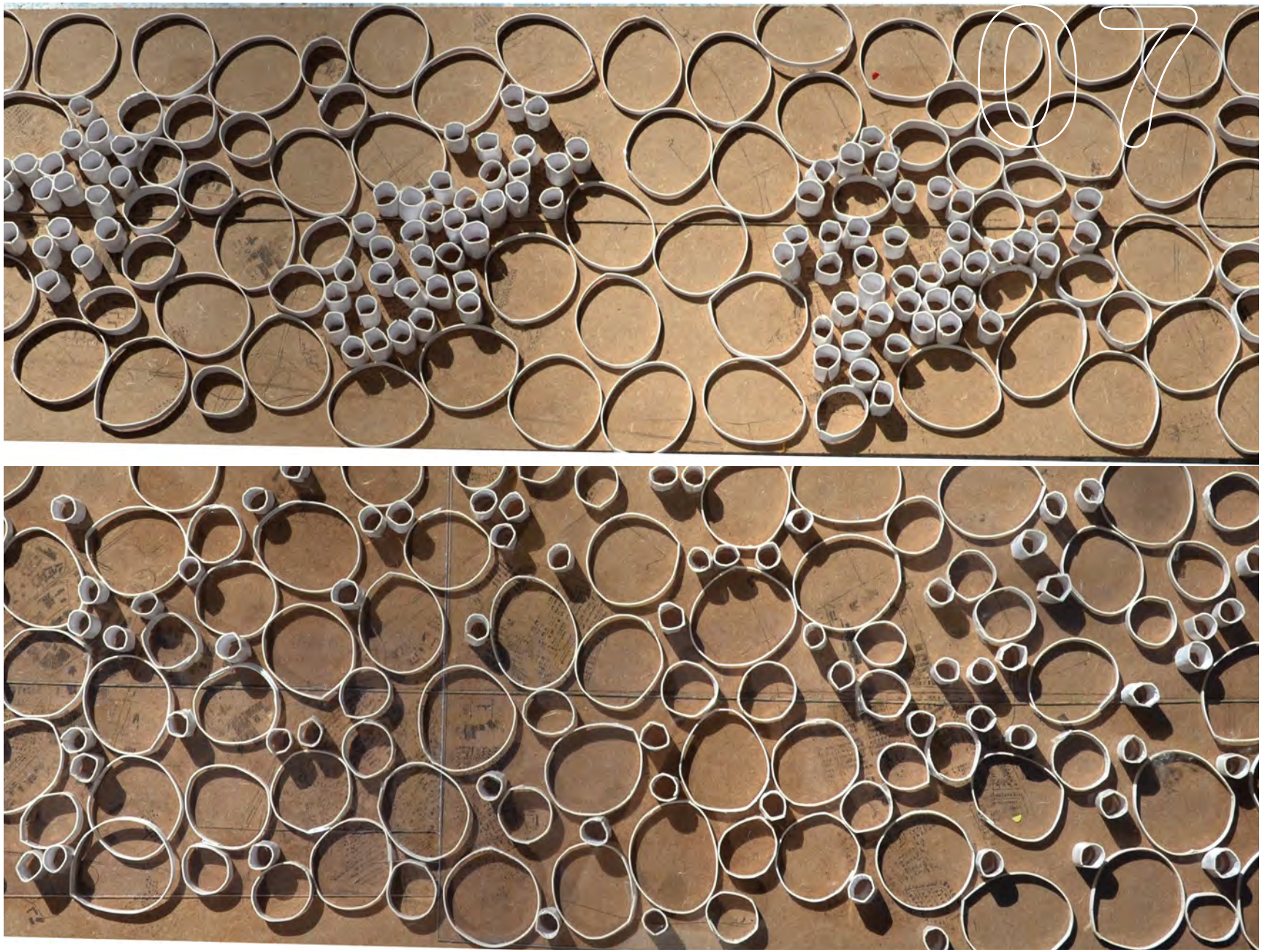


COMMUNITY FARM

SUBDIVIDING ARABLE LAND INTO LAND PARCELS ASSIGNED FOR RESIDENTS IN THE AREA.







07

MODELS

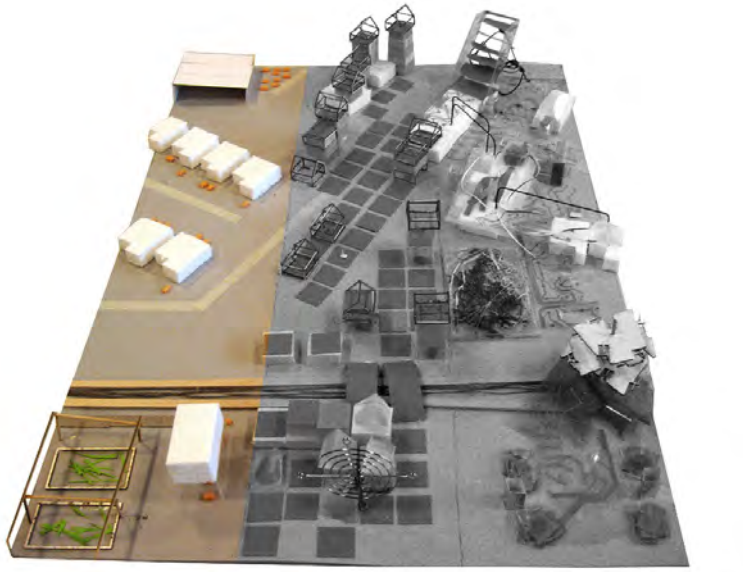
Co-existance in building scale.

Concept model showing the relationship between urban and rural - linear vs. merged.

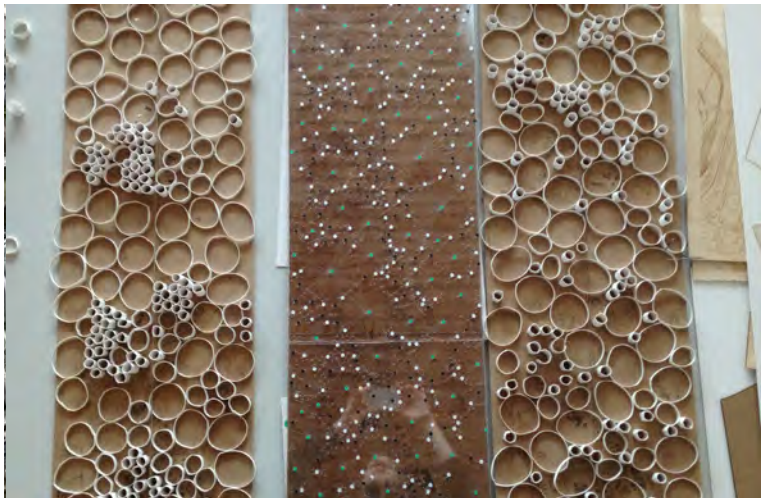
Existing relationship between urban and rural, high and low scale and density

New relationship a merged scale and density .

Big box area as border

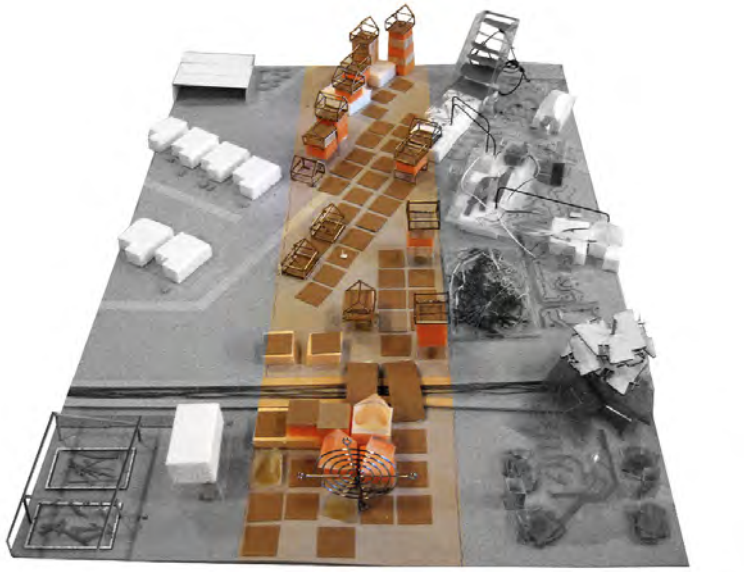


Usual on steroids

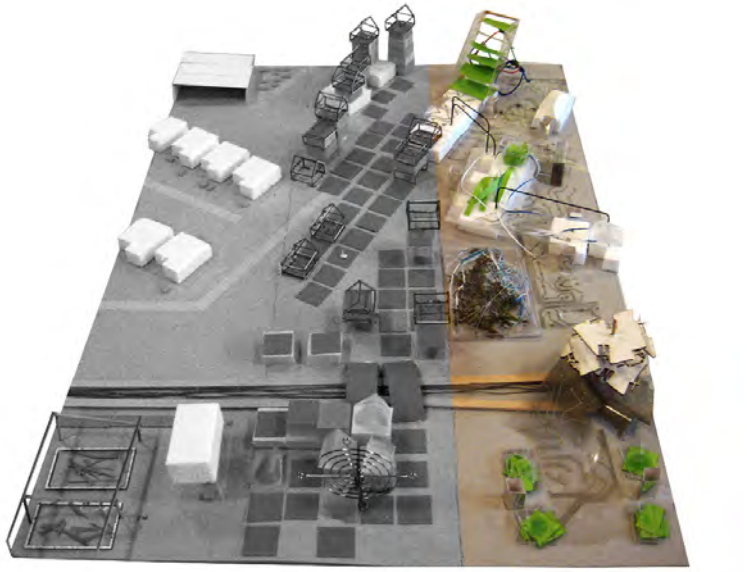


Recreation area as border

Borderland



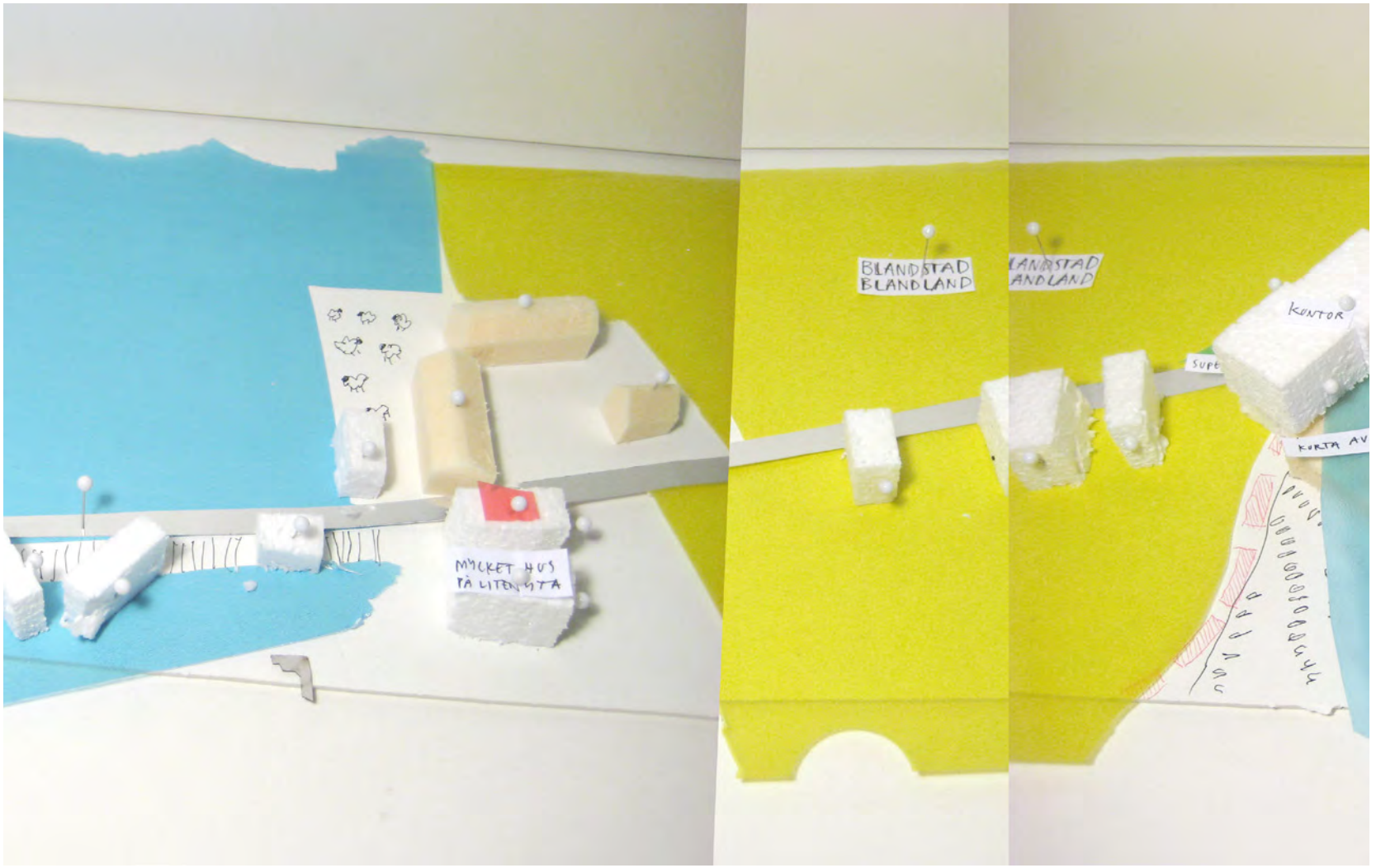
Co-operating community



Biological technology

Recreation area as border

Borderland


MYCKET HUS
PÅ LITEN YTA
BLANDSTAD
BLANDLAND
KONTOR
KORTA AV


AVSTÅND
ÖVERDÄCKNING
ICA
GRISAR