



Glitch : a digital archeology of Coop Himmelb(l)au

Nicholas Flatman

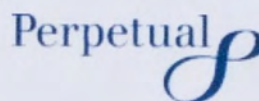
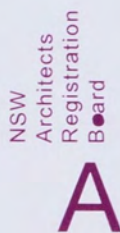
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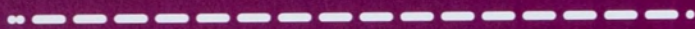
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Nicholas Flatman was awarded the Byera Hadley Travelling Scholarship in 2014
Cover image: A malfunctioning system. Image by Author.

Finding innovation
through experimen-
tation and inven-
tion. As a search
for glitch, and an ar-
cheology of the
critical practice of
Coop Himmelb(l)au.

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This research explores means of design surpassing analogue. It is an endeavour for digital practices and processes that subvert traditional design logic.



1

Introduction



During a 2015 summer workshop at the Benaki Museum, just over 2km away civilians protested in anger, frustration and eventually violence at the parliamentary forecourt of Syntagma Square, Athens. This intense, momentary presence brought on by a growing tension surrounding recent anti-austerity measures marked an important social and political milestone. The momentary disruption was a point of evolution, progressing with uncertainty and change. This critical environment was the context for a two-week advanced digital design research project held in Athens. It was appropriately titled glitch. The attendance of the author was the award of the 2015 Byera Hadley Travelling Scholarship. This too involved visiting international architectural work by Vienna based firm, Coop Himmelb(l)au. It was founded on the idea to explore means of design surpassing analogue and became an endeavour for critical digital practices and processes. The collected research is the product of a three month investigation across Scandinavia, Eastern and Western Europe, the Balkans, and the Bosphorus Strait. This report is presented in two parts. First, is a summary of knowledge consumed from the workshop, individual research, experiences, discussions, and relationships. Secondly, is a case study analysis of selected works by Coop Himmelb(l)au.

The workshop was coordinated by X|A,[1] a Los Angeles based collaboration between Nefeli Chatzimina and Erick Carcamo. Practitioners like X|A, are exemplary in their unprecedented intuition and innovation they bring to design and its processes. Derived from two distinct yet relatable characters; 'X' and 'Atelier.' The later translated as a workshop or studio, and, 'X', as the unknown factor or outcome of the final process of design. The two together are suggestive of an exploration of the unknown. Finding innovation through experimentation and invention. This forms the departure point for the paper. As a search for glitch, and an archeology of the critical practice of Coop Himmelb(l)au.

Figure 1.1- 1.4: Syntagma Square 2015 (Photographer Nariman Kiazand, 2015)

Figure 1.1 'The Cloud' (Coop Himmelblau, 1968 <<http://www.coop-himmelblau.at/architecture/philosophy/coop-himmelblau-is-not-a-color>>)



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A glitch exists momentarily. Often the result of a sudden surge in current it generates a malfunction, an unpredictable disruption in appearance and function of a normalised logic. Occurring momentarily and irregularly, the term has a short history belonging to the development of computer based software and hardware during the mid 20th century. It is generally perceived as a negative occurrence consequent of its anti-progressive and detrimental effects. The unspoken potential of this phenomenon however, is much more viable. The X|A Summer Workshop, held at the Benaki Museum, Pireos, introduced the idea of 'glitch(ism)' as an integrated system in the design process. The brief was to look into a mechanism that generates innovative, potential expressions in architecture. It introduced a language of design that was founded on the disruptive, irrational, and uncanny.

The ability of a glitch to emerge as a known factor allows its malfunctioning properties to be integrated in the design process as a formalised logic. This 'malfunctioning' mechanism, which in turn is not faulty, becomes an expression of a formal aesthetic and architectural physiology. The exploration of these occurring advanced geometries becomes the byproduct of assembly logics and/or formal strategies. Such an approach brings into question the relevance of normalised processes that operate within contemporary architectural practice. It further highlights an architecture that is responsive to its environment. Whether faulty or functioning, its application is implicit in relation to its system or field that it operates within.

Working with the uncanny, an intellectual uncertainty, generates an interest in the indeterminate potential of architecture. The current reliance on advanced digital practices in contemporary techno-society and a developing presence within the architectural discipline has seen a surge in the occurrence and growing potential of these glitches. Similar indeterminate approaches have been explored creatively from the late 19th century, long before the origin of the term glitch.[2] However, glitch distinguishes itself from these practices by its exteriorisation of traditional principles and corrosive relativism inherent in the design process. The outcome of a glitch is measured wholly on its potentials that it brings to a situation.

The celebration of indeterminacy through design is a process familiar in the work of Vienna based firm, Coop Himmelblau[3] since their conception in 1968. Coop Himmelblau was founded with the seminal work 'The Cloud,' (figure 1.1) on the principle that architecture is as buoyant and variable as clouds.[4] A philosophy that is reflexive in a radical decade of experimental architecture amid the trauma of the Vietnam war, worldwide antiwar demonstrations, US civil rights riots, 2001: A Space Odyssey and Andy Warhol being shot. They believed that design could be reduced to a momentary, indeterminate (in their case, often violent) action. This act, becomes the mechanism of their design process. The reducibility of the design process to an indeterminate mechanism reinforces precedence for glitch. This would not be the first time architects and artists similarly, have endeavoured in irrational processes to challenge and seek new design outcomes.

“At first it might appear paradoxical to work with this condition - to propose that the uncertain takes away its uncertainty. Yet there are encouraging examples of people in a range of creative fields who work successfully with the uncanny [an intellectual uncertainty] and the sublime [an existential uncertainty], which suggests that architecture could find a way to touch upon such territories.”

Kulper, Perry. Chard, Nat. 'pamphlet architecture 34: fathoming the unfathomable,' Princeton architectural press, New York. 2013. p.6.

The dis-establishment movement of Surrealism during the early 20th century popularised “automatism”[5] as an irrational practice. It was significant as an art characterised by its unorthodox technique of production.[6] The Surrealist approach focused on eliminating conscious control and preconceived notions of traditional art by replacing it with chance. Most renowned of the techniques produced during this era is ‘automatic drawing,’[7] by which the hand could explore freely while maintaining continual contact with the surface of the paper producing a “dynamic overlay of intertwined forms.”[8] During the 1920’s, surrealist Andre Masson pursued this technique in a number of drawings (figure 1.2) combined with an extreme state of psychosis[9] in an effort to reinforce an artistic link with human consciousness.[10] However, despite Andre Breton’s assertion that Surrealism was “psychic automatism in its pure state”[11] the legitimacy of the process as a connection to the subconscious was questionable. As Steve Edwards and Paul Wood indicate in their book on the Avant-garde, “[I]n order for for the visual image to be intelligible, it must undergo processes of clarification.”[12] This highlighted that a degree of conscious intervention influenced the final aesthetic and rendered the image more life-like or acceptable. Aside from an implicit fraudulence in the practice of automatism, it is significant in reinforcing glitch as a contemporary variation. The ability of the glitch to be inherently automatic in its production aligns it with the surrealist technique in developing irrational processes and appropriately situates this research in artistic discourse.



Figure 1.2 Automatic Drawing (Andre Masson, unknown <http://www.moma.org/wp/moma_learning/wp-content/uploads/2012/07/Andre-Masson.-Automatic-Drawing-348x395.jpg>)

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*It introduces a language
of design founded on the
disruptive, irrational, and
uncanny.*

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The diluted boundary between art and architecture was an important scholarship documented in Anthony Vidler's 'The architectural uncanny.' [13] He conceptualised prominent architectural practices that interrogated and diagnosed various tendencies to develop a history of modernity. Of these practices, Coop Himmelb(l)au. Founded by Wolf D. Prix, Helmut Swiczinsky, and Michael Holzer in Vienna, Austria. They employed similar indeterminate practices that expanded upon automatism, which they termed the "psychogram." [14] An approach which they believed distilled architecture into a single moment, frozen in the initial sketch for a building - its 'psychogram' - and its incarnation in a simultaneously constructed model. The firm's focus and overt intentions are explained in an interview; "We [Coop Himmelblau] discuss a project during a very long period of maturation, but the phase of the execution of the design is very short." [15] Like automatism, Coop Himmelblau use the psychogram as a direct interaction between the mind and pencil. The moment of execution is captured in an image, a semiotic structure that is devoid of traditional values. [16] It was a technique that was best illustrated in their early works, more prominently the 'open house' (figure 1.3). This approach excluded all "external circumstances, all clichés, the interference of ready made ideas" in order for the idea to reach pure representation. Harris Dimitropoulos in his article on Coop Himmelblau's process reinforces the idea of exclusion exclaiming they "want the accretion of culture which contributes to the formation of the self to not be there." [17] The aim of which is to liberate the design from constraints that have be-

come ingrained in the architects acculturated or educated design practice. [18] The psychogram therefore exists as a critical practice for subverting traditional logic in the design process in the same manner as a glitch in a digital system. [19] What separates the work of Coop Himmelblau from automatism is the changed context in which it operates. Michael Chapman and Michael Ostwald explain Coop Himmeb(l)au work by "dismantling the undesigned object, rather than edifying it" as the predecessors of Surrealism did. [20]

What fundamentally distinguishes glitch from both the methods of 'automatism' and 'psychogram,' is the removal of the body as the translating medium. Glitching deviates from these two precedented approaches through its reliance on digital-based practices. Such an approach fundamentally exteriorises the designer and by association, potential subjective influence. While it has been explored through other digitally based disciplines including film, photography, and music, [21] its appearance in architecture remains limited. [22] Previous texts in architectural discourse indulge in the historical methods [23] associated with Coop Himmelb(l)au however fail to address a diverse analysis that considers the implications of a digitally-based practice. [24] This distinguishes X|A and the 2015 Summer Workshop as an important contribution to contemporary architectural and artistic discourse.

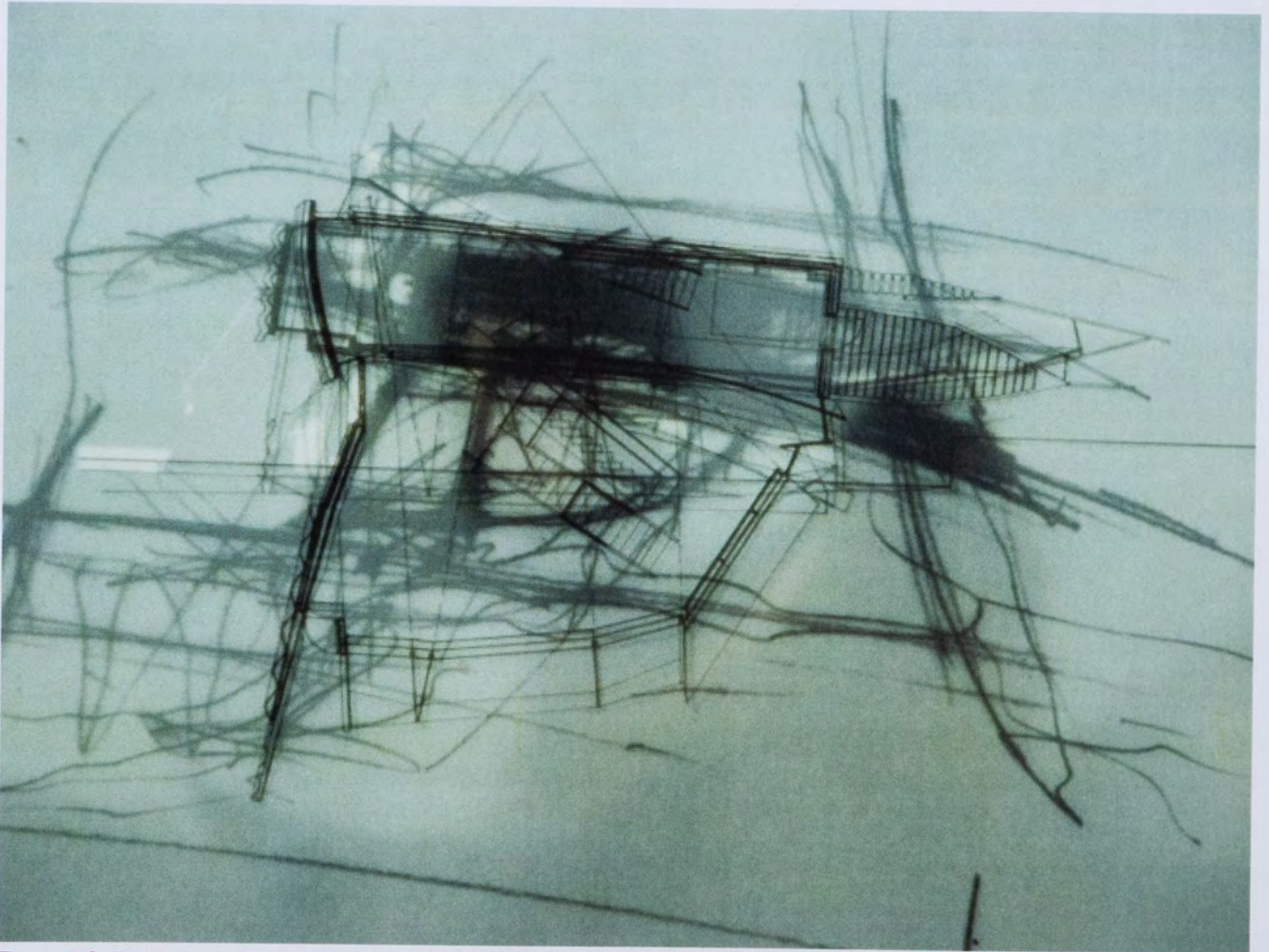
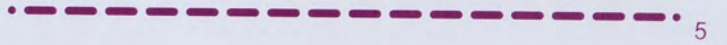


Figure 1.3: Psychogram for the open house (Coop Himmelblau, 1983) <<http://www.coop-himmelblau.at/architecture/projects/open-house>>

[1] A design collaborative founded in New York, 2007, between Nefeli Chatzimina and Erick Carcamo. Described as a "platform of obsessions and aesthetic reformulation of design and architecture" the inherent philosophy explores the bond between form and generative typologies. "X|A's design intentions and processes deviate towards the extreme conditions of innovation and the pure coherence of technique invention." See: X|A, 2015, X|Atelier., viewed 5 December 2015, <<http://www.xatelier.com>>

[2] Refer: the practices of Surrealism and Dada during the 20th Century. Breton, Andre. 'Manifesto of Surrealism' (1924) in Richard Seaver and Helen R. Lane (eds), Manifestos of Surrealism (Ann Arbor: University of Michigan Press, 1997).

[3] In a recent change in logo from Coop Himmeblau to Coop Himmeb(l)au the firm reinforces their ability to do the inevitable. That the end of 'bau' with the potential dropping of the 'l' reflects the german verb 'Bauen,' to construct, thus the ability to construct clouds.

[4] See: Coop Himmeblau. 'Coop Himmeblau, architecture is now', Rizzoli, New York, 1983.

[5] Theorised by Andre Breton, surrealist artists sought to generate new imagery, which was separated from bourgeois "establishment" values. Following WWI, the artists perceived their work in relation to the occurring social values as fundamentally reactionary, untruthful and limiting. Other movements in which Automatism played a role during the 20th century included DADA, although its techniques have been recognised in the late 19th century.

[6] Derived from the idea of 'automatic drawing,' automatism was a method of creating art without conscious interference. The hand of the artist was allowed to move freely, as if automatic to produce randomly generated images with no formal logic influencing the design. This formed a direct connection between the subconscious and the drawn material.

[7] The idea of automatic generation was explored across a number of techniques and mediums including but not limited to painting, frottage, and collage.

[8] See: Edwards, Steve. Wood, Paul. 'Art of the Avant-gardes', Yale Press, 2004. p.430.

[9] Andre Masson was renowned for working un-

der strict conditions, including a lack of sleep or food, as a means of reinforcing the rawness of the emotive and unconscious response. A number of further techniques were developed by Masson including the act of throwing sand at glue. Although he later came to disassociate with Surrealism his work played a significant contribution in the exploration of automatism.

[10] Other renowned surrealist artists during the 20th century who practiced automatism included Francis Bacon (1909-92), Max Ernst (1892-1976), and Joan Miro (1893-1983)

[11] See: Breton, Andre. 'Manifesto of Surrealism' (1924) in Richard Seaver and Helen R. Lane (eds), Manifestos of Surrealism (Ann Arbor: University of Michigan Press, 1997), p. 26.

[12] See: Edwards, Steve. Wood, Paul. 'Art of the Avant-gardes', Yale Press, 2004. p.430. It further reinforces the idea inherent in the Avant-garde of the time that it existed in mere representation. It derived its meaning symbolically through edification of the norm.

[13] See: Vidler, Anthony. 'The architectural uncanny: Essays in the modern Unhomely'. MIT Press, Massachusetts, 1992.

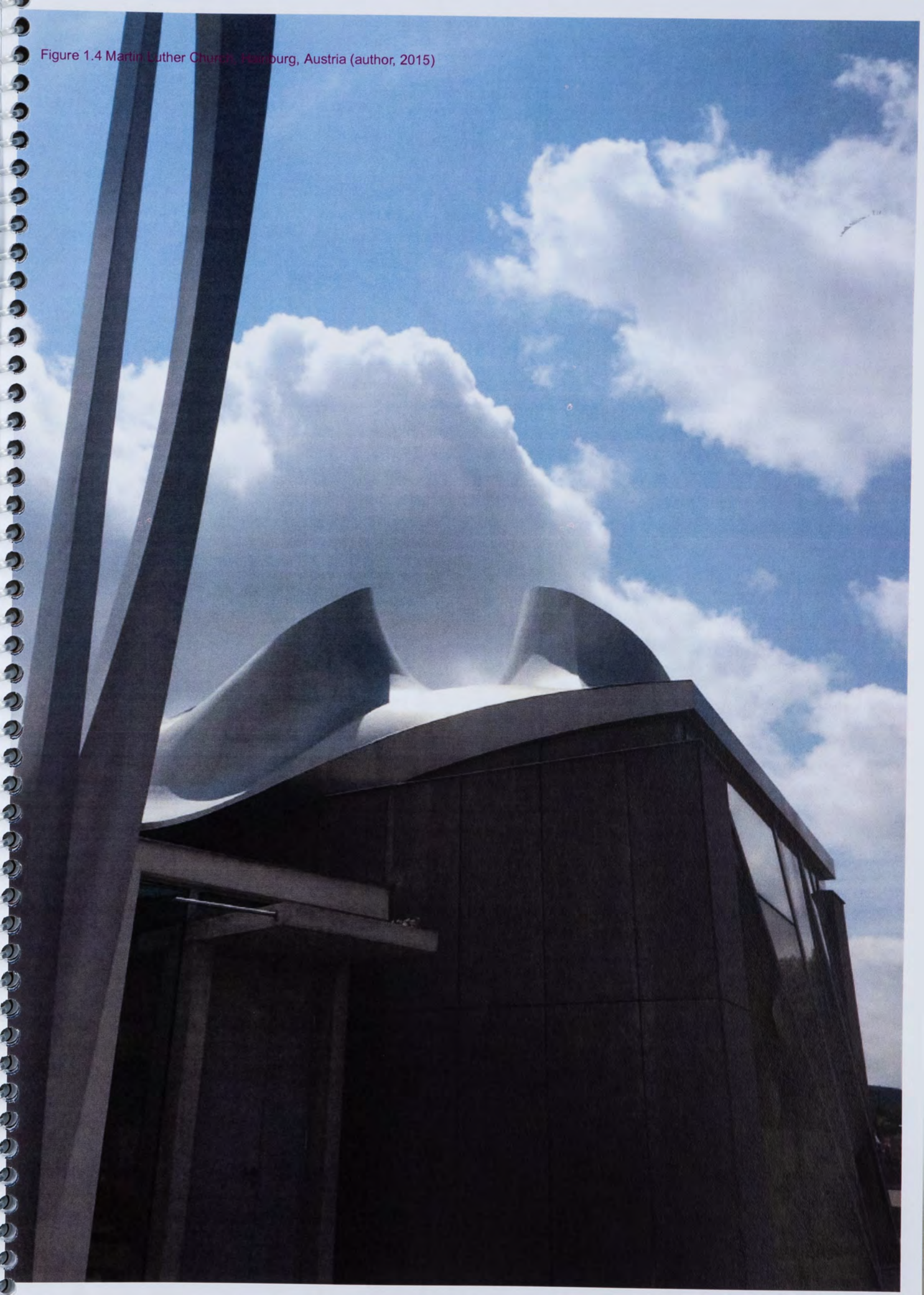
[14] Wolf Prix acknowledges the association of automatism to the psychogram. See: Sorokin, Michael, 'Exquisite Corpse: Writing on buildings' Verso, London. 1991. pp.339-52; Prix, Wolf. 'Our architecture has Four Cities and Seven Lives', Prix, Get off my Cloud, p.63

[15] See: Michel, Florence. Helene Contal, Marie, 'Coop Himmeblau portrait', Architecture Interieure Cree, No. 214, Oct./Nov. 1986, 00. 116-17. They go on to further discuss The only way we can get there is to materially curtail the moment of creation which is represented by design. This also means that we give ourselves the means to extract from our subconscious the manner in which we are thinking of architecture.

[16] Ostwald and Chapman further elaborate by stating, "the minds impulse (or emotion) is processed into an image without passing through an interface or filter." Ostwald. M. J. Chapman. M. Privileging the Sketch: Coop Himmelblau, Non linear dynamics and the Psychogram. 2006. P.2.

[17] See: Dimitropoulos, Harris, 'Process, or the Neo-[modern] in Coop Himmeblau's work', in Art Papers, March-April, Vol. 17, Iss. 2, 1993 pp. 3-6. One could argue that they follow the Heideggerian model of the

Figure 1.4 Martin Luther Church, Harburg, Austria (author, 2015)



relationship between the artist and the work in which the work is of importance but the creator is secondary, like a medium which allows for the birth, the creation of the work: "It is precisely in great art-and only such art is under consideration here- that the artist remains inconsequential as compared with the work, almost like a passageway that destroys itself in the creative process for the work to emerge." "the origin of the work of art", poetry, Language, thought tr. Albert Hofstadter, New York: Harper and row, 1971 p. 40

[18] Michael Chapman and Michael Ostwald come to the same conclusion in stating that the psychogram was the "... architects expression of emotion liberated from the constraints that bind conventional architecture." See: Ostwald, M.J.Chapman, M.Privileging the Sketch: Coop Himmelblau, Non linear dynamics and the Psychogram. 2006

[19] This is a prominent approach evident in Coop Himmelb(l)au's unbuilt work, Vektor II. A model of a house caught in the moment of an inherently destructive act. A sudden occurrence where a long thin blade protrudes through the skin of the model. Much like a glitch, the blade is a sudden interruption of what was once conceived a model house. What is to be learnt from such practice is the occurrence of the blade implicating the present architectural principles. That being, the underlying structures inherent in the formation of the architecture including program, history, memory, and value.

[20] Ostwald, Michael. J. Chapman, Michael. 'Automated architecture: Violence and nihilism as strategies of 'making' in the tactics of Coop Himmelb(l)au', Theory, Cambridge Journals, Vol. 10, No. 3/4, 2006. p.246.

[21] Artists like Takeshi Motu and Richard Devine explore the idea of glitch in music that forms a genre of electronic music emerging from the late 1990's. Focusing on an 'aesthetic of failure' it utilised deliberate means of disrupting audio outputs. Furthermore, David Lynch explored glitch-like cinematic in the 1977 Surrealist film "Eraser Head." White noise and Gaussian noise play an important role in the film in reinforcing an over bearing despotic effect. This technique is a technological glitch, mostly attributed to poor illumination and/or high temperature, and/or transmission.

[22] Perry Kulper and Nat Chard have a collaborated technique of production that utilises uncertain strategies

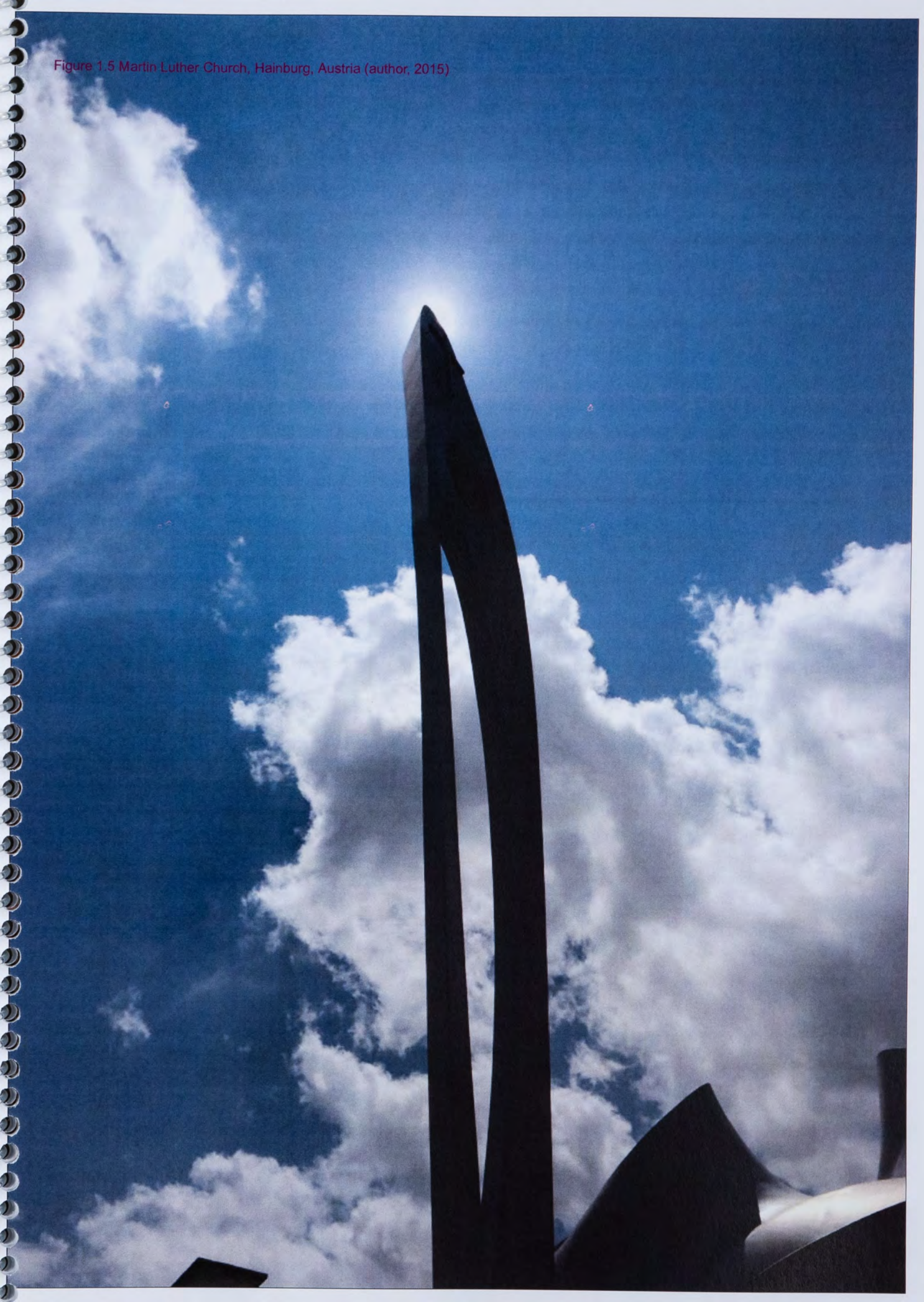
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in the design process. They argue that "The array of possibilities is so vast that the program is typically restricted to those things that can be predicted with some certainty. While this conceit is a practical necessity, we are interested in the indeterminate potential of architecture. At first it might appear paradoxical to work with this condition - to propose that the uncertain takes away its uncertainty." See: Kulper, Perry. Chard, Nat. 'pamphlet architecture 34: fathoming the unfathomable,' Princeton architectural press, New York. 2013. p.6.

[23] See: Ostwald, Michael. J. Chapman, Michael. 'Privileging the Sketch: Coop Himmelblau, Nonlinear Dynamics and the Psychogram', Design research society, International conference in Lisbon, 2006. pp.1-8. And Ostwald, Michael. J. Chapman, Michael. 'Automated architecture: Violence and nihilism as strategies of 'making' in the tactics of Coop Himmelb(l)au', Theory, Cambridge Journals, Vol. 10, No. 3/4, 2006. pp.241-248. While such discourse may be focused on former practices revolving around the Avant-garde and the psychogram, it may provide a foundation of knowledge from which to expand upon.

[24] Coop Himmelb(l)au work with highly advanced and recently developed technologies within their architecture. See: Himmelb(l)au's 'Jammer Coat' for the digital age. An explorative model for responding to the current saturation and permeability of technology. This is a single example, amongst many that reflect the firms forefront approach with digitally based design.

Figure 1.5 Martin Luther Church, Hainburg, Austria (author, 2015)



2

Glitch(ism)

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A small brief at the beginning of the summer workshop detailed an initial outline of the project strategies that may help its fruition. It however, failed to address the inherent factor upon which the research relied. That being, the presence of a glitch. A glitch remains unknown until it is uncovered. Like the philosophy of X|A, an exploration of the unknown suggests a reorganisation of traditional ordered or structured logic in the design process. This means thinking past that of a brief that is problem solving, to a brief that is problem finding. This analogy is reinforced by John Frazers's discussion on the evolutionary paradigm in architecture.[25] Where typically the brief represents a criterion, which must be solved through program, form, context, Frazor argues that in such an approach the solution is often the problem. His discussion on 'problem finding' explains that a design outcome or final product has been defined in the early stages, as done so by the design brief. Instead, "open models of practice" promote the design technique as opposed to an image or object. While there was an initial brief for the research, an overarching idea of uncertainty reinforced exploration over resolution.

When a glitch has been discovered, and its underlying fault understood it becomes predictable and manageable as a formalised logic. The glitch therefore becomes a rational mechanism with an irrational outcome. Michael Weinstock's research on 'Morphogenesis and the Mathematics of Emergence'[26] may shed light on the process of becoming invisible after

being concealed. His comparative study draws the conclusion that "form and behaviour emerge from process." This idea of process is likened to cybernetics, which he explains, "organises the mathematics of responsive behaviour" regulating conduct of organisms in order to measure performance over a period of time.[27] In the context of the summer workshop, the rationalisation of a malfunction therefore becomes the process of design. Where, the revelation of the glitch is characterised by fault, malfunction and corruption, at an architectural level the outcome is a reformation of aesthetics and physiology. This is described as the basic criteria by which the artefact is to be understood in the summer workshop:

- Formal characteristics of the Glitch affect the way you perceive the form. Address formal qualities that determine the experience of your space.

- The way you design the space changes the way you intend to use the space, the way you feel in that space. In the same manner the Glitch project has to consciously address the way the body perceives the design as an architectural object.

- The design will be thought with the recipe of interiority's, cavities, figures, massing and volumes, solid and void"[28]

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"In a time so obsessed with establishing the value of works as the products of contexts and conditions, the architect may take solace in the fact that the corrosive relativism that plagues the historian will not plague the architect who curiously traffics in products that, if not permanently fixed, and however formed around the flux of matter, nevertheless rest on the side of persistence. They are never reducible to the fleeting interpretations - or, for that matter, practices - projected onto them. Thus, architecture is the substrate for the accidents of history rather than its embodiment."

Reiser, Jesse. Umemoto, Nanako. 'Atlas of novel tectonics'. Princeton Architectural Press, New York, 2006. P.18.

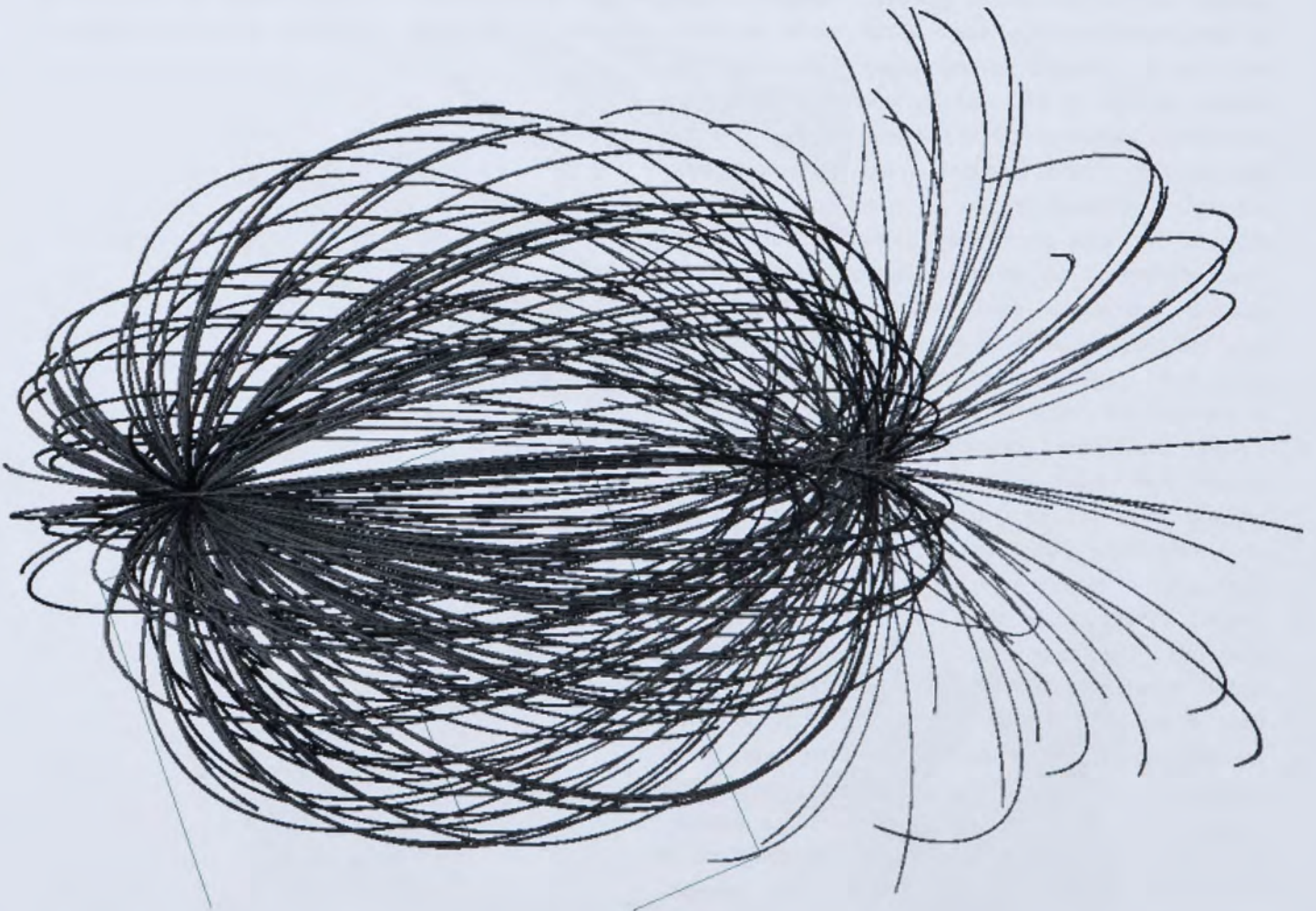


Figure 2.1: Particle field (author, 2015)

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Frazor argues that in such an approach the solution is often the problem. His discussion on 'problem finding' explains that a design outcome or final product has been defined in the early stages, as done so by the design brief. Instead open models of practice promote the design technique as opposed to an image or object.

Over the period of the summer workshop more glitches were discovered and hence, evaluated for their irrationality. Once discovered, they became a rational part of the design process. Variations could be produced from the same glitch once its inherent logic, or dis-logic is understood. Changing the original factors, in this case the geometry, meant the mechanism performed in a different manner. The formal aesthetics and function would be considerably different as a result. Figure 2.2 and Figure 2.3 are the result of the same glitch that has manipulated a basic cubic geometry. By adjusting the complexity of the geometry, variations could be produced. The diversity of the glitch aligns with recent discourse on generative prototyping. SHoP's research in this case, aims to expand the discussion on generative prototyping through an element definition of 'versioning.' They explain that versioning should not be considered the copying of a type or original, and is counter to the idea "originating from a singular identifiable model, prototype, or master form." [29] This is similar in the context of simulation that was used in the summer workshop. The outcome did not originate from an object or 'master form' but more so an interactive process. A response to faulty criteria. SHoP go on to further explain, in the context of simulation, versioning is neither a manipulated archetype with the end goal of producing a complete product for mass production. Alternatively, they explain that versioning could be seen as a "menu or nomenclature" that organises conditions for configuration as part of responsive design criteria. Whereby no base prototype exists,

the design decisions are based on an organisational strategy "capable of evolving parametrically to produce specific effects or behaviours." [30] As seen in figure 2.2 and figure 2.3, the diversity of outcomes reinforce the strategies of SHoP's versioning approach.

Whereby no base prototype exists, the design decisions are based on an organisational strategy “capable of evolving parametrically to produce specific effects or behaviours.”³



Figure 2.2 Corrupt Cube (author, 2015)



Figure 2.3 Corrupt Cube II (author, 2015)

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Ed Keller expands upon SHoP's variations and design strategies, explaining "the search for prototypes that solve specific problems has today been replaced by prototypes, scenarios, versions and spread sheets that are used to innovate."[32]

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The evolving potential of the glitch is therefore dependent on the modes of use. This understanding attributes to an assembly logic approach and would become the strategy in which to generate irrational variations. As seen in figure 2.5 and 2.6 a series of variations could be produced from a single malfunction. These artefacts therefore stand as a series of virtual errors that can be examined and evaluated against one another. The design process focussed on repetition, multiplication, and mutation of the artefacts.[31] Ed Keller expands upon SHoP's variations and design strategies, explaining "the search for prototypes that solve specific problems has today been replaced by prototypes, scenarios, versions and spread sheets that are used to innovate." [32]



Figure 2.4 Design outcome (author, 2015)

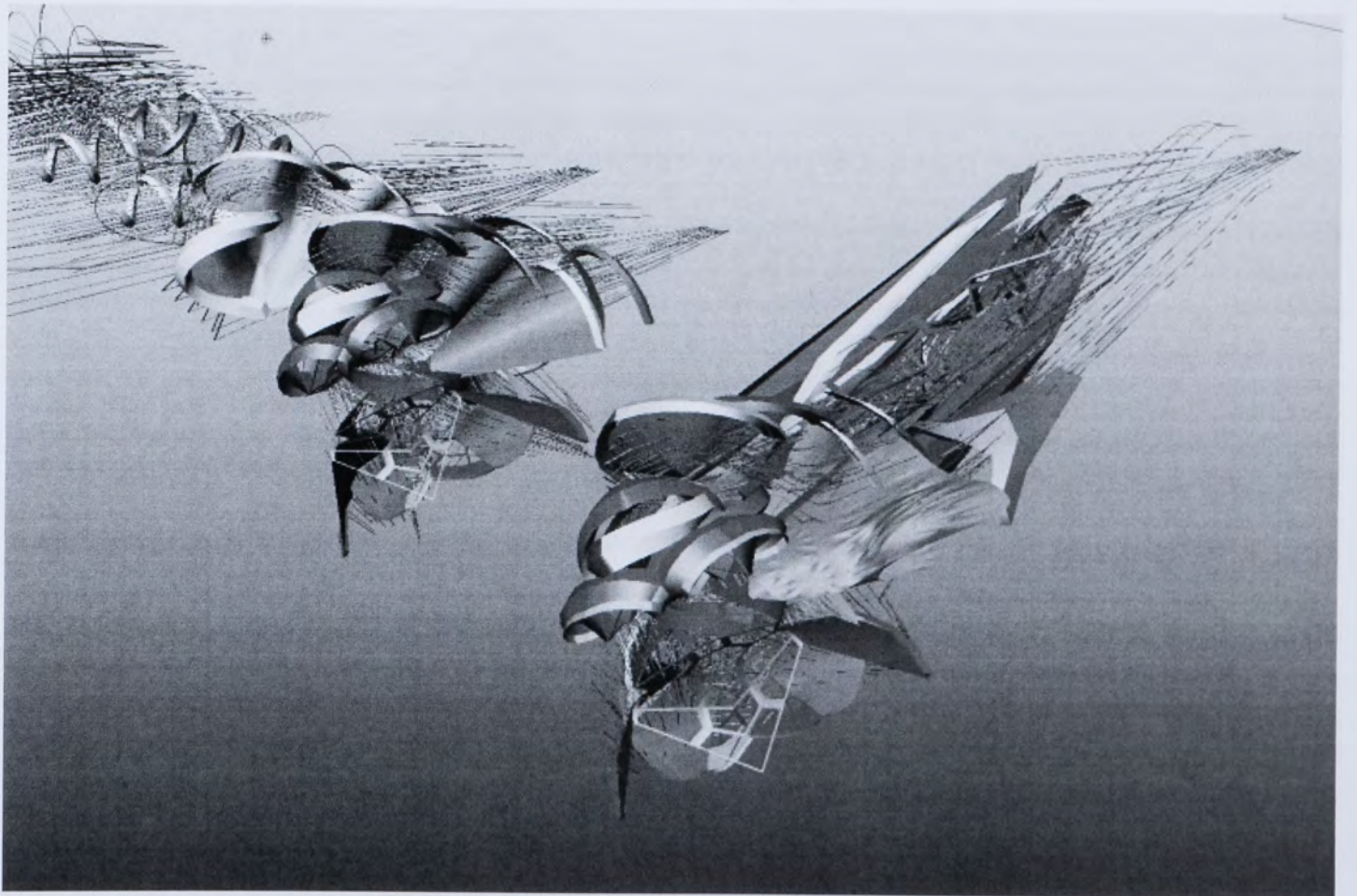


Figure 2.5 Generative design (author, 2015)

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The limitations of the formal expression is that it is meaningless without the support of the process that defined it. As such, it remains an object in isolation and without meaning. This architecture is not meant to be criticised in isolation, but should be criticised in its application.

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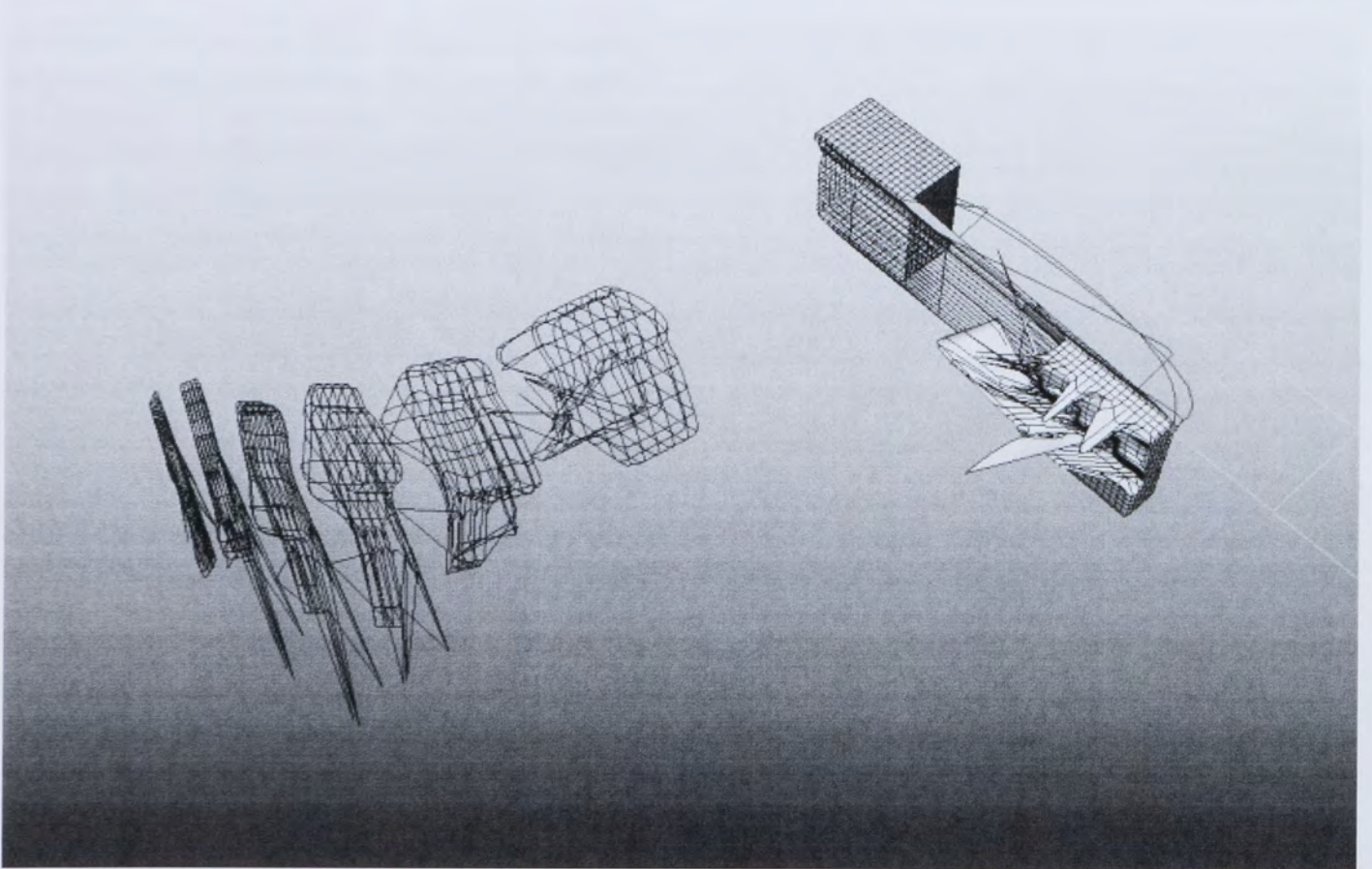


Figure 2.6 Generative design II (author, 2015)

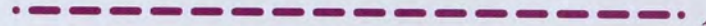


Figure 2.5 demonstrates an early example of a generative design process. A linear pattern of formal exploration is evident and increases in complexity until it reaches its determined design outcome. From here another strain is created and so on, an so forth.

The design project that was undertaken by the author during the summer workshop began with a field of inflatable geometries. These geometries were given a series of performances in relation to their environment so that they could respond dynamically. Figure 2.7 shows the initial geometry of the project. The following figure 2.8 demonstrates the evolution of geometry through inflation.

A glitch has already emerged, and has been prototyped in earlier formal explorations. The manipulation in this project illustrates a clear reorganisation of certain spatial properties. Through observation it is clear that a number of qualities that defined the previous geometry has undergone a transformation. Firstly, the field that defined the relations between each individual element has been reorganised through integration of mass and void. As a result, the spatial awareness is redefined in a more fluid manner, and interior and exterior is no longer defined by closed volumes but by openings and proximity. Furthermore, complexity has been introduced into the layering of the skin. The resulting outcome is a series of intertwined layers as opposed to an isolated composition.

The aim of the research project was to explore the idea of "architectural glitches as prototypes for malfunctioning systems, which in turn do not become faulty, but are dependent of their controlled aesthetics." [33] The limitations of the formal expression is that it is meaningless without the support of the process that defined it. As such, it remains an object in isolation and without meaning. This architecture is not meant to be criticised in isolation, but should be criticised in its application. The intention of the workshop was therefore to develop and investigate the "notion of proficient geometric variations at a level of complexity, so that questions towards geometrical effectiveness, accuracy and performance can begin to be understood in a contemporary setting." [34] The main framework of research was conducted in a computer based, animation software, and by a matter of perception remained scaleless. As a result, the scale was determinate of the individuals perception of space in relation to an architectural environment. It was therefore important for the research to be integrated into a reality. That it would have properties that are inherently realistic through a mutation and adaption to its environment. This understanding is reinforced by Sanford Kwinter's seminal work on formalism. [35] his essay hopes to establish a "true formalism" [36] against poor formalists [37] who utilise advanced computer software to manipulate objective and sculptural form. These approaches he believes fail to give thought to actual mechanisms of formalism. Meaning, that while this new modelling software has allowed the possibility to produce extravagant collisions in material and object,

.....

As the live mechanics of the glitch allow the user to change the input at any given moment. A change in the input or output field has a direct result its opposition by translation through the fault. While this was not explored within the scope of the workshop, the ability of the rationalised model as a translating medium gives it an 'active sense' that may lead to an ever changing process.



Figure 2.7 Phase 1 (author, 2015)

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there has been little true discursive discourse or exploration into the creation of these forms. Expanding on the idea of formalism introduced by Johann Wolfgang von Goethe, Kwinter argues that simple structure end-products should become the "active, ever-changing processes." [38] His description here could be said true of the glitch process. As the live mechanics of the glitch allow the user to change the input at any given moment. A change in the input or output field has a direct result on its opposition by translation through the fault. While this was not explored within the scope of the workshop, the ability of the rationalised model as a translating medium gives it an 'active sense' that may lead to an ever changing process. More research in this area would be required. The realisation of the research project was to be evaluated by three design criteria; structure, skin, and mass. The following images are the authors research project in exploration of these design intentions as a result of its application in a contemporary setting. While these may not be exemplary explorations they signify a beginning.



Figure 2.8 Phase 2 (author, 2015)

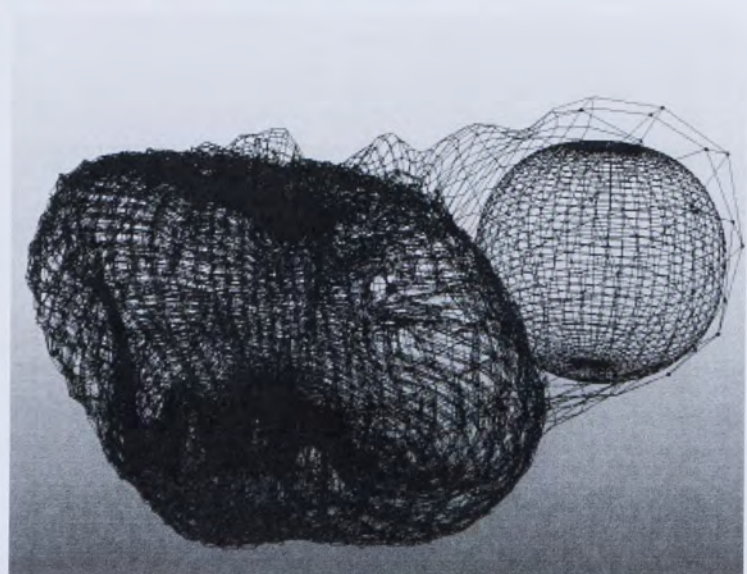


Figure 2.9 Wireframe Geometry (author, 2015)

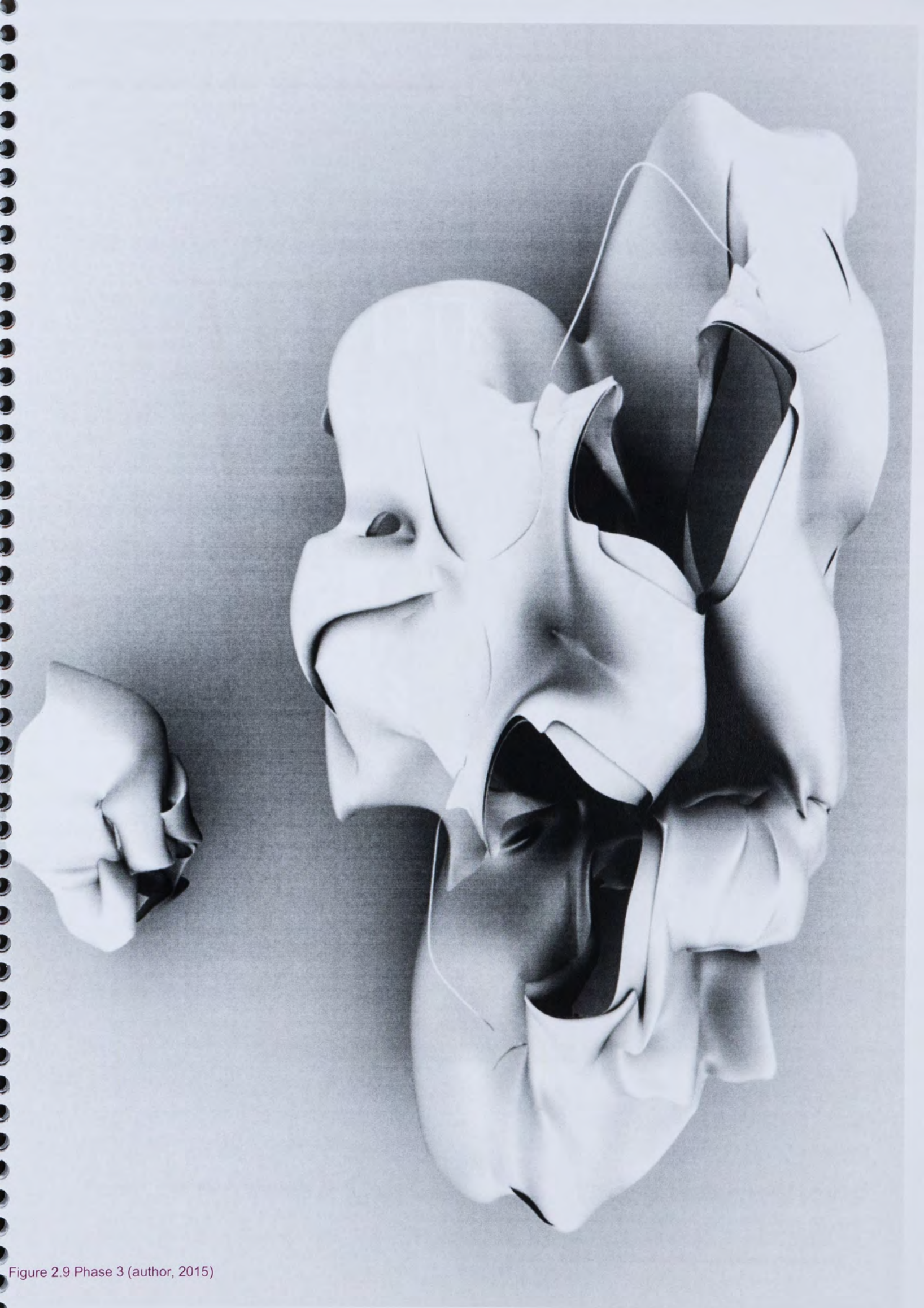


Figure 2.9 Phase 3 (author, 2015)

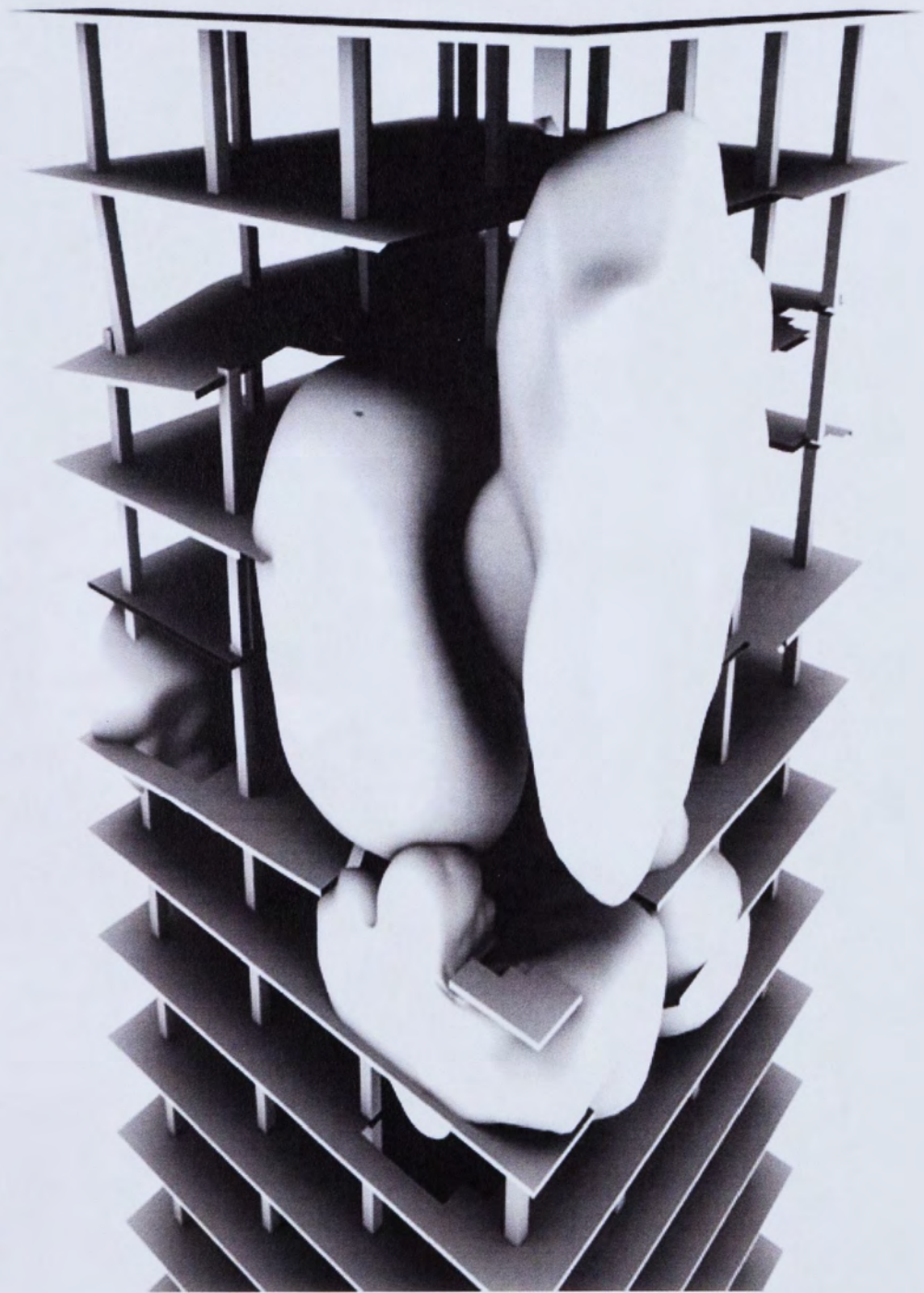


Figure 2.10 Original geometry (author, 2015)

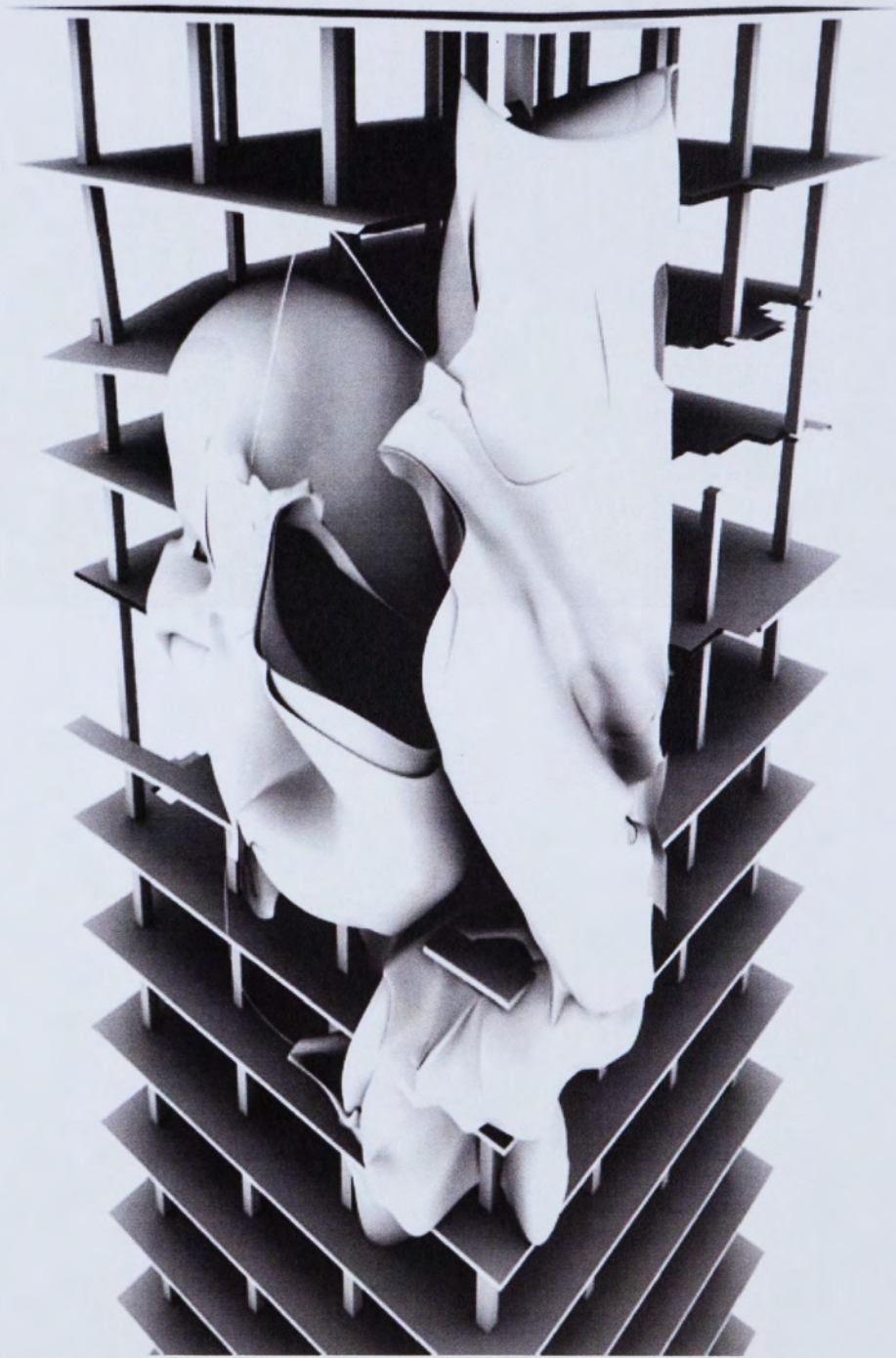
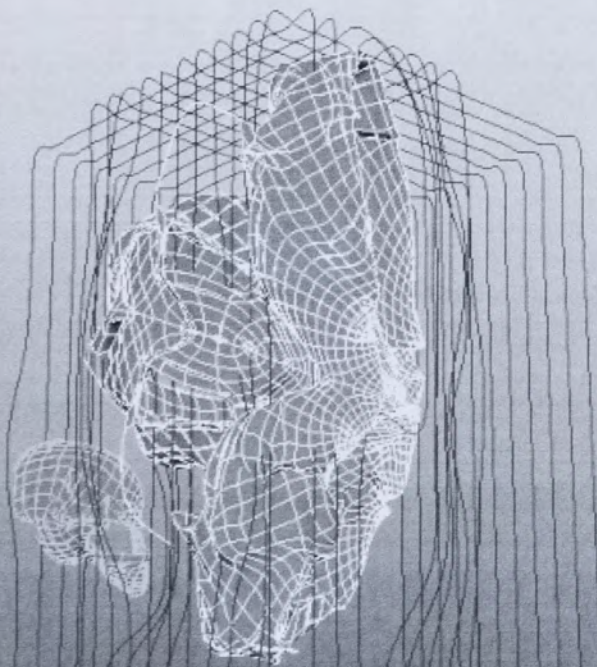
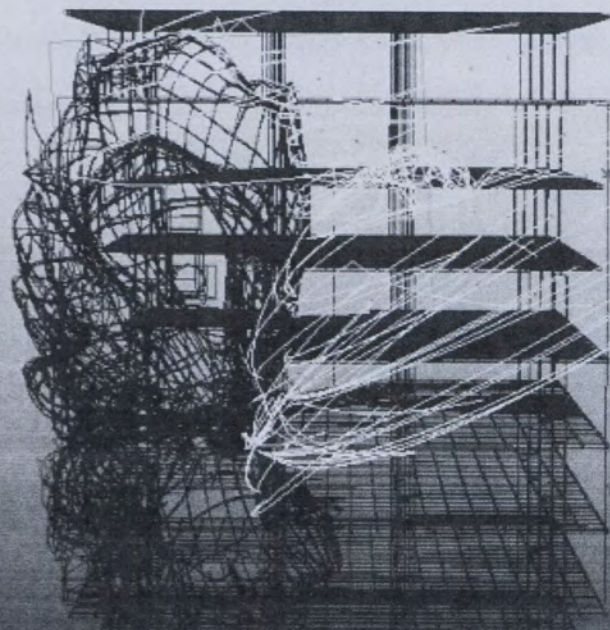


Figure 2.11 Glitched outcome (author, 2015)



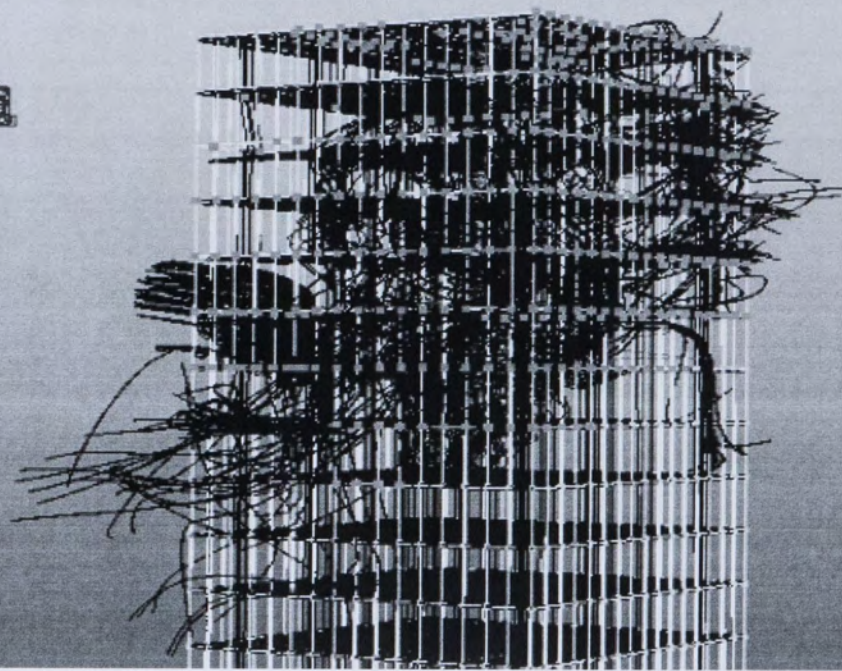


Figure 2.12-15 Field Diagrams
(author, 2015)



Figure 2.16 Skin Structure (author, 2015)



Figure 2.17 Internal Render (author, 2015)



Figure 2.19 Skin framework (author, 2015)

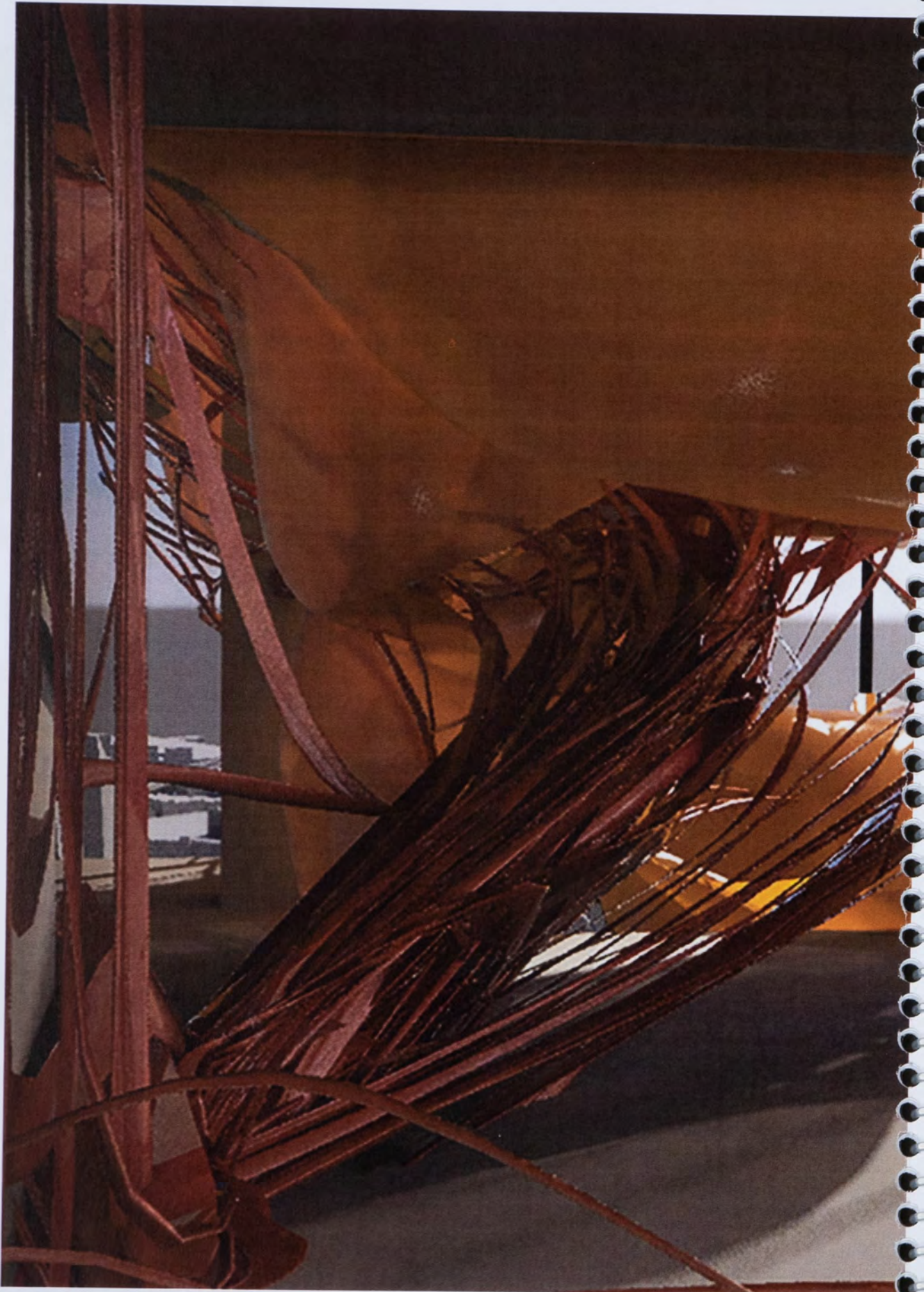


Figure 2.19 Internal render (author, 2015)

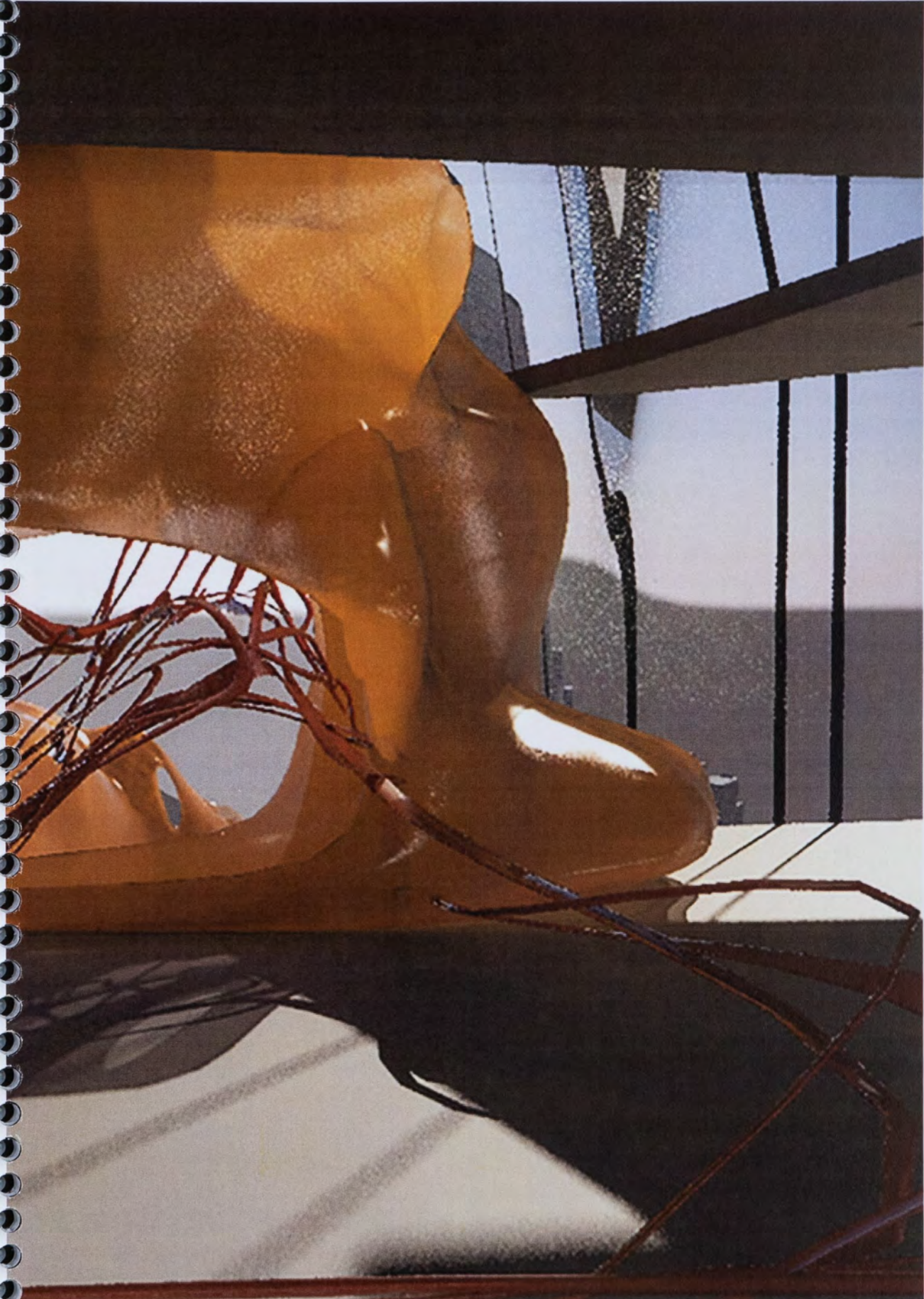




Figure 2.20 External Render (author, 2015)





Figure 2.21 External Render (author, 2015)



- [25] See: Frazer, John. "Creative design and the generative evolutionary paradigm" 2002
- [26] See: Weinstock, Michael, 'Morphogenesis and the Mathematics of Emergence', in *AD Emergence: Morphogenetic Design Strategies*, vol. 74, no. 3, Wiley, London, 2004, pp.10-17.
- [27] See: Weinstock, Michael, 'Morphogenesis and the Mathematics of Emergence', in *AD Emergence: Morphogenetic Design Strategies*, vol. 74, no. 3, Wiley, London, 2004, pp.10-17.
- [28] Carcamo, Eric. Chatzimina, Nefeli. 'Glitchism' workshop handout in X|A Summer Workshop III Athens. 2015
- [29] See: Sharples, Holden, Pasquarelli, 'Versioning: Evolutionary Techniques in architecture', 2002.
- [30] See: Sharples, Holden, Pasquarelli, 'Versioning: Evolutionary Techniques in architecture', 2002.
- [31] Carcamo, Eric. Chatzimina, Nefeli. 'Glitchism' workshop handout in X|A Summer Workshop III Athens. 2015
- [32] See: Sharples, Holden, Pasquarelli, 'Versioning: Evolutionary Techniques in architecture', 2002.
- [33] Carcamo, Eric. Chatzimina, Nefeli. 'Glitchism' workshop handout in X|A Summer Workshop III Athens. 2015
- [34] Carcamo, Eric. Chatzimina, Nefeli. 'Glitchism' workshop handout in X|A Summer Workshop III Athens. 2015
- [35] Kwinter, Sanford, 'Who is Afraid of Formalism', in *Far from Equilibrium. Essays on Technology and Design Culture*, ACTAR, Barcelona & New York, 2008, pp.144-149.
- [36] Kwinter provides a direct definition of true formalism in demonstrating "first and foremost that form is resonance and expression of embedded forces." Furthermore, "the great formalists, on the other hand, have always been able to peer into the object toward its rules of formation and to see these two strata together as a mobile, open and oscillating system subject to a greater or lesser number of external pressures. See: Kwinter, Sanford, 'Who is Afraid of Formalism', 2008.
- [37] On the other hand, he defines "Poor formalists" inept to identify the qualities seen by true formalists. Instead he explains, "they see only the shell of object-forms and sad enclaves of inert matter, never the resonating field of wild, directed formation. See: Kwinter, Sanford, 'Who is Afraid of Formalism', 2008.
- [38] Kwinter, Sanford, 'Who is Afraid of Formalism', in *Far from Equilibrium. Essays on Technology and Design Culture*, ACTAR, Barcelona & New York, 2008, pp.144-149.



Figure 2.22 Athens Summer Workshop 2015 (author, 2015)

3

Case study: Coop Himmelblau

34

Situated on the southern shore of the Limfjord in the heart of Aalborg, Denmark, the House of Music II [39] both stands and collapses to its surroundings. Located at the narrowest point on the channel, the city of Aalborg prospered as a trading hub for the northern region of Denmark developing a prominent industrial based working-class. A past that has up until recently, long stood as the city's identity. An ongoing demolition of industrial structures however, is paving the way for a renewed prosperity of knowledge-based lifestyles (figure 3.3). The completion of Coop Himmelblau's House of Music II in 2012 signified the changing industrial identity with the presence of a national cultural landmark. This challenging pretext reverberates in the rich experience of the building itself. The building is best understood in composition of its four facades. Setback from the waterfront by an expansive concrete plane, a diaphanous membrane of glass and steel flows out of the heart of the building overlapping itself as it engulfs the immediate landscape (figure 3.1 & 3.2). A small rigid box, caught in the surface of the diaphanous membrane serves as the main public entrance to the building.[40] This is in contrast to the remaining three facades that turn their back towards the city sheltering the diaphanous membrane in a gigantic concrete box. The formal disruption in the entry facade draws a distinct parallel to

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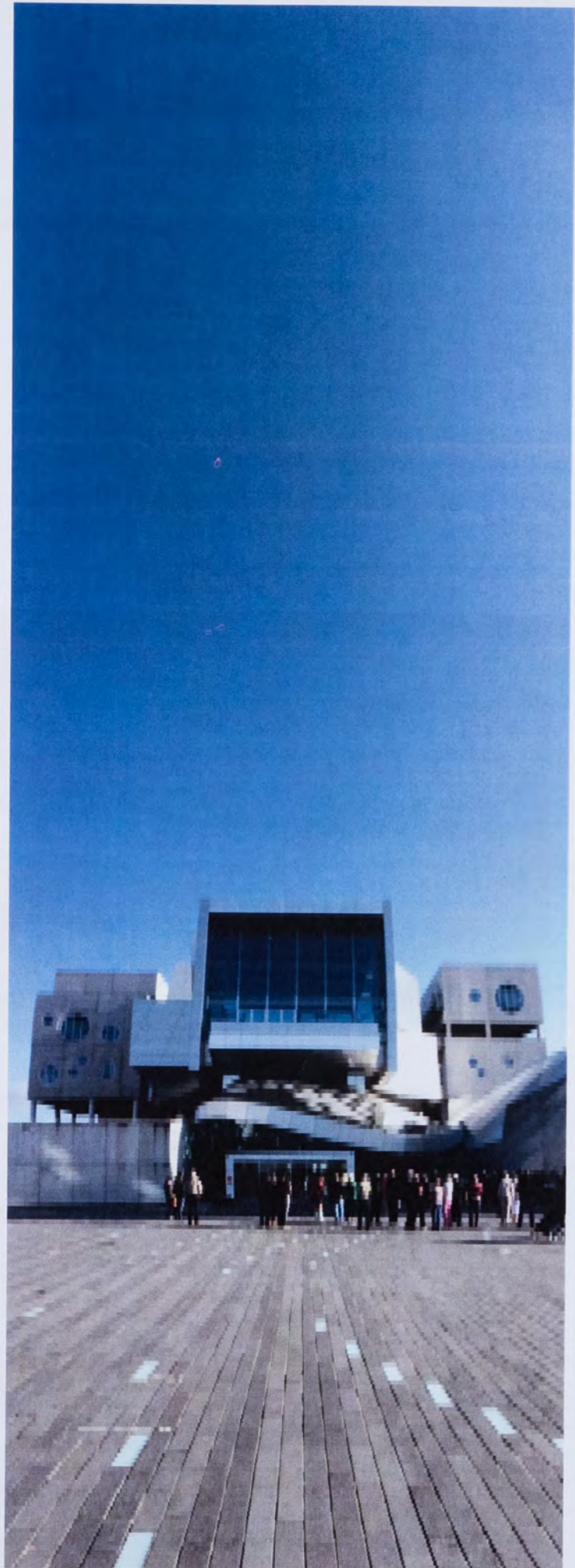


Figure 3.1 House of Music II, Aalborg, Denmark (author, 2015)



Figure 3.2 House of Music II, Aalborg, Denmark (author, 2015)

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Figure 3.3 House of Music II, Aalborg, Denmark (author, 2015)



Figure 3.4 House of Music II, Aalborg, Denmark (author, 2015)

the unbuilt 'Open House' that the architects explain, "[T]he feeling of the inside stretches the skin of the outside." [41] The three concrete box's are elevated on piloti's resonating the language of Le Corbusier's La Tourette in Lyon, France (figure 3.5). [42] This concrete encased monastery is derived from the typical Dominican order that draws religious significance from an internalised ideology focusing inwards.

While this may have been the starting point for the House of Music II, a centralised uniformity is overturned in the outward expression of the entry facade. The more obvious outcome of this approach is to promote the buildings function and presence as open and inviting to the public. It is however, this idea of 'openness' that is characteristically uncertain in nature and disruptive towards pre-determined experiences. The concept of an "open architecture" described by Coop Himmelb(l)au, is an effort to produce architecture that is "not for a specific purpose." [43] The recognition of 'a specific purpose' is by association with a context or program commonly inherent with a typology. While the building is the archetype of a music school and concert hall reinforced by a rigid program of teaching spaces, sound room's, lobby, theatre and stage, an overarching typology however, is somewhat elusive. Further insight is given away by its title, as suggested by the architects to be more so a 'house,' than institution. Where the latter stands as a body of

social and political pre-determinism, the house is its domestic counterpart concerned with the incubation and growth of family. [44] Such a loose association with a Coop Himmelb(l)au building is brought to light in Jeffery Kipnis' essay 'Exile on Ringstrasse' explaining that, "[Coop Himmelb(l)au] refuses predetermination, refuses, that is, to be justified by allegiance to precedent or context or even the program that gives rise to it." [45] What is interesting in this understanding, is that the result of such 'refusal' that Kipnis described, would require it to perform and function in a significantly different manner.



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Figure 3.5 La Tourette, Lyon, France (author, 2015)



Figure 3.6 House of Music II, Aalborg, Denmark (author, 2015)

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Derived from the original sketch, the circulation swarms through the mass of the cloud, intersecting and dissecting its skin and mass. As a result, pathways departing the foyer lead to all heights of the building in a number of directions. Exits and entries collide with the surface to create out of place occurrences.

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The idea of incubation can be visually discerned by the hierarchical arrangement of rooms in the buildings floor plan (figure 3.7 & 3.8).[46] Whereby, importance is given to the 1,300 seat concert hall enveloped on three sides by the rigid encasement of learning facilities. It is isolated from this nest by means of a continuous circulatory pathway that meanders around the hall joining the two elements at selected locations.[47] The composition of the number of differing functions owes its success to the circuitous pathways that meander throughout the building.[48] Parallel can be drawn to Friedrich Kiesler's unbuilt project, 'Endless House.'[49] Like the Endless House, Coop Himmelb(l)au dilute thresholds (figure 3.9) to create a seamless overlapping of spaces. Alternatively, rather than an uninterrupted, continuous path, the architects generate occasional limits that define path ends (figure 3.10). A similar execution of internal circulation is found in the Musee De Confluence's in Lyon (figure 3.12-19). Derived from the original sketch, the circulation swarms through the mass of the cloud, intersecting and dissecting its skin and mass. As a result, pathways departing the foyer lead to all heights of the building in a number of directions. Exits and entries collide with the surface to create out of place occurrences. (figure 1.13). Such an approach brings into question the openness, or planned openness of the buildings function. Furthermore, an overwhelming public infiltration[50] brings into question the functional boundaries. The audi-

ence readily becomes performer through exposed openings in both facade and concert hall. The negative perforations and exposed openings in the facade create an array of extruded ornaments that is read statically like music,[51] and in movement as performance. The (lack-thereof) hierarchy and transparency of teaching spaces openly interprets visitors as students and vice-versa. Such an experience finds a harmony between learning, practice, viewing and performance, and indicates a significant shift in the dissolution of public and private boundaries. The architects describe as a kind of 'shared space.' [52]

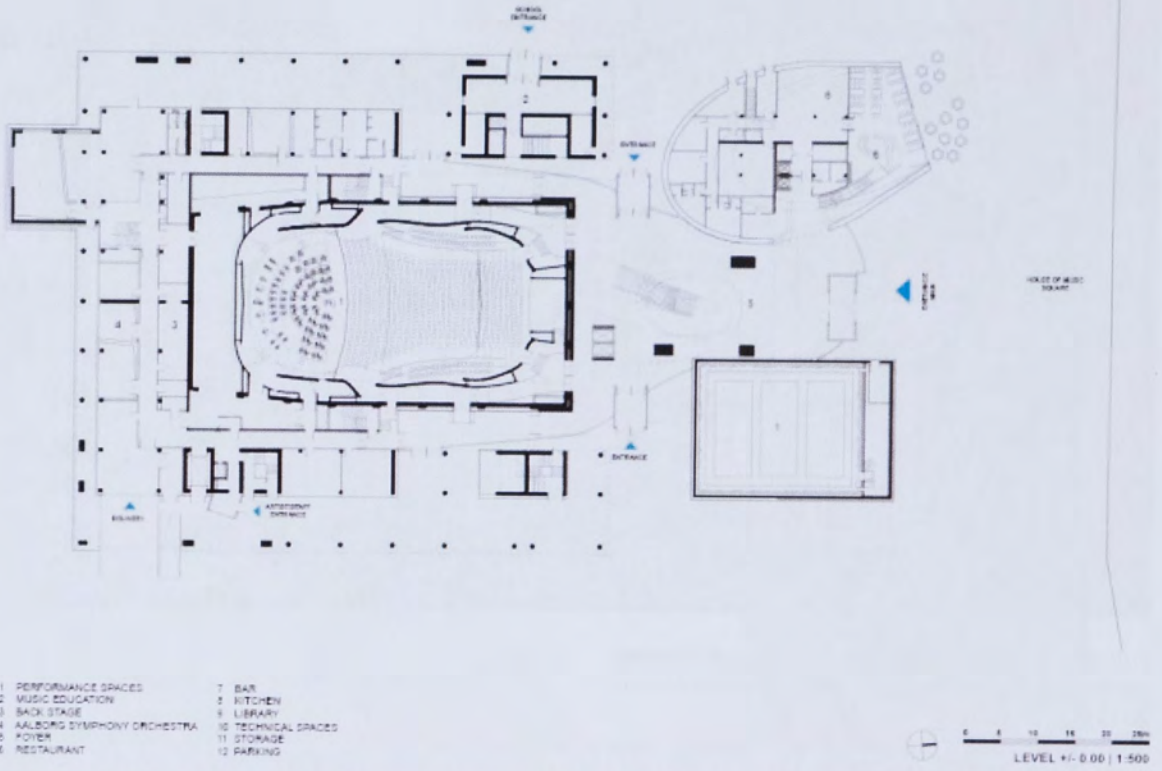


Figure 3.7 House of Music II Ground Floor Plan (Coop Himmelblau, 2012) < <http://www.coop-himmelblau.at/architecture/projects/house-of-music-ii> >

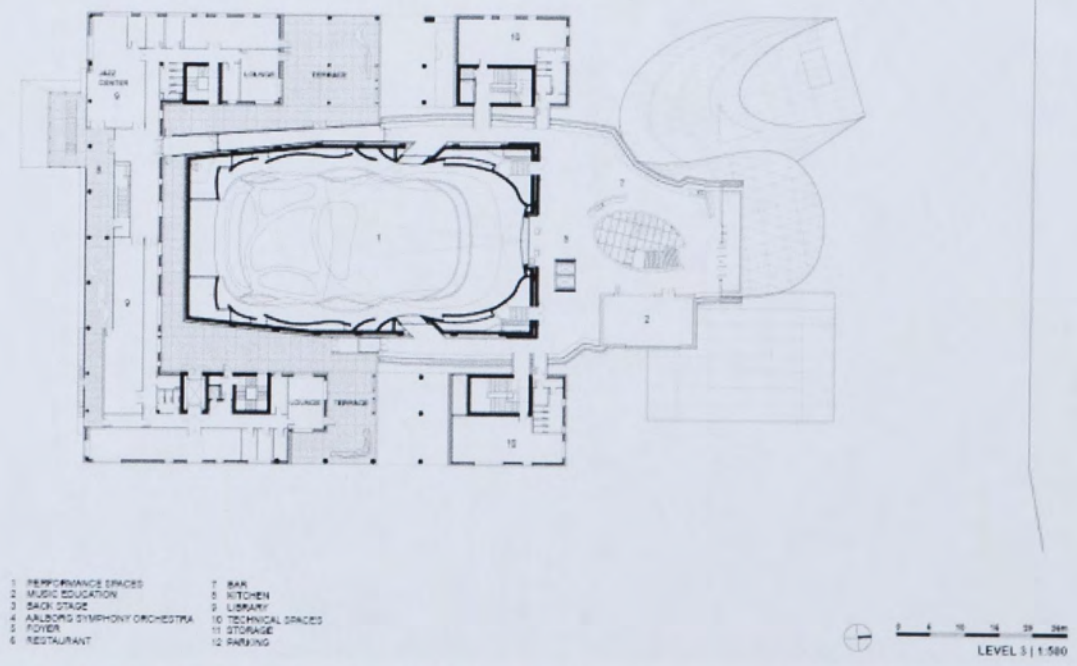


Figure 3.8 House of Music II level 3 plan (Coop Himmelblau, 2012) < <http://www.coop-himmelblau.at/architecture/projects/house-of-music-ii> >



Figure 3.9 House of Music II diluted edge between inside and outside, function and circulation (author, 2015)



Figure 3.10 House of Music II end to a circulation path that looks out over the Limfjord (author, 2015)

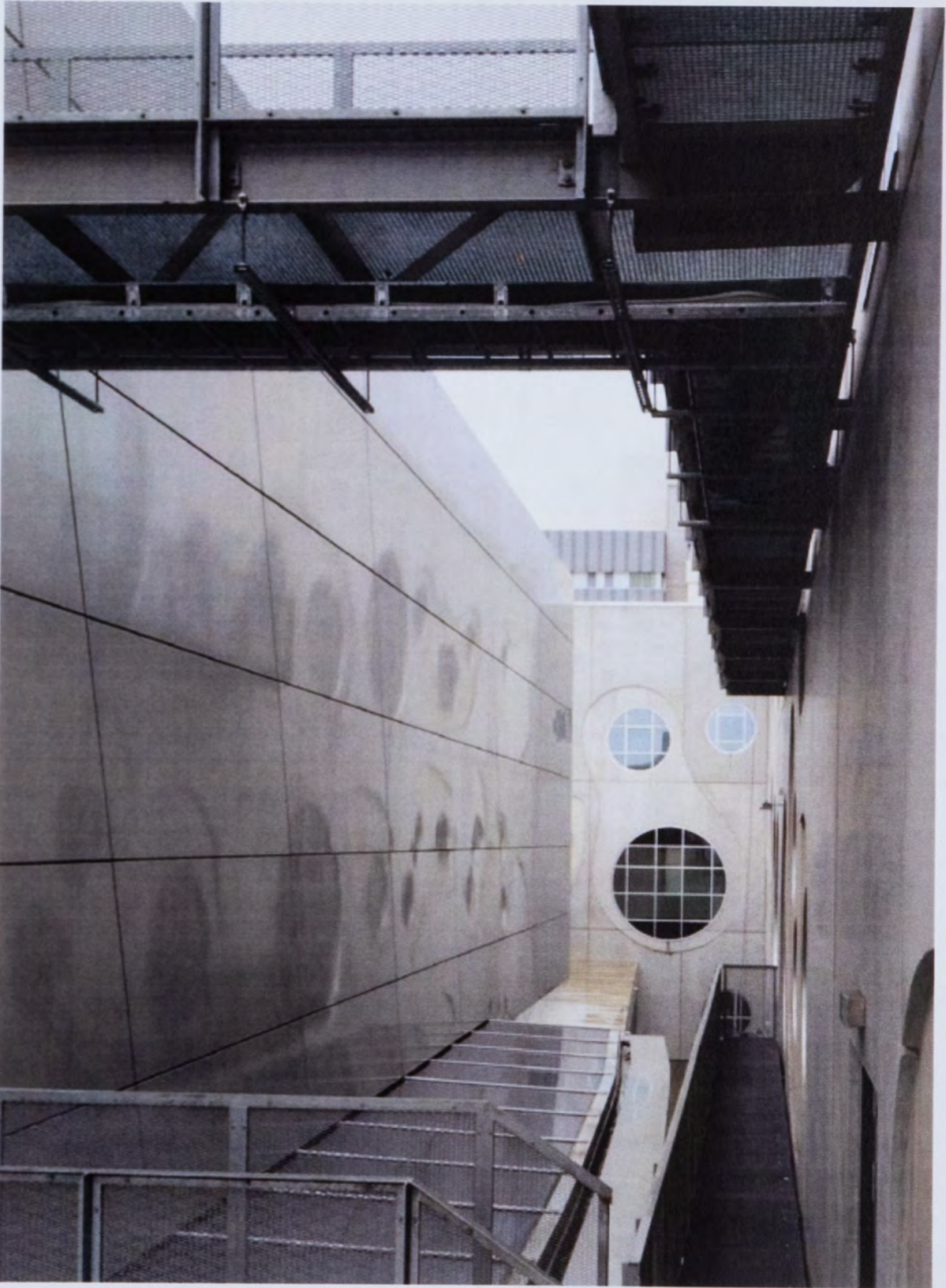


Figure 3.11 House of Music II overlapping of circulation spaces that connect interiors and exteriors (author, 2015)



Figure 3.12 Musee De Confluences Foyer (author, 2015)

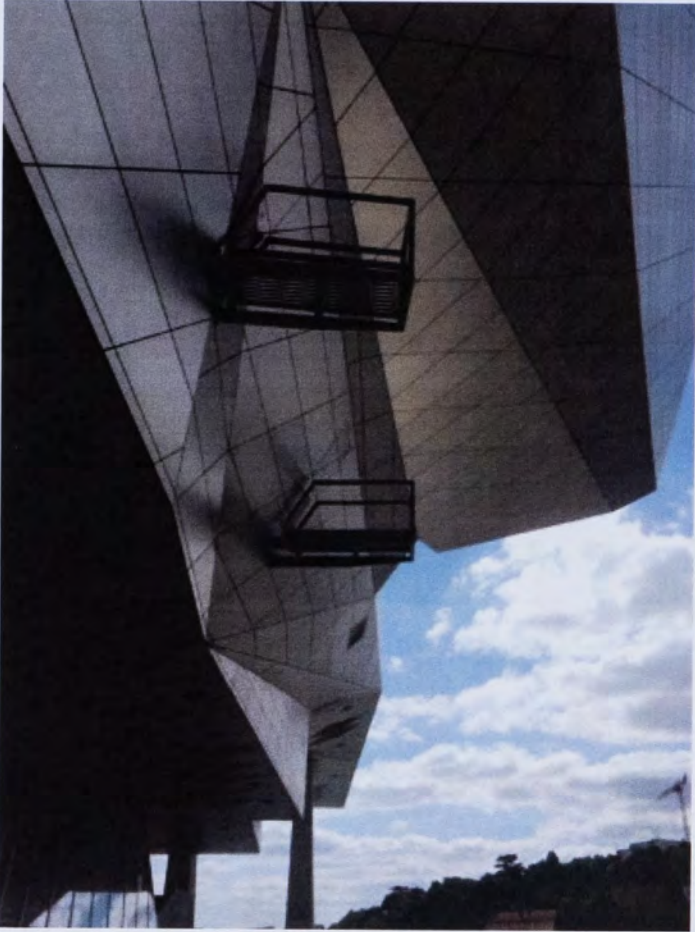


Figure 3.13 Musee De Confluences external exits (author, 2015)



Figure 3.14 Musee De Confluences central corridor (author, 2015)



Figure 3.15 Musee De Confluences roof landscape (author, 2015)



Figure 3.16 Musee De Confluences Foyer (author, 2015)



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Figure 3.17 Musee De Confluences roof landscape (author, 2015)



Figure 3.18 Musee De Confluences (author, 2015)



Figure 3.19 Musee De Confluences central corridor (author, 2015)



Figure 3.20 House of Music II (author, 2015)

This however does not retain the argument 'not for a specific' purpose that Coop Himmelb(l)au pertain to. While there is a certain refusal to a prescribed typology, the functional execution of the building remains determined. The infiltration of the public, combined with an unprescribed circulatory network reinforces irrationality and is an attempt to dilute prescribed perceptions of space. Such an understanding, combined with the knowledge of the 'sketch' pertains to an architecture of representation. The building remains symbolic in its approach to indeterminism and more so puts into question the idea of typology by means of irrationality, rather than denoting typology altogether. This is reminiscent of an earlier Avant-garde approach reinforcing edification.

The awkwardness of visitors floating around the interior of the building questioning their newly found liberty and legal presence in any given room lends itself to a questionable and reflexive subjectivity. Such that it puts into question the individual subjectivity and institutional behaviour inherently controlled within the cultural and educational typologies. Where the inhabitants struggle to find individuality by subjective association with a defined purpose or being, it reinforces a loose association of typology with the artefact in question. As such, it is neither more a school than concert hall, nor theatre than public space, but more so a formal amalgamation of programmatic op-

portunities, a kind of programmatic *laissez faire*.

Michael Hensel and Achim Menges in their 'inclusive discourse towards a heterogeneous architecture[53] argue that "a purely dynamic architecture is contradictory to the idea of type and typology." This they believe, "undermines the relevance of programmatic determination in the design criteria." [54] Such an understanding requires further analysis of the present dynamic expression in the House of Music II that exceeds the realised physicality of the building. Directly above the foyer is a mezzanine bar and informal theatre with views overlooking the Limfjord. During an orchestra the sound is carried down into the foyer by a carved out concrete staircase (figure 3.21). The mass of the switchback stair is suspended in space as it gradually spirals down into the three-storey foyer. It is interesting to note that this staircase is a recurring element in Coop Himmelb(l)au's work. As seen in Lyon, Kipnis too describes a "[C]ontinuing on the sinuous ribbons of circulation... the switchback staircase landing floats in midair, staging views into the space." [55] (figure 3.16) Unlike Lyon or the Groninger Museum however, the staircase in Aalborg is not acute in nature but more so curves with the lyrical performance of sound. It winds down in a manner that captures the soft reverberation of music as it echoes off the concrete interior of the foyer. This recurring element Kipnis believes, is "the result of an evolution



Figure 3.21 Foyer (author, 2015)



Figure 3.22 Foyer (author, 2015)

in which the floating single-celled spheres inside The Cloud slowly merge with the zigzag and winding circulation devices into new organisms, architecturalisations of the city not just as image but as sounds, rhythms, and sensations.”[56] The staircase and circulation in general, hold an importance in Coop Himmelb(l)au’s work that exceeds their functional requirements. The continuity of these adjoining elements become part of a connective and performative urban fabric. The architects have explored the potential of the immediate landscape through artificial lighting (figure 3.23). Its effect however, falls into representation as the artificial lines drawn embedded in the plan, bare no distinct relationship to the flow of music internally. A connection is made in the overall formal disruption of the cubic geometry, however the execution hampers its human-scale success. Where there is intended a smooth environmental gradient, the fixed panes of glass and double door entry, limit potential connectivity. In light of dynamic performance, Hensel and Menges go on to further explain that it can “only be judged through the occupation and experience of the building itself.”[57] This alludes to the experience that Kipnis richly describes. It is however, in this instance that the dynamism within the building remains in the perception and experience of the occupant rather than the architecture.



Figure 3.23 Environmental gradient (author, 2015)



Figure 3.24 BMW Welt Munich, Germany (author, 2015)

Further significance for such formal arrangements can be understood as a disruption in the representation of a predisposed certainty. That is, the traditional function of architecture ceases to exist. Such a statement is argued by Coop Himmelb(l)au attributing the architectural function of protection to be obsolete since the invention of the space suit in the 1960's. [58] This is most notable in BMW Welt, Munich, completed in 2006. The conceptual sketch for the project defines two distinct elements; a cloud, defined by an inanimate form over the ground plane and, a cone that gracefully connects the two. The cone as the architects describe is to generate a spatial identity that forms a relationship with the existing company headquarters that lies adjacent at the intersection of two motorways. The opposing direction of these two motorways intersect at the corner of the site on which the cone is located and reverberate a velocity that curls the glass and steel vortex structure (figure 3.26). In an exhibition in Frankfurt, 2015,[60] the collaborative engineering team Bollinger and Grohmann describe Coop Himmelb(l)au's work as "the dream of flying" with an apparent "negation of gravity." [61] They worked this concept together through the formal expression of the cloud in Munich. The lightness of the cloud is achieved through a minimal number of struts and an efficient space framework. The cone itself is a significant structural component for stress loading, thus reducing need for additional supports. The cone in this sense plays a fundamental role as a column over a formal feature. Alternatively, as a

column it is habitable, circulated and exhibited. The double helix cone similarly features in Dresden (figure 3.27), although the integration in the UFA Cinema Centre did not have a structural necessity. A number of other disfigured geometric shapes accompany the double helix in the lobby, in Dresden. As such, from the completion of the UFA Cinema Centre in Dresden in 1998 to Munich 2006, there is evidence of an evolution in the formal approach of Coop Himmelb(l)au. The geometries which previously existed as dismantled objects[62] are presently components of an integrated formalism. Such a transformation is significant in arguing traditional geometries as objects, and reinforces a complexity in the relationship between forms.[63]

Through the cone, the cloud maintains its relationship with the ground and signifies the departure as if its mass has been inflated from that point. As illustrated in the original sketch, the cloud maintains its presence as an isolated body. The isolation of which distinguishes it more so as a cloud than a roof to which Coop Himmelb(l)au describe as transformation from necessity to expression. They go on to explain, "Corbusier and his garden on the roof of the Unite in Marseille, and Oscar Neimer with his roof that does not follow the layout of the house, but acts as a kind of frame for the view, grace a new meaning to that particular construction element." [64] They conclude with the idea that roofs are valued as a specific and

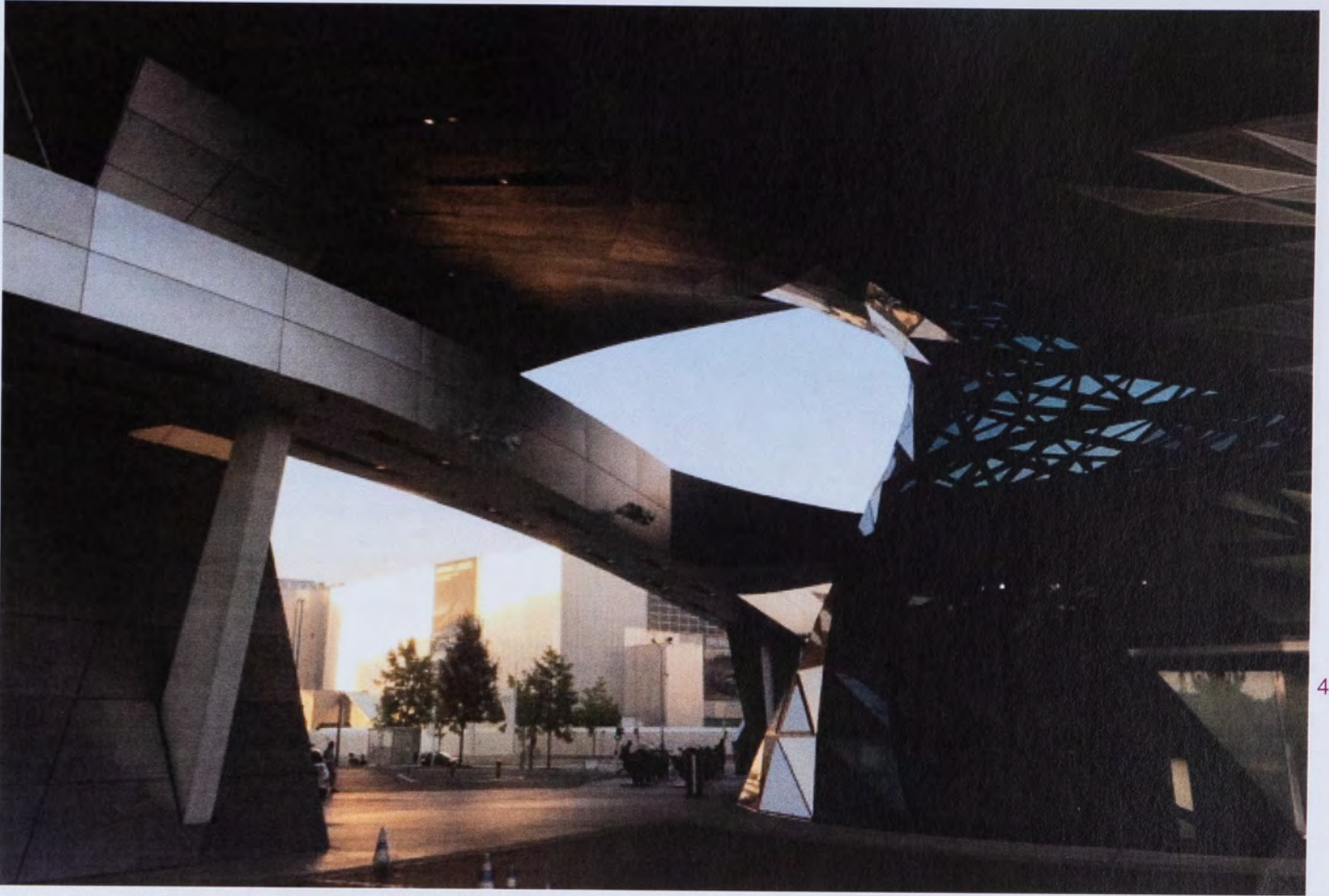


Figure 3.25 BMW Welt Munich, Germany (author, 2015)

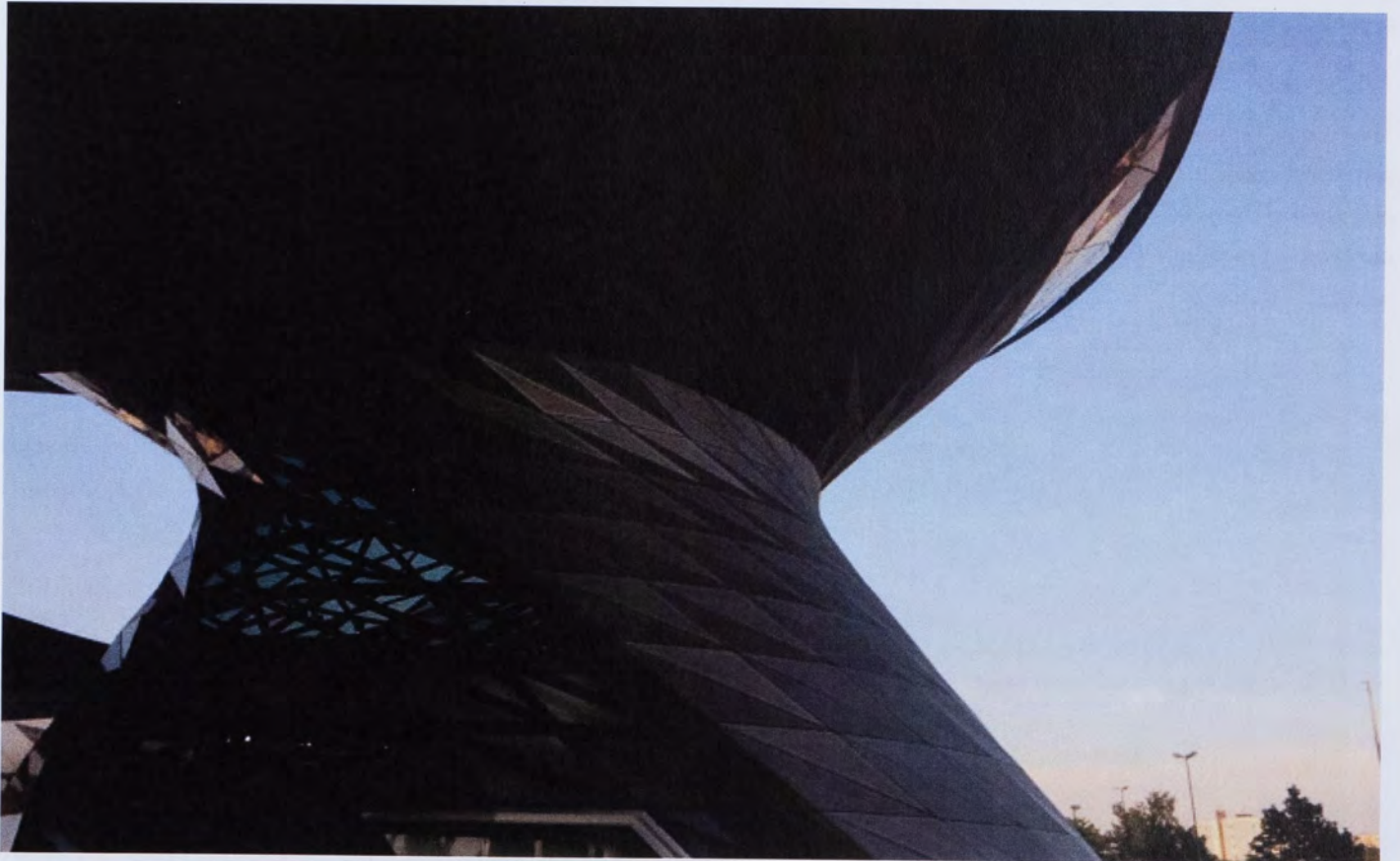


Figure 3.26 BMW Welt Munich, Germany (author, 2015)



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independent means of expression in architecture. This is more so evident in BMW Welt, where the mass of roof becomes a tangible landscape, elevated to create intimacy between its presence and the ground plane. The architecture in this instance is not defined by built elements, or assembled components in the traditional sense of architecture. Instead in their catalyst publication 'Get off my cloud' in 1968, they argue:

"Our architecture has no physical ground plan, but a psychic one. Walls no longer exist. Our spaces are pulsating balloons. Our heartbeat becomes space, our face is the facade"[65]



Figure 3.27-29 UFA Cinema Centre Dresden, Germany (author, 2015)



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Figure 3.30 BMW Welt Munich, Germany (author, 2015)



Figure 3.31 BMW Welt Munich, Germany (author, 2015)

[39] While there may be work by Coop Himmelb(l)au that is exemplary for the research, such as the Akron Art Museum extension in Ohio, USA, and the Dalian International Conference Centre in China, their distance from the central location of research in Western Europe is beyond the scope of this research. They will however be covered in the preliminary survey studies to ensure thorough background knowledge of the intended subject. While visiting a vast majority of Coop Himmelb(l)au's work, the research will be critical of significant milestones in such work as: House of Music II, Aalborg, Denmark, 2014; Musee des Confluences, Lyon, France, 2014; Martin Luther Church, Hainburg, Austria, 2011; BMW Welt, Munich, Germany, 2007; UFA Cinema Centre, Dresden, Germany, 1998 and; Rooftop Remodelling, Vienna, Austria, 1988. The research maintains a level of diversity across the career of Coop Himmelb(l)au with various years of completion and typology. The majority of case studies are public buildings and is intended to provide a framework of contextual analysis for the interaction of the given building with its audience.

[40] This kind of formal composition of the main entrance is a reoccurring theme in Coop Himmelb(l)au's work. The UFA Cinema Centre in Dresden, Germany has a similar treatment, where the glass crystal that rises out of the ground is perforated by a basic geometric box that functions as the entrance. This reoccurring treatment reinforces a significant understanding of Coop Himmelb(l)au and their conflict with the principle of an 'entry.' The entrance is an example of a pre-determined architectural requirement for reasons of security, threshold, conversation, and separation. There is a constant exploration of the entrance in their work, that raises a constant conflict between an 'open architecture' and a controlled certainty. This idea is explored humorously later in the Musee De Confluence, Lyon, France. In this building the idea of circulation is expressed in contention with a formal body that signifies a room. The idea of entrance is put into question where a number of circulation points intersect and diverge from this body to create an array of openings. The humour of it is found in the redundancy of some of these openings.

[41] See: COOP HIMMELB(L)AU. Frankfurt Lyon Dalian, 2015 held at DAM Deutsches Architekturmuseum, Frankfurt/Main, Germany.

[42] See: Coop Himmelb(l)au, 2015, Musee De Confluences, Coop Himmelb(l)au, viewed 5 December 2015, <<http://www.coop-himmelblau.at/architecture/projects/musee-des-confluences>>

[43] See: Coop Himmelblau. 'The dissolution of our bodies in the city.' ANY: Architecture New York. 1993. 0, (May/June), n.p. The underpinning of the psychogram as the formal generator in the Open House reinforced the concept of an open architecture. In terms of spatial arrangements that did not define nor restrict its user. This approach is reinforced in their seminal essay, in 1983. They state: "Architecture is not accommodating. Because accommodation and classification are - in architecture as well as in social life - expressions of a rigid, reactionary, and entrenched attitude." Refer: Kandeler-Fritsch, Martina. Kramer, Thomas. 'Get off of my cloud: Wolf D. Prix: Coop Himmelblau: Texts, 1968-2005', Hate Cantz, Munich, 2005. p.50.

[44] In a way, the analogy of a house reinforces an association with La Tourette focusing on an internalised ideology. However, in the instance of House of Music II, it would be best understood as an integrated field that internal functions as a relationship of its parts, as opposed to an overarching single point of origin.

[45] See: Kipnis, Jeffrey. 'Exile on Ringstrasse' in 'A Question of Qualities: essays in architecture.' MIT Press, Cambridge. 2013. pp.35-52.

[46] While the qualities of a house as such, are recognisably translated in the artefact in question the idea stands as a means to dilute the presence of a predetermined typology. As such, it houses a composition of rooms and functions that would normally exist on their own.

[47] In their sketch for the cloud, the circulation drawn across the page does not 'meander' through the volume. Instead, the motion of the hand goes much more unnoticed in a manner reminiscent of the psychogram. The unbroken line more so 'dissects' the volume than dictates.

[48] This is reinforced in the sketch of building itself where the architects use in conflict the broken and continuous line. Where the continuous line reflects a kind of meandering path of separation between certain formal elements, whether defined by program or relationship, the broken, or dotted, line overlaps these established

boundaries in an informal manner. This manner shares a relationship with either side of the line, conflicting the permanence that has been established previously.

[49] Endless House: unbuilt project by Frederick Kiesler, exhibited in model form in 1959-1960 at the Museum of Modern Art in New York. In it, the architect sought to dissolve the visual, real, image, and environment into a freely flowing space.

[50] While much of this permeability can be attributed to a successful management system, it was also thought out in the architectural conceptualisation. See: Coop Himmelb(l)au, 2015, House of Music II, Coop Himmelb(l)au, viewed 5 December 2015, <<http://www.coop-himmelblau.at/architecture/projects/house-of-music-ii>> The need for such permeability can be attributed to demand for the building to accommodate a number of tenants. The facility is rented out to the Aalborg Symphony Orchestra, Aalborg University, Orkester Norden, and Royal Academy of Music. The arrangement of requirements and occupation reinforces the idea of the house of music as an overarching structure that accommodates.

[51] See: Coop Himmelb(l)au, 2015, House of Music II, Coop Himmelb(l)au, viewed 5 December 2015, <<http://www.coop-himmelblau.at/architecture/projects/house-of-music-ii>>

[52] See: Coop Himmelb(l)au, 2015, House of Music II, Coop Himmelb(l)au, viewed 5 December 2015, <<http://www.coop-himmelblau.at/architecture/projects/house-of-music-ii>>

[53] See: Hensel, Michael and Menges, Achim, 'Towards an Inclusive Discourse on Heterogeneous Architectures', in *Morpho-Ecologies*, Architectural Association, London, 2007, pp.16-60.

[54] See: Hensel, Michael and Menges, Achim, 'Towards an Inclusive Discourse on Heterogeneous Architectures', in *Morpho-Ecologies*, Architectural Association, London, 2007, pp.16-60.

[55] See: Kipnis, Jeffrey. 'Exile on Ringstrasse' in 'A Question of Qualities: essays in architecture.' MIT Press, Cambridge. 2013. p.48.

[56] See: Kipnis, Jeffrey. 'Exile on Ringstrasse' in 'A Question of Qualities: essays in architecture.' MIT Press, Cambridge. 2013. p.48.

[57] See: Hensel, Michael and Menges, Achim, 'Towards an Inclusive Discourse on Heterogeneous Architectures', in *Morpho-Ecologies*, Architectural Association, London, 2007, pp.16-60.

[58] Refer: COOP HIMMELB(L)AU. Frankfurt Lyon Dalian, 2015 held at DAM Deutsches Architekturmuseum, Frankfurt/Main, Germany. They explain that "[I]n the 1960 decade, the space suit was invented. This was a sign for us that the protection function of architecture had entered obsolescence. Indeed, this suit would under the most extreme conditions suffice as a hull for humans and control their bodily functions. At the same time, movement of human beings in a space devoid of gravity was viewed as a departure from the renaissance way of seeing things, that is, the central perspective. Ever since Gothic architects invented the flying buttress, architects have dreamed to overcome gravity."

[59] See: Coop Himmelb(l)au, 2015, BMW Welt, Coop Himmelb(l)au, viewed 5 December 2015, <<http://www.coop-himmelblau.at/architecture/projects/bmw-welt/>>

[60] See: COOP HIMMELB(L)AU. Frankfurt Lyon Dalian, 2015 held at DAM Deutsches Architekturmuseum, Frankfurt/Main, Germany.

[61] See: COOP HIMMELB(L)AU. Frankfurt Lyon Dalian, 2015 held at DAM Deutsches

Architekturmuseum, Frankfurt/Main, Germany.

[62] Chapman and Ostwald described these objects as capitalist in nature that Coop Himmelb(l)au sought to undermine through violence and indeterminacy. Refer: Ostwald, Michael. J. Chapman, Michael. 'Automated architecture: Violence and nihilism as strategies of 'making' in the tactics of Coop Himmelb(l)au', *Theory, Cambridge Journals*, Vol. 10, No. 3/4, 2006. pp.241-248.

[63] Roger Caillois, in his seminal work 'Mimicry and Legendary Psychasthenia', (1977) describes a transformation that is leading architecture away from the assemblage of joints and components towards an alternative that is to understand – or redefine – the static relationship between object and environment as a dynamic interaction. This he argues, to perceive material, not as an application to predetermined geometries but as an inherent condition, a subatomic organisation of matter. See: Caillois, Roger, 'Mimicry and Legendary Psychasthenia', in *OCTOBER: The First Decade 1976-1986*, John Shepley Trans., The MIT Press, Cambridge, 1977, pp.16-32.

[64] See: COOP HIMMELB(L)AU. Frankfurt Lyon Dalian, 2015 held at DAM Deutsches Architekturmuseum, Frankfurt/Main, Germany. Other elements are brought into question including the balustrades cease to be partitioning elements but evolve from a continuation of movement into a platforms and static spaces.

[65] See: Kandeler-Fritsch, Martina. Kramer, Thomas. 'Get off of my cloud: Wolf D. Prix: Coop Himmelblau: Texts, 1968-2005', Hate Cantz, Munich, 2005. p.25.

3

Conclusion

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Where a malfunction or hitch would negatively disrupt a normalised process, it is also a potential generator for an irrational architecture. The rationalisation of a glitch, as a mechanism in the design process demonstrates innovative, potential expressions of formal logics and building physiologies. It creatively questions the preconception that a fault is a negative occurrence, and suggests it could be the generator for irrational formal exploration. The viability of this approach is significant when one considers the advancement of digital practices in contemporary society and, the reliance of software and hardware in the architectural discipline.

While this research demonstrated that glitch is not dissimilar to preceding irrational design, it distinguished itself as a contemporary variation of those associated processes. Similar indeterminate approaches have been explored from the late 19th century including the work of Dada and Surrealism through 'automatic drawing.' In architecture, Coop Himmelb(l)au developed a critical practice of 'the psychogram.' As a mechanism, glitch distinguished itself from these practices through its medium of digital technology. The exteriorisation of learnt or educated principles did not constrain the process allowing it to perform irrationally. Further research on the process of glitch, derived from the summer workshop and a post-rationalisation, demonstrated that irrationality was the outcome, and did not define the process. In fact, the process of glitch was inherently rational. Where automatic drawing and the psychogram were an irrational approach with an irrational outcome, glitch could

be perceived as a rational decision following its emergence. This technique elaboration was the generator for innovation and potential architectural expressions.

The 2015 X|A Summer Workshop, held at the Benaki Museum, Pireos, introduced the idea of glitch as an assembly logic in the expression of a formalised fault. Participating in the summer workshop was not only significant for its digitally based practices, but demonstrated an unprecedented approach that explored innovation through manipulation. The exploration of faulty mechanisms demonstrates a fundamental shift in thinking towards design by questioning the relevance of learnt or educated practices. Such an approach does not constrain the design process to the known, but allows it to develop openly. Thus, promoting individual exploration progressing through experimentation and variation.

Most significantly, the workshop demonstrated two fundamental qualities of a glitch. Firstly, it demonstrates a reorganisation of the design process from problem solving to a process that is problem finding. This idea reinforced exploration over resolution. Not only was it searching for an inherent fault within a normalised logic, but it allowed the process to operate openly. This meant there was no fixed idea of beginning or final design outcome. While there was a perceived outcome, that being an architectural project, its aesthetics and functionality were entirely uncertain.

Secondly, it highlighted that a glitch is implicit in its environment. Meaning, that it cannot be perceived in



its individuality, and only as an integrated and dynamic part of its context. A glitch for instance, is understood by its implications of a normalised system and is characterised by faulty and corrupt effects. In an architectural context this demonstrates a reorganisation of formal aesthetics and physiology. The influence of Weinstock's research introduced the idea of a dynamic environment where the criteria of one form could be the defining parameters of another. This understanding appropriately situates glitch as implicit in its environment. While the practice of the glitch in the context of the workshop was a momentary occurrence it set up dialogue between a normalised geometry and an implicated geometry that was dynamic in nature.

Utilising knowledge and perspective derived from the summer workshop allowed a critical digitally based analysis of Coop Himmelb(l)au's work. It did so across a number of recently built projects, with cross examination to earlier projects. As a result parallels could be drawn that informed the study with evidence of evolution. Of significance is the development of Coop Himmelb(l)au's manipulation of prescribed constructed elements. The presence of the double helix in both BMW Welt (2006) and UFA Cinema Centre (1998) demonstrated an evolution from an objective representation of euclidian geometry to an integrated formalism. This questioned the given principles of structure surrounding the column and associated elements. This too has the effect to question the functionality of such elements and was the beginning of a shift in the firms

approach away from a merely aesthetic approach.

However, while the architects pertain to a kind of 'open architecture' it is evident through their built work that this is not the case in the functional sense. While there is a certain refusal to a prescribed typology, the functional execution of the building remains determined. The infiltration of the public in the House of Music II, combined with a reoccurring presence of an unprescribed circulatory network, reinforces irrationality and is an attempt to dilute prescribed perceptions of space. The building remains symbolic in its approach to indeterminism and more so puts into question the idea of typology by means of irrationality, rather than denoting typology altogether. In comparison to the execution of glitch, Coop Himmelb(l)au's understanding of open form (and a more obscure sense of the type), lends itself to aesthetic representation rather than process. Glitch on the otherhand is open processes and goals constantly shifting due to exploration and intermediate findings, an idea that lends itself to process over aesthetics. In this sense the study was more so concerned with the performative rather than aesthetic function about models in architecture.

This may be one way of evaluating Coop Himmelb(l)au's work and it in no way undermines the unquestionably powerful emotive and spatial presence that they bring to a given situation.



Figure 9.1: (From the left) Nefeli, Erick, and Nicholas at the Benaki Museum, Pireos (author, 2015)

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About the author

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This report was the determination following a challenging and frustrating period of education during the completion of the Masters of Architecture Program.

“When he (Johannes Kepler) found that his long cherished beliefs did not agree with the most precise observations, he accepted the uncomfortable facts.

He preferred the hard truth to his dearest delusions”

- Carl Sagan

I am currently working in the profession and education of architecture in Newcastle, NSW. I maintain the upmost level of passion towards design, research, and construction.

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