

Surrealist Aesthetics in Sensory Actuated Spatial Systems

A theoretical evaluation on Surrealism and Living Architecture under Krauss's Surrealist Principles

Raisya Hidayat^{1,*}, Jordi Piera²

¹ University College London, United Kingdom

² University College London, United Kingdom

*Corresponding author. Email: raisya.hidayat.19@alumni.ucl.ac.uk

ABSTRACT

Continuous development in the robotic system also happens in the architecture field where the experimental of its use in designing and producing buildings becomes more and more common. The implementation of sensory actuation systems allows the building to act beyond human's knowledge by offering a feedback analysis process regarding space-body engagement as the implication of its immediate environment condition. The hybridization of physical and cognitive behaviour through robotic actuation conveys the unconventional architecture where it starts to change the way people conceive the real. The arguments appear to result from an investigation in aesthetic performance of algorithmic intelligence applications in the architectural design process. It argues that using a sensory actuation system to produce adaptable, reconfigurable, and flexible spatialities re-articulates Krauss's fundamental principles of Surrealism: *presentation over re-presentation*; *automatism*; and *conjunction of opposites* are still valid.

Surrealism has justified the idea of the unconscious other as the source of creativity detached from any rational perspective. In the 20th century, unconsciousness was understood as an authentic creative force that should be liberated to manifest ultimately. However, the recent emergence of algorithmic otherness and its application in experimental architecture has de-centred humans from most of our cultural debates. By re-interpreting Krauss's surrealist principles within the context of otherworldliness in autonomous architecture, this research concludes that the new Surrealism is no longer based on inner unconscious otherness. However, it has shifted to the outer algorithmic otherness, making all aspects of human desires and impulses obsolete.

Keywords: *Surrealism, Autonomous Architecture, Algorithmic Otherness, Aesthetic Phenomenon, Sensory Actuation Systems.*

1. INTRODUCTION

Surrealism has driven an obsession towards the total freedom of the human most hidden thought as a cultural movement that emphasizes superior qualities of unconsciousness as the purest state of expression. Jacques Lacan and Sigmund Freud are psychoanalysts who had a massive influence on surrealism manifestation. They both leveraged the revelation of the grounded feeling to reach a

free state of mind while ignoring any moral constraints and judgment. While Freud believed that a *dream* is a direct bridge between the conscious and unconscious mind, Lacan argued that the *imaginary state* is the closest link to what people experience as a disturbing reality. Besides the dispute, they both agreed that the unconscious mind should be confronted to emerge, leading to the conception of an enigmatic medium where the otherworldliness atmosphere produced from

the inner self trying to suppress the logical interference. Through all the effort to detach unconsciousness from the rational mind, André Breton devised a fundamental manifestation practice of surrealism to undermine the boundaries between dreams and reality, objectivity and subjectivity [1].

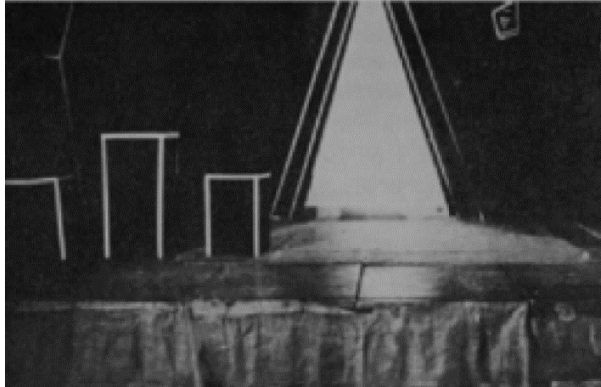


Figure 1 L'Armoire a glace un beau soir, Louis Aragon, 1923.

In the era of modern architecture, surrealism has fundamentally changed the architecture medium from beautifully crafted massive elements to a space that remains void or left incomplete of function. Louis Aragon (Figure 1) has demonstrated the human experience forced to move freely between the boundary of fact and dream as architecture. He enclosed the form of void functionality to encounter objects through direct action by avoiding any conscious perception. The space was made to fulfil particular needs and desires and build an insight declared as the one's mental state of disorientation and sense of disturbing. The enigmatic atmosphere is designed as an instrument that blurs the difference between the real and the unreal.

Later in the future, the number of technological experiments has motivated an invention way to integrate contemporary technology into designing, producing, and operating buildings. This phenomenon has even shifted further the way we conceive the real. It enforces its visual, spatial, and aesthetic rules in architecture, which bring up the conception of *transarchitecture* [2] – constructs a spatial that negotiates between human cognition and the environment through technological frameworks. On the other hand, the more autonomous technology becomes, the system would no longer prioritize human knowledge as its rationality – *postarchitecture* [2]. We put architecture in abstraction that allows it to

transmute to nature. Rather than centring the objectives around humans, the *postarchitecture* would be driven by its autonomous subjectivity.

Surrealism has shaped the most contemporary architecture in forming reality in a very anthropocentric way. The manifestation of the human unconscious mind unquestionably played a crucial role in its architecture logic. However, the advancement of computational intelligence in the last decade has threatened humans from being the epicentre of most of our cultural theories. The emancipation of algorithmic matter contribution in the creative process effaces the human monopoly to computation intelligence. The occurrence of decentralizing humanity has possibly alternated the role of humans with the algorithmic matter in orchestrating cultural change. In the case study of sensory actuated spatial systems, alignments between autonomous architecture and surrealism are investigated to understand the aesthetic evolution of unconventional output produced by inner otherness (human unconscious mind) to unconventional output produced by outer otherness (algorithmic matter) through re-interpretation of Krauss's three surrealist principles: presentation over representation, automatism, and conjunction of the opposites.

2. BACKGROUND

The use of algorithmic intelligence in the architecture field is unquestionably high. The advancement of intelligent machines and interactive technology provides collaboration between the architect and the machine that is more than mere tools. It is now leading to the state where automation starts to confiscate manpower in the industry. This condition provokes human fears of losing their identity and role, as human perception is no longer prioritized. As quoted in my other writing, Güvenç Özel has anticipated that "human intelligence would be just an actor rather than the epicentre" [2]. The computation has been considered to be on par with the craftsperson. Antoine Picon believed that "algorithmic intelligence should have its own space to be a *true partner* in the creative process instead of being a human's second hand" [3]. The emancipated algorithmic matter from human dictation reveals the ungraspable result that is become a desirable and innovative device.

Not until recently, the robotic role in architecture has been seriously considered as a transformation of the way architects process their design. The implementation of autonomous robotic control systems in experimental projects is generally approached as a positivistic mode of action based on

processes of optimisation, enhancement, maximisation, adaptation, or performance, with the aim of serving human beings. The current discovery of more radical robotic strategies with a control system that is more adaptable and continuously progressing offer aesthetic opportunities in a usual positivistic approach to architecture and artificial intelligence. Their algorithmic power not only become known as an automated system of our routine, but it also supports a revolutionary change in terms of humanity through its extensive hybridisation with an algorithmic otherness.

As the algorithmic matter is now considered a living other, we are faced with the notion of *Anthrobology* [4], which Eric Sadin describes as an “increasingly strong consolidation between living matter and digital matter”. The exploitation of robots and machines to construct human desires has come to an end. A continuous evolvement of algorithmic matter allows robotic to particularly present as an actor of its own system. The notion of de-centred humanity offers the possibility of a profound re-evaluation of an aesthetic phenomenon that has problematized the concept of otherness, which has closed to the human inner self in surrealism.

The radical transformation that happens in the design process provokes a possibility to re-evaluate new surrealism. Some experimental architectural projects such as those analysed in this paper are classified as autonomous architecture, which utilises a sensory robotic system to perform an environment-aware space - adapting, evolving, maximizing to provide the best possible solution for its immediate surroundings. Through a profound aesthetic analysis of an autonomous robotic system applied to architecture, this paper proposes the new form of Surrealism as an impact of technological interference in most cultural discussion.

3. SURREALISM IN MODERN ARCHITECTURE

Freud's assumption of reaching the unconscious mind through dreams becomes a fundamental theory in surrealism. Breton's automatism [5] is believed as the method that bypasses sense and sanity by accessing the pure state of unconsciousness, permitting to engage the real through inconspicuous signals of interest. As the surrealist seeks to free humans from their conscious perception and bring the delusional world through a generated void of ambiguities, Breton believed that spontaneity is the key to picturing the inner self without any external mediation. Therefore,

the quality of it lies on the purest reflection of the desires.

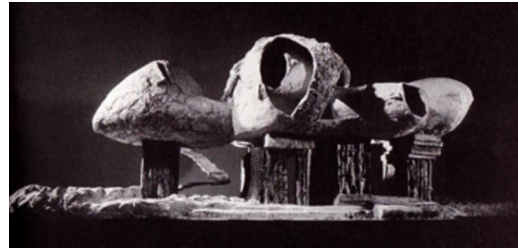


Figure 2 Endless House, Frederick Kiesler, 1960.



Figure 3 Une semaine de bonté, Max Ernst, 1934.

The visualisation of architecture medium as an enigmatic void in Endless House by Frederick Kiesler (Figure 2) is an absolute concise of ambiguity. It aims to accommodate the privacy of a residence and discharge to the outer world at once by portraying the house as a living organism through its organic shapes and elastic space. It forms an independent structure, blurring the divergence of its interior elements to determine a flexible space as an enigmatic space to be investigated through a direct interaction of the user. The stimulation that cave-like shelter produced through curving edges will open the imagination and critical energy to interpret the space functionality without interruption of early determination.

The relationship between the void lack of function, the enigmatic atmosphere produced, and the urge of direct interaction leads to a designated moment to transcribe the user's authentic, natural, honest desires. This phenomenon has been demonstrated as an aesthetic phenomenon of surrealism in modern architecture.

4. ALIGNMENT BETWEEN SURREALISM AND AUTONOMOUS ARCHITECTURE

Enhancing the liberation of the human inner unconscious mind is a fundamental practice in surrealism. Spontaneity is the key in Andre Breton's automatism [6], which is believed as a strategy to

provide a demanded direct manifestation of the unconscious without reckoning logical thoughts. The Bretonian automatic method in visual practice invented by Max Ernst's photo collage (Figure 3) has intentionally emphasized the spontaneous technique to manifest the unconscious.

The unconscious is an infinite source of imagination and inspiration, acknowledged as the most influential aspect of human beings. Gaining self-awareness and self-perception through understanding the inner unconscious drove surrealists to practice higher freedom of art. In today's architecture, integrating technology in the design process puts forward an acquiescence of algorithmic matter partnership within the fancy of a more significant novelty. The synthesis between nature and algorithmic matter blurred the boundaries between reality and virtuality.

In surrealism, the desire for automatic thought is defined as revealing the unconscious and removing any rational control or moral concern that Breton stated as the actual state of human psychics [6]. It provokes Krauss's determination in the centrality of Surrealism photography by spotting the three aesthetic principles: *presence over representation*; *notion of automatism*; and *the conjunction of opposites*.

4.1. Presentation over Representation

Breton saw the declarations of uncontaminated vision freed from any moral concern as a presentation instead of representation. As well as Krauss associated oneself with a presentation that performs better than representation - it serves the purity with less deception perceptuality than a representation [6]. The automatic technique was famously used in visual production at that time. Masson's automatic drawing (Figure 4) is one of the pieces of evidence in the use of automatism in visual production. The making was done by letting his hand immediately capture the unconscious mind without any representative symbolic practice. This type of visual production revealed the Surrealist nature of reality, and its immediate and uninterrupted process is a radical demand in surrealism.

The algorithm's evolutionary system introduced cellular automata in architecture, where a simple law can effectuate an obscure result. The creative process was performed as a direct expression of its own local rule without any predetermined function. This concept has been used in living architecture to generate design as a natural evolution of its algorithmic intelligence. Cerebral Hut (Figure 5) is a device where the same direct interpretation is demonstrated as a kinetic response of human brain impulses to produce a

spontaneous space. The negotiation between the environment and the human mind is accommodated through sensing technology in kinetic architecture.



Figure 4 Automatic Drawing, Andre Masson, 1924.



Figure 5 Cerebral Hut, Güvenç Özel, 2013

The observation of human attitudes toward the environment has been carried out in architecture because it is a priority to keep an architecture fit for human inhabitants. The atmosphere of an individual's ambiance of emotions, memories, and perception can happen as the emergence of one's feeling through its surroundings. The more architects understand the user, the more buildings can prolong their existence. A responsive architecture becomes necessary to engage a built environment with its inhabitants. A sensory-based design that observes the affection of the space towards human behaviours becomes possible to be done in real-time. The improvement of the building's function can be instantly provided along with the activities that happen within the building.

In the case of study TEMPO (Figure 6), a sensory actuation system involving robotic intelligence used to capitalize a symbiosis between humans and building as a continuous communication of behavioural sequences [7]. It produces a performative spatial by encapsulating behavioural data collected and presented as behavioural analysis upon human's physical and cognitive behaviour. The actuation system embedded within it demonstrates a presence behaviour as a spontaneous implementation of its authentic reality. The role of algorithmic intelligence

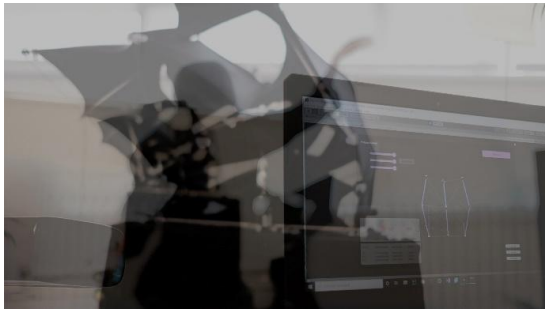


Figure 6 Sensory Actuation System, Chun-Hao Hsu, Mariem Afify, Nui Hanrui, Raisya Hidayat, RC3, 2020.

in robotic actuation logic is beyond mere tools. Tempo's actuation system reveals that behavioural data consists within its local organization and demonstrates the factual realities of its users' condition, not as a representation but as a presence of an immediate environment.

4.2. Automatism

Human rationality is what surrealist has been avoiding in their production process to access their purest state of mind. Automatism is an independent action to express the unconscious with the absence of control, judgement, or any preconceived notion of what is going to be a result. For Breton, a spontaneous formality is a fundamental aspect in the creative devices as a detachment on moral filters. The use of the camera in Surrealism visual production comes as an automatic genesis that uses a "non-living agent" [8] to produce an unmediated image.

As automation has become the pervasive means of production, design no longer becomes a human's possession, but algorithm systematic. The force of human preferences and desires in D'Arcy Thompson cartesian is contradictory with Virtually Venice (Figure 7) where the force comes solely from the analysis of its own data that autonomously navigates between its enclosed looping system.

In most robotic architecture, architects have the ability to control the robot's movement, organization and even use them for designing and programming tasks. However, robotic use flexible system can continuously evolve. The potential robotics offers in the architectural production process and its role is being explored in many ways such as large-scale robotics integrated through buildings in what Gregg Lynn called a *Giant Robot* [9]. A collaboration between robotics and architecture becomes a notion where there is no limitation on human-made algorithms. Embedding robotics with the constructing

process is being done as an attempt to free the robot from dictation and becomes autonomous, which is known as the notion of *autopoiesis* [3,10]. A free robot has been found as a better solution by advancing its intelligence learning process to reach an ungraspable result. As a data-driven organism, robotic is governed by its isolated intelligence organization that operates on its own system.

In terms of robotic advancement, the robotic behavioural system approaches this autonomous organization to achieve complex appearing behaviours as a result of observation towards behaviour transformation. Instead of being dictated on the

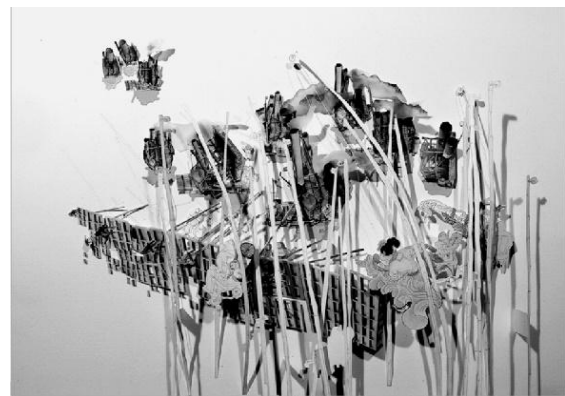


Figure 7 Virtually Venice, CJ Lim, 2004.

decision-making process, the robotic behavioural system uses its internal parameters to evaluate data using its library and proceed with an actuation sequence as a direct expression. The use of such a system in architecture is by using immediate environment behaviour as dynamic data that is analysed and presented as a performative space.

Modern architecture such as the womb structure suggested by Kiesler shows that architectural space can be infinitely translated [11] also for the case study of TEMPO (Figure 8) where technological implementation also demonstrated the endless calibration method for architectural space. Both rely on the action made towards the undetermined function of enigmatic space, and the function revealed as the reaction of direct interaction between the occupiers and the building. The approach in Solohouse (Figure 9) also consists of the ambiguity of function, and users should invent a way to inhabit the pre-determined house. Through the exploitation of local force as the primary source of performative spatial configuration without external involvement, architecture can reflect an aesthetic value that is more than just providing the needs within the physical boundaries but also reflects

a cognitive quality of the space and its environment [7].

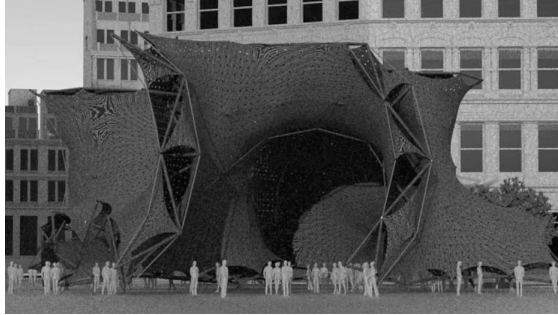


Figure 8 Architectural Speculation of Adaptive Spatial System, Chun-Hao Hsu, Mariem Afify, Nui Hanrui, Raisya Hidayat, RC3, 2020.



Figure 9 Solohouse, Lebbeus Woods, 1988-89

4.3. Intimacy and Alienation

In surrealism, something that is familiar to us can become unfamiliar, which Anthony Vidler called the term of *home and unhome* [12]. The association between a comfortable feeling with the alienation of it exemplifies the revelation of the unconscious as a buried feeling within us but extremely unrecognized.

The manifestation process in Cerebral Hut uses an algorithm to manifest the cognitive behaviour of humans without their control. The designed space becomes the output of their own possessed but unrecognized feelings, and yet is there to be translated in a different manner. The space carries Kiesler's synthetic function with the sense of autonomous space that is free of functionality and is actively observed by the inhabitant. The uncontrolled expression from observation enables users to see beyond familiar appearance where they start to feel alienated from their own perspective. Through The House II, Peter Eisenman designed a house that mimics what is absent in its surroundings as the response of feeling the

needs. The formality of walls and columns is built to perform the familiarity of a house, but it lacks typical details that produce a multivalent object where "the owner feels estranged from his own territory" [13].

The use of a sensory actuation system in the case study of Tempo, allows a responsive architecture to perform the same distancing concept. The alienation of behaviour quality of the users produced by the system through a space user enters. The system continuously analysing the behaviour through sequences where the users become *objects* (being a part of the environmental construction) while also being *subjects* (gradually interacting within the environment) [7].

5. TOWARDS A NON-ANTHROPOCENTRIC SURREALISM

Surrealism became a controversial and remarkable movement in the 20th century, bringing Lacan and Freud to fundamentally consider a liberation of unconscious other from logical perception. The fundamental ambition was to deliver the pure expression detached from rationality.

Not only is modern and contemporary architecture surrealism has shifted the way humans interact with space, but also in a post-humanism era where humans is no longer become the centre of everything. Analysing architecture development in the context of algorithmic-based architecture makes the exploitation of unconscious otherness obsolete. The surrealism that was supposed to engage unconscious human otherness is now diverted to the algorithmic otherness, which is more like an outer matter than an inner matter. However, besides the arguments of changing the direction of surrealism objectivity, Krauss's aesthetic principles are still relevant in the sensory actuation system case study.

AUTHORS' CONTRIBUTIONS

RH wrote the manuscript and conducted the research under the supervision of JP.

ACKNOWLEDGMENTS

I thank Jordi Vivaldi Piera as a supervisor of my thesis writing for his assistance on the writing process of this topic, and other tutors from RC 3 Bartlett B-PRO, Tyson Hosmer, Octavian Gheorghiu, Valentina Soana, and Panagiotis Tigas for giving me the opportunity to participate in the exploration process of TEMPO project. It is also impossible to produce this writing without the amazing collaboration with the RC 3 teammates, Chun-Hao Hsu, Mariem Afify, and Nui

Hanrui. Also, for the financial support provided by LPDP that allows me to pursue the degree. Finally, all the family and good friends who always support and encourage me in the very hard circumstances of the Covid-19 pandemic.

REFERENCES

- [1] Andre Breton. Manifestoes of Surrealism. Translated by: S.Richard, R. L. Helen. United States of America: The University of Michigan Press, 1969.
- [2] Güvenç Özel. Towards a Post-Architecture. Paper presented at: Log 36. New York: Anyone Corporation; 2016.
- [3] Antoine Picon. Free the Robots. Paper presented at: Log 36. New York: Anyone Corporation; 2016.
- [4] Eric Sadin. L'humanite Augmentee: L'administration numerique du monde. Paris: L'echappee, 2013.
- [5] Thomas Mical. Surrealism and Architecture. New York: Routledge, 2005.
- [6] Rosalind EK, Livingstone J. L'Amour Fou: Photography in the Service of Surrealist. New York: Cross River Press, 1985.
- [7] Raisya Hidayat. Rosalind Krauss's Surrealism in Sensory Actuated Spatial Systems (Unpublished master thesis). United Kingdom: University College London, 2020.
- [8] Linda MA. Photography's Automatism. Paper presented at: Cambridge Studies in Nineteenth-Century Literature and Culture. Cambridge: Cambridge University Press, 2018.
- [9] Mitsuteru Yokoyama. Giant Robots. Paper presented at: Log 36. New York: Anyone Corporation, 2016.
- [10] FJ Varela. Describing the Logic of Living. 1980.
- [11] Neil Spiller. The Surreal House. Paper presented at: Architecture and Surrealism. London: Thames and Hudson, 2016. p. 75-119.
- [12] Dickran Tashjian. Home Poor Heart: The Architecture of Cornell's Desire. In: Thomas Mical, editors. Surrealism and Architecture. New York: Routledge. 2005. p. 41.52.
- [13] Sean Keller. The logic of form: Peter Eisenman's early work. In: Automatic Architecture: Motivating Form After Modernism. United States of America: University of Chicago Press, 2018. p. 119-179.

IMAGE CREDITS

Figure 1 © Gray Read, 2005.

Figure 2 © Stephen Phillips, 2005.

Figure 3 © Tudor Evans, 2016.

Figure 4 © Lorenza Pereira, Last accessed 10 January 2020.

Figure 5 © Zoe Pilger, 2013.

Figure 6, 8 © Archive Image.

Figure 7 © thatfield, 2011.