

AN INQUIRY INTO THE CONCEPT OF “SURFACE”
IN THE WORKS OF PETER EISENMAN

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ALİ YÜCEL ÖZDEMİR

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IN THE WORKS OF PETER EISENMAN**

submitted by **ALİ YÜCEL ÖZDEMİR** in partial fulfillment of the requirements
for the degree of **Master of Architecture in Department of Architecture,**
Middle East Technical University by,

Prof. Dr. Canan Özgen _____
Dean, Graduate School of **Natural and Applied Sciences**

Prof. Dr. Güven Arif Sargın _____
Head of Department, **Architecture**

Assoc. Prof. Dr. Berin Gür _____
Supervisor, **Architecture Dept., METU**

Examining Committee Members:

Prof. Dr. Güven Arif Sargın _____
Architecture Dept., METU

Assoc. Prof. Dr. Berin Gür _____
Architecture Dept., METU

Prof. Dr. Selahattin Önür _____
Architecture Dept., Karabük Uni.

Ins. Dr. Mehmet Koray Pekerli _____
Architecture Dept., METU

Dr. Onur Yüncü _____
ONURYÜNCÜ Mimarlık

Date: 14.09.201

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name, Last name: Ali Yücel Özdemir

Signature :

ABSTRACT

AN INQUIRY INTO THE CONCEPT OF “SURFACE” IN THE WORKS OF PETER EISENMAN

Özdemir, Ali Yücel

M.Arch., Department of Architecture

Supervisor: Assoc. Prof. Dr. Berin F. Gür

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This thesis makes a survey on conception of “surface” in the works of Peter Eisenman. In doing so, the concept of “surface” is discussed under three titles: “Surface” as an element of architectural vocabulary (as a formal element), as an analytical tool (as a grammar), and as a diagrammatic tool. Correspondingly, the thesis is intended to examine how “surface” is conceptualized and handled through the critical readings of Eisenman’s writings, and projects are referred in order to support and visualize the discussions. In this context, Eisenman’s dissertation, *The Formal Basis of Modern Architecture* (1963), reveals the definition of architectural surface in relation to the architectural language that is proposed by him. Through the formal analysis of Giuseppe Terragni’s building, Casa Giuliani Frigerio, he utilizes surface as an analytical tool. Considering design processes of his projects, as discussed in the book *Diagram Diaries* (1999), surface becomes a dominant tool for generating architectural form. As a result, in this thesis, surface is evaluated in various aspects (as a formal, analytical and diagrammatic tool) that are essential for understanding of architectural form. In the case of Eisenman, its significance dominates the way of developing his architecture.

Keywords: architectural surface, form making, formal analysis, formal basis of modern architecture, Peter Eisenman, Casa Giuliani Frigerio, diagram.

ÖZ

PETER EISENMAN’NİN ÇALIŞMALARINDAKİ “YÜZEY” KAVRAMI ÜZERİNE BİR SORGULAMA

Özdemir, Ali Yücel

Yüksek Lisans, Mimarlık Bölümü

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Bu tez, Peter Eisenman’ın çalışmalarındaki mimari yüzey kullanımı hakkında bir araştırmadır. Bu amaçla, yüzey kavramı üç ayrı başlıkta değerlendirilmiştir: mimari eleman olarak “yüzey” tanımı (biçimsel eleman), biçimsel analiz aracı olarak “yüzey” (gramer), ve diyagram ile biçim üretme aracı olarak yüzey. Buna bağlı olarak, bu tez, Eisenman’ın öncelikle yazılarında yüzeyin nasıl kavramsallaştırıldığını inceler ve tartışır. Bununla beraber, projelerindeki yüzey kullanımları bu tartışmaları desteklemek ve görselleştirmek için ele alınmıştır. Bu bağlamda, Eisenman’ın doktora tezi, *The Formal Basis of Modern Architecture* (1963), kendi oluşturduğu mimari dildeki yüzey kavramının tanımını ortaya çıkarır. Eisenman, Giuseppe Terragni’nin Casa Giuliani Frigerio binasının biçimsel analizinde ise, yüzeyi bir analiz aracı olarak kullanır. Projelerinin tasarım sürecini tartıştığı *Diagram Diaries* (1999) kitabında ise, yüzey karşımıza diyagramla biçim üretme aracı olarak ortaya çıkar. Sonuç olarak, bu tezde yüzey, mimari biçimi anlamamızı sağlayan birçok yönden (biçimsel, analiz ve diyagram aracı) değerlendirilmiştir. Eisenman örneğinde yüzey, mimarisinin gelişmesine yön veren önemli bir elemandır.

Anahtar kelimeler: mimari yüzey, biçim oluşturma, biçim analizi, modern mimarlığın biçimsel temeli, Peter Eisenman, Casa Giuliani Frigerio, diyagram.

To My Family

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TABLE OF CONTENTS

ABSTRACT..	IV
ÖZ..	V
ACKNOWLEDGEMENT.	VII
TABLE OF CONTENTS	VIII
LIST OF FIGURES...	X
CHAPTERS	
1. INTRODUCTION	1
1.1. Aim of the Thesis...	1
1.2. Structure of the Thesis.....	2
2. CONCEPTUALIZATION OF "SURFACE" IN RELATION TO ARCHITECTURAL LANGUAGE	7
2.1. Eisenman's Formal Vocabulary and Surface as a Formal Element.....	8
2.1.1. The "Motives" of Eisenman's Dissertation: C. Alexander and C. Rowe	10
2.1.2. The Traces of Eisenman's Dissertation: Le Corbusier and the Four Composition.. ..	15
2.1.3. The Objective of Eisenman's Dissertation: The Formal Vocabulary of Modern Architecture	20
2.1.4. Eisenman's Interpretation of Architectural "Surface".. ..	24
2.1.4.1. Generic and Specific Form.....	25
2.1.4.2. Systems of Form.....	30
2.1.4.3. Mass-Surface Systems.....	32
2.2. "Surface" as a Structure of Relationships.....	39
2.2.1. The "Abstraction of a Conceptual Nature" in Surface.	42

2.2.2 Significance of Noam Chomsky's Linguistics Discussions to Eisenman's Conception of Surface..	44
2.2.3. Dual Reading of Surface	47
3. CONCEPTUALIZATION OF "SURFACE" AS A DIAGRAM.....	61
3.1. "Surface" as Conceptual Element in the Diagrams	62
3.1.1. Development of "Surface" Treatments via Eisenman's Diagrams..	67
3.2. Inference of "Surface" in Eisenman's Written Texts.....	76
3.2.1. Bibliothèque de L'IHUEI, 1996-1997, Geneva, Switzerland	82
3.2.2. Church of the Year 2000, 1996, Rome, Italy..	84
3.2.3. Alteka Office Building project, 1991, Tokyo, Japan..	86
3.2.4. Regional Music Conservatory and Contemporary Arts Center, 1993-1994, Tours, France..	88
3.2.5. Max Reinhardt Haus, 1992, Berlin, Germany..	90
4. CONCLUSION.....	94
BIBLIOGRAPHY..	98

LIST OF FIGURES

FIGURES

Figure 2.1 Alexander's design problem diagrams..	13
Figure 2.2 Examples of formal analysis by Colin Rowe.....	13
Figure 2.3 Examples of "surface" and "mass" by Le Corbusier.....	17
Figure 2.4 Le Corbusier's Four Compositions.....	19
Figure 2.5 Peter Eisenman's examples to types of architectural "surface" ("Surface – plane", "Surface – Skin", and "Surface – Mass").....	26
Figure 2.6 "Surface – Skin" and "Surface – plane" according to movement condition.....	28
Figure 2.7 Curved surfaces treated as "mass" in reference to the grid in two examples (Le Corbusier's Ronchamp and Villa Savoye)...	29
Figure 2.8 Eisenman's classification of formal orders (systems) based on the properties of generic architectural form..	31
Figure 2.9 Eisenman's modern architectural examples of "Mass-Cut Away" and "Mass-Juxtaposed"	35
Figure 2.10 Nunotani corporation headquarters project by Eisenman in Tokyo. ..	35
Figure 2.11 Examples of "Mass or Surface Depending on Specific Treatment"...	37
Figure 2.12 Eisenman's House I project..	37
Figure 2.13 Examples of "Surface Structure" and "Deep Level Structure"	42
Figure 2.14 Subtractive and additive conception of space (Casa Giuliani Frigerio).....	48
Figure 2.15 Reading of solid via the plans of Casa Giuliani Frigerio.....	49
Figure 2.16 The north facade of Casa Giuliani Frigerio.	49
Figure 2.17 The position of stairs and the extension of north façade.	49

Figure 2.18 The north facade of Casa Guiliani Frigerio..	50
Figure 2.19 The dual reading of north façade on the oblique view.	52
Figure 2.20 The dual reading of east façade on the oblique view.....	52
Figure 2.21 The east façade of Casa Guiliani Frigerio	53
Figure 2.22 The cut-away operation on the façade..	53
Figure 2.23 The south façade of Casa Guiliani Frigerio	55
Figure 2.24 The dual reading of south façade on the oblique view..	56
Figure 2.25 The southeast corner condition.	56
Figure 2.26 The southwest corner condition.	58
Figure 2.27 The vertical layering of west façade on the oblique view..	58
Figure 3.1 The “Surface” treatments in Cannaregio Housing Project in Venice (1978).....	73
Figure 3.2 The diagrams of House IV project in Connecticut (1971).....	75
Figure 3.3 The materiality of surface via colors in House VI project in Connecticut (1972-1975).....	75
Figure 3.4 The interiorty, exteriority and transformational tools diagram.....	77
Figure 3.5 The fold in Rebstock project, Frankfurt, Germany, (1990-1992).....	79
Figure 3.6 The modifications of surfaces in Bibliothèque de L’IHUEI project in Geneva, Switzerland (1996-1997).	83
Figure 3.7 The modifications of surfaces in Church of the Year 2000 project in Rome, Italy (1996).	85
Figure 3.8 The modifications of surfaces in Alteka Office Building project in Tokyo, Japan (1991).....	87
Figure 3.9 The modifications of surfaces in Regional Music Conservatory and Contemporary Arts Center project in Tours, France (1993-1994).....	89
Figure 3.10 Different surface types in different stages of design process in Max Reinhardt Haus in Berlin, Germany (1992).....	91
Figure 3.11 The model of Max Reinhardt Haus in Berlin, Germany (1992)	92

CHAPTER 1

INTRODUCTION

1.1. Aim of the Thesis

According to the dictionary definition, surface is:

The outermost part of a solid object considered with respect to its form, texture, or extent; an exterior of a particular form or finish.¹

Having originally a mathematical (geometrical) definition, surface is one of the main design tools for architecture. This thesis makes an inquiry about the conception of “surface” in the works of Peter Eisenman. It is intended to examine how “surface” is conceptualized and handled through the critical readings of Eisenman’s writings. His projects are referred in order to support and visualize discussions.

The thesis discusses how surface is evolved from a formal element into a diagrammatic tool in the works of Eisenman. The inquiry starts from his definition of “surface as a component of generic form” that is introduced in his dissertation titled *The Formal Basics of Modern Architecture* (1963), continues with the definition of surface as a structure of relationships in his article, analyzing the work of Giuseppe Terragni, and arrives to the surface usage as a diagram that is conceptualized in his book, titled *Diagram Diaries* (1999). Focusing on these written texts will open up the way to better comprehend the surface usage in his contemporary projects. Therefore, it is essential to re-examine the treatments of “surface” in these projects in order to provide a clearer vision of his arguments (in

¹ Oxford English Dictionary, s.v. “Surface,”
<http://www.oed.com/view/Entry/194886?rskey=9gmhFg&result=1#eid>, (last accessed, 2 September, 2012).

the dissertation, in the formal analysis of Terragni's Casa Giuliani Frigerio, and in *Diagram Diaries*).

As R. E. Somol claims that, "Eisenman does not privilege "space" (of the van Doesburg variety) as the dominant dynamic element to be read against the static of structure."² Approvingly, in Eisenman's works, it is seen that the "surface" has a dominant significance while defining, analyzing, or generating an architectural form. Therefore, it can be considered that, Eisenman's architecture provides a convenient framework in order to investigate potentials of "surface" in architectural design process. However, in order to achieve a proper comprehension of Eisenman's works, one must analyze the motivations and references that give way to his writings. Thus, in this thesis, the works of Colin Rowe, Christopher Alexander, Le Corbusier, and Noam Chomsky are mentioned in order to follow Eisenman's traces.³

1.2. Structure of the Thesis

Eisenman's dissertation that can be considered as a basis for his architecture is a motivation for this thesis. Colin Rowe has an enormous effect on him while cultivating his knowledge. As he said: "Colin Rowe first thought me how to see what was not present in a building. Rowe did not want me to describe what I could actually see."⁴ This knowledge leads him to the construction of a universal architectural language as opposed to the perceptual view of Rowe towards architectural form. He seeks to establish an objective interpretation of architectural form as a way of conveying ideas to client, by separating form from any subjective

² Robert E Somol, "Dummy Text, or The Diagrammatic Basis of Contemporary Architecture." In *Diagram Diaries*. Peter Eisenman. New York : Universe Publishing, 1999, p. 7.

³ See Greg Lynn, "The Talented Mr Tracer", *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 183. In Greg Lynn's words: "[...] there are only ever two kinds of architects: the first will leave you messages; the second will leave you traces. [...] and Peter is a tracer, as were those whose identities he assumed at various times.

⁴ Eisenman, Peter. "Introduction", *Ten Canonical Buildings: 1950-2000*. New York : Rizzoli International Publication, 2008. p.16.

meaning. However, he was not alone while he pursued his search on the architectural language. Stan Allen mentions:

By the middle of seventies, it was commonly asserted that the solution to this perceived crisis of meaning was to see architecture itself as language like. Rather than see form and meaning as distinct entities always threatening to split apart, theorists looked at the many ways in which form and meaning were inexplicably intertwined. In separate *Oppositions* editorials published in 1976, Peter Eisenman and Mario Gandelsonas in different ways underlined this point. Gandelsonas pointed to the semiotic character of functionalist design strategies; Eisenman called for a “work on the language of architecture itself.”⁵

In contrast to Mario Gandelsonas and Diana Agrest’s inferences that “architecture, as a social practice, would exhibit language-like tendencies, and at the same time impossible that architecture could ever approach the transparency of discursive language”, Eisenman continues with Noam Chomsky’s linguistic theories in order to solidify his work of language.⁶ These linguistic discussions contribute to his efforts for architectural language by promoting an architectural grammar as a transformational method for form. As a result, Eisenman’s two writings (the dissertation and the article “From Object to Relationship II: Giuseppe Terragni Casa Giuliani Frigerio”) will be examined as a work for an architectural language in terms of the definition and usage of surface. The dissertation is expected to provide a definition of “surface” according to Eisenman’s vocabulary of the language. On the other hand, his article has a tendency for revealing the role of surface in architectural grammar. Consequently, considering these surface discussions, the thesis will continue with the shift from the “work of language” to diagrammatic works of Eisenman. Eisenman’s critical observations and ability to see “what was not present in a building” are thus rendered as an architectural language, which becomes influential for theoreticians and practitioners. It is this potential of defining formal elements, devising formal analysis, and inspiring an intellectual

⁵ Stan Allen, “Trace Elements”, *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 56.

⁶ Ibid. p. 57.

base and a bold attitude towards practices of modern architecture, that positions the dissertation and the analysis of Terragni's project in the focus of this thesis. That being stated, while still benefiting from linguistic contribution of architectural language developed by Eisenman, this study will also reveal his understanding of architectural surface as a diagrammatic tool. In his latest works, it can be stated that he focuses mainly on presenting the design process, while benefitting from his early works. It is obvious that diagrams allow him "to speak of his architecture as being like writing"⁷, while generating forms via surfaces. Thus, his diagram inquiry can be considered both as continuation and extension of his "work on the language". Allen clearly indicates the potential of his diagrams in the design process:

For Evans, these fictions of process are implausible. For Eisenman, this is not at issue, and I am willing to accept this as an enabling fiction. The engagement, with process yields result not obtainable by conventional, more intuitive means. And Eisenman's method has the advantage of making explicit what is often hidden in an unexamined design process. Moreover, it has exposed something deeply embedded in the discipline itself.⁸

The fact is that Eisenman regards self-referential needs and concerns as primary provision for a design process that is described in diagrams within a considerable proximity to his discussion on architectural language. Actually, the search for autonomy in architecture continues in his diagram discussions too. Having said that, Sarah Whiting clearly points out his purpose in the works of Eisenman:

Eisenman's goal was (and continues to be) to distill the structure of architecture's form in an effort to find meaning established by as opposed to associated with architecture. Rowe had similarly focused upon architecture's autonomy –architecture qua architecture– but had done so by resuscitating the *Ratio* of pre-modernity.⁹

⁷ Ibid., p.60.

⁸ Ibid., pp. 60-61.

⁹ Sarah Whiting, "Euphoric Ratio", *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 99.

For this reason, both the “work of the language” and the diagram discussions stand critical for their presentation of the potentials of the architectural surface. The search for autonomy in his architecture (via an established language or “interiority” in the diagrams) presents clearer scope for understanding the architectural surface. Frankly, Eisenman is an extraordinary architect that provides the opportunity for this thesis. Although being accused as a formalist, he is showing many qualities as a researcher. Besides, it is possible to say that his above-mentioned discussions make enormous contribution to the understanding of architectural form. Whitting also mentions about Eisenman:

Peter Eisenman is famously and frequently accused of being a “mere formalist”. Truth be told, Eisenman’s work is not what most critics would define as “user-friendly”. But to ask whether this architecture has anything to do with people is ridiculous at best and inane at worst. The form of this question belies not simply a misreading of Eisenman but (far more worrisome) a wholesale ignorance of what has transpired in architecture culture over the last one hundred years.¹⁰

Having mentioned his contributions, Eisenman works has also many traces from his precedents (Le Corbuiser, Mies, Terragni etc.). As Greg Lynn said, he presents a gift that you have to study the traces of them “even to discover that they have in fact been dead for thirty years”¹¹ In addition to these critical readings of Eisenman’s written texts, his projects are also considered as a promising source for illustrating the surface usage in practice. Therefore, for the sake of this inquiry, his contemporary projects will be brought into discussion due to their relevance to the readings. As a result, the introductory chapter of this thesis aims to present the overall position of this study in light of its core references. The second chapter focuses on the early writings of Eisenman, and presents the architectural language and the definition of architectural surface in Eisenman’s terms. “Surface” will be examined as a component of architectural form, and its constitutive and analytical dimensions will be presented. Considering the inferences of the second chapter,

¹⁰ Ibid., p. 98.

¹¹ Greg Lynn, “The Talented Mr Tracer”, *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 178.

the third chapter will discuss surface as a diagrammatic tool in reference to Eisenman's projects. Reconsideration of surface will be stem from discussions of surface usage in Eisenman's diagrammatic works. Consequently, this stream of thought will be concluded in the final chapter. The inferences from discussions are expected to lead to promising further researches and to achieve the aim of this thesis.

CHAPTER 2

CONCEPTUALIZATION OF “SURFACE” IN RELATION TO ARCHITECTURAL LANGUAGE

This study aims to constitute an elaborated definition of “surface” in architecture and explore its conceptualization in architectural design through an inquiry of Eisenman’s arguments in his works and projects, specifically starting with his dissertation. In this chapter, “surface” will be defined for the purpose of presenting its creative potentials in the light of Eisenman’s writings. In other words, rather than addressing to “surface” as a “result of architectural design application” or as “a medium of a specific texture or quality,” it will be re-conceptualized in order to identify its role and importance in architectural design, which in turn can be used for discovering productive potentials in Eisenman’s architectural projects.

In order to infer the critical role of “surface” from the viewpoint of Eisenman, one first needs to understand surface’s definitions and connotations according to him. A closer investigation of his works reveals considerable amount of data about the concept. Especially his dissertation (*The Formal Basis of Modern Architecture*) holds invaluable hints to the original intention for the creation of architectural language.

Taking this as a starting point, this part of the thesis will proceed by examining three distinct writings of Eisenman about the formal discussions. The initial point of inquiry will therefore be Eisenman’s dissertation, which intends to construct specifically a whole vocabulary in order to analyze formal structure of modern architectural projects. Then the second focal point will be the article, “From Object to Relationship II: Giuseppe Terragni Casa Giuliani Frigerio” (1971) in order to observe the development of the idea of “surface” which can be defined as a transformational tool in the structure of relationship. Consequently, these discussions

in Eisenman's writings make it possible to question how "surface" as an architectural element is evolved into a diagrammatic tool. It should be stated immediately that in this thesis, the conceptualization of "surface" in Eisenman's works, benefits directly from the framework of his formal discussions. Thus although Eisenman himself did not strictly involved with the conception of "surface" in his works, its productive potentials are still need to be mentioned.

2.1. Eisenman's Formal Vocabulary and Surface as a Formal Element

Eisenman's dissertation, titled *The Formal Basics of Modern Architecture* (1963), can be stated as a proposition for an architectural language that allows formal analysis in the architectural projects by the definitions of the formal elements and transformations of the form. The dissertation's significance lies in its ability to analyze architectural form¹² according to the objective definitions of the elements. In this part of his academic studies, the development of architectural language was initiated by Le Corbusier's formal discussions and diagrams which provides vocabulary, grammar and syntax.¹³ However, it can be considered that, grammar and syntax part of the language is developed in his later work (*From Object to Relationship II: Giuseppe Terragni Casa Giuliani Frigerio*, 1971) in the light of the Noam Chomsky's linguistics arguments. In other words, written in such a period of uncertainty, Eisenman's dissertation is supposed to bring people a communication tool in an interactive environment of an innovative formulation for actual practice and education. Therefore, the vocabulary part of his architectural language can be considered as the most intense part of his dissertation.

¹² See Peter Eisenman. "Form in Relation to architecture". *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, pp. 33-34. According to Eisenman, architectural form can be classified in two concept: generic and specific form. And, all specific form can be analyzed through its generic antecedent. Therefore, in this thesis, "surface" will be discussed as an generic form element which has an distinct definition according to the Eisenman's proposal of the vocabulary.

¹³ Peter Eisenman. "Introduction". *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 21.

At this point, it should be stated that the intention of this thesis is not classifying Eisenman's works like a historian, nor studying it via an irrelevant discourse. However, It is necessary to clarify how definition of "surface" –as employed in this architectural language– differs from conventional uses of the word. First of all, the thesis approaches "surface" as a definable architectural entity, which provides guidelines for the formal structure of architectural design process in the light of the Eisenman's discussions. Secondly, in this part of the inquiry, "surface" will be discussed as an analytic tool for discovering the formal structure of the modern architectural projects without depending on any style or theme. Even more important than the previous two arguments, for Eisenman, any subjective definition or interpretation of "surface" is strictly avoided according to his dissertation.

These characteristics delimit the framework of "surface" definition that leaves little room for subjectivity and perception, and is concerned with objective definition rather than sensation. On the other hand, the motives and basis of Eisenman's dissertation are essential interests for this thesis in order to context for this architectural language. Eisenman mentions that, Colin Rowe's work and Christopher Alexander's dissertation provides his motives and tries to make explicit Le Corbusier's formal discussions. Therefore, the inquiry will continue with his motives and prequel discussions which constitute his framework of the language.

2.1.1. The “Motives” of Eisenman’s Dissertation: C. Alexander and C. Rowe

Peter Eisenman concluded his dissertation titled *The Formal Basics of Modern Architecture* in 1963 (notably, Design Methods researches began at the same period) and published in 2006. In afterword of his dissertation, written in 2006, he mentions about his motives. These motives can be inferred from Eisenman’s statements:

Two widely different streams of thought focused my attention. One was *a response to Christopher Alexander’s thesis*. “Notes on a Synthesis of Form” which had also been done partly at Cambridge when he was a mathematician. The other was *an attempt to move away Rowe’s formal ideas to a more linguistically based formal discourse*.¹⁴

Having mentioned his motives as such, Eisenman actually gives a hint about the context of his dissertation in that era. In order to figure out his starting points, I will briefly investigate both Christopher Alexander’s dissertation *Notes on a Synthesis of Form* and Colin Rowe’s article titled “Transparency: Literal and Phenomenal, Part I and Part II”.

Alexander’s dissertation and practice of his methods remarkably corresponds to the period in which research on “Design Methods” was at the agenda, however, he believed that design methods cannot be a field of study without its practice. Having stated that, he mentions the nature of design problems in first part, and then he continues with the representation of the design problem diagrams in his dissertation. Consequently, he states that the most important idea declared in his dissertation is “the idea of the diagram”, which he calls as “patterns”.¹⁵ He defines these patterns as a key process of creating form. In other words, “diagram is an abstract pattern of physical relationship which resolves a small system of interacting and conflicting forces and is

¹⁴ Peter Eisenman. “Afterword”. *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 380. Emphasis mine.

¹⁵ Christopher Alexander. “Preface to the paperback edition”, *Notes on Synthesis of Form*, Harvard University Press, 1971.

independent of all other forces, and of all other possible diagrams.”¹⁶ Subsequently, diagrams can be helpful in order to handle the complexity of design problems. In Alexander’s words:

Today’s functional problems are becoming less simple all the time. But designers rarely confess their inability to solve them. Instead, when a designer does not understand a problem clearly enough to find the order it really calls for; he falls back on some arbitrarily chosen formal order. The problem, because of its complexity, remains unsolved.¹⁷

Consideration of Alexander’s statements on architectural form also reveals the difference with Eisenman’s aim brought forward in his dissertation. Alexander is concerned more with the forces that create forms and their relationship with each other rather than form itself. That is to say, design problems are needed to be clarified in order to rationalize the form by using mathematical and logical rules which the designers unintentionally avoid. Therefore, he creates a functional basis for architectural form. Correspondingly, he defines the form as “the solution to the problem”¹⁸. In other words, the form cannot be discussed without its context. As a result, the search of “fitness” between “the form in question” and “its context” constitutes the design problem. And he states that, “physical clarity” of form can only be achieved with the “programmatic clarity” of the design problem. In doing so, revealing the functional origins of design problems is the primary duty of designers in order to get the final form. Consequently, these functional origins may provide a clearer vision of the patterns (diagram) in the solution of the form.¹⁹

In addition, Alexander mentions the independence of the diagrams using infinite combinations of them. The improvement of these abstract diagrams can be obtained separately. Therefore, the achievement of these can be considered both cumulative and gradual at the same time. By this way, it can be regarded that, the independent role of diagram is the key point of the creativity in the design process

¹⁶ Ibid.

¹⁷ Christopher Alexander. “Goodness of Fit”, *Notes on Synthesis of Form*, Harvard University Press, 1964 p. 15.

¹⁸ Ibid.

¹⁹ Ibid.

while using logic. However, it must be noted that Alexander's dissertation itself is intended to study basically the form in response to function. (Figure 2.1)

On the other hand, Eisenman specifically seeks for the autonomy of the form in a different context. At this point, the hierarchy between the architectural elements (such as concept, function, structure, technics, and form) described by him, enables one to define the architectural form as a distinct element. In this sense, Eisenman's dissertation can be regarded as more subjective than Alexander's study. Eisenman defines the form specifically according to the architectural relation with the "concept", "function", "structure", and "technics", while Alexander makes the general description of form in relation to the function.

The other motive of the Eisenman's dissertation, the article titled as "Transparency: Literal and phenomenal", displays Colin Rowe's position concerning the architectural surface. (Figure 2.2) He defines the "transparency" as a state of being in spatial order. Therefore, he proposes two types of transparency by examining both cubist and post-cubist paintings and architectural examples: "literal" and "phenomenal." Literal transparency can be stated as an actual physical condition; as a quality inherent to substance. On the other hand, phenomenal transparency as a quality inherent in spatial organization, can be found in "shallow spaces" and can be interpreted in different ways. Moreover, Rowe mentions about the perceptual interpretation of transparency as follows:

In considering phenomenal transparency in this way, entirely at a perceptual level, it has not been possible to overlook Gestalt psychology, since the Gestalt psychologists, in their analysis of perception, seem to have been preoccupied with just those questions which are central to any examination of the problem. "Configuration", "figure-ground", "field", "common contour", "proximity", "constellation" – sometimes inadvertently and sometimes conscious your vocabulary has been saturated with the Gestalt phraseology, precisely because of the adequacy of its terms.²⁰

²⁰ Colin Rowe. "Transparency: Literal and Phenomenal Part II", *As I was Saying: Recollections and Miscellenious Essay*. MIT Press, 1996, pp. 99-100.

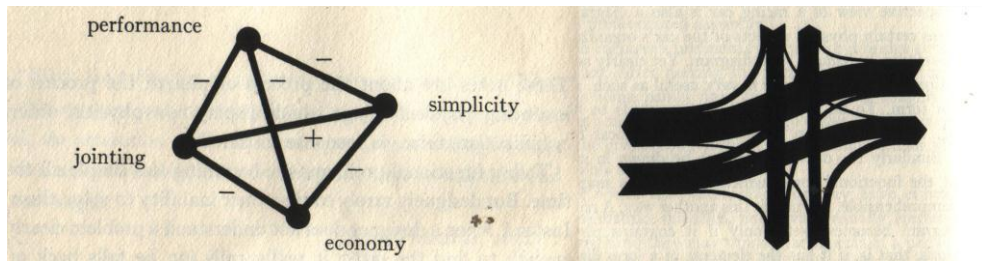


Figure 2.1: Alexander's design problem diagrams [Source: Christopher Alexander. Notes on Synthesis of Form, Harvard University Press, 1964 p. 15, pp. 2, 88]

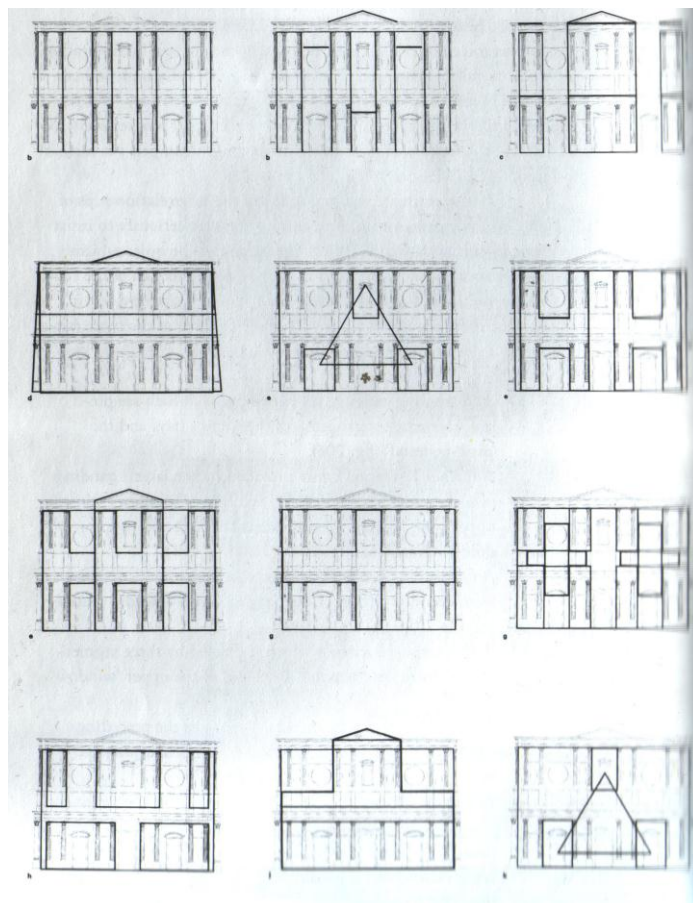


Figure 2.2: Examples of formal analysis by Colin Rowe, [Source: Colin Rowe. "Transparency: Literal and Phenomenal Part II", As I was Saying: Recollections and Miscellaneous Essay. MIT Press, 1996, pp. 92]

Considering Rowe's point of view, the interpretation of architectural form can be differentiated according to the perceptual references. However, Eisenman's dissertation is a proposition for a formal language of architecture that allows objective relations of architectural space by defining architectural elements. The dissertation's significance lies in its ability to critically respond to the issue of architectural form. According to Eisenman's discussion, critical approaches towards the architectural form are inclined to be subjective such as perceptual, conceptual or iconographical. Considering this argument, he makes his point clearer via examples:

In art history, for instance and particularly in the work of the Warburg Institute, there has been an increasing awareness of iconographical issues, and the great part that they play in the creation of architectural style in any specific historical situation. Similarly, the exponents of Gestalt psychology have produced a climate of sensitivity in which everything that concerns a work of art, as something experienced by the eye, must be analyzed. However, this thesis intends a more restrictive definition of formal considerations. It is therefore proposed at the risk of distorting the truth, to excise as far as possible iconographical and perceptual references.²¹

Keeping these discussions in mind, it can be suggested that although Eisenman considers the works of Christopher Alexander and Colin Rowe as source of his motives, he approaches the problem of architectural form from another perspective. He uses Alexander's sense of logic and Rowe's geometrical references, but he places himself between Alexander's functional and Rowe's perceptual approach. To be more specific, he intends to develop an architectural vocabulary in his autonomous situation without any subjective approach.

²¹ Peter Eisenman. "Introduction". *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 15.

2.1.2. The Traces of Eisenman's Dissertation: Le Corbusier and "the Four Compositions"

Peter Eisenman's dissertation titled *The Formal Basis of Modern Architecture* in 1963 can be considered as a proposition for formal language that allows formal analysis in any architectural project by defining architectural elements and transformations based on their properties. The dissertation's significance lies in its ability to critically respond to the universal nature of the modern architecture: The examples of the modern architecture are ideal for examining the pure architectural form and taken as a case in order to make explicit the formal language.²² At this point, he places Le Corbusier's Formal discussions and the four compositions at the basis of his formal language. Le Corbusier's traces can be seen in several baseline parts of the dissertation. For instance, the properties of generic architectural form (mass, surface, volume, movement) can be considered reinterpretation of Le Corbusier's three reminders to architects (mass, surface, plan). Meanwhile, the four compositions of Le Corbusier are taken as a classification of mass-surface order by Eisenman. He approvingly notes about his dissertation that:

The premises of this argument derive specifically from Le Corbusier's discussion of form. Indeed this thesis can be thought of as an investigation and interpretation of the conceptual basis of Le Corbusier's "*Four Compositions*", illustrated in the "*Oeuvre complete*". Implicit in Le Corbusier's diagrams are the vocabulary, grammar and syntax of a formal language: the intention here is to make them explicit.²³

²² See Peter Eisenman. "Introduction". *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 20. According to the Eisenman, his formal language can be valid in any architecture regardless of style. He clearly points out his aim for choice of modern architecture examples "[N]o attempt will be made in this dissertation to isolate 'modern' forms or to purpose a comprehensive system for design and criticism ordered by the use of geometric solids. Rather a language will be distinguished and a systemic order for this language, which uses geometric solids only as absolute points of reference. By means of this reference, it will seek to clarify the relationship of form to any architecture. The qualification 'modern' in this thesis is given only to provide a reference for the examples considered: the principles in this discussion are rather to be thought of as being universally valid."

²³ Ibid, p. 21.

Although there are common points between the dissertation and Le Corbusier's formal discussion, Eisenman would differ from Le Corbusier with his approach to specific and generic differentiation in architectural form. This differentiation could be considered as the main contribution of Eisenman to Le Corbusier's formal discussions. In fact, Eisenman's "mass" and "surface" definitions are closer to Le Corbusier's. Le Corbusier defined mass as "the element by which our senses perceive and measure and are most fully affected."²⁴ And he defined surface as "the envelope of the mass and which can diminish or enlarge the sensation the latter gives us."²⁵ Being based on geometrical references, two more formal elements that are volume and movement are added by Peter Eisenman. However, contributions of Eisenman on Le Corbusier's mass and surface definitions are needed to be examined, since they are the main concerns of my thesis.²⁶

Contrary to the perceptual references of Le Corbusier in the definition of "surface" (and "mass" at the same time), Eisenman believed that the formal language should be concerned with more objective definitions, avoiding any perceptual and subjective basis. Being elements of generic form, "surface" and "mass" are considered as an abstract idea by Eisenman. From this perspective, "surface could be considered as either last layer of volume, its 'skin', or conversely that volume could be thought of as made up of an infinite number of surfaces (namely mass), or planes"²⁷ for understanding Eisenman's reinterpretation of Le Corbusier's formal discussions. Among these generic form elements, "surface" and "mass" are mostly in a "dialectical situation"²⁸ according to Eisenman. Namely, it is not possible to consider the terms of "mass" and "surface" in isolation, since they exist in such relation to each other. On

²⁴ Le Corbusier, "The Engineer's Aesthetic and Architecture", *Towards a New Architecture*, trans. by Frederick Etchells, London Architectural Press, 1946, p. 21.

²⁵ Ibid.

²⁶ See Peter Eisenman. "The Properties of Generic Architectural Form". *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, pp. 57-83. According to the Eisenman, there is a dialectic relation between 'surface' and 'mass'. In his PhD dissertation they are both treated as distinct architectural elements however, it is not possible to consider 'mass' without 'surface'. Therefore, the term 'mass' is needed to be examined in terms of the inquiry.

²⁷ Ibid, p.75.

²⁸ Ibid.

the other hand, Le Corbusier's "surface" definition is directly related with skin or last layer of the "mass". That being said, Eisenman expanded this definition by exposing the relation between surface and other elements (such as mass, volume, movement) and defined three types of surfaces: "surface-mass", "surface-skin", "surface-plane".²⁹

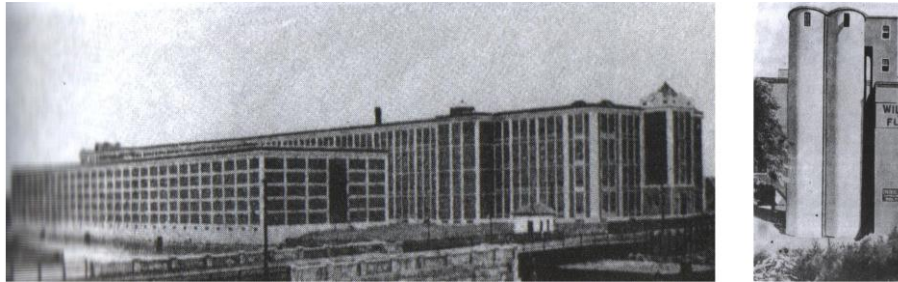


Figure 2.3: Examples to "surface" and "mass" by Le Corbusier,
[Source: Le Corbuiser, "The Engineer's Aesthetic and Architecture", Towards a New Architecture, trans. by Frederick Etchells, London Architectural Press, 1946, pp. 37, 27]

Besides his premises from Le Corbusier's formal discussions, Eisenman also worked on "the four compositions" of Le Corbusier, and used it to develop his "mass-surface systems"³⁰ classification. Daniel Sherer defines "the four compositions" (*Les Quatres compositions*, 1929) as the most succinct theoretical expression of Le Corbusier's inversion of classical principles.³¹ Le Corbusier presented systematically this series of

²⁹ See Peter Eisenman. "The Properties of Generic Architectural Form". *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, pp. 57-83. According to the Eisenman, the classification is defined as surface 'skin', surface 'plane', and 'mass'. However, there is a dialectic relation between 'surface' and 'mass'. In his PhD dissertation they are both treated as distinct architectural elements however, it is not possible to consider 'mass' without 'surface'. Therefore, 'mass' is re-named as 'surface-mass' in order to prevent misunderstandings in this classification, since 'surface' is my main discussion.

³⁰ See Peter Eisenman. "Development of Formal Systems". *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 89. According to the Eisenman, systems are orders to properties of generic form (mass, surface, volume, movement). He classifies the systems according to organization of articulation and distortion on these properties. Hence, there are three types of systems: mass-surface, volumetric and movement.

³¹ Daniel Sherer, *Le Corbusier's Discovery of Palladio in 1922 and the Modernist Transformation of the Classical Code*, Perspecta, vol. 35, Building Codes, 2004, p.34.

new domestic typologies in *Oeuvre Complete*, and exemplified with Villa La Roche in Paris, Villa Stein in Garches, Villa Baizeau in Carthage and Villa Savoye in Poissy. Thus, these compositions can be considered one of the earliest norms of modern architecture produced by Le Corbusier. As Eisenman mentioned, “[T]he mass-surface dialectic received its initial definitions in Le Corbusier’s ‘four compositions’.”³² Providing the necessary context to Eisenman’s dissertation, these compositions can be considered as one of the first illustrations of generic design typologies. In other words, Eisenman founded his formal grammar based on the absolute generic formal analysis of modern architecture. It can be stated that Le Corbusier’s formal discussions might also have played an important role in Eisenman’s formal grammar. The position of Le Corbusier is introduced by Deborah Gans:

As one places Le Corbusier “in context” and traces the historical genealogies of the themes and images he inherited, it is easy to lose sight of the fact that he, along with a handful of others, is responsible for the invention of a genuinely modern architectural space, within which those themes could be clearly and simultaneously articulated. That Le Corbusier could, as early as 1915, identify the generic conditions of modern construction, subject them to the typological analysis required by his classicizing predilections, and summarize the results in an icon so potent and concise that it would rival Laugier’s primitive hut as a constructive emblem of its era, is remarkable enough.³³

In brief, it can be stated that, the basis of Eisenman’s dissertation and formal language derived from Le Corbusier’s formal discussions and analytic works. However, in order to figure out the affinity between these discussions, one can be more inclined to other subjects (such as volume and movement). Thus the focus shifts from the basis of Eisenman’s dissertation into the motives of the dissertation, without being altered by present discussions. Consequently, these statements present a course to better understand the close relations between Eisenman’s dissertation and Le Corbusier’s formal analysis. (Figure 2.4)

³²Peter Eisenman. “Total System”. *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 107.

³³ Plattus, Alan. “*Le Corbuiser: A Dialectical Itinerary*” In *The Le Corbusier Guide*, 3rd ed., edited by Deborah Gans, 12-28, New York : Princeton Architectural Press, 1987, pp. 21-22.

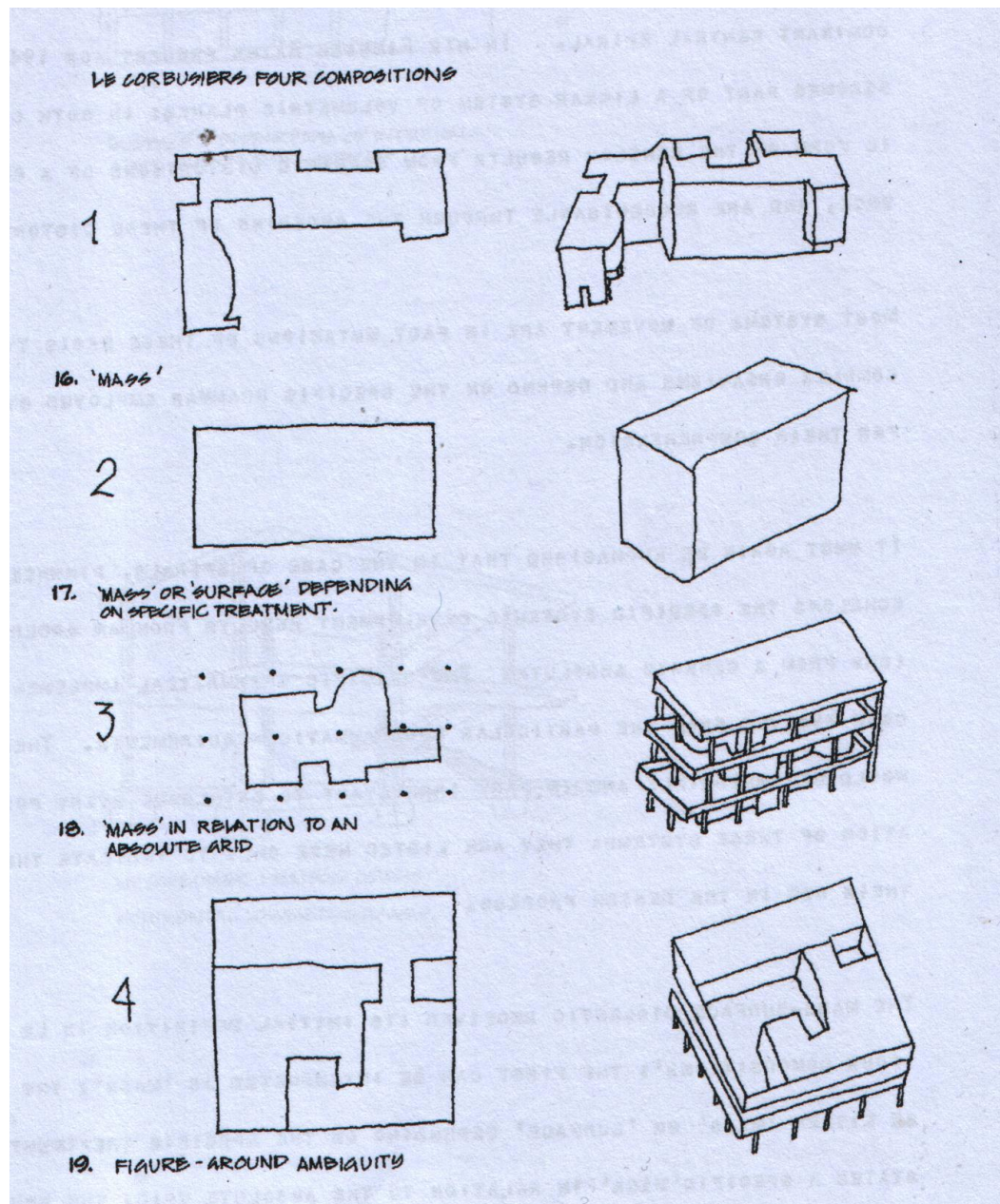


Figure 2.4: Le Corbusier's Four Compositions.

[Source: Peter Eisenman. "Total System". *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 106]

2.1.3. The Objective of Eisenman's Dissertation: The Formal Vocabulary of Modern Architecture

Peter Eisenman's main objective was to construct a formal language, within a certain sense of autonomy of form. By questioning the autonomy (and boundaries) of form via geometrical references, one may acquire some other reliable definitions about architectural form which the constituents are in relation with each other. In order to do that, he tries to define relations of form instead of isolating form from the other elements such as concept, function, structure etc. Nevertheless form has a primary position in his dissertation, and for him it is essential to redefine form in architecture in order to create logical formal basis. Hence, according to him, the essence of architecture is "giving a form" so he tries to contribute the development of a theory of architectural form in a logical manner.

The introductory chapter of the dissertation aims to present the background of logic in the light of its core references. Having started with the epistemological references from Karl Becker, Eisenman accuses the theories of modern movement being historical not logical. According to him, in the absence of logical thought, history becomes dominant discipline.³⁴ He states that:

The modern movement has tended to itself with change and ideas of change, because it too has conceived itself to be a "permanent revolution" and consequently its particular mode of speculation has been historical rather than logical. [...]. The meaning of such theoretical concepts as "Rationalism" and "Functionalism" has become obscured by the use of these terms in a historical context. This has caused a misinterpretation of the theoretical basis of architecture and more specifically of the modern movement.³⁵

Therefore, besides all the current theories, he aims to create a critical formal theory rather than historical. In addition, he remarks the effects of the cognitive psychology and art history studies to the formal theories at that period. He

³⁴ Peter Eisenman. "Introduction". *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 11.

³⁵ Ibid, pp. 11-13.

mentions about the examples of iconographical and perceptual works of Warburg Institute and Gestalt psychologists. However, he disregards these interpretations and sees them mostly irrelevant to his inquiry. Considering his analytic approach towards the formal considerations, he focuses on using more restrictive definitions rather than any symbolic or perceptual meaning of the form. Nevertheless, (in the dissertation,) the terms of Gestalt psychology were still needed in order to provide a basis for the recognition of form rather than the validation of any subjective interpretation. By this way, he reveals another aim of the dissertation in these sentences:

The argument will try to establish that considerations of a logical and objective nature can provide a conceptual, formal basis for any architecture.³⁶

Although his dissertation is a proposition of formal language for modern architecture, it is supposed to be “thought of as being universally valid.”³⁷ He chooses modern architecture as a case in order to provide canonical examples. He approvingly notes:

It will provide a means of communication evolved from this absolute basis; a language that will communicate the nature of the formal essence of any architecture. Any such language must obviously be qualified by, and evolved from, this essence: it is therefore a formal language.³⁸

Therefore, it is essential to comprehend universal validity of his formal basis for my inquiry. Understanding, evaluating and discussing Eisenman’s arguments on surface with regard to his projects will be the main focus of my thesis.

Having stated that, this stream of thought commences with the definition of five elements that constitute architecture. These elements are concept or intent, function, structure, technics and form. Taking this as an initial point, he tries to identify the hierarchy between these elements through defining their relation with

³⁶ Ibid, p. 17.

³⁷ Ibid, p. 19.

³⁸ Ibid.

form. According to Eisenman, many theorists have attempted to define one or many of these elements in a different hierarchy, but none of them achieved the precise meaning of these elements. Therefore, he proposes a general order for these elements. Since its common relation with the other elements, the term form has been referred to the primary position among architectural components in the inquiry. Subsequently, the form is considered in two types as “generic form” and “specific form”. According to his definitions:

The term “generic form” is here understood to mean form thought of in a platonic sense, as a definable entity with its own inherent laws. The term “specific form”, on the other hand, can be thought of as the actual physical configuration realized in response to a specific intent and function.³⁹

Besides sharing different definitions, “generic form” has a universal nature while “specific form demands perceptual responses of an aesthetic or subjective nature to such factors as its proportion, quality of surface, structure, i.e. symbolism etc.”⁴⁰ And generic form has a primary role over the other four elements (i.e. concept or intent, function, structure, technics) because of its universal nature. Thus, he separates the form according to his intentions. He discusses form with no consideration of any perceptual or subjective distortion about the architectural form. Then he states that generic form can be either “centroidal” or “linear” according to their geometry. A cube or sphere has a centroidal geometry, while rectangular prism or cylinder is linear either horizontally or vertically.

Eisenman’s inquiry continues with the discussion of the relationship of specific and generic form with other elements. And according to their relations, Eisenman proposes an order for these elements. To be more specific, progress of a building emerges from intent (concept) and function⁴¹ through the “specific form” instead of “generic form”. However, if “specific form” is derived only from utilitarian

³⁹ Ibid, pp. 33-35.

⁴⁰ Ibid, p. 37.

⁴¹ See Peter Eisenman. “Form in Relation to Architecture”. *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 39. According to the Eisenman, the ‘intent’ is defined as the primary conception of a thing. On the other hand, ‘function’ is an activity or usage proper to anything.

function,⁴² then examining “generic form” can be possible according to specific conditions. That being stated, while structural decisions are derived from “generic form”, because of its utilitarian nature, technics⁴³ are more related with the “specific form”. On this particular aspect, the sequence of these elements is defined as; intent, function, structure and technics according to the weight of their relations with “specific and generic” form. Eisenman discusses the relation between technology and architecture in the following sentences:

Technology should not be imposed on concept, function, structure, or form. Only and architectural logic based on generic form can achieve this order.⁴⁴

According to the inquiry, any element under the influence of technology has more symbolic meaning rather than logical. Thus the term ‘technics’ is used as an element of architecture instead of technology. So far the focus of the discussion has been positioning the “form” as an architectural element in logical sense. For this purpose, originally emerging from a historical context, Eisenman aims to find more restrictive definitions and relations for his formal language. In a quite challenging context, he proposes some distinguishable features of architectural form. In fact, it can be argued that a closer survey on perceptual and iconographic meaning of form may be necessary in the inquiry. However, in order to be able to identify a universal form, he carefully avoids any subjective comments that might lead to distortion on the logic. In other words, as well as acknowledging these terms, he tries to create a framework for his thesis in an absolute logic. Although this absolute logic is derived from the geometric rules, geometry should be taken as a communication medium for his dissertation.

⁴² See Peter Eisenman. “Form in Relation to Architecture”. *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 39. According to the Eisenman, function can be utilitarian or symbolic or both.

⁴³ See Peter Eisenman. “Form in Relation to Architecture”. *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 47. According to the Eisenman, Structure may be thought of as the bones, veins, and arteries of any building. It is the framework for the translation of intent and function into physical reality. If structure is considered in these sense, then the technics are the ligaments of any building; methods used to link, articulate and consolidate the structure, which clearly establishes a subordinate relationship of technics to structure in the hierarchy of elements.

⁴⁴ Ibid, p. 53.

At this point, the main focus of this thesis should be clearly pointed out: the thesis focuses on how surface is conceptualized and used in the works of Eisenman's definition of architectural surface and classifications through the modern architectural examples in his dissertation have become a theoretical basis for his further projects and written texts. As a result, my inquiry continues with Eisenman's interpretation of architectural surface as discussed in his dissertation.

2.1.4 Eisenman's Interpretation of Architectural "Surface"

The aim of this part of the thesis is to examine the definition of "surface" according to Eisenman's architectural vocabulary (proposed in his dissertation) in order to understand and discuss how "surface" guides architectural form. The thesis approaches "surface" as a definable architectural entity, which provides guidelines for the formal structure of architectural design process in the light of the Eisenman's discussions. Adopting from his elaborated redefinition of architectural form as generic and specific, the conception of "surface" in this thesis is emancipated from conventional limitations such as texture or material. In turn, the thesis utilizes only the elaborated conceptual definition for discovering its role in architectural design process. A "generic form" refers to an abstract structure of the elements (mass, surface, volume, and movement) interrelated with each other. This can be considered as guidelines of the specific form, which do not require total or actual realization but are influential in the design process. In this respect, "surface" can be considered as a tool that ascertains the interpretation and inclusion of generic form in the formal analysis. Correspondingly, Eisenman's dissertation is a promising case to study via definition of the "surface". His proposal of architectural language puts emphasis mainly on the construction of an innovative vocabulary for formal analysis. Therefore, this part of the thesis will proceed by examining the definition of "surface", which makes its first appearance as a generic form concept in his architectural vocabulary.

2.1.4.1 Generic and Specific Form

In *The Formal Basis of Modern Architecture*, Eisenman discusses the properties of generic architectural form. He identifies properties such as “volume”, “mass”, “surface”, and “movement”.⁴⁵ In doing so, he intended to create a formal vocabulary of modern architecture. Besides defining these properties, he discusses each one of them in distinct contexts. Nevertheless, it is not possible to consider the terms “surface” and “mass” separately, since both of them are related with space. This argument can be inferred from Eisenman’s statement that:

Purely in terms of logic it would be possible to say that “mass” could only be considered as an abstract idea, since only the external layer of “mass”, the surface, is seen, from which “mass” is inferred. Again, in absolute terms, the validity of discussing surface as a separate entity could be questioned, in that surface could be considered as either the last layer of a volume, its “skin”, or conversely that volume could be thought of as made up of an infinite number of surfaces, or planes.⁴⁶

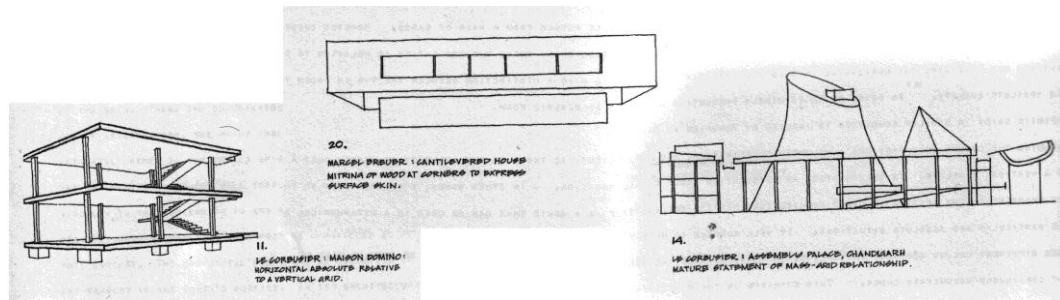
The statement introduced above, can be considered as the definition of the term of “surface” in “generic” architectural form. It can also be inferred from Eisenman’s argument that “surface” has different types of definition for different cases. However, it will not be so simple to identify the type of “surface” for each case. In his dissertation, he points out clues about the nature of surface and mass. “[A]s both of these concepts (“surface” and “mass”) are means of containing space. They must by definition be properties of generic form, since they are inherent to the control of any volume.”⁴⁷ In this respect, classification of “surface” can be characterized by their delimiting of space. Namely, an architectural space or

⁴⁵ Peter Eisenman. “The Properties of Generic Architectural Form”. *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 67.

⁴⁶ Ibid, p.75.

⁴⁷ Peter Eisenman. “The Properties of Generic Architectural Form”. *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 75.

“volume”⁴⁸ can be defined by three types of “surface” such as “plane”, “skin”, and “mass”. The relation between surface types and space can be seen in the given examples by Eisenman in figure 2.5.



Surface – plane

Surface - skin

Surface - mass

Figure 2.5: Peter Eisenman’s examples to types of architectural surface (“Surface – Plane”, “Surface – Skin”, and “Surface – Mass”). [Source: Peter Eisenman. “The Properties of Generic Architectural Form”. *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, pp. 66, 68, 76]

The illustration shown above indicates the basic differences between surface types according to the definition of space. In Le Corbusier’s Maison Domino, space is defined loosely by a series of horizontal planes according to the vertical (column) grid. On the other hand, rectangular space is surrounded by “surface - skin” tightly like a membrane in Marcel Breuer’s Cantilevered House. Lastly, considering Le Corbusier’s Assembly Palace in Chandigarh, we can easily conceive the basic solids such as conic solid and pyramid in a relation with the grid. Eisenman considers the grid as an “abstract entity” in relation to any form:

⁴⁸ See Peter Eisenman. “The Properties of Generic Architectural Form”. *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, pp. 57-83. In his dissertation, Eisenman prefers to use the term ‘volume’ rather than ‘space’ as a property of generic architectural form. He says that, “[I]t is necessary to development of this thesis to consider architecture in terms of volume rather than space—a distinction which is not merely academic and philological. In modern criticism the terms volume and space have often been used loosely and interchangeably so that neither is any longer a useful instrument of rational discourse. The essential difference between the terms, is that volume can be thought of in a dynamic sense: it is particularized, defined and contained space.”p.59.

It [the grid] is the frame of reference for all perception: deriving, primarily from our physical sense of the forces of gravity. When something drops it does so in a straight line through a vertical plane. Again when a rectilinear object is placed on end it must stand vertically or it topples over.⁴⁹

Since its relation to gravity, the term grid can be referred in horizontally or vertically. The grid provides three axes; one horizontal and two vertical. Then, any linear or centroidal form can be seen with reference to the spatial grid. For example, a linear form can be perceived through by a horizontal or vertical grid. On the other hand, a centroidal form may not have a dominant grid axis in a certain sense. Eisenman points out clearly the significance of the spatial grid in modern architecture in his dissertation. Based on these arguments, he uses the “grid” as an analytical tool both for perception of generic form and also for distinguishing the “surface types”. In general, the “grid” can be understood here as an abstract architectural graphic demonstration of plans, elevations, and sections. However, it is not always easy to distinguish these surface types from each other in each case. Eisenman points out the difficulties in differentiating and classifying surface types:

As “mass” in Michelangelo’s terms refers to sculpture, so “surface” refers to his definition of painting. In this context, surface stands in opposition to mass; it can not merely be thought of as the external layer of volume. It must now be considered surface when there is a clear intent to present the external appearance of a building as being built-up, as from a pack of cards, in an additive process. Surface thought of in this context is by nature planar and therefore can be easily read in anti-thesis to mass. However, there is another interpretation of surface, that of a membrane or skin, which is not as easily distinguished from “mass”. The differentiation between surface ‘skin’ or surface ‘plane’ and ‘mass’ depends largely on *the placement and size of openings, the treatment of corner conditions, and the material used.*⁵⁰

⁴⁹ Peter Eisenman. “The Properties of Generic Architectural Form”. *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 79. Emphasis mine.63.

⁵⁰ Peter Eisenman. “The Properties of Generic Architectural Form”. *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 79. Emphasis mine.

It can be inferred from Eisenman's argument that, "surface - mass" and "surface - skin" are similar and hard to distinguish, while "surface - mass" stands in opposition to "surface - plane". Yet again, "surface - plane" and "surface - skin" are open to discussion especially when they are defining a rectangular space as illustrated in figure 2.6. However, as Eisenman argues, the corner condition determines the difference between the surface types. In "surface - skin", the four planes adjacent to each other can be considered as a continuous "surface" folded around the center space like a periphery. On the other hand, planes define space through a movement in the form.

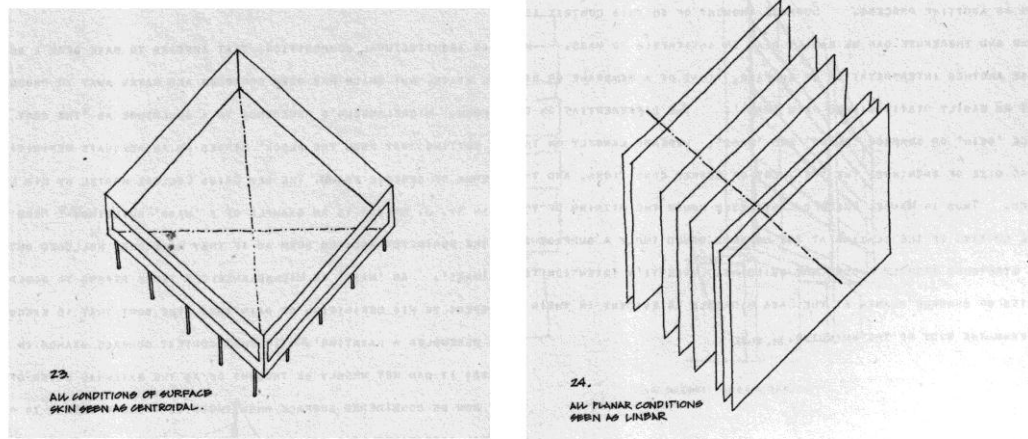


Figure 2.6: “Surface – Skin” and “Surface – plane” according to movement condition. [Source: Peter Eisenman. “The Properties of Generic Architectural Form”. *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 80]

Approvingly, Eisenman claims that all conditions of “surface skin” are seen as centroidal, and all planar conditions are seen as linear.⁵¹ Keeping these arguments in mind, it can be stated that relations of “surface” (described as one of elements of “generic form” by Eisenman) with other “generic form” elements (such as “mass”, “volume” and “movement”) describe the surface type. “Surface” in relation to

⁵¹ Peter Eisenman. “The Properties of Generic Architectural Form”. *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 80.

mass can be considered as “surface-mass”, “surface” in relation to volume can be seen as “surface-skin” and similarly “surface” in relation to movement can lead us to the “surface-plane”.

Another distinctive point of surface types can be revealed by examining the curved surfaces. Eisenman states that curved surfaces are either mass or “incipient mass” in reference to the grid. In Le Corbusier’s Ronchamp, curved surfaces can be read by a grid on the elevation. On the other hand, the “incipient mass” can be seen in the columnar grid of the plan of Villa Savoye. (Figure 2.7)

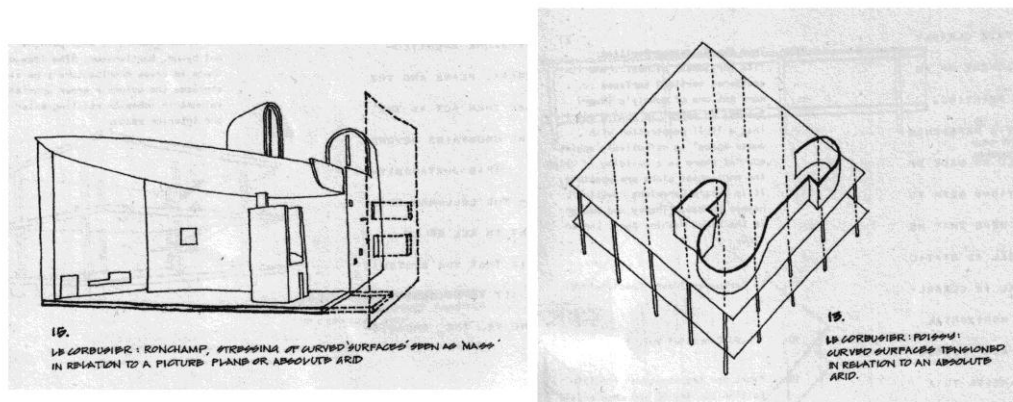


Figure 2.7: Curved surfaces treated as “mass” in reference to the grid in two examples (Le Corbusier’s Ronchamp and Villa Savoye). [Source: Peter Eisenman. “The Properties of Generic Architectural Form”. *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 68]

2.1.4.2 Systems of Form

In the first part of Eisenman's dissertation the main focus was to provide a universal definition of architectural elements in both specific and generic sense. By means of these definitions, he manages to point out the relation between the generic and specific elements. In doing so, the main aim is to derive conceptual references that transform "generic form" into "specific form". According to Eisenman, any specific form must have a "generic antecedent"⁵². In this sense, any form should be understood with abstraction, and classified according to this abstraction. Then the process of a generic form is transforming into a specific form could be analyzed. Eisenman refers to any organization of architectural form as a "formal system"⁵³; and architects used or invent "formal systems" in order to rationalize their works. Thus, Eisenman tries to display the formal systems for modern architecture as a specific case. He points out his aim as:

a terminology for architectural form which might serve as a basis for communication, whether between teacher and pupil, architect and client, or critic and public.⁵⁴

In arguing for formal systems, Eisenman's consideration of formal vocabulary order is a "grammar" or "syntax" that controls the formal arrangement derived from generic antecedent. He names specific usage of generic elements as "system of formal order". Eisenman defines each step that transforms generic into specific as an order.

Eisenman elaborates universal validity in the sense that specific form should not be classified with subjective qualities such as good or beautiful. Instead, it should rather be evaluated in terms of the relation between conceptual intent in generic form and the specific condition. Considering the conceptual and the perceptual

⁵² Peter Eisenman. "Development of Formal Systems". *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 85.

⁵³ Peter Eisenman. "The Properties of Generic Architectural Form". *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 87.

⁵⁴ Ibid.

extents of the formal systems, Eisenman classifies these systems according to the properties of generic form: volume, movement, mass and surface. Although these properties provide the perceptual and the physical definition for any system, they must refer back to a generic antecedent for their set of rules. Eisenman's classification of formal systems based on generic architectural form properties can be seen in figure 2.8.

<u>Volumetric Order</u> <i>. Contious Volumes</i> <i>. Static Volumes</i> <i>. Volumetric Contious Planes</i>	<u>Mass-Surface Order</u> <i>. Mass</i> - Mass-Cut away - Mass-Juxtaposed <i>. Mass or Surface Depending on Specific Treatments</i> - Series of Vertical Planes - Series of Horizontal Planes - Series of Both Vertical & Horizontal Planes <i>. Mass in Relation to the Absolute Grid</i> <i>. Figure-Background Ambiguity</i>
<u>Movement Order</u> <i>. Pinwheel Movement</i> <i>. Spiral Movement</i> <i>. Eschelon Movement</i>	

Figure 2.8: Eisenman's classification of formal orders (systems) based on the properties of generic architectural form. [Source: Produced by the Author]

Eisenman explains his classifications with specific examples. At this point, I will focus on the "Mass-Surface Order", since my inquiry is related with the applications and definitions of "surface" in Eisenman's works. As he stated before, mass and surface cannot be held separately. Therefore, it is necessary to discuss both surface and mass simultaneously in this context. Actually, he took his initial references for "mass-surface order" from Le Corbusier's "four compositions". Thus, the thesis will firstly continue with Le Corbusier's "four compositions", and then Eisenman's "mass-surface order" examples.

2.1.4.3. Mass-Surface Systems

Besides his premises from Le Corbusier's formal discussions, Eisenman also worked on "the four compositions" of Le Corbusier, and used it particularly in discussing his "mass-surface systems"⁵⁵ classification in his dissertation. Daniel Sherer defines "the four compositions" (*Les Quatres compositions*, 1929) as the most succinct theoretical expression of Le Corbusier's inversion of classical principles.⁵⁶ Le Corbusier systematically presented these series of new domestic typologies in *Oeuvre Complete*, and exemplified with Villa La Roche in Paris, Villa Stein in Garches, Villa Baizeau in Carthage and Villa Savoye in Poissy. Thus, these compositions can be considered as one of the earliest norms of modern architecture produced by Le Corbusier. Approvingly, Eisenman clearly points out his use of Le Corbusier references in these sentences:

The mass-surface dialectic received its initial definitions in the Le Corbusier's "Four Compositions": first "mass-surface order" can be interpreted as "mass"; the second could be either "mass" or "surface" depending on the specific treatment; the third states a specific "mass" in relation to the absolute grid; the fourth is a pure example of the dialectic condition, which is figure-background ambiguity. This can be read as either "mass", or solid that has been cut away, or "surface" building that has been built up by an addition of a number of layers or "planes".⁵⁷

The "four compositions" thus provide the initial knowledge of transformational tendencies within the "mass-surface dialectics". By sharpening the definitional boundaries of mass-surface order, Eisenman now can reevaluate and improve what

⁵⁵ See Peter Eisenman. "Development of Formal Systems". *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 89. According to the Eisenman, systems are orders to properties of generic form (mass, surface, volume, movement). He classifies the systems according to organization of articulation and distortion on these properties. Hence, there are three types of systems: mass-surface, volumetric and movement.

⁵⁶ Daniel Sherer, "Le Corbusier's Discovery of Palladio in 1922 and the Modernist Transformation of the Classical Code.", *Perspecta*, Building Codes, vol. 35 (2004), <http://www.jstor.org/stable/i270606>. (accessed August 26, 2012), p.34.

⁵⁷ Peter Eisenman. "Total System". *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 107.

operations make difference for mass compositions: how “mass or surface depending on specific treatment” might be interpreted according to plane usage in design, and how the design is conducted through “mass in relation to an absolute grid” and “figure-ground ambiguity”. Subsequently, proposal of architectural vocabulary can be move on into more grammatical study. Breaking down various mass-surface usages according to Le Corbusier’s four compositions (figure 2.4) provides initial point of transformational analysis for Eisenman; that is what he calls “total system”. Analytical affinity among the examples of Eisenman makes possible the consideration of various “sub-concepts” related to “mass-surface order,” which appear approximately thirty years after publication of the compositions by Le Corbusier. Furthermore, introduction of these sub-concepts can be considered as a step towards further practices of the architectural language formation, as it helps clustering and defining the common structural needs of the design activities (which is discussed in detail later). Therefore, in the following part, Eisenman's interpretation of the compositions will be examined through various examples given by him.

As we discussed earlier, “mass-surface systems” consist of four types of systems based on Le Corbusier’s compositions. These are “mass”, “mass or surface depending on a specific treatment”, “mass in relation to an absolute grid”, and “figure-background ambiguity”. At this point, Eisenman’s interpretation of the four compositions begins with the inquiry of “mass”. He seeks to establish *constitutive operations* to be applied to pure masses. For this task, he argues, masses must be emancipated from its dialectic partner, which are other surface types (surface-skin, surface-plane) in his vocabulary. Consonantly, unlike the other surface types, these constitutive operations emerge from the inherent volumetric nature of the masses. That is, while defining a mass’ specific transformations, either a mass can be *added* to the mass or can be *removed* from it. In this sense, these presented realities are taken as an input for Eisenman’s interpretation of the mass conditions. Therefore, constitutive operations of masses define his sub-concepts of mass systems in two distinct ways. If a specific mass is produced with erosion or subtraction, then it can be called as “mass cut away system.” And if a specific mass defined with addition of series of masses, then it can be called as

“juxtaposed mass system” Then, constitutive operations or sub-concepts are “mass cut away system” (that is removal) and “mass juxtaposed system” (that is addition). To be specific, observing the existing conditions of specific masses should reveal the generic antecedent, which guides the design process towards the operations of distinctive masses. Eisenman defines orders for masses and gives modern architectural examples in these sentences:

Mass systems by definition must be external representations of an internal volumetric order, and are generally found where brick and concrete are employed in load bearing situations. These often convey the conception of a generic solid that has been eroded or cut away; as in the New Caius Hostel by Sir Leslie Martin and Colin St. J. Wilson. However, mass systems can also be used to express a sequence of pavilions or geometric solids such as pyramids or ziggurats. Here the mass is not thought of as having been eroded but rather as juxtapositioned in its “geometric” condition to order the external system; an example of this would be the Richard’s Laboratory by Louis Kahn.⁵⁸

It can be seen in these modern architectural examples that these constitutive operations occupy the design process of a generic mass. However, it can be discussed that they also are not strictly related to the modern architecture project context for any researchers and traces of Eisenman’s discussion about the operations can be seen as his own contemporary projects.

Approvingly, it is possible to claim that, the Nunotani Corporation Headquarters project in Tokyo (1990-1992) is derived from distorted masses, which triggers a need for juxtaposition and subtraction in the design process. The design phase of the project as presented in the figure 2.10 has similar features about controlling the inner volume that are devised in light of interpretations of the design input. The spatial organization setup of the project is devised under supervision of controlled operations of subtraction and juxtaposition. In accordance, the architectural setting for inner volume is worked according to the scale of these solids (circulation areas are the intersections and the offices are formed with the difference of the masses) to keep in pace with the building program. Finally, Nunotani Corporation Headquarters can be interpreted as mass-juxtaposed system.

⁵⁸ Peter Eisenman. “Total System”. *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 111.

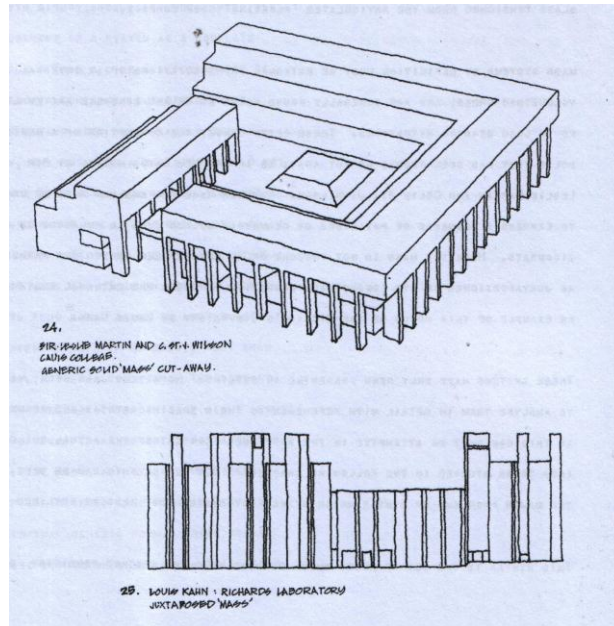


Figure 2.9: Eisenman’s modern architectural examples of “Mass-Cut Away” and “Mass-Juxtaposed”. [Source: Peter Eisenman. “The Properties of Generic Architectural Form”. *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 76]

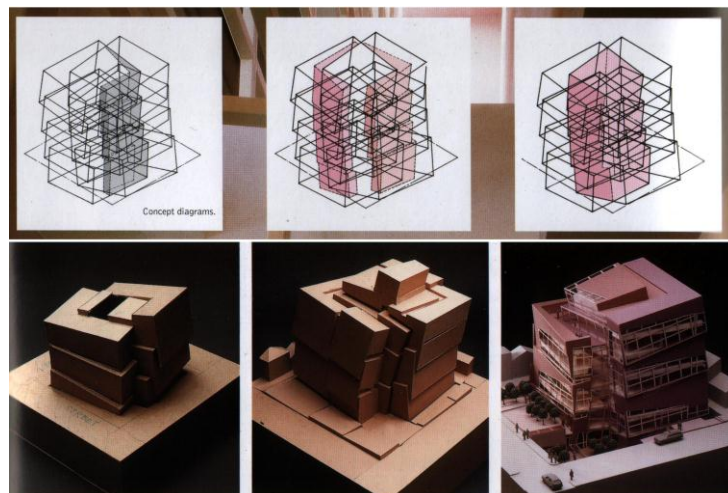


Figure 2.10: Nunotani corporation headquarters project by Eisenman in Tokyo (1990-1992). [Source: Cynthia Davidson, “N.C. Headquarters”, *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, pp. 200, 203]

Another point of mass-surface systems arises from Eisenman's position towards the second composition of Le Corbusier (mass or surface depending on specific treatment). In his dissertation, differentiation comes from plane usage in volume control. In pursuit of this task, Eisenman states that, this surface system "generally define[s] or order[s] a volumetric organization."⁵⁹ Position of the planes (vertical or horizontal positioning) in architectural organization defines the type in this system. Furthermore, position of the planes depends on how the observer reads the building. The first type of mass-surface dialectic system is a series of horizontal planes. Its most obvious example is Le Corbusier's Maison Domino. The second type is the series of vertical planes and its example is Le Corbusier's house at Garches. The third type combines the principles of Maison Domino with the house at Garches. Le Corbusier's Villa Shodhan contains both horizontal and vertical planes.⁶⁰ (Figure 2.11)

In Eisenman's earliest project, House I, the definition of planes as potential guidelines makes it necessary to consider according to the conception of mass-surface system. It must be noted that the planes itself is intended to stimulate the mental generic element in building diagram, much alike the Eisenman's analysis of "Casa Del Fascio" in the figure 2.11. The series of vertical planes are particularly remarkable for both projects. However, these planes cannot be seen as pure planes; they are rather intended to transform into a specific form according to the inner space organizations.

The discussions on the systems of form in the dissertation can be considered as Eisenman's first attempt of creating architectural grammar. The surface, as an element of generic form, is at the center of the inquiry. On the other hand, in his further works, which will be discussed in the following part of this chapter, he intends to find more theoretical support for his analytic architectural language.

⁵⁹ Peter Eisenman. "Total System". *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 113.

⁶⁰ Ibid.

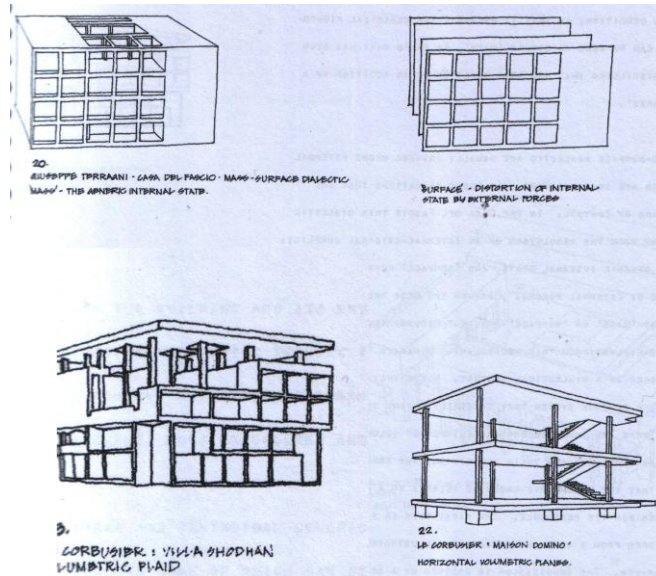


Figure 2.11: Examples of “Mass or Surface Depending on Specific Treatment”. [Source: Peter Eisenman. “The Properties of Generic Architectural Form”. *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 80]

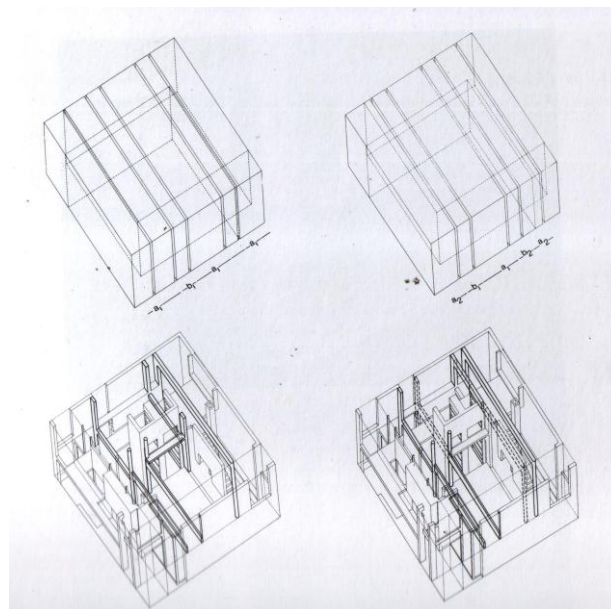


Figure 2.12: Eisenman's House I project. [Source: Cynthia Davidson, “House I”, *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, pp. 200, 203]

In reference to Eisenman's dissertation, one can identify three categories for architectural surface that generates the form. The first is "surface-mass", as it is the main tool that defines the formal structure of Le Corbusier's Ronchamp. The surface-mass can be exemplified by basic solids as an entity in a grid, curved surfaces, or a pure solid. The second category called as "surface-skin", is based on volume defining function of surface in the formal structure. This second category addresses enveloping the volume, such as in the case of the exterior facade of the Villa Savoye. The third category is based on the experience of movement in the formal structure. This category of "surface" presents itself as planes, such as the additional planes in the case of Terragni's Casa del Fascio (figure 2.11). The observation of a series of additional planes reveals Eisenman's conception of movement in the formal structure. Hence, it is seen that category of "surface" as an element of generic form is defined according to the generic form properties (namely, mass, volume, and movement).

Eisenman questions the relations between these generic form properties, and in doing so he acquires "an order", which constitutes a kind of grammar or syntax. To recall, it has been argued earlier in the title "Systems of Form" that, "a terminology for architectural form might serve as a basis for communication."⁶¹ Thus, by discovering characteristic operations of surface (namely, subtraction and juxtaposition), Eisenman obtains a new system of form, which is more elaborated than Le Corbusier's "Four Compositions". For instance, surface defined as mass can be transform via operations of subtraction and juxtaposition, so that new typologies are emerged. These new typologies promise improvement of the architectural language that goes beyond conventional interpretation of "Four Compositions". However, it must be stated that, the focus of Eisenman's efforts is to construct an architectural language, and to search for a *transformational method for architectural form*.

In brief, Eisenman's exposition of architectural surface types is particularly enlightening the relevancy of "surface" to his contemporary works. However, in

⁶¹ Peter Eisenman. "The Properties of Generic Architectural Form". *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 87.

order to figure out the creative potentials of surface, one feels more inclined to follow his article titled as “From Object to Relationship II: Giuseppe Terragni Casa Giuliani Frigerio” (1971), in which he adopts Chomsky’s insights about linguistics and grammar to his architectural language. Thus, the focus shifts towards progression of Eisenman’s architectural vocabulary into grammatical form, altered by the conditions of context. The architectural grammar helps better understanding the complex relations between architectural elements.

2.2 “Surface” as a Structure of Relationships

So far the focus of the discussion has been positioning “surface” as a formal element. For this purpose, originally emerging from a productive use of generic form, the conception of “surface” and their relevance in the case of Eisenman’s dissertation (*The Formal Basis of Modern Architecture*, 1963) have been explored. However, in order to be able to identify “surface” and its productive potentials in architectural form properly, one would also need to consider the further readings in which Eisenman’s ideas about architectural form had flourished. In fact, a closer survey of his article, “From Object to Relationship II: Giuseppe Terragni Casa Giuliani Frigerio” (1971), reveals several connections between his dissertation and analytical studies on Giuseppe Terragni’s works. Actually, Eisenman’s thought of architectural form has been matured and routed by influential linguistics acquaintances as well as his motives during his academic years and his professional practice.

Eisenman’s architectural training and practice corresponds to a remarkably productive era of Post-modern world, the effects of which can be considered particularly influential on his approach to architectural form. Being a quite challenging context, leadership of Colin Rowe in his academic studies in Europe thought him how to distinguish the architectural elements through our perception. On the other hand, the need of critical response to Christopher Alexander’s study (*Notes on a Synthesis of*

Form) drives him to understand form in universal context. Contrasting viewpoints of these two influential figures were brought together in his dissertation with the intention of constructing architectural formal language.

As a consequence, architectural surface became an important tool for responding to these motives. Definition of the architectural form elements and revealing the relation among them can be considered the first step towards generating the language; that is what he did in his dissertation. However, to render itself capable of the task set ahead, Eisenman needs a theoretical basis that would address to the construction of the architectural formal language; particularly its *grammar*. Thus, this part of the second chapter will make a critical reading of the article titled, “From Object to Relationship II: Giuseppe Terragni Casa Giuliani Frigerio”, in order to discuss “surface as a structure of relationships” that constructs the grammar, in light of the linguistics principles and Noam Chomsky’s arguments about language .

The influence of linguistic studies on Eisenman’s conception of architectural language can easily be recognized in this article on Terragni’s work: “Both language and architecture can be seen in terms of the three semiotic categories: pragmatics, semantics, and syntactic.”⁶² And both of them defined as “one type of environment which can be said to have a structure; that is, it has a series of elements which have both definable properties and definable relationship between elements”.⁶³ Furthermore, the influence of linguistics is not limited to general concerns, but especially the influence of Chomsky’s ideas towards responding to semiotic trinity (Semantics, Pragmatics and Syntax), which include the two aspect of syntax , namely “surface syntax” and “deep level syntax,” is observed. These two aspects generally separate two different readings of the structure; one is through the elements and the other is through the relations of these elements.

Eisenman has also been partially influenced by the concept of object in painting and the ideas of Colin Rowe in “Transparency” article. Although Eisenman would

⁶² Peter Eisenman, “From Object to Relationship II: Casa Giuliani Frigerio: Giuseppe Terragni Casa Del Fascio.” *Perspecta*, vol. 13/14, (1971), <http://www.jstor.org/stable/i270585>. (accessed August 26, 2012), p. 39.

⁶³ Ibid.

be more affiliated with the linguistics arguments that have influenced his understanding of architectural language, still some links need to be drawn between architectural form and the concept of object in paintings. Probably the most evident affinity that is revealed between these issues is foreseen by Rowe's discussion of the "literal transparency" and the "phenomenal transparency". Eisenman's analysis of architectural form according to the perception of element and the relationship of the elements is certainly collaborating with Rowe's ideas. Indeed, these ideas would resemble the vision of generic and specific form discussions in Eisenman's dissertation. However, the issue in his reading of Terragni's work rather related with the grammar (syntax) than the vocabulary of architectural language. And to achieve this task, he focuses on two specific architect's works (Le Corbusier and Giuseppe Terragni) in order to reveal his arguments of "surface structure" and "deep level structure" on the basis of Chomsky's discussions.

Hence, even through a superficial discussion about these arguments, several connections can be made about the concept of "surface" and the grammar. The elements of the architectural form that can be analyzed in perceptual or conceptual senses are constituted by surfaces. Therefore, it should be underlined that the objective of Eisenman's research on Terragni's work is to reveal the role and potential of surface use.

For this reason, in this thesis, the critical reading of Eisenman's article, in which the conception of architectural grammar is developed, will not be examined for only discussion about the linguistics of architectural language, but will rather be considered as a discussion on "surface". Keeping that in mind, this part of the study intends to examine the conception of surface as a structure of relationship, providing a base for the grammar in the transformational process from generic to specific form. Thus, this part of the thesis starts with the affinity between the paintings and architecture in order to define the conception and perception of the object as discussed in Eisenman's article. Then, we reveal the extents of linguistics principles and Chomsky's arguments in Eisenman's discussions related with architectural language. We continue with the cases (Le Corbusier and Terragni) chosen by

Eisenman in order to reveal the conceptions of “surface structure” and “deep level structure”. (Figure 2.13) And finally, we reevaluate these arguments in terms of the “surface as a structure of relationships”.

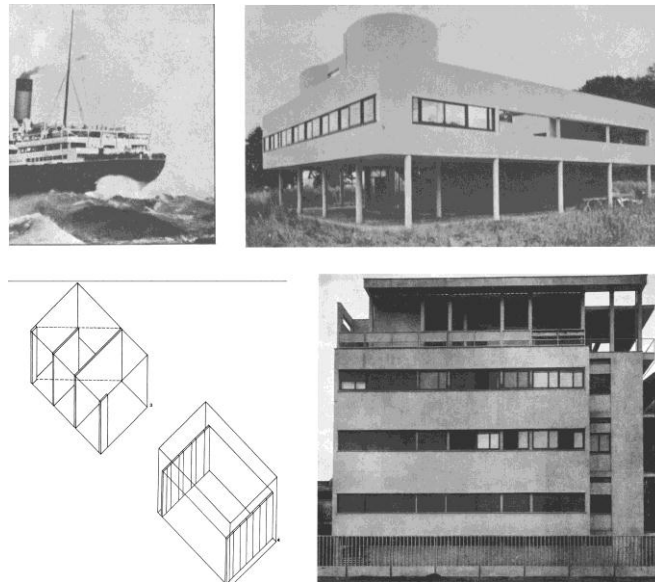


Figure 2.13: Examples of “Surface Structure” and “Deep Level Structure”

[Source: Peter Eisenman, “From Object to Relationship II: Casa Giuliani Frigerio: Giuseppe Terragni Casa Del Fascio.” *Perspecta*, vol. 13/14, (1971), <http://www.jstor.org/stable/i270585>. (accessed August 26, 2012), pp. 36,65.]

2.2.1. The “Abstraction of a Conceptual Nature” in Surface

To begin with, Eisenman mentions the “role of the object” for both painting and architecture. In this discussion, there are two types of “object” issue in painting of the twentieth century. The one is “abstraction of the percept” which can be considered as the distortion of known objects. The other is “abstraction of a conceptual nature” which can be defined as composition of the pure forms

according to their relations.⁶⁴ In order to devise this discussion for architecture, Eisenman thus has to go beyond the existing references for defining object relations in architecture while retaining his core objective of architectural grammar (syntax). Hence, a process similar to the painting is observed for architecture by him:

In architecture both types of relationships exist simultaneously. There is a surface aspect essentially concerned with the sensual qualities of the object; that is aspects of its surface, texture, color, shape, which engender responses that are essentially perceptual. There is also a deep aspect concerned with conceptual relationships which are not sensually perceived; such as frontality, obliqueness, recession, elongation, compression, and shear, which are understood in mind. These are attributes which accrue to relationships between objects, rather than to the physical presence of the objects themselves.⁶⁵

Considering Eisenman's explanation, it is seen that the steps following the architectural vocabulary into architectural grammar again demand understanding of form without any perceptual senses. This information is then useful "to provide a structure for implied meaning as opposed to explicit meaning".⁶⁶ Although the proposition is cleverly briefed in an analogy between painting and architecture, it is seen that the explanation also corresponds to the discussion on linguistic by Noam Chomsky: the dual definition of syntax, namely the "surface structure" and "deep structure". Therefore, while hinting a discussion about the object relations in architecture via painting, the main focus of Eisenman was to provide a linguistic basis to his architectural language by using Chomsky's ideas. Consequently, to be able to facilitate production of architectural grammar, the objects were analyzed in order to reveal their structural demands according to Eisenman's architectural vocabulary. By considering these "constituent definitions" as the base of his architectural language, it becomes possible to

⁶⁴ Peter Eisenman, "From Object to Relationship II: Casa Giuliani Frigerio: Giuseppe Terragni Casa Del Fascio." *Perspecta*, vol. 13/14, (1971), <http://www.jstor.org/stable/i270585>. (accessed August 26, 2012), p. 38.

⁶⁵ Ibid pp. 38-39.

⁶⁶ Ibid pp. 39.

formulate a grammar (various specialized transformations), which may share common constituents but utilize them to different ends. As a defining property of the generic form, surface is the main tool for defining the formal structure and revealing the transformational method (the conceptual ambiguity). In Casa Giuliani Frigerio, it can be considered that, the form was defined with either surface-plane added to each other or surface-mass with the operation of subtraction.

2.2.2. Significance of Noam Chomsky's Linguistics Discussions to Eisenman's Conception of Surface

Following the arguments on the “object” discussion in painting and architecture, Eisenman inquiry continued with the analogy between architecture and language. Although architecture and language are in different perceptual contexts, he sees the language as “a series of elements which have both definable properties and definable relationships between elements”.⁶⁷ Consequently, the concealed potentials in this definition of the architectural language can be used to question how his “surface” definitions as a vocabulary element evolved into grammatical component as a concept. Eisenman stated that, “both language and architecture can be seen in terms of the three semiotic categories: pragmatics, semantics, and syntax”. Thus although architecture itself is not directly presented in this way, traditionally, it can be examined according to these categories.⁶⁸ At this point, the iconography, or the aesthetic value of the architectural form can be considered as the semantic meaning of the architecture. However, it can be argued that presenting syntactic meaning for architecture is more difficult than language or painting because any object in architecture “has no agreed upon or intrinsic

⁶⁷ Peter Eisenman, “From Object to Relationship II: Casa Giuliani Frigerio: Giuseppe Terragni Casa Del Fascio.” *Perspecta*, vol. 13/14, (1971), <http://www.jstor.org/stable/i270585>. (accessed August 26, 2012), p. 39.

⁶⁸ Ibid.

meaning other than as its shape might be a natural sign”.⁶⁹ And any subjective interpretation of the architectural object can be considered as an obstacle for getting universal syntax. In Eisenman’s words:

If a syntax in architecture were to be developed, it would presume to mediate between the intended meaning which could be derived from a conceptual structure, and the possible distortions of this meaning which might occur through the lack of an understandable relationship between physical fact, and this conceptual structure.⁷⁰

In other words, in order to get the conceptual structure of an architectural form, semantic meaning should be separated from the actual physical meaning. As Eisenman stated, this argument leads us to Noam Chomsky’s linguistic discussions. Chomsky reveals his opinion about the language in these sentences:

[...] language has an inner and an outer aspect. A sentence can be studied from the point of view of how it expresses a thought or from the point of view of its physical shape, that is, from the point of view of either semantic interpretation or phonetic interpretation.⁷¹

Subsequently, he presents two concepts, “surface syntax” and “deep level syntax” in order to examine syntactic structures of language by considering this argument. In his definition, surface syntax is referred to “a representation of the phrases that constitute a linguistic expression and the categories to which these phrases belong.”⁷² Namely, it is the one aspect of the syntax (grammar) which determines the physical form (phonetic) of the sentences. On the other hand, “deep level syntax” is referred to “representation of the phrases that play a more central role in the semantic interpretation of a sentence.”⁷³ In other words, it can be defined as a structure that identifies the abstract order of the phrases. Thus applying Chomsky’s

⁶⁹ Ibid.

⁷⁰ Ibid.

⁷¹ Noam Chomsky, “Deep and Surface Structure” *Cartesian Linguistics: A Chapter in the History of Rationalist Thought*, Harper & Row Publishers, New York, 1966, pp.32-33.

⁷² Noam Chomsky, “Form and Meaning in Natural Languages” *Language and Mind*, Cambridge University Press, New York, 2006. p. 92.

⁷³ Ibid, p.93.

ideas as a linguistic basis into the architecture, Eisenman introduces the re-definition of the terms as “surface structure” and “deep structure” adopted from Noam Chomsky’s book “Syntactic Structures”. And the main argument of the article, “From Object to Relationship II: Giuseppe Terragni Casa Giuliani Frigerio,” is guided through the conception of architectural grammar⁷⁴, which is inferred from the cases of Le Corbusier and Terragni. Therefore, for the sake of clarity, these elaborated definitions of the “surface structure” and “deep structure” are laid down and re-positioned by Eisenman within the scope of these examples. As observed in various representations of Le Corbusier’s works (such as Villa Savoye) (figure 2.13), the form is depicted from the “known objects” (machines, ships, and aircrafts) with an abstraction. In this respect, according to Eisenman, the conceptual nature (syntax or grammar) of Le Corbusier’s project is directly linked with the perceptual senses (semantics). That means that there is not any difference between “surface structure” and “deep structure” in the examination of the project. On the contrary, various perspectives of Terragni’s work (Casa Giuliani Frigerio) illustrate the dual reading in the conception of the space with an emphasis on ambiguity. Actually, it is this conceptual ambiguity that causes differentiation between “surface structure” and “deep structure” of the form, and enables “deep structure” analysis of the project without considering any iconography or aesthetic value. The diagrams produced for the project by Eisenman often present the dual reading of the form. This dual reading consists of the solid reading (surface-mass) and planar reading (surface-plane). Therefore, it can be stated that, the “surface” definitions in his dissertation are used in the “deep structure” analysis of Terragni’s project. And this argument can point out the evolution of the “surface” use (from vocabulary to grammatical component) by the help of Chomsky’s arguments in Eisenman writings.

⁷⁴ See Noam Chomsky, “Form and Meaning in Natural Languages” *Language and Mind*, Cambridge University Press, New York, 2006. P. 91 According to the Chomsky, grammar can be defined as “the system of rules that specifies the sound-meaning relation for given language.” And “grammar generates infinite set of ‘structural description’, each structural description being an abstract object of some sort that determines a particular sound, particular meaning.” Thereby, Eisenman’s proposition of architectural grammar can be considered in this conception.

2.2.3. Dual Reading of Surface

It has been argued so far that the use of “pictorial ambiguity”⁷⁵ in Casa del Fascio and the Casa Giuliani Frigerio, constitutes significantly the transformational method for the formal “deep structure” and “surface structure.” This perceptual ambiguity depends on observation of plans, elevations, and oblique view of the project. Although perceptual senses can occupy in this ambiguity, its effect is rather related with conceptual sense than aesthetic issues. This conceptual ambiguity leads us to the dual reading for Giuseppe Terragni’s project (Casa Giuliani Frigerio). The means of dual reading, the “surface structure” and “deep structure”, is two distinct “conception of space”.⁷⁶ Eisenman defines these conceptions of space:

In Terragni’s work, conceptual ambiguity is developed from the use of two basic and opposing conception of space. The first considers space as subtractive, or cut away from a solid. In this context space is considered to be metaphorically hollowed from an abstract solid volume. The second conception of space, which has Renaissance antecedents, considers space as additive, made up of a series of implied layers, much like a deck of cards. Subtractive space implies a center and its centripetal in conception; additive space is concerned more with the periphery, with edges and corners, and is centrifugal in conception.⁷⁷

It is seen that (figure 2.16) the dual reading is considered as a solid within four volumetric planes or as two opposed planes divided into distinct partitions. At first, the solid is ready for subtraction according to the volumetric planes.

Considering the alternative conception of the space, the opposing planes have different partition for guiding the interior volumetric design. The proposed subtractive conception concordantly can be read via earliest plan sketches of

⁷⁵ Peter Eisenman, “From Object to Relationship II: Casa Giuliani Frigerio: Giuseppe Terragni Casa Del Fascio.” *Perspecta*, vol. 13/14, (1971), <http://www.jstor.org/stable/i270585>. (accessed August 26, 2012), p. 41.

⁷⁶ Ibid.

⁷⁷ Ibid.

the project (figure 2.15). The shear walls (as observed in ground floor plan), displays the volumetric planes in the solid. Besides these planes, typical mid-floor plans expose the boundary of the solid as a square and a half. On the other hand, the roof plan emphasize on the square as a base form.

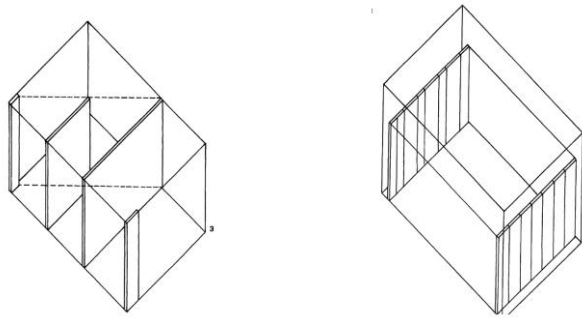


Figure 2.14: Subtractive and additive conception of space (Casa Giuliani Frigerio). [Source: Peter Eisenman, “From Object to Relationship II: Casa Giuliani Frigerio: Giuseppe Terragni Casa Del Fascio.” *Perspecta*, vol. 13/14, (1971), <http://www.jstor.org/stable/i270585>. (accessed August 26, 2012), p. 42.]

Hence solid reading of the project was associated with the interpretation of the plans by Eisenman. However, observation of the north façade of Casa Giuliani Frigerio (figure 2.16) gives us the first hint about “intention to erode the primary solid reading”⁷⁸. Moreover, these dual readings were being increasingly conceived by Eisenman for developing deep structure of the project by making observations on the other pictorial illustrations. Seen in the north facade, the horizontal window slot at the bottom part of the drawing is interpreted as an attempt to flourish a planar reading of the façade surface by breaking the relation of surface to the ground. The surface of the façade can be considered as a plane elevated from the ground like Villa Savoye.

⁷⁸ Ibid., p.42.

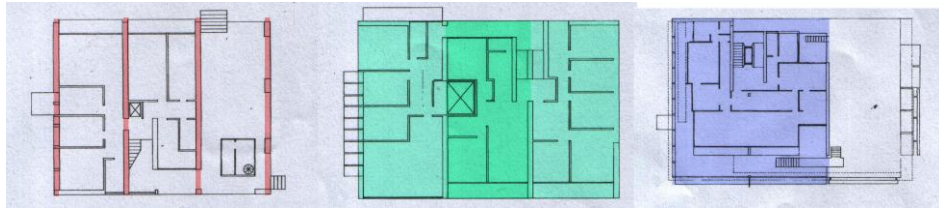


Figure 2.15: Reading of solid via the plans of Casa Giuliani Frigerio.

[Source: Peter Eisenman, "From Object to Relationship II: Casa Giuliani Frigerio: Giuseppe Terragni Casa Del Fascio." *Perspecta*, vol. 13/14, (1971), <http://www.jstor.org/stable/i270585>. (accessed August 26, 2012), p. 43, Edited by the Author.]

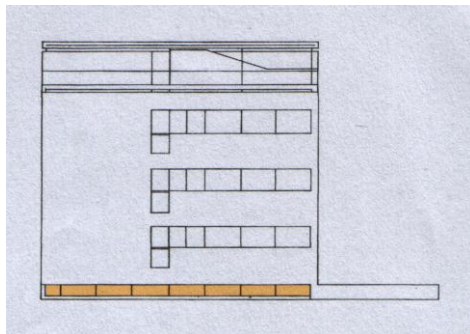


Figure 2.16: The north facade of Casa Giuliani Frigerio.

[Source: Peter Eisenman, "From Object to Relationship II: Casa Giuliani Frigerio: Giuseppe Terragni Casa Del Fascio." *Perspecta*, vol. 13/14, (1971), <http://www.jstor.org/stable/i270585>. (accessed August 26, 2012), p. 43, Edited by the Author.]

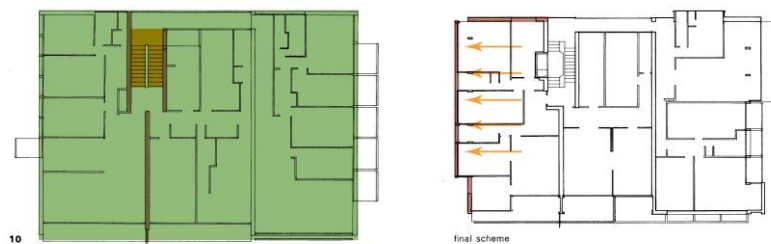


Figure 2.17: The position of stairs and the extension of north façade.

[Source: Peter Eisenman, "From Object to Relationship II: Casa Giuliani Frigerio: Giuseppe Terragni Casa Del Fascio." *Perspecta*, vol. 13/14, (1971), <http://www.jstor.org/stable/i270585>. (accessed August 26, 2012), p. 44, Edited by the Author.]

In the case of Casa Giuliani Frigerio, the list of possible readings is expected to be a continuous over the drawings. That is to say, the dual reading has to be able to recondition and diversify itself according to illustration of the building. Concordantly, comparing final condition of the plans of the project might result in the planar reading of the north façade (figure 2.17), which would have been induced with the position of stairs in the design. Therefore it is seen that for the interior composition, staircase resides in the middle of the second volumetric plane. For this reason, solid corner on northwest is forced to be apart from the west façade, and that is causing the planar reading for the façade.



Figure 2.18: The north facade of Casa Giuliani Frigerio.

[Source: Peter Eisenman, “From Object to Relationship II: Casa Giuliani Frigerio: Giuseppe Terragni Casa Del Fascio.” *Perspecta*, vol. 13/14, (1971), <http://www.jstor.org/stable/i270585>. (accessed August 26, 2012), p. 45.]

While on one hand, possibilities for dual reading increase in the oblique view of the facade. In this sense, the solid volumetric extension in the north façade (figure 2.18), can be considered as either a plane or a solid part cut away from the main solid (figure 2.19). The corner condition of the extension gives us the planar

reading by splitting from other façade and roof surfaces. Strikingly, considering the extension of building as an initial solid, the volume around the extension can be seen as subtraction from the conceptual solid. However, on the northeast corner of the building, the extension line up with the inner face of the east façade, that is another supporting corner condition of the planar reading for facade.

The logic of the dual reading ambiguity also presents itself in oblique view of east facade of the project. (Figure 2.20) As mentioned earlier, the boundaries of the building can be considered as a conceptual solid, which would receive a subtraction operation on the roof part. In turn, it is proposed that the information gathered from boundaries is to be used in the solid-volumetric reading of the project. Although the oblique view and the boundaries point out to a conceptual solid, the corner conditions prefigures an additive planar reading that would have sounded like the analysis of the north facade as discussed above (that is: the planes perpendicular to the facade are guided by the articulations on it). Therefore, the east facade can also be considered as a referential plane that guides the inner planes with the help of articulated parts on it.

At this point, it must be remarked that the dual readings on east facade demands specifically the oblique view, and like the north facade, the additional planar reading is available via the corner conditions of the building. However, the east façade (figure 2.21) would only be considered as a conceptual solid and validated as a solid cut away system by openings articulation, when the façade is observed frontally. In this respect, the openings do not provide any clue about the inner organization of the building. Although they seem to be clustering the façade plane, they can rather be regarded to group the constituent demands of inner volume for light. Demands of the dual readings are prevented by the perceptual limitations of frontal view of east façade for any alternative readings.

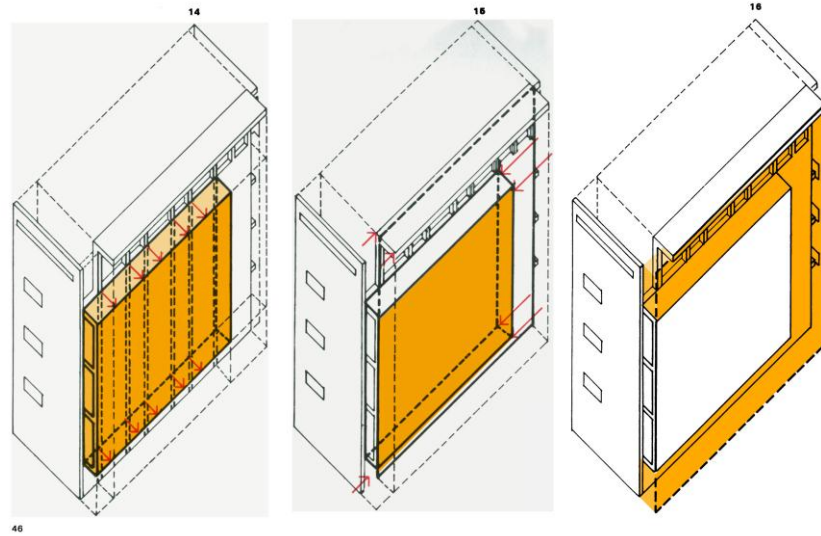


Figure 2.19: The dual reading of north façade on the oblique view.

[Source: Peter Eisenman, "From Object to Relationship II: Casa Giuliani Frigerio: Giuseppe Terragni Casa Del Fascio." *Perspecta*, vol. 13/14, (1971), <http://www.jstor.org/stable/i270585>. (accessed August 26, 2012), p. 46, Edited by the Author.]

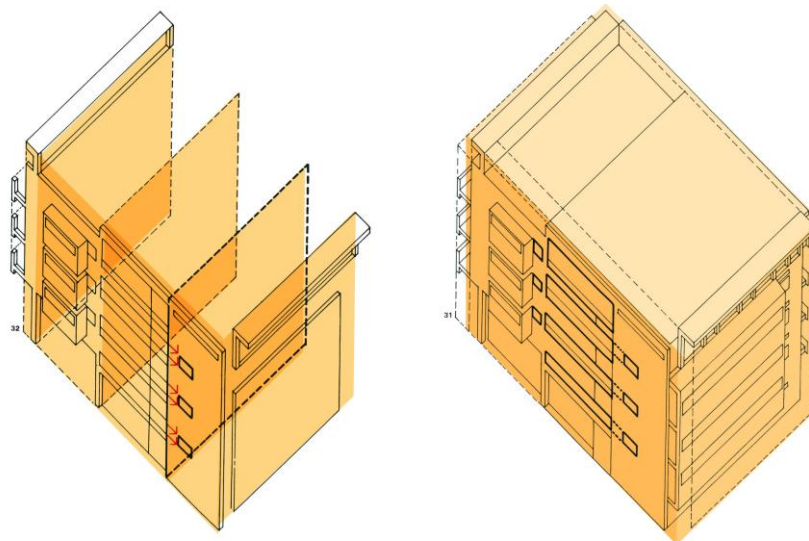


Figure 2.20: The dual reading of east façade on the oblique view.

[Source: Peter Eisenman, "From Object to Relationship II: Casa Giuliani Frigerio: Giuseppe Terragni Casa Del Fascio." *Perspecta*, vol. 13/14, (1971), <http://www.jstor.org/stable/i270585>. (accessed August 26, 2012), p. 53, Edited by the Author.]

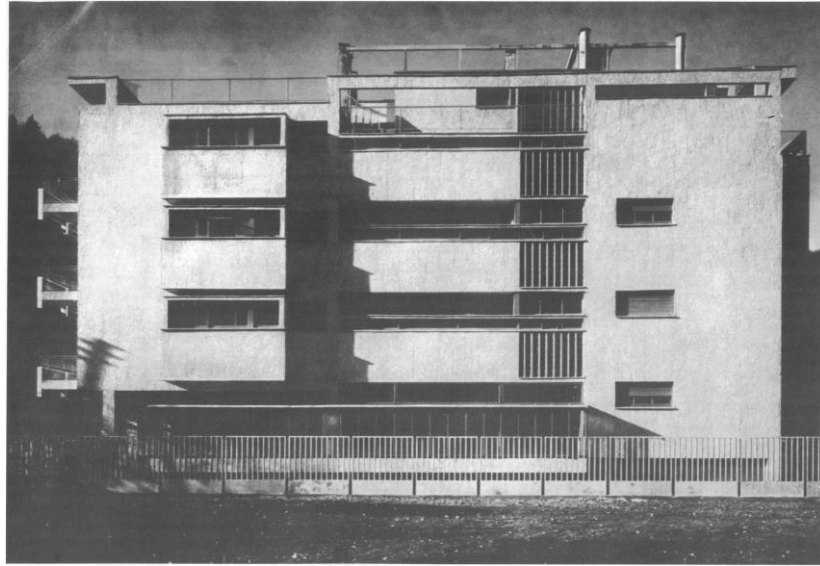


Figure 2.21: The east façade of Casa Giuliani Frigerio.

[Source: Peter Eisenman, "From Object to Relationship II: Casa Giuliani Frigerio: Giuseppe Terragni Casa Del Fascio." *Perspecta*, vol. 13/14, (1971), <http://www.jstor.org/stable/i270585>. (accessed August 26, 2012), p. 50.]



Figure 2.22: The cut-away operation on the façade.

[Source: Peter Eisenman, "From Object to Relationship II: Casa Giuliani Frigerio: Giuseppe Terragni Casa Del Fascio." *Perspecta*, vol. 13/14, (1971), <http://www.jstor.org/stable/i270585>. (accessed August 26, 2012), p. 62, Edited by the Author.]

Therefore, the formal structure reading of Casa Giuliani Frigerio depends on the reference view of the observer for the east façade. In the discussion about the formal structure comparison of Casa Giuliani Frigerio and Casa del Fascio, Eisenman noted that:

Thus while the Casa del Fascio suppresses the oblique, and the corresponding diagonal structure for frontal relationships, the Casa Giuliani Frigerio demands the oblique. It is interesting to note that in both buildings, while there is an emphasis on façade articulation as a notation for the specific syntax, in neither case does the articulation carry through the building to a complementary ordering of the internal spatial structure.⁷⁹

The possibilities of the dual readings acquired by various observations of distinct views can also be provided in the sequential illustration of the building. Furthermore, the more-detailed interpretation of the east façade illustrates the diversity of possibilities for solid base reading. For instance, although the framed boundary of the building seems to be flattened solid in the frontal vista, Eisenman illustrates the possibility of reading cut-away operation by indicating staircase articulation on the façade. (Figure 2.22)

This conceptual ambiguity of the building analysis continues with positioning the dual reading in various views of the south facade. On the one hand, providing a boundary for solid volumetric interpretation makes the building available for use in framing with the solid edges. Although indirectly, this interpretation still takes advantage of this quality by utilizing an elaborated observation of the frontal view (figure 2.23) for indication of the frame. It is also the room for interpretation that sets the course for reading the form via the oblique view – for Peter Eisenman determinedly approves the solid reading of the facade in a certain sense. On the other hand, the room for planar additive interpretation brings along a vital requirement for oblique view and corner conditions. While defining for a larger frame for conceptual solid, the volumetric definition of the façade derives from erosion around the balcony segment, as argued by Eisenman in the oblique view.

⁷⁹ Peter Eisenman, “From Object to Relationship II: Casa Giuliani Frigerio: Giuseppe Terragni Casa Del Fascio.” *Perspecta*, vol. 13/14, (1971), <http://www.jstor.org/stable/i270585>. (accessed August 26, 2012), p. 51.

However, the lack of precision in the defined frame also induces the potential planar reading of the façade. (Figure 2.24) The ambiguity around the definitions of the building can lead us to the alternative reading by defining the balcony partition as a plane. Thus, being associated with corner conditions, reading of the south façade can easily be turned into planar additive reading.

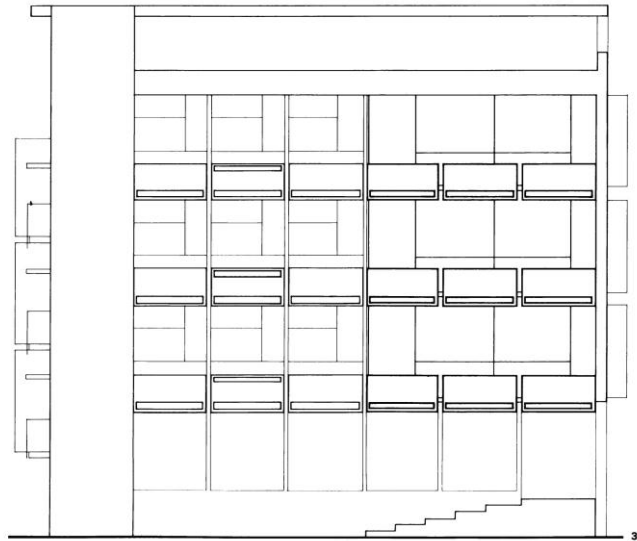


Figure 2.23: The south façade of Casa Giuliani Frigerio.

[Source: Peter Eisenman, “From Object to Relationship II: Casa Giuliani Frigerio: Giuseppe Terragni Casa Del Fascio.” *Perspecta*, vol. 13/14, (1971), <http://www.jstor.org/stable/i270585>. (accessed August 26, 2012), p. 56.]

Eisenman argues that the southeast corner of the building (figure 2.25) should be able to adapt the dual reading to the additive planar reading by defining wall of the east facade as a “datum marking the corner of the internal volume.”⁸⁰ In the southeast corner, the “datum” plane extends to south that exceeds the columnar grid for supporting the planar reading.

⁸⁰ Peter Eisenman, “From Object to Relationship II: Casa Giuliani Frigerio: Giuseppe Terragni Casa Del Fascio.” *Perspecta*, vol. 13/14, (1971), <http://www.jstor.org/stable/i270585>. (accessed August 26, 2012), p. 55.

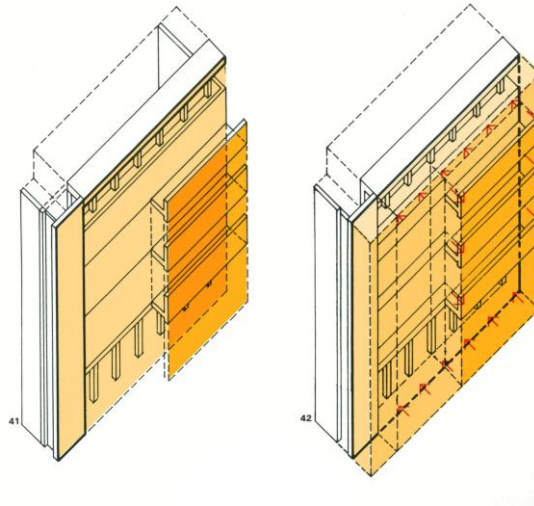


Figure 2.24: The dual reading of south façade on the oblique view.

[Source: Peter Eisenman, “From Object to Relationship II: Casa Giuliani Frigerio: Giuseppe Terragni Casa Del Fascio.” *Perspecta*, vol. 13/14, (1971), <http://www.jstor.org/stable/i270585>. (accessed August 26, 2012), p. 57, Edited by the Author.]

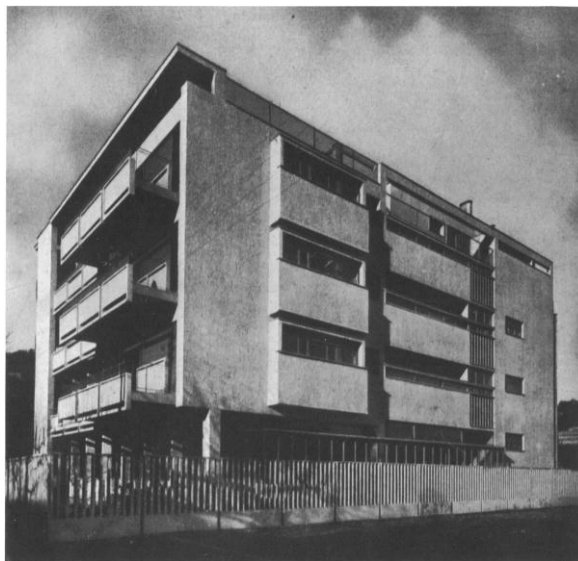


Figure 2.25: The southeast corner condition.

[Source: Peter Eisenman, “From Object to Relationship II: Casa Giuliani Frigerio: Giuseppe Terragni Casa Del Fascio.” *Perspecta*, vol. 13/14, (1971), <http://www.jstor.org/stable/i270585>. (accessed August 26, 2012), p. 55.]

It must be remarked that the extension of the south facade plane passes border of the west façade plane that breaks the solid edge reading (or guiding the planar reading) in the design stage. Besides, the edge of the balconies matches with inner face of the east wall that strengthens this alternative reading. In a very brief sense, on the deep structure level, Eisenman's notion of the dual reading as a transformational tool is available for north, east, and south facades via examining the illustrations. On the other hand, the west façade of Casa Guiliani Frigerio can be interpreted mostly in the planar reading via illustrations. As observed in various representations of Casa Guiliani Frigerio, the project is defined either as a "conceptual solid" with the subtraction operation or as a planar layering with addition of the planes to the east facade plane. In the case of the west façade, these readings are expected to be a continuous in the progress. However, the articulation on the façade is more related with the vertical planar reading for Eisenman. That is to say, the triple segmentation emphasizes this vertical layering in the façade. In this sense, this reading is clearly pointed out in Eisenman's argument:

The dialectic of solid volumes and planar reading is less important than the ambiguity developed by marking of the vertical layering. On the northwest the line of the balconies and the edge of the roof project beyond the solid corner of the north façade, thus again reducing any volumetric reading. A similar condition also pertains on the southwest corner which because of the placement of outriggers, tends to give the entire façade an 'open' notation.⁸¹

Concordantly, observing the illustrations of the façade (figure 2.26) as such might result in comprehending the open façade notation, which would have been consistent with previously defined planar organization of the form. The horizontal extensions of balconies help the understanding of the open façade. In addition, the corner conditions of the façade prevent any solid-volumetric reading of the form. Therefore it is seen that for the west facade to be convenient in vertical planar reading (figure 2.27), and interpretations of the articulations cannot be considered as a conceptual solid. Rather, they may arise from the vertical layering.

⁸¹ Ibid, p.59.



Figure 2.26: The southwest corner condition.

[Source: Peter Eisenman, "From Object to Relationship II: Casa Giuliani Frigerio: Giuseppe Terragni Casa Del Fascio." *Perspecta*, vol. 13/14, (1971), <http://www.jstor.org/stable/i270585>. (accessed August 26, 2012), p. 58.]

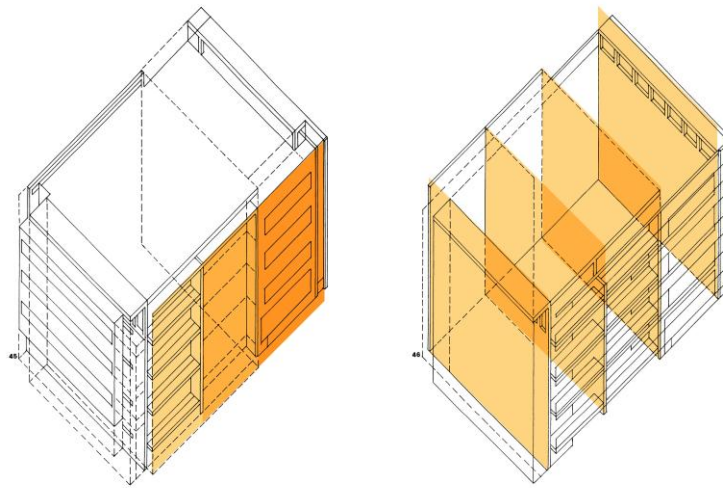


Figure 2.27: The vertical layering of west façade on the oblique view.

[Source: Peter Eisenman, "From Object to Relationship II: Casa Giuliani Frigerio: Giuseppe Terragni Casa Del Fascio." *Perspecta*, vol. 13/14, (1971), <http://www.jstor.org/stable/i270585>. (accessed August 26, 2012), p. 59, Edited by the Author.]

It must be stated at this point that simply redefining the deep structure in Eisenman's discussion for Casa Giuliani Frigerio would not be sufficient within the context of this thesis. As mentioned earlier, this discussion should be examined according to the "surface" use in the analysis, since it is the main focus of the thesis. In fact, "surface", as in the vocabulary definition (in the dissertation), itself is not directly mentioned in the analyses of Fun Palace. Rather, it is used for understanding the conception of space via a solid (surface-mass) or planes, which are operative tools for the deep structure analysis. Therefore the focus shifted towards significances in the architectural grammar, rather than the definition of "surface". In addition, these significances would be rendered more efficient for analysis if the case project is also taken into consideration. In other words, including Casa Giuliani Frigerio as well as "surface" in the discussion on "deep structure" is necessary for producing relevant arguments. On the other hand, attempting an association between "surface" (as a generic form element) and deep structure might seem contradictory at first. However, the main tool of introducing the dual reading in this discussion is exposing that "surface" provide an important reference from his dissertation to this analysis. Thus, this study on the architectural grammar enables to define a rational design process for Eisenman. In his words:

Within the limits of this one transformational device an infinite range of specific forms can be conceived which have the possibility for rational interpretation based on a limited series of formal universals. In a design process this type of formal analysis also remains limited, as the intuition still plans a dominant role. Chomsky has said that as long as a grammar remains at an intuitive or less than conscious level, many strategies remain unavailable to the user. Thus, an exploration of the realm of deep level syntax would be necessary to develop a finite structure of formational rules to which each specific syntactic structure could relate. Rather than limiting the intuition, such an objective understanding might lead to freeing and expanding of the role of the intuition in a rational design process.⁸²

⁸² Peter Eisenman, "From Object to Relationship II: Casa Giuliani Frigerio: Giuseppe Terragni Casa Del Fascio." *Perspecta*, vol. 13/14, (1971), <http://www.jstor.org/stable/i270585>. (accessed August 26, 2012), p. 61.

Therefore, it can be stated without hesitation that both architectural vocabulary (in Eisenman's dissertation) and grammar (in his conception of deep structure) presents a critical use of architectural surface. Surface is required for a rational analysis in favor of architectural language. In a very brief sense, Eisenman's notion of universal language for architecture assigns surface as a descriptive and transformational tool into design process, and its limit is developed in his further works by the help of the computer technology. As a result, in the following chapter, this thesis will continue the conceptualization of surface as an instrument for his diagrams.

CHAPTER 3

CONCEPTUALIZATION OF “SURFACE” AS A DIAGRAM

This study utilizes an elaborated discussion of “surface” for discovering its conceptualization in architecture, specifically in Eisenman’s works (writings and projects). In this chapter, “surface” will be examined for the purpose of presenting its evolution from an architectural language component to a diagrammatic tool for his practices. In other words, besides arguing “surface” in a theoretical framework constituted by Eisenman or as “an improving conception” throughout his works, “surface” will be re-examined in order to reveal reflections of inferences discussed in the previous chapter. This examination is expected to help discovering the productive potentials embedded in Eisenman’s architectural practices.

In order to infer effective readings of Eisenman’s practices in terms of usage of “surface”, one first needs to understand its definitions and connotations. A closer investigation on surface in the second chapter has revealed considerable amounts of data from the roots of his form discussions, which holds invaluable hints on the original intention for the creation of architectural language. Taking this as a starting point, this chapter will proceed by examining Eisenman’s book, titled as *Diagram Diaries* (1999), which will indicate the relevance between his theoretical framework and his actual practice in terms of surface usage. In addition, some projects are added into the discussion in order to emphasize the inferences from the readings in relation to the surface usage. At this point it should be underlined once more that the aim of this discussion is neither defining a brand new analysis of Eisenman’s projects in its wholeness, nor trying to classify them as surface-based projects. Rather, the aim is to support the arguments in his writings from a fresh point of view, which is provided by introducing process into the analysis. Apparently, conventional definitions of surface cannot provide a framework for the

production of architectural form. Subsequently, this inadequacy creates a need for an alternative reading according to inferences from the surface discussions. In the following part of the study, while continuing the discussion regarding surface as a diagrammatic tool, the focus is shifted to the relations between the concept of “surface” and its practice.

3.1 “Surface” as Conceptual Element in the Diagrams

It has been argued so far that the potential of architectural surface both as a formal element (that is discussed in the PhD thesis) and as a syntactic tool (that is discussed in the deep structure analysis of Casa Giuliani Frigerio) significantly constitutes the architectural language (as proposed by Eisenman). However, as the processing of design activities may result in numerous new configurations, the architectural language of Eisenman has to reconfigure itself to enable various necessity of the present conditions (computer technologies, etc). Having said that, as important as the configuration of architectural language, main focus of this part of the thesis is the discussion of diagram and surface relations in reference to Eisenman’s book *Diagram Diaries* (1999). In the book the use of diagram concentrates on the design process. A quick observation on Eisenman’s works pointed out the diagram as the final statement. R. E. Somol approvingly notes:

Proceeding with halting steps through serial obsession with form, language, and representation — though, as will be seen, equally with program, force, and performance— the diagram has seemingly emerged as the final tool, in both its millennial and desperate guises, for architectural production and discourse.⁸³

⁸³ Robert E Somol, “Dummy Text, or The Diagrammatic Basis of Contemporary Architecture.” In *Diagram Diaries*. Peter Eisenman. New York : Universe Publishing, 1999, p. 7.

It is seen that diagram is considered as a major constituent of flexibility of design process within the current context. In the beginning, the reason for emphasizing a universal language in architecture appears to be a response to Rowe and Alexander.

Considering the formal analysis of Rowe, the contribution of Eisenman can be inferred as the suspension of the formalist discourse to a structural base.⁸⁴ The proposed base concordantly utilizes Rowe's formalism, based on the perception, for the work of a language. The main shift can be discussed as the improvement from the sensual aspect of the object to the universal aspect of the object (as observed in the definition of "generic form") and the configuration of the vocabulary for the language. Besides adapting to these discourses in the work of architectural language, further researches of Eisenman also contribute to an equally essential discussion of architectural grammar. The discussion within the context itself creates a progress in his architectural language, which echoes to a rather important conception of syntax (grammar).

Eisenman's inference on "Chomsky's linguistics discussions" contributes to his work of language from various aspects. The conception of "linguistic" has been interpreted in the previous part for its contribution to his formal language in the design process. It has been briefly argued by Sarah Whiting that "Eisenman identified three semiotic categories for architecture: *pragmatics* (functionalism), *semiotic* (iconography, or relations between symbols and their referents) and *syntactic* (structuralism, or the relationship of symbol to symbol)."⁸⁵ Moreover, Eisenman points out the continuous phase of work of the language made possible the syntactic aspect of architecture (the deep structure) by providing both planar and solid reading of Terragni's work. Subsequently, the dual reading of the Casa Giuliani Frigerio displays potentials and limitations of the language in that time. In Somol's words:

⁸⁴ Ibid. 14.

⁸⁵ Sarah Whiting, "Euphoric Ratio", *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 101.

The effect of this dual reading is not primarily aesthetic, but operates as an index of a deep structure: that is it investigates and makes apparent the possibilities and limitations of the architectural language itself. Eisenman's attention to form, then, can be seen as a means to advance this transformational method as both an analytic and synthetic design tool.⁸⁶

Following Eisenman's architectural language point of view, the matter of interest is seen to be designing an autonomous universal language that enables communication between architect and client. The vocabulary and linguistics discussions, argued in the previous parts of this thesis, manifest their limits and potentials in the design processes. Therefore, in the book titled as *Diagram Diaries*, Eisenman introduces the "diagram" as the new conception, in order to broaden the limits of architectural language. Actually, his dissertation can be expressed as the first "use of diagram" via diagram discussions.⁸⁷ A trait common to all of these diagram discussions define the diagram as a representational tool. To be more specific, diagram is described as "graphical shorthand" by him. Even more importantly, it is a representation of something – despite being not necessarily an abstraction– "in that it is not the thing itself".⁸⁸ In this sense, Eisenman mentions the diagram in architecture, noting:

In architecture the diagram is historically understood in two ways: as an explanatory or analytical device and as a generative device. Although it is often argued that the diagram is a post-representational form, in instance of explanation and analysis the diagram is a form of representation. In an analytical role, the diagram represents in a different way of from a sketch or a plan of a building.⁸⁹

It would be seen in Eisenman's notes, in the whole design processes, including the dissertation and analysis of Terragni's projects, the diagram is postulated as an

⁸⁶ Robert E Somol, "Dummy Text, or The Diagrammatic Basis of Contemporary Architecture." In *Diagram Diaries*. Peter Eisenman. New York : Universe Publishing, 1999, p. 16.

⁸⁷ Peter Eisenman, "Diagrams of Interiority", *Diagram Diaries*. New York : Universe Publishing, 1999, p. 48.

⁸⁸ Peter Eisenman, "Diagram: an Original Scene of Writing", *Diagram Diaries*, A Division of Rizzoli International Publication, New York, 1999, p. 27.

⁸⁹ Ibid.

analytical and generative tool. Reconsideration of the dissertation via discussions explicates the potential of revealing the autonomy of architecture, which may further facilitate and guide the “interiority” of Eisenman’s architectural diagrams. In this respect, the generative role of diagram might contribute to extend the limits of the design process, while sustaining the aim of autonomy via universal language. Here, his statements’ intention is to reveal the autonomous potential of architectural diagram rather than simply describing the design process:

Architecture is traditionally concerned with external phenomena: politics, social conditions, cultural values, and the like. Rarely has it theoretically examined its own discourse, its interiority. My work on the diagram is one such examination. It concerns the possibility that architecture can manifest itself, manifest its own interiority in a realized building. The diagram is a part of a process that intends to open architecture to its own discourse, to its own rhetoric and thus to potential tropes which are latent within it.⁹⁰

Hence, the inferences via diagrams should be considered as a part of an ongoing process of gaining autonomy of architecture, which continues to reconfigure itself with time and experience (similar to the language proposal of Eisenman in the dissertation and syntactic analysis of Casa Giuliani Frigerio). On the other hand, gaining autonomy in his discussion of “diagram” does not mean to develop an ultimate result for each diagram in the design process. He points out the unstable nature of the “diagram” in these sentences:

A diagram is not a plan, nor is it a static entity. Rather it is conceived of as a series of energies which draw upon the interiority and anteriority of architecture as a potential for generating new configuration.⁹¹

[...], the diagram is not a scientific instrument that gives a precise reading; rather it allows a given range of readings at the same time that it obscures others.⁹²

⁹⁰ Peter Eisenman, “Diagrams of Anteriority”, *Diagram Diaries*. New York : Universe Publishing, 1999, p. 37.

⁹¹ Ibid., pp. 37-38.

⁹² Ibid, p.40.

Therefore, while incorporating the end product of a design process, the “diagram,” with its considerable flexibility in perception and in generating forms, differs greatly from conventional diagram. The inferences throughout these arguments render clearer why and how Eisenman’s conception of diagram is differed from Christopher Alexander’s understating of diagram in his study (*Notes on a Synthesis of Form*). Apparently, the common point of them is making (and abundantly provoking) the “diagram” as the focal point in order to explain the design process. On the other hand, the very same conception poses a strong discrepancy within the conception of inference from the diagram. As observed in and not limited to Alexander’s dissertation, the main inquiry depends on determining the “fitness of form” via diagrammatic process and within the “static truth condition”. In doing so, Eisenman defines a set of theories about diagrammatic practices that are thought to release the potential for forms notating the forces of their emergence. For this reason, the intellectual framework of Eisenman’s “diagram” rejects Alexander’s idea of diagram (pattern) for revealing the generative nature of diagram as a concept.⁹³ Consequently, conceiving the word “diagram” in the definition of Eisenman and of Alexander would lead to different interpretations of the term. Eisenman’s interpretations present reasonable discrepancy and progress in the generative and constitutive dimensions of architectural diagram that is to be introduced. Approvingly, Somol remarks on the significance of his diagram:

[...], Eisenman’s deviation of form would move not to information or the sign [...], but to the trace, the missing index of formal processes.⁹⁴

It is essential to comprehend the contribution of diagram to Eisenman’s practices in order to inquire why diagram as a concept is being utilized by various architects, including him. As Somol points out “the fundamental technique and procedure of architectural knowledge has seemingly shifted, over the second half of the

⁹³ Robert E Somol, “Dummy Text, or The Diagrammatic Basis of Contemporary Architecture.” In *Diagram Diaries*. Peter Eisenman. New York : Universe Publishing, 1999, pp. 7-10.

⁹⁴ Ibid. p.14.

twentieth century, from the drawing to the diagram.”⁹⁵ Evidently, one reason seems to be the blurriness between desired-images and the physical fact. The generally noticed, the vital nuance of contemporary diagram use is the computer technology, which is a core quality of Eisenman’s present projects. On the contrary, earlier works of him – either analytic diagrams in the dissertation and the analysis of Terragni’s works or diagrams of earlier projects presented by him – are created with the same technique of drawing, quite contrary to the complexity of any contemporary project. Thus it is seen that diagram as a concept bears both manual and digital dimensions, and the progress of diagram into the digital medium enables Eisenman to achieve the objective of expanding the limits of analytic and generative structure of it.

Advancing the potential of registering site forces and movement via inflections in generic form, Eisenman’s transformational diagramming techniques anticipate the need for (and predict the possibilities of) the later development of 3D modeling and animation software.⁹⁶

Consistently, an elaborated inspection reveals that there has been occurred a significant shift in both the conception and the use of diagram. For the sake of clarity and consistency of arguments, these issues must be individually pointed out and reassessed for their congruence to the “surface” discussion.

3.1.1. Development of “Surface” Treatments via Eisenman’s Diagrams

Diagrams play a crucial role in Eisenman’s conceptualization of architectural understanding. According to his definition, “diagram” should be conceived as a tool that provides guidelines as to how its transformative potential can be

⁹⁵ Ibid, p. 7.

⁹⁶ Ibid, p. 10.

achieved, rather than enforcing strict prescriptions for practice.⁹⁷ It would be convenient at this point to remind how “diagram” is relevant in the course of this study, and how their use may enhance the understanding of “surface” use in the design process.

It has been mentioned earlier in this thesis that the definition of architectural surface emerges from an elaborated definition of “generic form properties”, provided by Eisenman. In the dissertation, he provisionally defines his conception of “generic form” as a set of generic properties (mass, surface, volume, movement), which are intended to conduct practices of modern architecture. In this respect, he seeks to establish a constitutive use for these properties on actual practice in which “surface” has a central role in it. For this task, he argues that, “generic form” must be emancipated from its supposed perceptual connotations which constitute the iconographic and aesthetic dimensions of the architectural form. As Somol remarks, Eisenman continues his architectural language conceptions with Chomsky’s discussions:

By 1970 Eisenman would distinguish the practices of Corbusier and Terragni (and, indirectly, Rowe’s formalism from his own) by incorporating terminology from the structural linguistics of Noam Chomsky. While Corbusier’s architecture remains committed to creating meaning through iconography, through the *semantics* of the object, Eisenman claims that Terragni’s work is concerned with revealing a *syntactic* of the architectural language. This shift represents a move away from a concern with the *perceptual-aesthetic* qualities of the object toward an attempt to mark the *conceptual relationships* that underlie and make possible any (and every) particular formal arrangement.⁹⁸

Consonantly, unlike the iconographic and aesthetic dimension of form, the constitutive dimension (architectural grammar or syntax) harnesses creative potentials with a critical approach to “surface”. That is, while adopting Chomsky’s linguistic discussions as rethinking on architectural language, Eisenman also

⁹⁷ Peter Eisenman, “Diagrams of Anteriority”, *Diagram Diaries*. New York : Universe Publishing, 1999, p. 37-40.

⁹⁸ Robert E Somol, “Dummy Text, or The Diagrammatic Basis of Contemporary Architecture.” In *Diagram Diaries*. Peter Eisenman. New York : Universe Publishing, 1999, p. 15.

presents the connection of surface to grammar in practice. In this sense, surface is taken as an input (solid and plane) for devising the dual reading in Casa Guiliani Frigerio. To be specific, observing the existing discussions, his architectural language conception can be utilized as a critical thinking of architectural “surface”, which defines guides to the design process towards the achievement of providing alternative perspectives.

Paralleling the elaborated definition of the architectural language, his discussions on “diagrams” indicate the presence of surface use as the initiating and activating input for design process. Eisenman’s diagrams stem from two distinct concerns; two motivation sources which can be defined as interior and exterior motivations. And, diagrams’ creative potential relies on determining the interpretation of these motivations as a primary force. To be more specific, his diagrams can be driven either by a critical thinking over “internal logic” of architecture, which guides the design process towards the achievement of providing self-referential guidelines, or as an “external desire” which depends on the context of the project.⁹⁹

In light of the previous discussions in this thesis, it can be stated that Eisenman obviously intends to constitute his early diagrams via “internal logic”, in contrast to his contemporary diagrams. To begin with, his early diagrams have self-referential structures, which construct his proposition of architectural language. Guido Zuliani confidently lists some of Eisenman’s works on the use of autonomy in architecture and indicates the internal logic (internal motivation) in these early diagrams:

In his thesis, as well as in his book on Giuseppe Terragni and his essays on House I and House II, one of Eisenman’s primary contributions to the development of the work of architecture as autonomous is the definition of a fundamental antimony specific to architecture.¹⁰⁰

⁹⁹ Peter Eisenman, “The Diagram and the Becoming Unmotivated of the Sign”, *Diagram Diaries*. New York : Universe Publishing, 1999, p. 211.

¹⁰⁰ Guido Zuliani, “Evidence of Things Unseen”, *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 344.

In addition, Eisenman states that:

Nevertheless, given my lack of prior training in such matters, the diagrams in the thesis remain an important initial document of my thinking about a relationship of built work to an architectural interiority. My first two house projects were a further analysis of the relationship of architecture's interiority in relation to built a form through the agency of the diagram. The idea was that the diagram could portray a logic of analogous to an interiority of architecture.¹⁰¹

Coherently, these diagrams embody arguments in which the change in the internal structure of what has to be addressed again inside the borders of architectural convention. However, "it must be understood in the context of these early diagrams that the idea of a *deep structure* in the interiority of architecture was never meant to be synonymous with the idea of a formal essence, even though the actual diagrams contained unmistakable references to some valued formal origins, such as Platonic solids."¹⁰² Namely, in this phase of his works, "surface" is used as a definitive tool that identifies the initial condition ("priori" in his definition) with the use of mostly solids and planes, and also, it is used as an analytical tool that tries to convey the information of design process to the observer (client) with the use of basic transformations (subtraction, juxtaposition, etc.).

In this respect, Eisenman emphasizes on two issues that inferred from the progress via house projects. The first one is "interiority was *a priori* condition of value that is stable set of geometric icons". The second one is "in transforming the geometry of the diagram into architecture it was realized that geometry does not merely transform itself from a diagram to become architecture. Architecture something more than geometry; walls has thickness, and space has density. Thus, the value placed on any geometry –Euclidean or topological– as a prior condition of interiority would always be contingent on

¹⁰¹ Peter Eisenman, "Diagrams of Interiority", *Diagram Diaries*. New York : Universe Publishing, 1999, p. 53.

¹⁰² *Ibid*, p. 58.

some architectural interiority.”¹⁰³ In other words, even in these design processes of his earlier projects, there are exterior (such as geometry) references that cause instability for the interiority. However, there are also some constituents which only belong to the architecture’s interiority. Therefore, if the instability of architecture is unavoidable in diagramming, then it is possible to use exterior references in architectural autonomy. As a result, Eisenman claimed that, “if diagrams had to begin from such origin of value, whether from inside or outside architecture, they would always have a *priori* embodiment.”¹⁰⁴ In this sense, the diagrams of the Cannaregio housing project in Venice (1978) are identified as the first use of external motivation by Eisenman. In his words:

The Cannaregio project asked the following question: if interiority was no longer stable, then could the ground, an assumed architectural datum, also be questioned? This questioning of the ground datum would be the basis of many of following projects. At Cannaregio, the surface of the ground was conceptualized as artificial, no longer a Euclidean datum but rather as a topological surface. In this context, any geometric form whether Euclidean or topological, was seen to be artificial – that is, without any original value.¹⁰⁵

The datum “surface” examination in the case has pointed out several qualities in the design of Cannaregio. Eisenman defines this surface as *priori* condition between existing conditions and *posteriori* condition. Consequently, surface has helped the observer in tracking the process from the beginning with its artificial definition that is developing with the exterior references. The “surface” has been studied in terms of an external reference from Le Corbusier (the grid for his Venice Hospital project), and this Euclidean grid has been pasted on to the artificially defined topological surface.¹⁰⁶ In this diagramming, a “mathematical

¹⁰³ Peter Eisenman, “Diagrams of Exteriority”, *Diagram Diaries*. New York : Universe Publishing, 1999, pp. 169-170.

¹⁰⁴ Ibid, p. 172.

¹⁰⁵ Ibid, pp. 173-174.

¹⁰⁶ Ibid, pp. 174-175.

figure”, was also introduced; the Möbius strip.¹⁰⁷ The section diagrams indicate the relations between the inside and outside conditions and the surface (figure 3.1). Somol defines this shift (from internal to external motivations) in diagramming in relation with the issue of “concept”:

While the house series focused on *process* as a way to displace the designer as an authoring agent, the archeological projects (from Cannaregio to Wexner) sought new definitions of *context* that would destabilize the static identity of place.¹⁰⁸

In addition to the discussion of interiority and exteriority in Eisenman’s diagrams, the conception of materiality has also been attached on this surface for possibilities of reconfiguration in design process. In this sense, he identifies this initial surface as a “rubber sheet” in order to express his articulations on it.¹⁰⁹ Considering this conception of materiality, it can be stated that conception is first attempted in the diagrams of House IV (1971). Thus it can be seen that there was an emerging concern and demand in the diagrams for a change in surface considerations. (Figure 3.2) As mentioned, the “idea of *wallness*” and opposition to “planeness” made it possible not only to express surface’s materiality, but also to devise proper ways of overcoming its “function and meaning”¹¹⁰. Apparently, as Eisenman would point out that “plane” had been inadequate to “describe the being of architecture”. Meanwhile, in diagramming, “*wallness*” can be described specifically in terms of architecture.¹¹¹ Therefore, it can be argued that the shift of materiality in surface is proposed by the new demand for interiority of architecture.

¹⁰⁷ Ibid, p. 173.

¹⁰⁸ Robert E Somol, “Dummy Text, or The Diagrammatic Basis of Contemporary Architecture.” In *Diagram Diaries*. Peter Eisenman. New York : Universe Publishing, 1999, p. 22.

¹⁰⁹ Peter Eisenman, “Diagrams of Exteriority”, *Diagram Diaries*. New York : Universe Publishing, 1999, p. 174.

¹¹⁰ Peter Eisenman, “Diagrams of Interiority”, *Diagram Diaries*. New York : Universe Publishing, 1999, p. 69.

¹¹¹ Ibid, pp. 69-72.

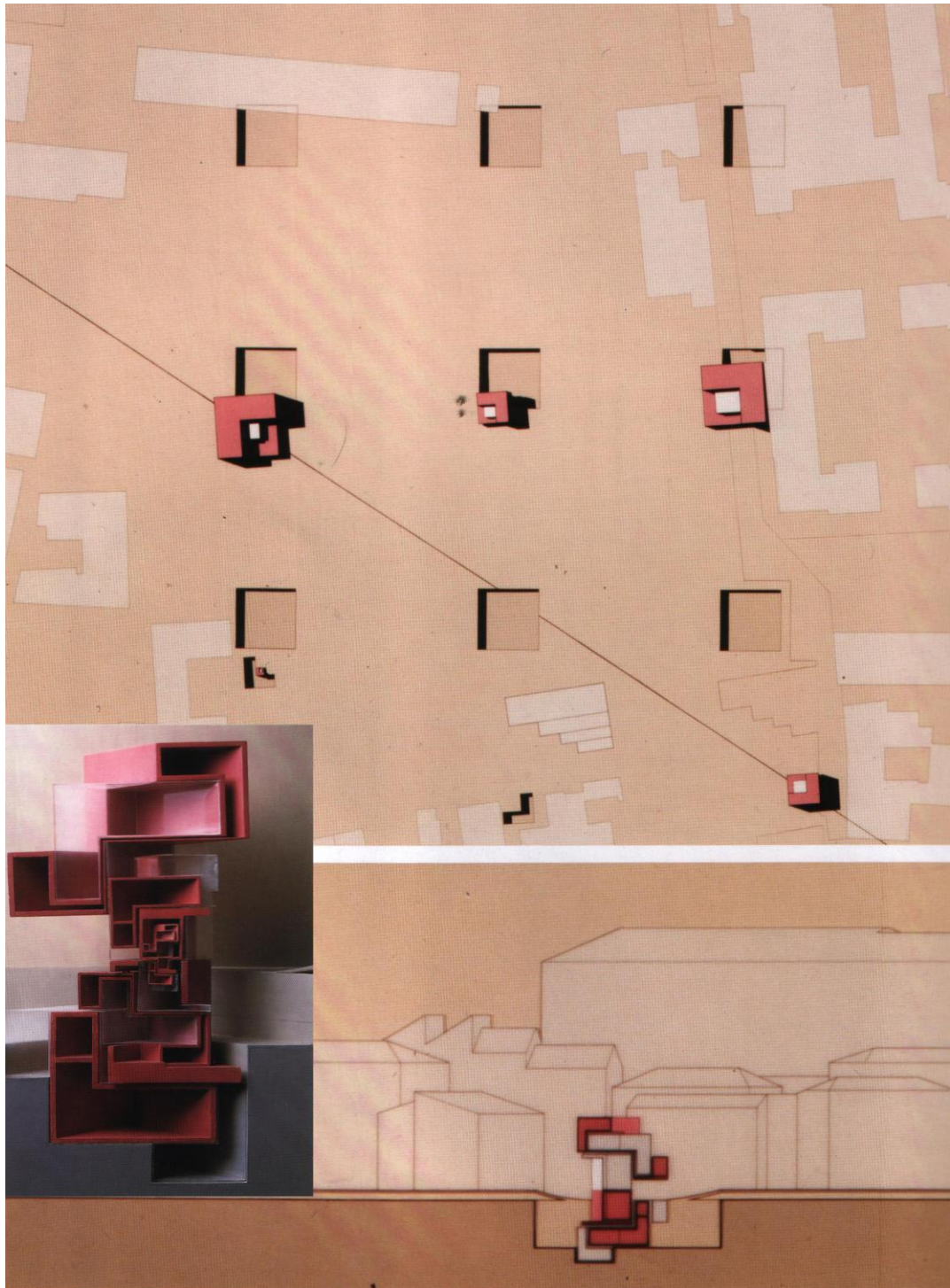


Figure 3.1: The “Surface” treatments in Cannaregio Housing Project in Venice (1978). [Cynthia Davidson, “Cannaregio”, *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 78.]

In this sense, the *materiality* of surfaces contributes to Eisenman's diagrams by coding "the limited set of elements" (solids, planes, and the grid) organization with "a limited set of rules" (shift, rotation, compression, and extension).¹¹² The inferences from the diagram discussions of Eisenman also point out that, the vertical planes is able to exceed its meaning and function, and they become an element in architectural interiority only when the term "wallness" is nominated."¹¹³ House VI (1972-1975) is extraordinarily relevant in this discussion, for its use of "wallness" is coupled with equally innovative materiality coding by color. Eisenman describes his diagrams of his earlier works as the summation of design process stages. However, in House VI, the diagrams represent these various stages in one frame. Then a whole frame can be acted as the design process. Eisenman approvingly notes:

Since House VI was no longer a representation of the diagrammatic process but in fact was the process itself, another coding was required, that is, coloring not only the diagrams but also the house. In addition, the coding was important to indicate levels of solid and void. As in House IV, the diagrams indicated wall surfaces by the notations solid, double solid, neutral solid, single void, and double void.¹¹⁴

In the light of Eisenman's point, in the diagrams of House VI (figure 3.3), it is seen that, the house is settled along a topological axis which is identified diagonally. Then a red and green staircase is placed in order to articulate the axis. Also, the diagrams indicate three kinds of axes; the grey axis represents the "neutral axis" that defines the center of the house with the white axis, and there are also black axes in order to identify the enclosures of the house.¹¹⁵

¹¹² Cynthia Davidson, "House IV", *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 44.

¹¹³ Peter Eisenman, "Diagrams of Interiority", *Diagram Diaries*. New York : Universe Publishing, 1999, p. 72.

¹¹⁴ Ibid, p. 77.

¹¹⁵ Ibid, p. 78.

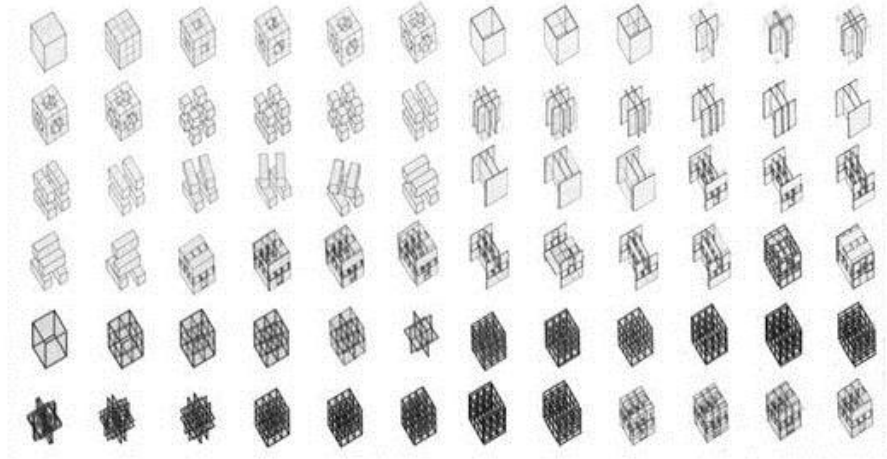


Figure 3.2: The diagrams of House IV project in Connecticut (1971).
 [Source: Cynthia Davidson, “House IV”, *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 47]

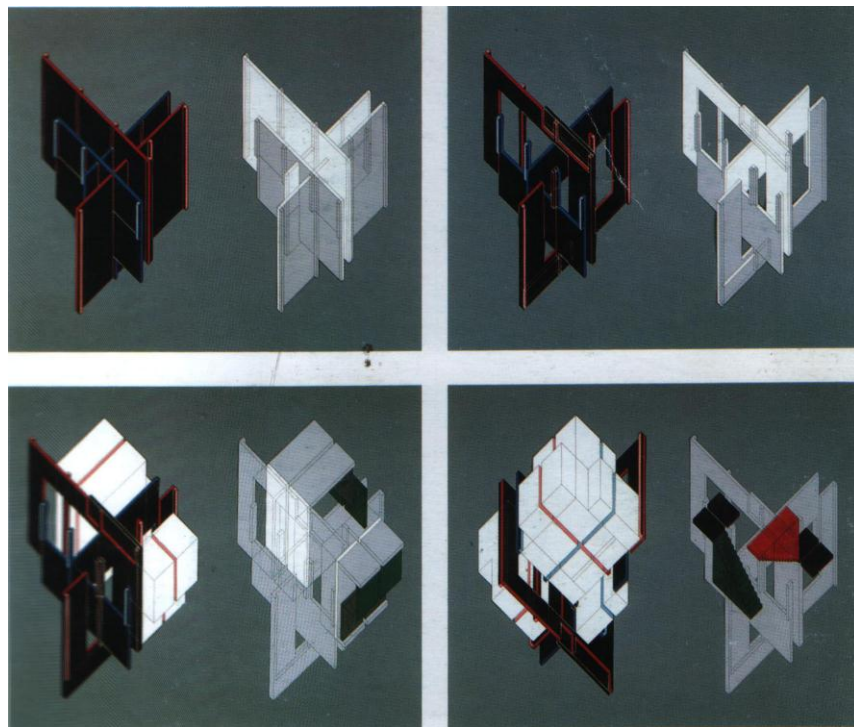


Figure 3.3: The materiality of surface via colors in House VI project in Connecticut (1972-1975). [Source: Peter Eisenman, “Diagrams of Interiority”, *Diagram Diaries*. New York : Universe Publishing, 1999, p. 65.]

At this point, another shift (from Euclidean space to topology) in the diagrams is revealed by Eisenman. That shift shows its full potential in design process with the help of computer technology that shall be discussed in the following chapter. Thus, in this reading of Eisenman, it is seen that surface is one of the main components with regard to various conceptions (generic role, materiality etc.), as in the dissertation and in the analysis of Terragni's house. Hence, the concluding part of this chapter will summarize the inferences of the study by considering the preceding readings together.

3.2. Inferences of “Surface” in Eisenman’s Written Texts

Considering these discussions, it is possible to bring several inferences forward for the sake of this inquiry. The conception of architectural language becomes prominent by considering his writings about diagrams (design process) and formal analyses of modernist architect's (Le Corbusier, Terragni) projects. In this sense, Eisenman tries to construct an architectural language for self-manifestation of his understanding of architecture. This language aims to convey the data of design process or analysis to a specific observer in certain terms. In his dissertation, Eisenman particularly dwelt on the establishment of architectural language. In doing so, he distinguished architectural form into “generic” and “specific”. By this distinction, he achieved to release the generic form from any subjective meaning and functions assigned to a specific form. Therefore, the generic form can be described as a formal essence (antecedent) or a priori condition of the specific form. At this point, the properties of generic form were presented as surface, mass, volume, and movement. Thus, these properties provide an architectural vocabulary. Regarding this vocabulary, surface has a dominant role compared with the other elements (mass, volume, movement). Significance of surface depends on the definitive task for describing the generic form.

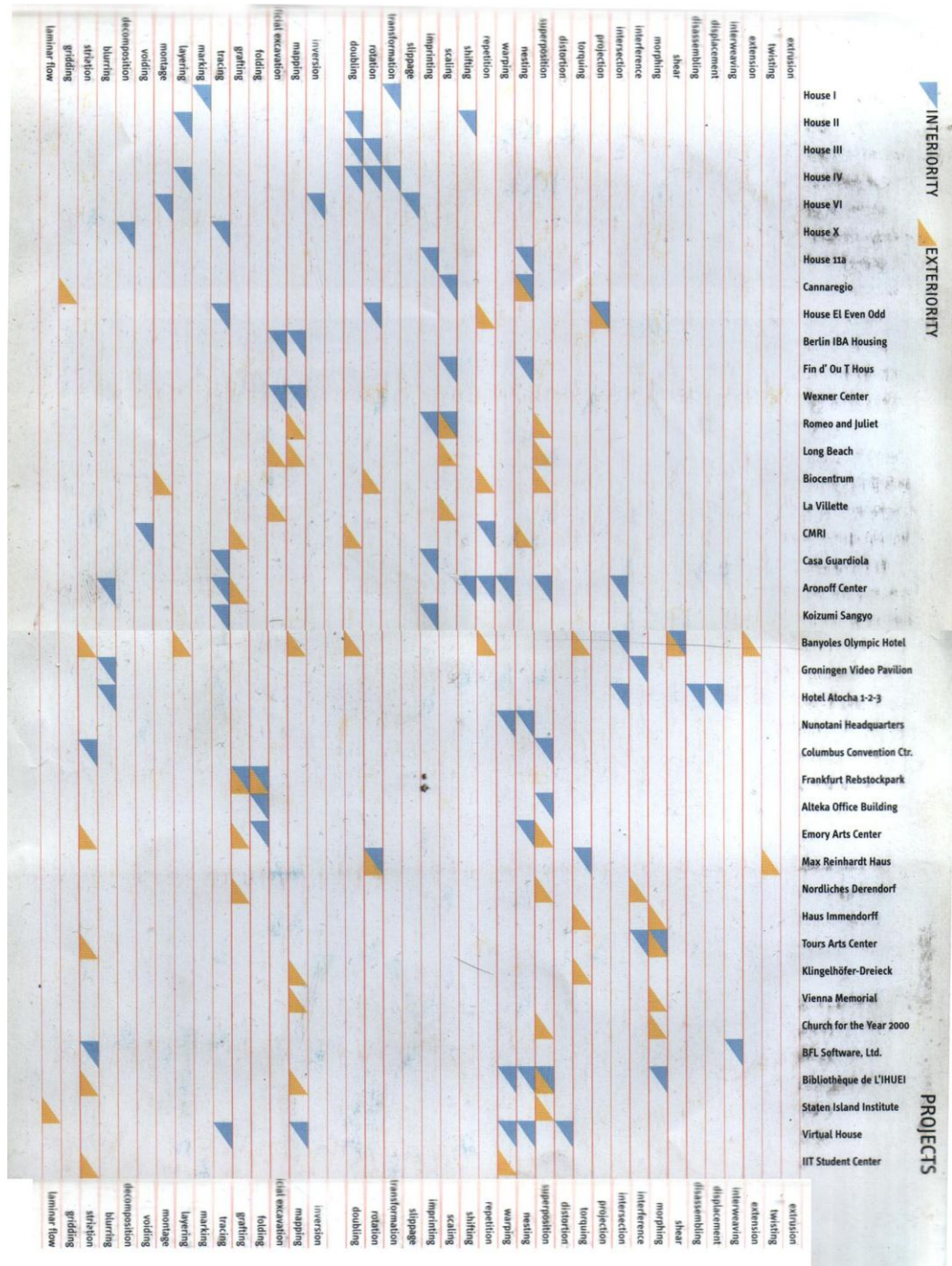


Figure 3.4: The interiority, exteriority and transformational tools diagram.
 [Source: Peter Eisenman, “Diagrams of Interiority”, *Diagram Diaries*. New York : Universe Publishing, 1999, pp. 238-239.]

In the dissertation, this definitive task of surface reveals itself mostly as a solid cube (central object) or planes. Meanwhile, the discussion of “deep structure” and “surface structure,” in reference to Noam Chomsky, can be considered as progress of the architectural language proposed in the dissertation. For his dissertation, Eisenman confessed that he tried to express what he was “able to grasp intuitively”¹¹⁶ as Rowe thought him. However, Chomsky’s discussions provide a linguistic basis for the architectural language, especially in the grammar of language. The analysis of deep structures enables to separate the syntactic (grammar) dimension from the semantic (iconographical) dimension of the architectural form. As in the case of Casa Giuliani Frigerio, this syntactic analysis leads us to the “dual reading”. This dual reading consists of two prior conditions defined by surface types; the first one is solid (mass), and the other one is planar reading defined by a series of additive planes. Thus, as in the discussions of generic form, this analytical study is driven by the surface types, which are inclined to prior conditions. Consequently, surface as an analytical tool can be considered as another inference of these discussions. The other shift in Eisenman’s works can be seen in his discussions of diagram. He denies the traditional use of diagrams in order to extend and explain his understanding of architecture.

My use of the diagram proposed a different rationale, one that could be both more logical and more involved with a process of architecture somewhat distant from the design process of the traditional author-architect. Such a logic could not be found in form itself, but rather in a diagrammatic process that had the potential to open up the difference between the form/content relationship in architecture and other disciplines, particularly the other plastic disciplines of painting structure.¹¹⁷

Apparently, he deals specifically with design process, rather than the analysis of a project or the definition of generic antecedent of specific forms. In this respect, it is seen that “surface” is a major component of his diagrams, which generates and defines the form. While generating the architectural form, surface is also presented in the diagrams as a conceptual element (i.e. Möbuis Strip). In addition, in the

¹¹⁶ Ibid, p.53.

¹¹⁷ Ibid, p.49.

dissertation and the analyses of Terragni's projects, the priori conditions were mostly defined by "surface" (solid or plane), especially in the diagrams of houses. Meanwhile, the design process, progressing from priori to posteriori, is governed by various operations. These operations that are motivated by two ways (internal motivation and external motivation), transform the primarily defined surfaces in order to generate possible forms.

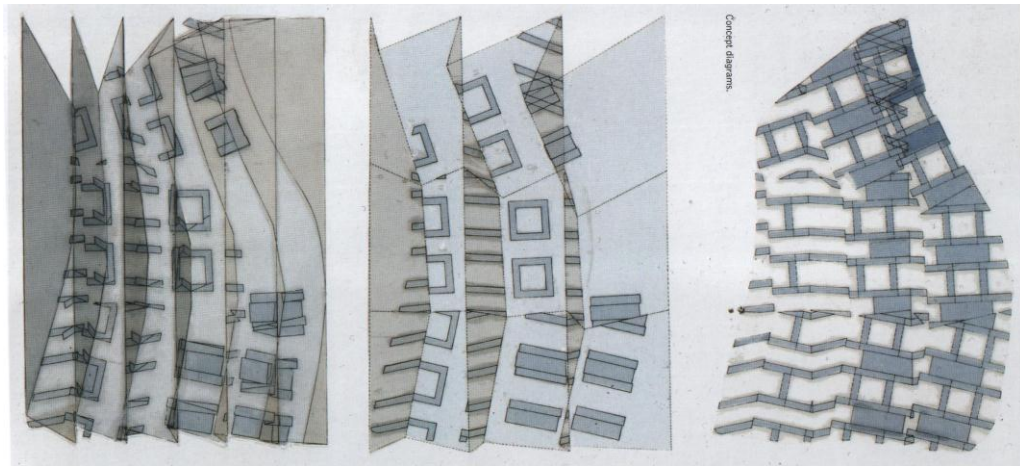


Figure 3.5: The fold in Rebstock project, Frankfurt, Germany, (1990-1992).
[Source: Cynthia Davidson, "Rebstockpark Master Plan", *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 212.]

As discussed earlier, "interiority" and "exteriority" stem from the relation of design process respectively with self-manifestation of architecture and context based references. The houses are related with interiority, and recent projects have mostly developed with external references due to the instability of the interiority. In this sense, the transformative operations applied to surfaces are driven by these stimuli (internal, external). Thus, there is a direct relation between the operations and the conceptions of interiority and exteriority. In the early projects (i.e. house projects), transformations are limited with several operations. By referring to the exteriority of architecture, it can be perceived that the numbers of operations have

rapidly increased. This increase can be inferred from the diagram below (figure 3.4) in consideration with the relation of exteriority. Besides, this increase is also related with the use of computer technology, as argued previously with the quotation from Somol.¹¹⁸ In his article, he also specifically discusses about the conception of “fold” in Eisenman’s project: “It is from this point that it might be possible to begin an evaluation of the fold in Eisenman’s most recent work, for the fold is precisely a map of event, a geometric description of the unexpected, *a diagram of the virtual*.”¹¹⁹ As seen in the Rebstock project, fold in surface have three phases: “already folded”, “folding”, “not yet folded” (figure 3.5) in order to achieve absorption and extension to the exterior.¹²⁰ Approvingly, he notes:

As a figure, the fold immediately indexes a process, an activity. Unlike the secondary transformation or decomposition of an ideal or generic form such as cube, a fold is at once a thing and its process. It is the operation of folding that generates the form, before which the thing simply did not exist.¹²¹

As a result, “fold” conception has a significant place in the surface discussion regarding arguments about Eisenman’s works. Therefore, fold can be comprehended in three ways; as a conceptual tool that defines relation between the inner and outer space, as a transformational (generative) tool that gives its name to the operation and as a definitive tool that can be regarded as an object. Subsequently, Somol adds to his arguments the contribution of fold conception to Eisenman’s projects. First contribution is providing relations between interior structure and exterior site. Second contribution is to increase in figural perception, unlike the house projects. Thirdly, the fold enables the use of alternative geometry (topology), which overcomes the Euclidean geometry. The fourth is the “relaxation of homogenous or hierarchical organizations without completely abandoning a geometric rigor or discipline”. Lastly, the fold generates complex sections;

¹¹⁸ Robert E Somol, “Dummy Text, or The Diagrammatic Basis of Contemporary Architecture.” In *Diagram Diaries*. Peter Eisenman. New York : Universe Publishing, 1999, p. 10.

¹¹⁹ Ibid, p. 21.

¹²⁰ Ibid, p. 20.

¹²¹ Ibid, p. 21.

moreover, “the folded projects have added a concern with *section* as a critique of the planimetric decidability of topology, which tends to contain objects through a limited logic of extrusion.”¹²² Consequently, the complexity level of Eisenman’s contemporary projects depends on these new operations (folding, morphing, mapping, etc.) applied to a defined surface (that is *a priori*) in the topological geometry, and there is a direct relation with computer modeling and animation software. Thus, considering these “surface” discussions it can be said that, besides the usage of exteriority, computer technologies have extended the limits of Eisenman’s architecture. In addition, assigning materiality to surface can also be considered as an improvement of surface usage in Eisenman’s works. By this way, he gains control over the reactions of the surface via specific operations. Stan Allen clearly explains the materiality issue of surface in these words:

Among signs, indexes are unique in that they are not ciphers in an abstract system, but physical artifacts. Some concrete mark is always left behind, and the materiality of the receptor surface is decisive: for example, the wet sand that holds the shape of the footprint; the light sensitive coating of a photographic film; the polished surface of a glass that preserves an individual fingerprint.¹²³

As seen in these statements, surface responses according to its materiality, unlike to his early projects. In the early projects, surfaces act neutrally; they are not assigned any characteristics. Besides, materiality is also used for coding the task of the surface, as in the House VI project. Differentiating surfaces with colors makes possible to present the duty of the element. As briefly introduced, there are several inferences derived from the elaboration of the conception of surface in Eisenman’s written texts, which provide a clear scope for this study. In the following part, the elaborated definitions of surface will be examined in the contemporary projects of Eisenman. Consequently, potential benefits and contemporary relevance of the study are briefly discussed with reference to the analysis of Eisenman’s contemporary projects.

¹²² Ibid, pp. 21-22.

¹²³ Stan Allen, “Trace Elements”, *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 52.

3.2.1. Bibliothèque de L'IHUEI, 1996-1997, Geneva, Switzerland

The design process of Library in Place des Nations in Geneva can be read as a series of surface operations that create an “intermediate condition between figure and ground, between form and space”.¹²⁴ The design of Bibliothèque de L'IHUEI, a library for Place des Nations in Geneva, is initiated by the idea of “memory” as the external reference defining the functioning of the library. Memory is integrated into the design process in the form of cerebral activity defined via human neurological activity diagrams. These diagrams are superimposed onto the prior condition, which is the site surface grid. The unification of the site grid with the superimposed neurological diagrams results in the morphing of the site surface. (Figure 3.6) The morphed surface, in turn, leads to what Eisenman calls “interstitial space”.¹²⁵ Eisenman explains that the prior condition, the site surface, of the project is “located at the intersection of two types of urbanism: one in which a landscape of parks define the spaces, the other one is in which the spaces are defined by objects.”¹²⁶ The morphing and nesting of surfaces via neurological diagrams aim to blur both into one heterogeneous, interstitial space. Eisenman explains that the materiality of this imprinted surface is comparable to a balloon filled with sand.¹²⁷ The container and the space that it contains interpenetrate each other. In his words, “the idea of interstitial in these diagrams suggests that the container and the contained, absence and presence, fullness and its lack, are each affected simultaneously.”¹²⁸ The conventional forms of library or the landscape are thus transformed into an interstitial space formed by morphing surfaces. The vectors and energy flows displayed in the neurological diagrams alter the site

¹²⁴ Cynthia Davidson, “Bibliothèque de L'IHUEI”, *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 250.

¹²⁵ Peter Eisenman, “Diagrams of Exteriority”, *Diagram Diaries*. New York : Universe Publishing, 1999, p. 204.

¹²⁶ Cynthia Davidson, “Bibliothèque de L'IHUEI”, *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 250.

¹²⁷ Peter Eisenman, “Diagrams of Exteriority”, *Diagram Diaries*. New York : Universe Publishing, 1999, p. 205.

¹²⁸ Ibid.

surface to create a form that blurs the landscape and the objects, resulting in one heterogeneous space. Through the interstitial spaces produced by morphing surfaces, the building “traces” its own process rather than representing “memory” as form.

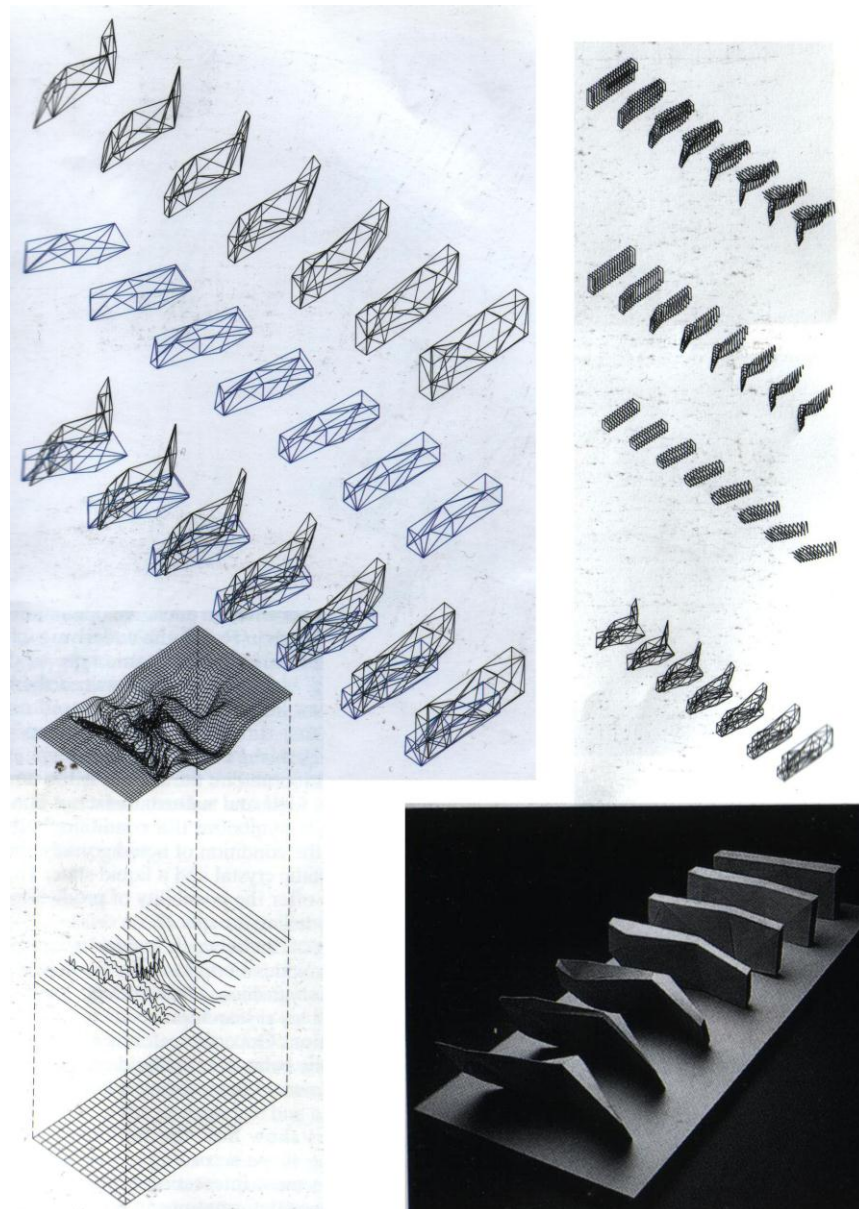


Figure 3.6: The modifications of surfaces in Bibliothèque de L'IHUEI project in Geneva, Switzerland (1996-1997). [Source: Peter Eisenman, *Diagram Diaries*. New York : Universe Publishing, 1999, p. 87, Luca Galofaro,. *Digital Eisenman : An Office of the Electronic Era*. trans. by Lucinda Byatt, Basel ; Boston : Birkhäuser-Publishers for Architecture, 1999. p. 32, p. 35.]

3.2.2 Church of the Year 2000, 1996, Rome, Italy

Like the Bibliotheque, the Church of the Year 2000 is also designed by use of the surface. Here the surface operations are applied within the frame of an external text: the concept of pilgrimage. Attracting attention to the collapse of pilgrimage experience due to technological developments in air travel and media, Eisenman aims at providing the pilgrim's experience of distance and proximity with the church. To do so, Eisenman introduces nave like routes made up of strips. These strips act as surfaces that are morphed and superposed in a way to generate pilgrimage experience without mimicking the traditional iconic features of a church. These nave like surfaces, strengthen the sense of spiritual fulfillment by "playing out the pilgrimage in miniature, within the body of the church itself".¹²⁹ Although Eisenman refers to the nave – as a traditional element of church- he strips it off from its iconographic connotations. Overcoming the initial image of the church, Eisenman aims at blurring the relationship between form and function. Another element Eisenman refers to is the stained glass, which is the traditional element of a gothic cathedral. Referring to the stained glass, Eisenman introduces a new element of the technological age: liquid crystal panels. Different from the "balloons filled with sand" in the Bibliotheque, the surfaces of the Church of the Year 2000 is materialized by liquid crystal. These surfaces merge with the ground; they "evolve out of the ground", "twist and warp in space" and "return back into the ground".¹³⁰ The Church is not seen as a building object (figure 3.7) erected on the ground but a sliced extension of the ground spread over the site. The continuous shift between the figure and ground makes it hardly possible to differentiate between the object and the site. As a result, Eisenman calls the Church of the Year 2000 a "ground-figure".¹³¹ The diagrams of this ground-figure barely resemble an image of building. In this inquiry, these two projects

¹²⁹ Cynthia Davidson, "Church of the Year 2000", *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 244.

¹³⁰ Peter Eisenman, "Diagrams of Exteriority", *Diagram Diaries*. New York : Universe Publishing, 1999, p. 203.

¹³¹ Ibid, p. 202.

(Bibliothèque de L'IHUEI, and Church of the Year 2000) have significance for comprehending Eisenman's materiality conception in architectural surface. It is seen that, the receptor surfaces act differently due to characteristics of materiality assigned to them. Therefore it can be stated that, the materiality in surface has a potential that expresses the intentional behavior (morphed form via balloon with sand materiality, and fractural nature of liquid crystal) of the surface, and gives a quality that can only be devised through it. Thus, these iconic projects can be considered as reference points for the issue of materiality.

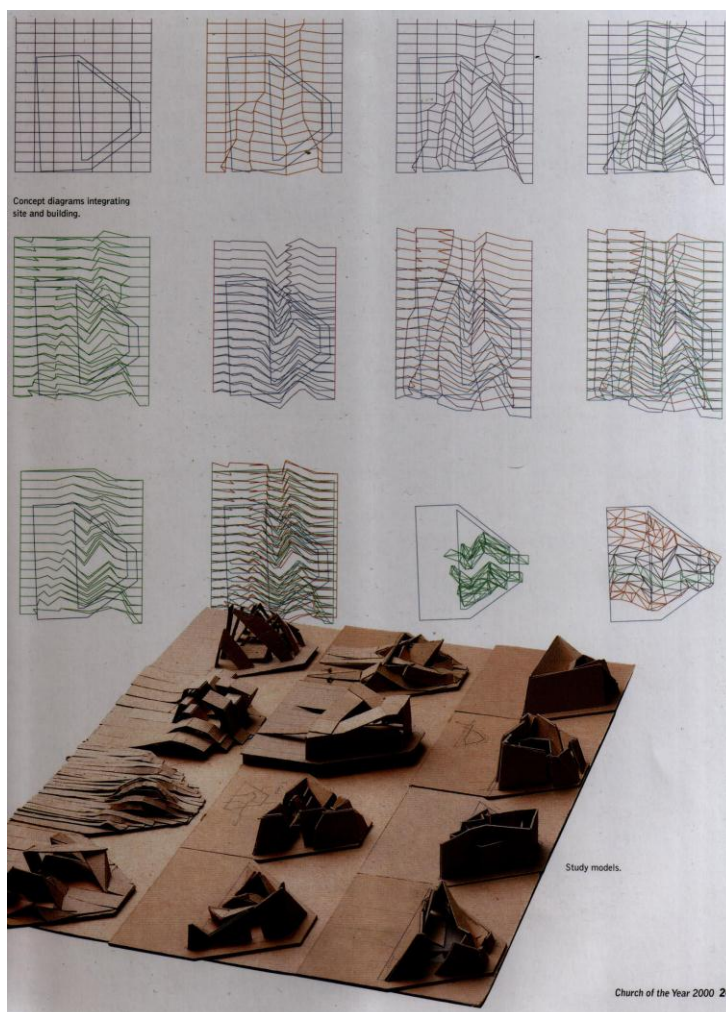


Figure 3.7: The modifications of surfaces in Church of the Year 2000 project in Rome, Italy (1996). [Source: Cynthia Davidson, “Church of the Year 2000”, *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 245.]

3.2.3. Alteka Office Building project, 1991, Tokyo, Japan

Tokyo is a city of accumulation, juxtaposition and compression therefore the city holds incidental and experimental relations that generates new, complex urban realities. Despite the variations of urban reality in the city, the general architectural approach in Tokyo is shaped with the idea of stabilization. Buildings, in general, construct their existence in the city through stabilization and domination of an urban land. Oppositely, the Alteka Office Building relates itself to the city by the destruction of the idea of stabilization. The building stands in between the traditional city fabric and the “Jigamae” on a new large avenue. The design concept of the building is to destruct permanency and to create a building that replaces permanence with alteration. The form of the building, the folded tower, does not work as a spatial mold rather it forms a temporal modulation. Refusing the Cartesian approach, the building does not have an essential form. The folded tower refers to a continuous development of form. The folded tower approaches the object as a situation, which derives from the idea that the object is not a solid block; it is a product of endless evolution. This continuity turns the building into an event, the form does not refer to a finished final product, and it is a form of “becoming”.¹³²

Consequently, considering the previous discussions, there is a coding for materiality defining the surfaces that generate the form. In the first stage of the diagram, the initial shape (the L shape) defined as a neutral by coloring in grey. Then, the initial form transformed via folding operation (“infecting” as Eisenman’s definition) and gained its color for emphasizing the difference between the original shape and the transformed one. Thereafter, in these diagrams (figure 3.8), color is used for indicating the transformed surfaces via the specific operations (unfolding, and envelope). On the other hand, the transparency is utilized for improving the three-dimensionality via the operations. Hence, this example is chosen to reveal the coding for materiality, which defines surface’s task or type.

¹³² Cynthia Davidson, “Alteka Office Building”, *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 214.

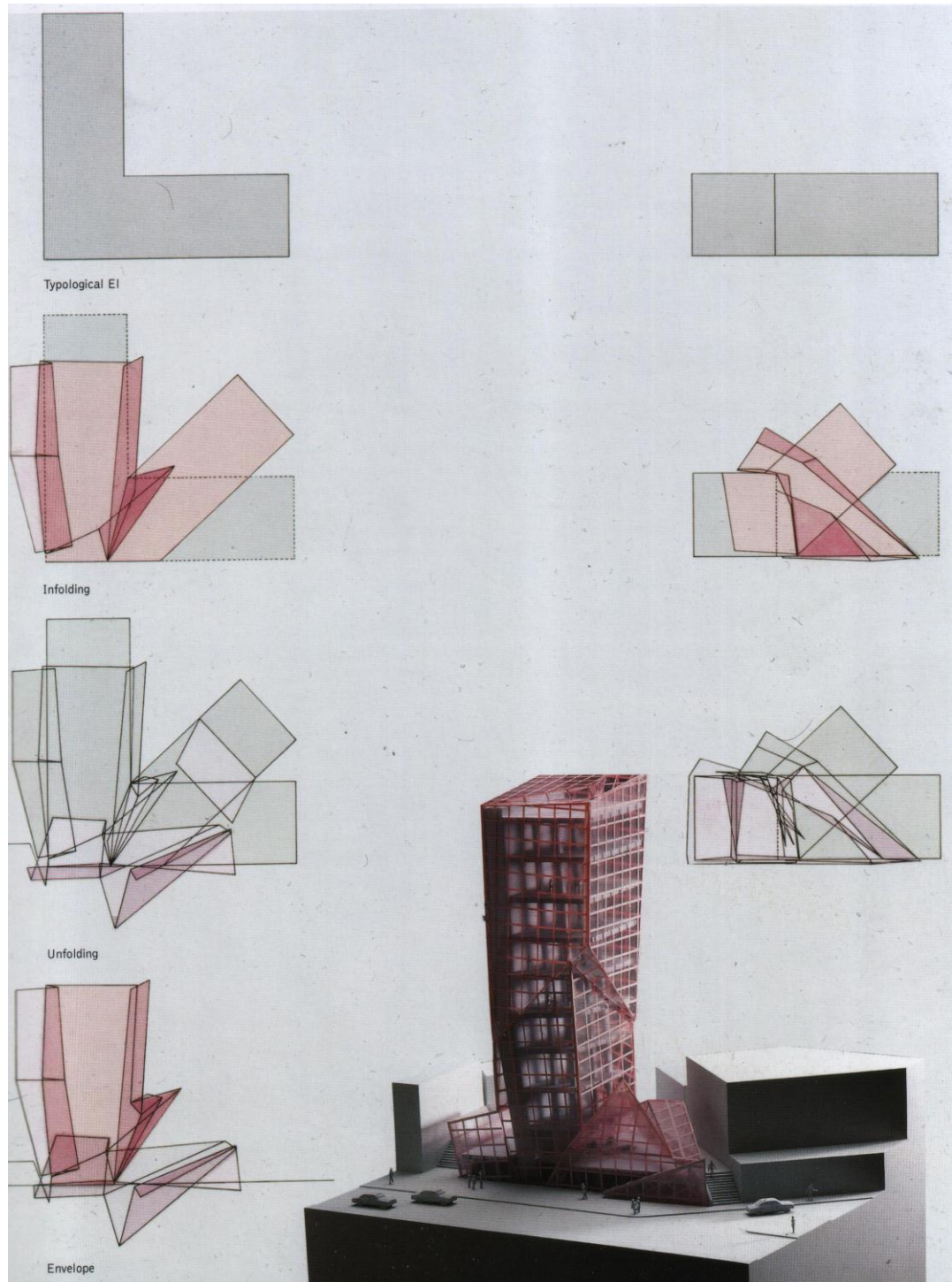


Figure 3.8: The modifications of surfaces in Alteka Office Building project in Tokyo, Japan (1991). [Source: Cynthia Davidson, “Alteka Office Building”, *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 215.]

3.2.4. Regional Music Conservatory and Contemporary Arts Center, 1993-1994, Tours, France

Regional Music Conservatory and Contemporary Arts Center exemplifies how surface operations are applied with reference to both internal and external references. The building is located on a lot defined by two buildings on its longitudinal edges; an 18th century building on one side and a 19th century building on the other. The form of the building is given by applying a series of external operations on the empty lot; striation -the kind of operation which makes the building look as if it was made of three bars-, and morphing –the operation which provides the building with its dynamic form. While morphing is a type of software typically used in film taking, Eisenman utilizes this technique to provide a transition between the 18th and 19th century buildings, by generating a series of layers, which maintain, and yet transform the formal vocabulary of the two buildings.¹³³ Similarly, the operation of striation is used to relate the building to its site by respecting the existing grid of the city with some modifications on the lot and its nearby surrounding. In this sense, the operations of striation and morphing designate the building's exteriority. Striation and morphing evoke the perception of the structure as a series of buildings rather than an autonomous one.¹³⁴ This situation shifts within the conventional figure-ground relationship, which tends to define the building as the figure, and the site as the ground. Contemporary Arts Center in Tours marks a reversal of the hierarchy of building to open space emphasizing the later over the former. Consequently, the lot is defined as an interstitial space in which the open and closed spaces merge with each other. Besides the exteriority, the operation of morphing also defines the interiority of the building along with the operation of interference. Transforming the contours of the bars, morphing produces new plan and section configurations providing the building with a combination of spatial relations rather than a fixed one.

¹³³ Cynthia Davidson, "Regional Music Conservatory and Contemporary Arts Center", *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 237.

¹³⁴ Peter Eisenman, "Diagrams of Exteriority", *Diagram Diaries*. New York : Universe Publishing, 1999, p. 179.

For the sake of this inquiry, this project provides a good example for illustrating the relation between exterior context and surface usage. In brief, this relation initiated with the orientation of the building mass via guidelines from the context. However it is not limited by this operation. As mentioned before, Eisenman aims to achieve a transition between the buildings in this site, via the proposed building. In this sense, the morphing operation on the surface of the building inclines with the external forces that are defined by Eisenman. Therefore, the effect of the existing buildings can be seen in the sections illustrated in the figure 3.9.

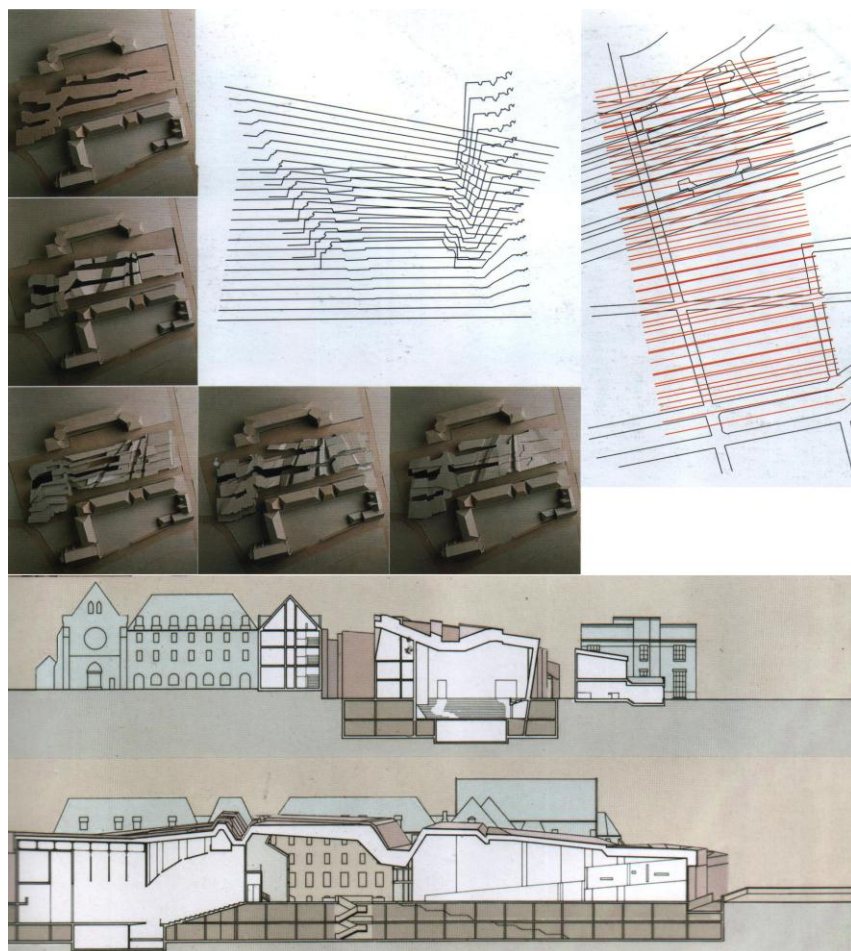


Figure 3.9: The modifications of surfaces in Regional Music Conservatory and Contemporary Arts Center project in Tours, France (1993-1994).

[Source: Peter Eisenman, “Diagrams of Interiority”, *Diagram Diaries*. New York : Universe Publishing, 1999, p. 93, p.179.]

3.2.5. Max Reinhardt Haus, 1992, Berlin, Germany

Max Reinhardt Haus (figure 3.11) is a recreational building, which stands out with its symbolic character. The building acts as a heterotopia that inholds accommodation, eating, fitness, commercial, and auditorial facilities. However the form of the building is determined mainly by the urban context in which it is situated rather than the program it encapsules. The building reinterprets the structure of the crystal chain in three cycles in accordance with the metropolitan references and relationships that make up the building's exteriority. The Max Reinhardt Haus originates from a single Mobeus Strip. In the first cycle, the vectors of the strip are extended into plates and the surfaces are triangulated. In the second cycle, the strip turns onto itself and comprises a new set of triangled surfaces. The third cycle involves introduction of cubic volumes as transformative elements "projected into the fabric of the building as large public spaces".¹³⁵

In this sense Max Reinhard Haus exemplifies how surface is utilized in different types and different purposes. Eisenman introduces "Moebius Strip" as a conceptual tool for the form and also as a initial point of the design process. The planes are oriented via the movement defined by the "Moebius Strip". The outer skin of the building is defined by this torsion and rotation of the planes. And finally, the solid cubes oriented to these planar panels are devised for defining the inner volume of the building. The illustration (figure 3.10) indicates the stages of the design process in relation to the distinctive usages of surface.

¹³⁵ Cynthia Davidson, "Max Reinhardt Haus", *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 222.

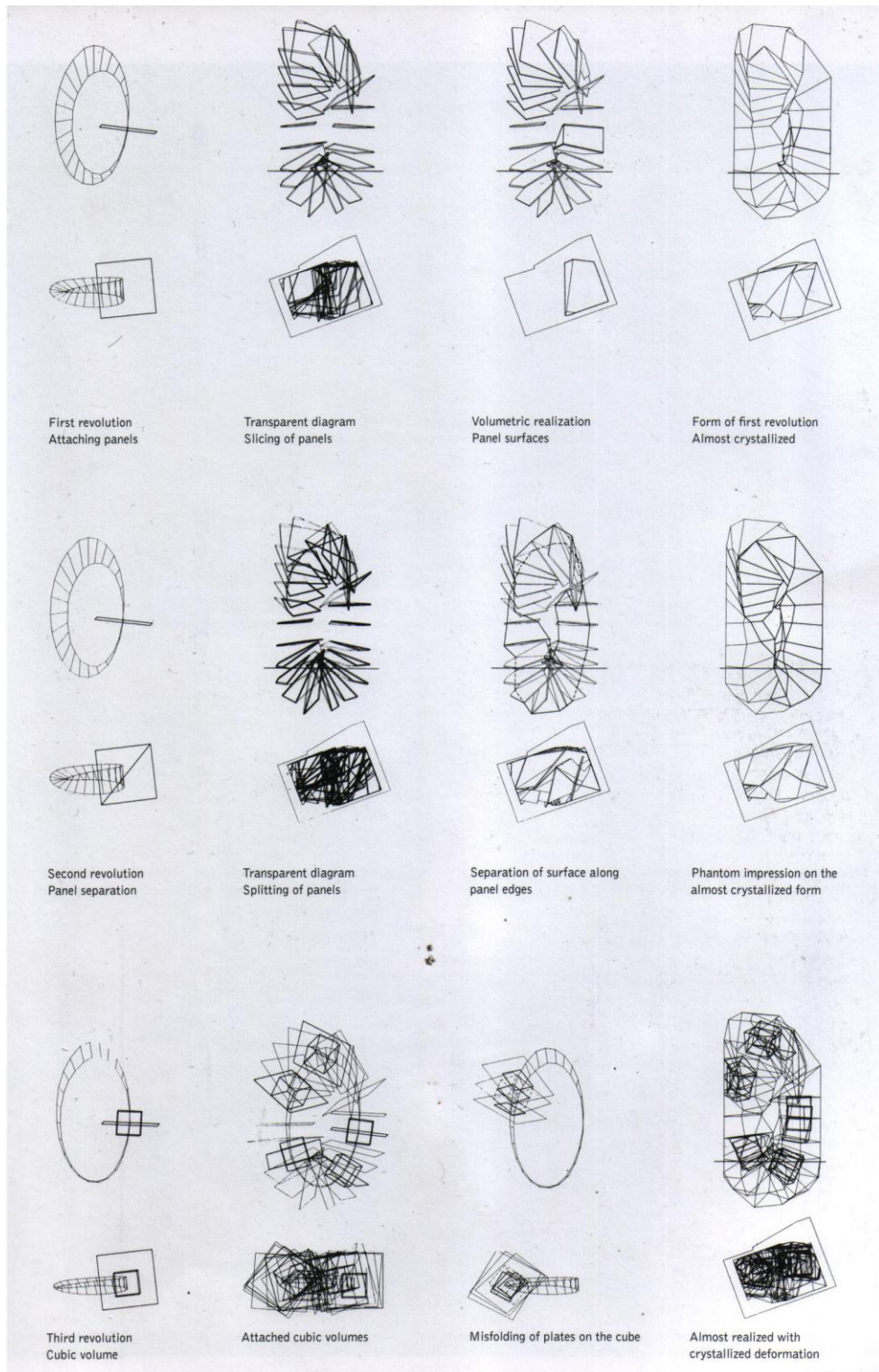


Figure 3.10: Different surface types in different stages of design process in Max Reinhardt Haus in Berlin, Germany (1992). [Source: Cynthia Davidson, “Max Reinhardt Haus”, *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 223.]

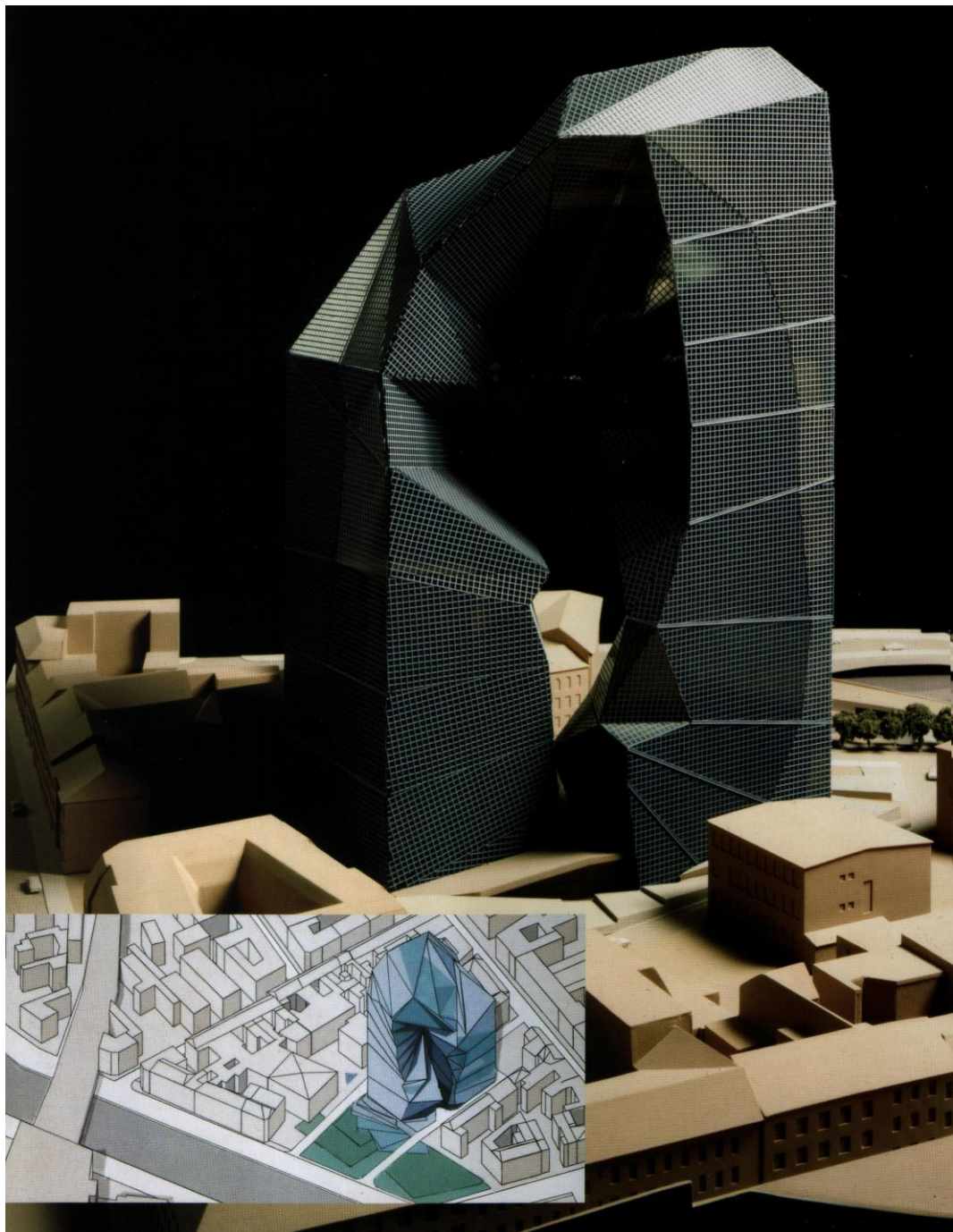


Figure 3.11: The model of Max Reinhardt Haus in Berlin, Germany (1992).
[Source: Cynthia Davidson, “Max Reinhardt Haus”, *Tracing Eisenman*, ed.
Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 226.]

As observed in various representations of Eisenman's projects, the design processes are depicted via surfaces in different phases. Various perspectives illustrate various form generating methods, with emphasis on the surface treatments in the projects. Furthermore, the logic of generating form through the use of surfaces is not limited to the illustrated cases. Rather, this logic can be found in his and many architect's projects. Even though, in contemporary projects, the use of vocabulary is different, the diagrams often resemble with Eisenman's ways of diagramming. Stan Allen points out Eisenman's effects on architectural design process, which requires representations other than conventional architectural illustrations:

In every case, some notion of the indexical sign, however mediated, is at work. This has been the one point of consistency as Eisenman has explored a wide range of formal and procedural vocabularies over the past thirty years. Regardless of formal character of the operation, i.e., whether it is a shifted grid (1970s), scaling (1980s), or folded surfaces (1990s), the implication of narrative time and fictional movement persists. It is also one measure of Eisenman's enormous influence.¹³⁶

Overall, examining the *Diagram Diaries* and studying Eisenman's projects with the focus of surface usage not only helps understanding the project from a different scope, but also provides one with a new set of inferences and questions that can facilitate the examination of other projects. In this sense, Eisenman himself can be considered as a pioneer, which may guide further meditation on the significance of surface in design process and architectural practice. Many of the important subjects discussed in the writings of Eisenman can be observed in refined ways in his various projects, which can be interpreted as a proof of the ways of thinking flourished in these projects.

¹³⁶ Stan Allen, "Trace Elements", *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 62.

CHAPTER 4

CONCLUSION

Rafael Moneo said: He is speaking a language in which words have lost their meaning. Eisenman replied: If it is possible to make words empty of meaning, I like to try.¹³⁷

Cynthia Davidson's remark on the conversation between Moneo and Eisenman summarizes Eisenman's understanding towards architectural form in design process. In this sense, it can be said that his journey begins with the dissertation. As Allen points out, "While Eisenman was deeply affected by the novelty and quality of Rowe's formal analysis; he nevertheless frontally attacks Rowe in his thesis."¹³⁸ As discussed in the second chapter of this thesis, besides Eisenman's refusal of iconographical aspects in generic form, his stand point opposite to Rowe means that Eisenman also denies any perceptual meaning. Therefore, the definition of architectural form in two concepts (generic and specific) allows him to examine the universal aspect of form.

Following this definition, he tries to define the components of architectural form (surface, mass, volume) without any iconographical or perceptual meaning. Thus, the second chapter introduces the definition of surface as a property of a generic form. In this respect, surface can be described as a mass, a skin or a plane in generic form.¹³⁹ This definition provides the classification of surface types, and in this thesis the terms are presented as "surface-mass", "surface-skin", and "surface-plane" for the clarity of the thesis.

¹³⁷ Cynthia Davidson, "The Absence of Presence; or, The Void", *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 27.

¹³⁸ Guido Zuliani, "Evidence of Things Unseen", *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 329.

¹³⁹ Peter Eisenman. "The Properties of Generic Architectural Form". *The Formal Basis of Modern Architecture*, Baden, Switzerland, L. Müller, 2006, p. 79. Emphasis mine.

Considering these discussions, second chapter is continued with Eisenman's analysis of Terragni's Casa Giuliani Frigerio. It is possible to say that, by the help of Chomsky's discussions, Eisenman's analysis of Casa Giuliani Frigerio makes a further contribution to the dissertation. The analysis of the building illustrates the role of surface by defining the form either as a solid (surface-mass), or as a series of planes (surface-plane). This ambiguity is considered as the transformational method for the analysis of the building. Herein, surface stands as the main analytical tool, while defining the form in the dissertation. Hence, these studies constitute a basis to the understanding of surface in this inquiry.

On the other hand, the diagrammatic works of Eisenman are needed to be examined in order to comprehend the role of surface in his architectural practices. At this point, he focuses on presenting the design process via diagrams. As Allen claims, "It is commonplace to speak today of design process, but it was Eisenman who first got us there, and we are still living with the consequences of that shift, often without thinking through its implications."¹⁴⁰ Focusing on the diagrammatic works of him, surface reveals itself as a generative tool in the design process. In his diagrams, it can be said that, form is generated with defined set of elements (surfaces) via defined operations. Besides, surface was also seen as a conceptual element, such as "Möbius Strip", as an external (mathematical) reference for his diagrams.

In the light of these discussions, in the third chapter, the cases of Eisenman are discussed due to relevance with inferences from the inquiry. The motives of the project selections are depended to bring original interpretations that are added to the inferences.

Thus, it is observed that Eisenman tries to communicate with his audience via his works that are conceptualized within the limits of his architectural understanding. Consequently, the key role of surface in his works was tried to be examined in this thesis. Approvingly, Davidson notes:

¹⁴⁰ Stan Allen, "Trace Elements", *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 50.

Were Eisenman able to succeed in emptying words of meaning, architecture would of necessity have to assume greater cultural meaning if some sort of standard of social communication were to be maintained. But, instead, Eisenman empties architecture of traditionally accepted meaning, questioning the column as a sign of itself, a sign of structure; questioning the ‘truths’ of architecture that derive from a dominance of vision –architecture’s need to ‘stand up’ conflated with ‘looking like’ it stands up– and opening ‘chasms’ in its own history.¹⁴¹

In this sense, one of the main reasons to choose Eisenman, as the referential architect, is his self-referential understanding of architectural form. This characteristic has allowed me to examine the conception of surface in various perspectives. Another reason could be considered as the process-driven nature of his works. Beginning with the definition of form in a primitive way, his design process that is presented in the diagrams provides a clear vision in discovering the surface usage. Finally, the most significant reason was his wide range of field of research from 60s to the present, and its potential to reveal the progress of surface throughout fifty years. In addition, his lasting practice of surface causes significant effects on the contemporary architecture. It is possible to say that, Eisenman is one of the most influential architects in the present. As a result, Allen mentions his main influence to the contemporary architects:

While current work presents an entirely different formal vocabulary, it is marked by the same underlying assumptions about process that Eisenman explored twenty five years ago. It is no accident that these projects are often presented in diagrams ranged in series, beginning with simple forms and tracing a similar narrative of increasing formal complexity.¹⁴²

Therefore, the main influence can be considered as the “process driven” nature of Eisenman’s works. In all of his works (from dissertation to his projects), this characteristic reveals itself by representing the design process. This method can be discussed as why he adopted his style into the computer-aided design (CAD) so

¹⁴¹ Cynthia Davidson, “The Absence of Presence; or, The Void”, *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 28.

¹⁴² Stan Allen, “Trace Elements”, *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 65.

easily. Thus, this argument can bring forward another question for an alternative further research. To be more specific, considering this inquiry, adoption of digital methods to conventional methods in Eisenman's works can be considered as a promising field of research that has great potential in it. In this sense, generic potentials of "surface" might be introduced as a keyword for such an inquiry. Apparently, this potential can be inferred from Allen's words:

Process-driven work is still very much present and, ironically, often linked with digital design protocols, which had promised architecture more adaptive and responsive to change. Given that computer modeling systems often work through deformations and transformations of geometric primitives, the use of the computer has, if anything reinforced the sense of design as the outcome of formal manipulations.¹⁴³

Hence, one can evaluate this inquiry as a discussion of Eisenman's works initiated by the "work of language" inherent to architecture. Examining his works has made possible to grasp the surface concept in a distinct way. The concerns with the surface usage, as the main focus, have been repeated in each chapter. Correspondingly, the thesis are intended to examine how surface is conceptualized and utilized in Eisenman's works (in his writings and projects), especially in the design processes. Although the inferences provide partial answers, the main goal is to set course for further elaboration on this subject. Thus, conceptualization of architectural surface in the works of Eisenman could be expected as the initial step of further researches about architectural form making and grasping the process-driven works for architectural practices. It can be argued that surface is a significant element in generating architectural form for Eisenman, as it still continues to influence intellectual discussions and practices in the present day.

¹⁴³ Stan Allen, "Trace Elements", *Tracing Eisenman*, ed. Cynthia Davidson, Rizzoli International Publication, New York, 2006, p. 64.

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