ETH Zurich Department of Architecture
ARCHITECTURE OF TERRITORY
Chair of Architecture
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Agritopia
Fall 2023

Animal Farming

Animal Landscapers

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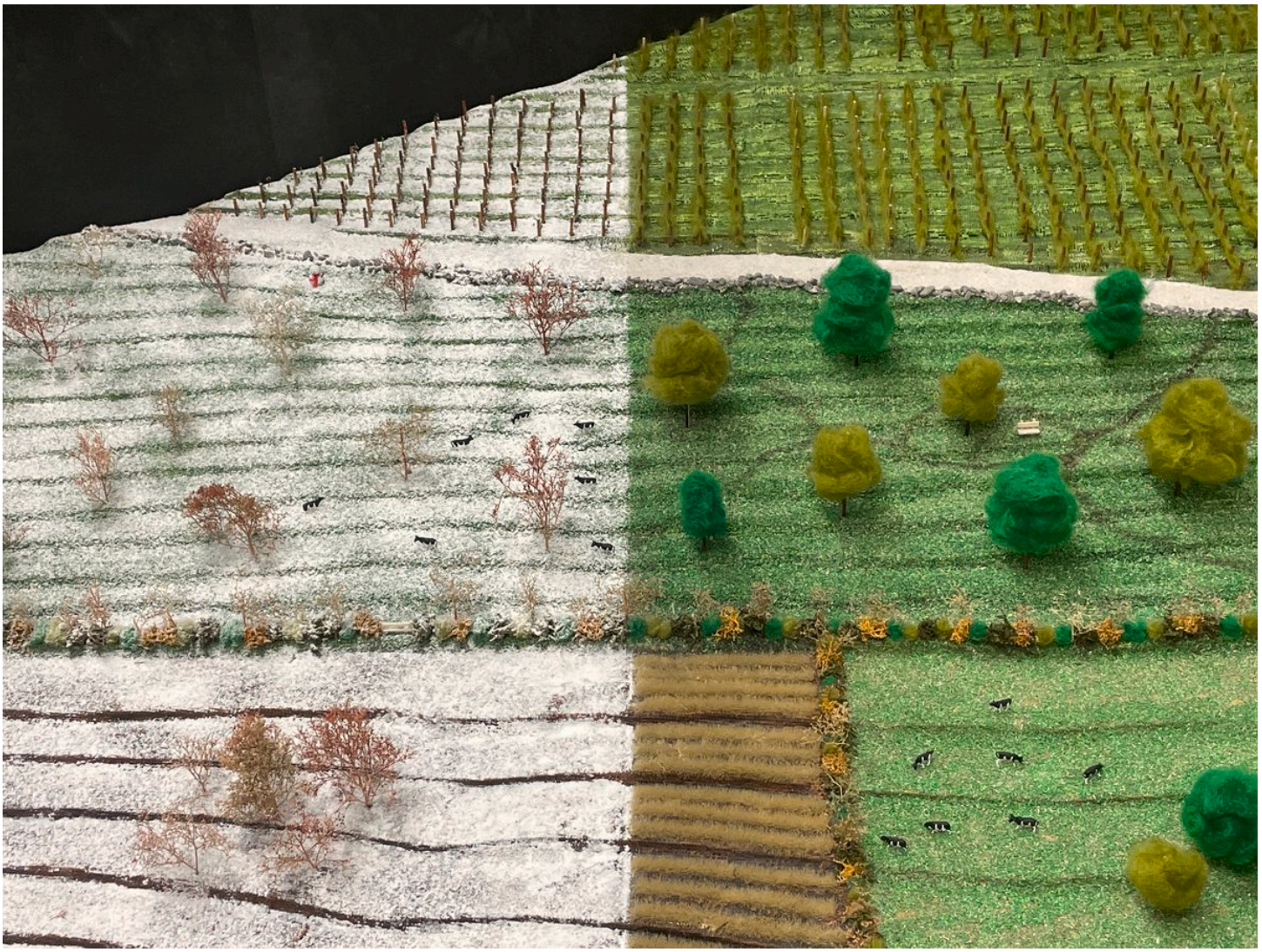


The high demand for animal products such as meat, eggs and dairy products in Switzerland is also evident in the agricultural area around Zurich North: pastures and farmland for the production of animal feed characterize the landscape.

The term “livestock,” which is widely used to describe farm animals, suggests an understanding of them as commodities. Looking at the mechanisms surrounding the production of animal products, it becomes clear that the agricultural system surrounding animal husbandry strives for efficiency and profitability. Little attention seems to be paid to animal ethics, or to ethics in general.

We believe that the current demand for animal products in Switzerland is not compatible with ethical principles. Instead, we propose establishing a new relationship with the animal beyond the commodity: Cows, pigs, chickens and other animals should be able to reclaim their role as active shapers of the landscape and live in freedom and dignity.

Animal Farming in Zürich Nord

From idyllic scenery to dirty stables, from casually grazing cattle to high-intensity fodder production: the current situation of livestock farming in Zürich Nord shows the contradictions of one of Switzerland’s most important agricultural sectors.

1194 chicken, 370 cows, 110 pigs, and 11 sheep currently live on our site in Zürich Nord. They are all housed in barns and receive hay and fodder supplemented with nutrients to promote animal product production. This feed is cultivated on land that could also be used directly for human food production. The animals' outdoor access is governed by Swiss animal husbandry laws. This housing practice is justified by the animals' close dependence on farmers who must milk and feed them. For this purpose, calves are separated from their mothers shortly after birth, contrary to the laws of nature. The animal's living space is characterized by containment through fences and barns.

Calves in the barn, separated from their mothers.

Pigs and chicken are managed differently in agriculture due to their potential invasiveness to the landscape in concentrated industrial settings. Consequently, they are either confined to designated enclosures with limited freedom or housed in mobile containers, moving from one meadow to another.

Chicken behind a fence.

Industrial animal farming in Zürich Nord treats farm animals as production machines for food. They are responsible for producing animal products such as meat, milk, and eggs. If they become incapable of fulfilling this purpose, they are culled. The processing of meat into various forms like ground beef, sausages, and nuggets facilitates product sales to consumers without evoking the image of a deceased animal being consumed. Their traditional roles, such as field support and landscape maintenance, are replaced by tractors and milking machines.

Yogurt in self-service vending machine.

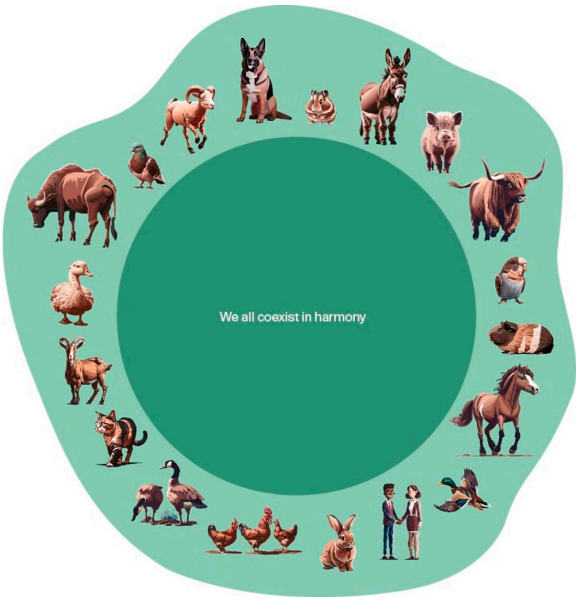
Beyond the Commodified Animal

Anthropocentric approaches to farming have led to animal exploitation and morally bankrupt practices with complete disregard of ecological sustainability and the value of life.

In a capitalist system people are subjected to consumerism and the strive for financial security. Within this system, the value of an animal is reduced to its commodification. A free animal has no monetary gain in such a system. They are essentially enslaved to an anthropogenic agenda and have been selectively bred to produce the most possible amount of milk or have the tastiest meat.

Capitalism is egocentric and does not incorporate the delicate dynamics between all living beings that allow nature to flourish. In Agritopia, farm animals are freed from capitalism, meaning they do not serve the demand for animal produce. Instead, they become part of an ecocentric system of equality and symbiosis, reclaiming their origins as territorial landscapers and caretakers.

Ego



The potential for a nonhierarchical coexistence of farmed animals and humans.

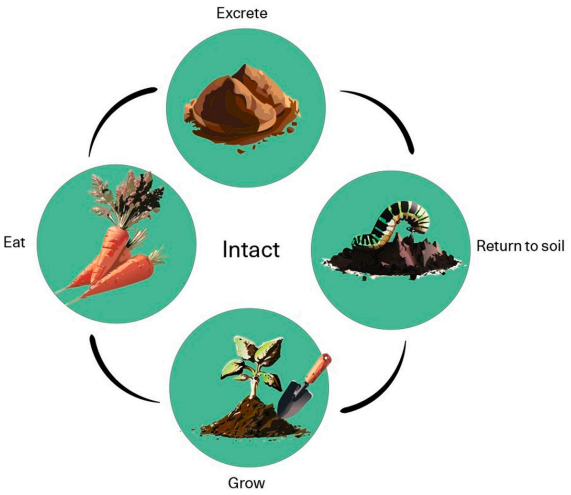
The exploitation of the farmed animal under a capitalist regime.

The Potential of Human Manure

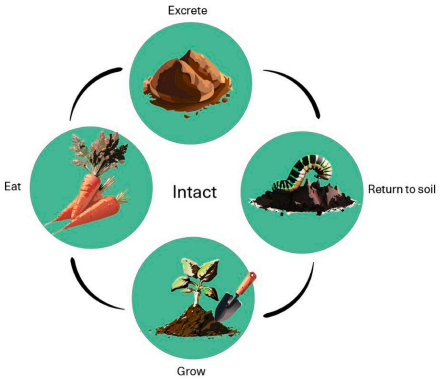
An important factor in successful agriculture is proper fertilisation. Animal manure is suitable but relying on that alone to fertilise the crops of Agritopia would mean subjecting animal numbers and their manure output to a human requirement, which would fall back again on the anthropocentric hierarchy. But humans produce manure as well. While human manure is still prohibited by current laws and regulations due to difficulty sterilising it to necessary standards, there are already practical and viable solutions to this problem. The use of human manure will invalidate the argument that large numbers of livestock are necessary to provide sufficient fertiliser for crop cultivation.

In our vision for Agritopia, people will have compost toilets, dividing the feces from the urine for separate treatment. These human excrements will be further fermented into usable fertiliser for crop cultivation. This system is universally beneficial and relieves the water waste and pollution management.

Broken waste cycle according to *The Humanure Handbook* by Joseph Jenkins (1996).



Intact waste cycle according to *The Humanure Handbook* by Joseph Jenkins (1996).



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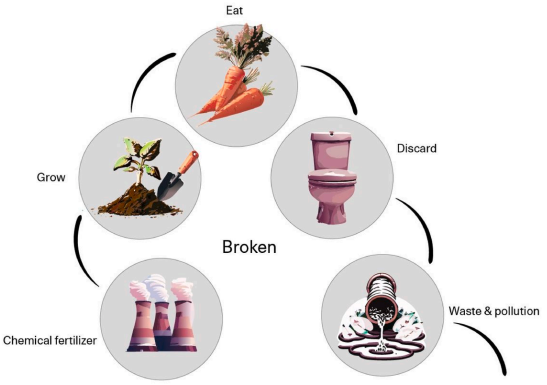

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Agritopia: The Animal as Landscaper

Ecological synergies between animals, plants and people benefit the territory and create a rich and resilient landscape. It is partly maintained by robust and strategically suited specimen: meet the animal landscapers of Agritopia.

In Agritopia, we implement mixed herds to efficiently graze diverse pasture lands and conduct comprehensive landscape management. This approach capitalises on the animals' varying dietary needs and distinct grazing behaviors. Most of our breeds are curated by ProSpecieRara, contributing to the reintroduction of biodiversity into our animal kingdom. ProSpecieRara is a foundation whose purpose is "the conservation and promotion of genetic diversity in fauna and flora."

In Agritopia the animals fulfill the following purposes, in order of priority from top to bottom:

1. Equality and Dignity: Signifying that our animals are esteemed and treated with respect.

2. Landscaping: Encouraging animals to revert to their fundamental purpose—grazing. All breeds contribute uniquely, collectively culminating in comprehensive landscape maintenance. Additionally, we aim to increase accessibility to the animals.

3. Synergies: Highlighting the collaboration between animals and humans, fostering a holistic approach that supports our landscape maintenance objectives.

4. Fertilization: Field fertilization is primarily managed by human manure, although animals can still contribute if human-derived fertilizers are insufficient.

5. Animal Products: Animals are no longer solely regarded as producers of goods. However, any products derived from them, if generated, are consumed with appreciation.

Through our cyclical approach we implement these principles. Animals are released more freely into the landscape, enjoying greater mobility and being tended by a shepherd rather than confined by extensive fencing. This grants the animals increased freedom, allowing them to naturally graze on prioritized vegetation, complementing agricultural maintenance efforts. The circulating movement on the site also contributes to natural fertilization of the soil. Animal products are obtained as a result: meat when an animal is unwell, milk when a calf passes away (briefly provided by the mother) and occasionally eggs.

Animals

GOATS

Within our herds, we have the tenacious Booted Goats, diligently combating overgrowth and forest encroachment. Their robust and weather-tolerant nature, coupled with thick skin and smaller udders, facilitates easy movement through thickets. Other suitable goat breeds for landscape management include Capra Grigia, Capra Sempione, Grüenochte Geiss, and Kupferhalsziege.

SHEEP

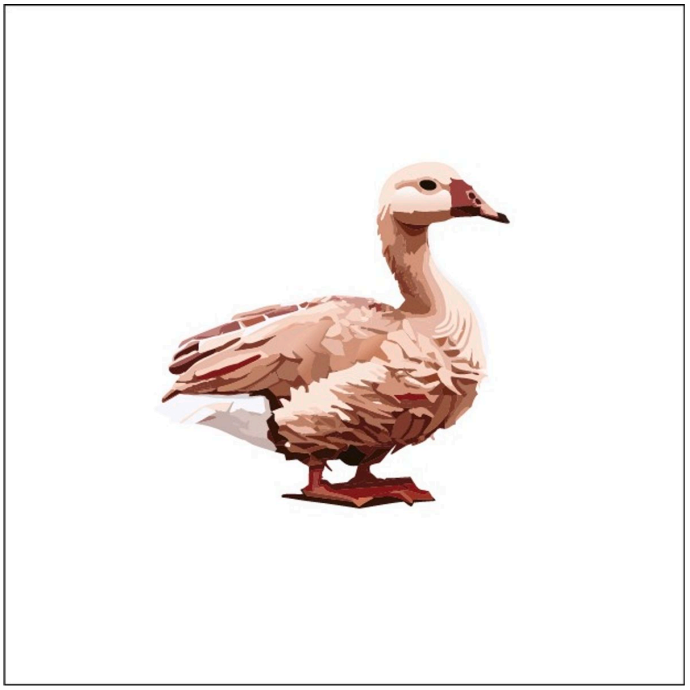
Complementing the diversity of goats, the Skudden Sheep graze across our lands. As lightweight animals, they delicately tread on challenging terrain, preserving the grass cover in sensitive areas like heaths, moors, and wetlands—making them particularly beneficial for Agritopia's wetlands. Their affinity for bark and foliage supplements their mineral intake, with the remainder of their dietary needs met through foraging.

CATTLE

Highland Cattle also grace our herds, providing a low-impact trampling effect suitable for wet regions. Thriving in open pasturelands, they efficiently consume vegetation without allowing for excessive growth. The Highland Cattle further contribute to the tapestry of our diverse landscape.

HORSES

Lastly, the Exmoor Ponies gracefully conclude our diverse ensemble. Their grazing behavior, marked by meandering and a deliberate avoidance of creating bare patches, harmonizes with the habits of other livestock. The ponies' diverse diet, including ferns uncommon for domesticated horses, and their rolling contribute to open spaces on pastures, fostering optimal plant germination. Their hoof impact also aids in suppressing the growth of bracken fern.



GEESE

Another valuable addition to our animal community is the Dieholzer Goose. Exhibiting an unpretentious grazing style, they consume what might be overlooked by goats and sheep. Beyond their culinary contributions, these geese serve as potential guardians, capable of replacing traditional watchdogs in defending our herds. In permaculture gardens, their knack for controlling insects and snails proves invaluable in preventing damage to plants.

PIGS

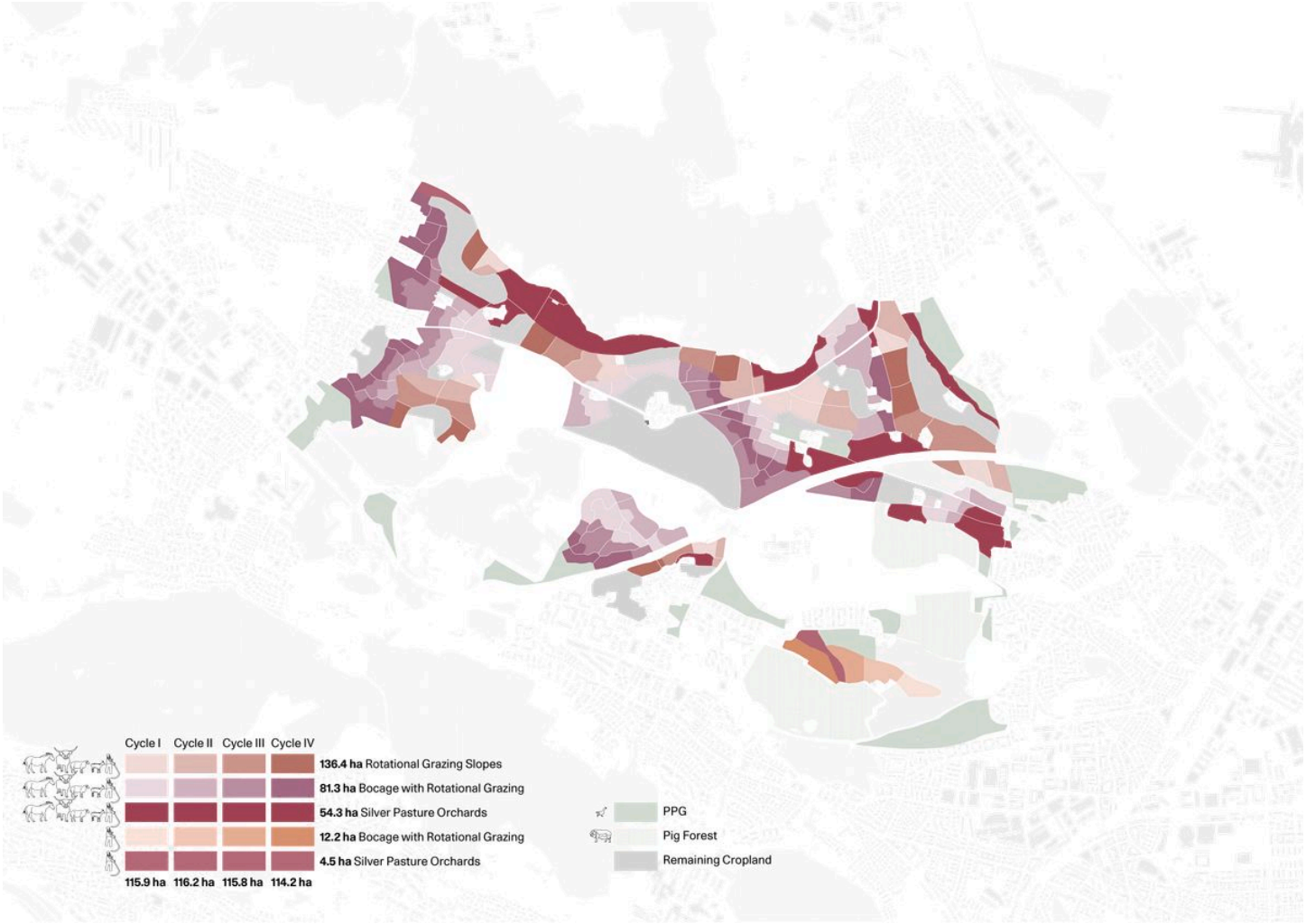
In addition to our herds, we have Mangalitza pigs in the small woodlands. They consume the roots of blackberry and nettle plants, helping control vegetation growth. Moreover, the water edges are maintained by the Mangalitza pigs, creating an ideal habitat for tree frogs and other amphibians.

CHICKEN

Around the farm, we keep chickens that, through their free-range activities, clear the area of weeds and emerging thickets. This natural pest control extends to snails and fly larvae, contributing to a healthier and more vibrant farm environment.

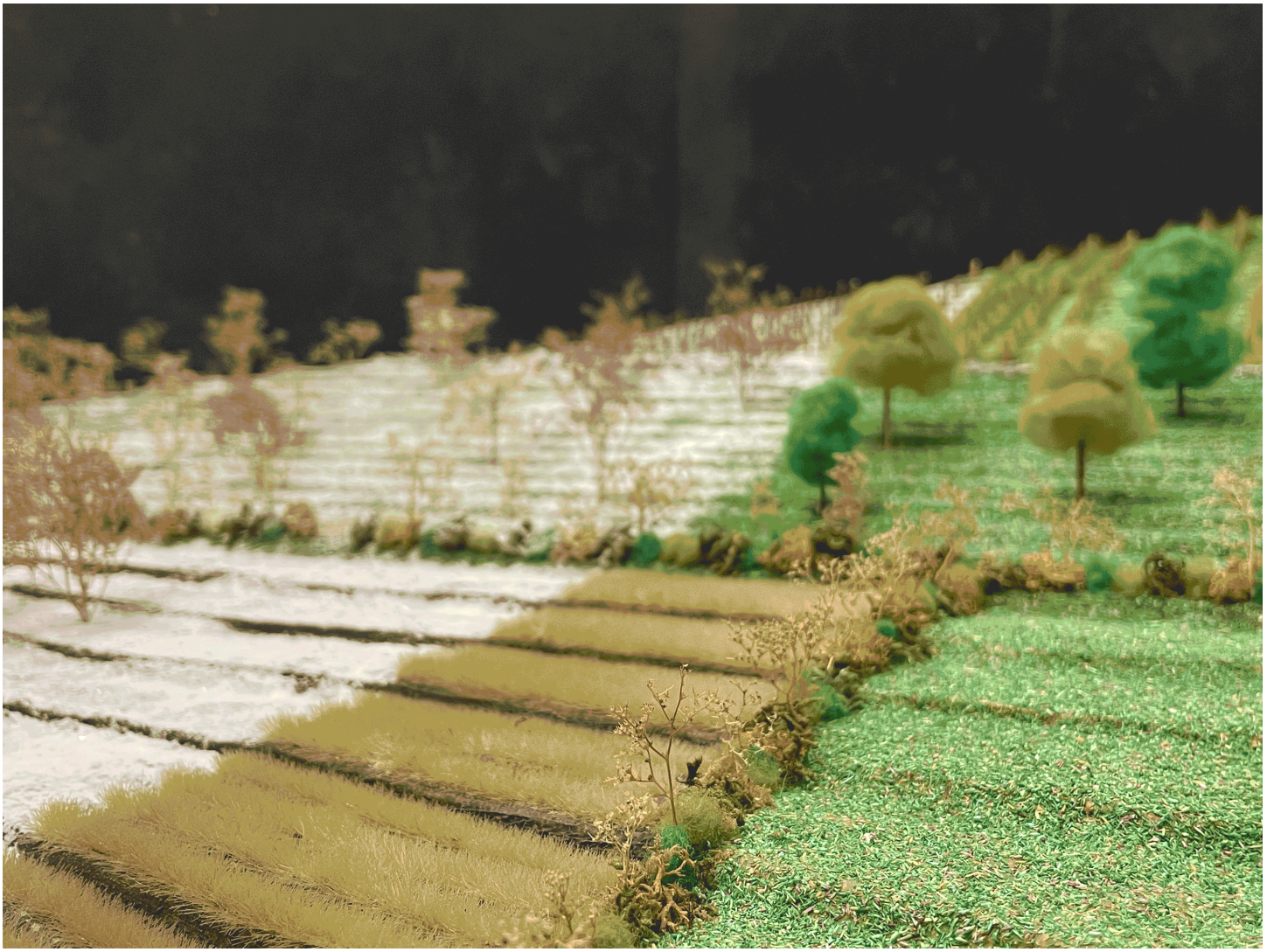
Herd

Amongst these animals, the booted goats, skudden sheep, Highland cattle, and Exmoor ponies form our rotational herds. In these meticulously detailed cycles, they graze upon the pastures, contributing to landscape management. To ensure the comprehensive grazing of all fields and the meticulous upkeep of the entire landscape, a total of 405 animals are requisite across the entirety of the estate, distributed among three herds, each comprising 135 animals. On their journey, they are accompanied by a shepherd and safeguarded by a sheepdog.



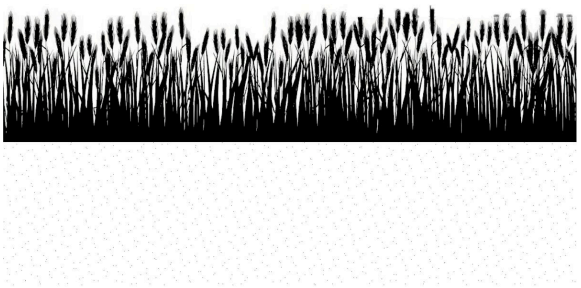
Total area used by and for the animal landscapers.

Agritopia: Crop Rotation and Herd Movement



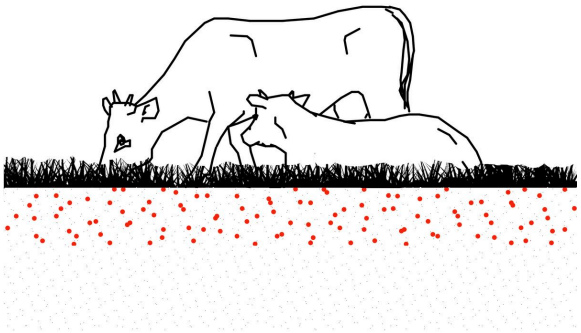
Landscaping through grazing and manure droppings is the primary role of an agritopian herd. An intricate system of an annually changing crop rotation between four animal lanes allows for the fallows to be fertilized and regenerate for the next crop cultivation. Follow the herd on a year long circuit around the territory, illustrating the crop rotation system and the transitions between the different cultivation sectors.

We start this ever-repeating cycle on a crop field that is ripe for harvesting. At this point the soil is strained from all the use and low in nutrients. Ideally the crops are then harvested in a sparing way, so that shortly after a herd of animals can move in and feed on the crop residue. In turn they raise the manure content in the soil by defecating on it. After the herd has moved on to the next field, a mixture of intercrop seeds is sown for the purpose of soil recovery in the form of so-called green manure. These intercrops grow really fast, so after just a few months the next herd can come in and feed on the intercrops. At this point the soil has mostly recovered and thanks to the visiting livestock it is also sufficiently fertilized. After the herd has left, the rest of the intercrops get ploughed so that their biomass is integrated into the soil. Thanks to the high manure and green manure content, the field is now perfectly suited to be cultivated once again and the cycle can continue.



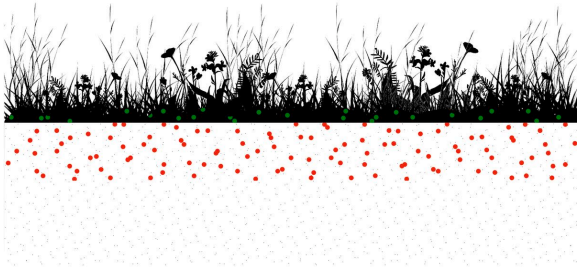
Mixed crops of the previous season are ripe and ready to be harvested.

Soil: Poor in Nutrients
Manure content: Low



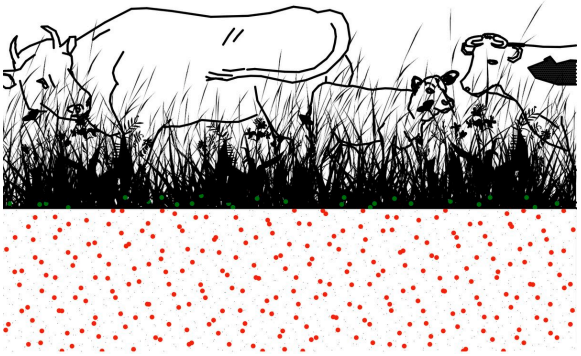
Crops are harvested and the herd gets to feed on the crop residue. In turn they fertilise the soil.

Soil: Strained
Manure Content: Medium



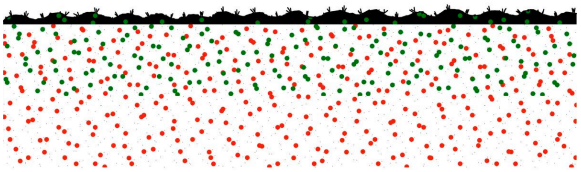
Culture of mixed intercrops are sown to be used as “green manure” for soil recovery. This plant mixture grows very fast.

Soil: Recovering
Manure Content: Medium



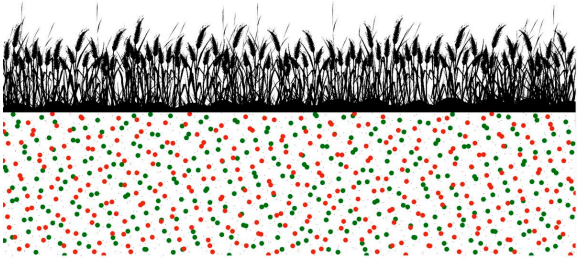
Herd arrives to feed on the intercrops. Animals get nutrients and in turn fertilise the soil.

Soil: Fertilized
Manure Content: High



Green manure's biomass is incorporated into the soil through plowing.

Soil: Fertilised and Mineralised
Manure Content: Very High

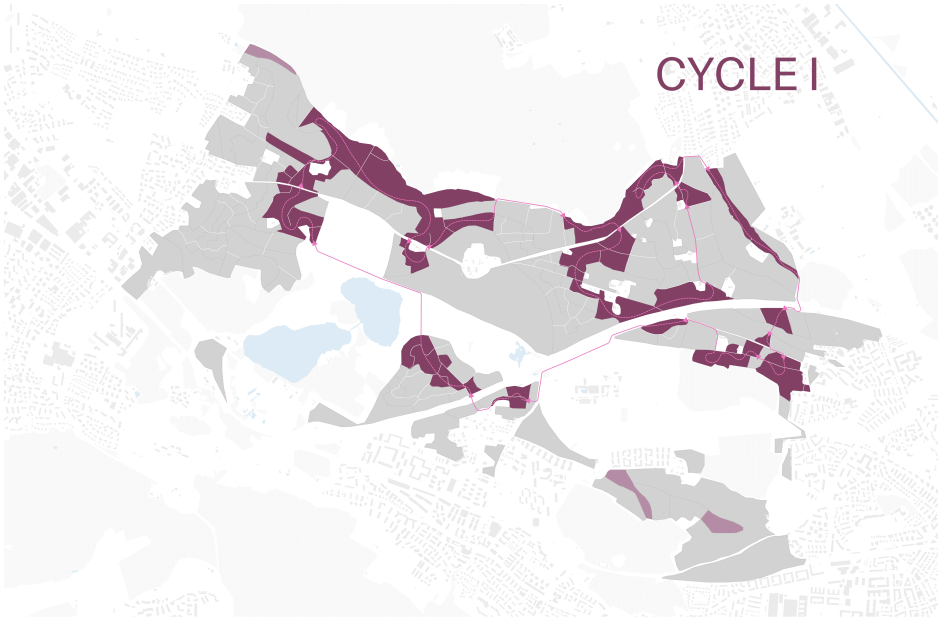


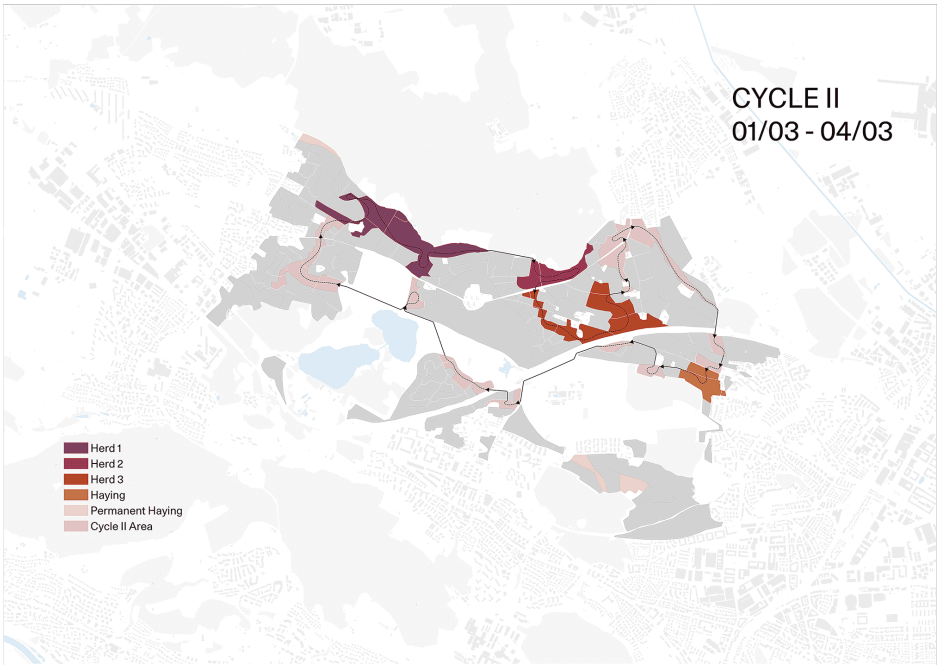
New crop culture is sown.

Soil: Ideal for cultivation of manure-intensive crops thanks to nutrient-dense soil.
Manure Content: Very High

In Agritopia the animals primarily serve the purpose of landscape maintenance. No arable land is allocated for their feed production. This is why the animals are only found on areas that are not suitable for arable farming. Our herds consisting of sheep, goats, cattle and horses graze in the silva pasture orchards, the rotational grazing slopes and in the bocage with rotational grazing. As the rotational grazing slopes and bocages with rotational grazing are planted in a 4-year cycle, the herds are always confined to a quarter of that area, the fallow land. This area and the silva pasture orchards are grazed by the herds, which simultaneously contributes to landscape maintenance and also fertilizes the land.

A pasture below 500 meters above sea level experiences four growth cycles annually between February and November. Consequently, we have divided our herds into three groups, grazing offset to each other. The fourth growth cycle is harvested as hay. This hay is then fed to the animals during winter, both in the barn at Katzenrüti and on the largest silva pasture orchard, where the herds mainly stay during winter. The animals are highly resilient, and thus, groves of trees suffice as shelters and protection against the weather.

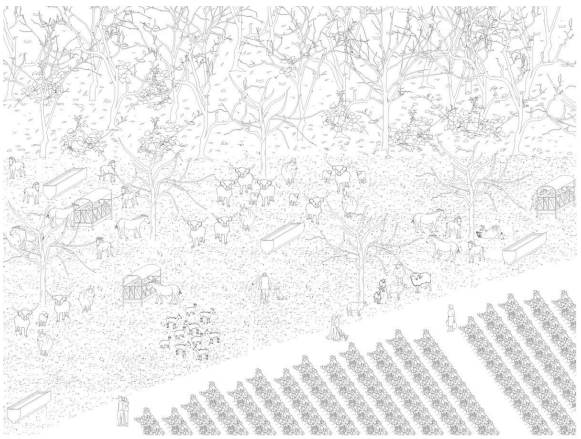




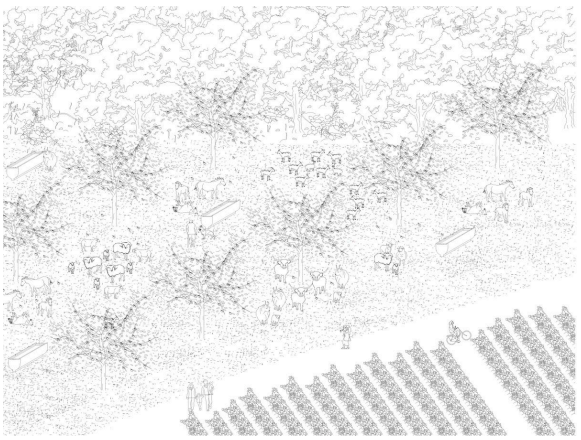
Cycle II Annual Rotation

In summer they pass bocage
with rotational grazing fields

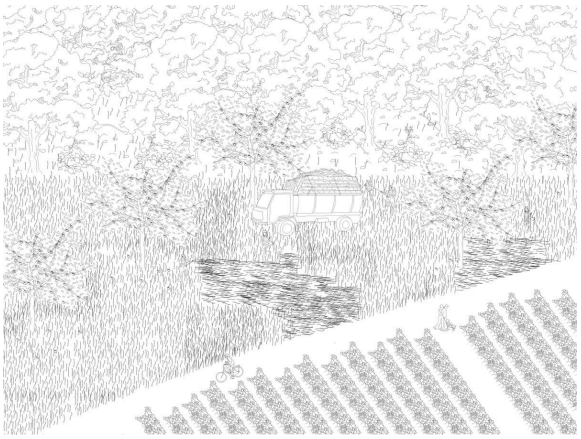
,while the bocage with rotational
grazing fields are empty.



In winter the animals live on the
largest silver pasture orchard



,as well as silver pasture orchards



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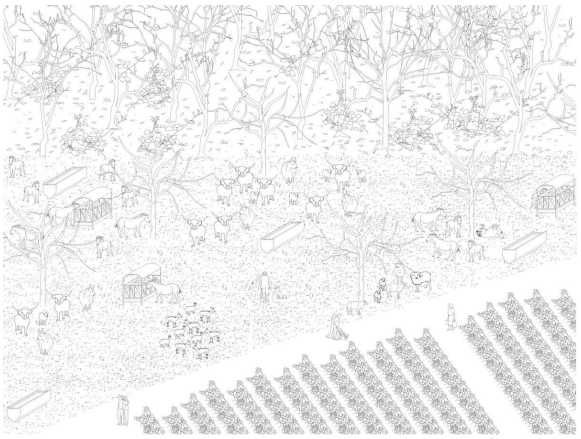
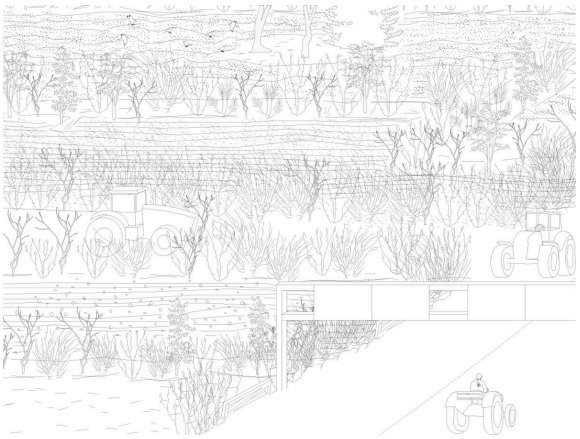
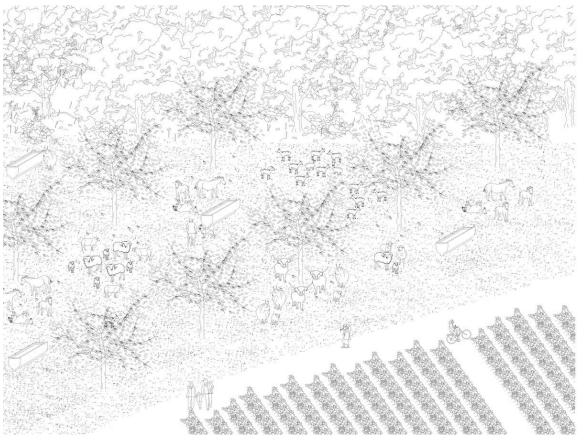
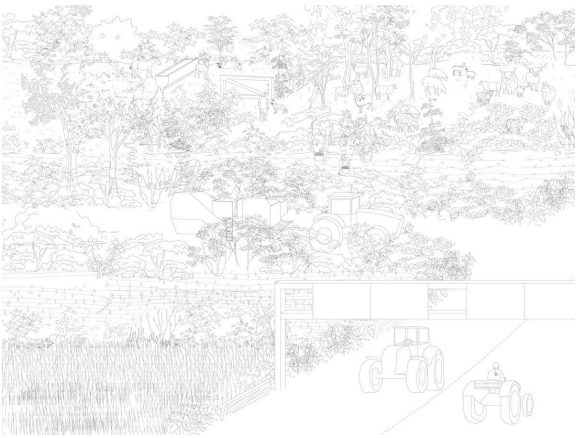




In winter the animals live on the largest silvopasture orchard.

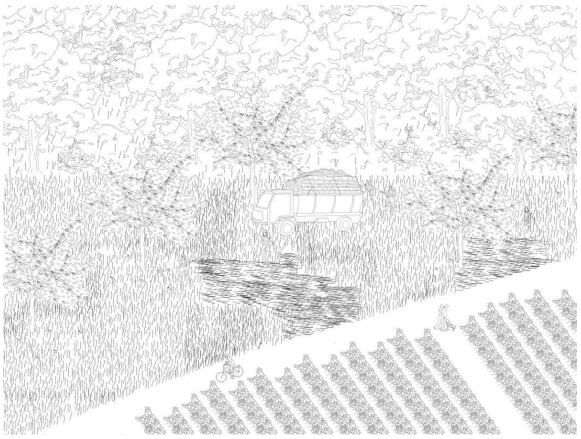
...while the bocage with rotational grazing fields are empty.





In summer the herds pass silva pasture orchards.

...as well as bocage with rotational grazing fields.



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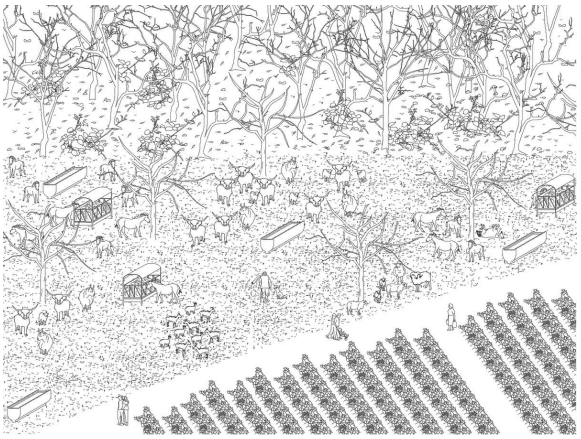

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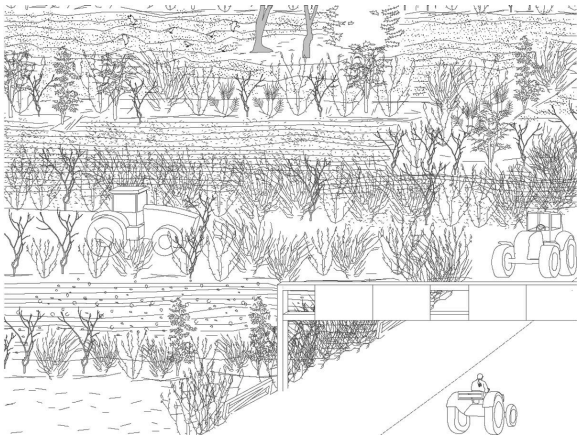

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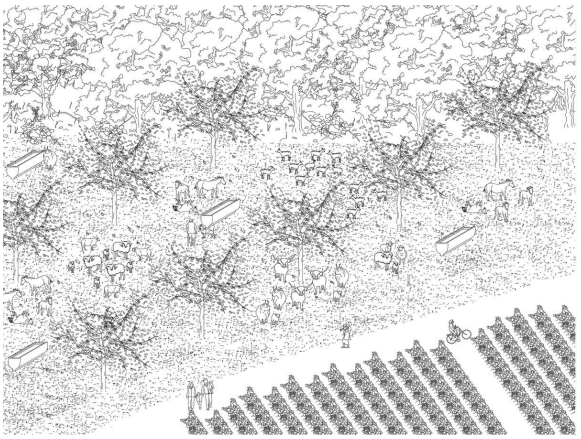

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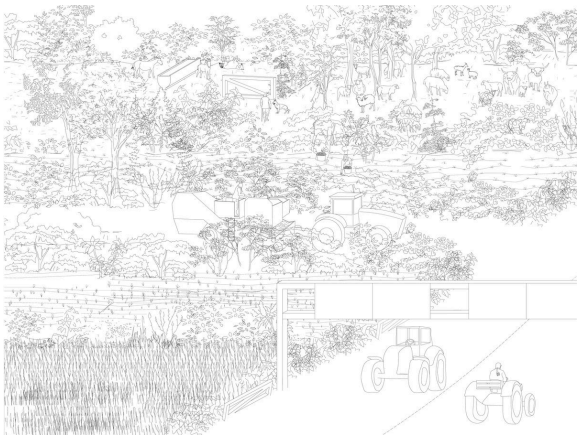

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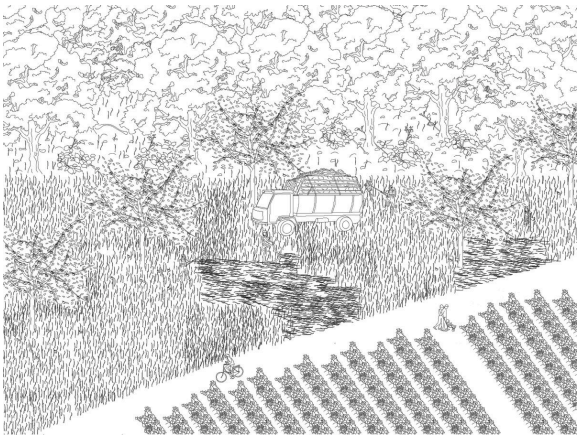

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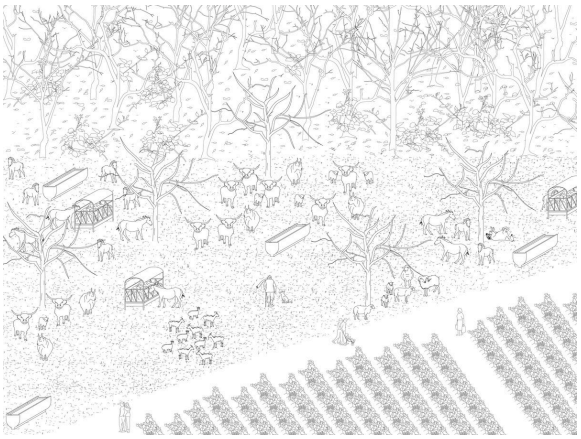

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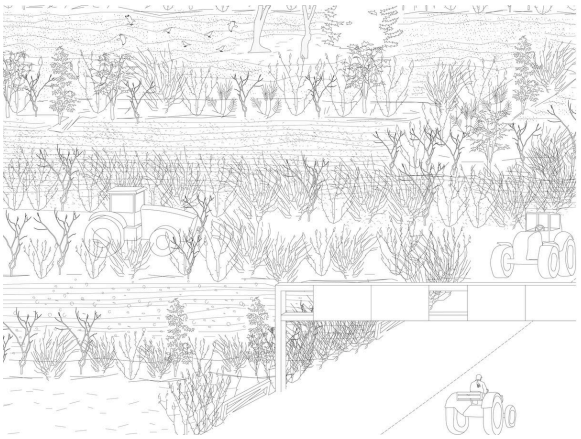

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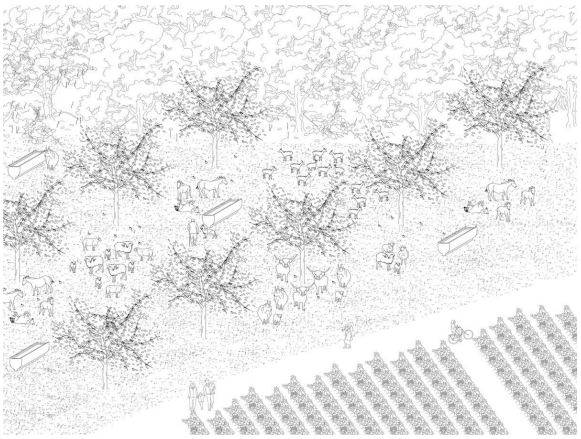

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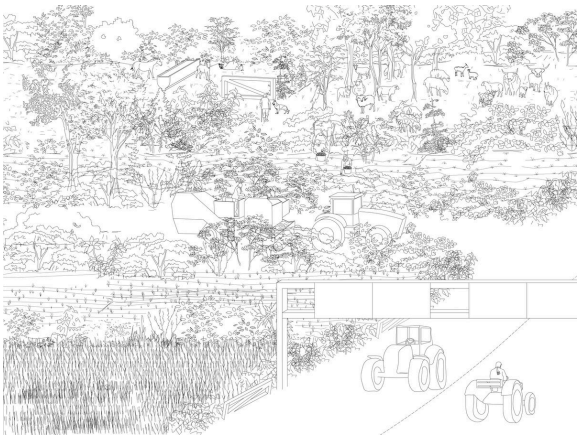

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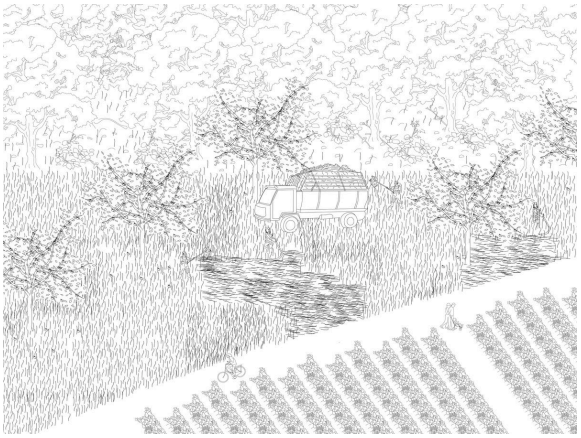

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SOURCES

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