DATA SCULPTED FUTURES

TROUBLE

a project by Jade Bailey & Oliver Hamedinger

Seeking agency through the entwinement of data and matter.
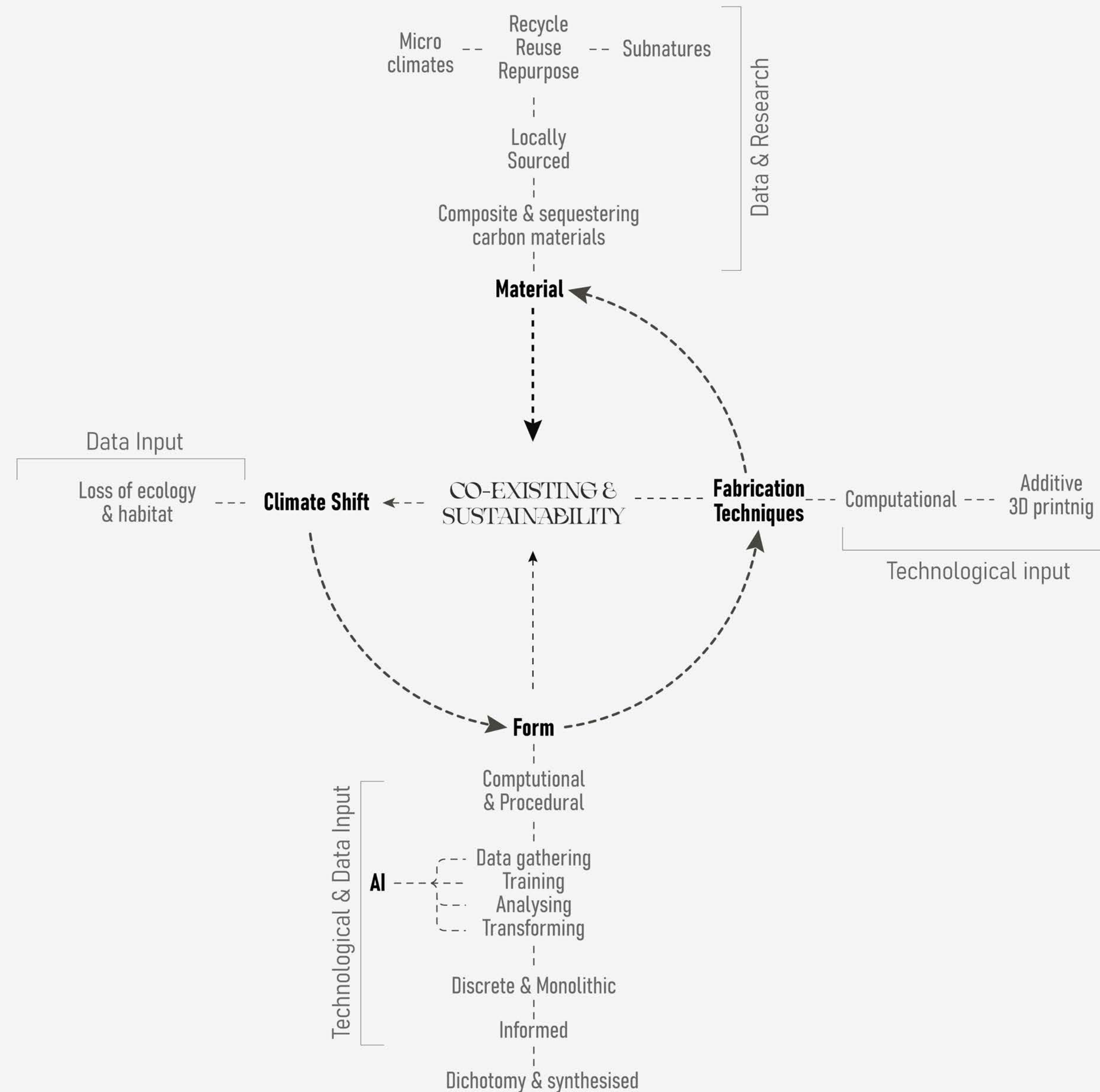
PROJECT TEXT

Description

Trouble, seeks agency through the entwining of data and matter. This interactive sculpture is an exploration into a future notion of ecologies that aims to evoke curiosity by revealing the omni presence of the climatic downfall through its potential reconciliation.

The proposal embraces a design approach founded on the implementation of computational and data-driven technologies intended to investigate and contribute to the pertinent conversation surrounding design and ecology whilst formulating novel procedural methods, fusion of human and machine intelligence, to craft harmonious and elegant strategies for a coexistence.

The main aspect of the installation is the formation of the Co2 sand column. It is derived from a trained generative adversarial network of scrapped Co2 emission cloud imagery (AI GAN), which is used to create a latent walk of AI generated images, completely new and yet informed by existing data. This is then transmogrified into a compiled series of images vertically stacked, intentionally producing ambiguous and unfamiliar forms, mimicking that of emission clouds. The output latent walk can be viewed within the exhibition using the viewers own mobile device through an augmented reality application. According to where the device is held next to the sculpture, the app will display the images that directly inform that particular strata of the sculpture. The accompanying timber structure completes the intent of combining computer and human aided design and fabrication techniques. The timber components interlock to form a self supporting structure that intertwines and supports the cloud column. Together they offer a future use scenario of creating microclimates as it decomposes or the materials can be reused. The ornamentation, fabrication and materiality of the sculpture is our approach to a future oriented and co-existent design. While employing bio-integrated design, it challenges the prevailing architectural paradigm of diversity and flawlessness, instead embracing a transition influenced by the environs in which we reside.

The use of recycled and bio materials is integral to the design, not only can they be disassembled and reassembled in various locations they can also be recycled or repurposed after use. Relying on natural composites, which can be locally sourced and constructed, minimises emissions and waste products and advocates a design process that is integral to designing with a non-carbon future in mind. The installation is an artistic manifestation of our ongoing research with the endeavour to engage with a wider audience in a grounded and poetic way. The multi-layering of materials, fabrication methods and interactive quality, serve as an interface between the incomprehensible scale of climate and how we can use methods to help tackle it at a human scale. Illustrating the overarching theme and in doing so presenting a possible solution.

Micro climates -- Recycle Reuse Repurpose -- Subnatures

Data & Research

Locally Sourced

Composite & sequestering carbon materials

Material

Data Input

Loss of ecology & habitat --- **Climate Shift** ← CO-EXISTING & SUSTAINABILITY --- **Fabrication Techniques** Computational --- Additive 3D printnig

Technological input

Form

Technological & Data Input

Comptutional & Procedural

AI --- Data gathering Training Analysing Transforming

Discrete & Monolithic

Informed

Dichotomy & synthesised

COMPUTATIONAL WORKFLOW
Using a data-set of Co² emission imagery and AI technology to generate a latent walk
that represents the initiation of the Anthropocene.

ENCODING
Data Input Images

LATENT SPACE
Training AI
Latent space is a conceptual domain in which the computer analyses
frames of a data-set, in order to generate new imagery, based on
specific reoccurring patterns and relationships.


DECODING
Computational Reconstructed

100%

frame_260

frame_260

frame_195

frame_195

frame_130

frame_130

frame_65

frame_65

frame_00

frame_00

0%

Trained generative adversarial network of scrapped Co² emission cloud imagery (AI GAN), which is used to create a latent walk of AI generated images, completely new and yet informed by existing data. This is then transmogrified into a compiled series of images vertically stacked, intentionally producing ambiguous and unfamiliar forms, mimicking that of emission clouds.

frame_260
3d column_from data informed images
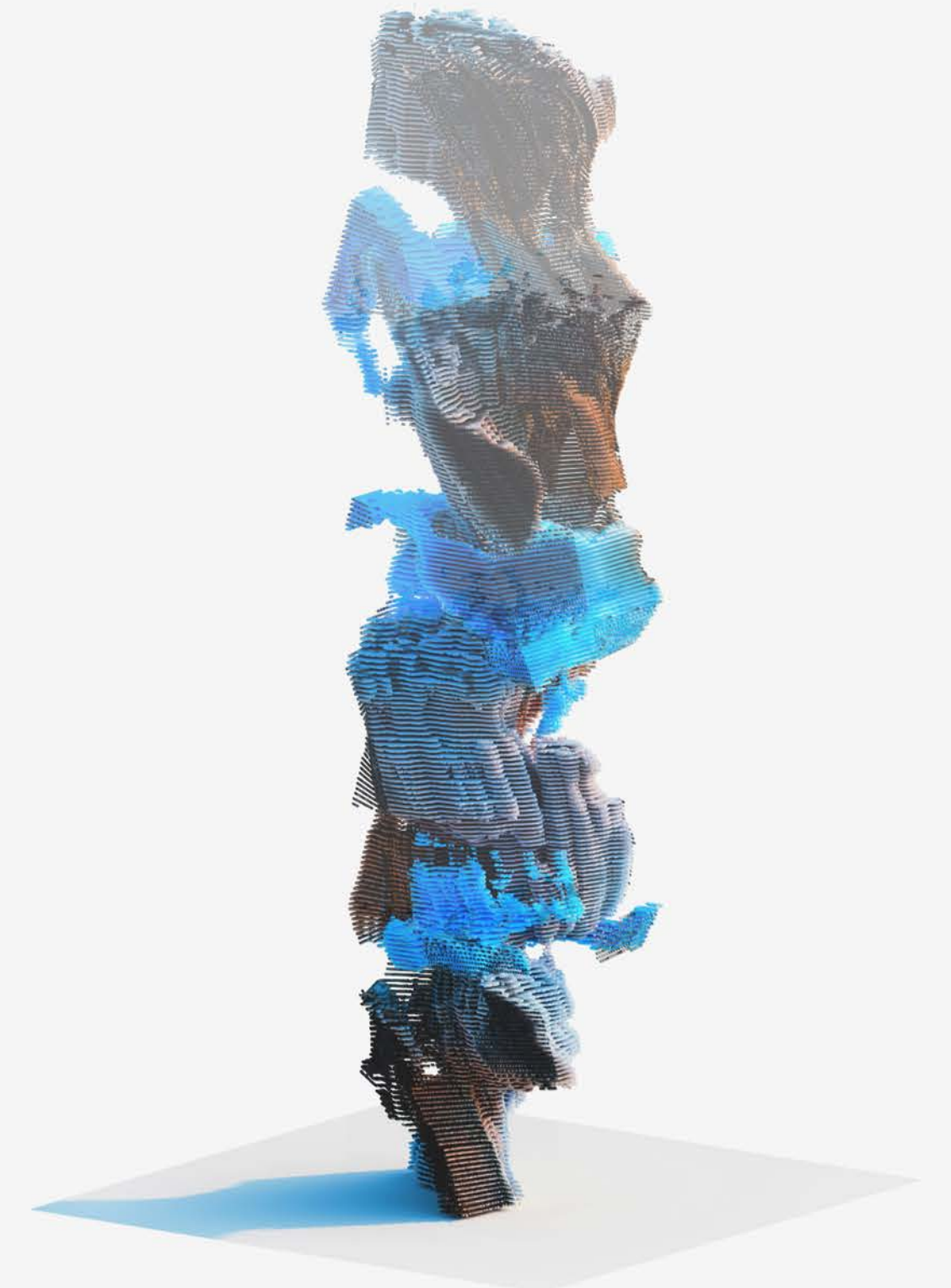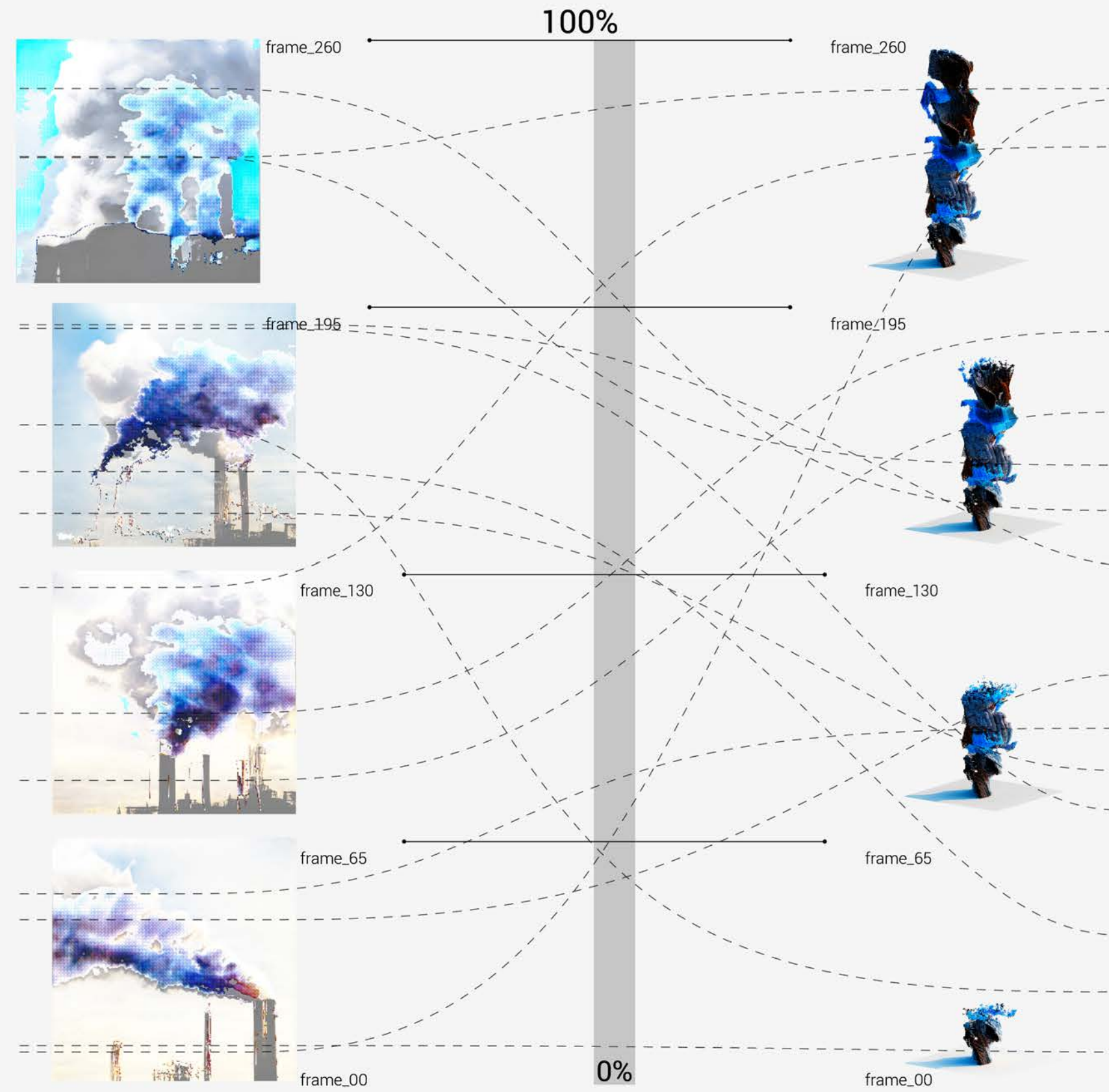
frame_260
3d column_from data informed images
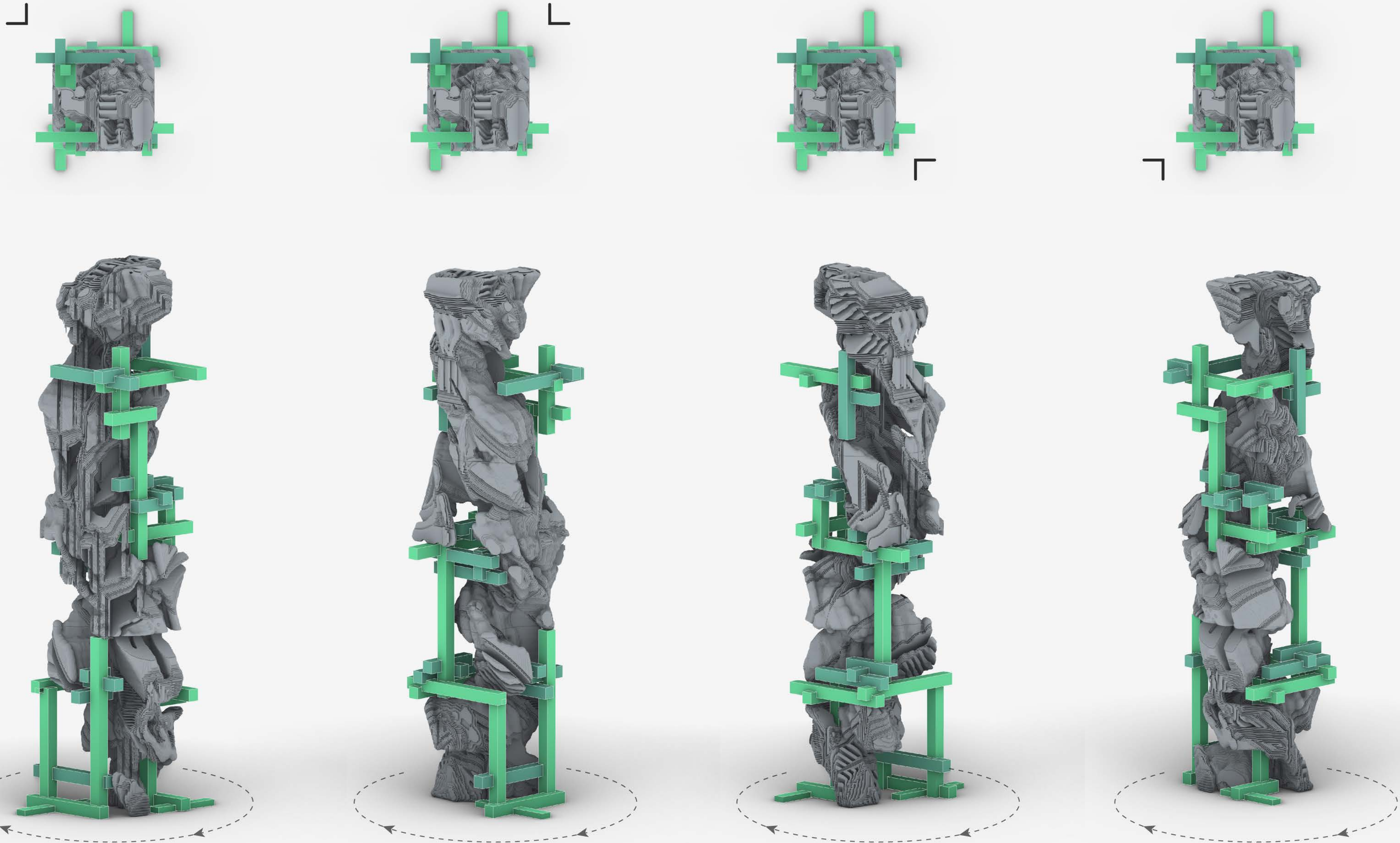
The input data_set of real emission clouds fed the latent walk, which in response generated the base form of the scultpure.

This base form, grey, generated through stacking the latent walk data, was then manipulated by human through computational design, to increase surface area for bio inhabitation. The design is composed from two materials, of which are sourced locally within Europe. Sand and timber. The cloud column is made from 3 interlocking components and is accompanied by a timber support structure that weaves around and through the column. Devised to work together as one system, working and growing simultaneously.

MATERIALITY & FABRICATION

Computer aided and robotic manufacturing processes superimposed with traditional craftsmanship

Material: Data infused clouds
– SH–F01 printable sand composite

Material: Intertwined timber structure – Localised Plywood

Fabrication: 3D sand printer sand. Additive manufacturing process with a bind jetter technology.

**Fabrication:** Human Input with traditional timber practises

The installation is made from recycled and bio materials, which can then be disassembled and recycled or repurposed afterwards.
The scale, is intended so that the sculpture can be relocated and it's simple construction process means that it can be easily disassembled and reassembled in various locations.
Due to these attributes the installation can also be embedded with seeds and other bio matter so that over time weathering and vegetation growth can take place, resulting in it becoming its own micro climate. Therefore, feeding back into reconciling the climate damage.
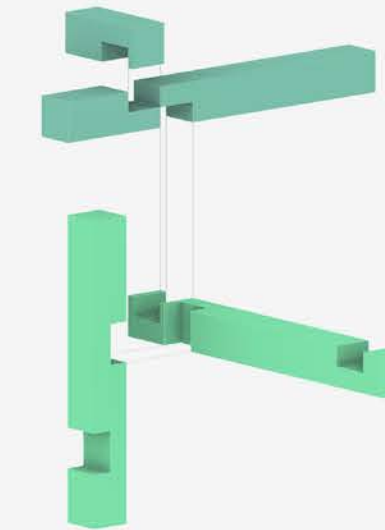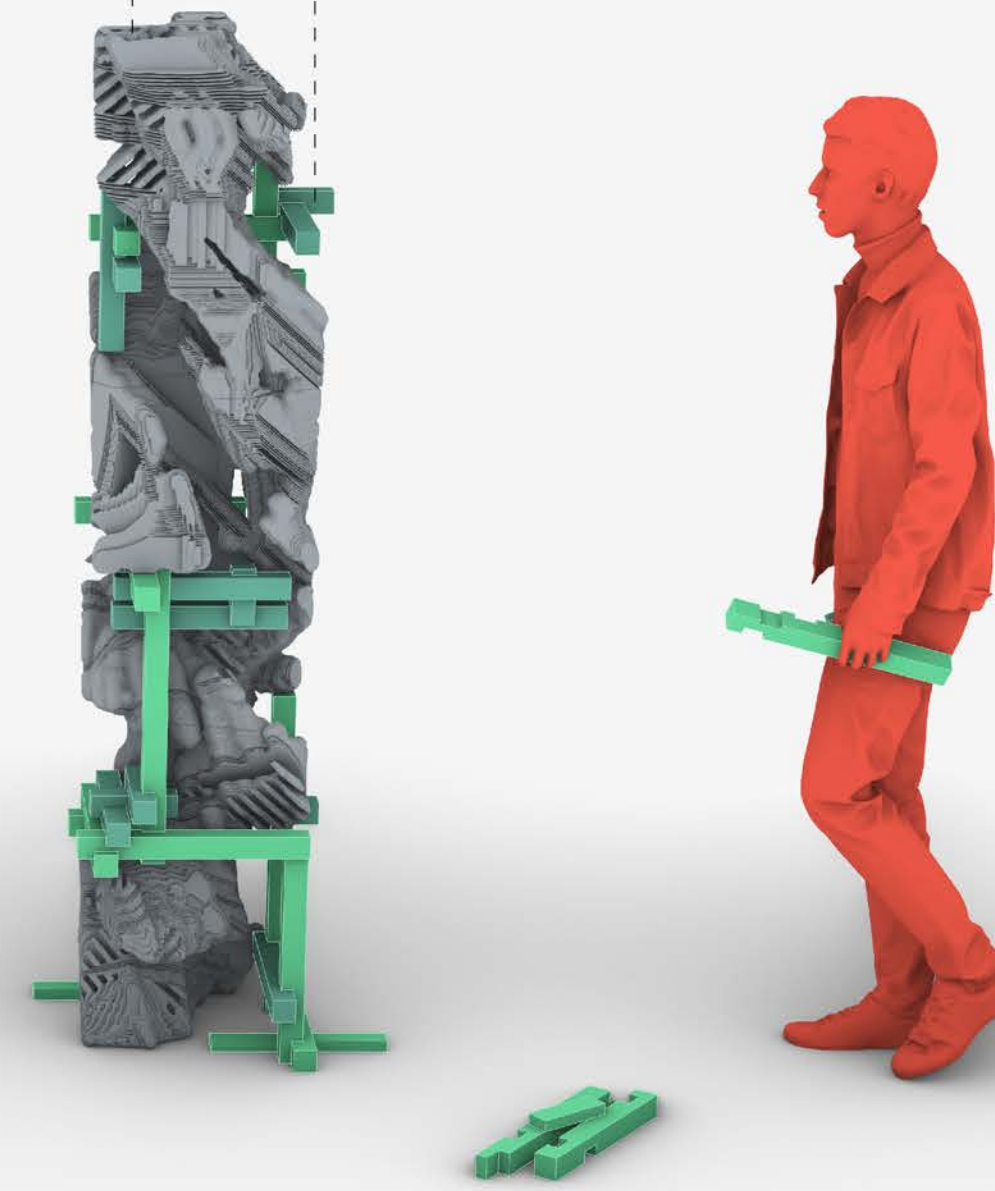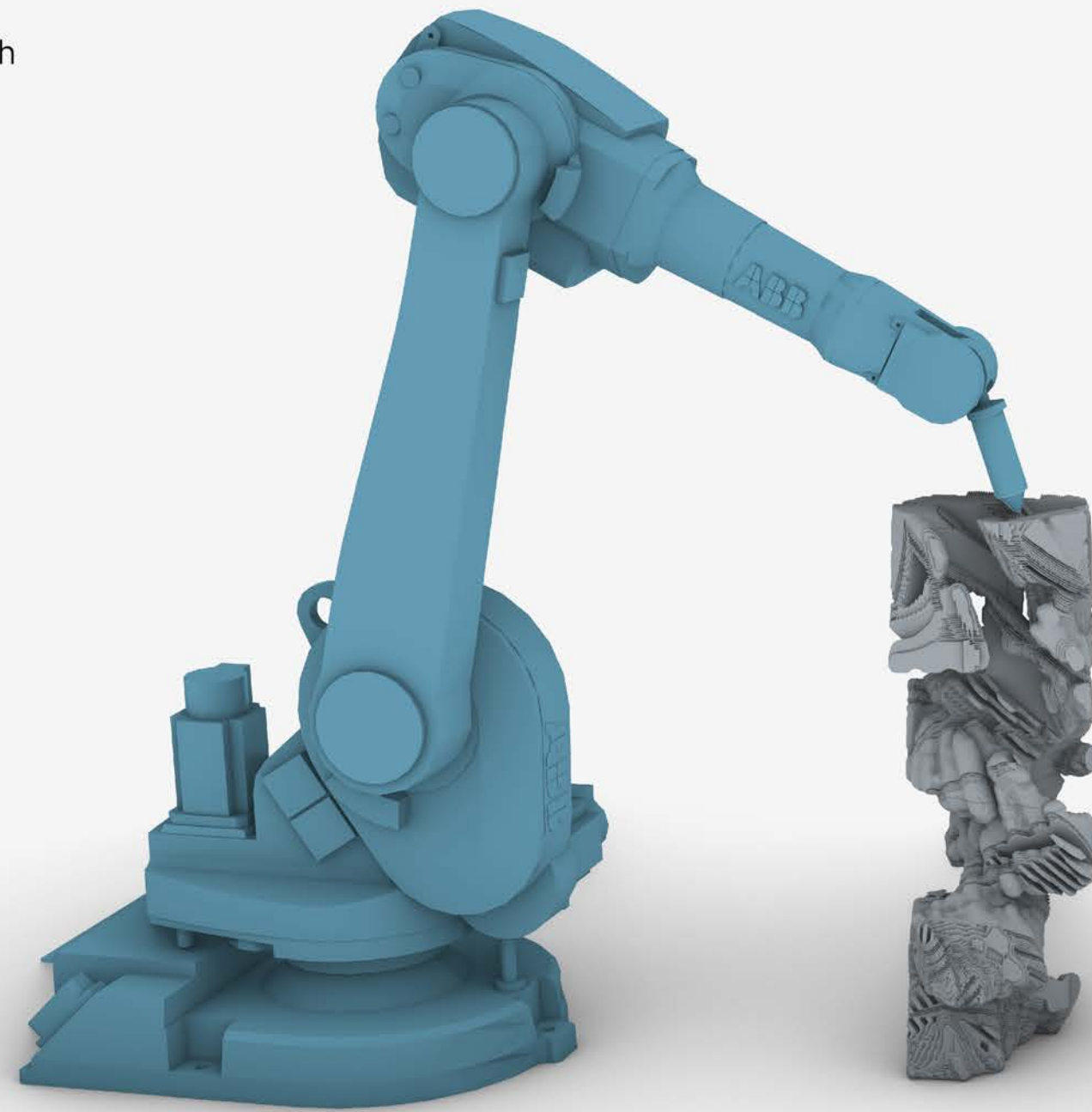
Interlocking self supporting timber components, with a primary and secondary system at play.

Physical Realm

Sculpture

Design
Methodology

Human

CO_2 Imagery stacked
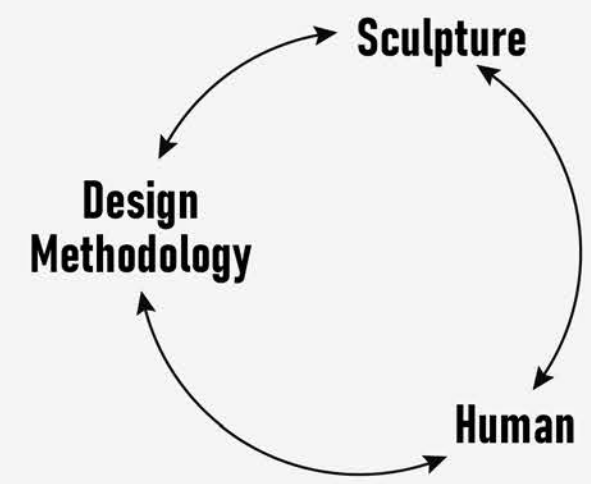
Programming is used to create an app to allow viewers to see the real life data input images. As the device is moved in a vertical direction next to the sculpture the input images that correspond to the form of the cloud, latent walk, appear. Therefore, the real life input image, sculpture and human interaction create a closed feedback loop.
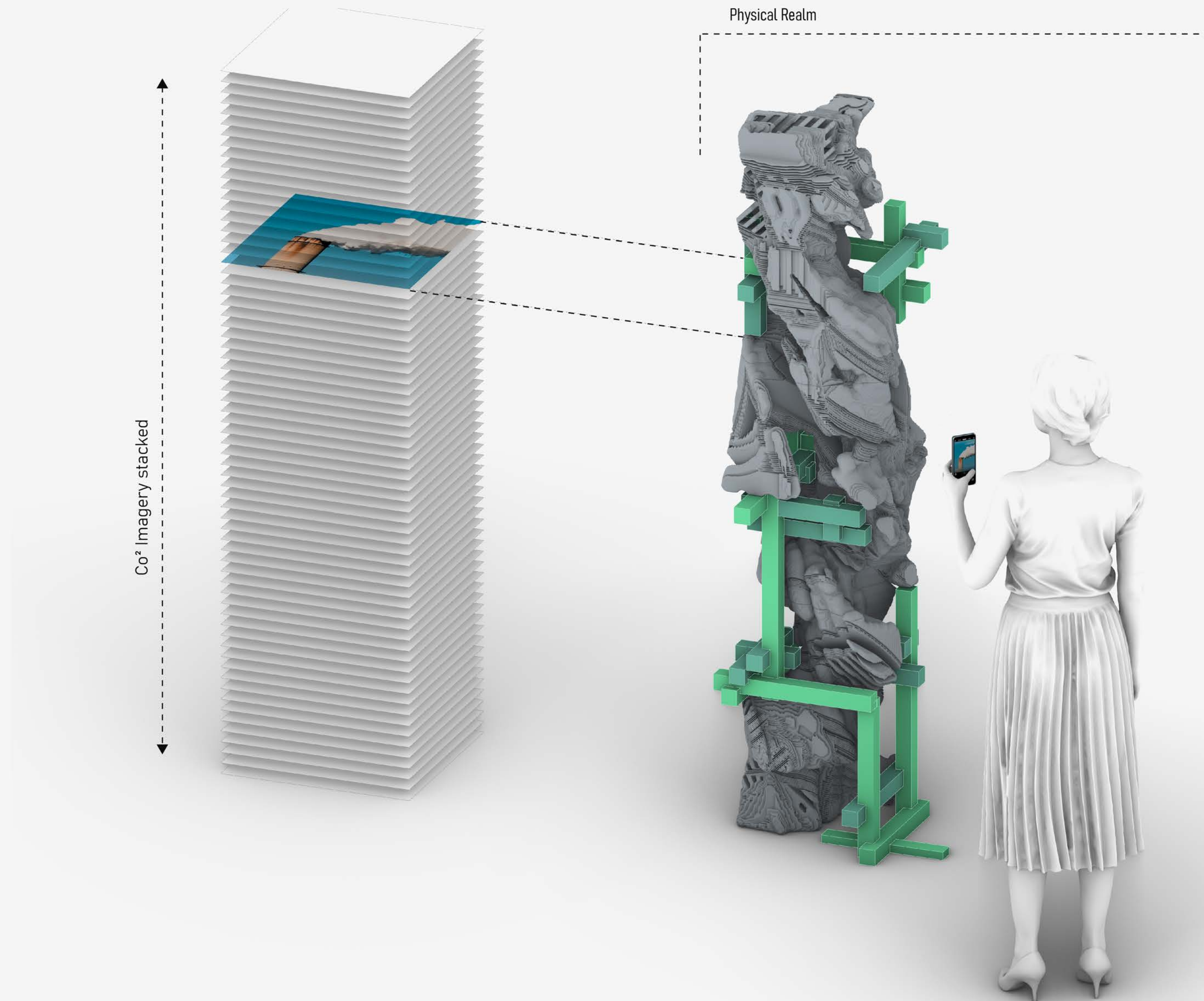
45 pieces

TOTAL
4x4x850cm (LxWxH)
15kg (material wood)

Prefered local wood resources:
– Meranti (01)
– Dabema wood (02)

01

02

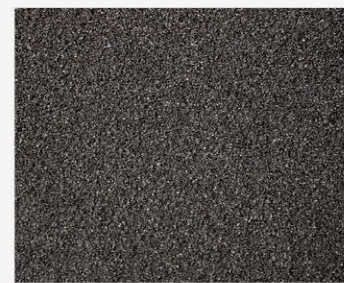# INSTALLATION
material sand

DIAMENSIONS:

P_01
40x40x60cm (LxWxH)
30kg (material sand)

P_02
40x40x60cm (LxWxH)
30kg (material sand)
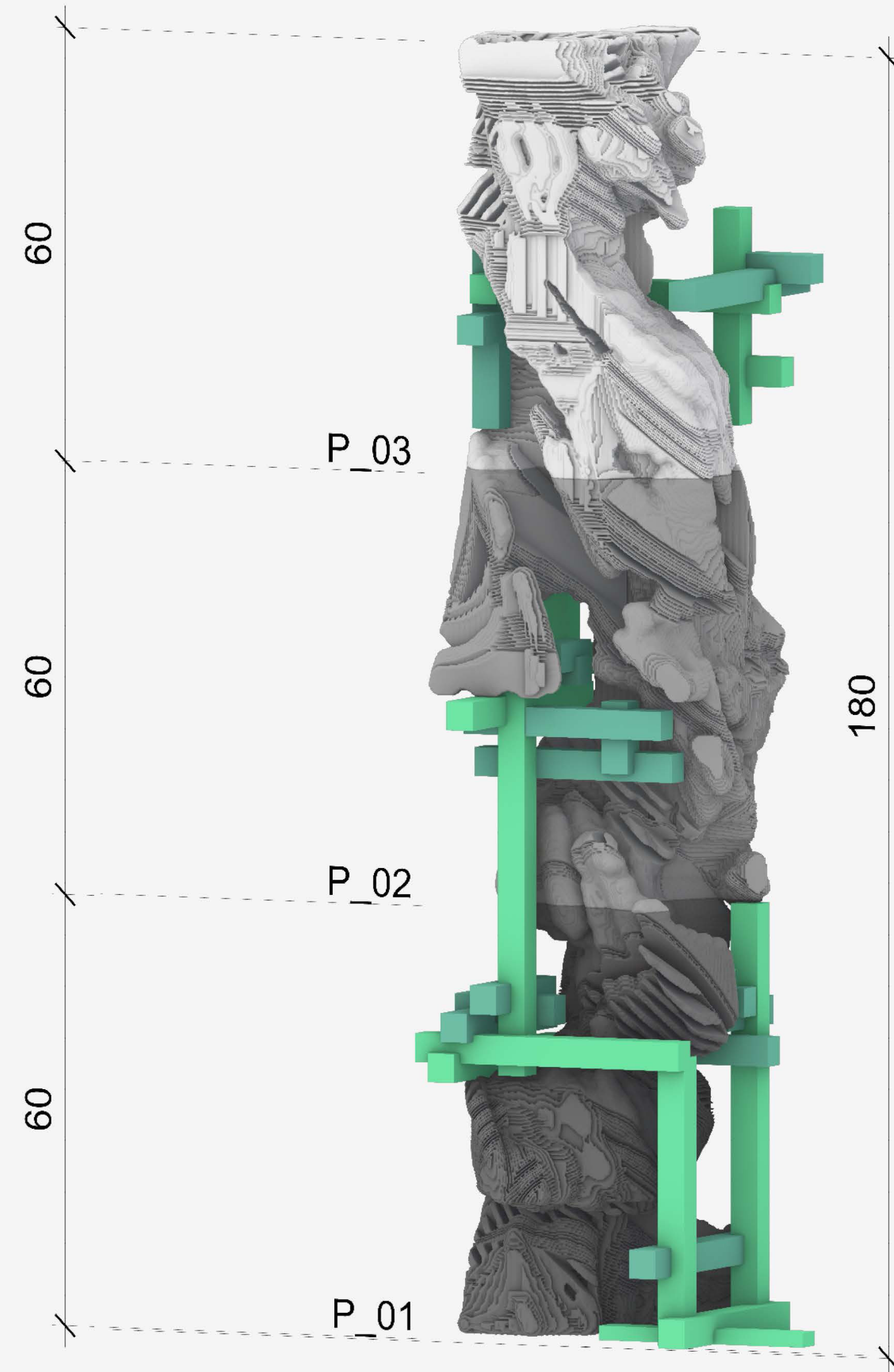
P_03
40x40x60cm (LxWxH)
26kg (material sand)

TOTAL
40x40x180cm (LxWxH)
80kg (material sand)

Binder Jetting

SH-F01   SH-C053

60

P_03

60

180

P_02

60

P_01
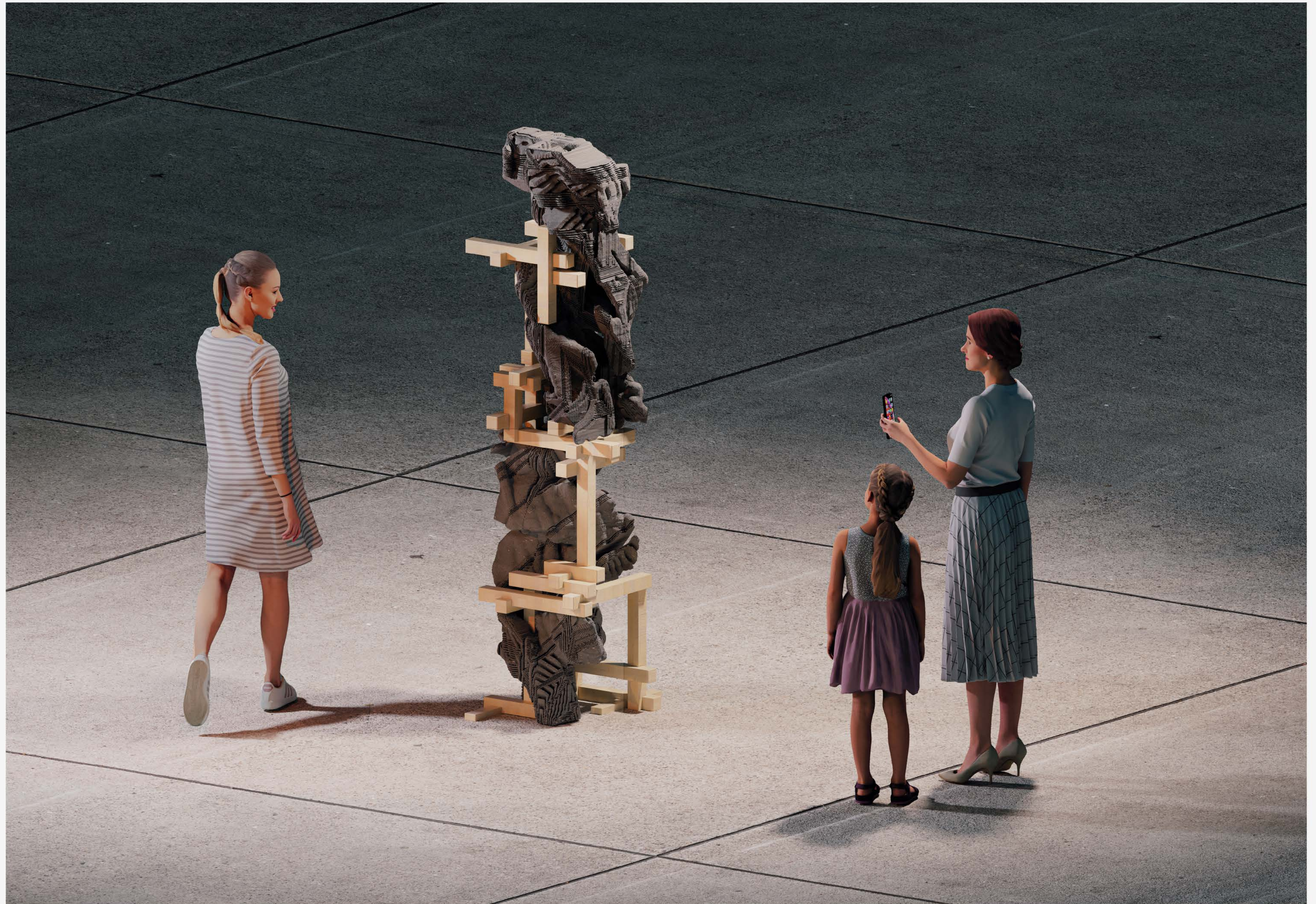
Our initiative is an ongoing material research and data/computational driven exploration into pioneering methods of approaching architectural elements. The essence is to refine a methodology of design, deeply rooted within evolving technologies and focused on ecological sustainability in order to reevaluate how and why we fabricate architecture.

The proposal acts as a physical manifestation of the time span between the start of the anthropocene and current day, a feat initiated within the US and Europe during the mid 1900's.
By using AI training tools and procedural design methods along with conscious material choices, the concept is to illustrate political, cultural and ecological traits and occurrences using wide spread public data and information which gives the installation the purpose of informing and invokes emotional ties with our changing environments.