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A Study on Design Approach of Projection between Theoretical Abstraction and Material Construction in Contemporary Architecture**

- Focused on the Works of Zaha Hadid, Bernard Tschumi, Foreign Office Architects and Diller Scofidio(+Renfro) -

현대건축의 이론적 관점과 물질적 가시화와의 관계성과 투사에 대한 연구를 통하여본 디자인의 논리와 프로세스의 경향

- 자하 하디드, 버나드 츄미, FOA, 딜러 스코피디오의 작품들을 중심으로 -

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Abstract
건축에 있어서 이론과 실제의 관계 문제는 오랫동안 건축 담론에 대한 주요 대상이 되어왔다. 이는 건축에서의 발전이 역사적으로 동시대의 사회적, 문화적, 경제적 환경의 진화와 더불어 진행되어 왔기 때문이며, 건축작업 선상에서 대두되는 이론과 실제의 관계와 맥락성이 건축의 주체성에 매우 중요한 요소로 여겨지기 때문이기도 하다. 1960년대부터 불거진 포스터모던주의의 사고적 영향은 건축분야의 의미와 가치에 있어서 학문과 실무분야에서 새롭게 재조명되기 시작하였고, 기존 건축고유의 영역을 벗어나, 역사, 이론, 비평, 기술 및 디자인 분야로 확장되어 새롭고 다양한 접근 방법과 그 방식에 대한 고민을 추구하기 시작하였다. 건축작업에 중요한 근거를 제시해주는 비평적 사고를 유지하기 위하여, 이론적인 아이디어에서 실질적인 실무로서의 투사방법, 그리고 그 사이의 절충을 지속하기 위함은 특히 현대사회에서 더욱 복합적이며 다면적인 질문이 되고 있다. 이 논문은 건축의 투사 방법에 있어서 현대 건축가들이 자신들의 이론적인 관점과 그 관점을 건축적으로 가시화 시키는 관계성을 관찰하고, 어떻게 본인만의 논리와 프로세스를 추구하고 지속하는가에 대한 점을 연구하는데에 그 목적이 있다.

Keywords
Projection, Abstraction, Consistency, Materialization, Design Process
투사, 추상, 일관성, 구체화, 디자인 프로세스

1. Introduction

The introduction of abstraction in art and architecture through the modern period has changed how we read art and everything that has been presented as an art form - from the object, the idea behind the object, and its representation of the world. Abstraction has brought about a significant shift in how we can perceive the world and make sense of its time. Abstraction has acted as a pivotal force and as a device in constructing a new reality and changing perspectives by creating broader means of aesthetic and material logic. In retrospect, conception and process of abstraction has evolved to become a growing body of knowledge and intellectual rigor for the development of various disciplines and regimes, constantly challenging the status of the conventions and thoughts of modernity.

Architecture as a discipline posits itself between art and science, by artistically aspiring to the universal means of formal aesthetics while responding to the practical situation in which it needs to function. It is a material practice dealing with specific constraints and operatives of the local context, while constructing a reality in pursuit of a universal application.[1] The calibration between universality and local context has re-

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1) Allen, S. Practice: Architecture, Technique and Representation. (Amsterdam: Overseas Publishers Association, 2000), p.xiv

sulted in architecture inhabiting both means of potential simultaneously in practice and theory. A noticeable shift in architects' efforts to create cohesion between the two fields of interest took place during the early 20th century, where modern movements and avant-garde artists flourished with a proliferation of their expression of ideology. This was followed by the postmodern movement which criticized modernism and emphasized diversity and multiplicity in understanding and expressing views of the world. This shift through historical precedents reflects that the practice of visual expression has evolved with the culture and socio-political landscape of its time. In architecture where the conception of ideas is manifested into the form of the built environment, a process of transcription between idea and material environment plays a critical role from the outset in the premise of a succinct calibration of the architect's intention. Within the transformation from drawings to buildings, the implementation of techniques and details generates a set of reading logics and promotes the potential of construction, whereas physical reality creates specific modes of perception of thoughts and ideas. Architecture thus is an exercise of abstraction in both physical reality and idea, a practice of displacement and of working on the gap between the two modes of vision. Architecture is generated by balancing the relationship between the repetition of the architect's intention and differentiation of the local condition - it is a process of projection.

This study examines contemporary architectural practices in the realms of projection - the progression of knowledge and speculation through the process of overcoming and negotiating the space suspended between the abstraction of idea and materiality. It also investigates how architects manage the distance between the two worlds in order to develop their own degrees of consistency. We could assume the projection as makings of transactions, or as a jumping shift between the two poles of the discipline that continuously provokes the interplay intriguing enough for the alternative design approach. Therefore the nature of architecture which has a tendency of reasoning techniques requires these architects to construct an argument and to maintain intact during their design process. This development of establishing legitimacy in representation techniques appears to be a decisive factor characterizing the architect's practice, especially in the light of the more globalized and interwoven complexity of contemporary culture.

The objective of this research is to analyze how the theoretical principles of architects are constituted as a source of knowledge and working process towards materiality in construction. The theme across this study is the projective relationship between an architects' theoretical exploration in ideas in their projects - whether in text, drawings or other media - and working process within the scope of material construction. Among the various processes to be discussed, this paper focuses on the workings of a representation method used as a tool of projection.

The study will comparatively examine the projects of a group of four architects whose works generated notable influence in contemporary architectural culture since 1970's: Zaha Hadid, Bernard Tschumi, Foreign Office Architects and Diller Scofidio(+Renfro). Not only they are currently very active on both theoretical and materialistic ends of architectural practice, these architects represent different generations of time and cultural landscapes of pedagogical influences. Because of the efforts and deliberate intentions to explore both spectrums of theory and practice, their projects illustrated in this study - whether experimental in paper or materialistic in real life, appears to take critical stance in developing their own position and consistency towards architecture.

For each architect two projects were selected - one that embodies a greater measure of theoretical and abstract ideas, and one that is manifested in building construction. The comparison demonstrates how the working process through methods and techniques developed the transcription of the architect's vision, and outlines the efforts made in conjuring the architect's stance towards the architectural conventions and norms as ways of maneuvering challenges and contingencies of materialization into a building.

2. ARCHITECTURAL REPRESENTATION & VISUAL PROJECTION

2.1. HISTORICAL OUTLOOK THROUGH MODERN PERIOD

Architecture has been a discipline with its own code

of languages directly capable of being applied to the realization of construction. Throughout history architects have worked with various means of representation at reduced scale of conception that describes their vision of the world yet to be built. Conventional methods of visualizing this include plans, sections, models and perspectives, most of which were limited along the spectrums of a 2-dimensional medium. Models were regarded as either the direct extrusion of 2-dimensional plans in mostly orthogonal orientation, or as the detailed description of a form already perfected as a final product.

For a long time, our vision has adapted a perspective method in representation and perception of reality. A more scientific and mathematical approach was taken to frame our vision towards objects when F. Brunelleschi explored techniques of linear perspective with vanishing points during the 15th century. Also during the time of the Renaissance, when humanistic values desired a more realistic representation of man's conception and perception of the world, architecture began to be acknowledged as a liberal art, in which architectural drawings were accepted as a way of representing ideas and visualization. Mostly in geometric composition, these drawings were conveyed as their own rationalization of logic detached from building construction.[2)]

In 1899, Francois-Auguste Choisy demonstrated axonometric drawing composition by implementing the oblique views of building plans and sections, presenting an abstract and diagrammatic view of the historic precedents. While perspective clearly defined from the beginning where the center and vanishing points of the viewer were located, there was no observer in Choisy's technique, only the object occupying space along its parallel projection.[3)] By treating all elements equally within the views, the axonometric technique emphasized objectivity by describing space with no hierarchy. While historically engineers have utilized axonometric as a rather generic tool to describe various types of 3-dimensional axial projection techniques, architects were interested in a greater range of spectrums regarding its types and variations.

The axonometric method and ideal thus appeared to be more appropriate for modern thought, where the rationale and the new objectivity for the 20th century's modern movement aspired towards a logical construct that can inhabit new ways of exploration by artists and architects. The technique and various methods of 2-d/3-d abstract composition utilizing axonometric techniques became the fundamental basis of a Bauhaus' architectural education and of De Stijl architects including Theo van Doesburg, who explored the method more aggressively in exhibitions (1923, Paris) and their designs. Among the modern artists, El Lissitzky, Russian Avant-Grade artist who exploited his design with the 'Proun' series, explored various elements such as lines, points, and surfaces embedded in two-dimensional elements into an infinite notion of space in continuum. Although heavily influenced by the 'nonobjective' artists including Kasimir Malevich and Wassily Kandinsky, Lissitzky wanted to strip away pictorial and finite (thus limited) illusion of traditional perspective practice. He was interested in the infinite space and multiplicity of views embedded in the parallel projection of the axonometric techniques. Simultaneous, reversible, and consistent, it was a device for presenting a new metaphysics of ideal geometry with universal applicability.[4)]

The brink of the postmodern movement at the end of 1950 through 1960's occurred as a radical rupture. Frederic Jameson asserts that specifically postmodern positions in architecture arrived with a critique of 'high modernism' and its formal rigidity, and a provocation on the scale of modern authoritarian urbanism that destroyed the city fabric of old neighborhood culture and diversity.[5)] While modernism evolved around

2) Perez-Gomez points out that before the Renaissance, archi-tectural drawings were found rare. He suggests the case of Gothic architecture, the most theoretical of all medieval building practices, was essentially "constructive" practice based on traditional fundamentals and rules directly applicable to the site. Starting with the Renaissance architectural ideas were regarded increasingly as geometric composition of its own logics and aesthetics. Perez-Gomez, A. & Pelletier, L. Architectural Representation and Perspective Hinge.(Cambridge: MIT Press, 1997), pp.8-9

3) Ibid., p.85

4) In illustrating the relationship between modern avant-garde artists and axonometric techniques, Allen borrows El Lissitzky's "A. and Pangeometry"(1925), (Cambridge: MIT Press, 1970), where Lissitzky described perspective with vanishing points create "limitation", the endpoint of space, thus by extending vanishing points into infinity, the notion of "irrational" space is achieved. The disappearance of fixed point in axonometric projection still maintains precision in scale, thus play new symbolic register in order to delineate the modern ideals. Allen, S. Practice: Architecture, Technique and Representation.(Amsterdam: Overseas Publishers Association, 2000), pp.18-21

rationales of thoughts, ideology and aesthetics, postmodern thoughts had origins in commodity culture, mass-media and consumerism that altered the totality of perceptions, where an integration of aesthetics and commercial value generated a culture that is represented only with surfaces and images, or spectacle.

2.2. POSTMODERN, POSTSTRUCTURAL APPROACH IN ARCHITECTURE

The postmodern thoughts were most actively brought about by linguistic discourse. Rather than focusing on the formal illusions or the style of literature, linguists examined the groundwork of structure and pattern of representation embedded in the text. Among them, the most influential approach towards contemporary architectural thought was brought about by poststructural manifestation. The poststructuralist approaches of Jacques Derrida, Jacques Lacan, Roland Barthes, Jean-Francois Lyotard and Michel Foucault focused on the world as a form of representation, meaning that it is constituted by representation rather than being reflected.[6] They questioned the status of history and the subject, both of which are constructed by society's representation, and argued that history is a form of narrative derived in its subjectivity, thus a form of fiction rather than of absolute truth.[7] In architecture, where traditional practice weighs heavily on the author's artistic 'style' or interest, the subject does not exist; rather there is a system of conventions that represents the subject.[8]

The theme across postmodern criticism was received by architecture to rethink the nature and status of the discipline, shifting its focus in association with understanding functional characteristics within the society represented, and seeking various methods of applications of poststructuralist principles. Poststructural interest in the meaning and value created by the relationships between signs and what consists of signs became the main exposition of architectural debate, challenging the institutionalized construction of space and its communicative logic. Poststructuralism positioned itself within architecture to alter perspectives and shifted towards a phenomenon of decentralization - fragmentation, multiplicity, difference and indeterminacy, all of which were never in totality, and were not definitive and universal. Accordingly, architects explored alternative methods and techniques that could transcribe the world of complexity in more expansive realms, experimenting with various combinations of products and media. Representations of mixed media and scale were deconstructed and reconstructed with new layers of imageries, such as collage, superimposition, abstraction, juxtaposition, diagrams, moving images and text, in order to encompass new spatial constructs.[9] This shift during the period towards the end of the 1960's formulated an intense culture and crossover of issues among disciplines as well as in the territories within architecture - art, art & literary criticism, philosophy, architectural theory & criticism, theatre, film, etc. Architecture was part of a greater culture in academia, which led to architects focusing on conceptual practice, termed 'paper architecture' in the 1970's.

Although these architects exercised their ideas mostly on paper due to an economic recession at the time, the emergence of paper architecture and a postmodern approach allowed tremendous growth of architectural discourse and debate, while providing an intellectual platform for architects to make a conscious effort towards an internal progression in line with the external conditions. Experience in a postmodern approach certainly becomes significant in the unfolding of development in today's architectural practice in facing a more global, mobile, and territorial society and culture.

3. PROJECTION BETWEEN THEORETICAL ABSTRACTION AND MATERIAL CONSTRUCTION IN CONTEMPORARY ARCHITECTURE

5) Jameson, F. "From Cultural Logic of Late Capitalism", Cahoone, L. (Ed.), From Modernism to Postmodernism: An Anthology. (Oxford: Blackwell, 2003), p.565

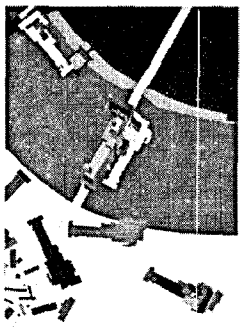
6) Nesbitt, K. Theorizing a New Agenda for Architecture.(New York: Princeton Architectural Press, 1996), p.32

7) Ibid., pp.33-34

8) Ibid., p.35

9) In introduction of the exhibit "Perfect Acts of Architecture" (MoMA, 2001), Terrence Riley asserts architectural tendency during 1970-80's in seeking the response towards the renewed value in architecture in its appearance. Experimenting with these variety of techniques thus become the new dimension of spatial and formal construct in order to contact and engage subjective narratives and interpretation with objectivity-oriented graphic means(perspective). Kipnis, J., Riley, T., & Geldin, S.(Eds.), Perfect Acts of Architecture.(New York: MoMA, 2001), p.9

3.1. THE PEAK, HONG KONG (1983) : VITRA FIRE STATION (1994), ZAHA HADID

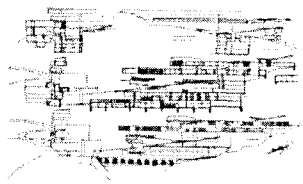


<Figure 1> Malevich's Tektonik

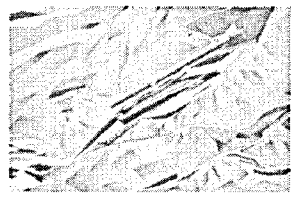
Zaha Hadid's drawings and paintings through her early days were an exploration of Suprematist abstraction techniques as a way of reconstructing and altering our vision towards architectural form and spatial arrangement. Evident from her graduating thesis project Malevich's Tektonik(1977), Hadid brought out a composition of planes used in Suprematist geometry to formulate a structure that reads both as painting and spatial construct. A structure on the bridge over the River Thames coincides with floating planes and pieces in a random layout, and creates settings for the different measures of association and play by the viewer <Figure 1>. It was asserted that all compositional elements and tensions among them generate a field of energy and spatial relationship, thus making it possible to re-imagine working with the demands of program and site - as she described "all conceivable constraints into new possibilities for space."[10] This approach behind Hadid's reinterpretation of Malevich comes from the main principle in the Suprematist technique which emphasized layers instead of objects - seeking pure spatial energy created by the voids, tensions and relationships among planes and lines rather than describing the object itself. The space thus could be re-imagined by pure materials free of any formal constraints - it creates its own dynamics that can move vertically and horizontally in simultaneity.

Hadid called this a 'Suprematist geology' which appeared again in her winning entry for the Hong Kong Peak competition(1983) in a more radical statement.[11] Instead of conceiving a building as conventional form, Hadid proposes all forms in explosion - into fragments in constitutive layers, introducing the characterization of both a vertical and horizontal impact in which the site is situated<Figure 2>. Layers in separation, each layer having its own direction and programmatic/spatial configuration, are piled up on each other as if they are in dynamic movement and shift <Figure 3>. The stratification of layers becomes cohesive with the mountain, which is also a stratification of natural layers. Built form, city and nature form a field of landscape in cinematographic sequence, of which its dynamics create a new breed of architectural construct<Figure 4>.

<Figure 2> Hong Kong Peak Blue slab



<Figure 3> Section; line drawing



<Figure 4> Overall Isometric drawing

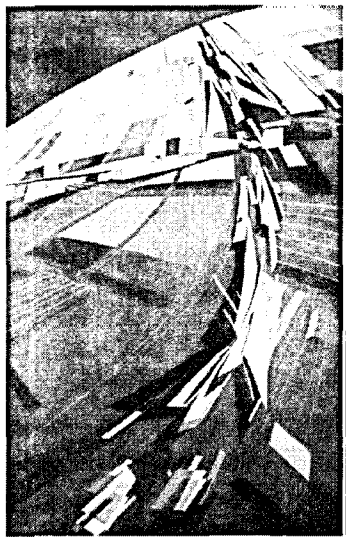
An interesting development in Hadid's drawing technique can be seen in her analytical drawings for the Vitra Fire Station(1994), where fragmentation and myriad layers of spatial narratives illustrated in the Hong Kong Peak competition gave way to some evidence of a gesture of linearity and directionality <Figure 5 & 6>. Given the fact that there had been a period of ten years between the two projects, Hadid's stance seemed to have evolved gradually from her pure ideal perception and visualization of space, to ways to work with operatives and constraints in the nature of a project.[12] While Hadid attempted to fragmentize the form and landscape for the Peak, the intention behind the Vitra Fire Station was to gather

10) Hadid, Z. & Betsky, A., Zaha Hadid-The Complete Buildings and Projects.(London: Thames and Hudson, 1998), Ibid., p.16

11) Hong Kong as a city built on mountain not only represents the spatial hierarchy but also corresponds with its social strata. As the site represents the peak, the highest point of the city and its social activities, Hadid's attempt to radically fragmentize the building form into layers gives interesting note for her interest in Russian avant-garde's notion of 'social condenser'.

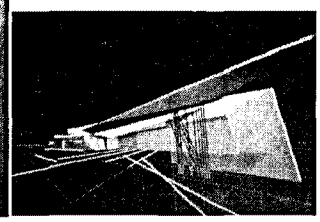
12) Lebbeus Woods makes clear distinction between Hadid's drawing practice during 1980's in particular, and her latter works. Drawing exercises in 80's for Hadid, Woods views, was a fundamental process of finding new method of projections needed for her complex ideas on architecture and forms. On the other hand, the paradox in her avant-garde-spirited visualization is that it often presents uncertainty and lacks clarity, causing her projects difficult to be realized.
http://lebbeuswoods.wordpress.com/2009/03/23/zaha-hadids-drawings-1/

and direct, whereby forms were, "frozen in motion, suspending the tension of alertness, ready to explode into action at any given moment"[13]. Considering that the building itself was only a small portion of a large factory complex site, Hadid regarded the building form as an edge of a vast landscape of a 500-meter-long extension of the site<Figure 7>.



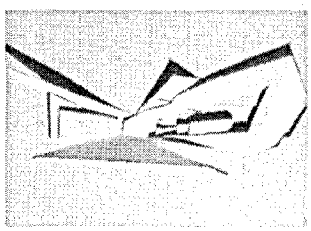
<Figure 5> Vitra Fire Station - Areal site plan

<Figure 6> Site fabric diagram

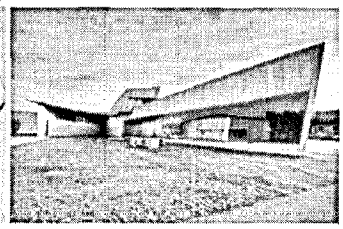


<Figure 7> Perspective diagram of Fire Station

Hence it became critical that the building on the site generate energy of flow and movement. This approach was evident through the series of her analytical works for the project - aerial site plan, relief models, and plan variations<Figure 8>. All of these drawings represent the project conceived as part of fluidity in unifying readings - continuous lines of sweeping movement, fragments of layers in consistent patterns to describe the tension and intensity of the form's extension<Figure 9>.



<Figure 8> Vitra Fire Station relief model



<Figure 9> Perspective view of Fire Station

The comparison of the two illustrates that Hadid's interpretation, although one in which architecture is seen as a formal exercise having its own codes and languages, is nevertheless part of a representation of our ideals and visualization that always demands rediscovering of our senses, just as the art always provokes us to construct different ways of seeing the reality. In doing so Hadid deploys visual manipulation and multiplicity in viewing angles to maximize the potential rising from her expression. The progress takes place as she refines the process of transcribing sensible projection into the making of a synthesis of architectural forms and landscape. Hadid's new logic of making architectural form out of this process of projecting expression became the most critical device with an effective volume to describe her architectural intellect and objectives, and certainly allowed her aesthetic logics to unfold in dealing with operatives of building construction.

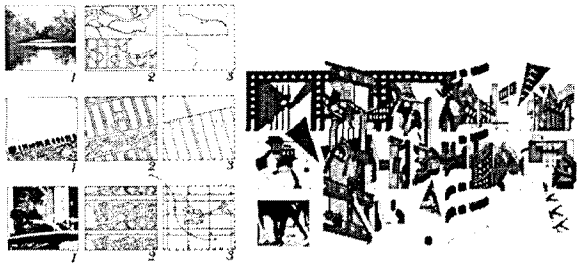
3.2. THE MANHATTAN TRANSCRIPTS (1981) : PARC DE LA VILLETTE (1988), BERNARD TSCHUMI

The theme throughout the Manhattan Transcripts is to dismantle some of the limitations of architectural representation and rework them into new readings and logics of communication, to visualize new ways of revealing events into architectural inhabitation. Tschumi explored a different reading of architecture in which space, movement and events form a set of new relations and continuity. In order to introduce this rearrangement, he adapted montage techniques and their theoretical linkage, of which Russian film-maker Sergei Eisenstein incorporated in his films. For Tschumi, cinema has been a rare form of a complete manifestation of space and time that provokes multiple readings of spatial experience that can be both physical and/or mental. Cinema has the ability to transcribe reality in its own code and languages at a variety of scales, allowing the reader to inhabit diverse spectrums of conceptual and sensible space in simultaneity, thus a creating new set of realism yet to be seen.

Tschumi implemented a framing and sequencing method borrowed from film, laying out three rows of categorical elements in time-based, storyboard sequence; photographic collage, motion diagrams, and drawings with fragments of architectural notation <Figure 10>. Employing a sequential strategy, yet in three simultaneous media, allowed the readers to ex-

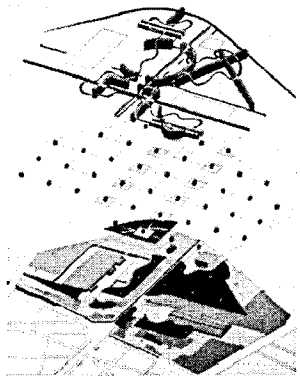
13) Hadid, Z. & Betsky, A., Zaha Hadid-The Complete Buildings and Projects.(London: Thames and Hudson, 1998), Ibid., p.64

pand their interpretations in endless multiplication - within each cut and within the intervals in between, to combine, intersect, alternate and invert, making possible for "crossprogramming", "transprogramming" and "disprogramming". It provokes a new assemblage of spatial types consisting of an unintended relationship of activities that can cultivate flexible, malleable linkages within architectural inhabitation.[14] Drawings become a vehicle to literally transgress historic presumptions of architecture and establish obscured yet real urban conditions to be materialized into architectural reality.

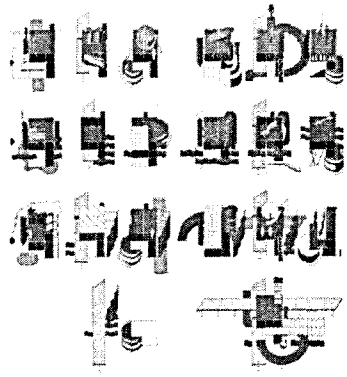


<Figure 10> The Manhattan Transcripts

In his winning entry for the Parc de La Villette Competition(1983), Tschumi continued and refined his critical stance of seeking new architectural realism conjoined with the socio-politics of the cultural climate. The exploration of sequential layering of individual event elements in the Manhattan Transcripts was revisited to establish an argument for the design of the park. Consisting of three systems of layers - points, lines and planes, the order of each system introduces architectural references of follies, paths, and sports ground, and again is altered with events, movements and space<Figure 11>. Among them, the follies, program-less 10x10x10-meter cubical structures, transform in accordance with the events and programs of the park. As a structure that is not pre-programmed, the "follies" are transformed as a cinematographic sequence - deconstructed, repeated, distorted, and interrupted according to the different occasions of activities taking place<Figure 12>. It is the moment where a strange yet urban relationship is formed between norm and deviation - what contains and what frees, and what is "in between" generates new architectural identity.[15] Rather than deploying a traditional method of composition, this project is conjured from the logic of the montage of drawings, with no specific given orders and hierarchies; a revealed construction of a new relation among the surfaces of images. It is a park that works like a city, "a complex web of events", thus redefining a new urban realism.[16]



<Figure 11> Parc de La Villette site diagram



<Figure 12> Parc de La Villette folly diagram

It is evident that Tschumi's primary interest in the Manhattan Transcripts was to re-examine the logic in producing architectural form through the logic involved in architectural representation, where the conventional discourse (reductive characteristics and redundancy of plans, sections, and elevations) used by architects exposes limitations within its form-dictated interpretations and outcomes. Similarly to the film's narrative, structure becomes absent, or reconfigured in lieu of a montage, and Tschumi strategically displaces the conception of structure for the Parc de La Villette, and superimposes other codes and constitutes of materiality to create realism that is capable of interchangeability and substitution.

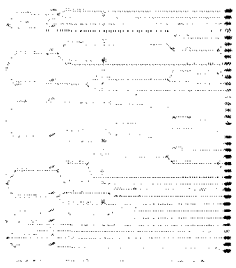
3.3. NATIONAL GLASS CENTRE (1994) : YOKOHAMA INTERNATIONAL FERRY TERMINAL (2002), FOREIGN OFFICE ARCHITECTS

14) Hays, K. Michael. Architecture Theory Since 1968. (Cambridge: MIT Press, 1998), p.216

15) Taylor, M., Refusing Architecture, Deconstruction: Critical Concepts in Literary and Cultural Studies, Vol.3, Culler, J. (Eds.). (London: Routledge, 2003), pp.427-429

16) Tschumi's position towards the project as 'urban park' suggests the equal strategic thinking involved in his description of a city, where things collide, disrupt, disfigure yet always manage to reconfigure and form relations, thus becoming the new point of reference. This new condition redefines city-event realism, and the new park for the 21st century also works as the point of reference where events and architecture generate new system for the urban park. Tschumi, B., Event-Cities.(Cambridge: MIT Press, 1994), p.13

FOA's series of unbuilt projects played an important role in developing a backbone for their architectural objectives - generating alternative forms of consistency in practice. The outcomes of each of these projects and their working processes contributed towards the accumulation and production of a group of case studies that can be placed into a large framework of classification called "Phylogenesis", a categorization of materials and traits in formal characteristics of architectural organization, which is sorted by orientation, function, and geometry etc.[17]<Figure 13>. This allowed them to internally maintain a conceptual core and to construct consistency out of its own materials used in architecture.[18]



<Figure 13> Classification system diagram

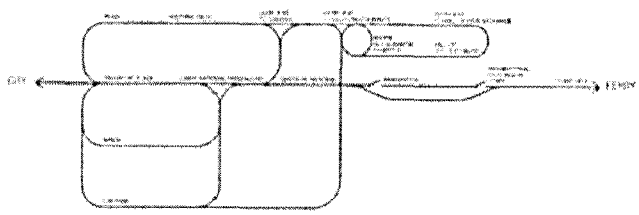
The two examples of FOA discussed in this paper have been worked consecutively. The first of the two, the competition proposal for the National Glass Centre (1994) in Sunderland, departed from a simple design strategy in which the structure can host both industrial uses and cultural activities simultaneously. The original version of the brief of the program required a factory space to be shared with a museum of glass, and it was suggested that the brief can be reiterated to have a linkage with the university facilities adjacent to the site. FOA asserted that the building's task is not about the rigid planning of functions, but is to provide a continuous surface using the level of the site which would allow a smoother transition and spatial differentiation. One critical element to implement this idea was the circulation arrangement, where the continuous, single flow of access connects the visitor's reception space, production and parking facility. This idea of a single route worked as a double-directional movement - the visitors' approach from the ground level and the workers moving from the lower level up.

FOA attempted a structural articulation to host this programmatic narrative and proposed the hybridization of ground and envelope. Since the existing surface running parallel to the site's natural slope already imposed a circulation structure, FOA provided an enclosure which is also the roof envelope, and gradually connected the structure to the ground surface. The roof had a series of undulated openings for structural articulation and daylight penetration<Figure 14 & 15>.

<Figure 14> Glass Centre - diagram sketch

<Figure 15> Glass Centre surface model

This course of development out of various types of interest suggests how FOA's classification started to evolve as a working mechanism. The implementation of structure as materials necessary to achieve a tectonic singularity between the roof and the ground already differentiated structural factors from functional factors, thus allowing them to rearrange the traits of space for consistent use. Each of these organizational elements was characterized in formal descriptions for possible use in their classification diagram. As a result, all of this investigation in their former projects could be documented and specified as a way of making a conscious effort of refinement through their future projects.



<Figure 16> No Return Diagram

Evidently, the experience and lessons from the Glass Centre were repeated yet pushed further in the Yokohama Terminal, in which they develop a structural and spatial organization where circulation, ground, and the envelope form a complete singularity. Acknowledging that the circulation path is already set in bifurcation, FOA developed a continuous circulation system with branched out looping sequences - so called "the no-return diagram"[19]<Figure 16>. This

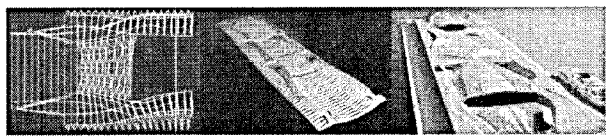
17) Cache, B., De Landa, M., Kwinter, S. et.al. Phylogenesis: FOA's Ark/Foreign Office Architects, ed. Kubo, M. & Ferre, A. with FOA.(Barcelona: Actar, 2003), pp.6-7

18) Ibid., p.8

19) Ferre, A., Sakamoto, T., Kubo, M., Moussavi, F. & Zaera-Polo, A. (Eds.). The Yokohama Project: Foreign Office Architects. (Barcelona: Actar, 2002)

looping circulation strategy challenged the nature of the program and the site for two reasons. First, the terminal is used as transportation use, where the start and the end, or the input-output relationship has been typically regarded as clear and fixed in its direction and orientation. Second, since the site is located at a pier, and is a long rectilinear form, it already created a sense of strong orientation and movement. FOA took an approach whereby the building should stay low and flat, avoiding a building-like presence and maintaining the feeling of the ground experience of wandering the pier.

This intention brought back the problem of working with ground and envelope. FOA developed a structural system made of folded surface. In order for the surface to achieve sufficient strength and depth, a system of multiple layers of corrugated steel plates with different degrees of undulations was used in continuation, which also allowed greater control in generating a fluid transition between the roof, the building floors and the ground<Figure 17>.



<Figure 17> Early studies of the fold grid Ferry Terminal

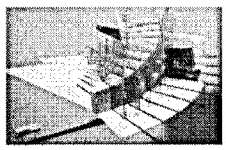
<Figure 18> Aerial view Ferry Terminal

The integration of a surface-folding strategy with circulation loops generated several characteristics of spatial differentiation. No vertical stairs were needed as the levels changed in fluid continuity. The transition between inside and outside spaces and zones of different programs also created a continuous sequence, merely determined by the glass doors where needed. The result was a new artificial topography in cohesion with circulation, structure, and building envelope, allowing urban mediation between the flow of public space in the city and the passenger terminal flow <Figure 18>.

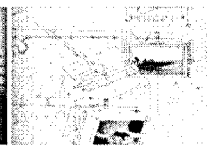
FOA's objectives of approach and their working method for the Yokohama Terminal unfolds along two sides of operatives - first, the refinement of organizational elements they had previously explored in the National Glass Centre, and second, reworking of specific factors and manipulating the forms upon variability and specification of local conditions. The strategic outset demonstrated in this comparison clarifies their interest in the techniques and process of architecture in generating material assemblage, but also suggests an equal degree of importance in an alternative culture of practice - an emphasis of external conditions imposed upon a fast-paced, varied state of the geo-political nature of the project. FOA's working method of classification is a conscious effort in keeping the balance between the two levels of consistency, and is also a tool to keep in check the progression of their architectural logic.

3.4. SLOW HOUSE (1991) : BLUR BUILDING (2002), DILLER SCOFIDIO (+RENFRO)

The interest of Diller Scofidio(currently practicing as Diller Scofidio + Renfro) lies within the process of appropriation of architecture, which is allocated "in" and "out" of focus in a broader network of social, economical, and political imperatives that determines our everyday routine. This position, they argue, questions the position and role of architectural practice in convention.[20] Since Diller Scofidio established their practice in 1979, the tools for their earlier questioning of architecture ranged mostly around non-architectural conventions - installation, media, performance and theater. Although there were buildings and urban interventions, these were regarded with the same explorative techniques as a non-architectural medium.



<Figure 19> Slow House wood block model with x rays



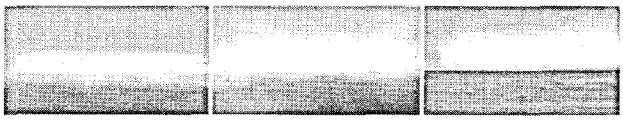
<Figure 20> Operable electronic view diagram

<Figure 21> the composite view of the horizon model

Slow House was one of their earlier attempts in transferring non-architectural knowledge into an architectural commission. A vacation retreat located on a waterfront, whereby the client's wish was for a 'house

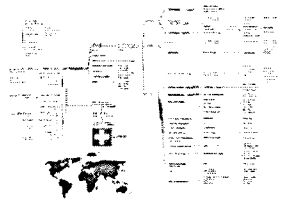
20) Sanford Kwinter points out the significance in this approach. With the logic of inhabitation explicitly eschewed by architectural practice for a long time, Diller Scofidio's transformation process of researches into architectural input provides more sophisticated understanding of how design determines who and what we are. Kwinter, S. Far from Equilibrium: Essays on Technology and Design Culture.(New York: Actar, 2008), p.18

with a view', the spatial structuring for Slow House was configured in its entirety as a view<Figure 19>. Ways of gazing and watching were bent, tweaked, and transformed by visual surveillance technology that records, plays back, and plays in real-time. For Diller Scofidio, the most interesting part of the house was the 'picture window', which is always regarded as an extra value featured in real estate advertisements. This interest led to the exploitation of windows in homes as mediating hardware framing the outside landscape from inside. The house features a video camera installed outside that can be watched in the living room and that projects the image of the same view that one can see through the picture window, resulting in doubling the view to the outside world[21] <Figure 20 & 21>. The window revealing a view from within and the monitor revealing the view outside are superimposed by altered intentions of the vision and surveillance, stripping away the necessity of the value for the hardware, but only in terms of its effect.[22] The strategy becomes a medium for exploring the themes of inhabitation and vision, tweaked by the new media technologies.

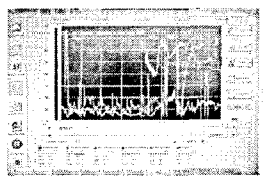


<Figure 22> Images based on various atmospheric conditions for Blur

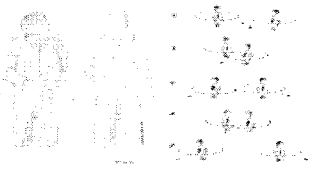
Diller Scofidio developed and incorporated this lesson a step further in the design of Blur Building <2002, Figure 22>. A pavilion designed for the 2002 Expo, Blur Building once again depicts Diller Scofidio's interest and years of research in blurring and altering the user and space - architecture transformed to take a constitutive role in introducing new expanded sensibility of our desires in space and time <Figure 23>. As much as it is a building, it is also an installation - a piece of artwork, as it is a performance in statement.[23] Hybridization of these characteristics invited a new degree of interaction by the visitor and the space where it hosts, and thus the building situates not as a static built form, but as a desiring device of architectural scale and outlook. The building is literally a device that controls its body in response to the environment - the system of 31,000 misting nozzles which use the water drawn from the lake beneath it balanced and monitored constantly by the natural conditions of the site in order to maintain the artificial cloud mass enveloping the building<Figure 24 & 25>. A lack of visual and spatial reference and direction caused by the fog leave the visitors disoriented and force them to alter their ways of maneuvering, and to coordinate a new measure of feedback in conception - new social acts and culture in suspension of an architectural caliber, a subversion of architectural convention and its meaning.



<Figure 23> Expanded disciplinary organization diagram for Blur



<Figure 24> Screen still, nozzle control system interface



<Figure 25> Braincoat media component

One distinction that sets Diller Scofidio apart from other groups of 'paper' architects is their exploitation of media and technology. Within the process of proposing a final form, they incorporated measures of new technology to exploit "other" qualities that can be implemented to reconstitute and confront architecture. A position whereby the technical realm represents the realm of social and political desire of its time became the departure of Diller Scofidio's original ideas through products of digital culture - performances, installations, videos and text.[24] With a suggestion that architecture, as convention, is only part of the much greater desire

21) Their use of media can be regarded as an effort to blur the boundaries existing between real and virtual space. By introducing the realm of cyberspace, one can inhabit new strange condition that causes the two to interweave in a new realm. In order to achieve this, they revisit the notion of meaning, perception, reality, form, and association with movement, trying to make different realities visible. Incerti, G., Ricchi, D. & Simpson, D. Diller + Scofidio(+Renfro): The Ciliary Function: Works and Projects 1979-2007(Milan: Skira, 2007), p.33

22) Lubow, A., Architects, in Theory, New York Times Magazine. Feb 16, 2003, pp.36-41

23) Incerti, G., Ricchi, D. & Simpson, D. Diller + Scofidio (+Renfro): The Ciliary Function: Works and Projects 1979-2007,(Milan: Skira, 2007), p.39

24) Kwinter, S. Far from Equilibrium: Essays on Technology and Design Culture.(New York: Actar, 2008), p.18

of routines to inhabit the world, their approach is based on the notion that the role of our eyes and sensory experiences determines where we position ourselves, thus creating a sense of space.[25] Thus when it comes to architecture, rarely a mode of representation or formal apparatus is carried into making an architectural object. Instead, they project aspects of perception and desire into the object - a new level of attributing in which the concept of the program is the determining factor in the living environment.

4. CONCLUSION

The projects discussed in this paper represent some of the most important works in the contemporary architectural discipline. Comparisons of two projects for each architect demonstrates that the process of projection between the theoretical idea and material practice involves various registries of representation for their pursuit of interest and architectural conviction - text, drawings, models, and built space. The projection plays the role of an important think-tank for developing their own means of communicating logics and provides critical platforms for which these architects sustain their individuality facing the complex operatives of contemporary practice. Some of the characteristics and overlapping tendencies of these processes can be summarized as follows:

First, the projection tends to depart from, and keep in consistency with, dissolving the distinctions constructed from traditional convention embedded within the architectural discipline. Architects utilized various methods of representation to put into question matters taken for granted, often evoking techniques of diagrams and manipulation of formal preconception. For instance, the displacement of the visual horizon in Hadid's representation method served to impose viewing experience with a new recognition of space. Manipulating conventional perspective and axonometric techniques, exaggeration of formal scale and flows, and breaking up the rigid object and rearranging fragments allow the reader to alter their viewings towards reconstructing their spatial experience. Tschumi de-codified traditional languages within compositional architectural sequence and expanded into a cinematic montage where superimposition of unrelated spaces and events form new architectural types and urban conditions.

Second, the projection involves the use of 'other' materials and scale to reveal and reconfigure the subject-object, or program-building relationship. Deployed as transposing device, the adaptation of other media introduces an altered logic, and blurs the boundaries of the subject-object relationship embedded within architecture. These architects do not stay within the realm of architectural scale and scope, but they borrow and interject surface effects and methodology exercised by other media. Diller Scofidio's use of alteration of vision and surveillance was borrowed from media technology and artistic abstraction in order to generate positions in which the relationship between the built space and social norms and desire can be varied within a greater spectrum of spatial territory in order to understand the linkages between architecture and social, cultural and technological inhabitations of our time. Blur Building not only plays the traditional role of building as container, it is also a desiring device that tricks, performs and behaves. It creates an effect that triggers a visitor's self-perception. Tschumi borrows cinema, specifically montage in lieu of composition, and illustrates the non-programmed follies of La Villette as focal points, but also breaking points, transaction points, and thus places of dissociation. They remain free of the rigid definition of object and conjoin, and they confront and interrupt the territories of the subject.

Third, the projection works to seek altered mechanism towards values and operatives in contemporary architectural practice. FOA's classification method was regarded as alternative logic and as techniques of generating architectural formalism. It is a thematic yet technical reformulation of existing materials and local constraints in producing new breeds of spatial organization that is more scientific than cultural or artistic. In the Yokohama Terminal they developed the repetition of logic they had previously found in the National Glass Centre, yet this was differentiated within the potential of the local specific scenario of Yokohama - the site, function and cultural inheritance within the system of public space. For Diller Scofidio, years of research and contributions in electronic art, media,

25) Ibid.

performance, and installation became the learning tool to reflect their architectural practice in a broader landscape of social, cultural, and political values. Not only the mechanism of building construction is their interest in pursuit, but the logic they found in extra-disciplinary practices play critical role for them to incorporate alternative effects and defamiliarizing perceptions into the structuring of a building. All of the architects discussed above seem to convey their practices of attitudes in which the two worlds of architectural discipline - theoretical abstraction and material construction - neither match in perfection nor are they perceived in total separation. What groups them together is that they engage in the mode of practice with both theoretical and material caliber, and continue to accept the open-ended inquiries surfacing out of the projection between the theoretical outposts of their ideas and material implications of physical reality. Cultivating both means of dichotomy becomes the critical determinant in developing and sustaining the identity in contemporary architectural practice.

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