

A line went for a walk ...

Module Form*Design 2022S



kunst 2
Three-Dimensional Design and Model Making

Institute of Art and Design
Vienna University of Technology

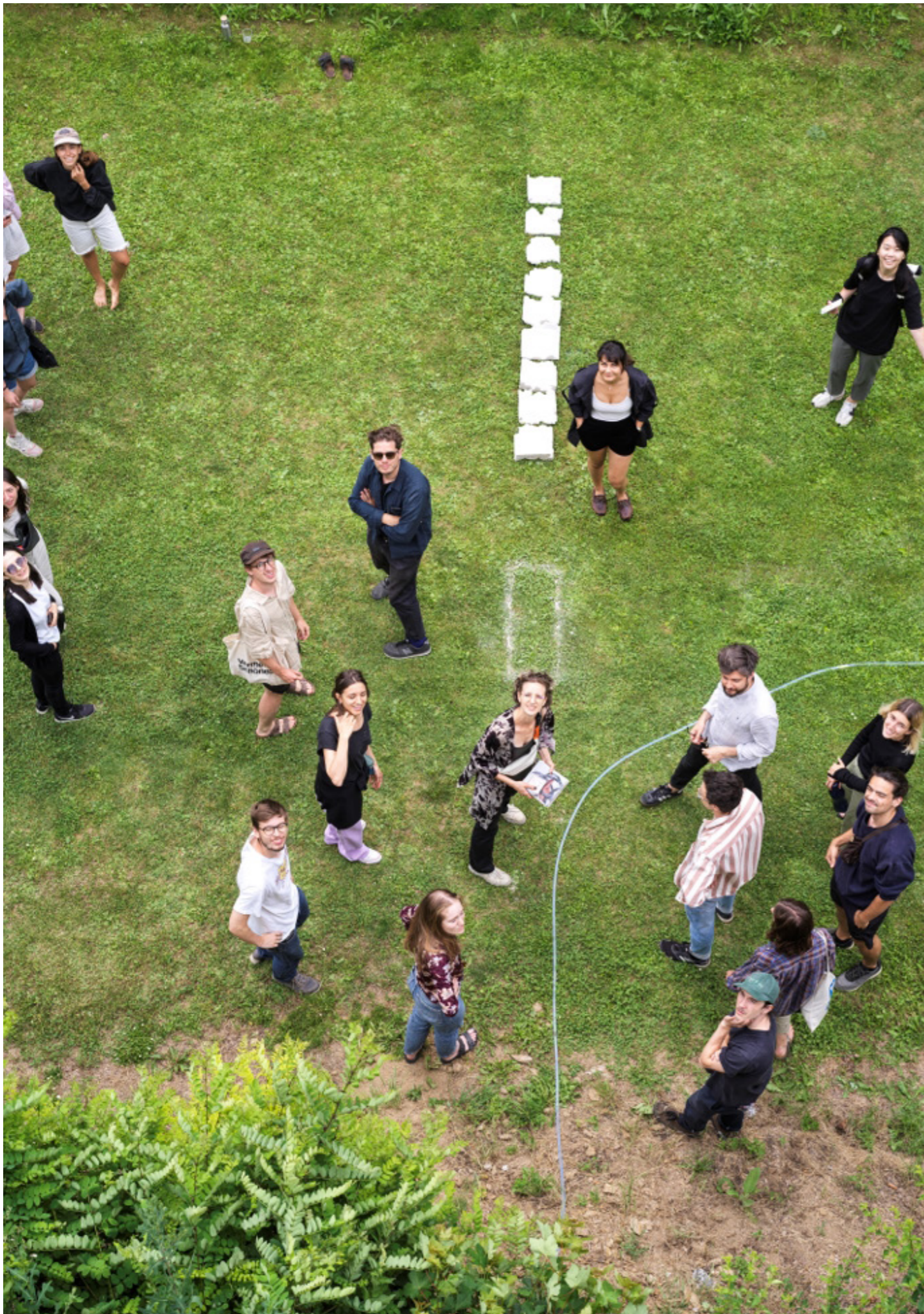
A line went for a walk ...

Module Form*Design 2022S

Artist Paul Klee depicted the line as `a dot that went for a walk`. Rather than limiting himself to a single definition, Klee expands the scope of the line to include a range of creative possibilities and interpretations. Actions and gestures leave traces that can be interpreted as lines.

The poem *Line* by Matt Donovan captures this broad definition:

*Surface engraved with narrow stroke, path
imagined between two points. Of singular thickness,
a glib remark, a fragment, an unfinished phrase.
It is any one edge of a shape and its contours
in entirety. Melody arranged, a recitation,
the ways horizons are formed. Think of levelling,
snaring, the body's disposition (both in movement
& repose). It has to do with palms and creases,
with rope wound tight on someone's hand, things
resembling drawn marks: a suture or a mountain ridge,
an incision, this width of light. A razor blade
at a miser, tapping out a dose, or the churn
of conveyor belts, the scoured, idling machines.
A conduit, a boundary, an exacting
course of thought. And here, the tautness
of tent stakes, earth shoveled, the depth of trench.*



In the summer semester of 2022, the Form*Design module dealt with lines of one kind or another: Linearity as a whole therefore serves as method, technique, as well as condition for the production of multidisciplinary works. The result of the module was presented publicly in an exhibition at the end of the semester at Drosendorf Castle in Lower Austria.

In this course the line is framed as digital-abstract and as material-physical element of departure for the generation of form in three-dimensional space. In such a framework a line can be a rope, a tree branch, a chain, a brush stroke, a water pipe or a toothpaste coil squeezed out of a tube whereas the generative possibilities of such elements are defined by attributes like:

- material properties (e.g. thickness, elasticity, viscosity,...)
- connective elements (e.g. continuity, nodes, composition,...)
- active forces (e.g. gravity, wind, friction,...)
- ...

By means of different approaches the course aims to creatively explore the multiple expressions of the line. The focus is on the relationship between digital and physical methods of thinking, representing and making in three dimensions.

module courses

264.011 material and technology as a condition of form
Efilena Baseta

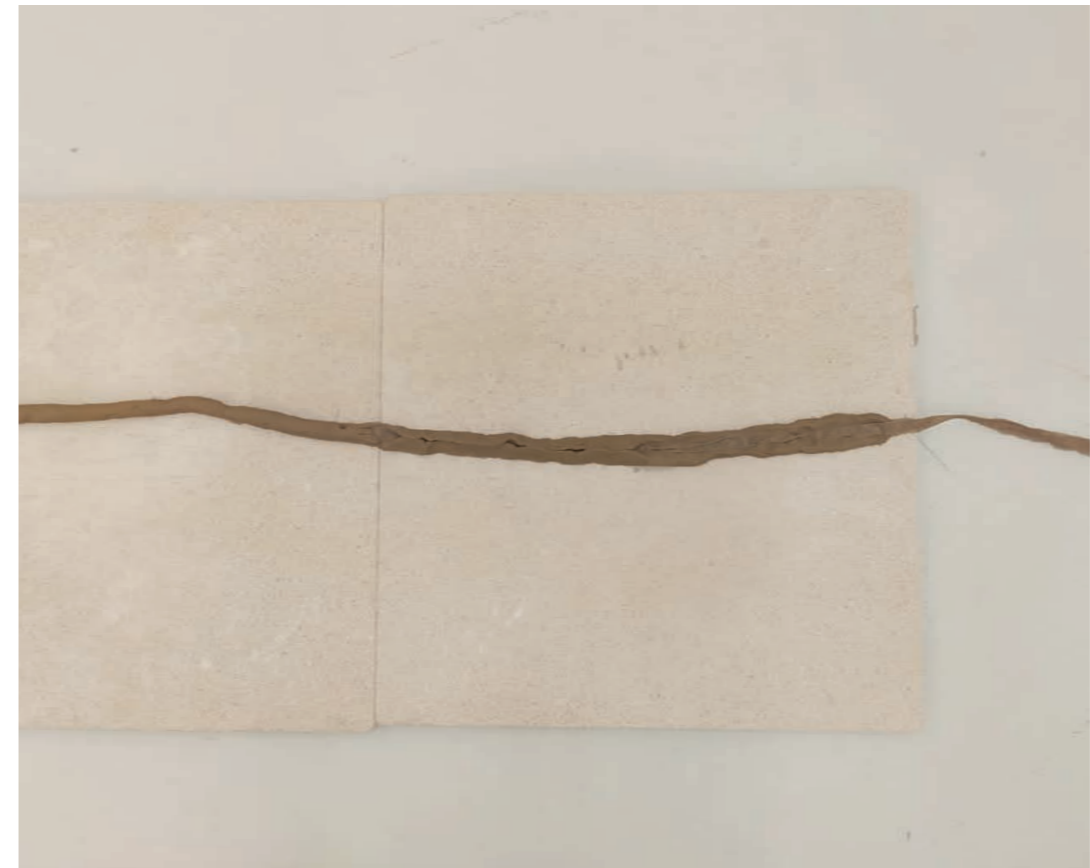
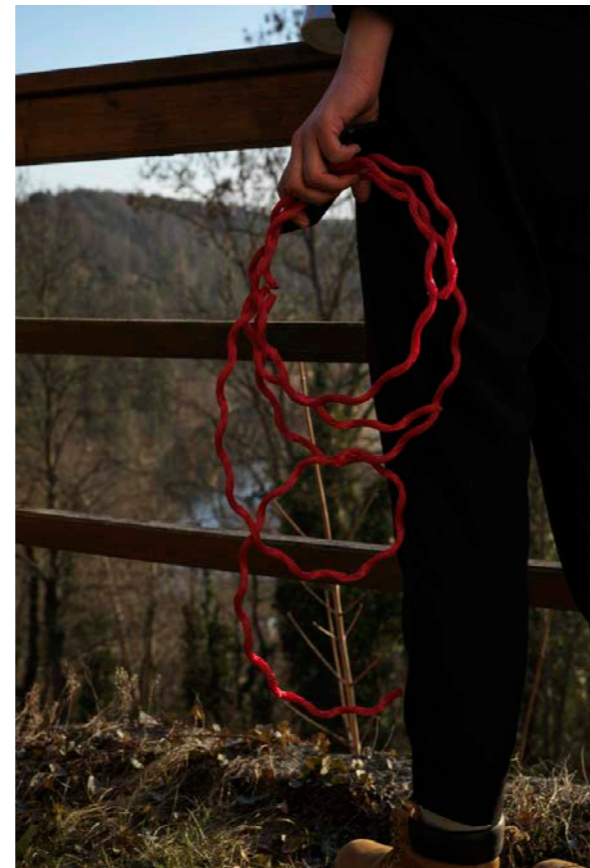
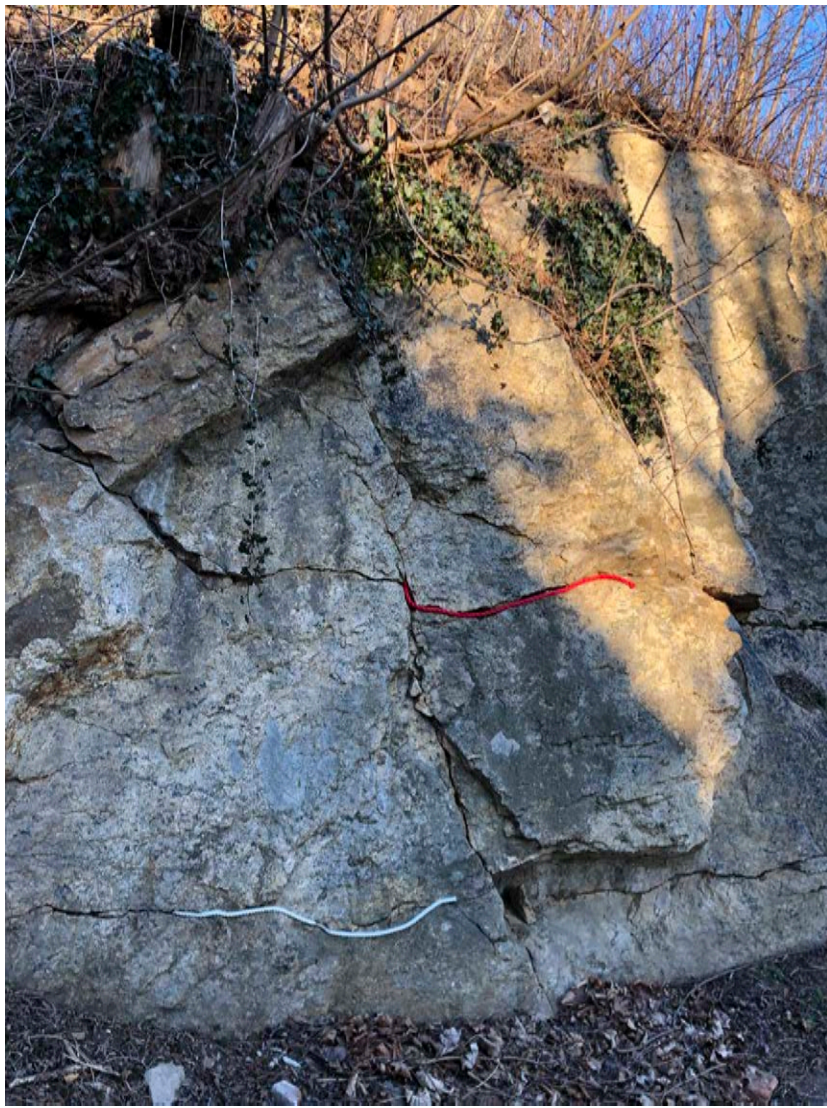
264.140 Digital Production
Marco Palma

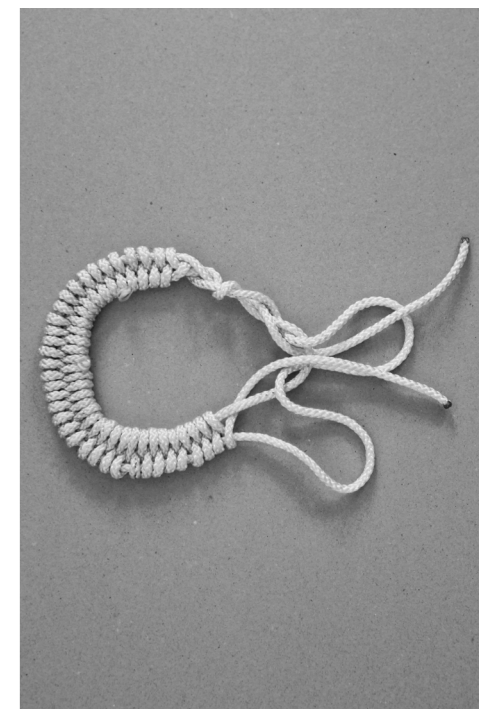
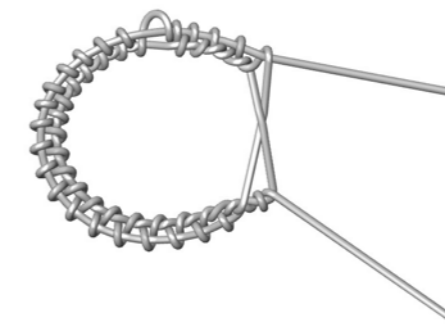
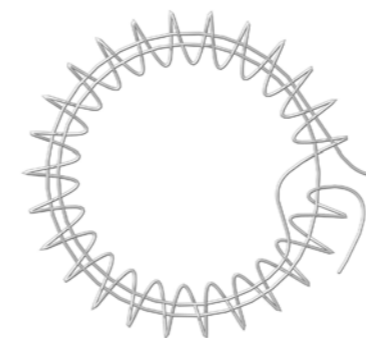
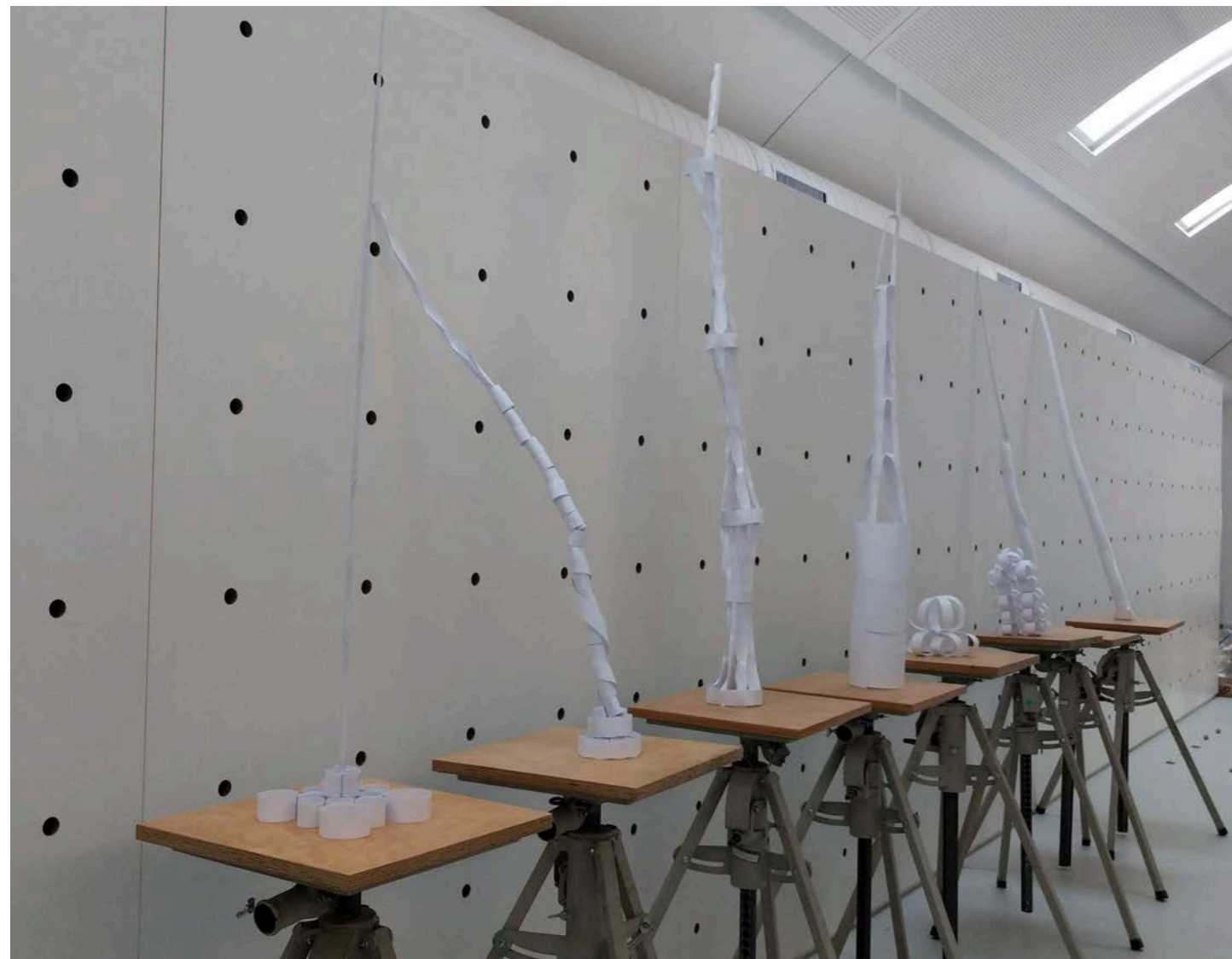
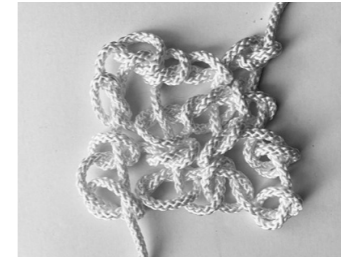
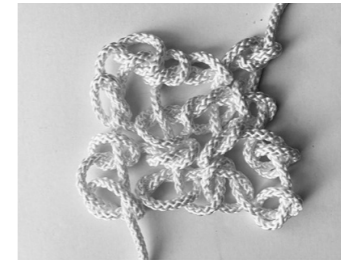
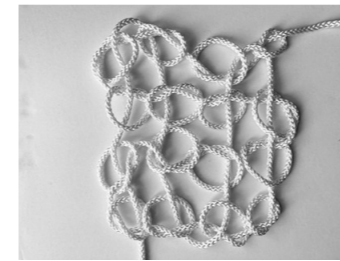
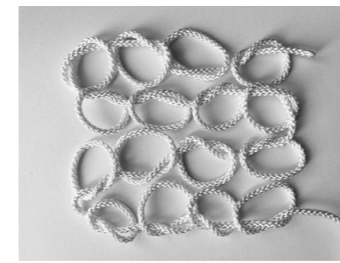
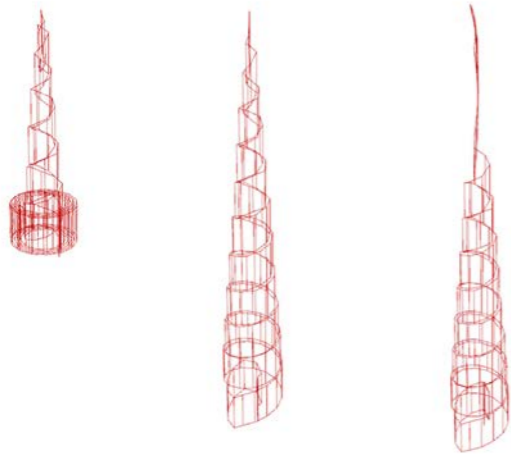
264.111 Drawing and graphical methods
Efilena Baseta, Marco Palma

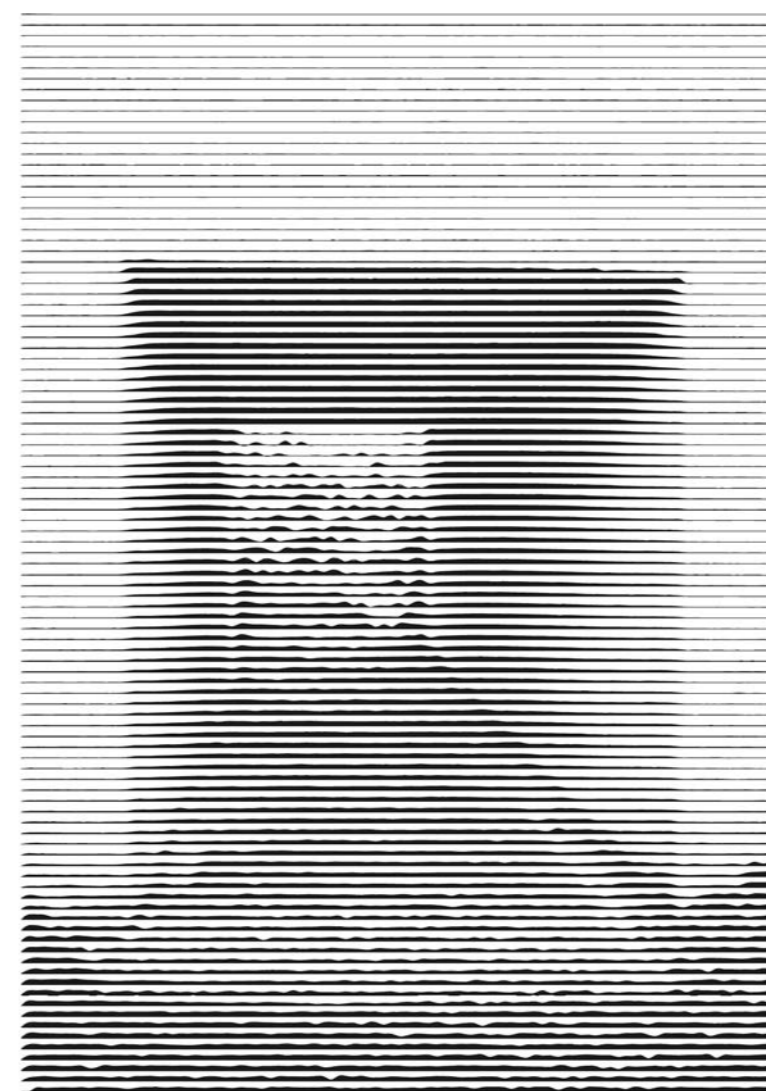
**264.110 Design und Gestaltung -Prozesse/
264.134 Grundlagen der Formgebung**
Marie Reichel, Lukas Thaler

264.103 Design und Gestaltung -Theory
Eva Sommeregger

**258.033 Architecture and model photography/
Object photography/Video**
Gregor Titze

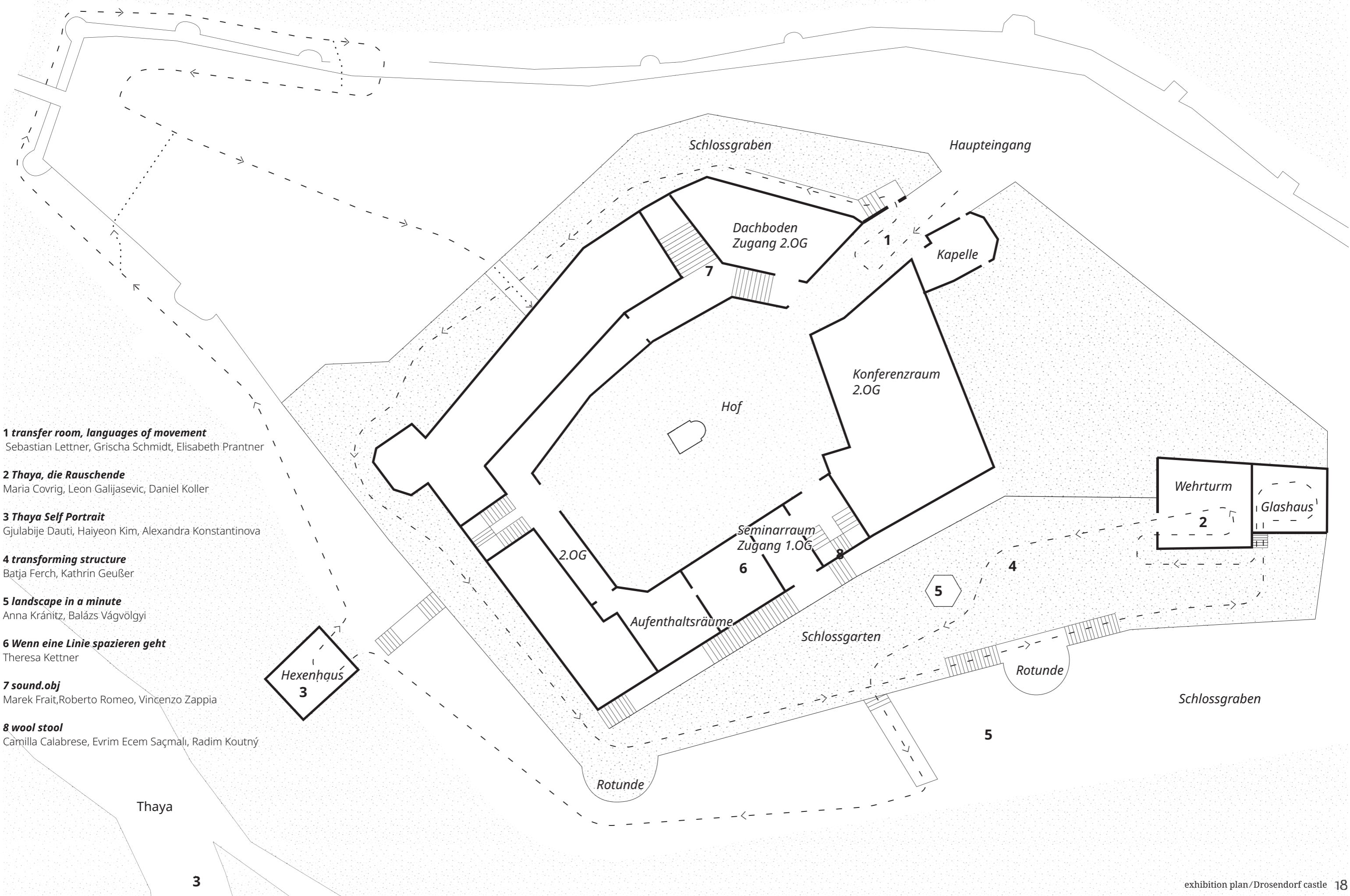






projects

- 19 **1 transfer room, languages of movement**
Sebastian Lettner, Elisabeth Prantner, Grischa Schmidt
- 25 **2 Thaya, die Rauschende**
Maria Covrig, Leon Galijasevic, Daniel Koller
- 31 **3 Thaya Self Portrait**
Gjulabije Dauti, Haiyeon Kim, Alexandra Konstantinova
- 37 **4 transforming structure**
Batja Ferch, Kathrin Geußner
- 43 **5 landscape in a minute**
Anna Kránitz, Balázs Vágvölgyi
- 49 **6 Wenn eine Linie spazieren geht**
Theresa Kettner
- 55 **7 sound.obj**
Marek Frait, Roberto Romeo, Vincenzo Zappia
- 61 **8 wool stool**
Camilla Calabrese, Radim Koutný, Evrim Ecem Saçmalı



1 transfer room, languages of movement
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Thaya

3

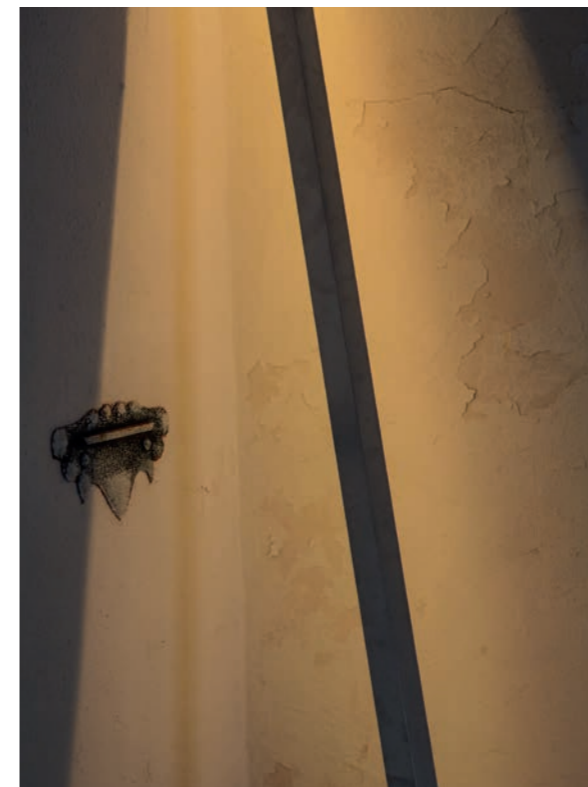
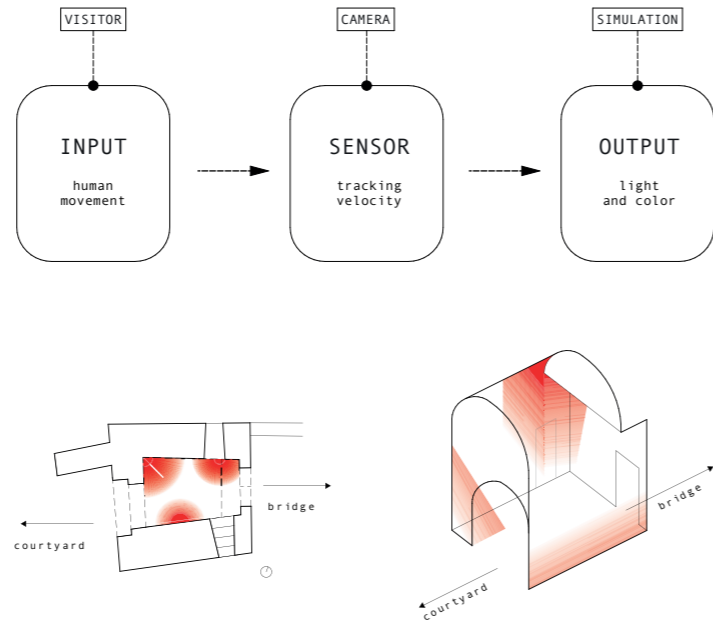


LED, aluminum, passage

In former times the passage was the only access to the castle: the space between the outside and the protected courtyard, a fascinating layer inbetween, at the same time a wormhole. To underline the importance of the historical passage we want the visitors to interact with the space.



The castle Drosendorf entry
Franziszeischer Kataster 19th century

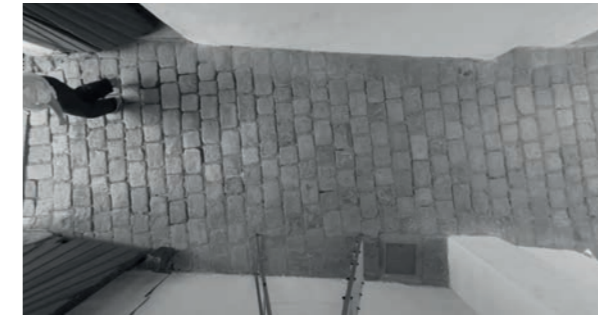
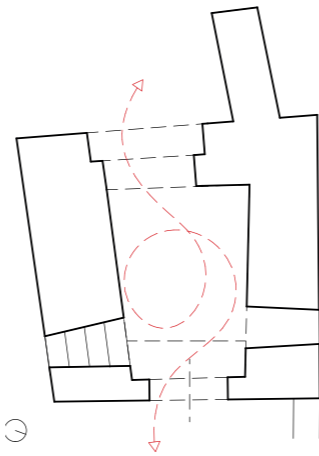
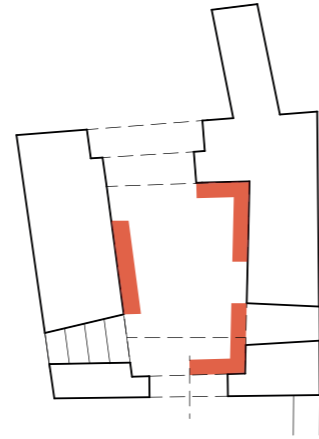
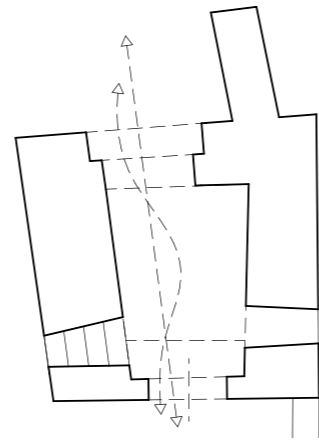


We placed the webcam hanging from the ceiling to cover a flat picture of the entire room. The best view is as flat as possible from above that movements through the room are clearly visible. The camera permanently transmits the video recording to the computer. As the following step, the code compares each frame of the stream with the previous one.

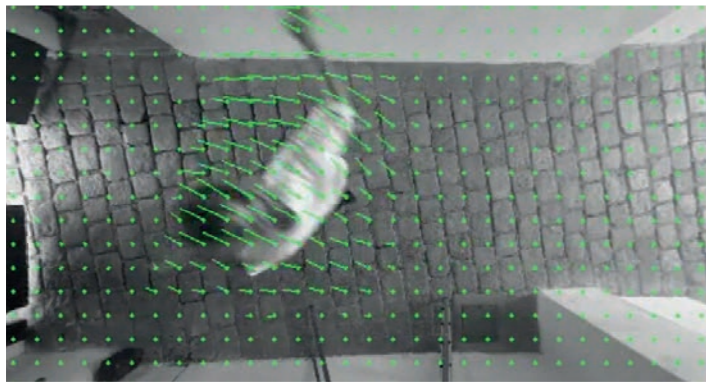
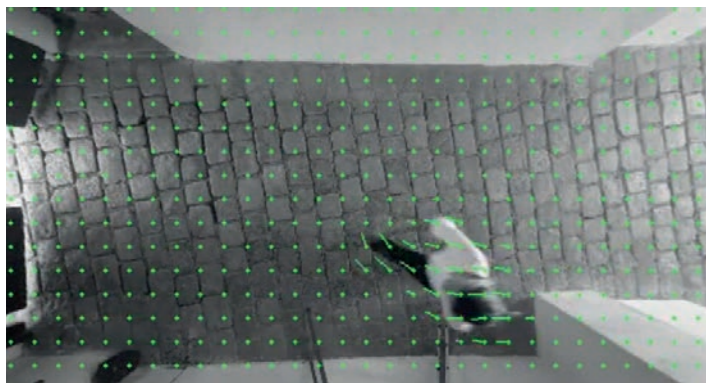
To simplify this, the size of the image is reduced and it is converted to black and white. By comparing the individual frames, changing pixels are detected and so is the velocity of the passengers. More in detail a vector of change can be recognized.



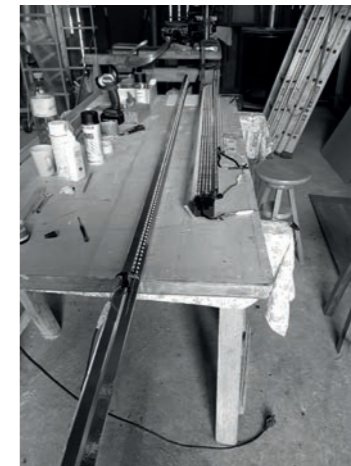
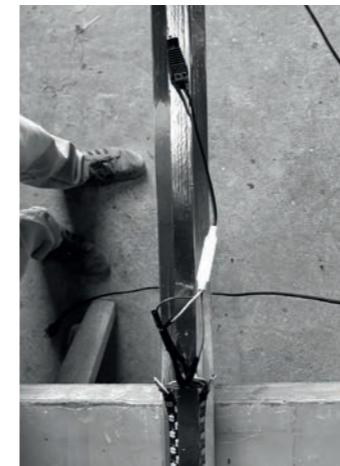
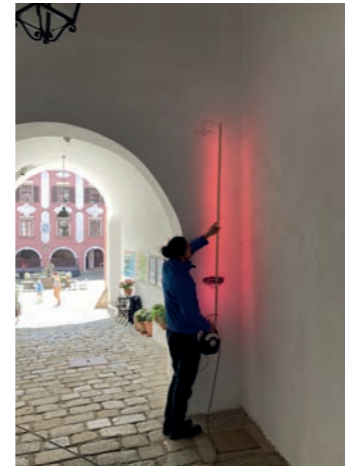
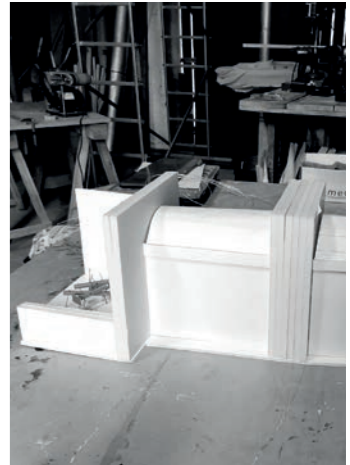
The collected data is in turn adapted to the RGB color-spectrum. To generate the desired color gradient, we started with a yellow tone of 255, 125, 0 RGB. This was changed using this formula: $255, 125-x, 0$, where x stands for the adjusted speed value. The result is that at higher speeds, the green value approaches 0 and the light turns red. If the movement in space decreases, the opposite process occurs and the light turns yellow again.



first camera position to track visitors



first models and light element prototypes

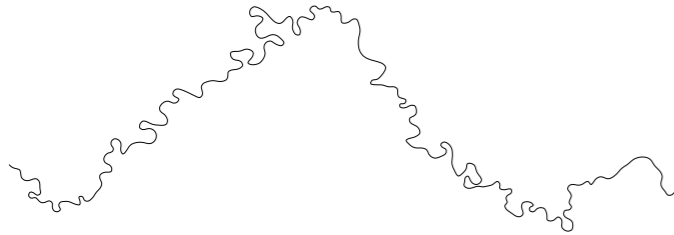




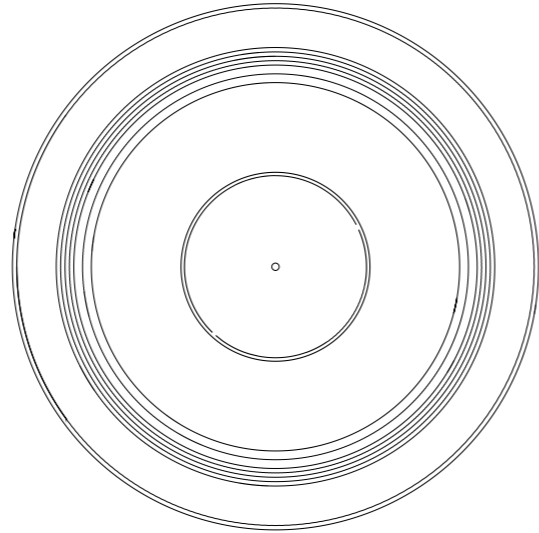
various materials including water of the Thaya, sound

It irrevocably drains away from us and drips into the void. We cannot slow down the cycle, not to mention stop it. The river Thaya is translated by its specific geometry as an ever-recurring sound of transience as a sound track in a steel plate. Through the curvature of the river, the needle creates the sounds and the water of the Thaya simultaneously deconstructs the track. Human being and environment. Two characters that are always working and thus create a system that is contradictory in itself.

(left) river geometry related to the meandering sound channels of records



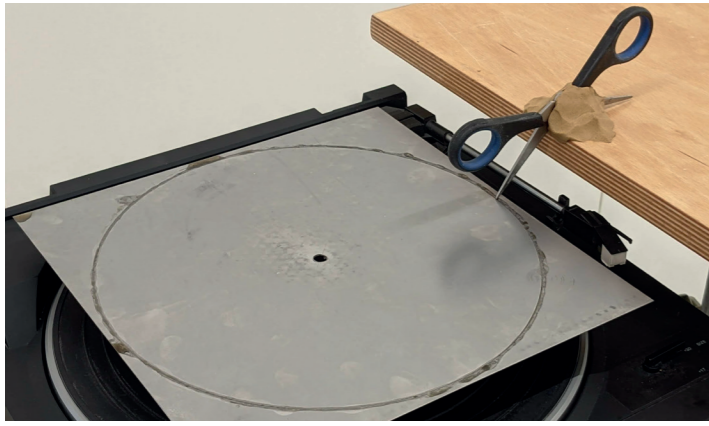
(right) the meandering geometry of the Thaya sampled in grasshopper to frequency curvesrecords



steel plate before and after corrosion

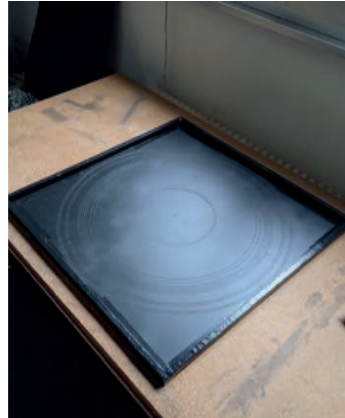
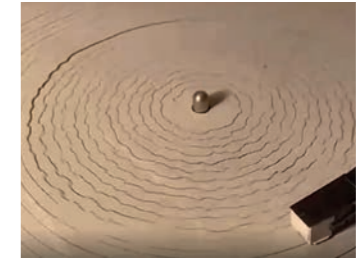
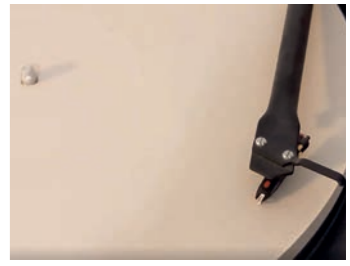
(top) filmstill of the installation, turning plate, running water and sound
(bottom) Thaya river geometry related to the meandering sound channels of records



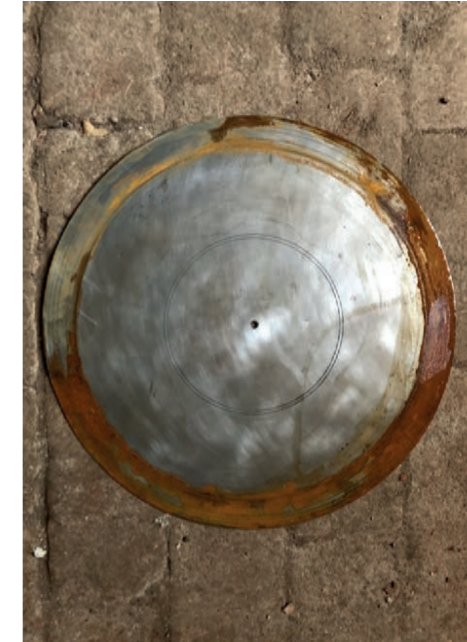


simple experiment with steel

- experiments
 (p.28 top from left to right)
 - transformation-city record
 - Beethoven negative in plaster
 - laser cutting sound spiral in greyboard
 - testing sound on aluminium foil



- etching of the metall plate
 (from top to bottom)
 - steel plate before and after applying the resist layer (black graffiti spray) and lasercutting the "sound-line"
 - steel etching process (involving hydrochloric acid, bicarbonate and protective gear)



- elements of the installation and location in the castle tower
 (top)
 - amplifier in niche of the tower
 - steel plate with rust
 (bottom)
 - engine of the installation
 - raw structure without plate
 - tower- location of the installation





acrylic glass, aluminum, PLA, watercolor paper, coal

The curvature of the Thaya could be a reason why Drosendorf Castle stands at this position. The Thaya protects the city, provides water, food and energy. We have set ourselves the task of devoting our attention to the Thaya. We want to produce drawings drawn by the river itself. A construction is placed and connected to the water, yet it can move freely. Pens record this movement. The production time of a drawing varies from one hour to a whole afternoon.



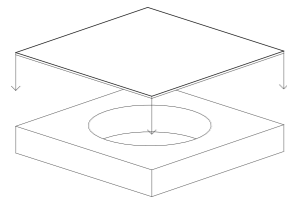
(left) June 21, 2022
10:28-14:33 (4 h)



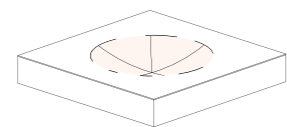
(right) June 22, 2022
13:48-14:24 (0,5 h)



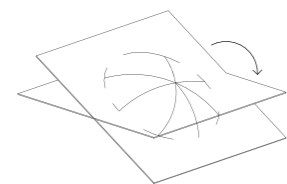
Place 'polystyrene glass' on top of the structure with round hole



Use a 'heat gun' to make the polystyrene glass convex



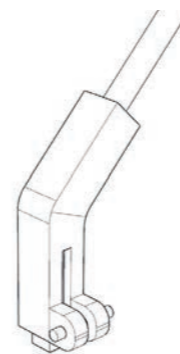
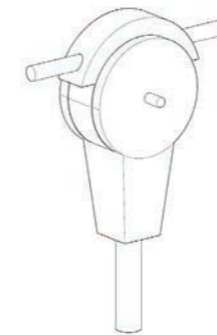
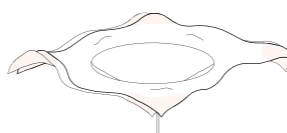
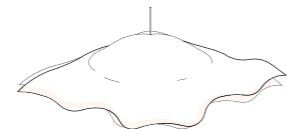
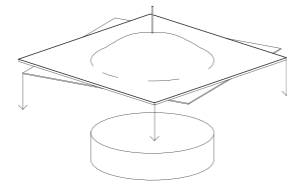
Turn the deformed glass over and place it on top of another layer of glass



Make a hole in the center of the convex side and insert the stick. this stick is centered so that the drawing plane can rotate easily

Create an 'unpredictable shape' around the edges with a heat gun. this border prevents paper from getting wet by rivers

Flip the model over again and do the finishing details



3d printed rotation point (top) 3d printed pen holder (bottom)

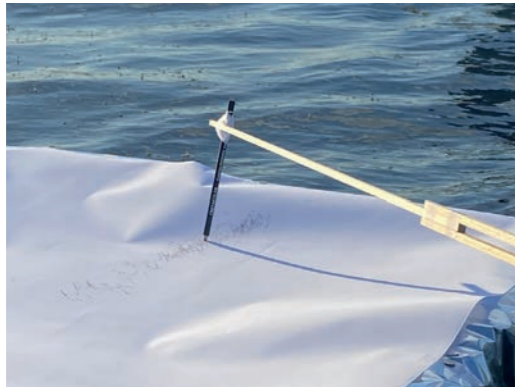




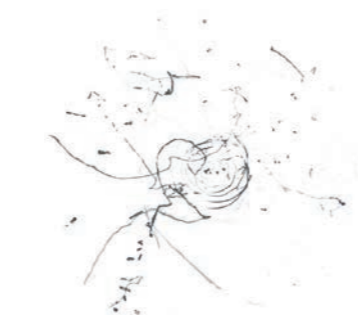
(p. 35) **simple experiment 1**
By connecting a pen and a ball floating on the water with a thread, draw lines on the paper according to the movement of the water.



(p. 35) **simple experiment 2**
A structure is formed so that the pen tool is fixed at a specific position, and the strength of the line is varied by using coal. We found that the line drawn on the paper changes depending on the material and thickness of the thread to which the ball and pen tool are connected.



(p. 35) **experiment prototype 1**
Create a simple prototype of a suitable size for drawing. In order to draw the movement of water in three dimensions, the plane on which the line is drawn is directly floated on the water and moved according to the movement of the water. The pen is fixed on a stick about 3 meters long.



(p. 35) **experiment prototype 2**
The movement of water includes rotation, as well as moving left and right, up and down. That's why we create a circular structure with a stick centered in the middle to facilitate rotation.



exhibition space at the castle



- Thaya self portraits (orig. size 60cm diametre)
(from left to right)
- 1 June 22, 2022 12:54-17:02 (4 h)
 - 2 June 21, 2022 10:28-14:33 (4 h)
 - 3 June 22, 2022 17:24-18:50 (1,5 h)
 - 4 June 21, 2022 16:56-18:24 (1,5 h)
 - 5 June 22, 2022 14:39-16:16 (1,5 h)
 - 6 June 22, 2022 12:04-13:32 (1,5 h)
 - 7 June 22, 2022 13:48-14:24 (0,5 h)



clay

The castle of Drosendorf with its continuous city wall has a protective but also inviting atmosphere. Our object deals with the theme of the threshold, the in-between separating and connecting. The shapes of the individual modules enable a constant transformation of the structure through the participation of the visitors. Material and form contrast with each other and influence the handling due to their fragility.



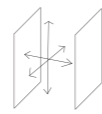
flexible in anchor points



fast in mass production



allows structure to see through



allows three-dimensional structure



easy in connecting



final design:
two modules in two
sizes to allow variability
in connecting
C-shape and O-Shape



Production of the module:
hand rolled clay pieces formed with the help of a template enabled the production of more than a thousand pieces



Firing process
firing the dried pieces up to 1150°C
the higher the temperature, the higher the strength

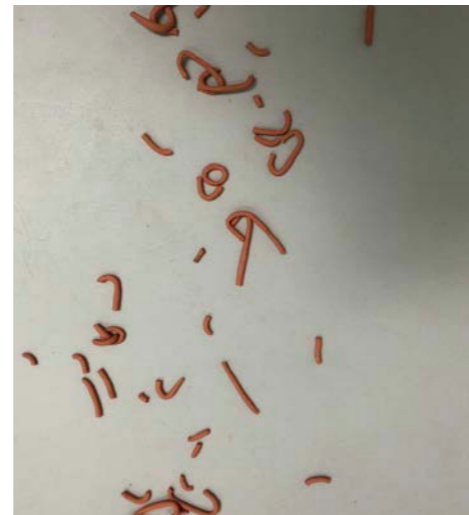


Transportation
weighing and packing the pieces carefully for the transportation to Drosendorf



Experiments of connectivity, max span, forms...

maximum span in width and height is 3 meters (30-40 pieces)



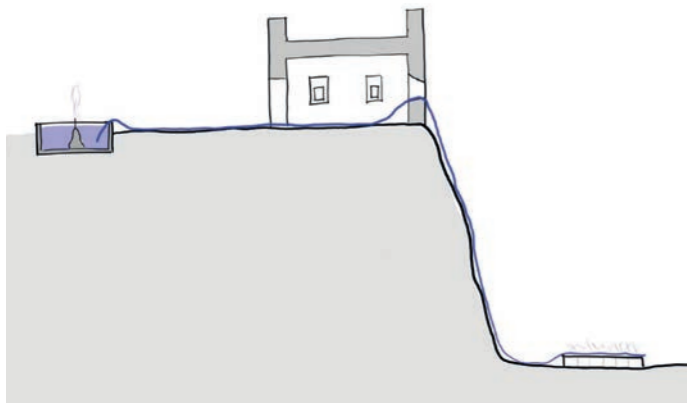
experimenting with prototype modules



plaster, water

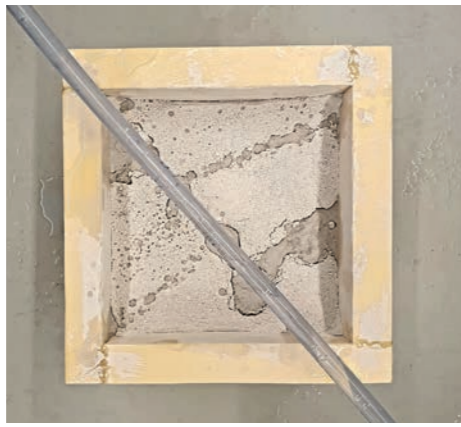
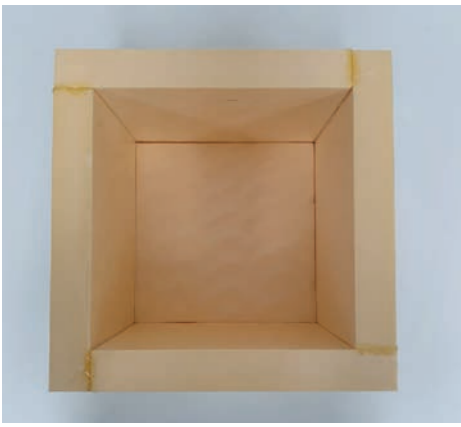
The landscape around Drosendorf, shaped by the river Thaya, has a magical atmosphere that captivates us. With our project we want to make the formative power of water tangible. By exploring the natural features of the topography, we build our own landscape. Starting with the fountain in the palace garden, we lead the water down along the wall and let its imprint petrify at the finish to preserve the moment of its creation.

water source and cast
position
system sketch



(left:) cast with raw
plaster
(right:) plaster shaped
by water from hose





material experiment
steel



material experiment
plaster



first experiment with
plaster and cast



material experiment
seeds

stripping the final
plaster material from
it's cast





video 8 min

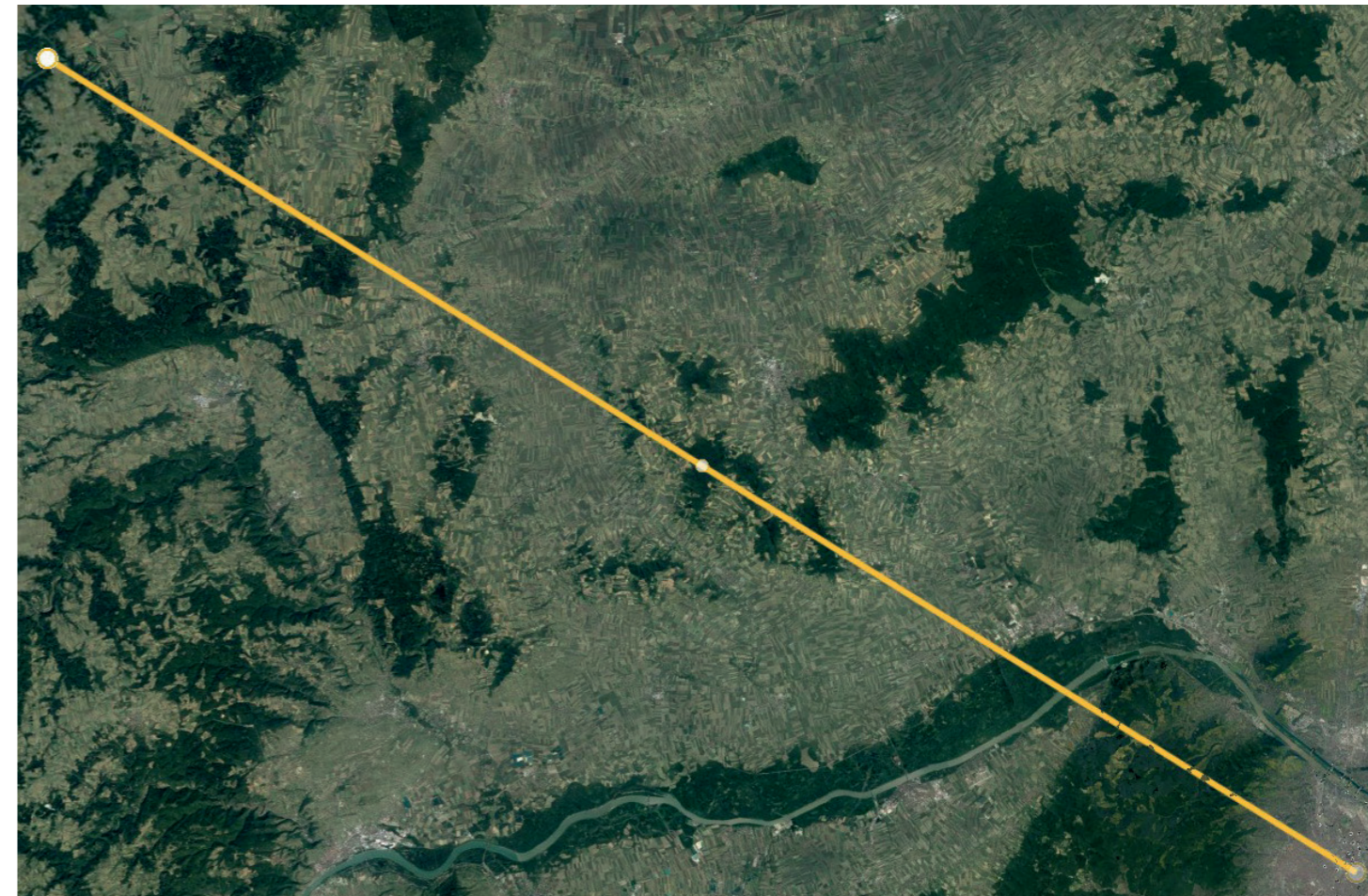
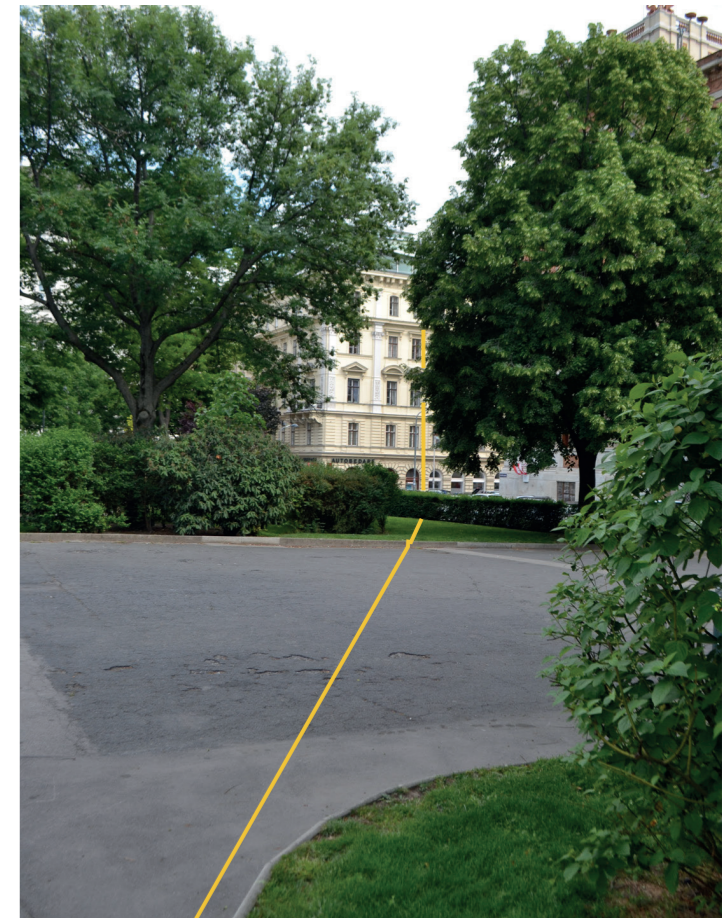
To illustrate the distance and difference of my two production sites, university and castle, I connected the two places with a 92.65 km long straight line. This line was investigated and documented in both physical and digital space.

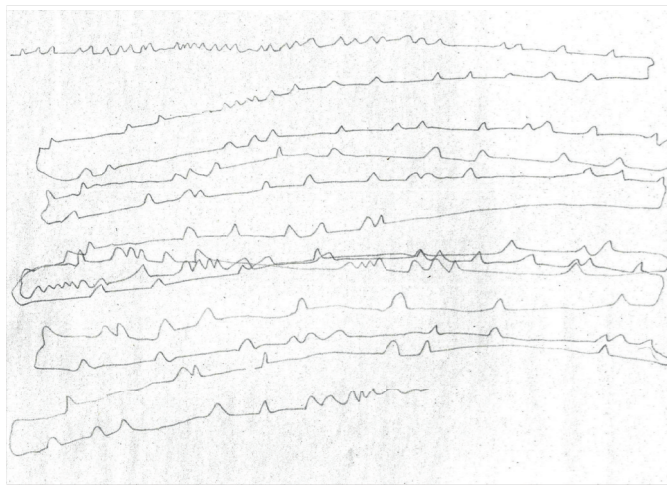
Schloss Drosendorf
48.86691272934801, 15.620454856999075

Distance

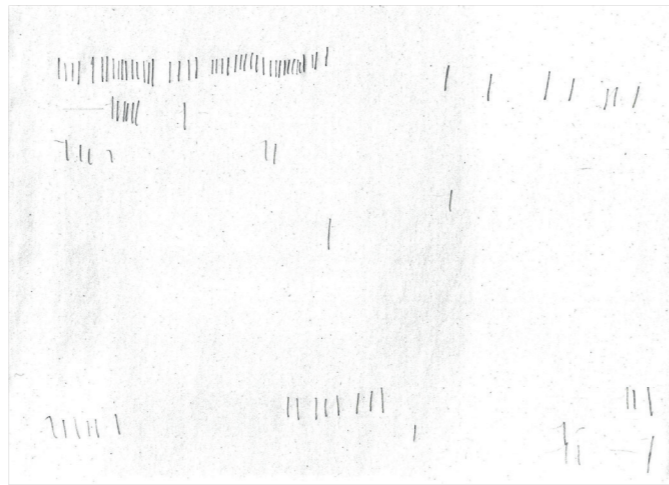
92,65 km
92 650 m
9 265 000 cm
386 042 x24 cm Geodreieck
201 413 steps
18,52 h walk

TU Wien
48.19846689961633, 16.3694494

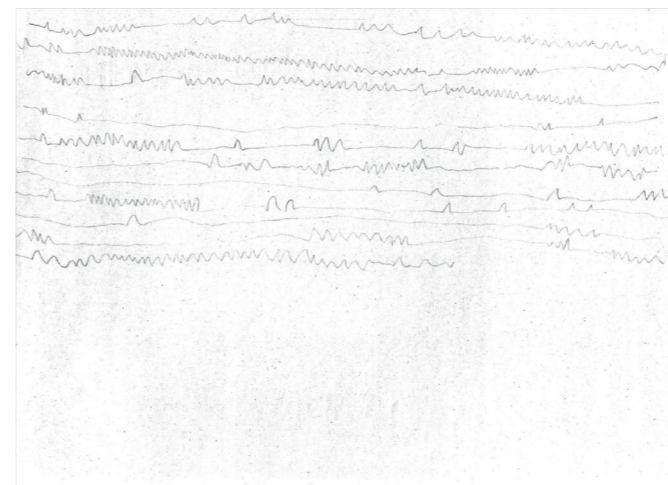




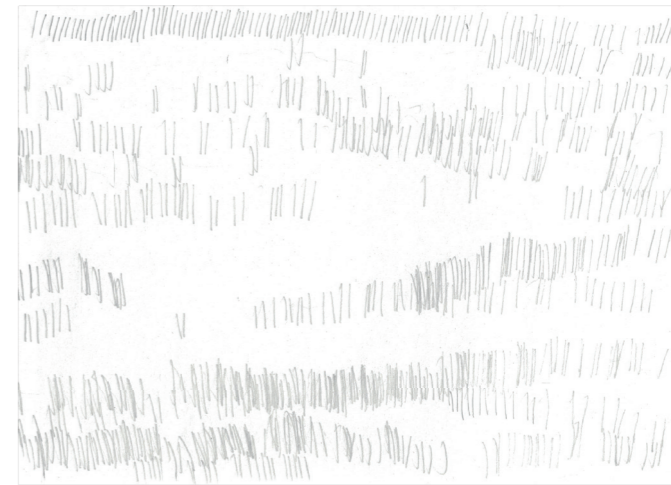
Linie x Straße
Dokumentation Film Sichthöhe 700-800m



Linie x Haus
Dokumentation Film Sichthöhe 700-800m



Linie x Baun
Dokumentation Film Sichthöhe 700-800m



Linie x Grenzen
Dokumentation Film Sichthöhe 300-400m

analogue line
documentation -
the digital flight of
the line recorded
graphically

(left:) attempt to make the line
visible in the physical world
(right:) google earth landscape
frames

22 h 11 min (108 km), 777 m Aufstieg, 531 m Abstieg, Hauptgebäude Resselgasse 3, 1040 Wien, Auf Paniglgasse nach Westen Richtung Wiedner Hauptstraße, 120m, rechts abbiegen auf Wiedner Hauptstraße, 160m, Weiter auf Karlsplatz, 170m, Weiter auf Kärntner Str., 15m, weiter geradeaus auf Kärntner Str., 290m, links abbiegen auf Philharmoniker Str., 4m, rechts abbiegen auf Kärntner Str., 500m, Bei Singerstraße links abbiegen, 14m, rechts abbiegen auf, Stock-im-Eisen-Platz, 160m, Weiter auf Rotenturmstraße, 450m, Weiter auf Marienbrücke, 97m, links abbiegen auf Obere Donaustraße, B227, 1,1km, links abbiegen, 18m, rechts abbiegen, 110m, links abbiegen, Treppe nehmen, 38m, links abbiegen, 5 m, rechts abbiegen, 1,6 km, Leicht rechts abbiegen, 1,9 km, rechts abbiegen, 240 m, Leicht links abbiegen Richtung Steinitzsteg, 190 m, Weiter auf Steinitzsteg, 450 m, rechts abbiegen auf Donauinsel, 26 m, links abbiegen, 82 m, links abbiegen, 5,4 km, rechts abbiegen, Teilweise für den öffentlichen Durchgang gesperrte Straße, 300 m, links abbiegen auf Barwichgasse, 67 m, links abbiegen, 11 m, rechts abbiegen, 3,4 km, Geradeaus auf Tuttendörfel, 450 m, Leicht rechts abbiegen, um auf Tuttendörfelzubleiben, 260 m, rechts abbiegen auf Klosterneuburger Str., 350 m, rechts abbiegen auf Jägersteig, 29 m, Links Richtung Nordwestbahnstraße abbiegen, 160 m, links abbiegen auf Nordwestbahnstraße, 120 m, Nordwestbahnstraße verläuft leicht nach rechts und wird zu Klosterneuburger Str., 400 m, rechts abbiegen auf Donaustraße, 120 m, links abbiegen auf Dr.-Max-Burckhard-Ring, 350 m, Weiter auf Prof.-Dr.-Karl-Liebleitner-Ring, 120 m, links abbiegen auf Stockerauer Str./B3, 4,2 km, rechts abbiegen auf Leobendorfer Str., 1,8 km, Weiter auf Wiesener Str., 700 m, Weiter auf L25, 3,9 km, rechts abbiegen auf Ernstbrunner Str./Stockerauerstraße, 16 m, links abbiegen auf Hatzenbacher Str., 260 m, Weiter auf L31, 5,3 km, rechts abbiegen, 1,7 km, Weiter auf Höbersdorf, 140 m, Weiter auf Bahnzeile, 500 m, Weiter auf Untermallebarn, 99 m, Weiter auf L1089, 1,1 km, Weiter auf Untermallebarn, 1,1 km, Weiter auf L1085, 280 m, Weiter auf L1088, 650 m, Weiter auf Viendorf, 3,0 km, rechts abbiegen auf Werkstraße, 12 m, links abbiegen auf Industriestraße, 1,2 km, Industriestraße verläuft leicht nach rechts und wird zu L1105, 750 m, Weiter auf Großstelzendorf, 500 m, links abbiegen auf L1138, 2,3 km, rechts abbiegen auf Hollabrunnerstraße, 350 m, Weiter auf L1138, 2,1 km, rechts abbiegen auf Feldgasse, 59 m, Weiter auf L1138, 800 m, Geradeaus auf Hauptpl., 49 m, Weiter auf Schmiedgasse, 230 m, Leicht links abbiegen auf Am Sandgraben, 43 m, nach links abbiegen, um auf Am Sandgraben zubleiben, 14 m, rechts abbiegen auf Friedhofsweg, 190 m, Weiter auf Mühlbergkellergasse, 64 m, links abbiegen, 550 m, rechts abbiegen auf L27, 120 m, links abbiegen, 1,0 km, links abbiegen auf L43, 1,8 km, Weiter auf Fahndorfer Str./Hollabrunner Str., Weiter auf Hollabrunner Str., 1,3 km, Weiter auf L42, 1,1 km, Leicht links abbiegen auf Fellabrunner Str., 80 m, Leicht links abbiegen, um auf Fellabrunner Str. zubleiben, 170 m, nach rechts abbiegen, um auf Fellabrunner Str. zu bleiben, 48 m, links abbiegen auf Schulgasse, 43 m, nach rechts abbiegen, um auf Schulgasse zubleiben, 83 m, Weiter auf Schwemmpl., 65 m, links abbiegen auf Sitzendorfer Str., 230 m, Weiter auf L42, 5,3 km, rechts abbiegen auf Lerchenfelder Str., 500 m, Weiter auf L42, 3,4 km, Weiter auf L1144, 2,0 km, rechts abbiegen auf Wartberg, 90 m, nach links abbiegen, um auf Wartberg zu bleiben, 400 m, rechts abbiegen auf L50, 1,5 km, rechts abbiegen auf Stoitzendorf, 400 m, nach links abbiegen, um auf Stoitzendorf zubleiben, 39 m, nach rechts abbiegen, um auf Stoitzendorf zubleiben, 210 m, nach links abbiegen, um auf Stoitzendorf zubleiben, 2,0 km, rechts abbiegen, 350 m, links abbiegen, 400 m, rechts abbiegen, 210 m, Geradeaus auf Roggendorf, 120 m, nach rechts abbiegen, um auf Roggendorf zubleiben, 49 m, nach links abbiegen, um auf Roggendorf zubleiben, 51 m, nach links abbiegen, um auf Roggendorf zubleiben, 900 m, rechts abbiegen auf Klein-Jetzelsdorf/B35, 240 m, Leicht links abbiegen auf Klein-Jetzelsdorf, 34 m, nach links abbiegen, um auf Klein-Jetzelsdorf zu bleiben, 450 m, links abbiegen, 1,3 km, rechts abbiegen auf L1197, 2,0 km, links abbiegen auf Missingdorf, 210 m, nach rechts abbiegen, um auf Missingdorf zubleiben, 99 m, Weiter auf L1197, 2,5 km, links abbiegen auf Theras, 1,2 km, Weiter auf L1198, 1,8 km, Leicht rechts abbiegen, um auf L1198 zu bleiben, 1,5 km, links abbiegen auf L1198/L37, 100 m, rechts abbiegen auf L1198, 750 m, rechts abbiegen auf Nonnersdorf, 250 m, Weiter auf L1198, 2,7 km, links abbiegen auf Dallein, 400 m, nach links abbiegen, um auf Dallein zu bleiben, 210 m, Leicht rechts abbiegen, um auf Dallein zubleiben, 1,0 km, Weiter auf L1191, 950 m, Im Kreisverkehr erste Ausfahrt (Horner Str./B4) nehmen, 750 m, Leicht rechts abbiegen, 1,7 km, Weiter auf Goggitschberg, 160 m, Weiter auf Berggasse, 350 m, Weiter auf Retzer Str., 24 m, nach links abbiegen, um auf Retzer Str. zubleiben, 14 m, Weiter auf Hauptstraße, 260 m, nach rechts abbiegen, um auf Hauptstraße zubleiben, 210 m, rechts abbiegen auf Stiftstraße/B4, Weiter auf B4, 500 m, Weiter auf Thayatal Str./B30, Weiter auf B30, 8,9 km, Im Kreisverkehr dritte Ausfahrt (Horner Str.) nehmen, 150 m, links abbiegen auf Schloßpl., 34 m, nach links abbiegen, um auf Schloßpl. zubleiben, Das Ziel befindet sich auf der rechten Seite, 47 m, Schloßpl. 1, 2095 Drosendorf Stadt.

Fußweg
Dokumentation GoogleEarth

digital line
documentation -
route descriptions



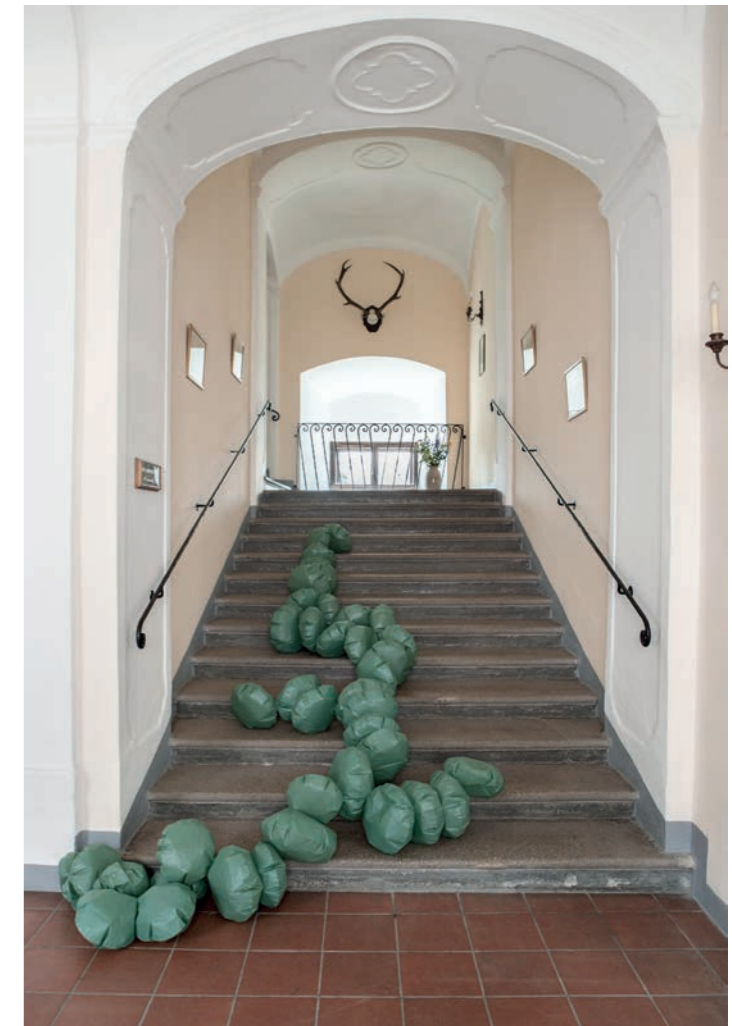
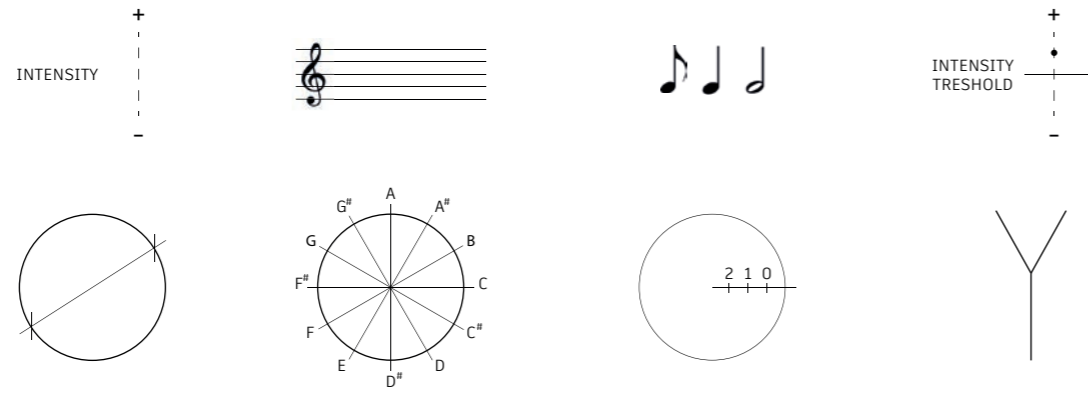


polyethylen, air

The concept is based on the idea of representing music in a material, three-dimensional way. The object is an alternative to the classical graphical representation of music - the pentagram. To make this possible, an algorithm was developed that reads data from music and translates it into the characteristics of the components of the presented object. The exhibited prototype is made using plastic as a two-dimensional component, which, once inflated, becomes three-dimensional.

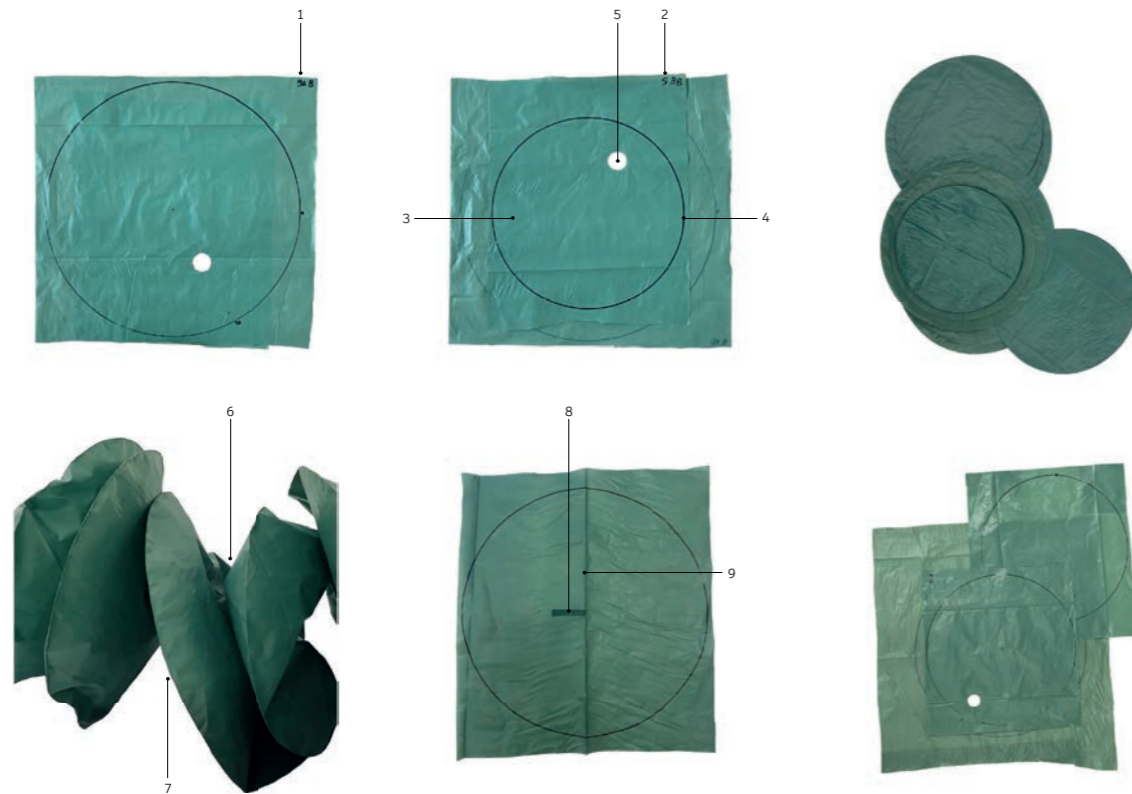
scheme of parameters-

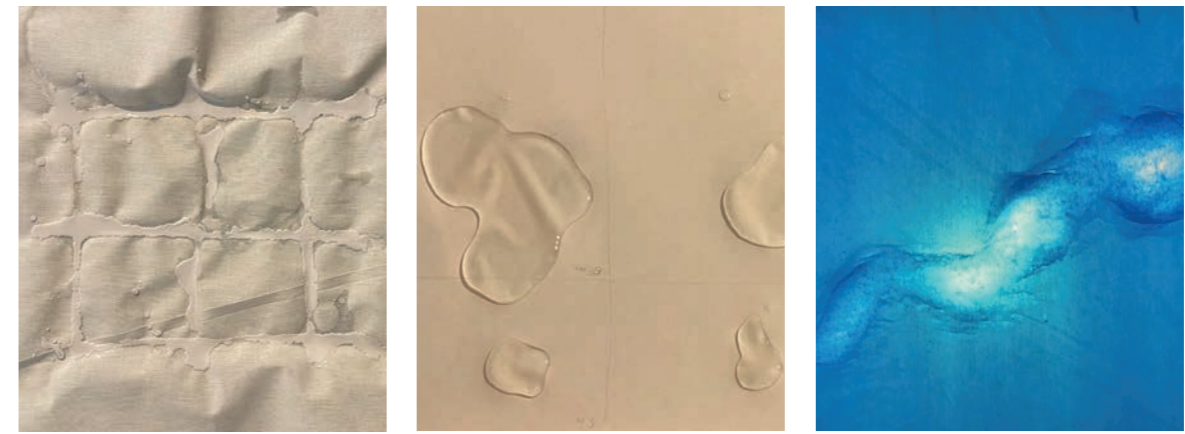
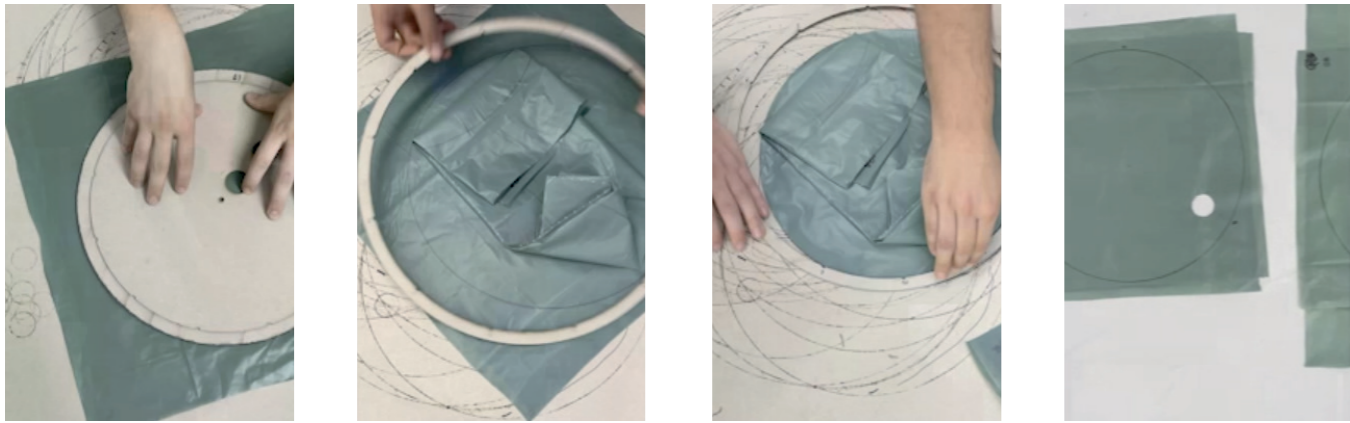
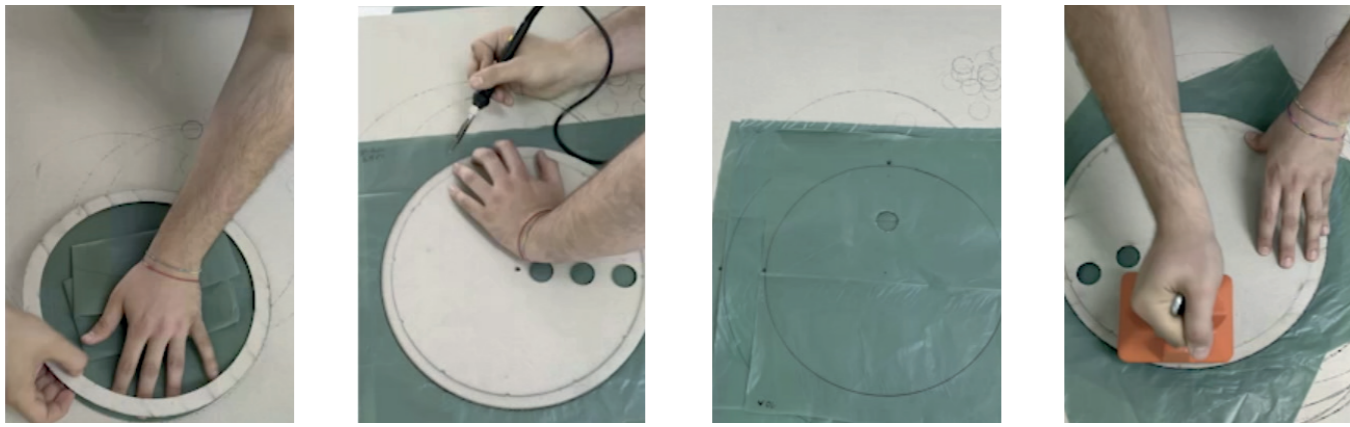
intensity, frequency and time, for sizing the pillow and position of connections and wholes



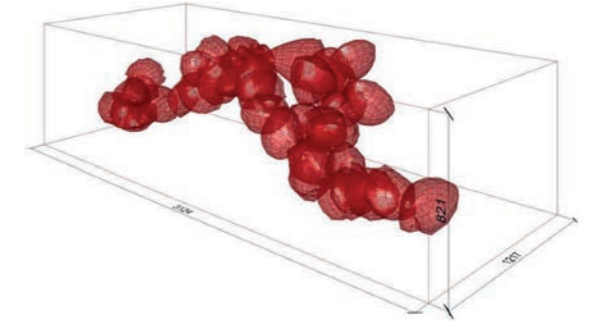
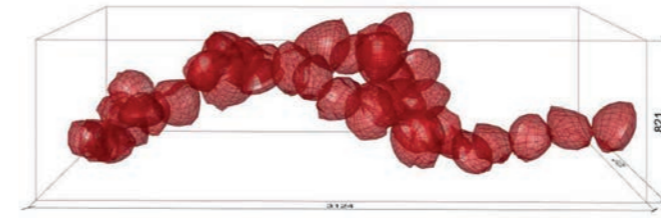
LEGEND

1. index pillow number
2. index pillow size
3. pillow surface
4. marker trace of the edge of the pillow
5. hole
6. welded connection between pillows
7. welded connection between upper and lower surfaces
8. sealing system
9. welding line

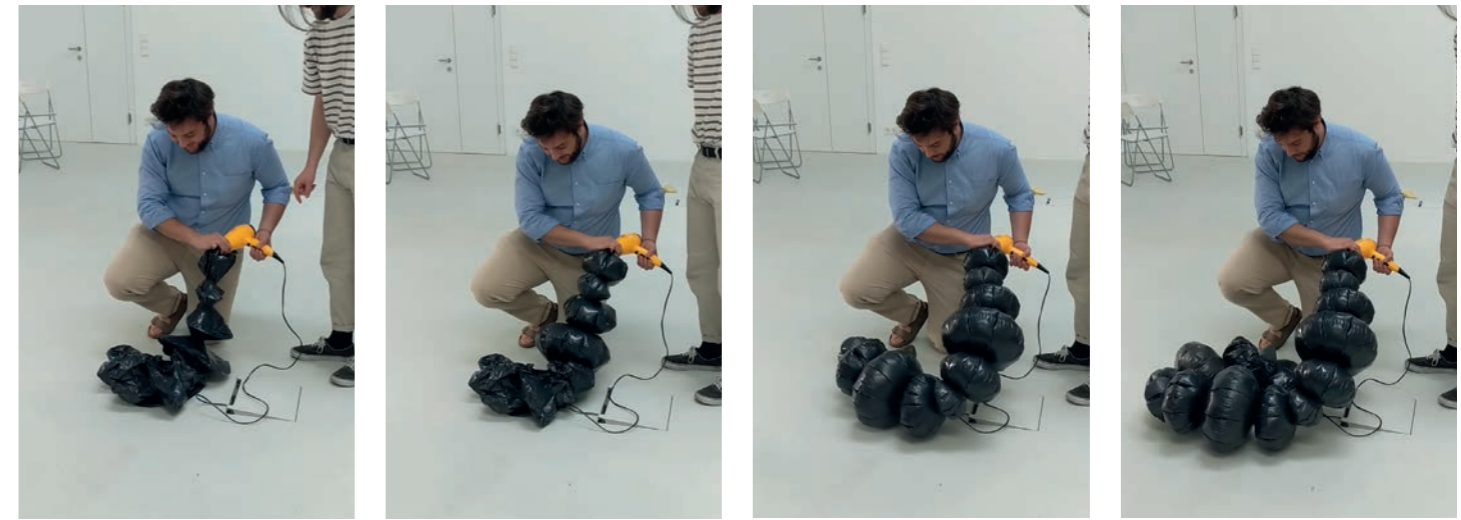




materials - combinations, connections and stress test



digital simulation of Hank Levy - Whiplash



r = 150 mm

r = 175 mm

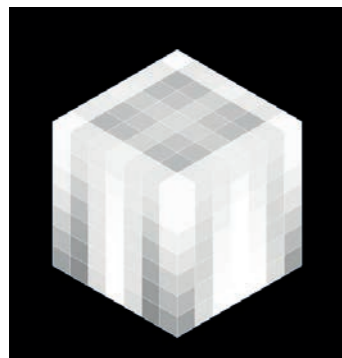
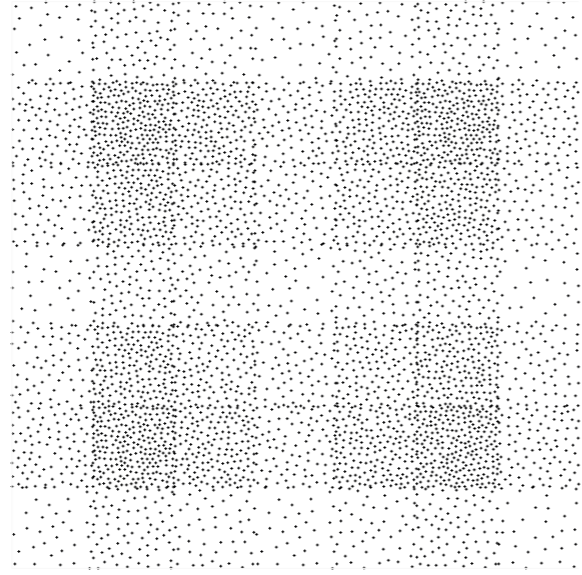
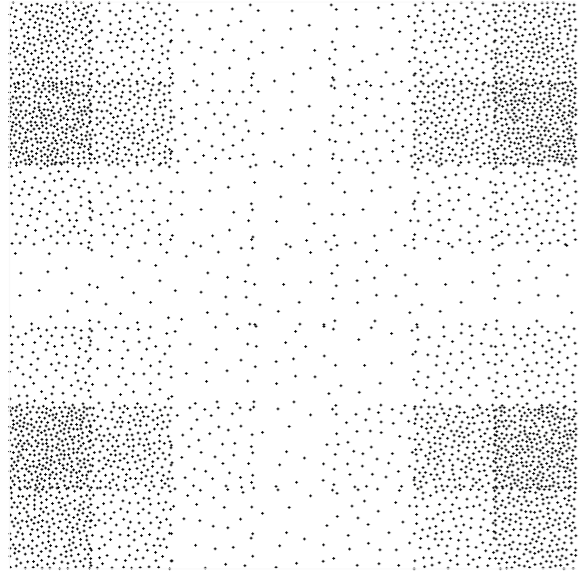
r = 200 mm





wool

The result of our material research forms a cube felted from raw wool and built up in layers. The technique of dry felting gives the chair its strength and creates a topological optimization of the structure. We see the transition from raw wool to the form of the chair as a ritual process. This method is characterized by the physical qualities of the shorn, sorted, greasy wool, as well as the properties of lanolin wax.



40 cm X 40 cm X 40 cm cube defines the solid mass of the stool. Stiff parts are represented with the voxels. Felting time decreases with the help of optimized felted area in the legs. Every 5 cm from bottom to top, felting pattern and density change according to the digital production.

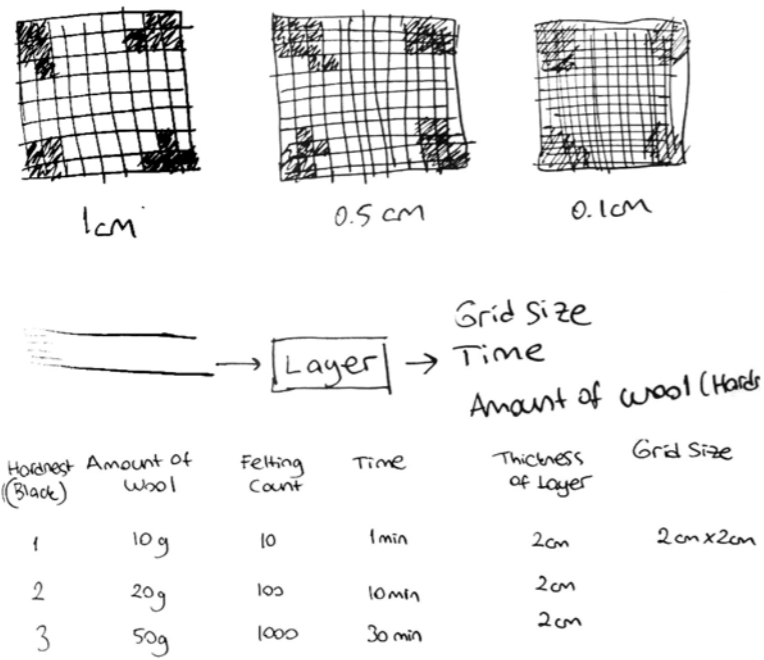




jute rope

polyester sponge

felted wool





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Three-Dimensional Design and Model Making

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