

# Markus Butkerei

## Results and Suppositions

# Time and Uncertainty

**“Mankind is at a turning point, the beginning of a new rationality in which science is no longer identified with certitude and probability with ignorance.”**

Ilya Prigogine, *The End of Certainty*

Physics is considered the most basic of all disciplines. On its foundations, human beings have calculated the movements of the planets, have invented the steam engine, have constructed the atomic bomb. Since physicists seem to have the deepest insight into nature and how nature is constituted, their statements carry weight. Physics offers an explanation for the world.

When Isaac Newton laid the foundations of classical mechanics, he at the same time was suggesting certain definite ideas about time and space. The connection between forces and motion that is described in the Newtonian laws take place in absolute space. The development of a system is predictable. This means that a state is described in the present by the position and the speed of the total points, and can be calculated on the basis of physical laws for both the past and the future. Time, from Isaac Newton onwards and even for Albert Einstein, is always understood as being reversible.

The second law of thermodynamics makes statements about the direction of processes and introduces the principle of irreversibility. The historically oldest formulation, by the German physicist Robert Clausius, declares: "By itself, heat never transfers from a body with a lower temperature to a body with a higher temperature." In other words, in a closed system left to itself, entropy can never decrease. It can only either increase or remain constant.

The works of Markus Butkereiit play with the idea of entropy: in the closed mechanical installations Wall Panel Saw, Stone Magnet, Jackhammer, or Sprinkler – as a measure of disorder –, and in the quasi thermodynamic installations Kitchen Waste, Seesaw, and Balloon – as the degree of uncertainty in the experimental results.

The chemist Ilya Prigogine, who was cited above, carried out research in thermodynamics, the area of science which, using the idea of entropy, introduced the concepts of irre-

versibility and the Arrow of Time into physics. Very early on, Prigogine noticed the disparity between the Arrow of Time of physics and that of biology and the historical sciences. While physicists view irreversibility and see disintegration, the loss of order and useable energy, biologists and historians view evolution and history and see creativity and the development from the simple to the complex.

In 1977, Prirogine was awarded the Nobel Prize in Chemistry for his contribution to the thermodynamics of irreversibility, especially for the theory of dissipative structures. In his research, he was able to show points of branching out, known as bifurcations, from which a system could develop in various directions. Which path the system will choose seems, according to our present knowledge, completely up to chance.

Markus Butkereiit purposely creates unstable states, but the concept of bifurcation becomes particularly clear in the explosions: an initially unstable system transgresses the threshold of instability, loses its equilibrium, and in the moment of explosion leaps into a completely new unpredictable state.

His irreversible works make time itself the point of focus, not only in the experimental process and the process of formation, but also through classical vanitas motifs like smoke, candles, scraps of food, or the remains of flowers that turn up alongside contemporary symbols of change like infusion bags, broken umbrellas, and – again and again – explosive devices. But not only in the works Wall Panel Saw, Internal Injury, or Purple Rain is it uncertain whether the observer is witnessing disintegration or the coming into being of something completely new. Iris Hempelmann

# Unfolded

Material:  
Mixed media

Measures:  
1750,0 x 140,0 x 290,0 cm

Year:  
2020



# Unfolded



## Ikarus 2000



### Set-up and Execution:

A 24 m high working platform is set up in a room. The crank arm of the lifting platform is extended until below the ceiling of the room. In the safety cage of the lifting platform is a switched-on 18 KW Fresnel Daylight floodlight, which generates a lot of heat. On the floor of the room are nine remote controlled model helicopters. The rotor blades of the helicopters are made of wax. Through use of a remote control device, the model helicopters are flown close to the floodlights.

### Supposition:

When the model helicopters fly too close to the headlight, the wax rotor blades melt and they plummet to the ground.

### Material:

Mixed media

### Measures:

50,0 x 50,0 x 65,0 cm

### Year:

2017



## Die Schaukel

### Set-up and Execution:

Two children's swings are set up in a room obliquely facing each other. A compressed air cylinder is placed on each seat, lashed with a truck safety strap and filled with 300 bars of compressed air. Pressure gauges are screwed onto the compressed air cylinders, which rest on a 60 cm high square piece of timber standing next to the seat. Four candles are placed around the swings. A hemp cord, fastened to the ground with a hook, is set up in front of each candle. The cord is guided 40 cm above the candles to a hook on the ceiling, and then down to one meter above the manometers. Hanging from the end of each hemp cord is an anvil, which is aligned exactly above the manometer. The candles are ignited simultaneously.

### Supposition:

After an indefinite period of time, a hemp cord is burned through and an anvil falls onto a manometer. The manometer breaks off and the contents of the bottle escape suddenly. The seats whirl wildly through the air twisting around the tube on which the seats are fastened. Maybe a seat breaks off.

### Material:

Mixed media

### Measures:

50,0 x 32,0 x 32,0 cm

### Year:

2017



## 8 x 8 Möbelhunte

**Material:**  
64 transport dollies, 64 rocket engines, 544 m ignitor cord, 64 cable ties, isolation tape

**Measures:**  
790,0 x 550,0 x 390,0 cm

**Year:**  
2018



## 8 x 8 Möbelhunte

**Material:**  
64 transport dollies, 64 rocket engines, 544 m ignitor cord, 64 cable ties, isolation tape

**Measures:**  
790,0 x 550,0 x 390,0 cm

**Year:**  
2018



## Conditioning



### Set-up and Execution:

A 4 x 4 m glass case with a steel frame is set up in a room. On one side of the glass case is a door. At the center of the glass case are four mobile air conditioners. Positioned on each side of the glass case at 1 m distance is a floodlight (Brut, Dino) directed the panels. The air conditioners are turned on. When the temperature inside the glass case reaches 16 degrees Celsius, the four floodlights are switched on.

### Supposition:

After an indefinite time, the glass panels will burst because the thermal stress inside the glass case will become intolerable. The glass roof will probably fall into the interior and the side panels will crack.

### Material:

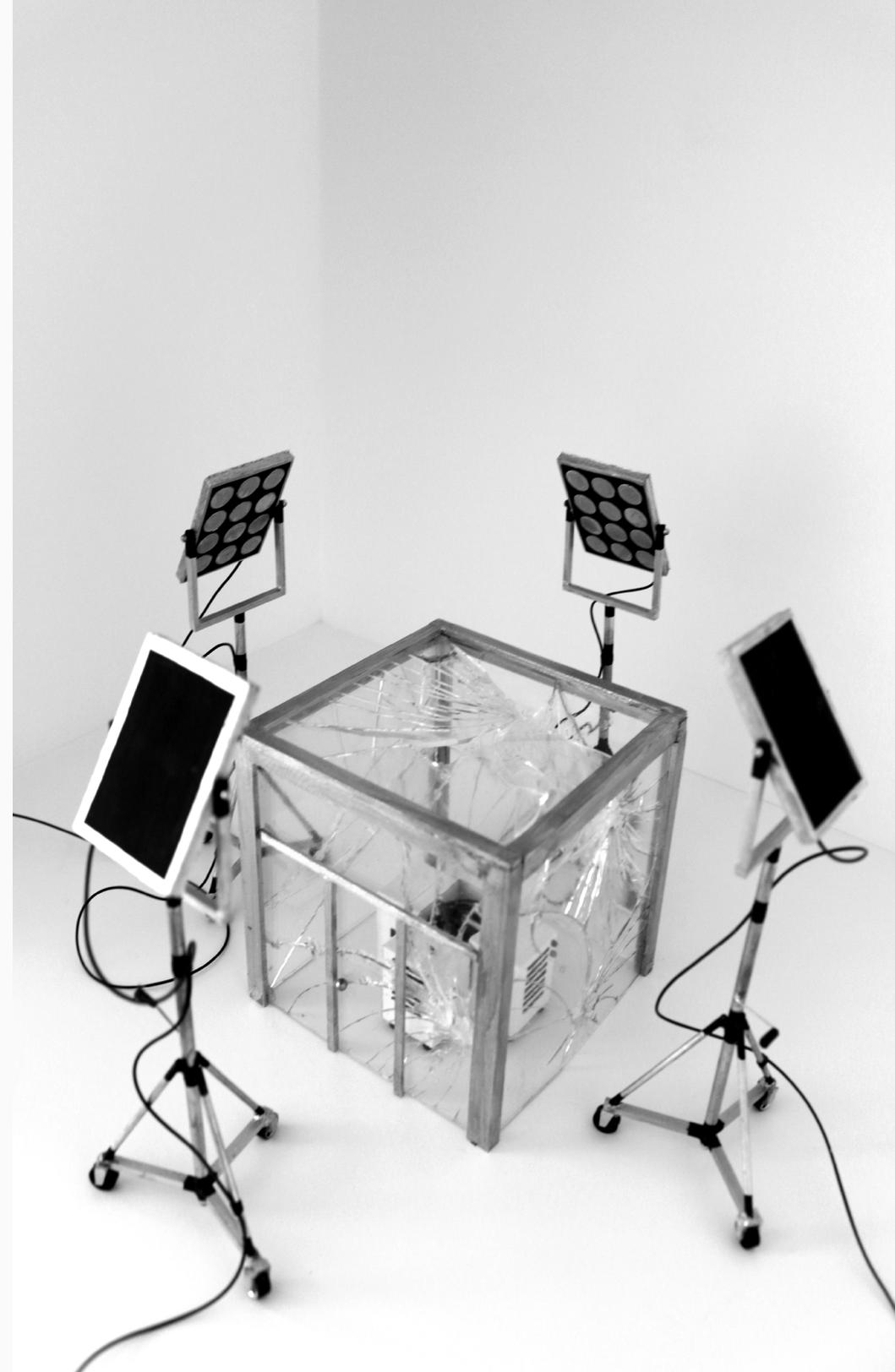
Mixed media

### Measures:

64,0 x 50,0 x 50,0 cm

### Year:

2017



## Come on baby let´s take a ride

### Set-up and Execution:

A carousel with eight seats is set up in a room. There is a scuba tank placed on each seat, lashed with a truck safety strap. The scuba tanks are filled with 300 bars of compressed air. A pressure gauge has been screwed onto the tanks. Each pressure gauge rests on a 60 cm high block of squared timber, which has been placed next to the seat. Eight candles are positioned on the floor around the carousel. A hemp cord, fastened to the ground with a hook, is set up in front of each candle. The cord is guided 40 cm above the candles to a hook on the ceiling, and then down to one meter above the manometers. Hanging from the end of each hemp cord is an anvil, which is aligned exactly above the manometer. The candles are ignited simultaneously.

### Supposition:

After an indefinite period of time, a hemp cord is burned through and an anvil falls onto a manometer. The manometer breaks off and the bottle's contents escape suddenly. Some seats tear off, flying through the room. Maybe the carousel starts to move.

### Material:

Mixed media

### Measures:

64,0 x 50,0 x 50,0 cm

### Year:

2017



# Der Stapel

Material:  
6 transport dollies, 16 rocket engines, 8 m ignitor cord, 16 cable ties,  
pole, isolation tape

Measures:  
200,0 x 25,0 35,0 cm

Year:  
2018

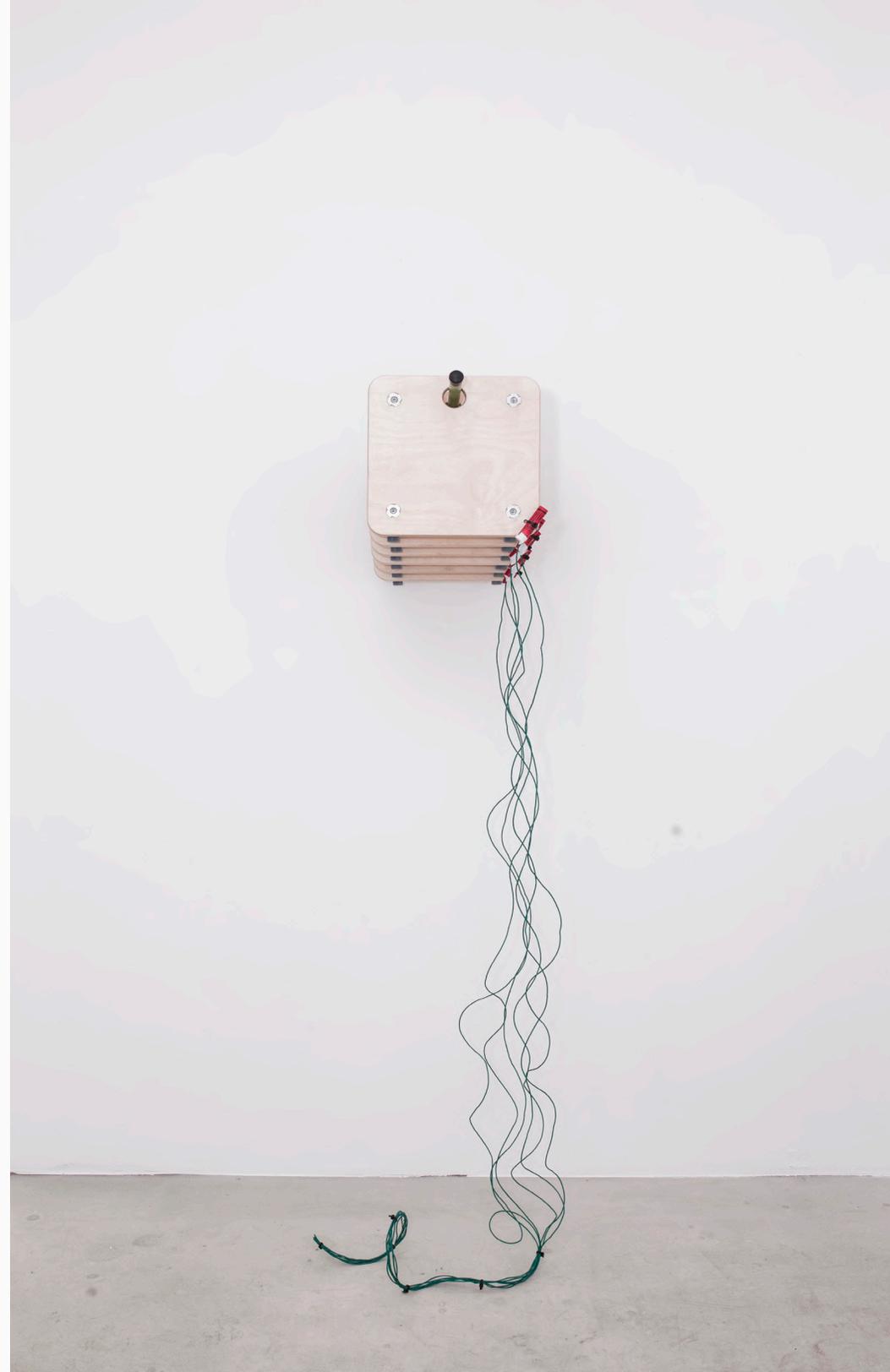


## Aufhängung für 6

Material:  
6 transport dollies, 6 rocket engines, 15 m ignitor cord, 6 cable ties,  
isolation tape

Measures:  
175,0 x 65,0 x 35,0 cm

Year:  
2018



## 2 Seile und 4 Motoren

Material:  
1 transport dolly, 4 rocket engines, 4 m ignitor cord, 4 cable ties, isolation tape 10 m hemprope

Measures:  
150,0 290,0 x 25,0 cm

Year:  
2018



## Scissor Lifter Love



### Set-up and Execution:

A tennis court with a blue acrylic floor is set up in a room. The base of the tennis court measures 23.77 x 10.97 m. Black tennis nets are stretched in the middle axis of the T formed by the service line and the center service line. The deployed nets form a cross. At the ends of the field, 80 cm high ramps are positioned. A scissor lift stands before each of the four ramp. The scissor lifts are traveling simultaneously with the same speed up the ramps.

### Supposition:

At an undetermined point, the scissor lifts on the ramp will incline toward the center, colliding with the opposite scissor lift. Maybe all four scissor lifts will come to a standstill leaning against each other in the middle of the playing field. Some of the scissor lifts might possibly overturn.

### Material:

Mixed media

### Measures:

83,0 x 65,0 x 50,0 cm

### Year:

2017



## Das Zelt



### Set-up and Execution:

In a gravel-pit, a tent was erected. Four pyrotechnical powder sticks were placed in the tent and on top of each of them a plastic sack containing 1.5 liters of petroleum benzene. The cables of the powder sticks were lengthened and attached to an igniter. The ignition switch was closed.

### Result:

It explodes, the wave of pressure from the explosion rips the plastic sacks with the petroleum benzene, the benzene atomizes and is ignited. The flames from the fiery explosion reach a height of almost 10 meters and a column of smoke forms. There is nothing left of the tent.

### Documentation:

A video shows the event.

Video: Tent 2015, 12:05 min  
<https://vimeo.com/195311306>  
 Password: translatae12345

### Material:

Tent, spark ignitor, 6 L white spirit, kabel, switch box

### Measures:

500,0 x 450,0 x 700,0 cm

### Year:

2015



# Burner



## Set-up and Execution:

In an abandoned building, a can of spray paint is hung from a ceiling by a nylon string. A fuse head is attached to the nylon string, and on the floor, exactly under the can a caltrop is set up. The fuse head is let from 4 meters away.

## Result:

The nylon string breaks, the spray can falls on the caltrop, which makes a hole in the spray can. Because of the pressure of the gas, the spray can turns in circles and sprays the paint. A spark ignites the propane – butane mixture from the can, and the huge fireball scorches the wallpaper in the room and singes my eyebrows. I quickly put out the fire in the room.

## Documentation:

A video shows the event.

Video: Burner, 2:16 min

<https://vimeo.com/195103287>

Password: translatae12345

## Material:

Spray can, spark ignitor, crows foot, kabel, switch box

## Measures :

350,0 x 300,0 x 250,0 cm

## Year :

2015



# New Year's Eve

## Set-up and Execution:

Four hand trucks are placed side by side at the same distance from each other in rows of two in front of a wall. The first row stands at a distance of 10 m from the wall. The second row is 5 m behind the first row.

On each hand truck a compressed air cylinder is placed upside down. The compressed air cylinders are filled with 300 bars. A pressure gauge is screwed on the compressed air cylinders. Eight target circles are hung in two rows on the wall in front of the hand trucks. The bottom row is mounted at a height of 2 m. The higher one is arranged at a height of 6 m. Behind the hand trucks are four pallet cages each with nine compressed air cylinders.

Next to each hand truck is a candle on the ground. A hemp cord, fastened to the ground with a hook, is set up in front of each candle. The cord is guided 40 cm above the candles to a hook on the ceiling, and then down to 3 m above the manometers. Hanging from the end of each hemp cord is an anvil, which is aligned exactly above the manometer. The candles are ignited simultaneously.

## Supposition:

After an indefinite period of time, a hemp cord is burned through and the anvil falls onto a manometer. The manometer breaks off and the bottle's contents escape suddenly. The compressed air cylinders fly towards their targets on the wall. They'll probably penetrate the targets and smash into the wall.

## Material:

Mixed media

## Measures:

64,0 x 50,0 x 50,0 cm

## Year:

2017



## Automatische Feuerlöscher

### Set-up and Execution:

Eight automatic fire extinguishers are emptied, filled with red paint, and sealed under 6 bar of pressure. They are all hung by steel cables, at the same height and equidistant from one another, from the ceiling of a large room with many windows. Magnifying glasses attached to telescopic poles are positioned under the heat-sensitive ampoules. Two full-length mirrors per fire extinguisher are positioned so that they reflect the light from the windows onto the magnifying glasses.

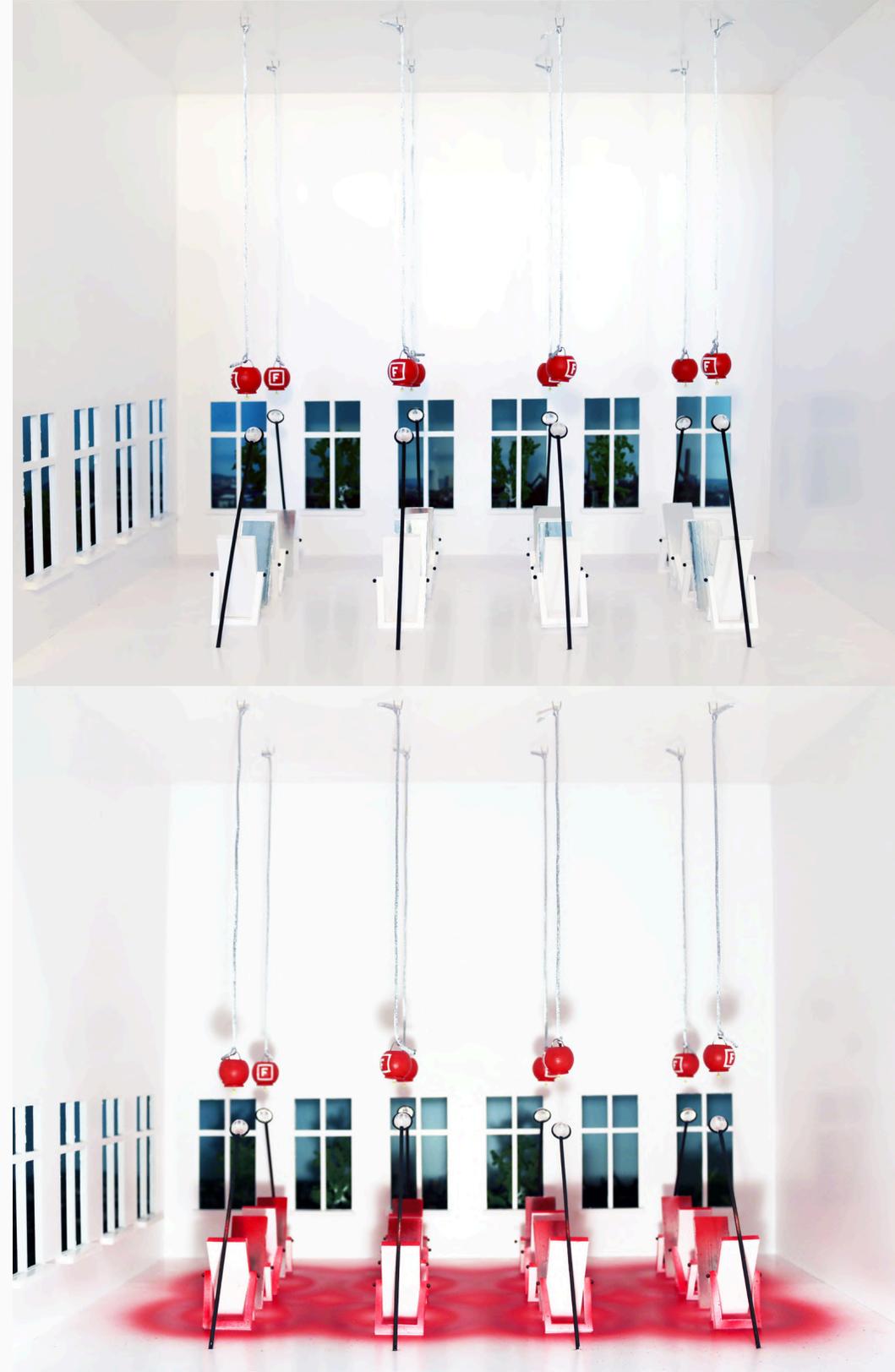
### Supposition:

If enough sun shines through the windows, the fire extinguishers will be triggered and will start spraying their contents. On the floor, red circles will appear.

Material:  
Mixed media

Measures:  
64,0 x 50,0 x 50,0 cm

Year:  
2017



## Die Wandlinie

### Set-up and Execution:

A pedestal fan is set up in front of a wall in such a way that the propeller positioned horizontal to the floor. Centered over the fan hangs an infusion bag filled with diluted red wall paint. The fan is then turned on at its highest speed and the infusion bag's roller clamp is opened only slightly.

### Supposition:

A red line will be produced on the wall.

### Material:

fan, infusion drip machine, 350 ml red fluid

### Measures:

250,0 x 250,0 x 300,0 cm

### Year:

2015



# Ballon

## Set-up and Execution:

For this work, a giant balloon filled with helium is attached to two empty 33-kilogram gas cylinders using a filling hose. A candle is placed on the floor next to the gas cylinders. The candle is lit and the gas cylinder valves are opened.

## Supposition:

At some point the candle burns down.

## Material:

Mixed media

## Measures:

200,0 x 200,0 x 300,0 cm

## Year:

2020

