



## AN OVERVIEW ON ASTANA NATIONAL LIBRARY THROUGH GILLES DELEUZE'S PHILOSOPHICAL CONCEPTS

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### Abstract

Today, the architectural paradigm faces a different theoretical and practical mind shift with the emergence of digital design tools. Besides these changes, changing rational systems; art, social situations and philosophy are also influential in changing the architectural paradigm, and it would be possible to say that these are the parameters have influenced architecture since the beginning of architectural history. Philosophical movements have always influenced the productive minds of the period they belong to. The effects of this situation on architecture can be observed inevitably in the 19th and 20th centuries. From this context, this paper has discussed the “effects of philosophy” and “changing digital design technologies” on architectural theory and practice through Gilles Deleuze’s philosophical corpus. Among the many philosophers and philosophical movements that influenced the history of architecture, the main reason for selecting Deleuze is that his philosophical concepts can provide more interactive and up-to-date responses to the emerging technological productions of today. Based on this discussion, “How can Deleuze's concepts affect a design process?” and “What are the potentials of the Deleuze’s concepts in design process?”. The research was conducted through these two main questions. After theoretical discussion and analysis on the case study of the BIG Architects’ Astana National Library, results have shown that Deleuzian influence on design process has potentials and positive impact throughout the conception to production.

## 1. INTRODUCTION

Those who deal with design practices know that the way to a final product is a multi-layered process. The design process in this layered state is a multidimensional, forward and backward moving and interdisciplinary practice. These interdisciplinary situations include technology, philosophy, art, engineering, sociology, psychology, etc. Among the design practices, in architecture, it can be claimed that this spiral of multidisciplinary relations becomes more complex. Artistic and aesthetic concerns create the personal and creative substance of the concept processes. In this process, arts, philosophy and social sciences nourish and mature the creative essence. On the other hand, if concrete architectural production is on the table, engineering sciences should be included in the process. However, the evolving digital design tools that have reinvented the known architectural and engineering paradigms over the last two decades have provided an opportunity for simultaneous intervention from design to production. While this provides the control of more parameters from design to production, it also transforms the whole design and manufacturing process into a design object.

Although the situation may seem like a static technique-theory relationship at this point, architecture has become a field of thought production with the discourses and theories that have emerged since the early 1900s. Producing discourses in an architectural environment not only brought the production tectonics of a period to a very different point with postmodernism, but the produced situations completely changed the traditional architectural tectonics by creating their own realities. With postmodernism, discourses sometimes even get ahead of the architectural productions. Before these changing production techniques and discourses, an unconstructed architectural product could not be considered as production of

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architecture, but throughout this period, many architectural products that remained on paper, models, lines are seen as important works in today's architectural history books. Collaborations of architect-artist, architect-philosopher and architect-sociologist have become more visible such as Eisenman and Derrida, Kapoor and Isozaki, Gadamer and Herzog de Meuron etc.

Questioning the relationship between philosophy and architecture in such an environment constitutes the main framework of this article. Among philosophers, Gilles Deleuze's philosophy (and sometimes his long-term partner, Felix Guattari) is a great resource for understanding architectural practices today. In fact, Deleuzian concepts influenced theory of digital design in early 1990s. The main question is "Can Deleuze's philosophy in the multi-layered and complex world of the 21st century be a guide for understanding and recreating architectural creation processes (concept, form, circulation, tectonics)?"

Throughout this question research have been done through primary and secondary resources about Deleuze. By analyzing secondary resources that scanned were wide range of disciplines as sociology, arts, psychology, sciences, humanities, cinema and design. The aim was to observe the influence of Deleuze, not only to architecture, also science, research methodologies, humanities etc. Also 21st century's architecture cannot be thought without digital design technologies in which the other branch of the research was computational design and fabrication technologies of digital age which was influenced by Deleuzian concepts such as folding, parametricism, topological design, bio inspired designs and more... The end of the 20th and beginning of the 21st century's designers has a chance to experiment with digital design and fabrication tools and still the field is immensely evolving.

From all of the contemporary architects of 21th century, BIG Architects has chosen to study on this paper. BIG has a portfolio that has traces of Deleuzian influences of digital design and with of all these collected data and investigation, a case study of Astana National Library project had been analyzed from conception phase to fabrication process through Deleuzian concepts. As a method to analyze the case study, key concepts have been selected as virtuality, folds, multiplicities and rhizomes of Deleuze and parametricism, performance-based design, non-standard design principles of digital design theories.

## **2. PHILOSOPHY AND ARCHITECTURE: A DELEUZIAN PERSPECTIVE**

This part of the paper discusses the relationship between philosophy and architecture by focusing on discourses by Deleuze. Firstly, an introduction of the general influence of Deleuze's philosophical concepts on design disciplines; then the effects and the potentials of Deleuze's virtual, multiplicities, rhizome and fold concepts on design processes will be discussed under four chapters.

The discipline of architecture feeds from many different fields and its boundaries are not clear as other fields. Because of this situation, architecture is an interdisciplinary practice. Some designers like engineering, mathematics, statistics, etc. While some designers can feed from more technical situations, literature, art, philosophy, metaphysics, etc. It can be fed by situations such as. This paper is focusing on the intersection of philosophy and architecture as a mutual relationship that feeds each other. There are some architect-philosopher collaborations that demonstrated the potentials of this kind of relationship. Eisenman and Derrida's collaboration is the one of the most famous relationship that conduced to develop both theoretical and practical outcomes such as Park de la Villette (Fig. 2.1.). And Greg Lynn's interpretation of Deleuze's fold is the one of the most important theoretical principles of digital design theories. Also, Eisenman's folding interpretation and further architectural works throughout folding concept has created the one of the many architecture styles of digital age.



a



b

Figure 2.1. Park de la Villette's drawing (a) and model (b) [1]

Looking through the general perception, it is a common interdisciplinary illusion that philosophy and theory are not capable to respond to practical situations. But theory and philosophy are, for Deleuze, not a state of contemplation but a mode of development. One of the great strengths of Deleuze is his connection of the development of theory to the occasion of events instead of to the subconscious's antagonization. [2]

Gilles Deleuze is a French philosopher who collaborated with some other thinkers. But his the most influential and productive collaboration of his is the one with Felix Guattari. Felix Guattari is French psychoanalyst on the field who is also a politic activist. [3] The diffusion of Deleuze's and Guattari's philosophy in design experience and logical thinking in architecture since the 1980's has been rapid and multi-faceted. The form and evaluation of the variations among seamless and layered space, the omnipresent formal translations of the folding system, the occupations of concepts such as immanence and virtuality in digital architecture, the use of Deleuze's conceptual frameworks has influenced more than a century of architectural thought and is manifest in the design of a global range of contemporary built environments. Deleuzian theory also proposes important strategies to critical environmental, political, and social issues that architecture should strive to struggle with and contribute significantly to the interaction between aesthetics and ethics. [4] In this paper some of the important concepts of Deleuze to understand in a section of architecture and design disciplines has been selected as Virtual, Multiplicity, Rhizome, The Fold. The following chapters describes these concepts in detail and constitutes a framework to analyze the case study

## 2.1. Virtual

It is possible to start with the concept of "virtual" to see the relationship between Deleuzian philosophy and architecture. What is virtual? In the digital age; when experiences are digitally mediated, enhanced or even replaced, 'Multiple realities [are] brought into being'. This alters our perceptions of spatio, location, distance, and interaction and therefore enables for ambiguous spatial methodologies, among independence and constant superintendence. [5] General perception of the virtual through this digital age is concept of cyberspace. This is a concept of digitally mediated alternative space, which it can be experienced by various devices. But the notion of virtuality should not be restricted by these boundaries, an alternate concept of virtuality in architecture that is not based on the notion of virtual reality as a simulacrum of reality (or the representation of architectural physicality) is important to express. [6] Deleuze's theory of virtual can lead this process of distinction through this more comprehensive sense of virtuality notion. Instead of considering the virtual as contrasted to the real, one may find the virtual as an opportunity or a power. The virtual is the potential of performing creatively but unformally, without physicality. [6] The virtual is the sphere of the potential, where there is no idea of what potential outcomes, so if anything appears, it comes to existence free of the guidance or forming of those possibilities. [7]

## 2.2. Multiplicity

In order to understand the virtual concept and to evaluate and extend it in the context of architecture, the Deleuze's concept of multiplicity needs to be dissolved. The first discussion of the multiplicities in

Deleuze's philosophy can be seen in his book *Bergsonism* (1988). Deleuze underlines that there are two kinds of multiplicities in Bergsonism: extensive numerical multiplicities and continuous intensive multiplicities [8]. Notions of extensive and intensive are taken from thermodynamics where they are interpreted not as a divergence between virtualities also between magnitudes or quantities while extensive multiplicities (size, volume, length) are additive and intensive multiplicities are not. Producing and thinking through multiplicity has some important aspects. The term was first emerged for reinventing the way of discussions and posing of the spatial problems. [9]

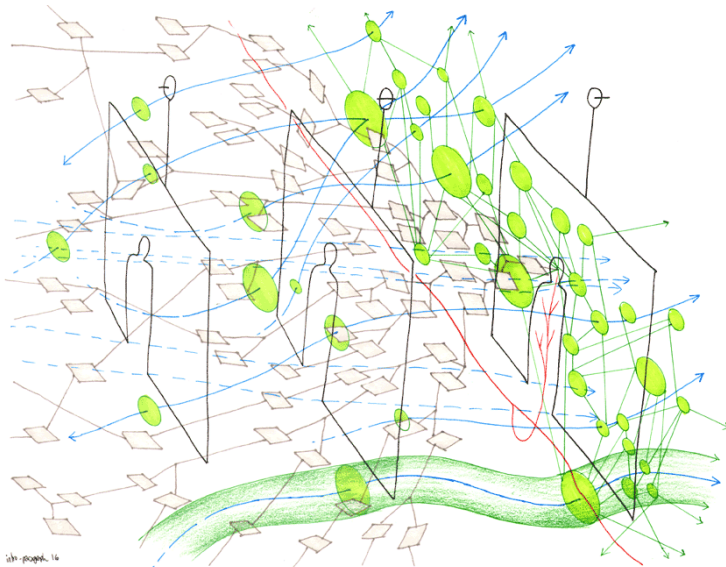


Figure 2.2. Metaphor of a multiplicity [10]

In the Deleuzian theory, the term was developed precisely in attempt to dodge the conceptual conflict between the multiple and the one, to avoid the dialectical, to achieve in procreating the multiple in a pure state, to cease to visualize it as a numerical fragment of the misplaced unity or totality, or as an organic part of the unity or totality yet to emerge, but rather to differentiate between different varieties of multiplicity. [11] The internal relations of multi-layered situations and even the horizontal and vertical relations between the layers they establish with the exterior (and interior), these relationships that are somewhat chaotic are tried to be understood through multiplicities.

Multiplicities or manifolds could be used to investigate the physical framework if every one of its dimensions is model parameters from one of the 'grades of autonomy' (or its relevant ways of altering) of the structure itself. After all, the multiplicity or manifold becomes the space through all potential states that a particular scheme would possess. This space of possible conditions is considered 'state space' or 'phase space'. [9] Throughout all situations, the multiplicity is inherently defined, without outer allusion or alternative to uniform space where it could be immersed. Spatial-temporal interactions undeniably preserve multiplicity, but sacrifice interiority; principles of perception sustain interiority, but end up losing multiplicity. [12] Multiplicity can be a major guidance through architectural conception and production processes but today the notion vastly discussing through parametric design process. Parametric design is an approach to the digital design which allows designers to adjust the correlation among various parameters of the design model which has given opportunity of interacting to update or to re-generate a design model by changing and modifying parameters by creating algorithms on specific computational programs. [13] Parametrics has describing a range of potentialities, replacing in the design process steady with varying, singularity with multiplicity.

### 2.3. Rhizome

The multiplicity-based concepts don't need to be structured as layers adding on a vertical dimension, it can form by subtracting unique from the multiplicity can be account for. [11] A Rhizome is a kind of

multiplicity. It is a concept by Deleuze and Guattari (1987) which is the contrasting notion of tree like hierarchical metaphors. The tree has specific roots which are rooted in the land at a particular location and which lead to twigs in a particular way. Therefore, here is a system of production: first the roots, the stems, then the other radicles. There, and not elsewhere, the roots are buried. The twigs are attached to the body, the fronds to the twigs. [14] The root-tree's metaphysical truth is binary logic. That is to think whether this way of thinking has never found a common ground for multiplicity: in terms of attain at the two related a conceptual method, a straightforward key unity could be expected. [11] Deleuze and Guattari uses rhizome concept to describe the connections between the most different and the most alike of objects, state and motions, space and human, etc. [15]

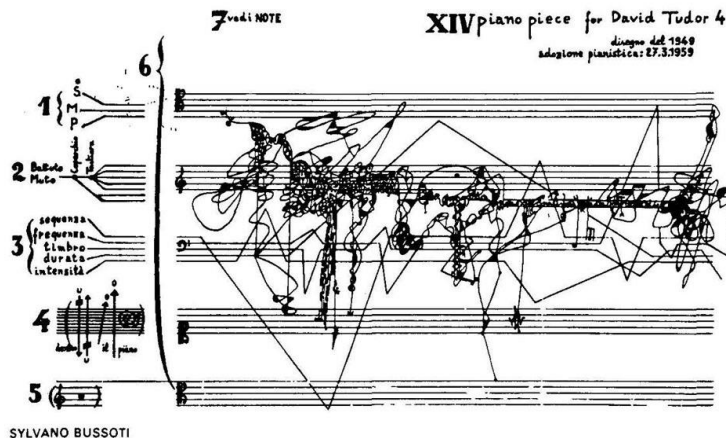


Figure 2.3. An illustration about rhizomatic relationships [11]

The multiple state of being is an intersection of various-dimensional patterns of stratum or vastness of unity which has unique essence of matter. It is also a machine that links to other nexus of matters and reinvents new state of stratified magnitudes. In which architectural conception and production processes can take advantages from the tectonics of rhizome and multiplicity.

## 2.4. The Fold

As can be understood from the network of concepts and relations mentioned above, Deleuze has not made a clear explanation or determination on architecture and space. However, the situations, relationships and concepts that he proposed form an organic connection with the space and production chains. If this ambiguous relationship and concepts are seen as a catalyst that will push an architect to establish rhizomatic relations, to design multiplicities and relations, the real effect of Deleuze's philosophy on architecture will be emerged in design practices. However, there is one conception that created by Deleuze, the fold, is vastly adopted by theory of digitalization and architects. Fold is interpreted through designers and academicians, also it is one of the fundamental concepts of digital design theories since the beginning of the 1990's. In Deleuze's book *The Fold: Leibniz and the Baroque* (1992), the first paragraph starts with explaining and finding traces of the fold notion in Baroque. Baroque mind, Deleuze says, generates never-ending folds. It doesn't make up things: all manner of folds arises and gather from the various time periods and geographies. However, the Baroque characteristic is whirling the shapes, driving them towards eternal circle of spatiality, sequentially folding over and over. Folding of the Baroque unravels into endlessness constantly. The baroque moves through two infinities as if endlessness consists of two phases and two floors, it separates the folds in two ways: the folds of matter and the folds in the soul. Multiplicity is not something that has many stratas, it is also something that folds in many directions and intersections.[16]



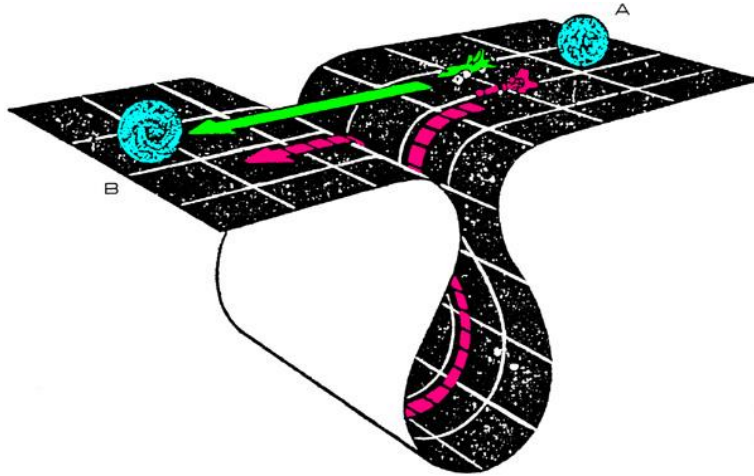


Figure 2.4. Folding on the space and time. [17]

While there is a result of this folding situations, time also folds and creates new dimensions, new saprio through folding over and over. (Fig 2.4.) According to Badiou (2000), "the new is a fold of the past" in Deleuze's work. Folding of the surfaces to create inherent spaces, that offers a subjective state. Thought and life emerge from outerness; instead of emerging from inwardness, these affects subjects. Badiou classifies the fold through retention, such that "everything new is an enfolded selection of the past". [18] The early adaptation of folding in architecture was a profile of Architectural Design in 1993 by Greg Lynn's article which was discussing deconstructivism and its mostly orthogonal embodiment of architecture at the beginning of the 1990's. This new discourse means for achitecture as a new opportunities through fluidity of interconnections which was expressed as "folding", a design approach that breaks away from the Euclidean geometry of discrete volumes embodied in Cartesian space, and as its ultimate expression utilizes topological form conception and the "rubber-sheet" geometry of consistent curves and surfaces. Folding is one of the many terms and concepts, such as affiliation, smooth and striated space, pliancy, and multiplicity, appropriated from Deleuze's work *The Fold*. The effect of folding is a new distinctive architecture of formlessness that questions existing notions of built space, its aesthetics, and utility. [19]

Where Deleuze and Guattari call the plane of organization; which is a sphere where the multiplicity of all forms, subjects, organs and functions collide, the conceptual production gains a lot of dynamics by establishing and producing new relationships. [20] For Deleuze, throughout the field of problems, maybe even issues that seem to have no answers-the problem of architecture remains inescapably bound up with the notion of space, its possession and physical regeneration. In Deleuze's philosophy, production and creating new connections are important part of the process and his philosophy is a state of constantly production of concepts. It is the development, manufacturing or discovery of something that has not been already conceptualized. Concepts are never rigid or singular for Deleuze, but they are always composite, the existence of the concept is a multiplicity which produces a potency and it interconnects with other concepts, movements and operations. Concept as a multiplicity is relations of elements, which intersects with other concept's edges (which is a non-uniform edge) and create something different, something heterogenous and flawed. Deleuze is interested in the conception of space, which is, on the one hand, above the level of limitation or methodology of the science field, for which mathematization of outcomes is of critical importance; and, on the other hand, under the sense of freedom of the art and design, some kind of experience developed by technicity, through the exploration of techniques of ordering and constructing, which do not promise their outcomes but do not guarantee their results, yet still, it creates compelling impacts and sociocultural transitions. [2] In order to understand the relationship between Deleuze and digital design, new age's design tectonics and principles will be discussed on the next chapter.

### 3. NEW TECHNOLOGIES AND DESIGN PRACTICES

T As moving towards the middle of the 21st century, humanity is surrounded by a new objectscape where our spatial perception has undergone great changes. Smart objects, digital design and production

techniques, digital environments and social and technical developments brought by these environments; such as augmented reality, virtual reality etc. developments affect our thinking structure and reactions to situations as humanity. [21] Throughout history, technology and humanity have established a feedback loop: developments in technology have influenced the pace of the alterations in architecture, arts, design and sciences; these civilizing developments have led, in turn, to new technological discoveries. [22] Within the last thirty years, architectural paradigm has changed by evolution of the digital design tools and its integration to architectural processes. This new digital tectonics of architecture have made a cultural shift of design practices, this means for a discipline like architecture which has a system of a knowledge through the beginning of history, multi-layered discipline intersected within many fields such as arts, design technology and engineering, and the approach of design thinking and tectonics are shifting. [23] The mentality of digital design environments in architecture has reconstructed the way of the design process of architects, the way that the builders to construct and the way that the industry to transform and adjust. [24] The computational tools in architecture has begun to stimulate a new set of approaches that can be identified as materialization of architecture. That term has added the material content as one of the main inputs of design elements through the process. Throughout with the re-embracing of architecture to its foundations of the design process, the development of digital fabrication techniques has created new aspects of form, design procedures and substance that can be considered as a digital architecture. [23] In theoretical way, digital design tools have re-invented many sub-categories such as non-standard, topological, non-euclidean geometric space, kinetic and dynamic systems, folding approaches, performative, parametrics, robotics and genetic algorithms. Virtuality based designing process as new tectonics of the architecture is a holistic procedure which is dynamic, open-ended and has given a chance to interact with the parameters through whole process. [19] These technological developments and paradigmatic changes have changed not only the architectural environment but also our perception of the city, our daily practices and many other things.

### **3.1. Non-Standard Architecture**

Today, in digital design practices, non-standard is representative of current architectural developments that make extensive use of recent digital architecture technology, and its conceptual database is distinguished by multifaceted complex structures that imply a rebirth of the organic paradigm. [25] Early modernist and non-standard examples of amorph lineage display a fascinating systematic remembrance that, although minor, hides epistemological, cognitive, angular / statistical and computational inequalities. The so-called hermetic systematic frameworks of organic practice have become progressively clear as dynamic and analytical experiments emerged. Organic design is being simplified and integrated with-increasing technological functionality, which is being generated by innovations in virtual based tectonics and methods used in the production and management of varieties. Non-standard producing mind introduces an unparalleled concurrentness of conceptual and substantial operations, allowing for the application of sequential methods of development to varying modes of creativity. The revolutionary paradigm of development, made possible by the increasing unilaterality of the structured / algorithmic dialects, breaks down the gap among conceptualization and manufacturing and also has important consequences for the interaction through shape and tradition. With improvements on complexity processing, unstandardized forms are becoming more concrete through a multi-layered mind of parametric and algorithmic mind. [26]

### **3.2. Parametric Design**

In parametric design process, the shape is not what designer is claimed as the important output of the process, the parameters and the algorithm that led to final product is the particular design element of the progress. [14] Tectonics are the one of the critical realms of the parametric architecture. Also, parametric architecture has three critical realms which are differentiation, informed tectonics and continuities, and continuities from design to digital production. Differentiation is a regional interpretation of a constant tectonic model that one may contain the local concerns. This is a fundamental mind of parametric tectonics to interfere the elements/codes/scripts of the parametric design and adapt to current desired situation. Constant distinction refers to a function of varied, algorithmic practice which enables the variance to emerge over a sustained domain or pattern. As opposed to mere variety, parametrically varied instances within an overall group, curve or field maintain their continuity to other instances before and after them while uniquely responding to local conditions. [13] Informed tectonics is the use of parametric mutations

as an organizational basis for a performance-based design. Continuity from design to manufacturing is the state of affairs where the flow of information works endlessly in both directions, from design to manufacturing. [23]

### 3.3. Performative Design

Also, using structural performance as a leading design concern and implementing a new set of performance-based prime concerns for the design of cities, structures, urban spaces and infrastructures is another approach of this new set of architecture design tectonics; Performative design. [19] In this new information-and simulation-driven design framework, the definition of performance-based design can be interpreted very broadly — its scope encompasses multiple spheres, from contextual, communal and traditional to merely scientific. [27] A generation of integrated simulation software for energy and physical calculations are simultaneously evolving in tandem with the increasing complexity of a genuinely mediated architectural design have a potential of a high level of generative variability. An emerging ability to script mediated variety of algorithms that can be systematically examined for performance behaviors such as energy and structural performance. [23]

On this section of paper, digital design paradigms discussed in order to understand this century's design approaches and its linkage to Deleuze's philosophy. Due to analyze and discuss BIG's design language, the main focus of this chapter was non-standard design, parametric design and performance-based design approaches.

## 4. DIGITAL ARCHITECTURE FROM DELEUZEAN PERSPECTIVE: ASTANA NATIONAL LIBRARY / BIG ARCHITECTS

The concepts of Deleuze and the concepts of the digital design have been discussed throughout the paper. On this chapter, intersection of the Deleuze and digital design will be explored through a case study that has traces of Deleuzian thought and developed by digital design tools. A design and a design process as a multiplicity, rhizome, rhizomatic relation, fold and a virtual object; and design tools and paradigms as a plane of organization, multiplicity and virtuality will be discussed and be examined throughout this section. After a research for several contemporary architects and their projects; BIG<sup>1</sup> Architects has chosen to examine and analyze by Deleuzian and digital concepts. But it is important to mention that, there is no explanation or commentary from BIG that they have been inspired from Deleuze's philosophy or any other. But as a consequence and the nature of the tectonics of digital design theories which influenced by Deleuzian philosophy, BIG's design language has a Deleuzian traces on them.

BIG's design motto is exploring throughout the virtual and material spheres, they progressively focus on technological simulations that may have traditionally been in the field of engineering. While certain, sun, thermal exposure, airflow, noise, climate, traffic patterns, and other variables can now be modeled and controlled, allowing designers to create structures that are actually formed by the forces surrounding them.

### Astana National Library

Bjarke Ingels Group's Astana National Library (ANL) design was a winner project of international competition in 2009 (Figure 4.1). When the project's conceptual and design tectonics are investigated, it can be seen that it is nourished by the key digital design situations, which were appreciably influenced by Deleuzian thought. Through the project designed with a diagrammatic approach, Deleuzian concepts such as fold and production of multiplicities can be read clearly as form and production technique.

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<sup>1</sup> Bjarke Ingels is a Danish "star architect" who is a founder of a BIG (*Bjarke Ingels Group*) which is a collaboration of architects, interior designers, designers, builders, landscape designers and creators. BIG has a several bases at several locations and won many competitions, received awards and have become an influential design group in the field of architectural design. In reality, as part of their design process, the Bjarke Ingels group has established up a separate technology-driven unique development team which intends to widen the architect's vision from a conventional viewpoint.





Figure 4.1. Astana National Library [28]

As can be seen from the diagrams of the Big Architects, the conceptual design, which started with the interpretation of four archetypes together, was developed with the opportunities provided by environmental data and digital design technologies. As four archetypes which are the circle, the rotunda, the yurt and the möbius strip had re-organized and interpreted through the concept creation, all these forms had layered and folded throughout each other over and over again.

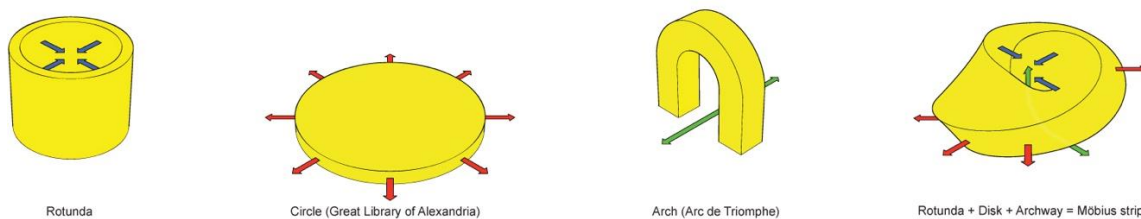


Figure 4.2 Four archetypes combining through diagrams [28]

This kind of gathering has a potential of becoming a multiplicity where mentioned at Chapter 2.1; which is a relation of elements that intersects with other concept's edges and develop something new, varying and distorted. This kind of non-standard form is not possible with orthodox design tools. The shift to computer aided object-based design and the development of processing power capabilities of computers have resulted in a significant increase in the quantity of knowledge embedded in the form and architectural design framework over the past three decades. [29] The term "non-standard" has meaning in two fields of knowledge, both of which upon first inspection appear totally heterogeneous. In its very formulation, the idea of "non-standard" obviously evokes, on the one hand, a non-acceptance of industrialization, as a guiding order of Modernism in which endeavors to deploy standardized mass production. But non-standard also refers to mathematics, more specifically to Non-standard Analysis (1974), the title of Abraham Robinson's work. Non-standard analysis opposes the formalism of mathematical language, focused on its own objectivity, by introducing open, infinitesimal models, genuine tools of approximation that presuppose the nature of an external, constructive mathematical reality. Non-standard analysis posits a dynamic structuralism, an abstract semantics that underprints the interrelation between phenomena and meaning. It is the establishment of a general and formal hermeneutics that can become directly involved at the core of an overall physics of phenomena. [30] Multiplicity design by contemporary computational tools means assembling many parameters through scripts and creating an algorithm, a couture scheme only for a particular architectural object. Parametric design as a form of digital design thinking needs a framework to understand topological logic as a basis for multiplicity design. Starting with the explicit parametric schemata of the design solution, the designer establishes an associative relationship by defining and linking the witch parts to each other and by encouraging the topological variability of the solution family. [23]

Throughout this information, the concept diagram created by processing the four forms, which are the main archetypes, in computer environment.



Figure 4.2. Interior render of Astana National Library [28]

The combination of the centripetal potential of the rotunda with the 360-degree orientation of the outward-facing flat circle was combined for direct the internal potential zone To external potential zones through the design process. The arch blended to this multiple situation has played a role in making it a multi-layered production by intersecting internal and external potentials. The Mobius strip has melted these 3 forms into itself with an endless loop and folding, turning the process into an endless curl with a non-standard form. By folding and collapsing of forms and ideas of the design, walls become roofs, roofs become canopies, canopies become walls again. Here, there is a situation that is tried to be conceptualized over the mobius strip. Deleuze explains this situation in terms of fold theory. Işıl Başaran explains the geometrical approach of this theory through Rene Thom's catastrophic theory in her *The Analysis of Eisenman Architecture Through Deleuze's Folding Theory* thesis written in 2017. Folding as a generative process in architectural design is essentially experimental. Opportunities are kept in morphogenetic process, the sequence of transformations that affect the design object. [31] Folds substantially don't contain fractures, overlay gaps or implants. The changes in folds are described by their continuous variations. As design tools for architectural folds, Rene Thom's descriptions guide creators to the many types of folding conditions. Topological mapping in general, and catastrophe models in particular, uses a number of factors on a fluid surface where more or less flexible forms of connection are feasible. Topology considers material frameworks that become immune to persistent modifications that instantly change their form, the most significant architectural characteristics related to all adaptations are examined. Supposed to be an inherently deformable conceptual substance that can be distorted, except for disruption. The key advancement created by Thom's equations is the spatial representation of the multiplicity of potential co-present happenings at any level. [32]

While designing the façade, the sun exposure of the surface was calculated using BIM tools. Due to the amorphous form of the facade, the angularities changing with respect to the sun were mapped by simulation programs. With the density map shown in blue and red, the building's air conditioning, shading and facade design could be done. Solar exposure data on the facade were included in the inputs of the parametric design and had an effect on the form and material density on the facade. (Figure 4.2.)



<p><b>Fold</b></p> <ul style="list-style-type: none"> <li>-Overlaps</li> <li>-Folds to create unities</li> <li>-Inwardness</li> <li>-Exteriority</li> </ul>		<p><b>Non-Standard Design</b></p> <ul style="list-style-type: none"> <li>-Unstandardized forms</li> <li>-Heterogeneous</li> <li>-Non-acceptance of standardized mass production</li> </ul>
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## 6. CONCLUSION AND FUTURE REMARKS

In the intricate order of the 21st century, the relationship between architecture-technology-philosophy is more intertwined and nurtured from each other than ever before. In this paper, Gilles Deleuze, a philosopher who influenced architecture and new generation design theory, have been studied. The traces, effects and potentials of Deleuze's concepts on architecture and new generation design methods have been investigated. Readings have been made on many disciplines and several projects have been examined within the framework of the concepts obtained from these readings. Researched and intersected concepts were tested on a selected case study which was BIG's Astana National Library. Based on this discussion, "How can Deleuze's concepts affect a design process?" and "What are the potentials of the Deleuze's concepts in design process?" were this paper's research questions. And the answers were positive along with the hypothesis of this study which was "Deleuze's philosophical concepts can effect design process positively" and "Deleuze's philosophy has influenced new age's digital design theories."

For future researchers, it would be possible to investigate Astana National Library with another Deleuzian concepts such as body without organs, difference and repetition. Furthermore, the concepts derived from Deleuzian philosophy can be utilized as a tool to analyze 21st century architectures designed by different offices.

## 7. References

- [1] URL 1. Retrieved from: <https://eisenmanarchitects.com/La-Villette-1987> access date 01.11.2020.
- [2] Grosz, E., Deleuze, Theory, And Space. Log, 1, 77-86. (2003)
- [3] Massumi, B., A User's Guide to Capitalism and Schizophrenia: Deviations from Deleuze and Guattari: Massachusetts, (1992).
- [4] Frichot, H. and Loo, S. Introduction: The Exhaustive and the Exhausted – Deleuze AND Architecture. In H. Frichot & S. Loo (Eds.), Deleuze and Architecture, Edinburgh, 1-12, (2013).
- [5] Horvath, L. B. and Maicher, M. Rethinking the City as a Body without Organs. In H. Frichot, C. Gabrielsson & J. Metzger (Eds.), Deleuze and the City, Edinburgh, 33-45, (2016).
- [6] Eisenman, P. and Rocker, I. The Virtual: The Uniform in Architecture, ANY: Architecture New York, 20, 20-23, (1997)
- [7] Ballantyne, A., Deleuze & Guattari for Architects, New York, (2007).
- [8] Roffe, J., Multiplicity In A. Parr (Ed.), The Deleuze Dictionary (Rev. Ed.), Edinburgh, (2010)
- [9] DeLanda, M., Space: Extensive and Intensive, Actual and Virtual. In I. Buchanan & G. Lambert (Eds.), Deleuze and Space, Edinburgh, 80-88, (2005)
- [10] URL 2. Retrieved from: <https://drawing-a-thousand-plateaus.tumblr.com> Access date 01.11.2020.
- [11] Deleuze, G. and Guattari, F., A thousand plateaus: capitalism and schizophrenia, Minneapolis, (1987).
- [12] Deleuze, G. & Patton, P., Difference and Repetition, New York, (1994).
- [13] W. Jabi, R. Woodbury, & B. Johnson., Parametric Design for Architecture, London, (2013).



- [14] May, T., Gilles Deleuze: An Introduction, UK, (2005).
- [15] Colman, F. J., Rhizome. In A. Parr (Ed.), The Deleuze Dictionary Revised Editio, Edinburgh, (2010).
- [16] Deleuze, G., The Fold: Leibniz and the Baroque, Minneapolis, (1993).
- [17] URL 3. Retrieved from: [http://www.projectrho.com/public\\_html/rocket/fasterlight.php](http://www.projectrho.com/public_html/rocket/fasterlight.php) access date 01.11.2020.
- [18] Crockett, C. Deleuze Beyond Badiou: Ontology, Multiplicity, and Event, New York (2013).
- [19] Kolarevic, B., Architecture in the Digital Age: Design and Manufacturing, London, (2003)
- [20] Sutton, D. and Martin-Jones, D., Deleuze Reframed: Interpreting Key Thinkers for the Arts, London, (2008).
- [21] Marenko, B., Digital Materiality, Morphogenesis and the Intelligence of the Technodigital Object Materiality, Morphogenesis and the Technodigital Object. In B. Marenko & J. Brassett (Eds.), Deleuze and Design, Edinburgh, 107-138 (2015).
- [22] Rahim, A., Catalytic Formations: Architecture and Digital Design, New York, (2006).
- [23] Oxman, R. and Oxman, R., Theories of the Digital in Architecture, UK, (2014)
- [24] Marble, S., Digital Workflows in Architecture: Design - Assembly - Industry, Switzerland, (2012).
- [25] Mennan, Z., Mind the Gap: Reconciling Formalism and Intuitionism in Computational Design Research, Footprint (2), 33. (2014)
- [26] Mennan, Z., The Question of Non-standard Form. METU JFA, 25:2, 172-183. (2008)
- [27] Kolarevic, B. and Malkawi, A. M., Performative Architecture: Beyond Instrumentality, London, (2005).
- [28] URL 4. Retrieved from: <https://big.dk/#projects-anl> Access date 25.10.2020.
- [29] Grobman, Y. J. and Neuman, E., Performalism: Form and Performance in Digital Architecture , London, (2011).
- [30] Migayrou, F., The Orders of Non-Standard. In R. Oxman & R. Oxman (Eds.), The Theories of the Digital in Architecture, UK, (2016).
- [31] Vyzoviti, S., Folding Architecture: Spatial, Structural and Organizational Diagrams, Amsterdam, (2003).
- [32] Carpo, M. The Digital Turn in Architecture 1992-2012, Sussex, (2013).