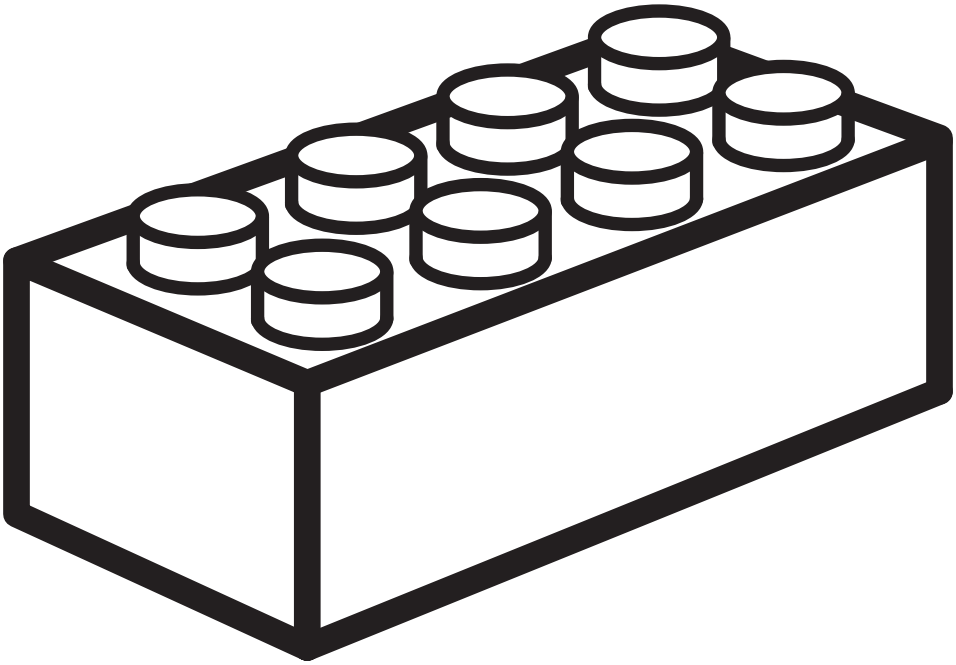
Light Challenge 2013:

how to develop a new concept of street light that reflects the demand of the public?

Sustainability, innovation and safety created by light.



mediaLABamsterdam

Clux

Light your street, feel at home home.

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Concept

Light your street, feel at home home.

The two main important aspects that the residents mentioned in the first meeting (13th of February 2013), were safety and the old fashioned look of the current street light. After a long research we came up with two different ideas, one focused on cosyness and meaningful solutions and the other one on colors and safety. Step by step these two ideas became one unique concept.

We asked ourselves what a possible safe and meaningful environment could be for them. For our group the answer was easy: our own home is the most safe and cozy place we can imagine. That is why we thought to recreate a home environment through light by bringing the inside outside in visualizing typical and iconic elements we can find in our living room, in our kitchen or in our houses in general. This way the street is turned into an house, the residents' house, and entering the street would be like entering in your own home. The new lighting system will create a familiar environment where you can feel at ease.

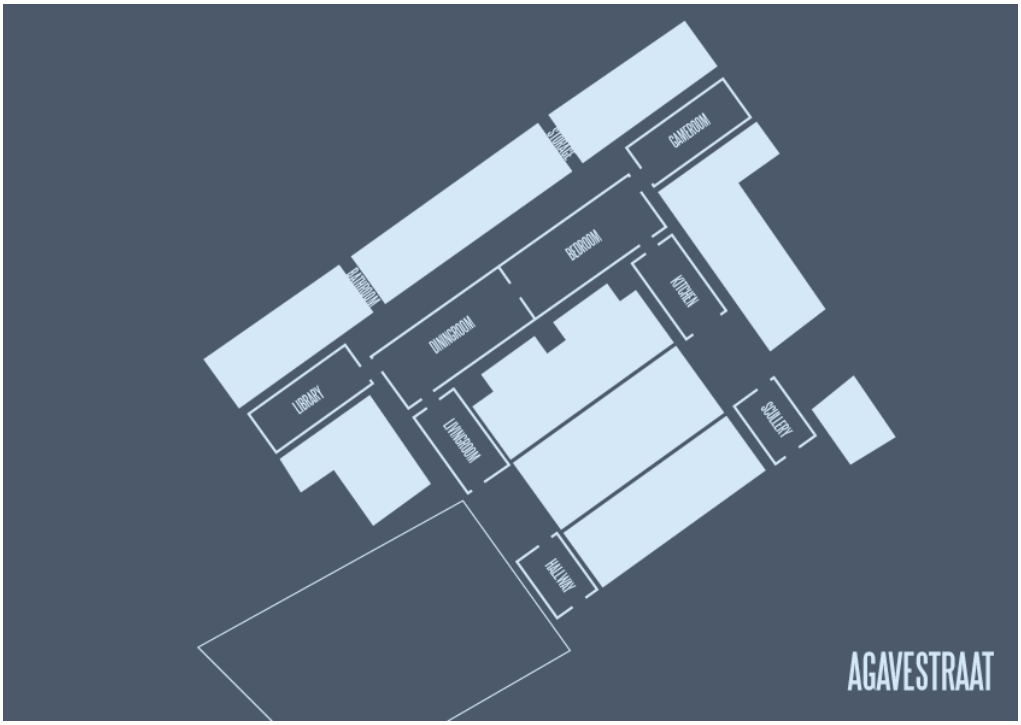

Figure 1. Possible blueprint of an house in the Agavestraat

It is possible to use the blind walls that are present in the street to visualize the objects in the street itself and the ground. In this way you can mark the perimeter of the different

rooms, creating a sort of blueprint of an Agavestraat house. The house and the rooms will be divided between the street and the walls: on the street there will be not only the planimetry, but also some objects lying on the ground corresponding to the room they are placed in. On the other hand on the walls will be visualized the silhouette of the elements settled in the various rooms, represented in their front side. This concept is also easily applicable in the narrow alleys that are between the houses. An element that can get residents closer to their street environment is data related to the life activity of the Agavestraat or providing simple information like temperature or time. Data can contribute to create an interactive light installation and also give the chance to change small details of the wall scenario, avoiding a still and monotonous panorama. An example can be a clock that gives real time, or a screen (a television, a computer) that show, for instance, the temperature in the street.

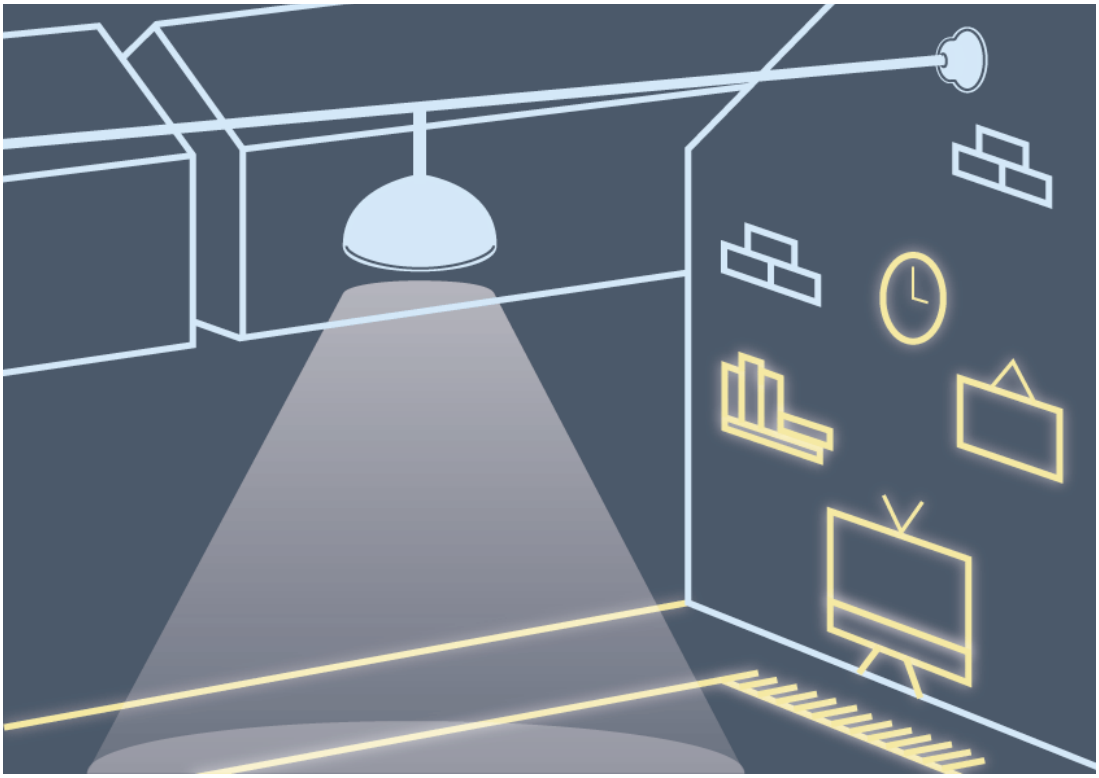

Figure 2. Possible view of the whole lighting system

The main lighting will be provided by hanging lamps, distributed in strategic point of the street in conformity with the room of the house, giving an equal light diffusion and covering the most important parts of the Agavestraat. These lamps have to be in line with the concept of the house, therefore they will have a design connected with the typical indoor lamp idea.

Residents are expected to feel safer, as they would be in their own house. This idea can help them to reach that feeling and at the same time it can create a unique and new experience, not seen anywhere else in the Netherlands, making them feel proud of their own street. The theme applied throughout the entire street is expected to help increase social cohesion, visual appeal and pride. Also, the playful aspect of this project turns the street into a special experience. The light, far from being a common lighting system, will be an innovative element that could also change the daily relationship between residents and their street.

This concept can be innovative because it is a totally new system of urban street lighting. It is a meaningful and innovative solution for a common street. It recreates the idea of a safe environment outside and also gives the residents the opportunity to interact with the light thanks to sensors, visualizing different data on the objects or different scenarios when it tracks movements. The positive aspects are that the light gives meaning to the residents as well as makes the street unique compared to streets with the old lighting system. An interesting element is that it combines an artistic project with a street light project. This can deliver a very creative outcome.

There were three projects that inspired us in the development of this concept:

- *Wilkommen*, a project by Stiftung Greizeit, a Berlin based collective focused on projects in a public space. Wilkommen is a project realized in 2011 where they transformed a urban space under a bridge into a cozy living room thanks to yellow tape placed on the wall and on the ground. The goal of the project was to make one of the forgotten space present in our cities, visible.

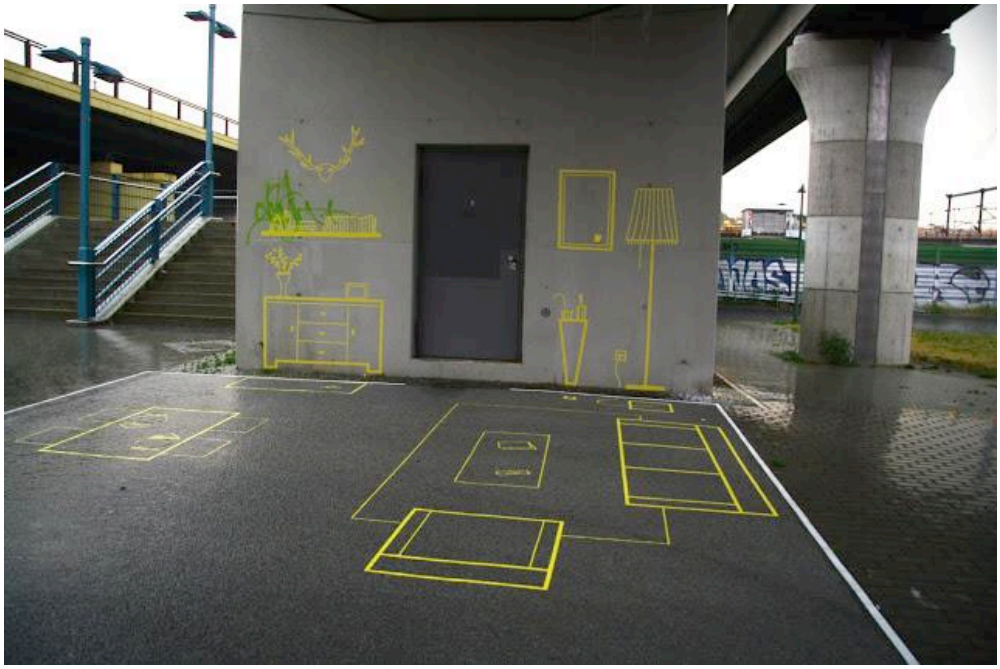

Figure 3. *Wilkommen*, Stiftung Freizeit, Berlin, 2011

-*Neflejes (Forget me not) Project*, by ungarian art collective Merge Invisible. The project, realized in 2012, is a tribute to the old architecture of one of the neighbourhood in Budapest. Lot of houses were destroyed during a long history of occupation. They reproduced the blueprint of a house by painting its cross-sections on a blind wall of a demolished building.

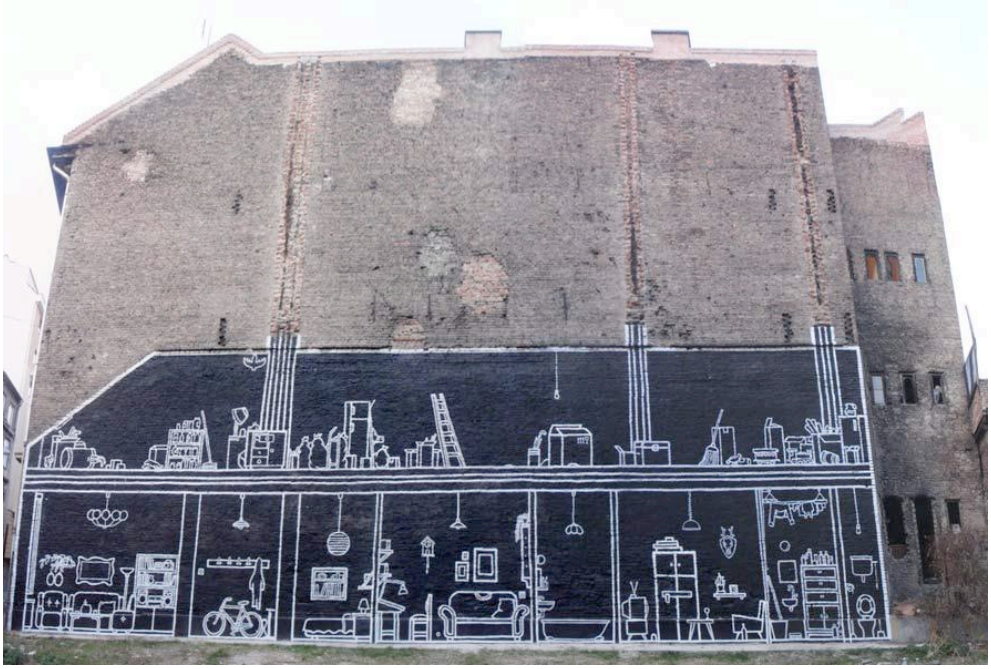

Figure 4. *Neflejes Project*, Merge Invisible, Budapest 2012

- *Dogville*, Lars von Trier's movie, 2003: the entire movie is recorded in an imaginary set. Actors behave like they were in a real place, but what people can actually see is just the blueprint of the town with its streets and its house. Some various objects are placed on the ground to give the audience a feeling of recognition.

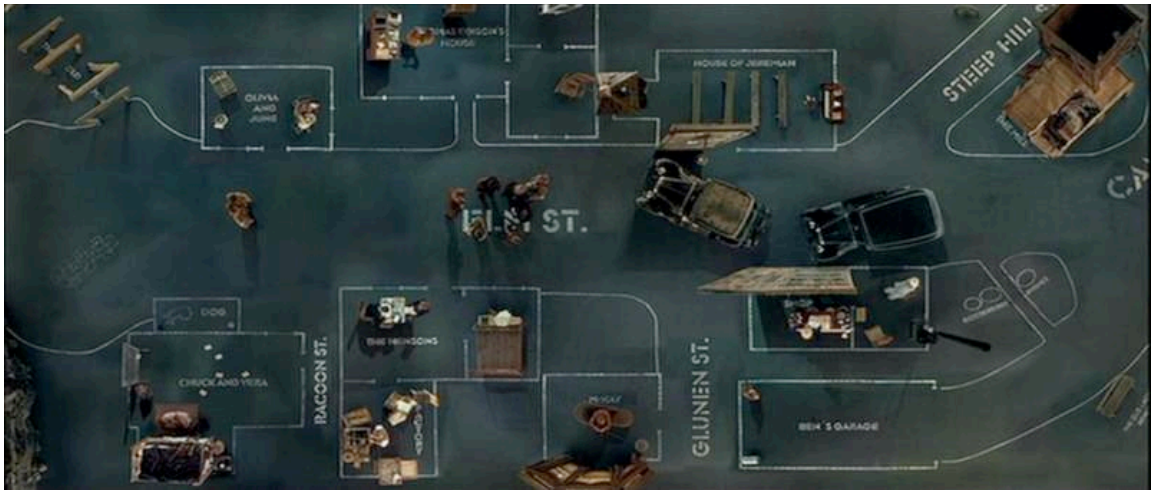

Figure 5. *Dogville*, Lars von Trier, 2003

Technical Aspects

There are different possible ways to realize this concept. These are some materials we could use:

1. LED Lights

LED lights, fixed or programmed. This would be the best way to create a highly interactive installation, not only controlling the intensity of the light, but also deciding the sequence of the drawings depending from the movement of people.

During these last weeks we have experimented with the Philips Hue kit, a new type of LED bulbs which are controlled by a wireless bridge. They allows users to change the intensity and the color of the light, as well as program their own applications to control the bulbs.

Even though these lights are not suitable for public spaces, it is still possible to use them to prototype and have a proof of concept about the technical materials. We have also experimented with strips of blue LEDs to visualize a possible installation. The results showed that it is possible to uniformly illuminate the whole street with this LED strips. However, this is just a representation of the street and can vary when used in a real environment.

In our concept, we also want to use colors according to the natural cycle of the day. This solution does not add problems related with safety, since during the dawn and the dusk there is still a slight luminosity and the color of the LED light provides a cozy atmosphere without harming visibility.

2. Glow in the dark painting

Seramic Light Coating: Technique that provides illumination using illuminated crystals. These crystals exist in the form of a coating which can be charged during the daytime using either artificial or natural daylight. After charging the coating will have an illumination of 8-10 hours, and after the illumination phase the coating will be recognizable for approximately 12 hours. Then the coating needs 5 minutes of recharging, which can be done by sunlight but also by artificial light.

The thickness coating is measured in MU, so for example, a layer of paint that is usable for outside would be 400 MU. The thicker the layer, the better the effect of illumination, and since our design is in the outside public area (The Agavestraat), we will need a very thick layer. We have to take into account that the coating must be resistant against the weather, like rain, wind, snow, hail and heat, and also against vandalism like graffiti or objects against the coating. Also it is possible that an object or person touches the coating unintentionally, for example a car that hits the wall or an object sticking out of a trailer.

More paint also means more costs, so we have to find the right balance in thickness. It depends on two factors: how much money are we willing to spend and how thick must the coating at least be to be sufficient? The paint consists of two essential components and an additional components:

- the white basic layer (5 kilos/€ 25,00);
- the green component, which is the illuminating layer. It has a light green color and it is not available in other colors (5/€ 85,00);
- the outside layer. It is a protection layer for outside areas (4/€ 32,00).

The material seems to be sustainable in the long term. This kind of paint only exists since ten years, so it is not clear what the exact lifespan is. But when cleaned properly when it is so dirty that the illumination is seriously disturbed, it already lasts for ten years. The company Seramic Light Coating is also experimenting with coating for enterprises. For example, the lights that give heat to grow flowers can be painted with coating from inside. When the light goes off, the coating still gives light to the flowers. If companies are interested in this product, sustainability must be a high priority. Companies can see it as a long term investment. This is a motivation for the developers to work on the sustainability of the product.

3. Sensors

To make the lighting system sustainable it is possible also to dim light's intensity thanks to movement sensors. Placing the sensor in strategic position it is possible to track people's movements in order to dim light depending from the presence of people or cars. When there is no one around the intensity of the light would be softer, while it could be stronger when people are passing by. This makes the light interactive, saving energy at the same time and increasing the lifespan of the LED lights.

Nowadays, commercial outdoor motion sensors cover until almost 270-degree field of view and perform reliably in all weather conditions, and their coverage zones should overlap a 20% to perform accurately. Thus, it is needed to experiment and see the results in order to discover the optimal positions.

Apart from strictly technical aspects, the following situations should be kept in mind:

- If in the final concept we consider necessary to hang a lamp with a cable or place it on a blind wall, we have to ask for permission to the local government and the owner of the house, since if there is any damage or something needs to be repaired, we need to know what the rules and regulations are.
- In case we want to hang the lamps, we can place some auxiliary poles close to the houses. This way, we avoid placing any hook to setup the installation.