**BARN HOUSE**

We believe that in order to be sustainable, we need to be radical as well as realistic.

We believe that ecological sustainability is inseparable from lifestyle and culture.

We believe that in order to be sustainable, we need to live sustainably.

We believe in a mixture of places, in locality.

The theory behind this project is that of “Radical Realism.” The central idea of this is that we can converge towards radical, as well as realistic, sustainability by combining concepts of ecological and cultural sustainability. This implies that designing ecologically sustainable architecture is not enough. Sustainability needs to be observed at a much larger scale, at the scale of a whole lifestyle.

The main idea of the project is that of connection with nature, and thus a broadening of the concept of sustainability. This connection with nature is achieved here by horses and humans sharing their lives. Life with a horse can represent both a symbolic and a real connection between humans and nature. Animal and human cycles can be mirrored in order to create a universal cycle in which one’s whole life becomes sustainable. Horses were chosen as the most appropriate animals for this project as they characterize the locality.

The project uses low technology. It uses the natural characteristics of the location: sun, wind and rain. This makes the project a simple and a number of cycles of energy flow. The horse makes an essential contribution to this. They are used in the way they are naturally used. As an animal, they are not only animals but they are also used to perform a function. The energy from composting is used for feeding the human space. Compost is then used for growing plants.

In order to visibly the smell generated by the horses, local soil is used as the main material of the walls. The fact that its designed to be easily replicable means that the house promotes interaction between building and user. Because of this, people are able to modify the facade and adjust it to different seasons and needs.

**Life with a Horse**

The connection between man and nature is expressed through freedom of movement and personal responsibility. Living with animals is part of learning how to be sustainable. The life model follows the change of seasons. During the summer, a horse is completely open to nature. This allows ventilation. A horse mainly controls the living area by changing the position of the stable and humans share their living space. The heating is produced through capturing solar energy which regulates the usage of home body temperature and reduces the need for heating.

**Life-cycle assessment of CHARCOAL**

The soil produced by horses demanded special attention in the materials and particular function of the facades. In order to overcome the smell from the horse, domed volumes of walls charcoal has been chosen. Charcoal comes from local forests and is produced in shapes of irregularities. These irregularities can be used as interior finishing. Horses charcoal throws the soil and is thrown with a cone. Used charcoal is collected on the exterior facade and used as charcoal can be further used for pavement, cutting firewood, heating and cooking and as fertilizer for the soil.

**Where the CHARCOAL comes from**

**CHARCOAL usage in the house**

Reuse of the Charcoal

**Seasonal Facade**

Horses are central to our design. In the summer, it empowers outdoor interaction with the area of the house.
The spaces of the house are assembled in order to create multiple connections between human, horse, and nature. This specific separation is achieved by designing the volumes of human and horse life-spaces. Two volumes are linked as a complementarily enabling the sustainable house as a whole. That sustainability emerges only in the moment when all spaces are merged to become a house. Human space is separated on the east and west zone. Heating system of the house is based on usage of muck, compost, horses, temperature, and cooling. The whole heating system is positioned on the ground floor that air then gradually radiation on the second floor of the house.

This project proposes multiple benefits from the situation of living with horses. The temperature of the body of a horse is almost two degrees higher than human temperature. That means that horses’ body temperature can be used in order to heat the air inside the house. By the same reason, horses’ manure is used for the production of compost. During composting process the temperature released is 50-70°C. That had to be used in order to capture the energy and use it for heating the horse spaces. Therefore, special rooms for composting is located under the living house space.

This diagram shows how efficient usage of energy released by horses can be. Even at the temperature 4°C of the outside air, inside temperature will be above 20°C. That calculation is based on the horse’s body temperature and compost as well as materials and insulation of the house. The energy of heat is not calculated in this specific study.