



Article

The possibilities of Surrealist Photography to Architectural Design and Proposition

Yorgos Loizos

Visiting Lecturer, University of Greenwich

Visiting Lecturer, University of Kent

yorgosloizos@gmail.com

The Analogical Photographic House

“My house needs a model of me, a model of my model of it, and a model of my model of its model of me.” (Negroponte 1975, p.151)

Surrealist photography has been seen as an act of discovery. The surrealists explored staged photography in the 1920s and 1930s, played with the notion of defamiliarize familiar objects, creating or discovering new worlds and uncanny spaces within their domestic environments. An example is the dust that settled on Marcel Duchamp's 'Large Glass' and photographed by Man Ray in the famous 1920 'Dust Breeding'. The photograph gave the impression of a distant landscape seen from above, with the accumulation of dust being transformed into atmospheric clouds. Man Ray also created a series of cameraless photographs – photograms - known as 'rayographs'. These images were produced in a darkened room, by placing objects directly on a light-sensitive photographic paper and applying a single light source to expose the scene. The areas where the objects cover or cast shadows on the paper render as light grey tones. The areas of the photographic paper that are flooded with light become black. His rayographs (e.g. *Électricité*, *Les champs délicieux*) captured mundane objects and the human body and elevated them into playful, strange and fantastic landscapes. The x-ray-like aesthetic of these images of constructed worlds seemed to be driven by electric sparks and magnetism as much as the choreography of chance for their making.

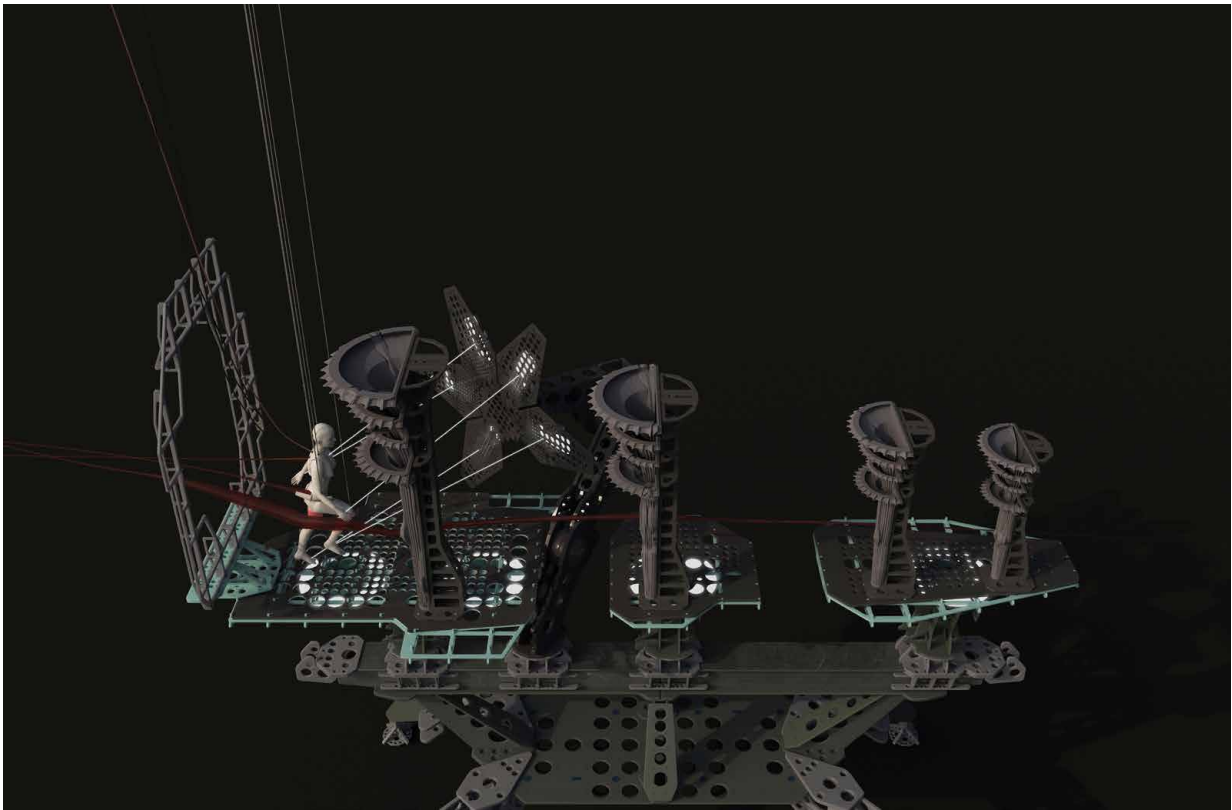
My interest in looking at these old photographic techniques, in particular staged photography and photograms, lies in both understanding the making behind these images and exploring the spatial opportunities that surrealist photography can bring to architecture.

“The enemy of photography is the convention, the fixed rules of the “how-to-do”. The salvation of photography comes from the experiment.” (Moholy-Nagy 1947, p.197)

An output of my research is the design of a house which is driven and celebrated by key notions of surrealism. In this article I will discuss some of the key theoretical ideas that inform and drive the narrative of the design project, as well as explaining the methods involved for making the work.

Theoretical ideas of the project involve themes of automata, the doll and the nature of the body, a preoccupation seen in E.T.A Hoffmann's 1816 'Der Sandmann' and the character Olimpia, daughter of professor Spalanzanni's. Fascinated by her eyes, the story's protagonist Nathaniel, a young student of Spalanzanni, falls in love with Olimpia only to later realize that she is in fact a mechanical doll, invented by his professor. Hoffmann's short story and in particular the eye motif was examined by Freud for his work 'The Uncanny' and reinterpreted by the Surrealists through their work and the fascinations of automata and mannequins.

To help framing the narrative and the user of the analogical photographic house, I borrow some of the key notions of 'Der Sandmann' such as the blurring of human and mechanical, and the fascination for the eyes and optics. The mechanized muse Olimpia is imagined as a user of the house.



[Fig.1] Yorgos Loizos, Analogical House, 2019

“I can envision architectural transformations taking place on an hour-to-hour or day-to-day basis.” (Negroponte 1975, p.150)

“The surreal house is itself a type of hermetically sealed environment; it borrows from the exhibition and the aquarium a sense of atmospheric dislocation from the outside world and the idea that what is contained there [...] requires this special atmosphere to survive” (Dillon 2010, p.56)

The analogical photographic house relates to characteristics that describe a surrealist house, with its own specialized atmosphere - a world depended on the play of light and dark - re-adjusting on an hourly and daily basis, and hermetically contained an ecology of elements. The house is imagined as an architecture of escapism projected and fabricated with the photographic process. It is explored as a technological house, where the fragments

have embedded the notion of mechanics and overlapping with the human body, camera frames, and motion. At this stage the house is not located on a specific site. It is dislocated from the outside context. However, I have set up some ground rules about external atmospheric that influence the house, such as sunlight.

The house depends on the microcosmic relations of the domestic elements it is consisted from. The mechanical parts allow the house to be in constant motion; its parts and rooms continually adapt to the inner changes, internal views and external light qualities. The work explores the architecture of a house as a microcosm that is assembled together with a series photographic film rigs [Fig. 1] that can be used in a photographic darkroom. The rigs, which I gave the name ‘darkroom probes’ are made to capture the relationship between the body and inanimate objects; forming dynamic domestic ecologies. Each rig studies a fragment of the house: a staircase, door and window, hallway, bathtub, attic and basement.

Darkroom Probes

The darkroom probes are designed digitally in CAD and fabricated with computer-aided manufacturing techniques of laser cutting and 3d printing. They serve as 1:1 analogue test beds to help me explore the spaces of the house and create architecture drawings to re-represent it and learn from them. For the design of the darkroom probes, and in some respect for the analogical house itself, I drew inspiration from the inventor Thomas Edison's who is credited for creating the first film studio, "a ramshackle-looking, black tar-papered structure his employees nicknamed Black Maria" (Vaz; Barron 2002, p.30) built in 1893 in West Orange, New Jersey. The 'Black Maria' was constructed on railroad tracks and a revolving platform to be able to rotate in order to track the sun path. The film studio's roof could open to allow direct sunlight inside the stage for the filming.

For the design of the mounts of the rigs and the ways it will be photographed or captured on photographic paper, I researched the photographic sets developed by pioneered chronophotographers Étienne Jules-Marey and Eadweard Muybridge that examined animal and human motion. Their structures involved an early development of specialized architectures similar to the cinematic film rigs, which consisted of an array of cameras and often featured a grid background to help measuring the movement and providing scale in the final photos.

The analogical house together with its filmic gizmos build on the architectural tradition of making architectural models as testbeds to simulate and create new worlds through the creative involvement of the drawing. Architect Nat Chard's arrays of drawing instruments of chance catapult paint to each other to generate drawings. His work balances between the prescriptive machines and the uncertain nature of architecture and its drawings. Most recently, Bartlett School of Architecture graduate Thomas Parker's photogrammetric architectural testbeds blend the practical sets with digital scripting to create a series of generative and iterative digital drawings.

The darkroom probes [Fig. 2] involve a track where both scaled house fragments as well as lights, moveable translucent screens, reflectors and light bounce cards can

slide. In addition, there are plug-ins such as turning tables and two-axis movers for mounting the house fragments. The track allows to experience the house elements and fragments in various positions, with the photographic paper backplate, armatures, shades or reflectors following the house fragments as they move across the track.

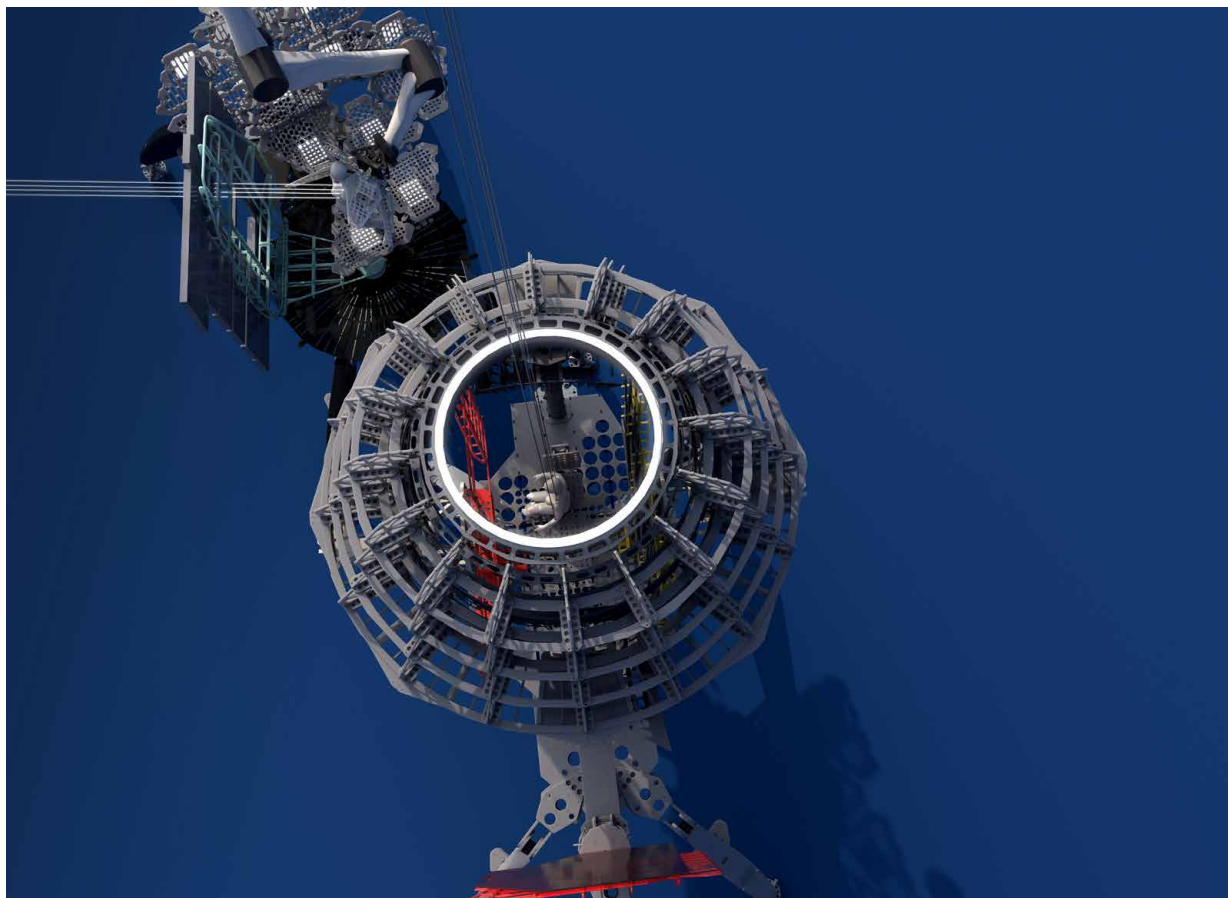
The light comes from multiple light sources for a number of reasons. One is to render a measured grid from an array of back lights, installed behind the grid within the backplates that holds the light-sensitive paper. Additionally, a moveable and more intense single light source is placed in front of the object to allow to leave its traces directly onto the paper. This initial light configuration can become more complex as more scaled fragments and components of the house and supported structures are added onto the film rig.

The rigs have attached a set of adjustable folded back plates where light-sensitive paper can be attached either in proximity or touching the house fragment to allow the traces to be casted.

The rigs were developed in several generations with each testing a method of capturing the light into drawing and studying a specific fragment of the house. Eventually the film rigs and the photographic drawings produced can be placed together to form the house.

The making of miniatures and the role of scale

One of the main design methods I have worked for this project incorporates the analogue making of physical models, which help to test the design ideas while maintaining a sense of materiality and scale. The work of László Moholy-Nagy and Man Ray who created and stage-photographed their models and sculptures respectively are important examples for constructing and recording a new reality. Equally valuable lessons were learned from the cinematic visual effects for film-shooting practical sets, physical miniatures and architectural models, especially in the era between 1960s and 1980s (2001 A Space Odyssey, Silent Running, Star Wars, Alien, Blade Runner). These examples are important for my project not only for the technical aspects involved which create dynamic relationship between the camera and



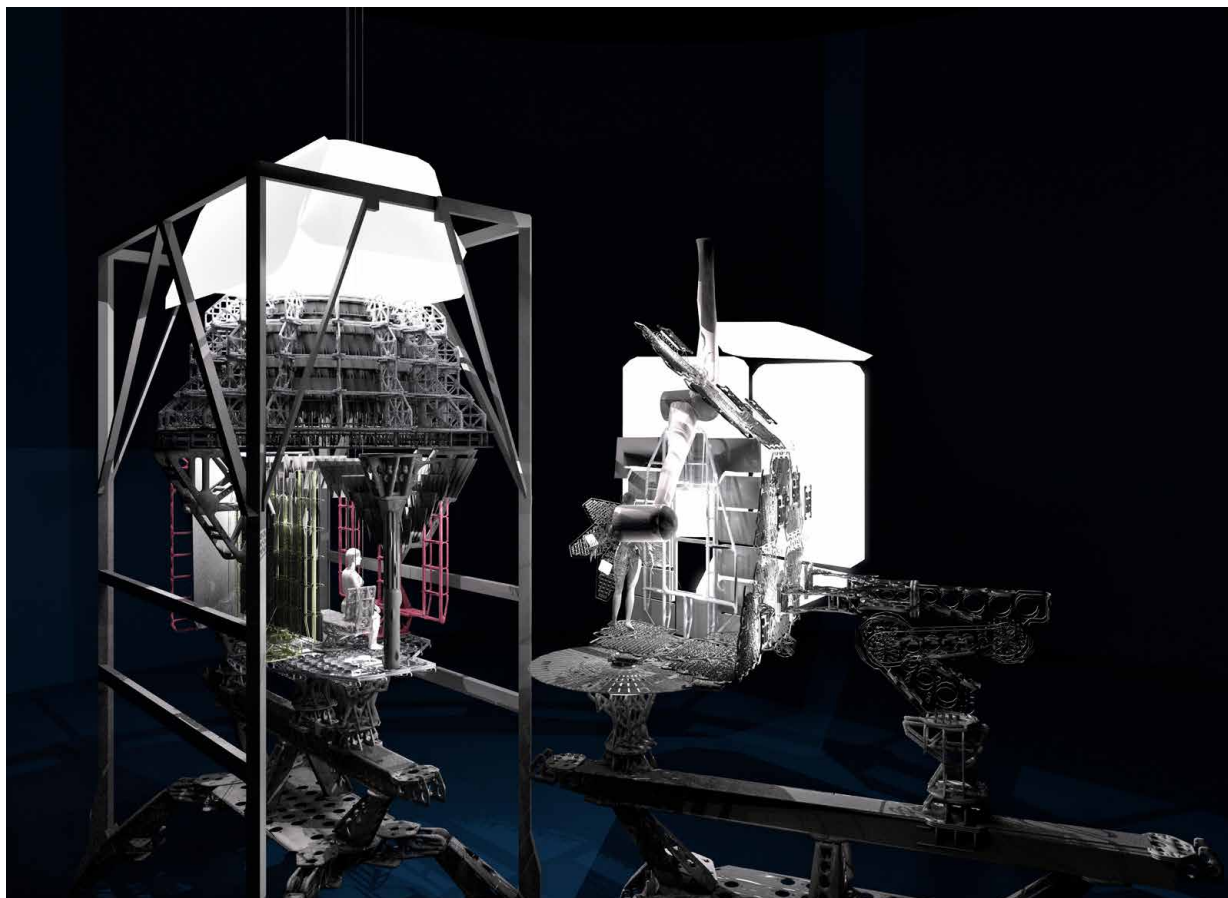
[Fig.2] Yorgos Loizos, Overview of early generations of attic and revolving window, 2019

the photographed object, but also regarding to the spatial narratives and how models and constructed worlds can be photographed and filmed through time to tell a story.

I use my miniatures to gradually form my own world-building sites. The miniatures enable me to explore how the human body can inhabit a space and leave its trace with the act of drawing, which is purely created from the interplay of light and dark. The house miniatures together with the darkroom probes, involve a modular design for a more time- and cost- effective process of creating multiple components that can be slightly adjusted to build new models. Equally some of the parts of the house, e.g. the columns, are bespoke and sculpted pieces to form more expressionistic architectural elements. While the modular elements are mostly designed in AutoCAD (a Computer-Aided Design software by Autodesk) and lasercut on sheets of acrylic and plywood,

the bespoke elements and sculpted hinges and junctions are designed in 3ds Max, Maya and Mudbox (also developed by Autodesk, these softwares allow to create visual effects and 3d sculpting) and are either 3d printed or lasercut

The scale of the Analogical house shifts between the scale of the photographic print, the house fragments and the film rig (darkroom probes). The juxtaposition and interplay of the different scales on the work involve the 1:1 scale of the darkroom probe, the 1:6 scale of the house fragment (using the imperial measuring system of a traditional 1:12 doll house), and the 1:1 scale of the participant (designer) and viewer. The 1:6 scale fragments still hold the figurative qualities of a conventional architectural scale model. Once they mount onto the rigs are transformed and thought more like filmic models, engage actively with the world, allowing a viewer to interact and play with and become performative.



[Fig.3] Yorgos Loizos, Attic and window during exposure, 2020

Domestic Fragments

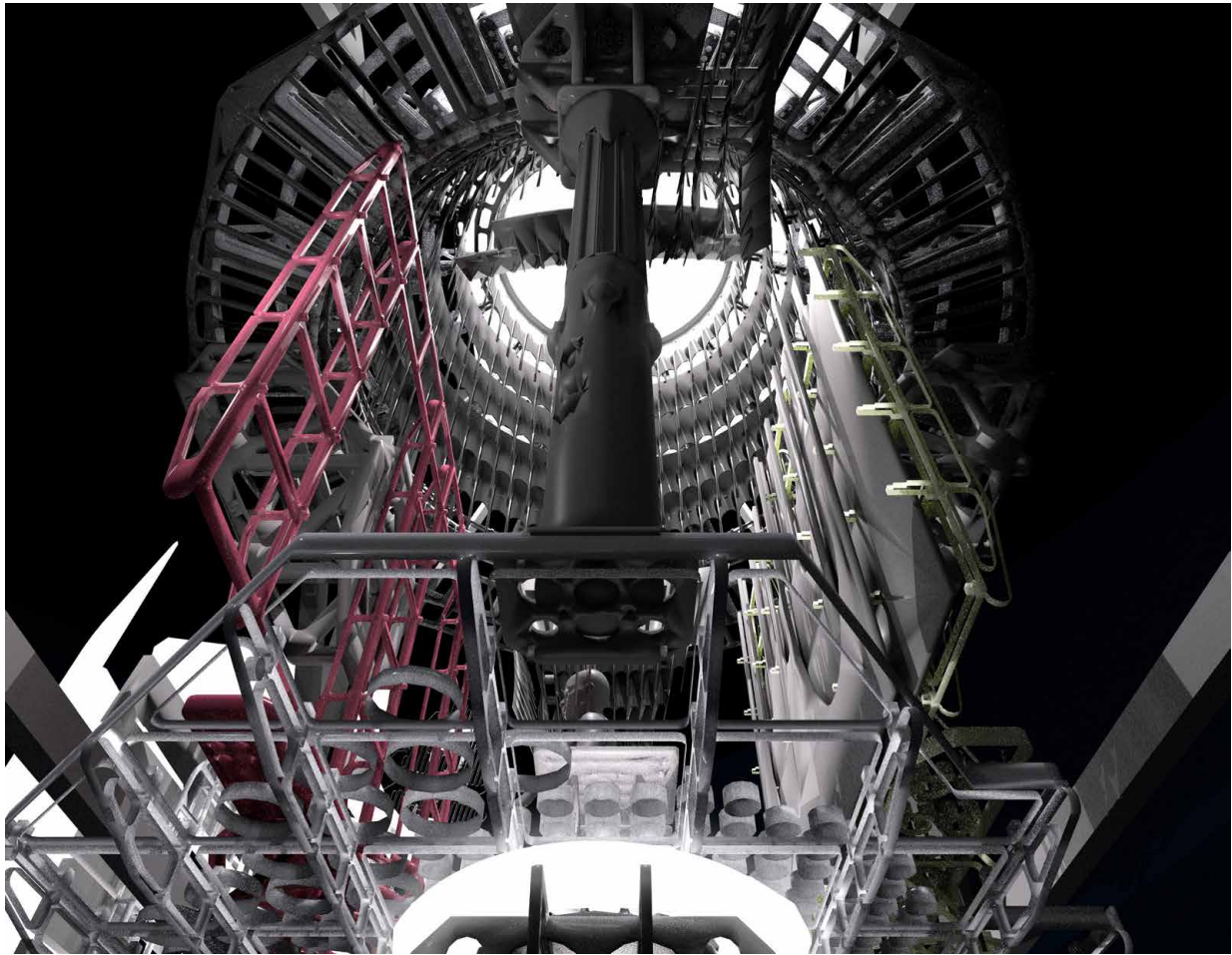
Window

The window [Fig. 2,3] alludes to the screen of the window as a single photographic plate, similar to the 4x5 and 8x10 large format cameras with their glass screen and engraved grid. One of the earliest paper photographs is the 1835 'Latticed window' ('Windows from inside South Gallery, Lacock Abbey') by William Henry Fox Talbot, which was made with a camera obscura and produced a negative print. My house window fragment uses a similar lattice as a measuring tool for the light and shadow traces collapsing with the internal space and human body. To observe the sun, the window fragment is set on a turning table to continually adjust its position. The scene uses as a reference and re-imagines the window and shades of Man Ray's photograph of Kiki (Le retour a la raison,

1923). The back plates with the paper, shades, blinds and curtains are additional elements that assemble the scene.

Attic

The most distinct element of the attic [Fig. 2,3,4] is a multi-layered dome that allows overhead light into the space. The dome has an external frame structure that allows it to collapse to itself, widening the overhead aperture and letting more sunlight into the attic. For the light and shadows projections I have studied the extraordinary atmosphere of the early German cinema stage sets, which exaggerated the contrast of the shadows by painting directly onto the sets. I looked particularly at the work of Hans Poelzig who designed the sets for 1920 'Golem', a film that focused on the human/machine condition. The attic draws inspiration from his expression-



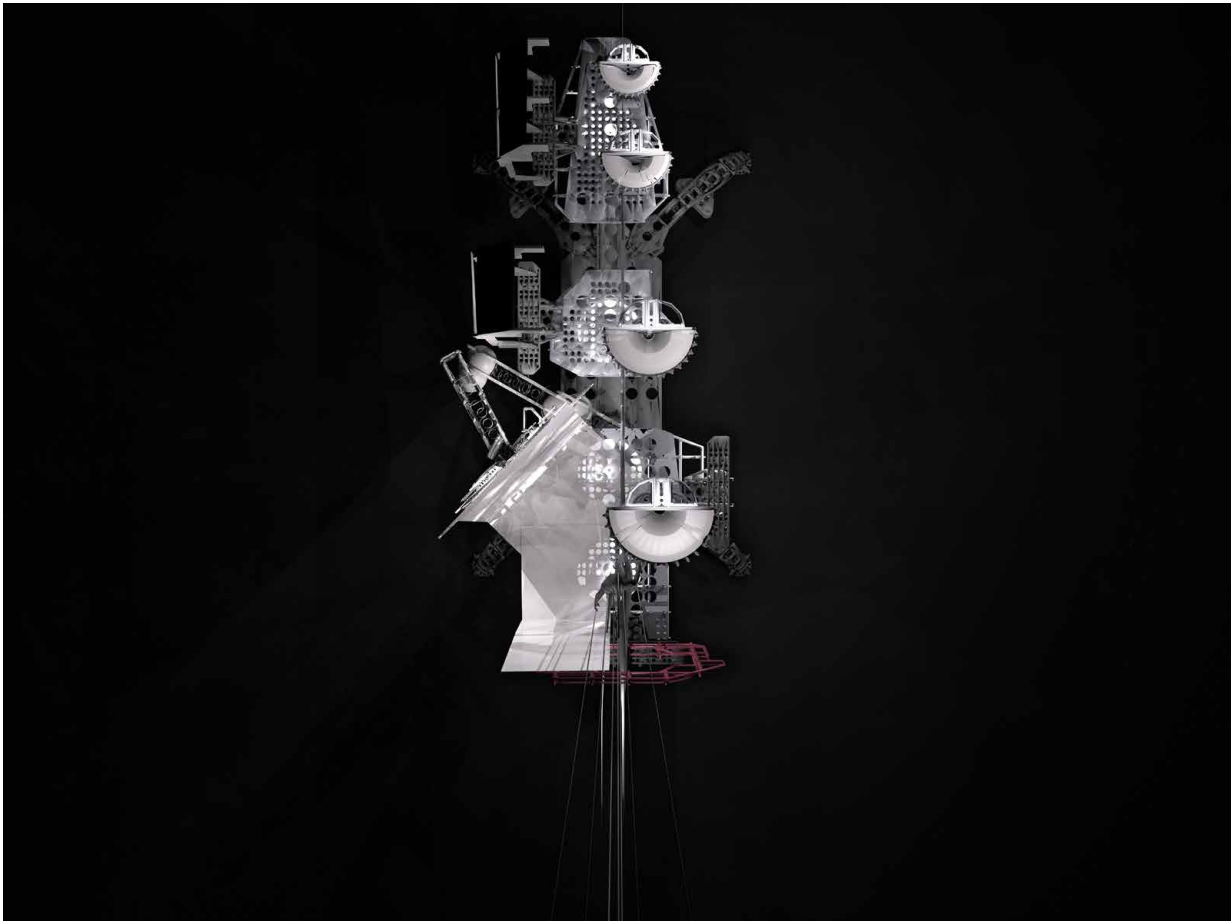
[Fig.4] Yorgos Loizos, Internal view of attic with dome and Olimpia doll, 2020

istic Berlin theatre, the 1919 Grosses Schauspielhaus, which I attempt to make connections with the design of the dome in the analogical house.

The dome is surrounded with an overhead tent-like structure that projects lights and tones simulating the sky and its light gradients. The technique is borrowed and developed from the visual effects film industry, and in particular is seen in the work of ILM (Industrial Light and Magic) and in their practical miniature shots for highly reflective objects such as spaceships. The filmmakers constructed diorama-like environments which they used to project moving images onto them, allowing to dynamically reflect the filmic context around the objects.

Hallway

The hallway [Fig. 1, 5] examines the surrealist “obsession with doors, portals, and hallways” seen from photographs of Eugene Atget of shop windows and city thresholds, to Dora Maar’s ‘Le Simulateur’. (Dillon 2010, p.55) The hallway is composed by a series of smaller fragments - sliding platforms - mounted on the film rig’s track. Each platform hold a set of columns, wall and armatures to attach the photographic paper as well as a door fragment that serves as a portal for another room of the house. The hallway is designed to be observed from a specific point-of-view near the portal, with the platforms which are further away to gradually reduce in scale, using force-perspective, to create the illusion of a greater depth of field.



[Fig.5] Yorgos Loizos, Overview of hallway during exposure with light-sensitive paper, 2020

Photogrammatic Drawings

I built the series of darkroom probes to help me answer the question of what makes the architecture and the photograph similar, and how the boundaries between the two-dimensional representation, the three-dimensional space and the human use can be blurred. The photograms [Fig. 6] are thought as an analogue of an orthographic architectural drawing, similar to an elevation, a section or a plan. Dependent on the light source attached to the back plates or armatures, the short exposure, usually between one to five seconds dependent on the light intensity, produces a direct imprint of the object that the light sensitive paper is attached to or in proximity. The prints created can then be retraced, edited and remodeled into a new generation of the scaled house fragment. Careful calibrations of light sources, house el-

ements and paper position allow new relationships and realities of the particular part of the house to be created through the drawing process. The photograms help me to creatively challenge the conventional architectural drawings for the task of the design of the house, by enabling them to communicate light conditions, and distances between the photographic paper and the body/objects.

The photographic back plates and armatures of the film rigs juxtapose with the doll's (Olimpia) body, prosthetics and domestic fragments to allow being photographed and captured the body's traces in the house, whilst forming a sensorium where the body gradually condenses on the mechanical plates of the rigs, the photograph and the house itself.



[Fig.6] Yorgos Loizos, Plan and section of hallway, digital photogram, 2020

The element of chance and unexpected result of multiple light sources that imprint on paper is a key aspect of the process that creates the drawings. The photograms capture the traces of the objects and house fragments on paper and map the various changes and adjustments. The photogrammatic drawings become palimpsests that record the ongoing history of the house as more events continually occur. They help to rethink of how and why to design the particular object to control or enhance the drawing. If the photogrammatic drawing represents a reality, then it tells the story of a house bathed in light, through reflections and apertures, and that light is essential for this world to exist.

Analogue and digital hybrids

While the darkroom probes are designed to be practical models to explore and create the analogical house, a hybrid method involving both analogue and digital drawings and models is very valuable for the work production. As objects developed and grow larger in scale, space limitation and cost increase also played an important part for developing digital models and photograms alongside their physical versions.

The digital versions, which are displayed in this article are developed versions of the physical film rigs, keeping the same level of detail. With the use of the digital versions, I can set the same parameters and programme each scene of the house more efficiently. However, a fundamental difference between the two versions is

the duration of the production of the drawing. The analogue photograms required a handful of seconds (usually between one and five seconds depending on the light intensity of the lamps) of light exposure to capture the traces from the objects. With the digital photograms, I use a computer graphics software (the above photogram – and visualisations of the film rig - were created with Autodesk Maya and Arnold renderer) to create the digital photographs through rendering that can take many minutes, often several hours. The exposure is not depended to the time as it is with the light sensitive photographic print, but it is a parameter that I can digitally alter. Similar to the physical object, I translated the analogue process into the virtual darkroom so it operates in the same logic with the conventional one, but without having some of the limitations such as size of the prints and film rigs.

Yet there is a fine line of controlling the results produced by the rigs while allowing for happy accidents, glitches and unexpected moments to happen. While the digital versions provided me with more flexibility and wider narratives to unravel, the physical versions retain a level of playfulness and inventiveness that is crucial for the exploration and the making of architectural ideas.

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