A TECHNOPOIETIC INVESTIGATION: TECHNÉ AS A DISCURSIVE FORMATION IN ARCHITECTURE

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ABSTRACT

A TECHNOPOIETIC INVESTIGATION: TECHNÉ AS A DISCURSIVE FORMATION IN ARCHITECTURE

Uz Baki, Melek Pınar
Doctor of Philosophy, Architecture
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The thesis defines making of actively doing, learning, and revealing in ways that simultaneously engage in the thinking activities of changing actors, practical applications, and the transformation of techniques, materials, and technologies as a central aspect of architecture, in terms of the actual processes of designing, production, generation, and accumulation of knowledge. As proposed, making is the fundamental notion in architecture that refers to how design thinking acts and how knowledge, related patterns, mechanisms, and systems are engendered and used. The thesis defines architecture as a technopoietic *being* by conceptualizing the immanent nature of its practice and knowledge, which challenges and negotiates between its own duality and unity. Providing a prevailing field for the discipline of architecture, from ancient philosophy, techné as a united concept presents the overarching potential to direct the processes of design thinking and develop new interpretations of architectural making and its research. The thesis locates the notion of techné in the core of its philosophy, theory, and methodology in defining its own position and act. As it claims, techné designates a prevalent discourse in architecture due to its discursive regularity in practical, theoretical, and educational arenas. Rather than a conventional historical account of knowledge of making, the thesis traces a

compelling method for research into the generative capacity of architecture. Techné is instrumentalized as a tool not only for analyzing a generative specialty open to multiple interpretations but also for producing knowledge as a discursive practice. Utilizing its own methodological operations therefore, the thesis practices a generative doing where knowledge production as a practice becomes an integral part of the research process.

Keywords: Techné, Discourse, Technopoiesis of Architecture, Knowledge of Making, Generative Doing

ÖZ

TEKNOPOİETİK BİR İNCELEME: MİMARLIKTA SÖYLEMSEL BİR OLUŞUM OLARAK TECHNÉ

Uz Baki, Melek Pınar
Doktora, Mimarlık
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Tez, değişen aktörlerin, uygulamaların, tekniklerin, malzemelerin ve teknolojilerin dönüşümünün eşzamanlı olarak düşünme etkinliğine dahil olan eylemsel yapma-etme pratiğini, öğrenme, açığa çıkarma, fiili tasarım ve üretim süreci, bilgi oluşumu ve birikimi ile ilgili olarak mimarlığın merkezi bir yönü olarak tanımlar. Önerildiği üzere, yapma-etme pratiği, tasarım düşüncesinin nasıl hareket ettiğini, bilginin, ilgili kalıpların, mekanizmaların, sistemlerin nasıl oluştuğunu ve kullanıldığını ifade eden mimarideki temel kavramdır. Tez mimarlığı, eylem ve bilgi ikiliği ve birliği arasında okur ve bu yolla içkin doğasını teknopoietik bir varoluş olarak kavramsallaştırır. Antik felsefeden bu yana, mimarlık disiplini için geniş bir alan açan techné kavramı, tasarım düşüncesi süreçlerini yönlendirmek, mimari yapım ve araştırmalarına ilişkin yeni yorumlar geliştirmek için kapsayıcı ve bütünleşik bir potansiyel sunar. Tez, kendi konumunu ve eylemini tanımlamak için techné terimini felsefesinin, kuramının ve metodolojisinin merkezine yerleştirir. Techné'nin, pratik, teorik ve eğitim alanlarındaki söylemsel düzenliliği sebebiyle mimarlıkta yaygın bir söylem alanı oluşturduğunu iddia eder. Pratik bilgisinin geleneksel ve tarihsel öneminden ziyade çalışma, mimarlığın üretken kapasitesine yönelik bir araştırma yönteminin izini sürer. Techné, yalnızca çoklu müdahalelere ve yorumlara açık olan söylemsel

pratiğin araştırılması ve analiz edilmesinde değil, aynı zamanda eylemsel bilginin üretilmesinde ve yapılandırılmasında da bir araç olarak tanımlanır. Böylelikle tez, kendi metodolojik işletimlerini kullanarak bilgi üretiminin kendisinin pratiğe dönüştüğü ve araştırma sürecinin ayrılmaz bir parçası haline geldiği üretken bir eylem gerçekleştirir.

Anahtar Kelimeler: Techné, Söylem, Mimarlığın Teknopoietiği, Yapım Bilgisi, Üretken Eylemsellik

To my family and,

to the life together…

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CHAPTER 1

INTRODUCTION

1.1 The Problematic of the Thesis

The practice of architecture in any formation is a generative (therefore intellectual) and operational (therefore critical) act that conceals both the degrees of conscious, determinate knowing, which are acquired in learned professional knowledge, along with personal accoutrements and degrees of unconscious, indeterminate knowing, inherent in the learning process along with reflective relationality. Considering design practice, architecture works as a practice of inquiry that acts by reflection and creative quest. In this knowledge production process, the subject becomes the practitioner of the art of inquiry. Practicing architecture, on the other hand, is the production of work of labor for a social, operational action that reflects a critical assessment of the subject who has a societal responsibility.

Establishing a close relationship with the 'art of making', the practice of architecture can be associated with an intellectual act by 'making formation' in which knowledge is generated and the subject-object formation simultaneously actualized. When the practice and knowledge relationship is considered, architecture dissociates itself from the 'art' of making due to 'scientificity' of disciplinarity, which defines a professional act by operating rules, norms, and mechanisms for the ordering and evaluation of knowledge. Therefore, this thesis scrutinizes the nominally dichotomous binary status between intellectual and professional practice, which holds the generative and normative knowledge mechanisms together. The definition of architecture even advocates this problematic due to ambivalent references: i.e. 'the art or science', or 'a method or style of building'. Integral to the act of making

in design thinking, architecture is a generative practice that is open, autonomous, and creative. When it encounters a pragmatic construction, to actualize a foresight into material construction, there occurs the need for external mechanisms technologies, systems, and discourses such as inter-, trans-disciplinary references, linguistic analogies, historical links, particular theories, the conceptualization of formal strategies, stylistic responses, and cultural imperatives to actualize, rationalize, and unify the practice and knowledge.

Furthermore, literal construction in architectural practice makes semantic construction problematic. The problem of architectural meaning does not just refer to creative activity; however, different than a mere artistic inquiry, meaning production by literal construction also makes the matters of 'exercise of reason,' 'professional ethics,' 'desire for good work,' 'quality-driven work,' 'embodiment,' 'functioning to society', 'working for public goods', both suspicious and hazardous. The thesis claims that the immanent conjuncture of meaning in architecture production becomes more visible and sensate when the practice of architecture is reduced to the 'mere activity of building construction' from the activity of 'building meaningful and reasonable knowledge' through practice. Ironically, the theme of construction does not occupy a 'constructive' place in current architectural discourse. One reason is that most current theoretical discussions, far from philosophically questioning, tend to criticize technology-driven situations posed by modernity and its successor themes, techniques, and concepts, which took place in the mid-nineteenth century. For this reason, it is necessary to include technique-technology-material query in the field of architectural philosophy and discourse studies.

The matter of semantic construction is not a new architectural affair. Ever since, "architects have been struggling with the survival of the discipline as a legitimate endeavor, distinct from a programmatic shelter (engineering and technology) and

from a mere aestheticization of shelter to comply with fashion and the dictates of consumerism and commercialism."[1]

Design cannot exist without the material act of construction, either in a textual or representational form. However, when it becomes a building, architecture appeals to a dialogue with external mechanisms and discourses in organizing its materiality and tectonic framework. As Gómez indicates, "both narrative script and its formal frame must issue from the architect's enlightened imagination, oriented through history and grounded in it."[2] Architecture as claimed is neither equivalent to applied science replenished by technology nor to understanding itself as a mere aesthetic object despite its complexity and intellectual sophistication within its educational, theoretical, and operational status. The meaning of the work of architecture comes from the bilateral presence of internal and external constituents together.

Due to the necessity of 'conceptual gap' between knowledge and practice in accomplishing 'construction' (scientific, aesthetic, semantic, material, structural, etc.), the thesis argues that the problematic is rather ontological. As claimed in this thesis, this problematic has resulted from disjointed incrementalism of practice and knowledge and their discrete structures operating internal and external mechanisms in thinking, making, searching, evaluating, and interpreting architecture. Thus, the thesis problematizes the dispute of architecture between the intellectual aperture of creativity and disciplinary operationality.

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[1] Alberto Pérez-Gómez. "Dwelling on Heidegger", https://www.mcgill.ca/architecture-theory/catalogues/1998#more, last accessed 09.03.2022

[2] Ibid.

1.2 The Scope of the Thesis: Technopoiesis of Architecture

The thesis defines architecture as a technopoietic *being* by conceptualizing the immanent nature of its practice and knowledge, which challenges and negotiates between its own duality and unity due to pairwise functions and structures: making-thinking, formation-generation, form-function, invention-innovation, aesthetic-scientific, craft-technology, theory-practice and art-science. The contribution is theorizing techné as the united agency in architectural practice and knowledge production.

Technopoiesis is a scientific-semantic formation emerging from the distinction and existing together; normative and generative, external and internal mechanisms of architecture.[3] The internal mechanisms comprise what is unique to architecture by means of design thinking and learning mechanisms inherent to the intellectual practice.[4] Hence, the internal mechanisms are what constitute the structure of techné

[3] As a part of this thesis work, various texts on 'techné' and 'technopoiesis of architecture' were presented via different platforms and published in different national and international sources. In addition to invited talks and open lectures at different universities in Turkey see the publications: Melek Pınar Uz Baki. "A Critical Investigation into the Technopoiesis of Architecture", *Innovation in Practice in Theory: Positioning Architectural Design and Its Agenc*y, (eds. Barioglio C., Campobenedetto D., Dutto A.A., Federighi V., Quaglio C., Todella E.), USA: Applied Research + Design Publishing, 2022, pp. 39-43. See also. Melek Pınar Uz Baki, "Techné as a Creative Agent in Architectural Making", *MATERIART: Architectural Design, Research and Technology*, (eds. Abbas G., Acar S., Bancı, S., Çağlar N., Sipahioğlu I.R, Yılmaz B.) Lisboa: Portugal: Caleidoscopio, 2022, pp. 315-327. See also. Melek Pınar Uz Baki. "A Critical Investigation into Technopoiesis of Architecture", *PhD Marathon*, Politechnico di Torino, Turin, Italy, 13-14 September 2019 (full paper was presented). See also. Melek Pınar Uz Baki, İnci Basa. "Printing (and) Architecture: A Technopoietic System for Making", *MSTAS 2020 Digital Design National Conference*, Karadeniz Technical University, 24 October 2020 (full paper was presented and published)

[4] Patrik Schumacher's Autopoesis of Architecture is a valuable contribution that became an inspiration for this study. The term autopoiesis is conceptualized by Schumacher with an extended two-volume work which searches a comprehensive theory of architecture. The original meaning of autopoiesis was firstly used by neo-biologists Humberto Maturana, Francisco Varela and Ricardo Uribe in the early 1970s and is described as "the capability of living systems to perform process of self-reproduction a self-maintenance while their constituent elements are subject to disintegration" as Schumacher gives a place. Schumacher's conceptualization of the term in architecture and his method of exploration the various modes of communication and formation of a unique subsystem defines architecture as a "self-production system" where autopoiesis is "an overall discursive self-making of architecture". Both the term and Schumacher's extensive work contributed inspiration for this study in terms of both the contextual and methodological frameworks. Revisiting the "autopoiesis of architecture" that addresses the overall discursive self-referential system of architecture, redefined by Schumacher, the thesis

discourse for 'self-regulation'. While the external one highlights the applied technological, social, and economic mechanisms that intercept and, therefore, amplify developments in professional practice. "The material practices of inside and hybridized practices and emergence of new techniques of outside both contribute to possibilities of practicing inside architecture from the outside."[5] This inside-out quintessence triggers simultaneous thinking-making that works upon seeming dualities as a form of reciprocity and relativity, like in the "twin phenomenon" as the common ground for polarities.[6]

> The understanding of architecture as a unifying system can extend its operational capacities through a search for the "metaphysically complete" architecture, which can be read as the same system that makes communication possible between its categories; artefacts, knowledge and practices.[7]

These internal and external mechanisms work together; although the former makes architecture autonomous, open, creative, and critical, the latter delimits, therefore, initiates inquisition and development. This conjunction creates a disciplinary unity, a technopoietic *being* of architecture that constructs a common ground for *becomings*

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defines architecture as a 'technopoietic being'. However, the author believes that in the definition of autopoiesis, the internal, automated systems are already inherited in poiesis. Therefore, believing in both the duality and unity of seemingly two dichotomies, the author proposes its own terminology as technopoiesis rather than elaborating the autopoiesis of architecture. See Patrik Schumacher, The Autopoiesis of Architecture: A New Framework for Architecture, Wiley, 2011, Vols. I-II.

[5] Igea Troiani. Suzanne Ewing. "Inside Architecture from the Outside: Architecture's Disciplinary Practices", *Architecture and Culture*, 1:1, 2013, pp.6-19

[6] Interpreted on Martin Buber's philosophy of dialogue, Van Eyck explains the twin phenomenon as the "in-between space" in which different things meet and unite, in other words, the "common ground" in which conflicting polarities can become "twin". The dual conditions are explained on polarities such as subject and object, small and large, inner and outer reality, open and closed, part and whole, which are distinctive, complementary components, not conflicting, yet mutually exclusive entities as the halved constituents of the same entity providing balance in total. See Francis Strauven. *Aldo Van Eyck: The Shape of Relativity*, Amsterdam: Architectura & Natura, 1997

[7] K.Michael Hays. "Introduction", *Architecture Theory since 1968*, 1998, Massachusetts: MIT Press, p.708

of conflicts, polarities, and distinctions as well as acting together and becoming one, which makes it operational. The thesis claims that simultaneous conceptual and practical action between depths of scientificity and heights of ability was/is united in the notion of techné.

1.3 The Context of the Thesis

The thesis locates the term techné in the very core of its philosophy, theory, and methodology to define its own position and act. The word techné is not a new concept, it has been discussed from many different perspectives since it was defined and conceptualized in ancient philosophy. However, believing that reminding or bringing up a known *thing*[8] every time can open new fields of discussion, the thesis recalls techné and interprets its extensive agency. Translated from Greek τέχνη into English tékhnē, the word broadly means knowledge of arts and crafts, the activity of craft making, and directly refers to generative doing in learning by making. However, there is no Turkish or English equivalent word that covers all its actual substance. Starting from the antique techné, the term is mainly conceptualized within different fields, from philosophy to art which places making or doing activities on a 'reasonable' and 'organized' knowledge system. Besides its pluriform in philosophical discussions and the field of art, techné offers a theory within itself due to its references to creativity, practical know-how, material work, the evolution of the artistic tradition, aesthetic perception, standpoint, meaning construction, knowledge system, a language from words to space.[9]

[8] The word thing refers to its philosophical presences as concept, material, any formation that has a meaning system

[9] Henry Staten. *Techné Theory: A New Language for Art.* London, US: Bloomsbury Academic, 2019.

The thesis positions ‘making’ as actively doing, learning, and revealing that simultaneously engaging in thinking activity of changing actors, practical applications, and the transformation of techniques, materials, and technologies as a central location in the architectural process of designing, production, generation, and accumulation of knowledge. As proposed, making is the fundamental notion in architecture that refers to how design thinking acts and how knowledge and related patterns, mechanisms, and systems are engendered and used. The complementary assets of making as a social practice, subject and object formation as the bearers of practice, and knowledge production all play a central role in making. Working with various tools, technologies, and materials in knowing is a unique characteristic of architectural production. Thus, as proposed, architectural making is an intellectual, professional, and operational act. As an integral genesis of design and production, making generates wholes of contradictory elements, aspects, and concepts in producing heterogeneous voices, various things, and *beings*.

As claimed in the thesis, from ancient philosophy, techné protects its discursive actuality in architecture in the generation, formation, evaluation, and operation of practical knowledge with its ontological references and agentic reflections.[10] Techné not only identifies tools and techniques in the making, but essentially represents their reasonable place in the world of values. Providing a prevailing field for the discipline of architecture from the ancient Greeks, the term techné presents an overarching potential to direct the processes of design thinking and develop new interpretations of architectural making and its research. In the discipline of architecture, it appears without a single conceptual precision. Instead, techné refers to a practical profession,

[10] The contemporary literature, theoretical and practical discussions in national and international dimensions prove that claim. The concept techné was selected as the central topic for the national symposium of MSTAS 2020 and for the AURAİstanbul workshop series in 2019. See also the current publications, e.g., R.L. Rutsky. *High Techne: Art and Technology from the Machine Aesthetic to the Posthuman*, USA: University of Minnesota Press, 1999. Mark-David Hosale, Sana Murrani, Alberto de Campo (eds.), *Worldmaking as Techné: Participation, Art, Music and Architecture*, Cambridge: Riverside Architectural Press, 2018.

a disciplinary act based on a knowledge system, an artistic formation, technical and technological applications, and cultural accumulation related directly to the design process, craft making, or buildings. The multiple uses of techné within architecture over centuries are, to a large extent, the outcome of its discourse as buildings, education, applications, and processes carrying. Thus, how it is to be discerned occurs as the question to trace. Within the illusion of its broad extent, techné designates a prevalent discursive regularity in architecture in the practical, theoretical, and educational spheres. Although generally described as the product of crafts-making tradition, where it was theoretically developed, techné is a discursive formation in architecture, as this thesis claims, by no means restricted to ancient art and philosophy. Techné, as a product of being and a bridge between aesthetic and scientific knowledge, induces a tendency to move towards the experience of materials, techniques, and technologies. It has been widely used in discussions covering developing digital technologies, changing learning mechanisms, multiple actors, and their interrelations in the twentieth century. Emerging in ancient art and philosophy as craft making in broad terms; from learning activity to concerning materials, from apprenticeship to teaching tradition in academia, from hand-making to machine learning, it presents discursive 'regularity' and a 'unity' in architecture.

Furthermore, both the term techné and the discipline of architecture have an ever-changing complexity within various paradigms, conceptualizations, contexts, positions, applications, and ideals. It appears as an entire formation that establishes multiple changing relations with material, process, actors, technic, or technology. Believing in the power of words, architectural historian Adrian Forty asserts that the most crucial problem is recapturing the past importance of words in a different era.[11] The nature of techné necessitates overarching research that defines it as a discursive

[11] Adrian Forty. *Words and Buildings: A Vocabulary of Modern Architecture*. London: Thames & Hudson, 2000, p.13

formation in architecture and investigates the generative capacity in architectural practice, theory, design, art, and technology. In this context, carried from philosophy to architectural discussions, techné will be opened as a multi-layered research object for theoretical and practical scrutiny.

1.4 The Methodological Approach Where the Method Acts

The thesis locates philosophy on the dispute between architectural thinking and making; between art and science, between practice and theory, and between creating and acting. Although philosophy is engaged in the thinking process, it is a theoretical pursuit; in other words, a field of practice that has created its own practical field in art and science with its unique systems. Philosophy is, at the same time, a form of theoretical intervention, as it constantly sees and uses the right to question and speak on everything that concerns people.[12] In philosophy, as claimed in the thesis, architecture can be defined as an act of critical thinking and activity of knowledge production through questioning, which defines a theoretical intervention area for architecture.

The thesis's methodological framework proposes theorizing techné discourse in the conceptual framework of architectural making concerning the practice and knowledge of architecture and the methodological action of its own, which is structured as a generative doing. Techné is defined in three dianoetic levels: 'act' of knowing, learning by making, 'knowledge' of practice, and a 'tool' for investigation and for generative doing. Both for the theoretical and methodological framework,

[12] Hasan Ünal Nalbantoğlu. "Teknoloji Sorununa Bazı Felsefi Yaklaşımlar Üzerine", *Mimarlık Journal*, 276, No: 35-4, 1997, p.25

the thesis uses multiple dismantling and reassembling operations between knowledge and practice of architecture.

The methodological approach is developed on three not random but evolutionary concepts: ‘discourse’, ‘network’, and ‘mapping’. The methodology grounds itself on discourse ‘analysis’ (where dismantling of the united being into discursive objects is possible), ‘social’ network ‘theory’ (which offers a material-semiotic method for understanding communicative societal systems of architecture), and ‘generative’ mapping (that makes knowledge generation possible by defined operational relationality on a weaved web of relationships). Therefore, the methodological approach proposes to focus on relations rather than objects, and in this way, the thesis makes the transformation of an inquiry (technopoietic investigation) into an act of discursive practice (knowledge generation), hence generative doing possible.

The term discourse does not have a single unique definition; similar to techné; it is an extensive term elaborated by different perspectives and theoreticians in various fields. As a general conception, it refers to any sort of said things, texts, or works; “verbal interchange of ideas especially conservation, formal, orderly and usually extended expression of thought on a subject or connected speech, writing.”[13] However, the declaration as a group of linguistic signs is not embracive in scope when the creation of objects, their relations, knowledge production, and their effects on various domains are considered. As referred to in this thesis, discourse is “a complex, differentiated practice, governed by analyzable rules and transformations”[14], including a group of statements to be recognized and evaluated. Through the circulation of statements, it produced things. As a particular area of

[13] Discourse, Merriam-Webster. https://www.merriam-webster.com/dictionary/discourse, last access 08.16. 2021.

[14] Michel Foucault. *The Archaeology of Knowledge* (trans. A.M. Sheridan Smith), London: Tavistock, 1972 (originally in 1969)

knowledge construction and research, discourse is not homogeneous yet social, including the history of forces that shape the way of thinking and acting.[15] Central to any theory, discourse traces establishing some form of "overall correspondence or correlation between two general spheres: whether words and things or knowledge and reality".[16] Discourse more significantly, as the 'system of statements' designates the "theoretical formation" of objects.[17] Techné as claimed in the thesis is a 'discursive formation' in architecture operating (non) verbal statements that are circulating in the practice field that also operate several other discourses (such as technological, aesthetic, material, etc.).

The 'analysis' of linguistic figures on statements (in texts and images) displays the discursive power of textual and visual language by which techné discourse forms its objects in architecture and brings discursive effects out. The research operates a critical analysis toward understanding the status of techné discourse while questioning what specific analysis can be operated under the complex structure of the discourse and generative capacity of architectural practice and knowledge. This question is answered with the conception of 'discourse' that is implicit in the problematic of the thesis. In this conception of discourse, the distinction between 'internal' (tools, methods, applications, etc.) and 'external' mechanisms with other discourses (technology, aesthetics, etc.), or non-discursive formations, does not imply a similar distinction. The notion of discursive structure is often readable in visible sets of elements or searched for in the "mental constructs which structure the

[15] Diana Macdonell. *Theories of Discourse: An Introduction*, Oxford UK, Cambridge USA: Blackwell, 1986, p.2

[16] Barry Hindess. Paul Hirst. *Mode of Production and Social Formation*, London: Macmillan, 1977, pp.10-11

[17] İnci Basa. "Linguistic Discourse in Architecture", PhD Thesis, Middle East Technical University, Department of Architecture, 2000.

speech and culture". Sciences, on the other hand, "produce knowledge about objects which are necessarily visible".[18]

The 'social network theory' is principally about identifying a non-visible system of relations between visible (or non-visible) elements. Since discursive structures are abstract systems, they are not visible in the formation that they constitute. The discursive relations constitute a 'network' around particular objects that reveals the internal mechanism of a discursive system. Discursively regulated by statements, networks strengthen or weaken the objects to establish a discursive unity.[19] The 'social network theory' enables to comprehension of a societal communicative system of these changes in the field wherein they practice.

Moreover, the proposed methodological act by digital weaving is defined by 'relational operations' and created by 'generative maps' as a discursive practice, where the unique knowledge generation on invisible interconnections operates discursive mechanisms.

1.5 The Structure of the Thesis

The textual body starts with the contextualization of making in extended means of the practice and knowledge of architecture. Chapter 2 enlarges the problematic and structures the theoretical ground. Before introducing techné, this chapter aims to represent the seemingly dichotomous yet united entirety of practice and knowledge. The making activity is centralized in constructing theoretical ground for the practice and knowledge of architecture. The 'art of making' denotes 'knowledge generation, while making in the science of disciplinarity enables 'knowledge formation' and

[18] Necdet Teymur. *Environmental Discourse*, London: Question Press, 1982, p.56

[19] Op.cit

ontological construction due to architecture's disciplinarity. Concerning making activity as an art of inquiry, architectural production and its knowledge are open, autonomous, generative, and knowable. Knowledge is generated in the process: it is learning by making. The practice of architectural design concerning 'art of making' as an activity of 'making formation' offers an autonomous act nourished by creative thinking, generative doing, craft knowledge, material experience, technical expertise, reflective practice, circumventing limits, and urging boundaries to create alternatives. On the other hand, within the scientific nature of disciplinarity of architecture, the making activity becomes an activity of structuring, organizing, ordering, and reasoning for the making profession, which creates its own mechanisms, modes of thinking, and making. Architecture, historically and theoretically, always tends to establish its own disciplinary mechanisms on artistic intentions, forms, and aesthetic tastes for contextualization, self-rationalization, unification, and self-demarcation, or in other words, 'to discipline itself' in the practical sphere. Therefore, historical categorizations, particular theories, theories within theories, stylistic definitions, normative structures, or methodologies have all emerged as tools for reasoning and contextualizing practice into knowledge. Under scientific inquiry for ontological construction, the knowledge itself and constituents of practice are ordered, defined, formed, and classified to make them applicable. Visual and textual models created architectural repertoire as an accepted and applicable mode of thinking and making. The practice of architecture is defined as an activity of creativity, building something, object, and subject formation nourished by accoutrement and relationality. Although the generative process concerning art making produces an obscure, fluid, complex result, the process is 'knowable' where the learning by making mechanism inherently works and is transmitted through accumulated knowledge. The knowledge of architecture, on the other hand, designates the ontological construction of the profession through disciplinary systems in tracing what is applicable for the precedence, development, and creation of the new. Chapter 2 ends by defining architectural making as a discursive

construction within presented dualities of practice and knowledge of architecture that includes a semantic construction by practice and a reasonable doing more than a mere building construction activity. Techné is introduced as a united notion; 'practical knowledge', in other words, 'knowledge of making', which defines a discursive formation and operates discursive mechanisms in architecture. Techné as practical knowledge refers to the unity of architecture hidden in its technopoietic *being* and provides a communicative bridge between practice and theory, intentions and experiments, art and science, and poiesis and episteme.

The thesis demonstrates its claim of techné discourse as a discursive formation in architecture by covering its conceptual subsistence in philosophy, architectural presence as an entity, in theory, institutional assent in education, which is in circular causality in different modes of making, and significance in future projections. Techné in this sense, is elaborated as knowledge of making, which has gained its discursive power in architecture by circulating statements, formulated norms and forms, creating mode(l)s and regularities, grids, specifications, inconsistencies, and persistence as being practical knowledge with references to aesthetic, material, technical and social constituents. Concerning craft knowledge and the act of learning by making the question of how techné has gained a discursive status by establishing institutions and learning by making tradition in architectural education, where the practice and knowledge were intertwined, is elaborated in Chapter 3. The regularity of techné discourse within the changing matters of making such as hand, machine, and digital making in which different modes are contrasted, divided, classified, and derived from each other is examined within the past-present and future projections. The notion within an extended framework from antique techné to high techn(e), including even the future foresight of making, the thesis claims that techné is a discursive formation in architecture.

Chapter 4 not only instrumentalizes techné as a tool for an investigation through the research of practical knowledge of architecture but also defines it as an operational

tool for the thesis's own action as a generative doing. Since the particular theories and histories are not distinctive from the world and stand out significant in contextualizing and understanding the peculiar contexts for reactions, Chapter 4 searches for the status of techné toward a tactile contact based on the relevant research material of particular contexts. Limiting the research to the years between the 1980s-1990s due to 'multiplicity' and 'variety' of data (various voices, actors, materials, techniques, technologies, statements. etc.) at the turn of globalization and digitalization, the analysis reveals the ever-practicing linguistic and material figures of the discourse in its 'complexity'. The same chapter attempts to constitute a series of relationship webs within its own discursive and generative conceptions that will enable one to identify and observe the discursive formation.

Within the framed discussions of inquiries as to how to respond to the question of architecture within both its generative and normative status, how to operate technopoietic work through both seeable and unseen mechanisms, and lastly, how to investigate the practical knowledge of architecture in communicable ways to a wider scientific discipline without losing its generative capacity, the thesis investigates the possibility of generative doing on which theoretical inquiry is constructed and through which the method acts. The aim is not only to investigate the practical knowledge and document knowledge of making in a flow of relationality but also to develop its own methodological act by weaving a digital craft towards multiple and operational relationalities where the generation of its own knowledge is possible through the particular archival collection, operation, and inter-material readings.

CHAPTER 2

ARCHITECTURE AS A DISCURSIVE CONSTRUCTION

2.1 Practice of Architecture: The Making Formation

This chapter extends architectural thinking and making within a philosophical and theoretical framework on the practice and knowledge of architecture. It defines architecture as a discursive construction by backcrossing aesthetics, materiality, and disciplinarity concepts in expansion in two directions: the 'making of formation' as social, intellectual practice and the 'making of the profession' as disciplinary practice in the generation, accumulation, and utilization of unique knowledge.

Chapter 2 traces reconfiguring the relation between practices of inquiry in formative construction and the forms of knowledge that give rise to architectural thinking and making. Architectural knowledge in means of practice is not merely created through a confrontation or an encounter of thinking and making tied with exercises, applications, or implementations already nurtured with objects. Knowledge grows from the trait of generative capacity amplified by practical and critical engagement. The creative and agentic potential of making then, emerges from thinking with, from, and through making various *beings* and things in architecture.

2.1.1 Art of Making and Architectural Knowledge Generation

Revisiting the practical reminiscence of making on its philosophical extent; thinking, learning, knowing, and acting, this chapter evaluates the fundamental constituents of both object and subject formation leveled to 'the making of multiple architectural constituents' between material and discursive practice: actors, statements,

techniques, technologies, materials as concurrent *beings in* architecture's formative and social scape.

The exoteric definition of architectural making alludes to a literal construction, formation, and building within the broad spectrum of materiality, including any spatial practice, work, method, and manner[20] within several mediums, structural productions in different scales, or reproductions in different scales. The complex phenomenon of architecture, with its design process, methods, thought systems, objects, and applications, consists of various intentions, interactions, inventions, and actions. Architectural making, as a practical inquiry in any formation suggests a series of responses to the meaning of creation, design, perception, analysis, form, materiality, the usages of tools, aesthetics, various techniques, and technologies. It draws on multiple practices and design experiments ranging from primitive hand tools to industrialized machines, ranging from documents to monuments. The built environment, furthermore, comprises materialized knowledge of various kinds that can be observed in detail, structure, and assemblage of space on different scales, from urban projects to infrastructure. It is possible to read inbuilt levels of different knowledges as patterns of socio-cultural contexts and processes, as well as material, technical, technological patterns and mechanisms.

The discipline of architecture motivated by unique knowledge production by any of these formations extends the definition and scope with semantic construction, including aesthetic meaning, socio-cultural value, and disciplinary communication. This conjunction of literal (formational) and semantic construction 'makes architecture' the ensemble of art and science, aesthetic and scientific, practice and theory, and social and intellectual production. Making, therefore, "creates

[20] The very broad, literal definition of the term 'architecture' is given as "building, formation, work, form, structure, act, method, manner". (Architecture, https://www.merriam-webster.com/dictionary/architecture, last accessed, 06.12.2022)

knowledge, builds environments and transforms lives" by ensuring investigation and a way of thinking in which "sentient practitioners and active materials continually answer to, or correspond with one another in the generation of the form".[21] Thus, as claimed in this thesis, architectural making activity is a discursive construction including intuitive, formative, and societal mechanisms within a disciplinary structure which is natural and spontaneous within it, yet, at the same time, it is planned, worked, and premeditated.

An exceptional faculty for the professions of design practices, thinking works with making. The conjoint activity of thinking by making conjugates ideas with material compounds in the practices of many fields, including art and the discipline of architecture. Thinking through making or learning by doing are well-known limbs inherited in architectural making. It denotes thinking as a comprehensive constitute of creation, and genuine knowledge is extended by practical inquiry. The design progress starts with a philosophical investigation of what and how and making offers a unique contribution merged with the mind and work of the subject, which creates know-how.

[21] Tim Ingold. *Making: Anthropology, Archaeology, Art and Architecture*, London and New York: Routledge, 2013, pp.6-17

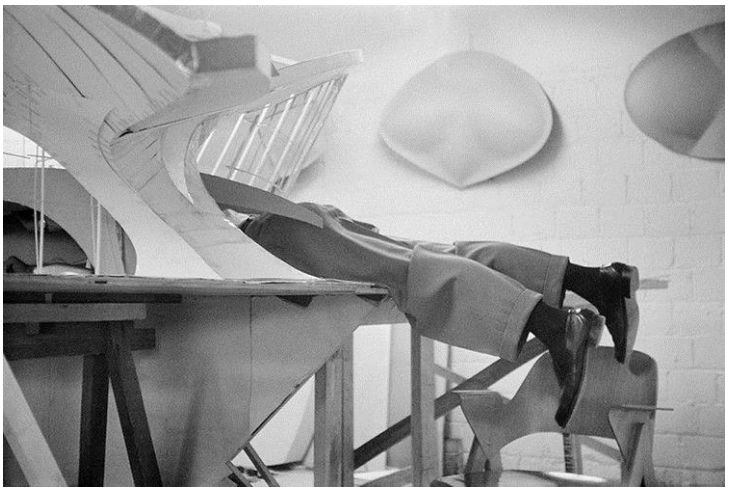

Figure 2.1. Eero Saarinen, Working on TWA Terminal Model. [22]

Tim Ingold defines the making process as an "art of inquiry" and interprets working activity as a process of curiosity towards the physicality of an idea. The physicality of thoughts as an art of inquiry "goes along with, and continually answers to, the fluxes and flows of the materials we work with".[23] It is the process of experimentation on the materiality of ideas in the head and the facts on the ground. Concerning four fields, anthropology, archaeology, art, and architecture, making, as Ingold points out, is the process of coming about through the details of emergence and the conditions of thingness. The art of inquiry aspires to entering a relationship engaged in doing, making, and learning. (Figure 2.1) Such an understanding requires a correspondent process in which humans and materials "unfold within the wave of the world".[24] The activity of making then recognizes the woven nature of knowledge production about the craftwork which requires "thinking through making" instead of

[22] Eero Saarinen, https://www.big-fishdesign.com/blog/x8reald253zafen5l7epbdn7l4hlht, last accessed 08.13.2022

[23] Op.cit. Ingold, p.6

[24] Ibid.p.9

a theoretical act of "making through thinking".[25] This commitment between material practice and knowledge production by generation in fields of practice conjures up "knowing from the inside" to respond to the flows and fluxes of making. The made object is the material form in a particular moment of its movement through a creative journey that allows material and dianoetic *beings* in the process instead of a normative application. Knowing from the inside highlights generating knowledge, in the embodiment of which the investigator is entangled in the material world, learning about it from the inside. The condition of the fluxional material relationality in the making is defined as "relational materialism" in philosophy investigated by Johannes Beetz, who conceives materiality as a matter in motion in which the subject is seen as "an effect of material conditions, relations processes, and practices". [26] The fluidity in progress against the solidity of the end product emphasizes the idea of growth which is the priority over the static state. The revelation in the process opens a philosophical investigation between possibilities on object and subject, matter and form, intentions and limitations, generation and construction.

In fields of practice, an internal affiliation of thinking by making is ontologically constructed because all the acts follow an inquiry and material embodiment of how and why. The practitioner works as a philosopher, asks curious questions, and finds alternatives to the possible answers from the inside, following bodily and material accession with the appointment of the self and exploration process. According to Gaston Bachelard:

> A philosopher who has evolved in [one's] entire thinking from the fundamental themes of philosophy of science, and followed the mainline of

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[25] Ibid.

[26] Johannes Beetz. *Materiality and Subject in Marxism, (Post)Structuralism, and Material Semiotics*, UK: Palgrave Macmilla, 2016, p.114

> the active, growing rationalism of contemporary science as closely as one could, must forget [one's] learning and break with all [ones'] habits of philosophical research if [one] wants to study the problems posed by the poetic imagination.[27]

Learning in action requires a disjunction from possession. This disjunction from 'known' is necessary to depart from the past and start from a new investigation as opposed to the 'given' problems that lead the designer or artist to think further and focus more on the specificity of the progress in searching for unique characteristics of the material, thoughts, space, and conditions to learn. The declaration of learning by making indicates that the maker has no prejudgment except being equipped with ontological tools and curiosity while starting to work. The internal intuitive mechanism is the agent in tracing and discovering the authentic essence/knowledge while making. Aware of ontological instruments and critical thinking ability, the maker finds specific qualities. Emphasizing learning from particular attributes, such as material, program, object, context, or site, anticipates the idea of new starting and leads to finding further.

> Philosophical reflection applied to scientific thinking elaborated over a long period requires any new idea to become integrated into a body of tested ideas, even though this body of ideas be subjected to profound change by the new idea (as is the case in all the revolutions of contemporary science), the philosophy of poetry must acknowledge that the poetic act has no past, at least no recent past, in which its preparation and appearance could be followed.[28]

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[27] Gaston Bachelard. *The Poetics of Space*, Boston, Massachusetts: Beacon Press, 1994 (originally in 1958) p.xvn. The author of the thesis has changed the original gender specifications from 'his' to 'one'.

[28] Ibid. p. xvi

The strong bond between the progress and the action as a poietic[29] construction lies in the depths of the unconsciousness, as indicated by Bachelard. The significance of unconsciousness in revelation of ideas in creation engenders unexpected dimension of making. Therefore, there should be a new starting for new creative construction that is distant from the inner trust of the subject of the echoes of the past. Independent of causality of a profound statement, unexpected nature generates the new. The poietic construction: specifically of space, has an entity, novelty, action, and dynamic own that is a direct ontology. As indicated, the communicability of an unusual result has a great ontological significance. Against the pressures or oppressions, there is always a possibility of 'new' with a sudden and unconscious poietic act. Thus, as Bachelard claims, when the act emerges into consciousness, the process becomes "a direct product of the heart, soul, and being a [human][30] apprehended in [self] actuality".

Retaining fundamental roles in the process, materiality, technique, and technologies have a relational dialogue that is not stable and unchangeable. Although the process itself is instinctively generative, the selection of tools, technical decisions, and interpretations are consciously facultative. The technique is a significant contributor to the process of revealing and a powerful enabler in producing specialty and unique knowledge. It is an interpretation of purposes as tools. Each technique is a natural

[29] Although there is a commonality in the usage of the term 'poetic' and 'poietic' the differentiation is given in https://plato.stanford.edu/entries/heidegger/ (last accessed 09.06.2022) that "Poiesis, then, is a process of revealing. Poietic events are acts of unconcealment—one is tempted to coin the ugly neologism truth-ing—in which entities are allowed to show themselves. As with the closely related notion of original truth that is at work in Being and Time, the idea of entities showing themselves does not imply that what is revealed in poiesis is something independent of human involvement. Thus, what is revealed by the artisanship of the cabinetmaker is wood as it enters into man's dwelling. This telling remark forges a crucial philosophical link (and not merely an etymological one) between the poietic and poetic. Poietic events and poetic habitation involve the very same mode of intelligibility." Throughout the thesis, the author uses the term 'poietic' to indicate not just the poetic stance of making.

[30] The present author has changed the original gender specifications; 'man' and 'his' to 'human' and 'self'. p. xviii

extension of the living organism; that is, the subject as the practitioner. Furthermore, the technique is an inevitable component of technology, as learned, accumulated, developed, and systematically used knowledge, existing even in the most primitive communities. Technology in the practice of inquiry is a transformative and robust notion of making that constantly evolves in time and affects processes and the end results.

Learning from the material, techniques, technologies, tools, or bodily involvement is a process of revelation through poetic imagination and structural, ontological, and social construction. Having different but common traces of art production, the foundation of architectural thinking and making, besides the construction of a building, is the construction of practical knowledge that is profoundly a philosophical phenomenon. Making from a new (context, material, site-specific, etc. conditions) necessitates a new construction in which further questions and related techniques are needed, new phrases of production are required, and the whole vocabulary of revealing calls for a theoretical, critical renewal and re-description. It designates a unique language to create meaning, value, and a related system for defining a discipline of communication.

Martin Heidegger's *Bauen Wohnen Denken* (Building, Dwelling, Thinking) is a seminal text that has influenced architectural thinking and making relationships. He devotes his philosophy to studying *being*, *becoming*, and making by raising questions between dwelling and building. "Language is the house of *being*", and when humans listen and respond to language or dwell in language, the world in which one exists opens an authentic existence that makes *becoming* possible.[31] Heidegger defines it as "dwelling poetically". The relation of building with dwelling is explained as a

[31] Martin Heidegger. "Building, Dwelling, Thinking" *Rethinking Architecture: A Reader in Cultural Theory*, London: Routledge, 2005, p. 95.

kind of thinking. To think about building and dwelling emerges to advance thought on the meaning of *being*. Reminding ourselves of the origins of the German word *bauen*- used here to build the article, leads to an understanding of the fundamental importance of what it means to 'be'. *Bauen* loses its original meaning: *being* in a particular place "in which we dwell, in the way we are, we exist, i.e. on the face of the earth an extension of our identity, of who we are". Therefore, "this venture in thought does not view the building as an art or as a technique of construction; rather, it traces building back into the domain to which everything that belongs."[32] Building (*Bauen*) originally means to dwell (*wohnen),* and as claimed, the original meaning of to dwell has been forgotten as what it means to be in the word's original sense. The influential reminder is suggested on the revitalization of existential reflections on human finitude, about his link between building and dwelling, to resist or orientate the self. In this indication on building and dwelling, Heidegger asserts architecture is not constructing places, yet the understanding of building resides in itself; the tectonics of architecture as *techné*. Architectural thinking resolves around building and dwelling as the form of *being* and inhabiting space. The resemblance between thinking and making as *being* and dwelling highlights the significance of the possibility of emancipatory architecture in creating multiple meanings in subject-object formation and in its own distinct way of practicing and acting.

2.1.2 Making as Knowing Act: Aesthetic and Politic Formation

The possibility of the transformation of making into an operational act resides in knowing, which is related to the impropriation of the necessary knowledge about the materials, methods, and processes of making. The philosophical agentic manner of making empowers the generative architectural practice rooted in creative thinking.

[32] Ibid.

The sociological manner of architectural making is embedded in critical thinking, cumulatively constructed know-how, and positionality motivated by emancipatory appetence. Intuitive making practice is nourished by creativity that works with generation, an internal process of exploration, understanding, circumventing limits, and experience. Deliberative practice is conscious, a premeditated act coming along with cumulative knowledge, accumulated know-how, and intellectual equipment. With references to revealing, learning, exploring, and *being* in the moment, the fluidity of the process is poietic construction emanated by object-subject formation. In this generative progress, the potential for emancipation can occur through cumulatively and socially constructed knowledge, the learning mechanism that works with mistakes, unexpected results, and the investigated alternative possibilities. In this sense, making beyond a mere aesthetic apprehension turns into a conscious act, politically formative practice, including self-equipment by bodily engagement to the process and material-immaterial work association, emerging and accumulated know-how, driving into limits, subjective initiation for the new or possible alternatives in the process.

The alternative possibilities are embraced in transforming the matter into the material *being* as a social construct. The act of making requires a formative construction in which existence precedes unique characteristics, conditions, or essence and a social construction starting from the maker's own equipment in the process and positioning towards an agentic manner. Knowledge is inextricably linked with power; invisible power relations, systems, and mechanisms are generally constructed on that relationship.[33] Once the maker can critically see the specific nature of the thing itself within a relational dialog, the authentic essence and systems of the working mechanism become visible to assess. A process of exploration and interpretation can

[33] Michael Foucault. *Power/Knowledge: Selected Interviews and Other Writings 1972-1977*, Pantheon Books, 1980.

enable one to know things from within: the synchronous *becoming* of object and subject is materialized. The maker is the one who thinks through making. It is through self-discovery that one knows things; it is through letting things grow in and growing into them that one gains knowledge. It generates a view that can operate the spatial and temporal reconstitutions in theoretical understanding and open a new perspective for re-projections of the viewed. 'Thinking to know' generally is considered with the subject's judgment through a theoretical statement and practical ability. Similarly, knowledge is the outcome of creative understanding and critical thinking. It is used in its spacious sense to embody various forms of knowledge processes. Being critical first requires an accurate understanding, possible by knowing then a process of analysis, research, and interpretation in an agentic manner.

Ideals and norms are practical, and the notion of critique is to analyze these practices that figure or determine particular kinds of experience.[34] Critique infers questioning the self-evidence of a form of experience, knowledge, and power relations to open new possibilities for thought and action. It signifies the analysis of the conditions of our existence, revealing as a *prioris*, whether transcendental or historical, of our thought, discourse, and action: "critique unmasks power's surreptitious operations in our lives if it exposes the systematic distortions of our communicative attempts to reach understanding."[35] Criticism, therefore, is a way of understanding which is individual and societal as well.

> Only by starting from this situation of [one's] relationship with the work of art is it possible to comprehend how this relationship- if it is authentic- is also for [one] the highest engagement, that is, the engagement that keeps [one] in

[34] Michael Mahon. "Michel Foucault's Archaeology, Enlightenment and Critique", *Human Studies*, vol.16, no:1/2, Postmodernity and the Question of the Other (1993), pp.129- 141.

[35] Ibid.

> the truth and grants to his dwelling on earth its original status. In the experience of the work of art, [one] stands in the truth, that is, in the origin that has revealed itself to [one] in the poietic act. In this engagement, in this being hurled- out-into the ἔποχη of rhythm, artists and spectators recover their essential solidarity and their common ground.[36]

Giorgio Agamben defines involvement and perception without any recourse to distancing and critical judgment. Aesthetic practice becomes work when the subject is engaged in *becoming* and when it is produced by labor and shared. Aesthetic engagement, thus, where the subject is equipped with tools, materials, technologies, and methods, becomes a political act toward an operational practice in ascertaining social *beings.*

Given the unique stance of ontological knowledge specific to the practice and discipline itself, architectural making is an activity of knowing, which is a conscious act. The dictum of 'to know' has a solid consignment to intellectually, professionally, and sociologically 'knowing act', which necessitates practical ability to make critical comprehension and justify a statement through perception, investigation, or experience. It denotes comprehensively equipped knowledge rather than a mere thinking activity. Knowing is revealed through discovery, understanding, experience, and assessment. Making activity alludes to a critical interpretation and creative manipulation resulting from an exploration. Learning by making refers to two associative explorations; one is related to a discovery of specific physical qualities, and the other is related to a self-discovery of the maker. It is mainly

[36] Giorgio Agamben. *The Man Without Content* (trans. by Georgia Albert), California: Stanford University Press, 1999(originally in 1994 in Italian), p.63. The present author has changed the gender indicators in the quotation from 'him' and 'man' to 'one'.

regarded with comprehending the subject's judgment through a theoretical statement and practical ability.

Following John Dewey's concept of "reflective practice", Donald Schön theorizes reflective activity and conceptualizes knowing in action, and reflection in action. Indicating the significance of problem set in opposition to the idea of design as rational problem solving[37] due to "given" problems to handle, Schön proposes reflection-in-action as the core of "professional artistry" instead of "technical rationality" that demands solvable problems through the rigorous application of science. The practitioner "is not dependent on the categories of established theory and technique but constructs a new theory of the unique case." The subject does not separate thinking from doing, and due to "experimenting, a kind of action, implementation, and application is built into the inquiry".[38] Reflective practice indicates a knowing act in which practitioners become aware of their implicit knowledge base and learn from their experience. Tacit knowledge, then, is explained by the ability of practitioners to "think what they are doing while they are doing it".[39]

> The beautiful is just political order lived on the body, the way it strikes the eye and stirs the heart.[40]

In *The Ideology of the Aesthetic*, Terry Eagleton traces the possibilities of an alternative ideology generated from theory; he constructs a strong connection between body and aesthetics by reinterpreting aesthetics with an extended political dimension. Impressed by Marx (with the laboring body), Nietzsche (with the body

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[37] Herbert Simon. *The Science of the Artificial*. Cambridge: MIT Press, 1996 (first published in 1969)

[38] Donald Schön. *The Reflective Practitioner: How Professionals Think in Action*, New York: Basic Books, 1983, p.68

[39] Ibid.

[40] Terry Eagleton. *The Ideology of the Aesthetic*, New York: Blackwell, Oxford, 1992, p. 336

as power), and Freud (with the body as desire), aesthetics is redefined by Eagleton "as a discourse of body." He refers to Alexander Baumgarten, the inventor of the term aesthetics, who asserts that "aesthetic cognition mediates between the generalities of reason and the particularities of sense".[41] In parallel with Foucault's "technologies of the self" indicating the strong bond between power and the body, Eagleton claims that "structures of power must become structures of feeling".[42] Given their common commission, bodily response as a social submission, aesthetics, and politics are deeply at one.

Critical knowledge of architecture entails an understanding of both the practice itself and the policies of building. Because the way technical responsibilities and providence of capital investments socially affect the questions of who architects are, what they are supposed to do, what they are asked to do, and therefore, what they can do. Architecture, by its very nature and through practice, is an act of 'making things visible' and puts specific cultural, contextual, social, and aesthetic values and meanings in a concrete social-communicative formation. The subject is the fundamental and indispensable entity of this visibility. Making redounds visibility of unique production through ontological tools and subjective knowledge assessment. That leads to subject and object formation through a conscious act. The process of making is 'an act for/of knowing' and an action including an expression of an individual statement or a political stance.

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[41] Ibid.

[42] Martin H. Luther. Gutman, Patrick Huck. Hutton. (ed.), *Technologies of the self: A seminar with Michel Foucault*, the United States of America: The University of Massachusetts Press, 1988

2.1.2.1 (Im)Materialization of Architectural Work

Architectural work from the very first step of design is an intention of seeing tectonic and poietic appearances that emerge with a system of relations. It always mediates intangible (immaterialize) to tangible (materialize) with the aid of translatory operations by different media. Design practice is not just translating an architectural idea into an object; it refers to making knowledge following a process of analyzing, understanding, responding, and resisting.

Hannah Arendt's political philosophy envisions the theory of architectural making through political possibilities by questioning how architectural making contributes to the constitution of a common world. It is seen as the precondition for the possibility of acting politically, and thus a means of potentially recovering an authentic public realm. In *The Human Condition*, Arendt elides the fundamental distinction between work, the productive activity of making, and action that comprise creating and sharing a public realm and political life as the realization of human freedom.[43] Politics is treated as a field for exercising a form-giving and sovereignty through which human affairs might be as solid and durable as artists' productions. It is the condition for genuine political freedom. Labor, work and action are defined as three forms of activity principal to the human condition: an inquiry into the human capacity for action. Criticizing its remorseless repetition, Arendt defines labor as the biological process of the human body and life-sustaining activity. The notion of work is distinguished from labor, conforming with "the artificial world of objects that human beings build upon the earth". In this definition, work is differentiated from labor by interacting between the natural world and human

[43] Hannah Arendt. *The Human Condition*, The University of Chicago Press, 1998 (second edition with an introduction by Margaret Canovan), (first edition published in 1958)

artisanship, mixing labor, and producing things with an end. However, labor transcends itself into permanence. Believing the potential of plural human beings, Arendt claims each individual can act and start to make something new. Therefore, action indicates plurality as distinct individuals and interactions without the intermediary of things or matter. The principle of action is hidden in the requirement of freedom. Her original concept of action is the actualization of human freedom in speaking and acting for the sake of the shared, public world of human affairs. For Arendt, "a space of appearance" arises whenever individuals speak and act together and appear freely. In its political means, action establishes a degree of certainty in the supposedly unpredictable world. Craft making, in this sense, is hidden in the possibility of producing "a model of politics as making a work of art", and it can be a way of action.

The bodily engagement in making manifests subjective action and socio-political presence of the body. Arendt gives a place to Locke's distinction between working hands and laboring body, stemming from the ancient Greek *cheirotechnes* the *craft maker* (craftsman), to whom the German *Handwerker* corresponds, who were "slaves and tame animals with their bodies ministering to the necessities of life".[44] There was no distinction between labor and work or the working hands and laboring body in ancient Greece, as indicated by Arendt. In the late 5th century BC, the polis started classifying "occupations according to the amount of effort required".[45] Believing that the laborer with the 'hand' and the laborer with the head involves the same laboring process, i.e. that intellectual work is not distinguished from the work of hands. Even thinking, as indicated, is a form of labor based on the activity of the head. The act of thinking is materialized when the intellectual worker starts to

[44] Arendt in reference to Aristotle, Politics.

[45] Ibid.

manifest thoughts by hand. This is the start of the work process as the craftsperson considers the model its most immaterial stage. As explained, "the work requires some material upon which it will be performed" and fabricated; "the activity of *homo faber* will be transformed into a worldly object" thus, "the specific work quality of intellectual work is no less due to the work of our hands than any other work".[46]

Peggy Deamer approaches this trilogy of labor, work, and action with an expanded view and an investigation of the architect's current professional and political predicament. The publication *The Architect as Worker- Immaterial Labor, the Creative Class, and the Politics of Design*, edited by Deamer, consists of a range of authors reconsidering how architecture is practiced from the position of the actual work involved.[47] The prominent argument is that architecture's peculiar status of the material embodiment is produced by its immaterial work. Questioning the peculiar position of architecture with the notion of craft, the significance of design with the definition of detail expanded from the joining materials in and object to the joining steps in the production process in factory-based production is extensively elaborated.

However, due to this close relationship between art and architecture generated in the design process, Deamer mainly criticizes the absence of conceptualizing architectural work as work. This condition has resulted in the definition of the architect as 'the creator' and their work as design. Work is defined by architect's blindness to the fact that they perform labor and examined with two underlying suppositions that contribute to this ignorance: "that creative work like architectural

[46] Ibid.p.90

[47] Peggy Deamer. (ed.) *The Architect as Worker – Immaterial Labor, the Creative Class, and the Politics of Design*, New York and London: Bloomsbury, 2015. The initiator for the further inquiry into materiality-work-labor relationship is the course: ARCH 511 Social and Cultural Themes in Urban Architecture instructed by Prof. Dr. Güven Arif Sargın in 2013.

design, is not considered as labor" and "that work in general is laborious and uncreative"[48].

Offering a peculiar way of re-reading and rewriting architectural historiography, what comes over in Richard Biernacki is that no matter how architects/designers or intellectuals work on different scales, contents, or media, they are all intellectual wage laborers working for capitalism and therefore, the whole system of working is controlled and organized by the capitalist system of productivity.[49] Creativity's riddle on the act of doing is organized as labor by the minutely timed expenditure of effort, challenged in producing unique end-results by the expenditure of time, and transformations of the offices to work-rooms.[50] The whole system of making architecture is controlled and organized by productivity with limitless work hours, low salaries, and maximum effort. Architects, relatedly, work as day laborers in drawing factories far from design and individual creativity. Deamer disputes being a victim of the capitalist ideology while indicating three causes: lack of conceptualizing architectural work as work, lack of security structures or institutionally sanctioned labor laws, and the pathetic notion of design that is isolated from the notion of work.[51] Biernacki criticizes the preposterous reciprocity between the notion of creativity and the dimension of the work resulting in the valorization of the work of an architect.

Therefore, the capitalist production system controls and organizes the whole working system. Biernacki argues that freedom could be protected only if making (he explains

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[48] Ibid

[49] Richard Biernacki. "The Capitalist Origin of the Concept of Creative Work", *The Architect as Worker – Immaterial Labor, the Creative Class, and the Politics of Design*, (ed) Bloomsbury, New York, and London, 2015, pp. 30-43

[50] Ibid.

[51] Peggy Deamer. "Work", *The Architect as Worker – Immaterial Labor, the Creative Class, and the Politics of Design*, (Ed) Bloomsbury, New York, and London, 2015, pp.59-81

it in the activity of writing) was an extraordinarily creative act in a universe untouched by the regularities of material labor.[52] Deamer clarifies the problem as the increasing marginalization of the profession within the building industry. Therefore, the comprehension of architectural production as work in all its rational reality rather than thinking of work and value in a more utopian sense means rethinking the ways of making. It points out identifying the need to produce alternative models for architectural making.

The critical analysis is hidden in the opposition between the physical milieu with functional considerations and the social milieu focusing on the symbolic meanings.[53] Additionally, the figure is the maker, and its (re)definitions by changing systems and mechanisms of production have been critical in the formation of architectural making since it is a design-based discipline. However, in architectural historiography, the authorial status in architectural making constructed by the institutionalization of architects' productions has generally resulted in the definition of the architect as a 'sublime' figure. The process and the authorship of makers have also been challenged by urbanization and its homogenizing effect and its capitalist production system. For this reason, as claimed by Deamer, architecture, a semi-autonomous discipline, is "a manifestation of capital" due to the act of building and the relationship with capital.[54] As a result of this requisite dependence on capital, architecture inevitably becomes part and parcel of capitalism. Through architectural construction, exclusionary and homogenizing effects of urbanization are observable in multiple scales and environments of design, including its objects, acts and actors,

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[52] Op.cit. Biernacki. pp. 30-43

[53] Kenneth Frampton. *Labor, Work and Architecture*, p.256, he explains criticism with a reference to Christian Norberg- Schulz's "Intentions in Architecture".

[54] Peggy Deamer, "Introduction", *Architecture and Capitalism – 1845 to the Present*, (Ed) London and New York: Routledge Press, 2014, pp. 1-4.

processes, and even vocabularies. From those, the thinking subject, which is the maker, has the ability to acquire knowledge with critical thinking; and then making is the emancipatory instrument of the profession.

Eliminating the political stance of an architect produces direct historiography, in which architecture and architects are narrated in their mere creative manner. Acknowledging making as a critical tool to produce architectural formation, the assessment of ongoing processes, and the acts of making in urban space, an architect can recognize capability in producing urban tactics by using critical and intellectual vision. Architecture, with its literal meaning as "the art or science of construction edifices for human use",[55] not only carries the meaning to build, but also to edify, which is to instruct, but alludes directly to the didactic character of the public realm. Architecture as an 'intellectual work' and the architect as a 'day laborer' are significant pieces of the conflict of capitalist urbanism. Beyond the act of shaping or creating the purely material world, architecture is a crucial mediator in the reproduction of spatial and social relations.

From the perspective of Pier Vittorio Aureli in *The Possibility of an Absolute Architecture*, the relationship between politics and architecture on the concept of form, the act of forming, and politics are the real and effective necessary programs of architecture. The possibility of absolute architecture in a city is questioned, and analyzing the city by defining and associating the concepts of "the political" and "the formal" against the totalizing notion of urbanization is proposed.[56] Believing that the possibility of an absolute architecture is related both to the possibility of making and understanding the city with its opposing forces through the very "finite nature of

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[55] Architecture, Oxford Dictionary <https://en.oxforddictionaries.com/definition/architecture > last accessed 05.16 2018.

[56] Pier Vittorio Aureli. "Toward the Archipelago; Defining the Political and the Formal in Architecture", *The Possibility of an Absolute Architecture*, The MIT Press, Cambridge, and Massachusetts, 2011, pp.1-46

architectural form", it is intended to explore the potential of architecture with the modes of politics as both critical and instrumental tool on architectural discursive practices and the strategies for circumventing limits.

The making activity evolves as an emancipatory act through the autonomy and peculiarity of progress, including unique involvement, technical expertise, production of alternatives, diversity in learning mechanism, and a form of dialogue between subject and object. The act itself is about doing, set in the context of technical, technological, material, and ontological becoming of new beings, constructions, approaches, and meanings. The practice bears the triumph of theory on the move, of objects and subjects in emergence, of the malleability of mind and matter. Such processes of generative plurality, the fluctuation of form, and the production of multiple meanings call for an ontological construction of thoughts and acts.

2.1.3 Making Knowledge: Knowing in Design

The making professions use a specific 'making knowledge' that refers to the established distinction between 'knowledge-that' and 'knowledge-how'.[57] Design professions linked with making activities represent a great variety of productions in different scales, usages, purposes, and meanings. Making knowledge requires a broader knowledge-how. In different design fields of making, how knowledge is created, formed, and used with all its difficulties has been discussed for a long time. Since design involves special thinking and fundamental intellectual capability towards an emancipatory inquiry, design knowledge is articulated as tacit, which is

[57] Gilbert Ryle. "Knowing How and Knowing That", *Collected papers*, Volume 2, New York: Barnes and Nobles, 1971, pp. 212-225.

implicit and contextual. However, this capability is a multifaceted cognitive skill that everyone has, and it "relies on non-verbal media of thought and communication".[58]

Stressing the differentiation between natural sciences and design sciences, Herbert Simon in 1969 already defined design as imagining and devising "courses of action aimed at changing existing situations into preferred ones".[59] It is not about how things are, yet, how they could be and be made. Therefore, making is not about the essential but the possible. Simon explains the construction and use of models as a way of making. The generation of different alternatives, often in large numbers to be tested with academic norms of formalization and well-defined disciplines, makes design and the science of the artificial loose, intuitive, informal, and recipe-like.[60]

Against this informal status, the concept of a "designerly way of knowing" emerged in the late 1970s with "a desire to scientize" design in the modern movement and was prevalently declared after its publication with the same name by Nigel Cross in 1982 through the new developments in design thinking, research and practice.[61] Providing a unique insight into the development of research interest in articulating and understanding the nature of design cognition, it claims that designers (whether architects, engineers, product designers, etc.) have and use particular "designerly" ways of thinking and knowing. In this specific process of knowing employed by designers, generative knowledge is embodied both in the processes of production and in designing products. Having trained for solving ill-defined, real-world

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[58] Nigel Cross. "Designerly Ways of Knowing: Design Discipline Versus Design Science", *Design Issues*, Vol.17, No:3, Summer, MIT press, 2001, pp.49-55

[59] Herbert Simon. *The Sciences of the Artificial*. Cambridge: MIT Press, 1981 (originally in 1969), p.129. See also Models of Discovery, Dordrecht, Holland: Reidel, 1977. Models of Thought, Vols. 1 and 2, Cambridge: MIT Press, 1979. Models of Bounded Rationality, Vols. 1 and 2, Cambridge: MIT Press, 1982.

[60] Fredrik Nilson. "Making, Thinking, Knowing Architecture. Notes on Architecture as a Making Discipline and Material Practice". *When Architects and Designers Write / Draw /Build /?* Arkitektskolens Forlag, 2013, pp. 126-147.

[61] Op.cit. Cross.pp.49-55

problems, designers have nonverbal thinking and communication abilities, where certain codes are used to translate abstract requirements (formulated in brief, in the visions of the client, or the wishes of the users) into concrete objects. These codes are non-verbal thoughts read and written in object languages, as Cross indicates.[62] Material culture is the source of design thinking, and designers can read and write in this culture. Cross claims that the designerly way of knowing is more about the design process. Yet, design products are valuable and significant sources of knowledge specific to design professions.

2.1.4 From Philosophical Inquiry to Scientific Construction

The discussions regarding knowing through making in design professions and the discipline of architecture designate different modes of knowing in philosophical hermeneutics enlightened by the art of inquiry and scientific inquiry. When the practical process of creation, production, and research is concerned, the duality between art and science is closely elaborated on the differentiation of knowing-that from knowing-how. Gilbert Ryle's differentiation of these two principles has a significant place in the literature, with his claim that the process of acting by knowing the necessary knowledge, techniques, materials used, or methods of an act are not enough in themselves. However, there is another form of knowing that is necessary to perform the task.[63] 'Knowing-that' is about theoretical knowledge as propositional, relational, and indirect knowing in which the form of knowledge is generated, documented, and cumulated through systematic research mechanisms. 'Knowing-how' in distinction refers to the practical knowledge, which is direct, reflective, and generated from the experiential process of practitioners and mostly

[62] Ibid.

[63] Op.cit. Ryle. pp. 25-61

remains undocumented. In parallel with Ryle's argument, the practice of the theorist and the craft maker are differentiated by Ingold as: "it is not that the former only thinks and the latter only makes, but that the one makes through thinking and the other thinks through making".[64] The theorist, as explained, "applies the forms of thought to the substance of the material world", however, a craft maker "allows knowledge to grow from the crucible of our practical and observational engagements with the beings and things around us".[65] The two forms of the work that belong to the theorist and the craft maker are asserted as the practice of this inquiry. Differentiated from the planned, strict predictions, this kind of work is explained by Hirokazu Miyazaki who defines a form of work towards hopes and dreams. Making activity in its practical means is a work of experiment that follows generative knowledge where it leads and a confrontation between sanguine ideas and the facts.

It can be claimed that the generation of theoretical knowledge consists of levels of practical knowledge regarding intuitional approaches and assumptions. The generation of practical knowledge contains levels of theoretical practices about achieving reliable facts to build upon. However, the differentiation of knowing-that and knowing-how still maintains its prominence in two distinct forms of knowledge generation.

The definition of the nature of knowledge coincides with the Enlightenment and scientific knowing. When the nature of knowledge has been utilized by scientific knowing, it has been defined under scientific thought. Relatedly, when it is defined as scientific knowledge, scientific inquiry becomes dominant in its research; the

[64] Op.cit. Ingold, p.6

[65] Ibid.

establishment of disciplinary boundaries has created foundations for practices of making.

Knowing-how in architecture is the direct form of reflective knowing of design, construction, documentation, research, and education, while knowing-that is indirect knowing ‘about architecture’ again generated through the reflection of and on the subject matter.

As elaborated in this thesis, ‘making’ is a central aspect of architecture due to ‘material practice,’ which is the actual process of designing, and ‘knowledge generation.’ Buildings, structures, built environments, or artifacts play a central role in searching, interpreting, and evaluating ‘materialized, therefore, constructed knowledge’ and ‘theorizing architecture’ by being the bearers of architectural production and knowledge. However, architecture is an expansive and complex notion; the act of making a unique work comprises an integration of various contradictory elements, aspects, details, relations, and perspectives: therefore, it produces complex, heterogeneous objects, artifacts, relations, and patterns. Architecture, in this sense, regarding both the design process and the built environment, consists of ‘materialized knowledge’ of many kinds, from details to buildings, from texts to monuments, concerning both patterns of social, cultural processes, contexts as well as material, technological, technical patterns and mechanisms. Furthermore, the nature of architectural knowledge with its generation, formation, accumulation, and usage is more complex than the material practice and the production itself:

> The real craftsmanship in architecture is the crafting of a good story, which depends on a prior story about the way a certain kind of craftsmanship, a

> certain way of assembling building materials, talks. The precision of a building detail is the precision of a point in an argument.[66]

Differentiating material practices from hermeneutic practices, Stan Allen denominates architecture as a material practice in which activities transform reality by the production of new objects and organizations of matter.[67] Hermeneutic practices are described as analyses of representations that mainly deal with interpretation and meaning. Material practices, on the other hand, means working with concrete matters rather than images, meanings, or objects yet, it is about performance and producing concepts, theories from the material, and practical procedures. These methods, theories, and concepts, as Allen points out, are useful to apply to specific transformations of concrete situations and contexts of application. Therefore, as indicated, architects have a unique basis of methods, tools, and techniques as well as trained imagination and capacity for constructing alternative realities. Architecture, as a material practice in this sense, deals with concrete materials and social situations that form the external reality and works in the context of an application constantly on the move.

2.2 Knowledge of Architecture: The Making Profession

The constant flux in relation to design with all its processes, methods, applications, and tools makes architectural research and knowledge assessment problematic. The material practice of architecture necessitates a 'making discipline' to form its

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[66] Mark Wigley. "Story-Time", *Assemblage*, No:27, Tulane Papers: The Politics of Contemporary Architectural Discourse, Aug. 1995, pp. 80-84

[67] Stan Allen. *Points + Lines. Diagrams and Projects for the City*, New York: Princeton Architectural Press, 1999, pp.52-53

disciplinary-specific scholarship.[68] A strategy for architectural research within the framework of disciplinarity and between knowledge and design practices lay the basis of architecture in what Halina Dunin- Woyseth calls the "making professions".[69] Making discipline and making knowledge have, according to Dunin-Woyseth, to achieve disciplinary viability and comply with the demands of two worlds – the world of the profession and simultaneously following the rules of the scientific world. A making discipline must be relevant to the practice of the making professions and must have the ability to fulfill the criteria of science, which constitute disciplinary knowledge.[70]

2.2.1 Science of Disciplinarity and Architectural Knowledge Formation

Until the 19th century, when positivism with all its system of thought was re-imported into philosophical theory, art and science had been concentric in thinking. Known for his works on the central role of visualizations and different modes of representation in science, Martin Kemp claims that "work begins at the intuitive level, curiosity aroused by our recognition of patterns or order" in both art and science.[71] That characteristic in thinking creates a commonality between two seemingly disparate realms. Examining the juxtaposition of patterns, cognitive processes, artistic and scientific expressions, and commonalities in thinking of art and science from the Renaissance, Kemp argues that there is constant analogous thinking between words and images and a common human quest for visual

[68] Op.cit. Nilson. pp. 126, 147

[69] Dunin-Woyseth, Halina, and Jan Michl. "Towards a Disciplinary Identity of the Making Professions: An Introduction." *Towards a Disciplinary Identity of the Making Professions*. Oslo: AHO, 2001

[70] Ibid.

[71] Martin Kemp. *Structural Intuitions: Seeing Shapes in Art and Science*, University of Virginia Press, 2016, pp.10-40

understanding. Due to the creative and crucial interplay of different modes; the words and images, the history of science as presented is replete with thinking through visual insights, construction of visual models, demonstrations, and communication, which creates an act of seeing. Analyzing the architects', painters,' and scientists' ways of thinking, Kemp theorizes the used mechanisms of intuitive extraction of patterns and highlights certain aspects of visual and textual order from the objects of inquiry with his "structural intuitions". They have particular applicability to the engineering solutions in architecture, where an instinctive sense of what might be stable and strong is central to architectural design processes, especially at the conceptual stage of projects that push the boundaries of existing solutions.[72] Structuring perceptual and cognitive experience, interpretation, and conceptualization operate scientific work and aesthetic criteria.

The establishment of disciplinary bases for practices of making as a governing mechanism of the field of knowledge requires definitions, orders, limitations, organizations, and systems to form or 'discipline' itself under scientific and hermeneutic inquiry. Due to being a discipline, architecture necessitates epistemological construction; therefore, it is conditioned by theories, histories, institutions, and related definitions, frameworks, boundaries, limitations, and constraints. When architectural generative production with its design process becomes knowledge utilization within the primacy of discipline, poetic presence is dissociated from the scientific. Due to the legitimatization of knowledge under positivistic thought and scientific inquiry, rigid boundaries and hierarchies with all

[72] Op.cit. Allen.

its materials, discourses, techniques, and the knowledge of making break up from aesthetics, specifically at the end of the 18th century.[73]

2.2.2 Making Discipline: Ontological Knowledge Construction by Dissolution of Material Practices

Making discipline can be elaborated as the establishment of disciplinary bases for the practices of making. In other words, making is regulated when disciplinary acts are established. Architectural productions are the sources of knowledge for investigation, utilization, and legitimization. To form definitions, categorizations, classifications, periodizations, and thematizations are disciplinary acts of making practices under scientific and epistemological inquiry. Hermeneutic practices on material formations require the dissolution of architectural production in the search for defining, structuring, theorizing, and interpreting knowledge. By decomposition of artifacts into their architectural elements and statements under the question of ontological construction with an analytic and interpretive inquiry, knowledge hierarchies that include re-compositions, re-definitions, stylistic formulas, motifs, and categorizations are established.

> At the origin of a critical act, there lies a process of destroying, of dissolving, of disintegrating a given structure. Without such a disintegration of the object under analysis, no further rewriting of the object is possible.[74]

A close analysis of any architectural production's provenance when selecting, classifying, and interpreting requires a disintegration or a conceptual dismantling

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[73] Stephen Cole. "The Hierarchy of the Sciences?", *American Journal of Sociology*, Vol. 89, no:1, 1983, pp. 111-139

[74] Manfredo Tafuri. *The Sphere and the Labyrinth: Avant-Gardes and Architecture from Piranesi to the 1970s*. (trans. by Pellegrino d'Acierno, Robert Connolly) Massachusetts: MIT Press, 1987. p.272

operation into its unique knowledge, including various components of itself; discourses, actors, mechanisms, structures, processes, as well as materials, elements, techniques, methods, technologies to redefine, categorize ‘to organize’ in the creation of new context.

2.2.3 Knowledge of Making and Thinking Architecture

Once an architectural production is decomposed into its components, it becomes open to re-compositions. Knowledge formation in an orderly organization is necessary for ontological and epistemological construction, relatedly, to define and ‘make’ a discipline. However, from Vitruvius' *De architectura* (*Ten Books on Architecture*) of the 1st century BC, and *De re aedificatoria* (*Ten Books on Architecture*) of Leon Battista Alberti in 1450, to the five points of Le Corbusier defined in *Towards a New Architecture* of 1927, architectural orders and canons are dominant in the making and thinking of architecture. The organization of architectural knowledge formation has been defined, canonized, and manifested in the study of practical knowledge. The ontological construction of the discipline has been linked to the question of ‘the art of composition’ and ‘canon formation.’ With the dissolution of architectural objects, descriptions, rules, and methods of making as architectural guidelines have been given for a more coherent, therefore ‘scientific,’ and ‘common aesthetic apprehension.’

2.2.3.1 Organization of Knowledge and Created Mode(l)s of Thinking-Making Architecture: Types, Typologies, Encyclopedia, Atlas, Anthologies, and Styles of Architecture

These difficulties in architectural knowledge formation have been discussed in the design field for a long time. In design practice, design knowledge is cumulatively constructed, creating a repertoire of artifacts, processes, and patterns of possible

solutions for future problematics. These repertoires include relational patterns of matter with material artifacts and process patterns with design methods. According to Schön, the particular ability of designers is hidden in the transfer of possible solutions, approaches, and methods to confront new design problems.[75] This kind of corpus work as 'the' architectural repertoire matches with typological thought that refers to describing a set of characteristics on a group of concrete individuals answering, which is called "the type".[76] With Quatremére de Quincy's *Encyclopėdie*, and the defined character, identity, origin, and invention, the idea of creating typological models became explicitly and systematically a universal aesthetic discernment theorized. (Figure 2.3)Initially formulated in *Essai sur l'architecture* by Marc-Antoine Laugier, the understanding of typology proposed a natural and fundamental basis for architecture making to be found in the model of the primitive hut. (Figure 2.2) The primitive hut in Laugier's depiction has rationalized elements and standards of making. Jean Nicholas Louis Durand, in further years, reframes the taxonomy and descriptive geometry for the thinking and making study of building forms with an analytic inquiry into the dismantled building elements, pilasters, walls, and foundations. (Figure 2.4) His major work, *Recueil et parallele des edifices de tout genre*, was proposed as a 'typological atlas of architecture'.(Figure 2.5) Claude Perrault's prominent studies on subdivided elements of architecture that are organized as standardized proportions in creating a modulation system to remember and using with ease can also be evaluated as one of the first attempts to rationalize

[75] Op.cit. Schön. p.138

[76] It is possible to see the reestablishment of disciplinary bases for practices of making in urban scale during the 1950s as reflected in the writings of Aldo Rossi, mainly The Architecture of the City (1982). The notion of typological thinking and making by decomposition of artifacts into their components for re-compositions has shaped even the current discussions on the fundamentals of architecture. See also Rem Koolhaas 2014 Biennale Works on the "Fundamentals of Architecture".

architecture by making it free from external and transcendental references.[77] Based on a mathematical; therefore rational system, the proposed method for a search for new means to acquire knowledge made architectural practice recallable and repeatable. The decomposition operation of architectural production under a scientific and aesthetic inquiry for knowledge formation and the ontological construction of architecture made a considerable contribution to the theory of utilization of knowledge and architecture's practical knowledge of making. It has been a prominent discussion in the field of 'Modernity' and still maintains its significance in the 21st century[78]. Furthermore, more significantly for this thesis, creating a repertoire, of elements, materials, and forms of architecture not only creates common knowledge toward architectural thinking but also establishes a repertoire including 'models' as a 'mode of thinking and making'.

[77] The initiator for the further inquiry into the order of architectural knowledge is the course: ARCH 616 Architectural Research II instructed by Prof. Dr. Ayşen Savaş in 2016-2017 spring semester.

[78] Anthony Vidler. "The Third Typology", *Oppositions*, 7, 1976, pp. 1-3, Anthony Vidler. "The Idea of Type: The Transformation of the Academic Ideal 1750- 1830", *Oppositions*, 8, 1977, pp. 93-113. Alberto Perez Gomez. *Architecture and the Crisis of Modern Science*, Cambridge: MIT Press, 1983. Manfredo Tafuri. *Theories and History of Architecture*, New York: Harper and Row, 1976. Oswald Ungers. "Ten Opinions on the Type", Casabella, 509-510, 1985, pp. 93-95. Alan Colquhoun. *Essays in Architectural Criticism*, Cambridge: MIT Press, 1995.

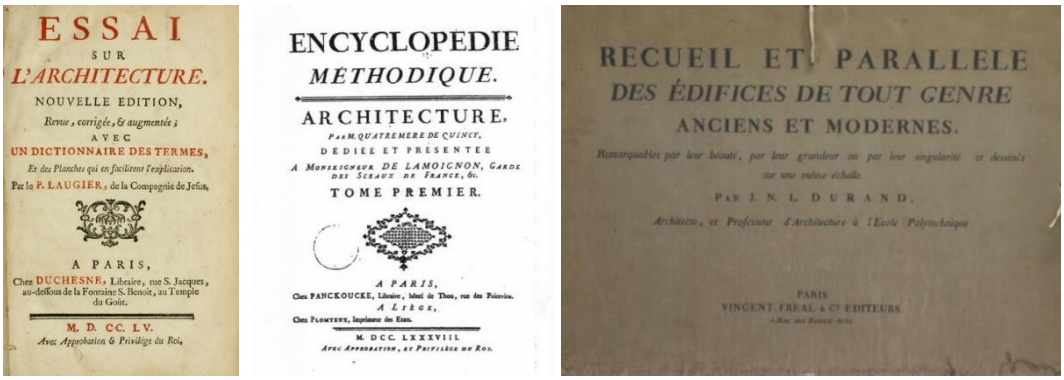

Figure 2.2. (left) Laugier's Essai sur l'architecture (1755 edition)[79]

Figure 2.3. (middle) Quincy.'s Dictionnaire historique d'architecture. 1825 [80]

Figure 2.4. (right) Durand's Recueil et parallele des edifices de tout genre. 1855[81]

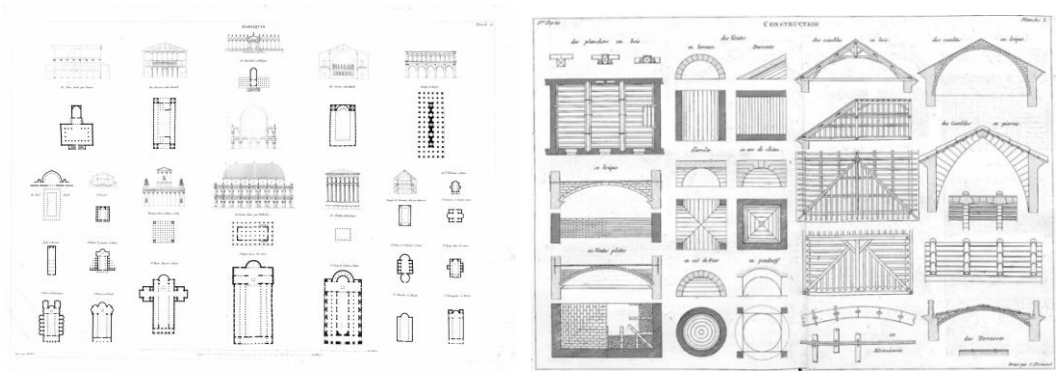

Figure 2.5. Durand, Systemization of knowledge by composition of forms[82]

Disciplinary viability of design knowledge, professional relevance, and scientific status are significant for establishing disciplinary bases for practices of making. History, Theory, and Criticism may suggest a base for the scientification of design

[79] Laugier. Essai sur L'architecture, https://openlibrary.org/books/OL3385514M/Essai_sur_l%27architecture, last accessed 07.21.2022

[80] Dictionnaire historique d'architecture. Quincy https://gallica.bnf.fr/ark:/12148/bpt6k85718t.image, last accessed 07.25.2022

[81] Durand. Recueil et parallele des edifices de tout genre. https://archive.org/details/jnldurandc1805/page/n15/mode/2up last accessed 07.21.2022

[82] Ibid.

knowledge as proposed by Dunin- Woyseth.[83] Architecture, with all its productions and knowledge, manifests itself in this trilogy, and the repository of architecture with its objects, subjects, and knowledge is ordered under the scholarly practice of architecture as architectural history, theory, and criticism.

Architecture constructs its ontology, and knowledge grows out of theory. The period after 1968 was a turning point when architectural theory changed gear.[84] The notable books of this period include a variety of authors and texts from practicing architects and theorists to students, from works primarily oriented towards the public to philosophically complex, intellectually challenging articles on the study of architectural practices. Practical knowledge of architecture is collected, investigated, and theorized through formal and textual analysis. The articles, as the sources of knowledge created a set of 'modes or knowledge figures of architectural thinking' and relatedly making. Architectural thinking is structured and textually transformed into modes of thinking by these anthologies.

Hilde Heynen investigates contemporary architectural theory as represented in historiography with the question of the process of canonization. It is claimed that architectural historiography obscures or overlooks such factors, prioritizing narratives of the most famous names, movements, and trends, making them even more famous, and unintentionally oppressing others:

> We are indeed witnessing a situation in which architectural theory, which supposedly thrived on post-structuralist, feminist, and postcolonial critiques, did not fully process these inputs in a thorough self-reflection. Late twentieth-

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[83] Op.cit. Halina, and Michl, p.6

[84] Joan Ockman, Edward Eigen. *Architecture Culture 1943- 1968: A Documentary Anthology*, Columbia University Graduate School and Rizzoli, 1993. Michael Hays. *Architectural Theory since 1968*, New York: MIT Press, 2000. Kate Nesbitt. *Theorizing a New Agenda for Architecture: An Anthology of Architectural Theory 1965- 1995*, Princeton Architectural Press, 1996.

> century architectural theory, as it was canonized in the 1990s, was thus mostly described as a field dominated by American East Coast intellectuals, whose concerns rarely had to do with actual problems faced by architects in real-world situations.[85]

Architectural theory is not totally autonomous due to being controlled by academic institutions, funding opportunities, publication channels, relations with the profession, geopolitical constraints.[86] Even the method of organizing architectural knowledge in order is mainly and dominantly based on the western narrative as claimed.

While creating epagoge by anthologies, the architectural theory is divided into particular theories and theories within theories as an ever-extending knowledge formation. When Foucault revisits the Encyclopedia in *The Order of Things*, he points out expanding and enlarging boundaries of thinking of which discursive constituents are hidden in the web of relations with classification and taxonomy.[87] Definition, categorization, and interpretation can be claimed as disciplinary acts towards the organization and order of practical knowledge. Periodization, taxonomy, and thematization are seen as a mode of the constitution in order of an organization knowledge that puts architectural thinking into a system of thought. Then it constructs its ontological ground for measuring, applying, and comparing to the incommensurability of the mind.

Furthermore, architectural thinking as a mode of research practice has often borrowed theories and methods from other disciplines in trying to understand

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[85] Hilde Heynen. "CODA A Discipline in the Making", *The Figure of Knowledge*, (eds.Loosen S, Heynick R, Heynen H.) Leuven University Press, 2020

[86] Ibid.

[87] Michel Foucault. *The Order of Things*, United Kingdom: Taylor and Francis, 2018, (originally in 1966) p.xvi

architectural objects, assemblages, and processes. Therefore, inter-, multi-, trans-, meta- definitions have already exploited the field of knowledge which resulted in extended disciplinary boundaries of practice and knowledge of architecture.[88] The 'other theories' from other disciplines have created a reservoir of multiple methodologies to apply by both employing the ever-increasing complexities of the field of architecture while offering a guide for architectural thinking and research towards built environments or artifacts.

The significance of history is evident not only concerning the repertoires highlighted by Schön but in terms of building knowledge on an interpretive and communicative level. It is based on scientific inquiry and factual reasoning within social contexts. Architectural knowledge reconciles an expositionary link between the mind and the material world with a narrative method that is based on a peculiar assent with history. In this sense, Michel Foucault's prominent methodological approach through an archaeological excavation of the history of ideas, concepts, and norms into the historical repository of knowledge, still works.

Etymologically derived from the Latin *nomen* (name) and *calare* (to call), the term nomenclature is "the devising or choosing of names for things, especially in a science or other disciplines".[89] Used in different fields of studies, it refers to giving a name to something to create a system for definition. In the biological sense, it denotes generating a system and classifying the organisms to indicate their genus, species, order, and class by giving Latin names. Given the periodization of architectural historiography, defining names or nomenclature offers an order and classification method for art and architectural knowledge. Certain periods or styles are named and

[88] Igea Troiani. Suzanne Ewing. Diana Periton. "Architecture and Culture: Architecture's Disciplinarity", *Architecture and Culture*, Vol:1, issue:1, 2013, p.9

[89] Nomenclature. http://www.oxforddictionaries.com/definition/english/nomenclature, last accessed 05 July 2022.

still declared as Classic, Romanesque, Gothic, Renaissance, Mannerist, Baroque, Rococo, Neo-Classical, and Romantic in art and architectural historiography. Henrich Wöfflin's influential work the *Principles of Art History* was published in 1915, employing a method known as "contrasting comparison", categorizing the common features of the periods into binaries in five principles to understand the transposition of styles.[90] The assessment method is applied to the Classic and Baroque periods, which are strictly separated from each other with a strict line on contrasts, while being presented with common grounds yet different perspectives. The architectural objects and their components are grouped on the basic common characteristics, not claiming that one is better than the other. They are exemplified as just elements of the whole and complement each other to understand the world. Additionally, for Wölfflin, it does not mean that the Baroque was better than the Classical period, but it was necessary for the emergence of Baroque.

Further on Wöfflin's work, Ernst Gombrich, in his *Norm and Form* in 1966, criticizes stylistic categories in art historiography, which are used to define or classify certain periods such as Classic, Romanesque, Gothic, Renaissance, Mannerist, Baroque, Rococo, Neo-Classical and Romantic.[91] As asserted, although naming productions and periods and categorizing them in an order may be useful in natural sciences in terms of providing fresh insights into them, stylistic definitions used in art history transform them into labels with deficient and inaccurate meanings. Gombrich claims that stylistic terminology contains critical abuses that prevent understanding the specific contents. Without a total rejection of styles, a holistic look

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[90] Heinrich Wölfflin. "Principles of Art History," *The Art of Art History: A Critical Anthology*, Oxford: Oxford University Press, 1998 (originally in 1915), pp.81-98

[91] Ernst Hans Josef Gombrich "Norm and Form: The Stylistic Categories of Art History and Their Origins in Renaissance Ideals". *Norm and Form: Studies in the Art of the Renaissance*, Chicago: University of Chicago Press, 1966, p.83

with a more extensive criticism is suggested instead of drawing sharp lines to all these definitions of styles for periods, techniques, materials etc:

> Every age of science and technology has its own rhetoric of communication, both internally within the disciplines and with the external world. Here the visual plays a key role, both concerning its importance to observation and representation, and because it is an effective way of communication with non-specialist audiences. Style is one of the ways through which we can gain access to issues about makers, materials, power relations, dissemination, and reception.[92]

In parallel with art history, architecture continually defines its disciplinary boundaries through centuries with classifications, periodization, thematizations, and architectural knowledge on its productions declared with pre-, pro-, neo-, post-, etc., suffixes. The knowledge of architectural making; materials, techniques, technologies, and concepts are gathered under these titles, such as "flying buttresses belong to Gothic architecture". Furthermore, the named periods gain meaning when the previous and later ones are clarified and become distinct from each other. Modernism, for example, can be contextualized when pre-industrial and post-modernism are dissociated from it:

> These three-dimensional models often have 'styles' characteristic of their period – a certain 'look' or visual 'feel' of the object – including the choice of materials, constructional techniques, colors, textures, scales, and vocabulary of shapes.[93]

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[92] Martin Kemp. *Seen/Unseen: Art, Science and Intuition from Leonardo to the Hubble Telescope*. Oxford: Oxford University Press, 2006, p.3 is in Stan Allen. Points and Lines, 1999.

[93] Stan Allen. *Points + Lines. Diagrams and Projects for the City.* New York: Princeton Architectural Press, 1999

The discussions on the knowledge of architecture in Turkey are not independent of any of these debates. The periodization of architectural historiography as “inter”-national, “the first, the second” national, modern-“ism”, “post”-modern and tendencies in formation of models, modes of making can be followed in a similar repetition. The continuity of the constitution of models under stylistic characteristics, architectural trends, or demands can be observed in different architectural production mechanisms. (Figure 2.6) It is possible to follow a parallel mode of making even in competitions, for instance. Although competitions seemingly allow and manifest creative approaches, the results can be a way of selecting and applying suitable models or formulas from an already constructed repertoire. Moreover, it is also possible to claim that the means of knowledge organization reflects the ways of thinking and making architecture.

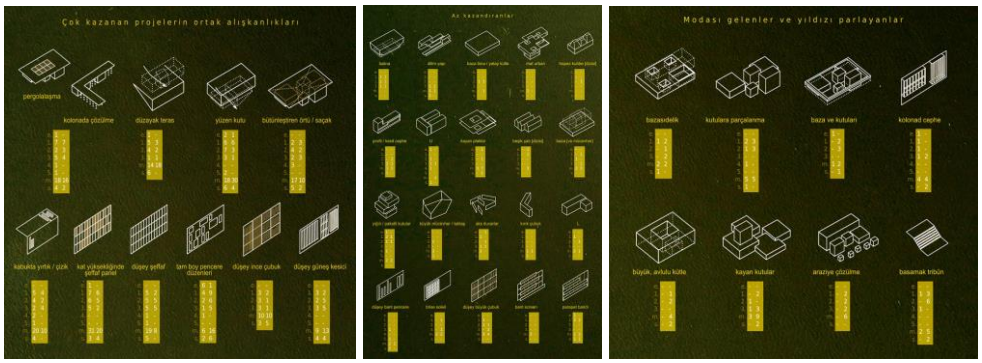

Figure 2.6. Schema Guide for Competitors. (*Yarışmalara Katılacaklar için Şema Rehberi*)[94]

Within the boundaries of styles and formulated norms, architectural productions, objects with their materials, methods, and elements are also categorized, like the well-known creed of Gothic that the ‘rose window belongs to the Gothic repertoire’ or the extensive declaration of Modern Architecture as ‘glass architecture”. When Sarah William Goldhagen asks the question what modernism in architecture is, she

[94] Nizam Onur Sönmez, K. Onur Keskin. “Yarışmalara Katılacaklar için Şema Rehberi”, Arkitera, https://www.arkitera.com/gorus/yarismalara-katilacaklar-icin-sema-rehberi/ access 07.21.2022

presents the well-known answers, such as the "cluster of rhetorical synecdoches" (transparency, flat roof, reinforced- concrete, glass doors, metal buildings, split off from building skills, flowing spaces, horizontal planes…etc) as being the "formal tropes of modernism". Criticizing "subterranean paradigm of style" that shapes current scholarly inquiry in the 20th century architectural history and theory, the article proposes to conceptualize the notion of modernism in architecture as a discourse rather than "a stock of variable constellations of formal tropes" or any of related instructive.[95]

The debates on styles and related formulas in architectural thinking and making are a long-lasting topic. Besides all the criticisms, the styles of periods, thinking, and making can also be read as permutations of utility, technology, particular aesthetics, procedures of thinking, and making as rhetoric that offers architecture scientific models and means of communication. They consist of all different modes and techniques acquired, constituting a repository of architectural thinking and providing a visual survey of architectural rhetoric. The discussions on the developing 'repertoire of architecture' within new design experiments, developments of visual and material languages, and model worlds of the digital era have kept their prominent significance in the current century.

The striking claim that "there can be no rational design process without underlying (explicit or implicit) style" belongs to Patrick Schumacher, who interprets styles as design research programs and communicative systems of architecture, including values, methodologies, and particular understanding of the tasks of the design

[95] Sarah Williams Goldhagen. "Something to Talk About: Modernism, Discourse, Style", *Journal of the Society and Architectural Historians*, 64 (2), 2005, pp. 144- 167

discipline,[96] and asserting that style is not just about the formal, but it is defined as a set of formal and functional constitutions together. Formal appearances cannot be dismissed since users' guide the designers in making the built environment; as asserted, "appearances are non-trivial but essential to continue to invest in architects means something."[97] Furthermore, the definition of styles as a design research program lies in the idea of tracing methodologies, knowledges, and processes of the previous to offer 'the new' since, from the perspective of Schumacher, architecture as an academic discipline includes experimentation and innovation where scholarly knowledge can be searched.

Schumacher theorized the notion of style and divided the theory of styles into three groups: epochal, transitional, and subsidiary styles.[98] According to him, the subsidiary style of the current era is 'tectonism,' which is the latest stage of parametricism, and implies the stylistic heightening of engineering with 3D-printing, data-driven generation, and algorithmically driven robotic space, form-finding, and optimization processes.[99] In addition to being a part of engineering pragmatics, Tectonism, as explained, is a "design philosophy" that highlights the artistic articulations of its own in Schumacher's theorization of styles. These artistic

[96] Patrick Schumacher. "Tectonism and the work of ZHCODE", https://www.youtube.com/watch?v=YUkPL2rEMWc, last accessed 06 July 2022. The idea of "architectural design as a system of research programmes" was declared by Stanford Anderson in 1984 who suggests conducting design research on the orderliness. Stanford Anderson. "Architectural Design as a System of Research Programmes", *Design Studies* 5, No:3, 1984, pp.146

[97] Ibid.

[98] Patrik Schumacher, *The Autopoiesis of Architecture: A New Framework for Architecture*, Wiley, 2011, Vol. I.

[99] Patrick Schumacher. "Tectonism and the work of ZHCODE", https://www.youtube.com/watch?v=YUkPL2rEMWc, last access 06 July 2022.

articulations are for communication purposes through the compositional stands of physical engineering pragmatics and the "societal task of architecture".[100]

Mark Wigley explains architecture's capacity for communication with a straightforward statement: "Architecture is only ever discourse about building. Every action, every seemingly humble operation of architectural practice has to be understood in this way".[101] As Heynen points out, within the broad scope of architecture, its practice, and knowledge formation, there is a "necessity for architectural theory to fundamentally engage with philosophical discourses to deepen its knowledge basis and strengthen its argumentative power".[102]

2.2.4 The Making of Architecture: Architecture as a Discursive Construction

Considering the practice of architecture, it is an action of 'making formation,' which refers to an activity of construction with its expanded means; building something, the creation of an abstract entity, the making of multiple forms, objects, subjects nourished by technologies, techniques, materials. It is irreducibly complex, unstable, fluid, obscure, and genuine, but 'knowable', with its generative processes, accumulated knowledge, aesthetic apprehensions, methods, and inquiries to search for. It creates its own unique, social, aesthetic repertoire.

The knowledge of architecture designates the 'making profession' and points to a conceptual 'deconstruction' where all the components, elements, objects, and

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[100] Ibid.

[101] Mark Wigley. "Story-Time", *Assemblage*, No:27, Tulane Papers: The Politics of Contemporary Architectural Discourse, Aug. 1995, pp. 80-84

[102] Hilde Heynen. "Pilot Discipline: Philosophy", *The Figure of Knowledge*, (Loosen S, Heynick R, Heynen H. eds) Leuven University Press, 2020

subjects are dismantled and reconstructed through definitions, classifications, and reorganizations to be questioned, and analyzed, and become 'applicable.' Then, it creates its own textual, visual, and disciplinary systems, mechanisms, models, and modes of thinking and making, ready to apply in design or research or to trace precedence over appearances to create 'new.'

Architectural making with its expansion of practice and knowledge is defined in this thesis as a discursive construction due to its seemingly dichotomous but united technopoietic being in-between art and science, aesthetic and scientific, formal and social, constructions and deconstructions, structures and representations. Making things visible in its formation or profession through textual and visual language may create delusions in its research. Discourse is an embracing concept in research and understanding of architecture complex since, in Foucauldian thought, discourse traces all these decompositions, re-compositions with their regularities, and discrepancies, to constitute an understanding of restructured totality.

2.3 Practical Knowledge or Knowledge of Making as Techné

The thesis recalls techné inherited from antique philosophy and redefines it as 'practical knowledge,' which is the 'knowledge of making', while positioning it as a discursive formation in architecture. Entailing an immanent relationship between practice and knowledge of architecture, techné is 'building knowledge craft' or 'the craft of building knowledge.' Techné denotes learning by doing, generative and creative producing, the act of knowing by making of its own agency and extended by inquiry and know-how. It is knowing through making.

> Whenever one can describe between a number of statements, such a system of dispersion, whenever between objects, types of statement, concepts, or thematic choices, one can define a regularity (an order, correlations, positions

and functionings, transformations), we will say for the sake of convenience, that we are dealing with a discursive formation.[103]

Techné has a discursive power with material, technical, technological expertise, disciplinary mechanisms, definitions, applications, statements, and their institutionalization on architectural making in practice, theory, and education. In light of Foucault's approach through discourse, techné is defined in this thesis as a discursive formation in architecture where "objects, mode of statements, concepts, thematic choices" are subjected to the rules of formation. To enlighten the claim, to question what are the rules of existence and the formation of objects of discourse should be understood based on a variety of discursive objects that were "named, circumscribed, analyzed, then rectified, re-defined, challenged, erased."[104] To elucidate the discourse of techné in architecture, on three explications of discursive formation defined by Foucault, chapter three presents the "first surfaces of the emergence," "the authorities of delamination," and the "grids of specification" of techné in philosophical, educational, theoretical, and architectural design thinking and making towards technological, societal and intellectual changes where it creates its discursive structures, regulations, patterns, and unity.

[103] Op.cit.Foucault, 1972, p.38

[104] Ibid.

CHAPTER 3

TECHNÉ AS A DISCURSIVE FORMATION IN ARCHITECTURE

This chapter seeks how techné constructs its philosophical, institutional, and theoretical systems as a discursive formation in architecture. As a method of tracing the formation, three rules are acknowledged by Foucault as "the first surfaces of the emergence," "the authorities of delimitation," and the "grids of specification" although they are inadequate to define the formation as claimed. However, it is through these rules that discursive formations are articulated, and it makes its analysis possible. A discursive formation emerges at the beginning by the conceptual codes, degrees of rationality and theory. It gains authorial status by the establishment of a body of practice and knowledge then a formation is acquired specificity in changing systems. Within the multiplicity of methods in understanding and analyzing discourse, this part covers the abovementioned "rules of formation" in which techné has gained visibility in practical, educational, and theoretical spheres of architecture with the regularities, peculiarities, tendencies, and mechanisms.

3.1 "The First Surfaces of Emergence."

Signifying the *logos* or reasonable 'knowledge of making', a concept of fabrication in which technique is congenial with the image of the final object itself from the classical discourse on architecture, techné has firstly appeared as a significant asset in comprehensive discussions of philosophy. Long-established debates on that term within philosophy contributed to constructing a critical insight into the conventions and inquiries of the formations in architectural thinking. Therefore, before investigating the multiple expressions of techné in architecture, comprehending how

techné has been conceptualized within the discipline of philosophy as its first surfaces of emergence will be insured.

3.1.1 Philosophical Subsistence

> The physical and perceptual world-visions… are but two of the vast variety in the several sciences, in the arts, in perception, and in daily discourse. Worlds are made by making such versions with words, numerals, pictures, sounds, or other symbols of any kind in any medium; and the comparative study of these versions and of their making is what I call a critique of worldmaking.[105]

The word *techné* has been intertwined with the notion of worldmaking[106] from antiquity. The nature of this relationship is not constantly running through the time of Ancient Greece, rather, it continues to expand in terms of what it indicates in the current time. Emerging as a philosophical concept in ancient time, techné has been visited not only by connoisseurs such as Xenophon, Plato, Aristotle, but also by the pioneers of the recent past such as Heidegger and Guattari. The ancient Greek *techné* began and evolved with "the woodwork of a woven house", involving "knowledge specific to the determinate subject matter and to the distinctive and specific objective of producing something functional and useful."[107] In such a definition, *techné* was

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[105] Nelson Goodman. *Ways of Worldmaking*, Vol.51, US: Hackett Publishing, 1978, p.94

[106] Mark-David Hosale, Sana Murrani, Alberto de Campo (eds.), *Worldmaking as Techné: Participation, Art, Music and Architecture*, Cambridge: Riverside Architectural Press, 2018

[107] David Roochnik. *Of Arts and Wisdom: Plato's Understanding of Techné*, University Park: The Penn State University Press, 1996, p. 19 and further interpretation in Sang Lee. "Techné and Dispositif Architecture", *Worldmaking as Techné: Participation, Art, Music and Architecture* (edited by Mark-David Hosale, Sana Murrani, Alberto de Campo), Cambridge: Riverside Architectural Press, 2018

acquired through tactile sensibility and acknowledged as craft knowledge relating to making public goods.

Constructing a close relationship between knowledge and the practice of making, *techné* has been considered first by significant philosophers of the era with two other Greek notions: *episteme* and *poiesis*. Since there is an intimately close relationship between them, as well as a fundamental distinction, the dialectic relationship will be critically analyzed with a reinvestigation of the interpretations.

The first known discussion on the notion of *techné* is based on Xenophon's interpretations in relation to *episteme,* which first appeared in Socrates' works.[108] With references to Socrates' definitions of *technai* (activities defined as astronomy, mathematics, housebuilding, painting and flute playing) and *epistemai* (closely connected to skill, practice, and *techné*) Xenophon explains *techné* (craft or skill) without any distinction from *episteme* (theoretical knowledge).[109] The first interpretation of Greek *techné* was art and craft, which could not be separated from theoretical knowledge. Therefore, knowledge intimately has a strong connection with the act of knowing by practice on the question of what and how to do things, which means the more organized kind of knowledge how designated by *techné.*

It is believed that one of the main considerations of techné is to be found in Plato. In *Complete Works*, a compendium of the rewritten versions of Plato's dialogues and texts published in the early 1st century A.D, techné is defined as a way of depicting

[108] Ibid, p. 19.

[109] Xenophon. Memorabilia and Oeconomicus, translated by E.C. Marchant, Loeb Classical Library, Cambridge: Harvard University Press, 1979

"virtue, ruling and the creation of cosmos".[110] Reality was associated with knowledge as one of the forms of rational, scientific, and logical thinking. Differing from the interpretations of other philosophers', what is indicated is the significance of the spatial and "the socio-political power" of *techné* in "ruling the city" by "the creation of the cosmos". Sophists expanded the theoretical boundaries of *techné* by including rhetorical speech and political government as skills. It refers to knowing how to do certain activities, while *episteme* indicates a theoretical component of *techné* as a rational way of understanding.[111] In the *Definitions* part of the *Complete Works*, we have a dictionary including 185 philosophically significant terms developed by ancient Greek intellectuals, the word *episteme* is defined here thus: "knowledge; a conception of the soul, ability to conceive one or more things which cannot be dislodged by reasoning, and true argument which cannot be dislodged by thinking".[112] Robert Hall, in *Art and Morality in Plato: A Reappraisal*, investigates Plato's thoughts on morality and on the definition of an artwork as a work of beauty having moral outcomes by being a "genuine being/work" of art. The essential nature of *techné* was recognized as a "regular and well-ordered production of the craftsman." For Plato, *techné* is "conceptual, rationally based on knowledge, and a precise entity".[113]

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[110] Plato. *Complete Works*, John M. Cooper (ed.), Indianapolis: Hackett Publishing Co., 1997. The book is edited by John M.Cooper and the parts in the book are translated by a number of translators. As Cooper indicates in the introduction part, the book Complete Works is composed of a single collection of all the works under Plato's name, existing from antiquity. The dialogues of Plato are mainly based on his conservations with Socrates when Plato was in his early twenties. As Cooper explains, "philosophers of earlier generations expounded their views and developed their arguments either in the meters of epic poetry or in short prose writings or collections of remarks or in rhetorical display places". (p.xviii) Plato was respected in the major centers of Greek culture and his works became the fundamental texts for the practice and study of philosophy.

[111] Ibid.

[112] Ibid, p.1683.

[113] Robert W. Hall. "Art and Morality in Plato: A Reappraisal", *Journal of Aesthetic Education*, vol.24, no:3, Autumun 1990, pp,5-13, <http://www.jstor.org/stable/3332795>last accessed 29 October 2017.

The word *techné* was also discussed and defined by Aristotle in *Nicomachean Ethics* as "a state involving true reason concerned with the bringing into existence of production".[114] There is a distinction between scientific knowledge and craft knowledge. The former is learnable and teachable knowledge and a demonstrative state associated with analytics, while the latter is defined as "a state involving true reason concerned with production". Building activity is identified as craft making based on production.[115] Craft means art as presented, while *episteme* is translated as scientific knowledge. A craft cannot exist by a necessity or nature since "their principles are in themselves".[116] Production, whose end is a product, is differentiated from action, whose end is in itself. Aristotle's definition, therefore, may also be read as a distinction between theoretical and practical with the current known description. Guattari recalls Aristotle's interpretation of techné and asserts:

> Aristotle thought that the goal of techné was to create what nature found impossible to accomplish. Being the order of knowledge and not of doing, techné interposes a kind of creative mediation between nature and humanity whose status of intercession is a source of perpetual ambiguity.[117]

Although the binary relationship between *episteme* and *techné* has been interpreted in various approaches, it is an acceptable result in many current articles that one of the defining signifiers of *techné* is the notion of *episteme* looming over its historical double. It is assumed as the kind of knowledge indicating such determinate, specific, qualifying criteria, and *techné* as the kind of knowledge arising from the practice of

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[114] Aristotle. *Nicomachean Ethics*, (trans. by Terence Irwin) Indianapolis: Hackett Publishing, 1999, originally published in 349 BC, the work is a compilation of ten books of Aristotle, written on several topics.

[115] Ibid.p.88

[116] Ibid.

[117] Felix Guattari. *Chaosmosis: An Ethico Aesthetic Paradigm* (trans. by Paul Bains and Julian Pefanis), Bloomington, Indianpolis: Indiana University Press, 1995, p.33

experience that was on the material. It identifies the essence of the subject's relationship to material techniques, objects, and to nature toward a specific kind of knowledge.

Conceptualized mainly with *episteme* by the Ancient and Classical Greek philosophers, *techné* has also been coupled with another Greek notion: *poiēsis*, which means generation in production, or a process of creation. *Poiēsis is* an activity of doing, achieving an end, and an approach inherent to the maker.[118] The emphasis here lies behind the notion of repetitive making. *Poiēsis* is a way of "bringing things forth" that is "bringing into *being*."[119] Through *techné*, things can be brought into existence in the application that is to be seen.[120] *Techné* belongs to *poiēsis*; for Heidegger, it is not simply a technique for making things but, a mode of revealing something in its essence.

> Techné is a mode of *aletheuein* (getting at truth). It reveals whatever does not bring itself forth and does not yet lie here before us, whatever can look and turn out now one way and now another. Thus what is decisive in techné does not lie at all in making and manipulating not in the using of means, but rather in….revealing.[121]

Techné does not furnish a direct reference to only a mere technique or technology. However, technology emerges as a powerful phenomenon that envelops techné discussions and comes to the fore more. The theoretical ground for contemporary

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[118] Ibid.

[119] Martin Heidegger. *The Question Concerning Technology and Other Essays*, (trans. by William Lovitt), New York: Harper and Row Publishers, 1977, p.13

[120] Ibid.

[121] Ibid.

discussions is found in Heidegger's *The Question Concerning Technology*.[122] Heidegger refers to the word technology as deriving from the Greek *Technikon*, belonging to *techné*. The term technology was used discrepant from its current meaning; not only for the practices and artistic equipment of crafts maker, but also as a current meaning; naming the arts of the mind as a form of discourse and concept making. Questioning technology has nothing to do with the technological for Heidegger, but a way of thinking from a critical distance, away from all constructed prejudices. As a way of critical thinking, questioning offers a way of interrogating the essence, which opens new possibilities in constructing a new and free relationship of human existence with technology. There exist two statements answering the question of technology: one as means to an end and the other as a human activity. Heidegger associates technology with *instrumentum*, which functions to mass, build up, or arrange. The true characterization of technology is explained with the concepts; "setting-in-place, enframing, ordering and standing reserve". His criticism of technology does not reside in the benefits, yet, in its emergence as a force and its tendency to transform everything into a 'standing reserve'. Heidegger defines artwork and technology as two different kinds. The elements of making are illustrated with the example of a silver chalice, generated from material, form, the end result, and the maker of the result. The artwork is interpreted as a way of 'bringing-forth', which means to bring forward into appearance, something from material and revealing its qualities and its maker. Technology, on the other hand, is 'challenging-forth' for Heidegger. Techné, in this sense, also reveals a tool in the exploration of the act, which is knowing, and of the process, which is revealing the truth.

[122] Ibid.

Due to its polysemous being in philosophy and subsuming meanings gained in the language of English, the term is used as it is in Turkish without being transformed into any other word yet with the transformation of just one letter; *tekhne*. The term tekhne, in all its inclusiveness, has featured much in Turkish publications, mostly in the realms of philosophy.[123] Ömer Naci Soykan explains the reason why the word does not have a direct Turkish equivalent and is used as it is of the necessity of true understanding of the original meaning in their contexts and the danger of misleading comprehension due to our prejudices when it is put on par with another Turkish equivalent:

> There is a traditional widespread tendency in philosophy: the concepts in which the question is expressed and their first use are explained by reference to the original texts in the languages in which it is written (this language is almost always ancient Greek), and from these references, new interpretations are brought. Thus, this genealogical research begins as a philological, etymological study.[124]

Stephen Parcell claims that there was no distinct word to explain architecture, or even art, for the ancient Greeks. All the endeavors regarding fine art, craft, and architecture were encompassed by techné, which has acquired during their development into a civilized culture. Different than a mere collection of technical

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[123] Hasan Ünal Nalbantoğlu. "Teknoloji Sorununa Bazı Felsefi Yaklaşımlar Üzerine", *Mimarlık Journal*, 276, No: 35-4, 1997. Hasan Ünal Nalbantoğlu. "Teknoloji, Sıkıntı ve Öteki Şeyler", *Defter Kış*, 2001, no:42, pp.53-59. Hasan ünal Nalbantoğlu. "Zanaat, Teknoloji, (ve de Ahlak)", *Çizgi Ötesinden Modern Üniversite: Sanat: Mimarlık,* Ankara: METU Faculty of Architecture Publications, 2000, pp164-169. Ömer Naci Soykan. "Sanatın Netliği, Sanatçının Kimliği Sorunu", https://dergipark.org.tr/tr/download/article-file/14432, last accessed 08.12.2022, Robert Meagner. "Tekhne" (trans.by Kenan Güvenç), *Mimarlık Journal*, 1997-276. Mustafa Pultar. "Technéde", XXI Journal, No:8, May-June, 2001. İsmet Zeki Eyüboğlu. *Türk Dilinin Etimoloji Sözlüğü*, İstanbul: Sosyal, 1998. Gevork Hartoonian. "Konstrüksiyonun Ontolojisi", *Mimarlık Journal*, 276, No:35-4, 1997. Robert Meagher. "Techné", *Mimarlık Journal*, 276, No:35-4, 1997.

[124] Ömer Naci Soykan. "Sanatın Netliği, Sanatçının Kimliği Sorunu", https://dergipark.org.tr/tr/download/article-file/14432, last accessed 08.12.2022. Since the original text of Soykan is written in Turkish, the related quotation is translated by the author.

skills for making, techné is interpreted as a larger realm of knowledge and intervention that encompassed not only artisans, yet patrons and ancestors. It relied on cultural memory, empirical experience, and strategies for circumventing limits.[125] Besides making things for the sake of self-expression, techné is a collective domain. Contrary to common belief, an artisan who worked for public good was declared a *demiourgos*; 'a public worker'.[126]

The Neo-Rationalist approach redefines architecture as techné in reference to craft making governed by rules, requiring skill and innovation. In a rational manner, *techné* was not a medium of subjective expression but rather a science, distinguished from poetry (or *poiesis*) since it meant "any rule-governed rational system of production" of a specific nature, that of knowledge.[127] *Techné,* as emphasized, is embraced within the realms of today's sciences, crafts, and fine arts, as any rational system of production.[128]

Another interpretation can be found in *Socrates' Ancestor: Architecture and Emerging Order in Archaic Greece*, published in 1993 as the printed version of Indra Kagis McEwen's thesis completed at McGill University in 1991.[129] The research is based on an investigation into an interval of a common revelation within both architecture and philosophy and on this central argument that "architecture is about revealing ideas." Given the well-ordered, mutual structure, architecture and

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[125] Stephen Parcell. "Architecture as Techné", *Four Historical Definitions of Architecture*, McGill- Queen's University Press, 2012, p.21

[126] Ibid. p.28

[127] Belgin Turan. "Is Rational Knowledge of Architecture Possible? Science and Poiesis in L'Architettura della Citta", *Journal of Architectural Education* (1984-), vol.51, no:3, Feb. 1998, pp.158-165

[128] Ibid.

[129] Indra Kagis McEwen. *Socrates' Ancestor: An Essay on Architectural Beginnings*, Cambridge, Mass: MIT Press, 1993.

philosophy have a common ancestor in early Greek concerns. For McEwen, the Greek temple was both the representation of the cosmos and the symbol of the ordered life of the crafted polis, which presented civilization and community over and against barbarism and isolation. It is highlighted that the uniformity between philosophy and architecture is ordered, harmonious and self-conscious. Therefore, the craft is interpreted as techné denoting making things visible and enabling the exploration of the cosmos. However, techné for McEwen is different from poiesis, making, or doing, yet it is a discovery and use of words; a tool for understanding and expression. Furthermore, the relationship between order and control of architecture for McEwen, is embedded within orderly knowledge. The hypothesis is that the possibility of theory first arose from the knowledge of artifacts through the experience of architecture and allied craft patterns of order that are paradigmatic for the development of philosophy. The artifacts of the pre-Socratic Greeks existed in the process of discovery through their making, use, and memory. Thus, for McEwen, they were constituents in the development of knowledge itself. This argument reflects the significance of craft in the self-consciousness of Greece, in which the cosmos or order of civilization was embraced through the making of the artifact.

3.1.2 Architectural Entity

On the basis of its philosophical extent, techné appears in multiple entities pertaining to design work/process and material work/production in exploration and instrumentalization of tools to position the self, definition of technical rules, tectonics, the genesis of form, and the constitution of theory.

As a general conception, architecture is a physical and static form, existing with its tangible materiality and its adherence to its site. This physicality/materiality of architecture is broadly considered as a final product following a design progression with different modes of representations which are the repositories of the complete

idea of the building or a set of projections. The architectural formation may be interpreted as a disciplinary product, in other words, as knowledge work in which theoretical and intentional approaches of the maker are readable. The knowledge work on the form is the experience of material reality which is not independent of the actors of making from the design process to construction. Therefore, in the discipline of architecture, the prose of things that came into being in the progress has been generally associated with the work of craft and the formation of form. The material work, unlike artistic productions, should purposely serve the public realm, where the maker has social and ethical responsibilities and politically positions the self. Considering techné and its cognate bonds with a mode of revealing in design thinking, the act of making has been consolidated within the discussions on craftsmanship, alluding to critical research resulting from exploration by working with ontological tools, techniques, and technologies. With its ontological reference, the word techné is an indistinguishable notion from materiality, technic, technology, aesthetics, tectonics, and form making.

There is a reciprocal relationship between the architect and architectural work, as there is between the artist and artwork. Creativity is associated with self-experience in the emergence of the architect's own capability of criticizing and the own potential of producing the alternative. Techné proposes generative processes and learning experimentation on physical specialty, material conditions, tectonics, and orientation of tools. Given references to techniques, technologies, and aesthetics in making, techné is an operative notion in both practice and knowledge of architecture. Constructed on the relationship between technic and tectonic, revealing and doing, architectural work is a non-static process that is open to explorations of unique traces, new alterations, and interventions.

Descendent to the vested meaning of practical knowledge of making as the first emergence of the term in philosophy, techné has mainly addressed craft knowledge, material practice, context-subject dependent making. *The Craftsman* is one of the

main significant contributors to extending the definition of [craftwork] from a socio-political perspective. The book was originally published in 1943 and written by Richard Sennett, who was Hannah Arendt's student, who introduced a division between the work of *Animal Laborans* (unreflecting work for beasts of burden') and *Homo Faber* of those who reflect on art and work interpolates moral and ethico-political dimensions to making. 'Making is thinking' is the entire argument, however, as asserted, thinking comes after making, which brings on a justification for the kind of politics.[130] It addresses two arguments regarding [craftsworkship][131]; the first is "the [craft maker]'s desire to do good work," while the second lies in "the abilities to do good work". The way of working as a [craft maker] and embodied craft practice provide an instructive insight into the techniques of experience, material reality, difficulties and possibilities, the role of tools and repair, and resistance or managing ambiguity within uncertain boundaries. Many of the references come from John Ruskin and his statements against the idea of maximum output for minimum effort in architectural and urban productions. Tactile power, quality-driven work, embodied practice, and manual labor inevitably give birth to the idea that the labor process in making 'good' work shapes consciousness with an exercise of reason; consequently, [craftsworkship] is located between autonomy and authority. Although the machine has triumphed in craft, Sennett does not believe [craftsworkship] has disappeared and claims that making activities contributed to "the proper functioning of society". In favor of public welfare, Sennet's contribution introduced the potential of individual reflective-reactive practice, not the

[130] Richard Sennett. *The Craftsman*, New Haven, London: Yale University Press, 2008. (first published in 1943)

[131] The gender specifications in craftsman, craftsmanship is transformed into craftworker, craftsworkship by the author.

individualist, showing that parallel attributes of [craftsworkship] in making and thinking of architecture constitute moral uprightness.

Besides unique technics and material explorations, the tools of the architect are the significant mediator in revelation and the transmission of knowledge in architectural design progress. Geometry, ratio and proportion, structure, tectonics, conventional or digital technics, and technologies could be evaluated as the tools of an architect. In different historical periods, architects tried to express themselves by using their hands, materials, geometry, order, and technical methods to control nature, treating the psychological effect or material experimentation as the main concerns of architectural exploration while making.

For Juhani Pallasmaa, the hand as the ultimate tool of the architect still protects its significance in architectural design.[132] In a parallel manner with Sennett's indication that the skilled practice of a craft consists of imagination with the hand, Pallasmaa believes that by using hands, designers can understand "the possibilities and the limits of the materials and crafts". All the work of the hand is rooted in thinking since the hand is the mind's extension. Thus, all humans, specifically architects, use their hands to discover and re-create the world. In this sense, the architectural profession is positioned close to the notion of craft. Architects, he believes, empower education with practice and the merits of making between idea and matter, form and its execution. The exploration of the world by architects not only by their eyes yet more significantly, by other senses and the entire body has been seen as important. Besides being a tool for exploration, the hand is a structure for the expression of "personality, social class, wealth, allegiance, occupation, and association".[133] Creative thinking is

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[132] Juhani Pallasmaa. *The Thinking Hand: Existential and Embodied Wisdom in Architecture*, United Kingdom: John Wiley & Sons Ltd., 2009.

[133] Ibid.p.26

in work and labor. Pallasmaa makes no separation between labor and work as Arendt defines, yet he emphasizes the significance of bodily engagement in achieving freedom by identification with the subject's own territory and personal limits. The hand and the body generate different alternative possibilities than the head for Pallasmaa since the latter is conceptual, intellectual, and geometricized, while the former refers to spontaneity, sensuality, and tactility.

The transformation of implicit intentions of form-making and its knowledge into technical rules is investigated by Alberto Perez Gomez.[134] The changing meaning of geometry and number instrumentalized through architectural intentionality and emerged from the scientific and epistemic turn in the 17th and 18th centuries, is searched with a historical analysis. Under the influence of Platonic cosmology, Galileo's revolution, astronomy, Newtonianism, Renaissance cosmology, and the developments in mathematics and Euclidean geometry, Gomez claims that geometry and number became the "instruments for the technical control of practical operations and eventually for an effective technological domination of the world".[135]

Up until the 17th century, "the primacy of perception" was accepted as "the ultimate evidence of knowledge".[136] As the ultimate tools of architects of this perception, geometry and number were the "prototypes of the ideal" and "the symbols of the highest order." In the Aristotelian period, there was no distinction between theory and practice, as explained. The former endured as "the elucidation and justification of the latter" that existed as the notion of *poiēsis* (different than praxis), and the latter was expressed as a form of reconciliation between human and the world. They were

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[134] Alberto Perez Gomez. *Architecture and the Crisis of Modern Science*, The MIT Press (5th printing), 1990. (first published as La genesis y superacion del functionalism en arquitectura, by Editorial Limusa, 1980)

[135] Ibid.p.9

[136] Ibid.

accepted as the "two poles of a sacred, living totality".[137] As elaborated the concept of *mathesis* of the 7th century B.C, belonging to pre-classical Greek culture, Gomez explains that what could be thought and learned was the first appearance of *theoria*. The exploration of *theoria* within the scientific understanding of the period meant the beginning of architectural theory, which is the *logos* of architecture. Until the end of the Renaissance during the 17th and 18th centuries, theory has always embraced the significant adjunct to the *mythos*, which indicated a set of assumptions gained by representation of an action. During the Renaissance, "theory was not merely a series of technical precepts but was underlined by metaphysical preoccupations often implicit in the mathematical rules themselves."[138] As Gomez asserts, it was Alberti at first who distinguished theory and practice, design, and actual construction.

Recalling Edmund Husserl, Gomez defines the crisis of modern science as the deprivation "to reconcile the eternal and immutable dimension of ideas with the finite and mutable dimension of everyday life."[139] European science is criticized due to mere concerning building in criteria searching the economical and efficient yet "avoiding questions related to existential context." Explaining the significant result of this crisis as an "unprecedented inversion of priorities" from the realm of poetics to the truth, which means "demonstrable through the laws of science," Gomez sees architectural intentionality as the ultimate problem and the "genesis of the form." His analysis offers a comprehension through the relationship of knowledge with technic, technology, and forms on such important names as Perrault and Durand within changing perceptions of geometry and architectural making.

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[137] Ibid.

[138] Ibid.

[139] Ibid.

Rudolf Arnheim, in *Dynamics of Form*, approaches the relationship between formwork and architecture making from a different perspective, allowing us to examine and discuss the visual aspects of architecture separated from historical, social, and personal contexts.[140] Within an ontological perspective, the expression of form outside of social, historical, and personal contexts is the main focus. To explore the visual conditions that influence the psychological effect of architecture, he traces architectural knowledge gained by the ontological tools and influential specialties with an extensive formal analysis of various forms and formal and expressive properties. Arnheim's book presents an intriguing knowledge that concentrates on how the perception of buildings is conditioned by human psychology and the experiences of the physical world. A fundamental assumption is that humans are born with an inherent sense of order. The act of building is to be architecture which means the product of the form (creating mind). Therefore, it has to meet the general standards of the mind and be perceived as a whole. Architecture in a form that is free from the constructional or structural organization is treated as experiencing the sense of beauty through the arrangement of forms and order of knowledge. Dynamics are defined as a "property supplied by the mind spontaneously and universally to any form that is perceivable."[141]

The discussions of tectonics have an important place in the understanding of the comprised entity of techné in architecture. The term techné is constantly investigated in Kenneth Frampton's texts following the origin of tectonic debates and its

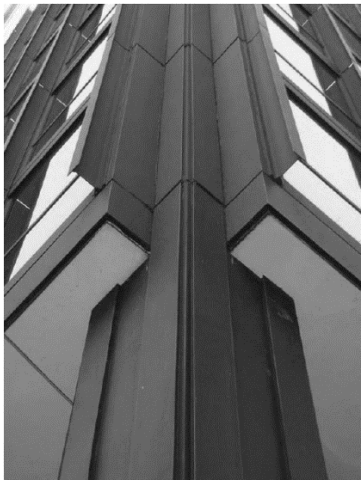
[140] Rudolf Arnheim. *The Dynamics of Form*, London: University of California Press, 30th Anniversary ed. Edition, 1977

[141] Ibid.p.253

contemporary ascension.[142] Frampton examines not the mere revelation of constructional techniques but rather its expressive potential on tectonics.[143] Tracing the etymological reminiscent of the statement that architecture as the "poetics of construction," his analyses present the expressive potential of the structure. Given an extensive historical comprehension of the duality of architecture remaining between aesthetics and scientific rationality in his analysis of the etymology, Frampton enhanced Adolf Heinrich Borbein's study of 1982, in which tectonic is defined as "the art of joining." (Figure 3.1) In this sense, techné is the way in which an object or a work of art has been assembled to the standards which should have been observed and to their efficacy. The act of revealing architecture for him can be possible by discovering poetic details in which techné acquired, enhanced from the material exploration. (Figure 3.2)

[142] Kenneth Frampton. *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture*, eds. by John Cava, Cambridge, Mass, MIT Press, 1995. Kenneth Frampton. *Rappel a l'ordre [call to order]*, "The Case for the Tectonic" in Kate Nesbitt. *Theorizing a New Agenda for Architecture: An Anthology of Architectural Theory 1965- 1995*, Princeton Architectural Press, 1996. Kenneth Frampton. "The Status of Man and The Status of His Objects: A Reading of The Human" in K. Michael Hays. *Architectural Theory since 1968*, New York: MIT Press, 2000, pp.358-360

[143] Kenneth Frampton. *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture*, eds. by John Cava, Cambridge, Mass, MIT Press, 1995, pp.22-23



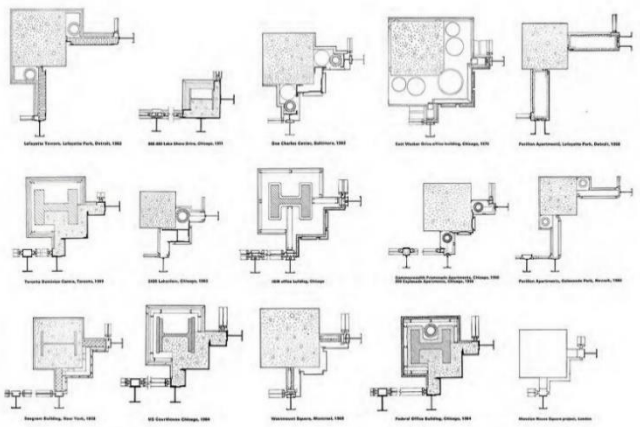


Figure 3.1. (left) Mies van der Rohe, Lake Shore Drive Apartments, Chicago, 1948-51[144]

Figure 3.2. (right) The detailing has been gained "the status of God", "God is in the details", Mies van der Rohe, Corner details[145]

Before Frampton, the relationship between tectonics-craft-architecture has been elaborated by different names with various approaches. However, it was Frampton who 'archaeologically' excavated tectonics with its derivation techné. A historical analysis starting from the very first definition of tectonic, the etymology of the term, and its relationship with techné, topography, ethnography, and technology is presented. In the analyses through the derivation of the term tectonic as *tekton*, emphasizing the builder or carpenter, as *taksan*, Frampton's statement that architecture is the poetics of construction displays the close correlation between tectonic and techné.[146] The term tectonic was first conceptualized by Homer as the "art of construction." The first architectural use of the term belongs to Karl Müller, who indicates that tectonics were used for a number of art productions. Gottfried

[144] Lake Shore Drive corner details, photographed by Damian Trostinetzky, Google images, last accessed 08.12.2022

[145] Mies van der Rohe, corner details, John Winter 1972, sock-studio.com, last accessed 08.12.2022

[146] August Scmarsow (1894), Gottfried Semper's *Four Elements of Architecture* (1852) (which constitutes the very first theoretical ground for craft-techné-architecture), Eduard Sekler's "Structure, Construction and Tectonics" (1973), and Martin Heidegger's *On the Origin of the Work of Art* are revisited by Frampton.

Semper's investigation and definition of tectonic is based on "local structure and construction techniques," where he describes the knot and the activity of knitting as the first form of craft and textile. The Caribbean Hut is considered the origin of primitive shelter and architecture, while the primitive hut for August Schmarsow was a "spatial matrix" and the "creatress of space", because the essence of architectural creation is based on the simplicity of the architecture and the basic principles of organization that carry us into techné. The form is the precondition of building and a craft technique, yet open to inflection at different levels. Eduard Sekler is one of the important names who defined the distinction between structure, construction, and tectonics. The structure is the basic sequencing principle, while construction is a tectonic expression of form; a specific physical manifestation and the representative power of the production. As indicated, architectural expression is both the "order of construction" and the "method of construction." As a well-known standpoint, techné has gained visibility in the discourse of Modern Architecture and weaved its emergent position in the discussion of 'detail.' In fact, the detail as the craft notion of architecture gained "a status of God" in Modernism. Tectonic and techné as the poetics of details is defined as "the art of merging, that is hidden in the details." Frampton presents the capacity of architecture "not only expressing the different materials from which it is made but also of revealing the different instances and modes by which the world comes into being"[147] Therefore, the notion of techné is the state of affairs in which knowing and making are inextricably linked. A hermeneutic model in which material constraints aside is offered, while technology is treated as a productive procedure and craft as a technique has a renewable capacity to compromise different productive modes and levels of intentionality.

[147] Ibid. p.23

In different historical periods, architects expressed themselves by using their hands, materials, geometry, order, and technical methods to control nature, treating the psychological and expressive effects on material-, site-, context-specific conditions. Furthermore, the relationship between the subject and the object has always been present in creation, manipulation, and reaction.

3.2 "The Authorities of Delimitation"

As the rules of the discursive formation, Foucault defines "the authorities of delimitation" as the institutions "possessing their own rules," and "constituting profession as a body of knowledge and practice", and the authorities that "delimited, designated, named established objects."[148] The practical knowledge belongs to techné through knowing and through the act of making with its traits; apprenticeship, craftwork, material-technical-technological expertise, knowing-how, hands-on learning, or learning by making. It was institutionalized and gained authorial status by formulations established in institutional systems to construct a disciplinary basis for architectural practice and its knowledge. Therefore, the constitution of techné discourse in architectural education institutions has a significant place in constructing learnable practice, knowledge of architecture, the manifestation of particular making.

The establishment of educational institutions for architecture, in formulating their own systems for practice and knowledge of architecture, and in the recognition of architecture as a profession came forward after the Renaissance with the emergent view of breakthroughs.[149] The methods, systems, and mechanisms of learning by

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[148] Op.cit, Foucault, 1972, pp.41-42

[149] Catherine Wilkinson. "The New Professionalism in the Renaissance", *The Architect: Chapters in the History of the Profession* (eds. By Spiro Kostof), New York: Oxford University Press, 1977, p.124

making were established by the institutions of the Enlightenment. The transition from the trained formal work of apprenticeship into a professional practice also meant the modernization of making, which requires and entails the institutionalization of practice and organization of learning in knowledge generation throughout the profession. The known enterprise for the construction of the professions of architects belongs to Alberti and his *De re Aedificatoria* in the 16th and the 17th centuries, in which architecture was first declared as "the profession of the complete designer".[150] The architect was equated to being *a man* who "trained through formal apprenticeship" and "worked his way up in the system, each step increased his responsibilities until, as a qualified mason, he could undertake the design and direction of a building himself".[151] The institutionalization of practice and knowledge of architecture in the educational arena has a significant place in understanding the substantial authorities of making, the defined roles of actors, their acts, the established methods of learning, the learning mechanisms, patterns of controlled behavior, and the ruled systems in authorizing, evaluating, manifesting the works, and more importantly, of the constitution of the profession.

3.2.1 Institutional Presence

The concept of techné beyond accompanying creative thinking in design and production processes has gained its discursive power through its institutionalization in architectural practices and knowledge generation by practice. The schools pioneered through the constitution of organized and transmittable practical knowledge, which is applicable and learnable. The Royal Academy and its successor, the Ecole des Beaux-Arts, was "the basis for the method of instruction used in

[150] Ibid. p.124

[151] Ibid. p.131

architectural schools until the advent of the Bauhaus in the 20th century"[152], which resulted in the institutionalization of craftsworkship and learning by making as the keystone of knowledge generation, architectural practice, and education of the profession. Founded in the 18th century with the exertions of Blondel, *The Académie Royale d-Architecture* constituted the fundamental system for architectural education with its own rules, defined roles, and learning mechanisms. After the French Revolution in the 19th century with its transformation into the Ecole des Beaux-Arts, the institutional approach developed by the Academy as the first authority came to be known as the Beaux-Arts system: model for learning and teaching architecture.[153]

In this system, learning by making was developed also delimited by the stylistic investigation of precedents and the repetitive drawing, and model making of learned knowledge from them. (Figure 3.3) In this model, the learning system was systematized on a certain way of making architecture by detailed working on major buildings to learn from them.[154] However, due to the lack of perspectival geometry in [draughtship][155], the rational geometries of buildings was rendered in strict orthogonal lines with the addition of the strategic use of shadows to give a sense of volume.[156] Tracing the precedents and site visits served to theoretical knowledge; the

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[152] Myra Nan Rosenfeld. "The Royal Building Administration in France from Charles V to Louis XIV", *The Architect: Chapters in the History of the Profession*, (eds.by Spiro Kostof), New York: Oxford University Press, 1977, p.161.

[153] Peter Collins. "The Eighteenth-Century Origins of Our System of Full-Time Architectural Schooling", *Journal of Architectural Education*, Vol.36, No: 1, November 1979, p.2.

[154] Joan Draper. "The Ecole des Beaux-Arts and the Architectural Profession in the United States: The Case of John Galen Howard", *The Architect: Chapters in the History of the Profession*, (eds.by Spiro Kostof), New York: Oxford University Press, 1977, p211.

[155] The term "draughtsmanship" is transformed into 'draughtship' by the author.

[156] Besile Baudez. Maureen Cassidy-Geiger. "The Beaux-Arts Tradition", https://drawingmatter.org/the-beaux-arts-tradition/, last accessed 08.12.2022

critiques and the juries were the learning mechanisms that provided the continuity of a building tradition. Artifacts were not only the fundamental tools for knowledge generation but also the precipitators of interpretive dialogs in the design process. Within the established learning system, the institutionalization of craftsmanship was the primary essence, while the 'the atelier' was the center of the practice that could be freely selected by the students.[157] (Figure 3.4) In this model of making and learning, the actors, their roles of them, and the relations between them were strictly defined.[158] The actors were all men.[159] In the atelier, the hierarchy of teaching and learning was defined and authorized by a patron, who is generally a practicing architect, giving supervision and critiques to students and coordinating the design problem, guiding, and governing the process of teaching and learning in the atelier. There was also a defined hierarchy between students that also formed the hierarchy of learning and the system of critique. The higher qualified student could criticize the lower one's work, and the jury was the mechanism of evaluation in grading or deciding whether to pass or fail. The established system of Beaux- Arts became the influential 'model' of the period with the institutionalization of learning by making the defined learning mechanisms, actors, relations, and the constitution of a professional ground for architectural practice and practical knowledge.[160]

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[157] __"Beaux Arts Institute of Design: Competitions and Awards", *The American Magazine of Art*, Vol.14, No.1, January 1923, pp.52-56 https://www.jstor.org/stable/23928069#metadata_info_tab_contents, last accessed 08.12.2022 and Jean Paul Carlhian. "The Ecole des Beaux- Arts: Modes and Manners", *Journal of Architectural Education*, Vol.36, No:1, November 1979, p.7

[158] Ibid.

[159] As understood from the photographs in the articles.

[160] There was also an exhibition at MoMA, the Museum of Modern Art, New York in 1975. For the catalogue: https://www.moma.org/documents/moma_catalogue_2483_300300503.pdf, last accessed 08.12.2022

Figure 3.3. (left) Central courtyard of the École des Beaux-Arts with plaster casts and architectural models, 1937.[161]

Figure 3.4. (right) Architecture Atelier, École des Beaux-Arts, 1937.[162]

The Chicago School of Architecture was one of the first institutional ideals and later a dominant movement that included a group of architects and engineers who promoted "an original architectural expression of industrial technology responsive to new economic demands and social concerns"[163] in the late 19th century. A range of factors in the following years of 1871, the great Chicago fire, and the First World War, such as possible vertical growth by the skyscraper, the continuity of exterior, innovations in mass transit, developed styles for new towns and new housing, increased activities in manufacturing, railroading, commerce in Chicago, adaptable design flexibility, basic system of construction, the fluidity of interior spaces, metal skeleton frame, transformation building into a skin, permeable physical height, the

[161] Op.cit. Baudez, Cassidy-Geiger.

[162] Ibid.

[163] Hugh C. Miller. *The Chicago School of Architecture*, Washington: United States Department of the Interior, 1973, p. v

idea of "transparent envelope" with maximum light and ventilation, design universality for "all aspects of architecture, the applied arts, landscape design, and town planning" were all defined as "the synthesis of revolutionary theories of design expressing the structure and function of the building".[164] The term Chicago School was widely used to describe constructed buildings in the city during the 1880s and 1890s. The declaration of "Chicago School" emerged in the 1940s from the works of Modernists', specifically Ludwig Mies van der Rohe and his efforts at the Illinois Institute of Technology in Chicago.[165]

> The refinement of building techniques and the expression of the function of the buildings in a fully integrated architectural style provided inspiration for the designers of Europe's new architectural movement that followed World War I. For the first time, an artistic development in America influenced architectural designers in Europe. The cycle was completed when the developed style of the modern European movement was later reintroduced to the United States with the emigration from Europe of the leading members of its architectural community during World War I. The work of the Chicago School was international in its consequences and prefigured the form of commercial and residential buildings now universally adapted as twentieth-century architecture.[166]

The descriptions and systematized practice were universalized by the mobility of actors, materials, and thoughts; therefore, the evolution of modern ideal in

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[164] Ibid.

[165] Carl Condit. *The Chicago School of Architecture: A History of Commercial and Public Building in the Chicago Area 1875-1925*, University of Chicago Press, 1973 and Thomas Leslie. Chicago Skyscrapers 1872-1934, University of Illinois Press, 2013.

[166] Ibid.

architectural practices is pursued through its formative environments and phrases as claimed.

> The developments in Chicago in the late nineteenth century were as consequential in world cultural history as the development in twelfth-century France, which produced Gothic architecture, and in fifteenth-century Italy, which produced Renaissance architecture. Of these three equally significant nodal points in the history of western man, only the consequences of the Chicago School were truly global in scope.[167]

The architects of the Chicago School identified a set of architectural principles of thinking and practicing on a common outlook of modern life in the 19th century[168] under the doctrine of the school when technology gained momentum, mechanization took command, and science and machines were operated to handle production and productivity services problems. The manifestation of the local sources in the global scape, technological and aesthetic approaches together created "Commercial Style"[169] and the precursor of "The International Style"[170] as the influential mode of thinking and making of the period.

One of the largest and most well-known contributions belong to the Bauhaus, with its fundamental philosophy of the integration of the arts with crafts as well as

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[167] Ibid.p.1

[168] The Arts and Crafts movement was a significant development that emerged from the attempt to reform design and decoration in the mid-19th century in Britain. It was a reaction against standards, machinery, and factory production manifested in the Great Exhibition of 1851. Although the Arts and Crafts movement had a crucial impact both on the 19th century architectural thinking-making relation regarding techné, the scope of this part was narrowed down by the focus on the schools, educational institutions as the powerful authorities in the institutionalization of knowledge of making.

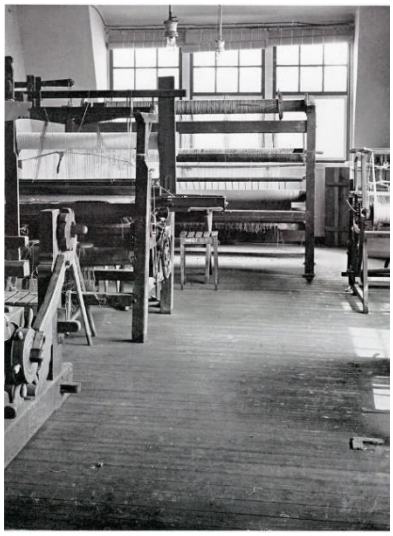
[169] Joanna Merwood Salisbury. "Chicago School of Architecture", Oxford Bibliographies in https://www.oxfordbibliographies.com/, last accessed 08.04.2022

[170] Joanna Merwood Salisbury. "American Modern: The Chicago School and the International Style at New York's Museum of Modern Art", *Chicagoisms: The City as Catalyst for Architectural Speculation* (eds. By Alexander Eisenschmidt & Jonathan Mekinda), Park Books, University of Chicago Press, 2013, pp.117-129

architecture. (Figure 3.5) Examining and perpetuating the question of thinking-making on the phenomena of material- technology- labor, the emergent understanding and formation of the Bauhaus has been widely influential. The Bauhaus 'Ecole' and 'model' was characterized by the extensions and new framework following the same patterns of learning by making practical knowledge and communicative practice constructed on crafts making that had developed in the 18th century by the Beaux-Arts system and the developments of the 19th century.[171] (Figure 3.6) Founded in 1919 by Walter Gropius, the institutionalized system of thought of the Bauhaus, with some transformations in understanding and utilization of existing methods, manifests the statement of "all creative activity is the building" by forming a unity among arts, crafts, and industry.[172] In this system, a new framework that was based on the materials, techniques, and forms that produce a building was proposed as "the new spirit" instead of the previous patterns of learning following the study of existing buildings for learning. (Figure 3.7) In addition to the existing modes of learning, the curriculum was based on the preliminary courses for the instruction in a craft and architecture to do with the problems of form, practical and material experiments, craft workshops on "advanced instructions of form," and materials such as stone, wood, metal, clay, glass, and the experimentation of color and textiles. (Figure 3.8, Figure 3.9, Figure 3.10, Figure 3.11)

[171] Nelly Shafil Ramzy. "Between the Ecole Des Beaux-Arts and the Bauhaus: Modern Architecture as an Outcome of the Enlightenment Philosophy", *Ain Shams Journal of Architectural Engineering*, Vol.2, November 2010, pp.53-65

[172] Walter Gropius. "The Theory and Organization of the Bauhaus", *Bauhaus* (eds.by Herbert Bayer, Walter Gropius and Ise Gropius), Boston: Charles Branford Company, 1952 (first published in 1938), p.21



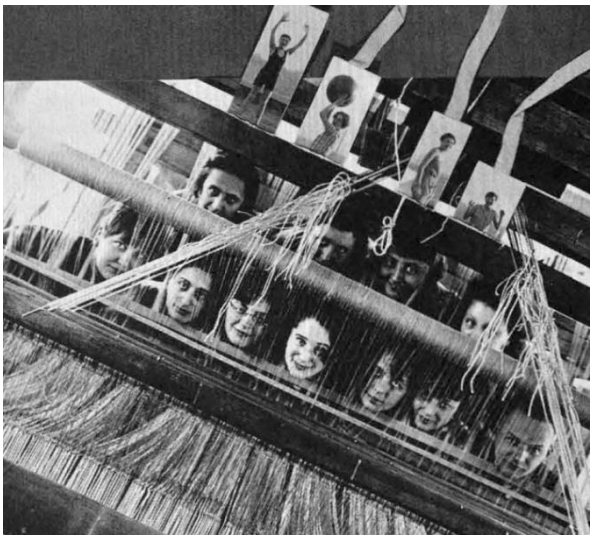
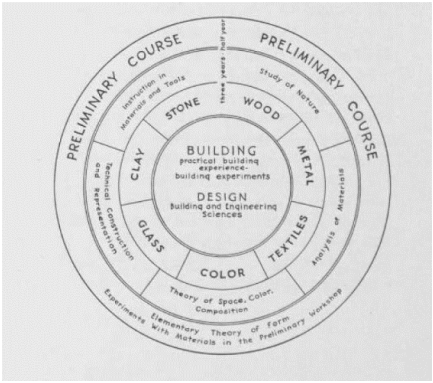
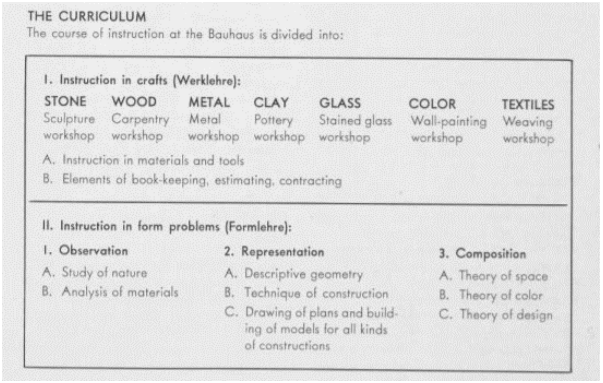


Figure 3.5. (left) Weaving workshop at the Weimar State Bauhaus,around 1923[173]

Figure 3.6. (right) Women and weaving at Bauhaus, 1928, Interlacing Craft and Modern Design Education[174]




THE CURRICULUM

The course of instruction at the Bauhaus is divided into:

I. Instruction in crafts (Werklehre):

STONE	WOOD	METAL	CLAY	GLASS	COLOR	TEXTILES
Sculpture workshop	Carpentry workshop	Metal workshop	Pottery workshop	Stained glass workshop	Wall-painting workshop	Weaving workshop

A. Instruction in materials and tools

B. Elements of book-keeping, estimating, contracting

II. Instruction in form problems (Formlehre):

1. Observation	2. Representation	3. Composition
A. Study of nature	A. Descriptive geometry	A. Theory of space
B. Analysis of materials	B. Technique of construction	B. Theory of color
	C. Drawing of plans and building of models for all kinds of constructions	C. Theory of design

Figure 3.7. The Bauhaus curriculum, 1923[175]

[173] Weaving, photograph unknown, https://www.bauhauskooperation.com/knowledge/the-bauhaus/training/workshops/weaving/, last accessed 08.13.2022

[174] Women and weaving at Bauhaus, https://harvardartmuseums.org/article/women-and-weaving-at-the-bauhaus, last accessed 08.13.2022

[175] Herbert Bayer. Walter Gropius. Ise Gropius (eds.) *Bauhaus*, New York: The Museum of Modern Art, 1938, p.25

Different to the Beaux-Arts system, in Bauhaus, learning by making provides an experimental ground for students on materials, techniques, and forms. It was a way to "liberate the individual by breaking down the conventional patterns of thought in order to make way for personal experiences and discoveries which will enable to see own potentials and limitations".[176] It enables reflection in practice to construct new meanings. Each Bauhaus student was first admitted for a trial period of six months to work in the preliminary course, which liberates "the student's creative power, to give him an understanding of nature's materials to acquaint with the basic principles in the visual arts".[177] The studio works with craft workshops from typography to stage designs, from metal workshops to exhibition techniques which were the core of learning. Grounded around the idea of *Gesamtkunstwerk* (total design), workshops had a richness in scale and scope. Considering the actors, their roles, and relations, instruction in the craft was transmitted under the supervision of two masters; a craftsman and an artist, from which the acquaintance of craft making, and the theory of form were provided. Although it is possible to see women as students, the masters were still men, as understood from the photographs and the names of instructors. The learning mechanism is mainly supported by self-reflection rather than working on the established stylistic models and references. The learning mechanism in Bauhaus was formed on the communicative transmittance of knowledge from masters to apprentices. The jury as the evaluation mechanism created a ground for

[176] Walter Gropius. "The Theory and Organization of the Bauhaus", *Bauhaus* (eds.by Herbert Bayer, Walter Gropius and Ise Gropius), Boston: Charles Branford Company, 1952 (originally in 1938), p.24. In this section the related data were collected from Walter Gropius. The New Architecture and The Bauhaus (trans.by P.Morton Shand), Cambridge, Massachusetts: MIT Press, 1965. Walter Gropius. Howard Dearstyne, "The Bauhaus Contribution", *Journal of Architectural Education 1947-1974*, Vol.18, No.1, June 1963, pp.14-16 Howard Dearstyne. "The Bauhaus Revisited*", Journal of Architectural Education 1947-1974*, Vol.17, No.1, October 1962, pp.13-16 Andrew Phelan. "The Bauhaus and Studio Art Education", *Journal of Art Education*, Vol.34, No.5, September 1982, pp.6-13. Patrik Schumacher. "Pedagogy and Paradigm: The Master-Apprentice Model in Architectural Education", *Five Critical Essays in Architectural Education* (eds.by Amin Taha, Theo Dounas, Shelag McNerney, Patrik Schumacher, Austin Williams), United States: Machine Books, 2021

[177] Herbert Bayer. Walter Gropius. Ise Gropius (eds.) *Bauhaus*, New York: The Museum of Modern Art, 1938, p.36

constructive discussions, generation of knowledge, and meanings. In addition to learning techniques of making, technology was one of the main considerations integrated into the system of thinking and making. The Bauhaus Ecole was not only been the most influential authority in its constitution of the profession by education methods, apprehension, and practices, but also it created the 'masters' of Modern Architecture, who manifested the whole vision of the institution after graduation. Mass production and standardization for the rapid exigence of buildings were also particular characteristics of the constituted profession in conformity with the changing social and economic structures. (Figure 3.12, Figure 3.13, Figure 3.14)

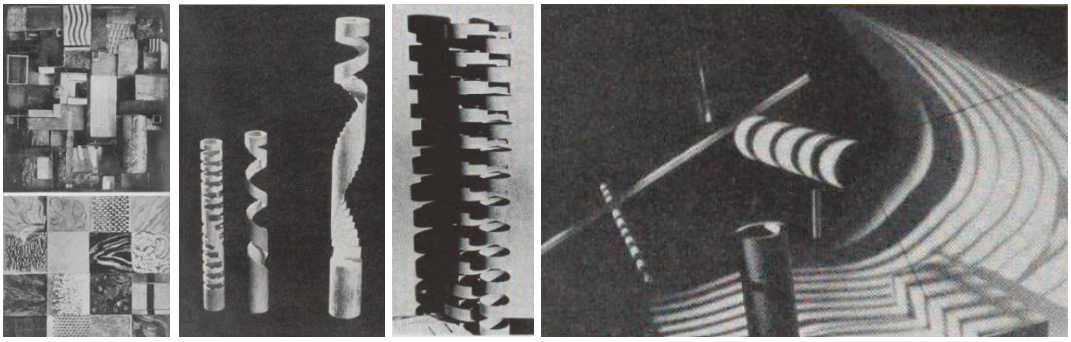


Figure 3.8. (left) Exercise designed to touch and subjective feeling for material, E. Dieckmann, Bauhaus[178]

Figure 3.9. (middle left) Preliminary course of wood cutting and applications, Bauhaus[179]

Figure 3.10. (middle right) Study in plastic use of paper, cut without waste from one sheet of paper, G.Hassenplug Bauhaus[180]

Figure 3.11. (right) Study in light and volume, Nathan Lerner Photography course, Bauhaus[181]

[178] Herbert Bayer. Walter Gropius. Ise Gropius (eds.) *Bauhaus*, New York: The Museum of Modern Art, 1938, p.25

[179] Ibid.p.218

[180] Ibid.p.117

[181] Ibid.p.218

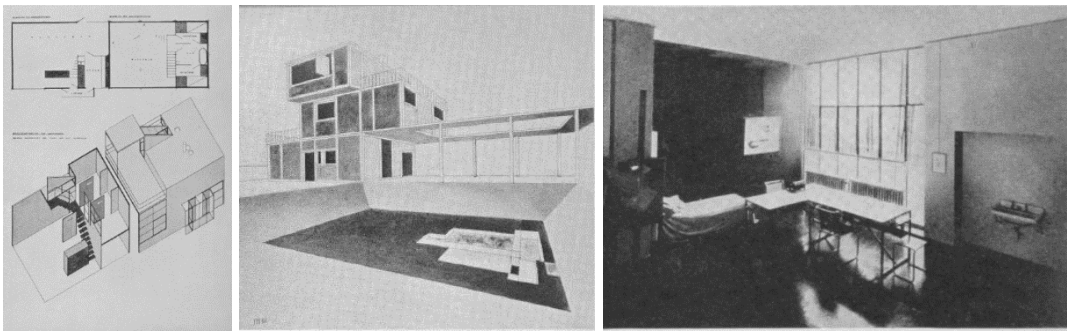


Figure 3.12. (left) Marcel Breuer, Plan and isometric drawing of small "metal house"[182]

Figure 3.13. (middle) Farcas Molnar, Project for "a wood frame house"[183]

Figure 3.14. (right) Walter Gropius, Studio in a "master's house", Dessau[184]

The developments in the 20th century were effective in the construction of modern architectural education and related establishments in the institutionalization of knowledge in architectural education, theory, and practice. The role of institutional-individual background, reflection in practice, and construction of knowledge by making were the emergent aspects and significant in knowledge generation, its establishment, institutionalization of authorities, and related definitions, arrangements, forms, and rules. The Beaux-Arts and further Chicago School and Bauhaus were the prominent authorities of delimitation of knowledge of making, which has been still effective by the dissemination of the founding ideas in architectural practice and education in the USA, Europe, and even the Middle East.

The institutionalization of the practice and knowledge of art, design, and architecture has a special significance in Turkey due to three reasons; the idea of educating and disciplining *(terbiye)* the society with art and craft, the expression of the whole soul and mind of a nation through its art; and lastly the modernization of education by

[182] Ibid.p.113

[183] Ibid.p.77

[184] Ibid.p.109

cooperation with industry developed specifically by the construction of the Republic. Grounded on the social utopia that art will transform human cultural existence, the institutionalization of art, design, and architecture has created the basis of the current educational system, educational institutions of practice such as building-craftsmaker schools, village institutes, public houses, teacherage, occupation schools, technical schools *(yapı-usta okulları, köy enstitüleri, halk ve öğretmen evleri, meslek okulları, teknik okullar etc.)* with a long history.[185] (Figure 3.15, Figure 3.16) Many of the founders of the schools of the Republican period consisted of either Turkish actors who were sent abroad and trained or famous names brought from the West to establish modern, broadly 'Western' institutions in Turkey. Architectural education systems were inspired and assimilated mainly by the Bauhaus Ecole.

Figure 3.15. (left) Village Institutes in Turkey[186]

[185] Especially village institutes have a special place in Turkey's historiography and in the development of learning by making model as an ideal that emerged from the historical and cultural context and needs of the geography. The aim was raising consciousness, enlightenment, and civilized society as the most distinctive feature of the village institutes that make them unique and different from others. The vision of village institutes is to revitalize the society from within with the mission of increasing the quantity and quality of production. The village institutes were closed in 1954.See for the details. Atilla Küçükkayıkçı. *Anılar ve Tanıklıklarla Köy Enstitülerinin Kısa Tarihi*, İstanbul: 1984 Yayınevi, 2020. Furthermore, on the subject of "yapı-usta okulları" specifically on Ankara Yapı-Usta Okulu, Buket Çiler Tosun has made an extensive archival research and publications. The author also made an oral history interview with Buket Çiler Tosun on 01.09.2019.

[186] Village Institute- Teacherage in Turkey, Google Images https://www.google.com/imgres?imgurl last accessed 09.04.2022

Figure 3.16. (right) Occupation-Technique Schools in Turkey[187]

In the last quarter of the 19th century, as a movement in which the idea of Enlightenment in the field of art and culture was carried to the Ottoman period, *Sanayi-i Nefise Mektebi* started its first activities in Istanbul in 1883 as a fine arts school that included the elements of the European educational system.[188] The very name of the school held references to industry and the human soul (disciplined taste). The content of education included ateliers on painting, sculpture, architecture, and carving (*hakkaklık*), which were conducted by Turkish and foreign instructors. The school had its first architecture graduate in 1892 and sent the graduate to Europe. The struggle for modernization under the cultural revolution of the construction of the Republic, the radical changes, innovative moves brought to education, and the higher school system did not neglect arts and design. *Sanayi-i Nefise Mektebi* was renamed the Academy of Fine Arts in 1929, which was further re-transformed into Mimar Sinan University in 1982 and has become an "Ecole" in the formation of current art and design thinking in Turkey. The increased power of the National Socialists in Germany in 1933 resulted in the return of the Turkish faculty members, which resulted in the beginning of a new period known as the 'Academy Reform' in Turkey.[189] Thus, academization has denominated and dominated the practice and knowledge of architecture. The major fire in the academy building in 1948 and the loss of a significant part of the workshop materials led the Academy to a new phase in its development again on migration.

[187] Occupation-Technique Schools in Turkey, Google Images https://www.google.com/imgres?imgurl=https%3A%2F% last accessed 09.04.2022

[188] Ahmet Öner Gezgin (eds). *Akademi'ye Tanıklık 2: Güzel Sanatlar Akademisi'ne Bakışlar, Mimarlık,* İstanbul: Bağlam Yayıncılık, 2003, p.11

[189] Ibid. pp.16-17

The establishment of the *Gazi Terbiye Enstitüsü Resim-İş Bölümü (*Gazi Education Institute Painting and Crafts Department) in 1932 in Ankara was accepted as the alternative to Sanayi-i Nefise Mektebi, and the first stage of combining art with industry and autonomous arts with applied arts.[190] The founding academic staff was sent before its establishment to Germany and was influenced by Bauhaus. It was envisaged that the graduates of the schools trained and educated in painting, crafts, and arts would become teachers or leaders who spread to all secondary institutions in Anatolia and would teach society, and further lead to the foundation of village institutions. Therefore, the graduates would carry out the idea of revolution in the creation of morally, mentally, and physically developed modern citizens through painting, arts, and crafts.[191]

The graduates of the Gazi Institute, after their return from Germany, founded *Tatbiki Güzel Sanatlar Okulu* (The Applied Fine Arts School) in 1957, known today as the Marmara University School of Fine Arts. The idea of discipline through art in the Gazi Institute was replaced under the influence of Bauhaus and they turned out instructors with the idea of "servicing the development of the industry with art and design".[192] The content of the Basic Design curriculum at the *Tatbiki Güzel Sanatlar Okulu* (The Applied Fine Arts School) and German instructors such as Ernst Egli and Bruno Taut, who were brought in to the head of the architecture department in the 1930s, adopted the Bauhaus principles to make art appropriate for society, its functionalization serving to the ideals of the state. This led to the formation and prevalence of a model for architectural education applied to the other institutions of

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[190] Ali Artun, Esra Aliçavuşoğlu (eds.*) Bauhaus: Modernleşmenin Tasarımı: Türkiye'de Mimarlık, Sanat, Tasarım Eğitimi ve Bauhaus*, İstanbul: İletişim Yayınları, 2020 (first published in 2009), p.13

[191] Ibid.

[192] Ibid.p.14

architectural foundations such as Istanbul Technical University and Middle East Technical University.[193]

Summer construction practices following the footsteps of the Bauhaus pedagogy have a specialty in learning by 1/1 in-situ constructions and practicing architecture through the act of construction.[194] As a part of intern education at the end of the first year Middle East Technical University, the 1/1 construction was a tradition from 1958 (after the establishment of the university in 1956) to the beginning of the 1970s. (Figure 3.17, Figure 3.18) The construction practices aim can be explained as: to give students the opportunity of demonstrating architectural understanding and approaches in a small-scale and simple-functional building, to introduce students who are at the beginning of their architectural education directly to construction materials and activity; to enable knowledge about one of the rural contexts in Turkey and produce a social benefit for contextual needs.[195] Practicing by constructing with its own unique tools, contextual knowledge and learning outcomes can be interpreted as an integrated model of learning by making and a social activity produced by collective labor of students, instructors and inhabitants towards the need of society.

[193] There is a long history of the institutionalization of technical knowledge at universities in special contexts both for Istanbul Technical University and Middle East Technical University. The context was limited with summer practices due to their significance in in-situ constructions in which learning by making mechanisms were operated by a literal construction for public usages.

[194] Berin F. Gür. Onur Yüncü. "An Integrated Pedagogy for 1/1 Learning", METU Journal of Faculty of Architecture, 27:2, 2010/2, pp.83-94

[195] Berin F.Gür. Onur Yüncü (eds.) 1/1 Yaz Uygulaması, İstanbul: 124/3, 2004. The book is focused on the Project of computer atelier construction in Arılı village. The author reached information about other constructions such as 1958-Ağlasun, Burdur, 1961-62- Eymir Kayıkhane, Ankara, 1966-Kutludüğün, Ankara, 1967-Eminlik, Niğde, 1968-Gilindere-Mersin, 1970-Ilıca, 1970s-1980s sun house, METU, Ankara, 2000-Eminlik, Niğde, 2003-fındıklı, Rize.


Figure 3.17. (left) Summer practices, METU, 1958-1974[196]

Figure 3.18. (right) In-situ construction as summer practice of METU, Elazığ, 1966[197]

Not only limited to the educational arena, the constructed methods, systems, and mechanisms in knowledge generation after Bauhaus for developing a disciplinary basis for architecture were also effective in the global theoretical scape. The attempts to formulate design research or research by design have also further emerged in the pedagogical system of Bauhaus. Alexander's mathematically interrelated system of solvable patterns against the impossibility of solving complex problems, Eisenman's formal language on the investigation of properties of form through the analysis; Rowe's experiments in the University of Texas, Venturi's, in the USA; Marc Angelil's in Zurich in the 2000s; and the notion of 'research by design' and 'action-research' were the further contributions.[198]

[196] Summer practices METU, Çağdaş Türkiye Mimarlığı archieve, https://www.google.com/imgres?imgurl=https%3A%2F%2Fpbs.twimg.last accessed 09.04.2022

[197] Summer Practice METU, Çağdaş Türkiye Mimarlığı archieve, https://www.google.com/imgres?imgurl=https%3A%2F%2Fpbs.twimg.com last accessed 09.04.2022

[198] Onur Yüncü. "Research by Design in Architectural Design Education", PhD Dissertation, Middle East Technical University, 2008.

3.3 "The Grids of Specification."

In Foucault's definition, "the grids of specification are the systems according to which the different kinds and modes of making are divided, contrasted, related, regrouped, classified, derived from one another."[199] The discursive structure of techné, in reference to Mario Carpo's elaboration of "hand, machine, and digital making" will be evaluated as "the systems of reciprocal projections, and as a field of circular causality".[200]

Throughout the recent past, developing technologies have been acknowledged with the possibilities of architectural making towards unpredictable directions. Architectural work has sometimes been challenged by emergent technologies by changing perception, modes, and methods of making. As each technical-technological development invalidates the previous one, the change in technologies and techniques accompanying human action becomes actually a sign for future transformations that can be more effective than previously thought. One can mention three significant matters of change that have had remarkable impacts on the ways of production processes, the roles of the maker(s), the end product, and the relationship between them: hand making, machine making, and digital making.[201]

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[199] Op.cit. Foucault. 1972, p.42

[200] Ibid.

[201] A theoretical study on the changing and evolving phenomenon of making and printing relationship in architecture within three significant transitional progress on hand making, machine making and digital making was presented and published in the MSTAS 2020 Symposium under the title "Printing (and) Architecture: A Technopoietic System for Making" by Melek Pınar Uz Baki and İnci Basa. The symposium content is specified as "Techné as the Knowledge of Doing and Poiesis" was held between 22-23 October 2020.

3.3.1 The Work of the Variable in Hand Making

As explored in the previous parts, based on the relationship between episteme (theoretical, scientific knowledge) and poiesis (a mode of revealing), the antique techné has generally been consolidated with hand making and craftworkship that alludes to critical research and exploration by working with hands. The human hand, which is the ultimate tool, is a grasping instrument that provides both material and immaterial comprehension by seizing, holding, pressing, pulling, and molding with ease.[202] It helps to discover the essence of an object due to grasping and manipulating it. Presenting a direct interrelation between the act and knowledge production, the hand is the ultimate agent for making.[203] In this sense, the act itself is the generator of knowledge which is based on the intimate connection between the hand and the head. The craftmaker is associated with "a specialized human condition" who has the ability to make things and construct knowledge by using hands.[204] The work of the hand is rooted in thinking since "the hand is the mind's extension."[205] By using hands, one could understand the possibilities, potentials, and limits of both the materials and the self. The hand can be a direct contributor to the process of creation and interpretation. (Figure 3.20) The role and the importance of the hand are explained by Raymond Tallis[206] in terms of its three distinct attributes into one single

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[202] Siegfried Giedion. *Mechanization Takes Command: A Contribution to Anonymous History*, New York: Oxford University Press, 1948, p.60

[203] Richard Sennett. *The Craftsman*, New Haven, London: Yale University Press, 2008

[204] Ibid.

[205] Juhani Pallasmaa. *The Thinking Hand: Existential and Embodies Wisdom in Architecture*, United Kingdom: John Wiley & Sons Ltd., 2009.

[206] Raymond Tallis. *The hand: A Philosophical Inquiry into Human Being*, Edinburgh: Edinburgh University Press, 2003. The author, a professor of geriatric medicine, writes on the hand's continuing significance in medical science and current research on the production of robotic arms. Operating sensibility of the hand's pressure in squeezing and arranging the pression in robotic arms has still been working on.

structure; not just a physical extension of manipulation but also a tool of knowledge and communication where the hand acts, knows, and speaks, not just to determine what things are but as a preliminary to action. (Figure 3.21) "The hand's communication with itself as well as with the objects that it manipulates enhances the sense of the hand as an instrument…so it is the master-tool, the father of the possibility of tools".[207]

Techné denotes learning and making activities which are actualizing at the same time and technique is an interpretation of purposes as tools in the actualization process. The power of technique on material enables the maker to control the mysteries that cannot be known or explained.[208] In this sense, each technique is a natural extension of the living organism, that is, the subject. The technique explains an act related to skill and a method of any kind of production.[209] The maker can learn from mistakes, and the process of production is based on imitation and experiments on the apprehension of visual similarity. Handworks in a repetitive making acquire visual similarity that emerges from specific techniques and tools. Learned knowledge is transmitted with the mentor system: the master apprenticeship. All techniques can be taught, imitated, or developed however, many of them are stored and transmitted in the mind of the maker. It is formed by transferring and accumulating concrete experiences. In this sense, technique can be associated with technology, as learned, and systematically used knowledge, existing even in the most primitive communities.

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[207] Ibid.

[208] Jacques Ellul. *The Technological Society* (trans.by John Wilkinson), New York: Vintage Books, 1904.

[209] Wolfgang Schadewaldt. "The Concepts of Nature and Technique According to Greeks", *Research in Philosophy and Technology*, vol.2, pp.159-172

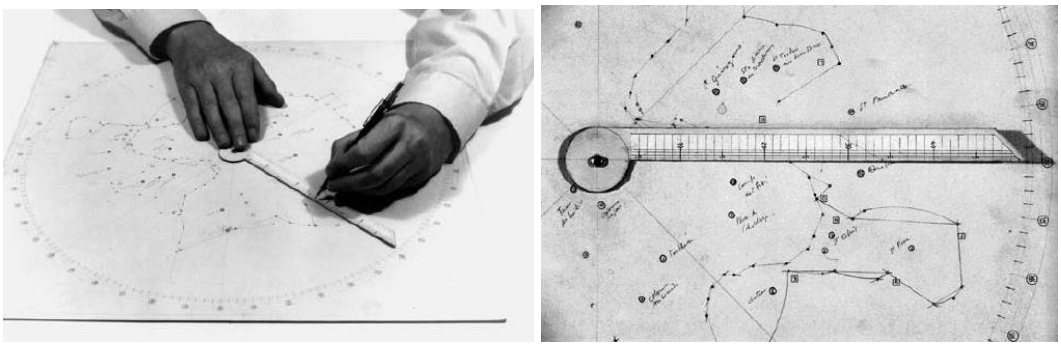

Figure 3.19. "Drawing device following the methods and coordinates" [210]

As a part of learning by making, the transmission of knowledge has always occurred with the act of thinking and making by hand. Architecture in its very primitive form, the structural, material, or technical work includes the transition of knowledge that has traces of its maker. Simultaneous thinking and making are inseparable parts of architectural transmission in the design process. As an extension of the architect's mind, the hand is the ultimate tool for the development of generative techniques. Architectural representations have aesthetic and technical references that include traces of the architect. The end result and the technique of the subject are not independent of the capability of the tool. (Figure 3.19)

Figure 3.20. The maker's hand and experimentation of the material, Henry Moore, Tapio Wirkkala, Le Corbusier[211]

[210] Mario Carpo. *The Alphabet and The Algorithm*, London & Cambridge, The MIT Press, 2011

[211] Henry Moore in the late 1970s in Juhani Pallasmaa. *The Thinking Hand: Existential and Embodies Wisdom in Architecture*, Chichester: John Wiley & Sons Ltd., 2009, p.19- 55 and Le Corbusier https://www.swissinstitute.net/event/lecture-and-screening-jean-louis-cohen-on-le-corbusier/, last accessed 08.15.2022

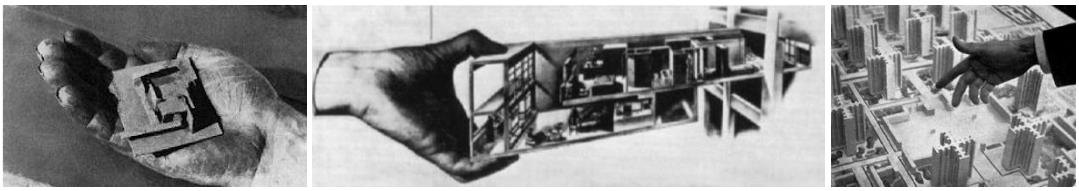

Figure 3.21. Architecture as an extension of body, manifestation of power, the master in the status of God[212]

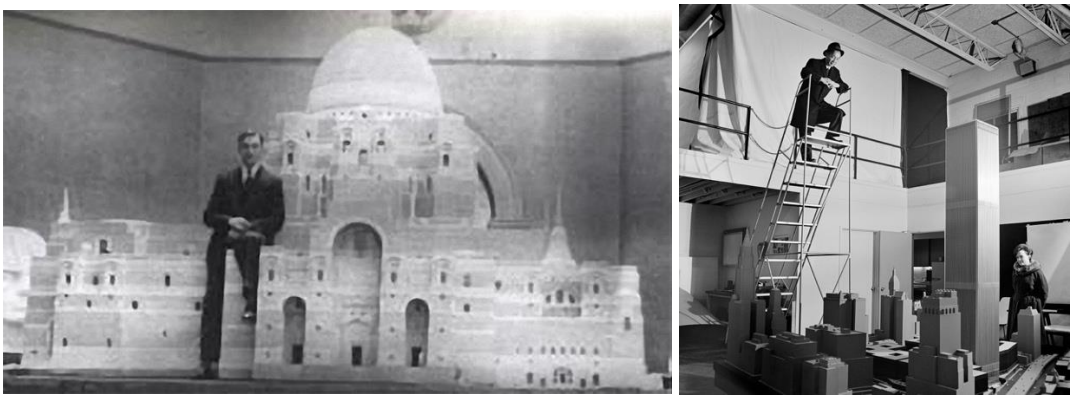

Figure 3.22. (left) The authorial dominance of architect over the object, Edwin Lutyens, Liverpool Cathedral model, 1930s[213]

Figure 3.23. (right) The authorial dominance of architect over the city, Minoru Yamasaki[214]

Working as a craftsmaker, an architect thinks through making. Geometry, ratio, proportion, structure, material, and different modes of representation techniques have been the tools of an architect for the transfusion of an idea(l) into a surface or a concrete form. In architectural production, this transition of knowledge is a notational process and is constructed on the visual conjunction of the mind and the hand. The architect is an authorial figure and/or the maker of measured and scaled

[212] The first is Alvar Aalto in Juhani Pallasmaa. *The Thinking Hand: Existential and Embodied Wisdom in Architecture*, Chichester: John Wiley & Sons Ltd., 2009, p.19, 55 and the others from Le Corbusier https://www.vam.ac.uk/blog/sketch-product/playing-god-architects-and-railway-models, last accessed 08.15.2022

[213] Edwin Lutyens, Liverpool Cathedral model, https://www.liverpoolmuseums.org.uk/stories/cathedral-never-was last accessed 08.15.2022

[214] Minoru Yamasaki, model, https://www.architectural-review.com/essays/reputations/minoru-yamasaki-1912-1986 last accessed 08.15.2022

drawings, models, forms, and/or texts. (Figure 3.22) The end result is generated as the mind's extension, the hand creates the visual copy of the notational creation of the mind. An architect does not have much data, so one relies on self-esteem, experiences, and intuition to make decisions.[215] Leon Battista Alberti's stimulating statement that "buildings are the identical notational copies of the architect's vision" is picked up by Mario Carpo to explain that the transmission of architectural knowledge can be associated with the act of the copying process.[216] To copy by its very nature refers to "an imitation, transcript, or reproduction of an original work."[217] (Figure 3.24) Whenever an object becomes reproducible, it is understandable that it starts to be designed for reproducibility, as explained by Carpo with a reference to Walter Benjamin.[218] The technique identified by the subject does not only shows the imagination and creative abilities yet, but also models for their own reproduction and provides a scenario for the repetition of the skill that it symbolizes.[219] However, reproduction of variable essence can be a problem whenever identical copies are needed, as Carpo asserts.[220] Before the invention of copying machines, mistakes, and unpredictable changes could occur during the transmission of information and at the copying stages. Both for craftsworkship and architectural making, the pattern of verification within the copying or transmission process is based on similarity and

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[215] Richard Susskind and Daniel Susskind. *The Future of the Professions: How Technology Will Transform the Work of Human Experts,* Oxford: Oxford University Press, 2017.

[216] Mario Carpo. *The Alphabet and The Algorithm*, London & Cambridge, The MIT Press, 2011

[217] "Copy", Merriam Webster, https://www.merriam-webster.com/dictionary/copy, 2020, last accessed 13.06.2020

[218] Op.cit. Carpo.p.5

[219] Joseph Weizenbaum.*Computer Power and Human Reason: From Judgement to Calculation*, San Francisco: W.H. Freeman & Co, 1976, p.30

[220] Op.cit. Carpo.p.5

repetitive imitation in hand making, not on identicality and sameness.[221] The significant emphasis here lies on the variability of the copy. Some degree of randomness in the making process arises from a coincidence in technic, method, or modes of making: the usages of tools and materials create variability, intrinsic to the transmission of knowledge as a copying process.

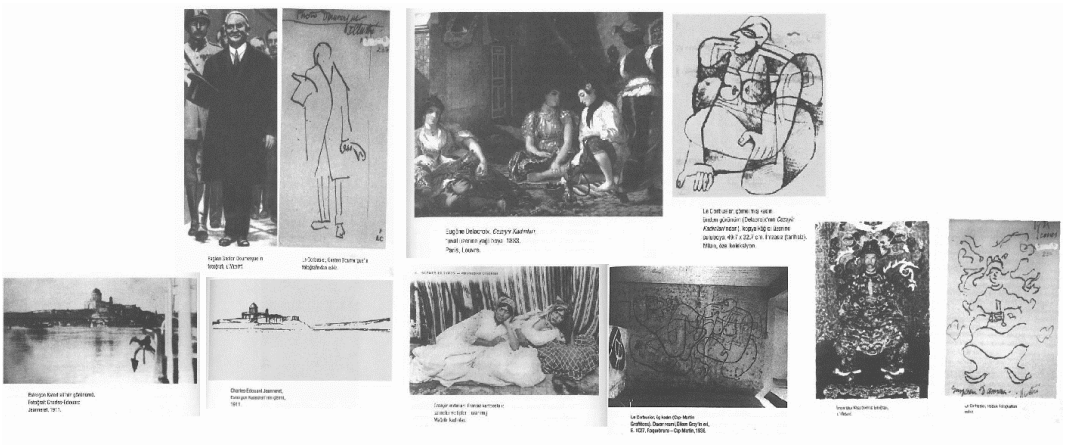

Figure 3.24. Copying processes of Le Corbusier for the mind and the hand as a learning and interpretation method [222]

3.3.2 The Production of the Identical in Machine Making

The changing notion of contingency with the idea of instrumental causality that emerged in the 20th century has been ensured by the transformation of the age of tools into the age of technology.[223] Within the age of change-making, activity with tools, technics, and materiality has emerged as a matter of processes, networks, and systems. In an ongoing evolution, the age of tools has given a way to the age of

[221] Ibid.p.1-4

[222] Reproduced here as a collage by the author from Beatriz Colomina. *Privacy and Publicity: Modern Architecture as Mass Media*, Cambridge, UK: MIT Press, 1996 are reproduced as a collage by the author

[223] Ivan Illıch. *Tools for Conviviality*, London: Marion Boyars Press, 2001.

systems in which the shift is defined through the design of "a matter of systems."[224] The transition of tools into first mechanical then digital technologies has led to transformations in many different levels yet, firstly occurred in the change of the activity itself from making into production. The replacement of hand tools with machine technology has resulted in the redefinition of the making process as a production system since it has altered the ways of utilization of instruments and the role(s) of the maker(s). (Figure 3.25)

Figure 3.25. Hans Hollein, Mobile Office, 1969 [225]

The concept of machine making emerged with industrialization, and related mechanization processes were the representatives of the new *zeitgeist* in the 18th and the 19th centuries. The mechanical condition of making has brought out new means of production within different fields that still have effectiveness in daily lives. The

[224] Ivan Illich in William W. Braham. Jonathan A. Hale, *Rethinking Technology*, London, New York: Routledge Press, 2007, p.xxi

[225] Hans Hollein, Mobile Office, https://archiveofaffinities.tumblr.com/post/17585074401/hans-hollein-mobile-office-1969, last accessed 09.04.2022

literal definition of a machine is given as “an apparatus for applying mechanical power, consisting of interrelated parts.”[226] The industrial machine has been influential in the transformation of the process from an organic, flexible, and articulated one into an automated system. (Figure 3.26, Figure 3.27)The act of manipulation and interpretation of the maker during the process has been weakened by a continuous rotation since the machine could convert “pushing, pulling acts of the hand” into “stamping, pressing, casting, embossing commands of the machine” as explained by Siegfried Giedion.[227] Endless rotation and impeccability instead of randomness and manipulation became the ultimate phases of (re)production. For Giedion, there occurred significant results of mechanization such as “the standardization affected by mass production, the application of mechanical principles in the end product itself, the use of power-driven machines, and the rationalization of work.”[228] The inclusion of the machine instead of labor power made the maker, the process, and the end object unbound matters. The elimination of revelation arising from the craft notion and skilled labor by the application of mechanical principles gave rise to the mass production of identical copies and standardization.

[226] “Machine”, Oxford, https://www.oxfordlearnersdictionaries.com/definition/english/machine_1#:~:text=(often%20in%20compounds)%20a%20piece,human%20labour%20in%20many%20industries, 2020, last accessed 13.06.2020

[227] Op.cit. Giedion.p.48

[228] Ibid.

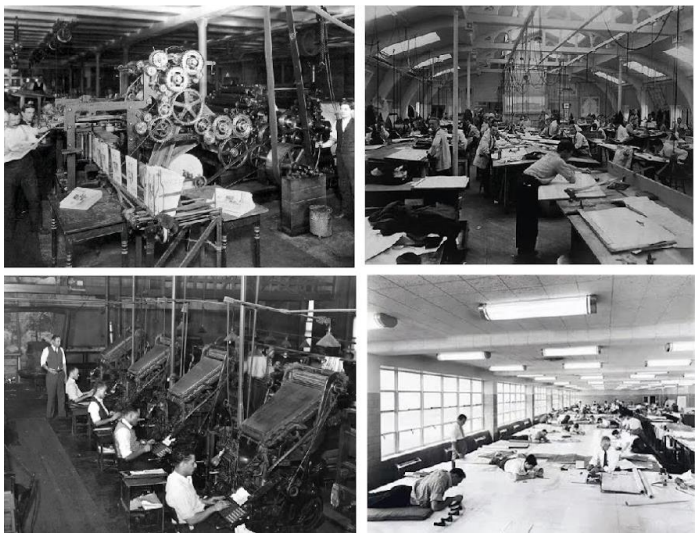

Figure 3.26. (left) Production of identical copies[229]

Figure 3.27. (right) Production of notational copies[230]

The mass copy has been innovated to produce a number of the same product when the hand tool became inadequate for this. It has then become one of the significant industrial transformative technologies which brought out the concept of identicality. As might be expected, identicality has been effective in the process of making, the end product, and the role of the maker. The revelation of aesthetic variability in the notational copy of the subject has transformed into a direct and immediate production of identical copies.[231] The end result generated from revealing has turned into a textual or visual imprint produced from a mechanical matrix. The variability of hand-made copies had been on the wane with the alteration of rapid production based on the visual and formal sameness. However, from the moment that tool turned into a technological system, making activity gained new perspectives considering different

[229] The workers' production, https://rarehistoricalphotos.com/?s=factory+production, last accessed 08.15.2022

[230] Life before the invention of Autocad, 1950-1980, https://rarehistoricalphotos.com/life-before-autocad-1950-1980/, last accessed 08.15.2022

[231] Op.cit Carpo

modes of knowledge production, its accumulation, and distribution. It was only with the industrial revolution that abstract ideas were embodied with a series of material possibilities. Furthermore, it can be said that the mechanical production systems and specifically printing technology caused the generation of a new concept as dissemination; dissemination of knowledge offers a communicative dialog by making information available to everyone. Actually, technology itself had a key role in the development of the Renaissance, the scientific revolution, and the Enlightenment, in terms of spreading knowledge via copied images and texts. In the same vein, the visible architecture or the visibility of architecture has been provided by the mass media[232]; the distribution of images, drawings, and texts.

Industrialization had different impacts on architecture on various levels. When the effects of mass production technology on architectural thinking and making processes are considered, there exists a dual course. First, through copied images, drawings, and texts, architecture with its substantial and discursive presence could travel all around the world. The accessibility of buildings through their visual and textual information was unique to mechanical (re)production processes and technology. Offering an opportunity to comprehend, compare, and interpretation of the built environment, the printed materiality of architecture provided a communicative medium for individuals in various geographies. Architecture opened itself to manipulations of various observers in addition to the actual designers and the users of the buildings. Secondly, the mechanically reproduced representations had a significant and long-lasting outcome in terms of providing permanent recording and the manifestation of architectural ideals specifically for Modernism.

Architecture, with all its scientific aspects, aesthetic means, and ontological discourse, has come into existence and been carried to the present day by virtue of

[232] Op.cit. Colomina

technology. The transformation to mechanical production has led to the diffusion of technical and visual information, including new construction materials, technics, and procedures. Carpo, for instance, associates the advent of new materials with the construction of Modern Architecture in the 19th century.[233] He draws attention to the relationship between reactionary architects of the era and their architectural acts that were "appropriate to the new machine age". Technology helps to the rapid spread of invisible knowledge and perception of ideological presuppositions, as one would observe in Modern Architecture discourse. The idea of standardization of architecture with a new social awareness, new usages of materials, and architectural conceptions have been facilitated through printed texts and images. Architecture beyond just a mere building activity has been associated with all means of making for the first time, embodying material and immaterial qualities, emergent technics and technologies, aesthetics, and new means of production. Technology as both the production of identicality and dissemination of ideality causes the redefinition of architecture as a machine-made object that searches for alternatives to making and answers to contemporary social and universal problems.

The investigation of the machine into the theory of desire is revealed by Guattari, who recalls Pierre Levy's approach of "trying to break down the ontological iron curtain between being and things".[234] From a different perspective to the common belief that represents machines as a subset of technology, Guattari asserts that machines were the prerequisites of technology, and the relation between machine and human has always been an issue of philosophy since the time of the ancient

[233] Op.cit.Carpo,p.5

[234] Felix Guattari. "On Machines", *Complexity: Architecture/Art/Philosophy* (trans.by Vivian Constantinopoulos), London: Academy Editions, 1995, p.8

Greeks' techné.[235] Further, he adds that "in order to overcome this fascination with technology and the deathly dimension it sometimes takes, we have to re-apprehend and re-conceptualize the machine in a different way."[236] The only way for this is, he believes, is to review definitions and relations of the machine and the human subject.

3.3.3 The Generation of the Particular in Digital Making

Considering the criticisms brought into the dominance of technology, the general belief is that the more humans incorporate technology into their daily lives, the more humans will become a part of it and search for another quest. This interrelated relationship between human and machine eventually has given birth to new communication systems that are vital for current societies as well as making activities. Digital computing and communication technologies in the late 1950s led to a transition from mechanical to digital electronics and information systems. This transformation has later been declared a Digital Revolution, which has become a significant milestone in information dissemination; "arguably marks a much bigger shift in human communication."[237] The sprawling digital understanding was welcomed with a great interest in design practices and became influential in thinking and making activities. The 1990s were denominated as the Digital Turn in Architecture that witnessed a shift in the history, theory of architecture, and design by the integration of digital systems. The digitalized conceptual and theoretical vocabularies in architectural thinking thus, lead to a rethinking the acquired and transformed matters of making. (Figure 3.28) In the current notion of production,

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[235] Felix Guattari. *Chaosmosis: An Ethico Aesthetic Paradigm* (trans. by Paul Brains and julian Prefanis) Bloomington, Indianapolis: Indiana University Press, 1995, p.33

[236] Op.cit, p.9

[237] Michael Clarke. "The Digital Revolution", Academic and Professional Publishing, https://www.sciencedirect.com/topics/psychology/digital-revolution,2012, last accessed 26.05.2020

technology has been declared as a synonym for the digital realm in which the whole apparatus of networked information flows. The condition of change has become a part of the current architectural discussions and discursive practices with dynamic analogies such as "process, flow, and emergence."[238] The process of building itself has become wholly technological as buildings are conceived, financed, and evaluated.[239] The globalizing network society has led architects to rethink the relationship of architecture with various modes of production and construction, new patterns of movement, and technological priorities in the age of information systems.

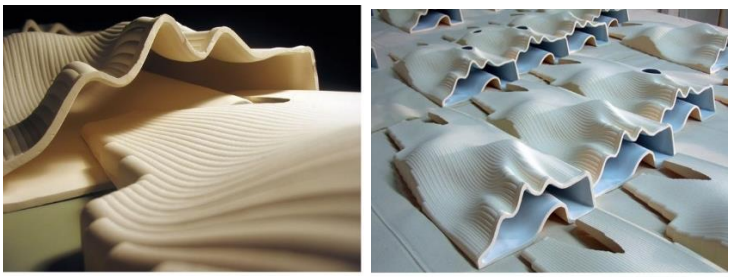

Figure 3.28. Tectonic Horizons, Radical Craft, Joshua Stein, [240]

Figure 3.29. Metamateriality-Material Ecology, Biocomposites, Neri Oxman, MIT Lab,2020 [241]

[238] Op.cit.Braham, Hale

[239] Ibid.

[240] Tectonic Horizons http://www.radical-craft.com/Tectonic-Horizons, last accessed 09.04.2022

[241] Neri Oxman, Biocomposites, https://www.archdaily.com/986111/future-materials-the-architecture-of-biocomposites, last accessed 09.04.2022, "Neri Oxman and MIT have developed programmable water-based biocomposites for digital design and fabrication. Named Aguahoja, the project has exhibited both a pavilion and a series of artifacts constructed from molecular components found in tree branches, insect exoskeletons, and our own bones. It uses natural ecosystems as inspiration for a material production process that produces no waste"

The current interest in information systems and developing technologies relies on the possibility of generative aspects and alternatives. Intuition has become a form of cognition when learning does not belong to the human but to the machine. Therefore, the actors, the objects, and tools have been changed with the process itself. Digital technologies in various fields enable interrelationships and interactions in a variety. The discipline of architecture as a significant practical ground of design thinking has been affected by this conceptual and theoretical change. The relationship between experience and knowledge started to be coded through systems; the printed media produced by the mechanical process turned into digital information systems that work with a screen. Therefore, the design processes of architecture with multiple actors (from different disciplines and different forms, even can be robots) have become more collaborative work. (Figure 3.29) In the current information age, although interactions between individuals, the architect, and object, human and machine, between the product and process are becoming digital in a broader sense, technology is getting much more integrated. The acceptance of technology necessitates transforming itself as a system to be used for making things efficient or to become a part of it. As Illich indicates, a system is different from a tool due to the necessity of becoming a part of it. The transmission and dissemination of knowledge become possible for architecture with all its literal one-to-one scale physicality. Technology as a system, in this sense, acts as a part of social and professional experience.[242] It empowered the association of technology with architecture by a wider social awareness. Additive manufacturing and an alternative to other industrial manufacturing techniques of the 20th century has been a long-seen and potentially effective technology. Computer-aided manufacturing permits scale independent productions of the design object for social remedy such as one to one scale

[242] Op.cit.Illich

constructions for disaster houses. Such an approach enabled by additive manufacturing systems provides a participatory process of decision-making and physical construction. It is possible to mass-customize objects, even architectural works that are not identical or standardized. The technology itself can be evaluated as the manifestation of learning that supports personal creativity and social integration.

Within the age of information systems developed by digitalization, the notion of particularity can be interpreted as one of the most significant assets in the intersection of poiesis and technology of architectural production. In particularity, an obstacle in machine making has turned into an asset in digital making. The lost dialog between product and act, between architecture and unique solutions, has been regenerated by digital making in a different manner. In the 20th century, the shift from tools to systems meant another shift from physical to informational, which enabled new change; the replacement of the making of identical copies from an original that has an infinite variety of initial conditions or architectural forms. Beyond imitating the hand work as the mechanical machine did, the digital making process consists of designing the machine's work and the interpretation of alternative end results. The technopoietic system permits the production of technical alternatives and poietic identities together. The production of particularity relies on proprietary techniques for unique conditions and authorial decisions of different actors. In spite of the changing interface, the production of uniqueness still relies on the interpretation and manipulation of matter rather than a direct transformation of an ideal. An architect creates a generic form, parameters, or design condition that can be adjusted by many different architects, designers, engineers, or users. The reciprocal dialog between machine and human in the making process is still significant for current relationships between systems and actors.

In fact, from the ancient Greeks, techné in relation to craft making has always been mediated by the condition of humans and tool-technology. From the primitive hand

tool to industrialized machines, the evaluation of the value of craft in an object has been measured by the trace of human input. By its first definition, techné refers to a wide range of occupations, both manual and intellectual labor. It can result in a physical object, a performance, or an altered condition; every activity which requires skill and manual or intellectual labor. It can be claimed that techné has developed a more integrative dialog with the process, the end result, and the maker(s) in the digital making when compared with two other modes of making by machine and hand. By the digital technologies within the changing courses of material condition, systems of making, the orientation of technics and physician specialty, techné has gained a technopoietic dimension which results from a dual existence of technology and revelation through explorations of unique traces, new alterations, interactions, and social consolidations. Architecture within the current information age has become an inseparable part of an emergent system of flow. As a matter of technopoietic knowledge system in a discursive, practical, and theoretical setting, it has gained an openness for pluralistic participation, multiplicative operations, and variable end products generated from an immediate presence of technology and poiesis.

Digital making leads to a new way of questioning metamateriality, creative complexity, and experimental intuition. The idea is that the design technologies can also serve to make something else that would not otherwise have been possible. Digital technology works as a system offering a serial production of alternatives. The emancipation from traditional modes of thinking and practicing through digital technologies has changed and sometimes challenged the architect's authority on its object due to an endless number of alternative results. In the latest generation, the loss of visual similarity has led to the disappearance of the physical object itself and

resurgent roles for the architect.[243] However, it offers province to the architect in selecting the most suitable one. A digital machine (specifically a computer), different than a mechanical one does not make objects but rather makes a sequence of numbers, a digital file that can be converted into an object or a media object (machines, applications, interfaces). Furthermore, the maker may not be the actual maker yet, the original code writer or the creators of "objectiles" (algorithmic constructs from which infinite variations originate) as Carpo defines. Thus, the process of digital making demanded: "new authorial scripts" (as the only future for authorial control) that other actors can carry out as instructions in the making process, as indicated by Carpo.[244] Digital technology ensures a revival of the architect's authorial role and the objects' specialty. Thus, it can be claimed that the identical notational transmission in hand making now has been substituted with the particular as an answer for more specific design problematic. Moreover, the particularity with variability generated from an investigation of an architect among different alternatives or the originality of objectiles has also increased in degree with the fact that the users can contribute to the end product with their manipulations. The generative potential of the current age is hidden in an unpredictable variation of the original objectile and facultative qualification resulting from a dialog between poiesis (revealing) and technology and between human and machine. The subject and machine have changed their roles at different levels; poiesis has become an extended notion belonging to both humans and machines by producing unpredictable variations of alternatives, its selection for particular solutions, and manipulation by users. Such an approach advocates essential micro-scale applications that are culturally sensitive, modestly humane, and universally conscious.

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[243] Op.cit. Carpo, 2011, p.4

[244] Ibid.

Three significant modes of making by means of the changing relations between maker(s), processes, and the end product within an evolving technical, technological progress as hand making, machine making, and digital making have been investigated. “Variability,” “identicality,” and “particularity” emerge as three important notions.[245] Although there are certain differences, it can be claimed that the dialog between the machine and the subject (the maker, architect, designer, planner, user), which is based on a certain spontaneity and a critical interpretation, protects the potential in all different modes of making. The variability of notational copy in craftsmanship has transformed into a literal production of identicality by the innovation of various technics and production technologies. It has brought into two other challenging notions, material possibility and standardization. However, it also transforms the ways of thinking, from self-esteem to social awareness. In a further period, “the particularity” emerged with the intersection of digitalization and the socio-cultural circuit. In digital-making, technology and poiesis, as the indispensable components of techné construct a close dialog between human and machine as never seen before. The emergent technologies in making activity open up new ways of thinking on new materiality, new possibilities of different modes of making, social integration, and relatedly, different alternatives on different modes of living and particular design solutions for generic problems.

[245] Op.cit. Carpo.

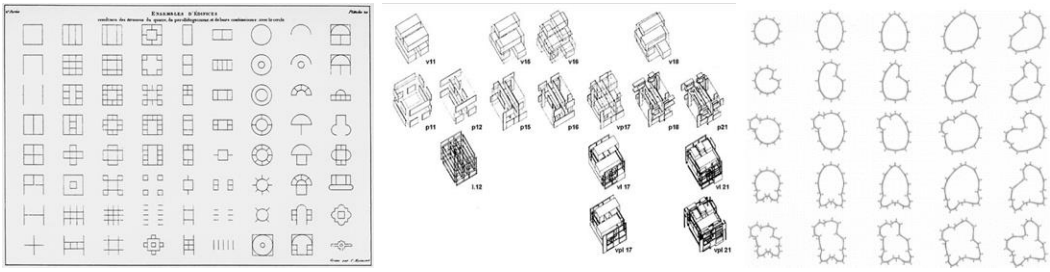

Figure 3.30. (left) Jean Nicolas Durand, Ensembles, *Precis des lecons d'Architecture*, 1802-1805 [246]

Figure 3.31. (middle) Peter Eisenman. Transformation Series, *House IV Falls Village Connecticut*, 1971 [247]

Figure 3.32. (right) Greg Lynn, *Embryologic Houses*, 1998-1999 [248]

Although it is possible to mention "different kinds and modes," there are also regularities, reciprocal projections on a circular causality, and a constant flux between hand, machine, and digital making. All these three making modes created "the alphabets, the scripts, and the algorithms" of architecture. .(Figure 3.30, Figure 3.31, Figure 3.32) The changing modes of making re-frame every object, subject, and their relation in a different system, however, in constant flows. Again, it is possible to follow regulative systems of these different modes of making, in which discursive objects are specified, grouped, divided, related, and derived from one another, which makes it possible to follow the grids of specification of techné discourse.

[246] Jean Nicolas Durand, http://projectivecities.aaschool.ac.uk/type-vs-typology/durand/, last accessed 08.13.2022

[247] Peter Eisenman. Transformation Series, https://eisenmanarchitects.com/House-IV-1971, last accessed 08.13.2022

[248] Greg Lynn, Self-constructing systems, http://www.cca.qc.ca/en/issues/4/origins-of-the-digital/5/embryological-house, last accessed 08.13.2022

3.4 From Antique Techné to High Tech(ne): The Critique of "The Serial"

The radical change throughout the history of making subject-object interactions emerged by industrialization when the act was transformed into a mode of production in the 18th century. By replacing hand tools with power-driven machines, the history of production and its evolutionary aspects have been redefined and categorized in the industrial ages. Each period has elaborated on technological developments and the radical change in modes of production. The application of mechanical production facilities in the 18th century; transition to mass production, innovation of electricity, and division of labor in the 19th century; automation of production processes in the 20th century, and autonomous machines and virtual environments in the 21st century have been the triggering agents for the definitions of each new era. As clearly observed after industrialization, globalization and digitalization are the two powerful and influential forces worldwide that resulted in the change in the materiality of architecture and its all-materialization processes.

Concerning techné and the act of making, the prose of things that came into being has been generally associated with its materialization, in other words, material condition. The conventional account of making a trajectory has been changed and sometimes challenged in the definition and the nature of design thinking, tools, and methods. In architecture, the materialization of an idea(l) is generated in various fields. The way architects think, analyze, use their tools, and make architecture has changed and sometimes challenged. The question of space, the role of the architect, and even architecture itself have been revised and redefined under both the changing influence of socio-political contexts and the progressing technologies. Like many other fields, over the last decades, the acts of thinking and making processes have been affected by globalization and digitalization. With the global and digital matters of change, architecture has become a part of international communication; therefore, it has constructed its disciplinary communication systems. The global exportation of building materials and components dramatically increased mobility of labor among

architects, new models of organizing international multi-nodal architectural firms, trans-spatial digital design methods, tools, and technologies, and the extensive production of images are the results. However, architecture has gone through "a crisis" of the identical repetition of buildings, endless construction, and non-contextual productions. Under the enthusiasm of digitalization and the capitalist systems of production spread by neo-liberal policies of globalization, the physicality or the materiality of architecture in practice has been encountered with 'forming' and endlessly 'constructing' ordinary spaces, which resulted in the production of the serial.

3.4.1 Global Constructions, Cultural Extructions: Re-Built Knowledges of Globalization

The late 20th-century architecture has been declared more with universalization, synonymous with standardization, mass production, function, and systematization of architectural thinking and making. As an accepted definition, globalization refers to the speeding up of worldwide connectedness in all aspects of social life. It has an extensive influence over almost all aspects of public and private life; thus, it is not surprising that it has also increasingly affected architectural practices. (Figure 3.33)

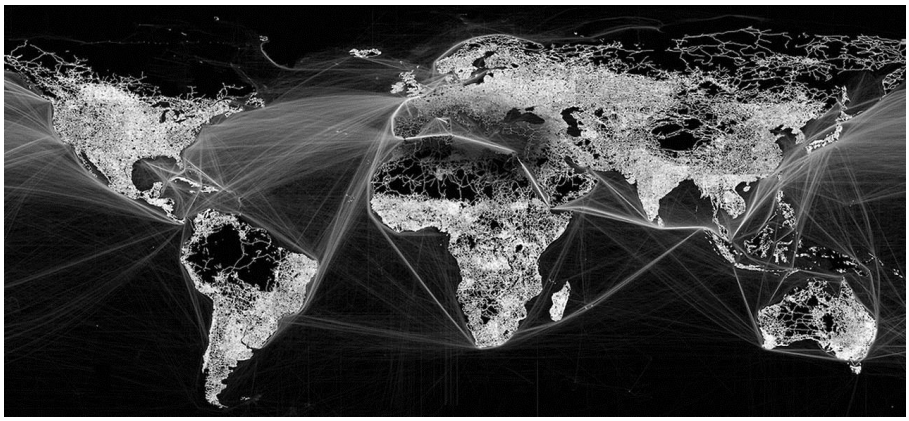

Figure 3.33. Planetary Urbanization. Global connectivity and accessibility. The Harvard Urban Theory Lab[249]

When neoliberal economic policies have been dominantly effective in current production systems during the 20th century, architecture and urban form have become significant components of the new economic paradigm in the transition from industrial to global relations. The architectural production relations relatedly, systems, processes, technics, technologies, and urban mechanisms have been embodied by neoliberal economies; urban development and improvement occurred as the effective dynamics in urbanization and related economic activities. To increase the economic power due to globalization, urban development became a widespread notion in neoliberal policies, resulting in the creation of a competitive building environment and ongoing construction processes. Commercial apprehension and urban branding resulted in the transformation of each city to a consumption object unregarding unique values. With new national and international transportation networks, cities have turned into competitive regions. Thus, the discourse generated from the neoliberal politics and effective dynamics of capitalist systems of production and consumption such as "privatization," "urban growth/expansion," and "global competition" has spatially concretized with "endless construction,"

[249] Harvard University, Urban Theory Lab, https://www.gsd.harvard.edu/project/urban-theory-lab/, last accessed 08.13.2022

“limitless and unplanned expansion” of urban form and “repetitive mass production of buildings.” Therefore, neoliberalism has dominated political-economic practices and become a hegemonic mode of discourse that worked as global capitalism. Architecture within this context, by its very nature, is dependent on the economy through the activity of construction. Globalization has driven the standardization of spaces and architecture by transforming cities, shifting spatial patterns, and shaping the built form. The embodiment of architecture on building under the pressure of urban-economy systems transforms itself into a physical object that inevitably becomes part and a parcel of capitalism. The urban landscape displays increasingly similar and homogenized architecture under politized tools, concepts, and modes of production. Within this changing and challenging urban discourse, not only architecture itself but also architects, actors of making, and their capacity of acting have been controlled by repressive systems of production. This homogenization without creativity and instrumentalization as the agency has been leading to the production of similar or ordinary built spaces and the disconnection of humans from the built environment. (Figure 3.34, Figure 3.35) As a result of the dependence on the economy and the manifestation of capital due to the act of building and construction, architectural making has become a semi-autonomous process. With the ongoing construction, unplanned urban development and growth, privatization of land, uncontrolled urban growth, suppression of rights to the commons, and commodification of labor power, neoliberalism has evolved as the continuation and proliferation of capitalism. Thus, it has become the focus of political struggle with a repositioning of both the architectural profession and architects as passive constituents in production systems.

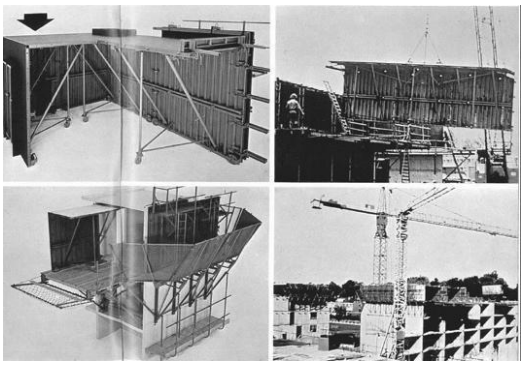

Figure 3.34. (left) The use of formwork half-tunnel construction system[250]

Figure 3.35. (right) The application of formwork half-tunnel construction system in Turkey[251]

Furthermore, the advancement of industrial technics and technologies in architectural building construction such as precast systems, the half tunnel form, and framework systems have been influential on the contemporary modes of making processes and the position of the actors in the making. Urban land has been formed in a similar and unlimited way. Under the influence of the developing industrial sector, the rapid production systems and consumption in architecture have integrated into contemporary thinking and design approaches. The building processes from the Industrial Revolution can be considered a turning period in which the meaning, practice, and representation of making architecture have been carried beyond its geographical and disciplinary boundaries. The modes of making, technics of construction, and the definitions of makers have been redefined with the concept of mass production. To struggle with the power of capitalist production systems, alternative ways of approaching architecture should be empowered by the definition of an architect as a social construct for the instrumentalization of tools and discursive practices.

[250] The half tunnel construction system catalogue, personal archive.

[251] The application of half tunnel construction system, TOKI, Kayabaşı, İstanbul, https://www.kayabasimahallesi.com/, last accessed 08.14.2022

The millennium has also been confronted with the tension between the forces of globalization and its impacts on microhistories, local architectures, techniques, and peculiar modes of making. Globalization can be read as a multidimensional phenomenon on micro-histories and localization where architectural efforts ensure local identity and distinctiveness. Architects who are practicing and writing find themselves in between two opposing forces existing due to past and present: local cultures and global architectures and methods of production and expression. Antony Giddens describes globalization as "the intensification of worldwide social relations that link distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa."[252] Globalization, in this sense, can be interpreted as an influential force in elevating extensive scales of production and the disappearance of local techniques, modes of making.

However, another concept; 'glocalization' emerged in the 1990s as the critique of the lack of concern with micro-sociological or local issues in globalization and generalized understanding of that concept. Glocalization is defined, therefore; by Roland Robertson as the "co-presence of universalizing and particularizing tendencies" or "the blend of global and local."[253] Robertson criticizes the widespread tendency to see global and local as a polarity, opposition, or elaborating the local tendencies as the resistance to the hegemonically global. Presenting the dynamics of the production and reproduction of difference, he claims that global culture is entirely constituted of the idea of the interconnectedness of many local cultures, both large and small. However, it is also critical in the notion of homogenization of all cultures. Thus, instead of efforts in connecting local with global, he defines a

[252] Antony Giddens. *The Consequences of Modernity*, Cambridge: Polity Press, 1991, pp.70-78

[253] Roland Robertson. "Glocalization: The-Space and Homogeneity- Heterogeneity". https://warwick.ac.uk/fac/arts/history/students/modules/hi31v/syllabus/week18/robertson-1995.pdf, last accessed 12.25.2021.

common platform where local and global exist together in the intertwining of the global and the local in a way that enables the production of unique products in different geographical regions.[254] From the references to the word glocalization in Japanese *dochakuka,* the term glocalization refers to the adaptation of techniques to local conditions. One of the further definitions of globalization can be interpreted as the period in which architecture seeks its universal truth. The critical outcome of this search means the distinction between architecture and the state. As claimed, glocalization works best for companies that have decentralized authority.[255] It triggers, in this sense, both the exploration of unique techniques, local applications, and autonomous thinking-making activities.

3.4.2 Machine Architectures, Digital Bodies: Re-Built Knowledges of the Anthropocene

> Ancient craftsmen once measured using parts of the human body: the cubit is based on the length of a forearm; the inch, the length of a thumb. Le Corbusier designed his buildings based around the Modulor, a scale he derived from the proportions of the human body. We once understood our world through systems that positioned ourselves, human scale, vision, and patterns of occupation at the center of the structures that we design. In the age of the network, however, the body is no longer the dominant measure of space; instead, it is the machines that occupy the spaces that now define the parameters of the architecture that contains them – an architecture whose

[254] Ibid.

[255] Ibid.

> form and materiality is configured to anticipate the logics of machine perception and comfort rather than our own.[256]

Since architectural making has transformed from an act of doing in material, tectonic, aesthetic, and technique references to craft into an industry of building construction in a global and dominant impact, neither the size of the brick is the essential element of architectural construction, nor the human figure is the entire measure of the space. Ironically, the effect of the human figure, embedded in different forms, progresses of production and construction has gained another visibility with a destructive dimension. The current period has been defined, researched, and elaborated on the most effective asset, the human effect on nature. The current geological epoch that we are living in is declared as the Anthropocene, where human activity has the dominant influence on shaping the planet, climate, and environment. It is the time in which our acts, tools of design, spaces, and landscapes have forever changed by the transformation of 'human thinking and making' into 'machine learning and building". As Liam Young writes; "spaces that were once bound by the proportions of the body, patterns, and cycles of human living, the ambitions of beauty and comfort are now stripped bare and are hazardous zones of toxic air, high-speed robotics, sensor calibration markers, algorithmic complexity and machine scales as the most powerful engine room."[257] The 21st century is 'new' and 'remote access' with the human body, where technology is so powerful, dominant, and constituent of everything with its non-human actors that can learn, compute, condition, and construct our world.(Figure 3.36, Figure 3.37, Figure 3.38)

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[256] Liam Young. *Architectures of the Post-Anthropocene*, New York: John Wiley & Sons Publishing, 2019, p.11

[257] Ibid.

Figure 3.36. (left) Robot fabricating, Fabbots. [258]

Figure 3.37. (middle) Robot making, Tesla Factory. [259]

Figure 3.38. (right) Machine learning and robot constructing. Melike Altınışık Architects. [260]

Architectures of the Post-Anthropocene, published in 2019, is a provocative book claiming that "the sites that constitute the Post-Anthropocene have nothing to do with our bodies; they are more accurately extra-human in that they are outside us, totally indifferent to us, where we are no longer part of the equation at all."[261] Since industrialization, starting from the fundamental change in the basic unit of architecture from the system of the human body into the machine, the tools, actors, spaces, even landscapes, and the whole relationships between various constituents have been in flux. Emerging from industrialization to digitalization, many of the most interesting technological and intellectual disciplinary solutions and operative problems are now situated in architectural theory and related current discussions. The spatial repertory/lexicon of the 21st century is declared in the content of the book as "territorial robots," "machine landscapes," "aesthetics of data center," "infrastructure as processional space," "disciplinary hybrids," and "retail landscapes of the Post-human city," "simulations," "satellite landscapes" and "a place for

[258] Fabbots, "Digital Fabrication on site", https://fabbots.wordpress.com/, last accessed, 08.14.2022

[259] Tesla factory, MIT Technology Review, https://www.technologyreview.com/2018/04/16/143870/tesla-says-its-factory-is-saferbut-it-left-injuries-off-the-books/, last accessed 08.14.2022

[260] Melike Altınışık Architects, Seoul Robot Museum, https://www.melikealtinisik.com/2-index/134-seoul-robot-ai-museum/, last accessed 08.14.2022

[261] Liam Young. *Architectures of the Post-Anthropocene*, New York: John Wiley & Sons Publishing, 2019, p.11

everything where the internet lives" points out enlarging non-human acts, spaces, and landscapes embodied in not human but the technological sublime of the current era. It can be interpreted as another *tabula rasa* that transformed the fundamental unit of architecture from 'body to machine,' where the scale of the body becomes immaterial relatedly; 'learning by doing to machine learning, 'human creativity to artificial intelligence, 'open plan to space for everything' and 'human thinking and making to machine learning and constructing". As claimed in the same book, the contemporary settlements, and buildings of big companies such as Apple, Facebook, data mining or servicing companies present "machine landscapes" where "the disciplinary language of architecture breaks down" with vast interiors, microclimates, engineered spaces, circuit boards, robotic natures, and urban-scale computers and planetary cities.[262] As explained in the various articles, the default position of the architecture practices seems to reclaim this lost territory with "ergonomic furniture, green walls, open- offices, and raw-juice bars." Succinctly, "machines are making the world, and we are on the outside peering in, faces pressed to the glass windows of an empty control room." In the transformation of worldmaking of the craftsman to machine making, new acts, actors, tools, spaces, and landscapes as the poetics of humans are extraneous, the scale of the body immaterial thus, we must explore new forms of engagement with the developing and evolving technologies and related thinking and practice.

Although the current period is 'new' and maybe 'provocative' with non-human constituents, the change did not happen all at once. Emerging in two different presences; "architectural programming" and "computer programming," the tradition of programming in architecture, as explained by Matthew Allen, appeared as a subdiscipline through the 1970s and 1980s, finally rejoining the mainstream with the

[262] Ibid.p.13

digital architecture of the 1990s.[263] Similar to other inventions or technological developments, Allen claims that assemblages of processors and input-output devices (as the early versions) were used before the 'interactive computer or 'computer-aided design' or 'digital modeling' became stable concepts. Although computers were stable in their sizes until the 1980s, the knowledge generated in the form of words and images on paper diffused and circulated in place of computers themselves. In his analysis of architectural printouts, plotter technologies, and their aesthetic traces, he claims that isolated and ephemeral experiments were transmitted using computers by architects before the 1990s, however, few recognizable buildings were produced. It is asserted that "if theories are situated in the context of practice, cultural techniques stand out as figures of knowledge that mark the former."[264] Thus, as claimed, a postulate of cultural techniques may assist in identifying the situated theories.

> …the approach of cultural techniques assumes that theory can exist in a situation even if it is not explicitly articulated. This raises the question of what exactly a theory is. My working definition is rather broad: theory is about understanding. Newton's theory of gravitation allows us to understand the motion of planets and why things fall to earth. Theories of programming allow us to understand architecture in certain ways. A theory works this way even if it is never written down or explicitly articulated.[265]

In the light of Allen, and his references to Cedric Price, Christopher Alexander, Colin Rowe and Peter Eisenman in his article, it can be claimed that each new technological

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[263] Matthew Allen. "Architecture Becomes Programming: Invisible Technicians, Printouts and Situated Theories in the 1960s", *The Figure of Knowledge* (ed.by Sebastiaan Loosen, Rajesh Heynickx, Hilde Heynen), Leuven University Press, 2020

[264] Ibid.

[265] Ibid.p.103

or technical change led to subsequent development. The difference is not the technology itself but the embodiment of knowledge within various forms such as texts, drawings, aesthetics, processes, materials, actors, and end products and affected our entire system of thinking and doing. Therefore, it is evident that with all the suffixes as “pre,” “neo,” “post,” “early,” or “late,” the status of historiography on theory and practices is a circular causality of relationships, interactions, accumulations, transmissions. To understand the current Anthropocene era of the 21st century and for further disciplinary positionings, it is necessary to investigate the recent history and reveal invisible components that effectively shape the present by inherent mechanisms.

The disappearance of the human input, the absence of interaction within the abundance of intercommunication of unique techniques has been emerged with globalization, however; what is more interesting is the acceptance of non-human presence as never before in architectural thinking, making appearances of concepts, themes, material, techniques, technologies, and even bodies. The Covid-19 pandemic that broke out in 2019, has affected the whole world on a global scale, and changed our daily living habits, tools, interactions, working conditions, and relationships, and, therefore, the use of spaces. Restrictions defined on social distance, lockdowns, and quarantines designated to reduce human interaction have been adequate to control extensive suffering and death from the pandemic; however, it has also made socio-economic inequalities, remote access, and control, empty spaces, masked faces, and non-human environments more visible and inevitable. In the current era, the global pandemic leads to a particular spatial organization isolated from human interactions worldwide. Many actors, including architects, started to question alternative ways of defining public life, commons, enhancing methods for designing, working, and education between contamination and space organization. Non-human environments, landscapes that occurred due to remote accesses, interactions, and controls have become provocative agents of human “well-being” as never before. The loss of “human being” for “well-being,” in other words, the loss

of the physicality of the body and the immaterial existence of the human body in its philosophical Aristotelian sense, can also be explained as the loss of meaning, the unique characteristic of subjectivity, peculiarity, understanding the essence, substance to exist.

As a result of this disappearance by the emergent technologies, the human body has gained another visibility which is a digital copy. An alternative to a real universe; within a "metaverse" of the 21st century, the urban environment, spaces, buildings, streets, activities, and even the bodies have been digitally reproduced with various identities. Claiming that everyone will have their digital version in the metaverse, a digital copy of the human body with identities has already started appearing in virtually constructed worlds.[266] It is also asserted that the next evolving phase of the internet with digitally reproduced hyper-realistic human figures who can synchronically act, move, and work in real-time will be used for the communication and expressions of various identities. A digital entity could only enter this world after years of work by many artists working for the world's visual effects companies. Following the technological evolutions and developments, these realistic digital humans can be instantly produced by the essential smartphone of today. There is even a unique name given to this new generation of digital bodies the 'MetaHuman.' (Figure 3.39) Current works applied in game design, virtual reconstructions, communication, and design platforms present a widespread approach to creating a digital copy of 'meaning' or 'experience' beyond the reconstruction of physicality/materiality of the space and body. In other words, the truth is not to do with the reproduction of reality on physicality but with the truth of experience and meaning.

[266] Metaverse, MIT technology review, https://www.technologyreview.com/2022/02/08/1044732/metaverse-history-snow-crash/, last accessed 08.14.2022

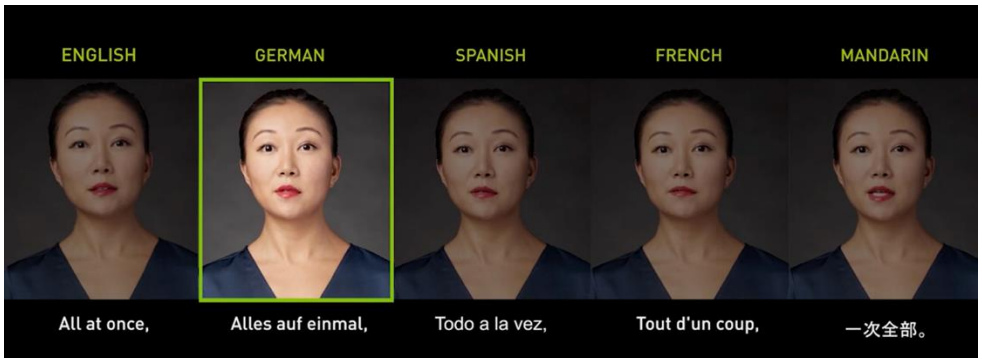

Figure 3.39. Digital Bodies, 2022 [267]

Starting from industrialization and the inclusion of machines into the act of making sharp changes, evolving technologies and shifting paradigms have created 'new' openings towards tools, techniques, materials, and modes of doing, constructing, and producing for meaning. In the digital era, they have gained multiple dimensions. However, in the current era, the dominancy of technology as an entire asset affects almost all modes of thinking, making, and being felt like never before on spaces, landscapes, bodies, practices, and knowledges in different fields. The relationships, discourses, meanings, identities, knowledges are all rebuilt as words, images, and buildings are.

3.4.3 The Critique of the Technological and the Global

It is not so far back, within the last decades, that advances in science and socio-political fields have extensively been influential and rapidly transformed architectural thinking and making practices. Besides its practical appeals and evolving discourse, non-instrumentalized use of technology and the capitalist construction demand instigated the disciplinary transformation of architecture. In

[267] NVIDIA Omniverse Avatar for Project Maxine, https://www.algoritmo.ai/blog-tools/nvidia-omniverso-avatar-proyecto-maxine, last accessed 08.14.2022

other words, the discipline has been challenged by the declaration of "the death of architecture" or "the crisis" in the changing perception of making, the loss of the authorial status, and the profession itself. The practice and knowledge of architecture have been transformed from making activity in reference to craft knowledge with all its ideology, moral, disciplinary, and creative becoming into an extraction that can be performed by machines, programs, codes, or any human actor. According to some debates, in the current time, beyond its evolved epistemological framework, architecture is no longer an activity of making experienced by collective labor; however, it is evolving as an individual act of drawing. In architecture, "rather than translations from drawing to building, we now move directly, even literally from modeling to fabrication, potentially without translation".[268] Therefore, infinitely many possible outcomes can be comprehended by one code. It can be claimed that the authorial status of architects is also globalized. For Carpo, with the rise of digital technologies, the modern power of the identical came to an end. The author of an original script may not be the only author of the end product and may not determine all the final features of it. The transition from design to fabrication in the latest generation of making is immediate and requires no additional information between these processes, as Carpo indicates.[269]

Non-instrumentalization of the tools and technologies as the agents for emancipatory architecture has resulted in the elimination of the human figure in the process, spaces, and even landscapes. Architecture has been confined within hyper-digitalization and mounted in 'non-human machine landscapes'. On the other hand, architecture has been enclosed within the mobilization of economic capital on the global scale, which resulted in capital invested ordinary landscapes. The process of making, the

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[268] Mark Linder. "Drawing Literally", *Architecture as Craft* (ed. by Michiel Riedijk), TU Delft, 2011, p.37

[269] Mario Carpo. *The Alphabet and the Algorithm*, Cambridge: MIT Press, 2011, p.23

definition of the maker, as the ultimate constituents of techné are in constant change by deflecting the disciplinary nature of problems, changing conventional definitions, and expanding fields of references and applications. Current debates on post-truth and predictions about the near future; the post-Anthropocene require a return to critical approaches to the technological and the global.

Antony Vidler's approach has contributed to the critique of Modernism and represents the nascent potency of utopia in overcoming the disciplinary resistance of practicing architects enraged with the machine world.[270] In his analysis of Manfredo Tafuri's critical course with Jacques Lafitte's science of "machinology", Vidler portrays how space and technology can be linked as an ideology. Steering a middle course between humanist and modernist approaches can be possible with the development of a critical practice of spatio-technological history in which the question of space is itself being redefined under the influence of digital technologies.[271]

Arendt's critique of modern technology is in convergence with Heidegger's, the "challenging-forth."[272] Arendt underlines the reasons for made efforts for the technological developments to escape from the Earth into the skies by challenging natural limits, as in nuclear technology or space studies. The instrumentalization of production can be provided by an instrumentalization of social relations, as highlighted. Thus, the modern age is interpreted by Arendt as a "world alienation." Architecture, however, is located on the opposite side and explained as "adsorption to the world," considering its very nature. Namely, architecture can only exist with

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[270] Anthony Vidler. "Technologies of Space/Spaces of Technology*", The Journal of the Society of Architectural Historians*, 58 (3), 1999, pp. 482-486

[271] Ibid.

[272] Hannah Arendt. *The Human Condition*, The University of Chicago Press, 1998 (second edition with introduction by Margaret Canovan), (first edition 1958)

roots on Earth in a specific place and a socio-political context. In this sense, Arendt underlines a specific invigoration for architecture which is very close to the assurance of techné as an "earthbound activity," "worldmaking", which is sensible and tactile. Kenneth Frampton, in the first essay, "Intention, Craft and Rationality," revisits Arendt's arguments by giving a place to more optimistic claims expanding the notion of craft in design and architecture with a reference to the traditional connotation of craft.[273] Reintroducing Hannah Arendt's distinction between labor and work, Frampton interprets the absence of craftsmanship as the alienation experienced in the division of labor attending all forms of production. He reinvestigates the *homo faber* of Arendt as "the builder of the human cosmos" and "the inventor and maker of the instruments with which the world is built."[274] The former is regarded with what representation and human world's creation are and the latter with concerning itself with the how of process, utility, and fabrication. Frampton argues that emphasis on the term "invention" is hidden within the question of what and the act of making regarding how.

The changing notion of craft and the work of craft making are revisited by Michiel Riedijk, who retains the claim that architecture is both a "self-contained craft" and "a discipline" producing alternatives to the question of design.[275] The entire admission is that architects do not make buildings yet produce drawings, scaled models, and texts. The craftwork (craftsmanship) of the architect is, therefore, mainly hidden in her/his ontological instruments. Riedijk claims that "mastery of all facets of design or production process is being destroyed by increasing division of

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[273] Kenneth Frampton. "Intention, Craft and Rationality", *Building (in) the Future: Recasting Labor in Architecture*, ed. by Peggy, Deamer. Phillip G. Bernstein, New York: Yale School of Architecture, New Haven Princeton Architectural Press, 2010, pp.29- 38

[274] Ibid.

[275] Michiel Riedijk. (ed.) *Architecture as Craft*, TU Delft, 2011.

labor and process of optimization." The architect's position in the design process has been re-defined due to the ever-increasing division of labor and insertion of computer-based systems of production. He believes that architects can still produce relevant work which is based on social criticism. Architecture may still be regarded as a craft as claimed due to the designer's conceptual position/inclusion in the project and their range of different ideas. Architecture still protects its disciplinarity due to the disciplinary conceptualization of knowledge based on a ruled-system in the course of the act. For Riedjik, architecture stands in-between craft action and disciplinary thinking. Architecture by digital possibilities is going beyond the act of making through the practices of design.

Following the 2006 symposium *Building (in) the Future: Recasting Labor in Architecture* and the edited eventual book published in 2010, Peggy Deamer and Phillip G. Bernstein have introduced a contemporary and, more importantly a speculative interpretation of the notion of the changing nature of architecture and craft making.[276] The new technologies may be considered as an opportunity to expand the designer's ability to decipher technical problems, yet the priorities of the process itself have been built on calculations rather than imagination or the act of design itself. The designer is no longer equated with an architect, and the architect is not a maker anymore. The book embraces several different aspects of new technologies, crafts and labor relations in architecture. The chapters include the reconsideration and redefinition of craft in the light of digital technologies and an exploration of new methods of collaboration. Contrary to expectations, the word labor, as used throughout their book, mainly refers to collaboration and organization of work instead of workmanship. Deamer advocates the need to examine the effect of digital technologies on designers, architects, and builders and how they conceive

[276] Peggy Deamer. Phillip G. Bernstein. (ed.) *Building (in) the Future: Recasting Labor in Architecture*, New York: Yale School of Architecture, New Haven Princeton Architectural Press, 2010.

their work. According to Deamer, fabricators, engineers, and software programmers can lay equal claim to authorial designation in relation to the production centering on digital fabrication. Integrating design, generated from the current interdisciplinary design approaches and digital tools, has accumulated designing, engineering, and constructing under one roof or in one executive team. It, therefore, ensures more accountability over cost, quality, and schedule rather than imagination or socio-political concerns of architecture. Consequently, there is a need to redefine the works of architects, designers, and builders and the reorganization of their labor to reclaim the profession's own freedom to build. Thus, the question she tries to answer is "how the profession and all players in it want and need to reposition themselves for the future."

One of the other significant contributions of the above book is by Scott Marble who similarly evaluates and redefines craft notions in current circumstances. Supposing that the human rests in the self-imagination, not the hand, Marble asserts the word craft is no longer described with the hand.[277] With the changing definition of architect and relatedly the maker and labor, the meaning of craft is expanded and gained a new life by the developed digital technologies and fabrication. Craft in architecture is closely associated with detail. Marble explains that today's details are based on the management and organization of information, in which tolerances and even assembly procedures can be numerically controlled and parametrically integrated into the process of design. Although this new method of production detracts architects from working with their hands, it reconnects them with making based on a relationship between human intelligence and machine capabilities. Therefore, craft does not disappear rather, it emerges with an extended definition in

[277] Scott Marble. "Imagining Risk", *Building (in) the Future: Recasting Labor in Architecture*, ed.by Peggy Deamer. Phillip G. Bernstein, New York: Yale School of Architecture, New Haven Princeton Architectural Press, 2010, pp.38- 44.

design processes. Marble follows David Pye's highlight on craft, which is "a process in which the quality of the result is in the hands of the person making it."[278] In *The Nature and Art of Workmanship*, published in 1968, Pye implies the risk for the designer, who considered, then that it was always the case, controls the workers assembling the product. A dichotomy between "the workmanship of certainty" and "the workmanship of risk" is defined as an individual initiative on the part of the skilled worker, the result is not predetermined yet depends on the maker. The quality of the result is continually at risk during the process of making. He defines "the workmanship of certainty" as work done by the semi-skilled under the highly regulated conditions of mass production in which the quality is fixed in advance. However, something about the risk of craftsmanship was worth preserving. Marble interprets David Pye's definition of risk in Deamer's book by asserting that the industrialized machine displaced with the physical labor of the human body is developed an intelligent machine that displaces the labor of the human mind. Therefore, the risk is still associated with human input yet shifts from "the hand to the mind". Digital technology increases the amount of certainty by optimization, it is the risk regarded with interpreting and imagining alternative results that need to be maintained to give craft a new role in mediating between humanity and technology.

Many of the current debates have been searching the ways to struggle with the loss of authorial status over the design object within the process and its instrumentalization for public goods. The subject, the manipulation, conceptualization, instrumentalization, definition, and historical and theoretical elaboration of the object are critical in the formation of architecture as it is a design-based discipline. In the wake of these theoretical and practical shifts, therefore,

[278] David Pye. *The Nature and Art of Workmanship*, A&C Black, 2007 (first published by Cambridge University Press, 1968

formalizing a critical redefinition of the architectural making process and the maker is a priority. *Techné* is acknowledged as a disciplinary tool through which architecture can define, produce and disseminate ontological knowledge by protecting its generative potential.

3.5 *Techné* as Discursive Formation in Architecture

From its first emergences in philosophy and architecture as an entity, the word techné in relation to craft knowledge and the act of learning by making has created the authorities of delimitation by the establishment of institutions in the educational sphere. Regarding the changing matters of making, relatedly the practice and knowledge of architecture, techné retains its regularity with the specifications in the grids in which different kinds and modes are contrasted, divided, classified, regrouped, and derived from one another. Therefore, the vitality in all these three notions in Foucault's method in the definition of discourse makes techné a discursive formation in architecture. Even today, the concept of techné is still current in both national and international architecture discussions.[279] As Paul Greenhalgh claims:

> Whilst craft has represented specific ideas at any one time over the past three centuries, it has continually developed and changed. Time-laden and traditional as it might seem, the years have not bestowed the word with a solitary or even consistent meaning. It has moved from being an adjective to

[279] This national symposium was organized in 2020 under the title "Techné as the Science of Doing and Poiesis". The proceedings were published in 2018 edited by Mark-David Hosale, Sana Murrani, Alberto de Campo as *Worldmaking as Techné: Participation, Art, Music and Architecture*, Cambridge: Riverside Architectural Press, 2018. The present author was invited to give a public lecture on techné at Middle East Technical University, Istanbul Technical University and Atılım University.

> a noun; from being a description of things to being a thing in itself… Once it acquired a meaning, craft never wholly lost it.[280]

The emphasis on the creation of meaning associated with craft is an instrumentalized agency of practice and knowledge of architecture, just as the constellation of meaning is associated with techné. It is possible to learn from techné about productive knowledge, certain kinds of materials and tools adaptable to minor and major scales of architectural production, and social relations specific to particular cultures, economies, and geographies.

Techné is neither a static act (of practice) not a normative body of knowledge. It can be designated as a dynamic act and knowledge (power), which includes learnable, transferable guides and strategies. Thus, the extancy of techné in architecture is stable enough to be adapted to understand and interpret particular situations and purposes. Therefore, this thesis not only defines techné as "a generative therefore emancipatory act" and "knowledge of making" but also uses it as a methodological tool where the act of the thesis itself offers a generative doing.

[280] Paul Greenhalgh. "The History of Craft". *The Culture of Craft: Status and Future* (eds. by Peter Dormer), Manchester: Manchester University Press, 1997, pp.20-52

CHAPTER 4

A TECHNOPOIETIC INVESTIGATION: A TACTILE CONTACT WHERE THE METHOD ACTS AS A GENERATIVE DOING

The knowledge production by making as a generative practice cannot be demonstrated only through a theoretical framework; however, it has to be practiced. Techné resists a static normative body of knowledge as well as the identification with a normative subject.[281] It is neither private knowledge, the product of unique genius nor a mysterious faculty. The subjects in making processes designated with techné are often in a state of flux or transformation. However, the contingency involved in techné consists of the subjectivity of one who uses techné and who practices techné in any formation, since it highlights a domain of intervention and invention. It both enables the transgression of boundaries and attempts to rectify transgressions.[282] Thus, in this kind of generative practice, is the outcome of this state of flux through extending of boundaries, personal transformations, and relationships through interventions and inventions. This chapter, therefore, presents a tactile contact with the archival material where the author positions herself as 'the practitioner'; and where a technopoietic investigation acts as a generative doing. Rather than a conventional historical account of practical knowledge of architecture, this part traces a compelling method for the research of the generative capacity of knowledge and practice of architecture. Techné is instrumentalized as a tool not only in search for practical knowledge but also practicing knowledge generation that is open to

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[281] Janet M. Atwill. *Rhetoric Reclaimed: Aristotle and the Liberal Arts Tradition*, New York: Cornel University Press, 2009.

[282] Ibid.p.48

further interpretations. As the indispensable questions of techné in making practice and constitution of know-how, first, it is necessary to initiate the questions of ‘what’ and ‘how’ towards the process.

4.1 The Questions of ‘What’ and ‘How’

In respect to the question of *what,* this chapter analyzes the discourse of techné as the main contribution of the thesis is grounded on the claim that techné is a discursive formation in architecture. Through discourse analysis, the thesis exploits an operational dismantling of the objects of techné discourse that define and actuate discursive mechanisms. Through the exploration of linguistic and material figures, the network is assembled through discursive maps as the web of relationships that make the internal mechanism of techné discourse possible and produce unique knowledge from their relationality. Utilizing its own methodological acts, the thesis practices a generative doing, where the relative relationality flows and makes technopoietic investigation possible. In a discursive formation, the meanings and objects are endured into an order, which can be followed, operated, decomposed, and recomposed by exploring the inward mechanisms, and structures from an internal position. Embodied in a technopoietic inquiry actualized by a dismantling operation following a critical analysis of circulating statements, the maps denominate a reconstruction of new relations in a new context for new interpretations.

Introduced as a discursive formation in architecture in this research, techné is investigated as central to practices, demonstrating a relationship between architectural works and their ulterior meaning. References to techné almost always raise issues about meaning since it is an activity of semantic construction and knowledge production by making. To understand how meanings through techné discourse are socially constructed, including textual, material, technical, and technological practices in a specific historical context, determining a ‘limit’ emerges

as a necessity for the analysis. In parallel with the claim fundamentally inherent in the 'post-modern' and 'post-structuralist' thought that, although meaning and value are inherently established in the consciousness of the subject, it is not subjective; however, it is the result of social practices, the thesis work demonstrates an operational practice through investigation and analysis in a certain geography, at a certain time and from a certain position. Furthermore, tactile contact cannot be separated from personal and contextual accoutrement. Therefore, it proposes an excavation through internal experiments and interpretations that are not independent of, but a part of the societal, cultural, and political spheres of architecture. The technopoietic investigation then proposes a reimagining of architecture as a tectonic event[283] in a particular geographical context, where the materiality, with all its practice and knowledge gains, produces, and manifests particular meaning within a specific geography and its cultural, societal, and political references. Therefore, techné will be instrumentalized in this research for a technopoietic investigation and an act towards architectural practices in a specific context[284] Turkey, within a

[283] The approach of the thesis does not directly follow it however, it is beneficial to remember "critical regionalism," which offers an architectural position within globalizing trends and strives towards a form of cultural, economic, and political independence.

[284] Although within the changing architectural matter of the 20th century, the transformations, and evolutions in architectural production in Turkey were not different from other world regions, it has been distinctive and unique to the context. The change and transformation in the economy, social, cultural, and political structures of modern society, which were identical to the industrial society, did not follow a linear line; however, they gained new forms and contents. Besides the developments in thinking and making in the recent past, the 20th century has been an ascendant period in architectural design and production practices with the increasing population and urbanization developing in parallel with the increasing building stock. This was a period of richness in which architects sought innovative relationships via their disciplinary tools and material and technical diversification which addressed 'new' ways of thinking and doing. In Architects and Construction, Philippe Potiè states that the relationship between architectural and intellectual production practices, which changed with the use of steel and concrete in the 20th century and were developed by greater technology and aesthetics in the later period, lost their sharpness over time. However, the ties of architects with construction still sharply manifest themselves in the current practical and theoretical arena. The war years witnessed individuality and extraordinary speed, industrialization, and rapid production. It may also be possible to see the 20th century as a period in which the architectural subject, who is trying to find a place among the new materials, technology use enthusiasms, and construction realities, must make a distinctive synthesis in the whole of design and construction. Philippe Potiè Virginie Picon Lefebvre. Cyrille Simonnet. *Mimarlar ve İnşaat: Konuşmalar* (çev. Alp Tümertekin), İstanbul Janus Yayıncılık, 2017 (originally: *Les architectes et la construction, Entretiens*), p.7 2017, pp. 18-19

particular time the 20th century,[285] specifically the years between the 1980s 1990s at the turn of globalization and digitalization,[286] and due to the 'multiplicity', 'complexity', and 'variety' of data.[287]

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[285] The 20th century can be contextualized for Turkey with the gained emergence in the intellectual, technical, material, and technological fields, and experienced on a global scale with the global changes, transformations, population growth, and urbanization. The period is seen as an era between "dreams and reality." The century is the era of utopias, and imaginary structures where many styles come together with the craze for technology, transportation networks, dreams with aircraft above ground, air-conditioned clothing, less working hours. On the other hand, it is the world of fascism and communism between two world wars. See. Doğan Hasol. *20. Yüzyıl Türkiye Mimarlığı*, İstanbul: YEM Yayınları, 2017. 1950-1980 period in Turkey, despite the increasing immigration and population density of the 20th century, building construction increased rapidly, the private sector strengthened, the built and urban environment were physically, and socially constructed, and new materials, techniques, and technological applications were tried, It was a period in which modern city construction takes place with new function proposals such as office buildings, banks, and hotels. In particular, the 1950s, which Hasol called "Modernism/International Style", and the 1960s and 1970s, which he called "the pursuits against uniformity", point to the permanence of "a thought that is both anxious and playful" and which strives to interpret and synthesize modern city-building processes. Akcan and Bozdoğan contextualize the same years of local practices and assert that especially the new generation of architects who graduated in the second half of the 20th century, were trying to fully explore the formal possibilities of technical knowledge and materials (especially reinforced concrete) to create a new social life through construction; in other words, social construction. The multiple roles of the architect (designer, the employer, the builder), coupled with the experimentation of design and construction processes where architects can transfer their previous experiences in another integrity, all had special importance. See. Sibel Bozdoğan. Esra Akcan. Modern Architectures in History, London: Reaktion Books, 2012, pp.139-171 and İlhan Tekeli. "1980'li Yıllarda Türkiye Ekonomisinde Dönüşüm, Modernitenin Aşınması ve Planlama", *Modernizmin Yansımaları: 80'li Yıllarda Türkiye,* Ankara: Efil Yayınevi, 2017, pp. 8 and R.Funda Barbaros. "Editörlerden", Modernizmin Yansımaları: 80'li Yıllarda Türkiye, Ankara: Efil Yayınevi, 2017, pp. v

[286] The notion of techné faced radical changes between locality, standardization, and digitalization in that period. However, that specific time also heightened societal communicative systems of architecture with the appearance of complexities and contradictions. The years in Turkey were represented by such changes and transformations in social and cultural structure, economy, and production. The 1980s are seen as 'new times' for architecture in Turkey, as expressed in theoretical studies, fostered by neoliberal approaches in economic and social policies in paralleled globally, with all their positive and negative aspects.

[287] As the social structure evolves in the modernization process, nature with the process of modernization itself acquires new forms and contents. As claimed, architecture sets out to create its own specific and autonomous epistemology in the 1980s and ever since the Republican era, when discussions on modernity began. See Uğur Tanyeli. *Panel: Cumhuriyet Döneminde Mimari,* Ankara: TMMOB Mimarlar Odası Ankara Şubesi, 1999, p.17 1980 marked the beginning of a new socio-political context in Turkey with radical changes in politics. The neo-liberalization process was introduced into the economic-political sphere and became a government policy after 1984. Thus, globalization, liberalization, and freedom in import became the determinants in the new economic model. New construction materials were imported, and the service sector developed. This period is viewed in the history of the 20th century as being the era of the "private sector", "expanded building facilities", "rapid and excessive population growth", "impersonal, scaleless structures", "land speculation", "dense and congested construction", "incompatible skyscrapers", "transition from squatters into apartments" which all contributed to the production of ordinary environments. Although it was hard for the society due to the long-standing habits in parallel with political discourse, architecture has become autonomous from the political and social structures for the first time since the Republican years. It was the years when one-to-one connection with political discourses has disappeared. See also Doğan Hasol. 20. Yüzyıl Türkiye Mimarlığı. İstanbul: YEM Yayın, 2017, pp.214. The

The question of *how* directly refers to the archive, the method, and the methodology of the study. The archive, *a priori* of history, is conceptualized as "not of truths that might never be said, or really given to experience; but that is given, since it is that of things actually said",[288] and "the general system of formation and transformation of culture's expressions" in Foucauldian terms.[289] An archive cannot be understood as a mere collection of written documents in this definition; rather, it means various practices of reminding and memory. The word archive is derived from the Greek

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main parameters of the transformation that started in the 1980s are summarized by İlhan Tekeli in four dimensions; transition from the industrial society to information society, from Fordist production to flexible. The definition of the 'years of change' is often used in Turkey to relate to the time between globalization and digitalization. It was a period that required a completely new approach, technical knowledge, and advanced industrialized building systems and techniques, resulting in knowledge alienation, which was seen to enrich the discussion in terms of exploration of learning mechanisms that developed against this alienation: from a body of national states to a global world, from the modernist mentalities to the world of postmodernism. This period is often declared as being this modern-post-modern transition in architectural studies and discussions in Turkey. Post-modern is linked to inconsistency; the instantaneous reactions of people, the possibilities of local without universality and inter-subjective approaches as the result of the inability in social order guided by universal claims of science, technology, ethical principles, and art. This epoch is also remembered for the production of 'kitsch architecture' including both the "material conditions of the consumer culture" and the "plurality in the formal language of architecture." In this period, the status quo of the first sixty years of the republic began to be questioned. State control over the economy was limited while personal freedom, the place of religion in society, and minority rights were discussed in a way that was never been seen before. See Didem Kılıçkıran. "Kitsch and Architecture: The Production of Kitsch in the Architecture of Turkey in 1980s and 1990s", M.Arch Thesis, Department of Architecture, Middle East Technical University, 1996, Sibel Bozdoğan. Reşat Kasaba. (eds.) Türkiye'de Modernleşme ve Ulusal Kimlik. İstanbul: Tarih Vakfı Yurt Yayınları, 1998, pp.1. It is possible to envisage that period as a threshold when looked at today: the power of change in thinking and making that differentiates our understanding of the tools, techniques, materials, and their contributions towards creating a discourse with the way they take place in the texts and visuals. The language of architectural production, its spatial character, processes, actors and therefore meaning have all critically changed. In the scenes in which this change is represented, the tools of popular culture have diversified and multiplied in this period. These framed years in Turkey with all the displacements, transformations, continuities and discontinuities, ruptures, limits, and other events require the conducting of a work of analysis, which is inherited by its own making rather than turning attention to long periods and its long-term changes, adjustments, fixing constants, spread, linear successions, and continuity. Rather the intention in this research is to question peculiar architectonic discontinuities, appearances, and disappearances of unities, using the a microscopic lens of architectural historiography and theory for methodological demarcation. Discourse, in this sense, is a very extensive concept that pursues the complex relations within architectonic categories, rules, mechanisms, and classifications, which create both ordinary environments and recognizable characteristics.

[288] Op.cit. Foucault. 1972, p.127

[289] Ibid, pp.127-129

arkhē, which refers to the voices of origin, edict, and law.[290] In further usages in Greek, *arkhē* is head, origin, power, law, edict, the primitive, original principle where the unconditional sovereign causes. The etymology of the archive indicates authority, patriarchy, or power. Archiving things in this sense is not ordinary storing, rather it is gathering things (documents, objects, etc.) for an extrinsic reason. An archive directly refers to various formations related to the collection of concepts and memory, including documents and monuments, as the term architecture contains etymologically adjacent concepts of *arkhē* and *tékhnē*.[291]

The legitimization of the archival document is based on its testimony to the truth or value. In Foucault's terms, the archival document is a source to trace. In this definition, the indication of tracing is based on the act of tracing that has happened and based on the truth, in a way that a flame or smoke are both traces of fire. Therefore, tracing is not in the sense of legitimizing the future or part of an institution or a legal entity, rather, it is the trace of a thing, *the archaeology of knowledge*. Journals, in this sense, are defined as the corpus of documents that the board of referees as the legal identity, entity, or institution can legitimate and have the right to display or not display knowledge. Architectural journals, in this sense, represent power relations, whereby the authority is scholarly produced by architects, theoreticians, specialists, or historians and practically represented by the advertisements of firms, companies, industries, and individual practitioners. Furthermore, journals are archival documents of architectural historiography that render the origin or the end of the law, authority, and legitimacy of knowledge.

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[290] "Archive", https://www.etymonline.com/word/archives, last accessed 24 December 2021.

[291] "Arche", "architecture", https://www.etymonline.com/word/architecture, last accessed 24 December 2021.

The national architectural journals constitute the main *textual corpora*[292] of this research and analysis. (Appendix A) Starting from the 1980s, architecture journals appeared as a powerful medium in which plurality and diversity were articulated, reflecting the rising globalization discernment in Turkey, and the world, through texts, images, and transmission of knowledge by translations. Increases in the number of journals and continual monthly publications indicate broad interest in textual expressions, visual representations, critical thinking, and making. It is thought that the developments, repetitions, regularities, and distinctions followed by the journals within the period focused on creating an agenda and a discursive value concerning a multiplicity of approaches and structures of architectural theory and practice. The produced knowledge is controlled/appreciated/reproduced by institutions and published by enunciators, confirmed by the architectural community, and embeded in the memory of society through permanent archive. The discourse is constituted by statements that are firstly released by experts (scholars, producers, craft makers, builders, designers etc.) with special knowledge. The statements, concepts, phrases, actors, materials, techniques, and technologies in the texts and visuals are significant data to determine the discourse of techné in Turkey within the conceptual framework. From the wide range of journals,[293] the two stand out as representatives of scholar and building practices as well as the institutional presences. The first of these two notable ones is *Mimarlık,* launched in 1963 by the

[292] It refers to a collection of texts that have been put together to be used and includes a large and structured set of texts.

[293] See Appendix 1.1 for the documentation of journals. The archive of this research is not limited to these two journals. In addition to a wide bibliography, including articles, and related sources, the author created her own 'archive' comprising interviews and meetings on a range of topics (village institutions, construction firms, scholars, practitioners, etc.) over the six-year period of this research. This thesis is the result of extensive archival research, and the materials were gathered through multiple visits to libraries, personal and institutional archives, and interviews with Prof. Dr. Enis Kortan, Prof. Dr. İlhan Tekeli, Assoc. Prof. Dr. Funda Uz, Inst. Dr. Çiler Buket Tosun, Çetin Ünalın and Nalan Semerci.

Chamber of Architects. Its significance lies in its being published by an organized group of architects from its inception; that is includes different voices, subjects, and actors; and it provides a medium for the act of knowledge construction in which the Chamber of Architects establishes and institutionalizes its discursive power. In other words, it provides an archive where architecture is discussed mostly from socio-political perspectives as an inherent part of the profession. The journal of *Yapı* has been published since 1973 and is the second longest-running publication after *Arkitekt* (the former version of *Mimarlık* journal) among the Turkish architectural journals. The continuity of its publication, including at the present time, is a significant contribution to the creation of an extensive archive. It was published by *YEM* (Building Industry Center), offering a rich content, including materials, technologies and technical details. *Mimarlık* and *Yapı*, at the intersection of scholarly and structural practices, have discursive dominancy, with over 400 issues,[294] continual publication, diverse content, including a heterogeneous repository to enable the tracing of technopoietic circumstances, via an extensive framework, of the repetitions, regularities, and distinctions. (Figure 4.1)

[294] Museums, albums, and libraries are accepted as a network of storage centers to trace archival documents since they are not gathered as a mere collection yet due to legally collecting rationale. The journal of *Mimarlık* has a transparent archive in a digital platform to trace. However, in *Yapı*, only the contents of each issue are reachable. Thus, for the archival research, the digital library of *Mimarlık* and several archival spaces, including TMMOB Ankara, university libraries, and personal archives, have been visited to reach the related documents. The manual labor in tracing the 'archaeology of knowledge' enforces the scholar work of the practitioner as an inseparable part of doing in the progress.

Figure 4.1. The *textual corpora* of the research (produced by the author)[295]

The question of *how* from a discursive perspective, exists through discursive understanding, how techné discourse functions, and how it produces its effects in architecture.[296] This chapter, thus, further investigates the question of 'how' by identifying 'the objects' and 'mechanisms' from statements by which the whole discourse functions. The archive is traced with a technopoietic inquiry and 'excavated archaeologically'.

Architecture's complexity can be inferred from the variety of interactions evident. Discourse forms a system of statements in architecture that steers thinking and making practices. The interaction creates complexity and multiplicity of architectural acts: writings, drawings, and buildings that bear both theoretical and practical means. The activity of building is not the ultimate goal in architecture. Building knowledge by producing criticism, aspiring philosophical dimensions of making, and writing about architecture, are all as significant practices as the building construction itself. Texts and images are powerful cultural products of architecture.

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[295] There are repetitions of covers for some issues which are excluded from the collage. However, even the repetition in visuals contributes to discursive formation. The *textual corpora* of the research includes over 164 issues and over thousands of articles and images that are archaeologically excavated from the digital achieve of *Mimarlık* and printed issues of *Yapı*.

[296] Op.cit. Teymur., p.93

Multiplicity in making activities, either in theoretical or practical form, contributes to the accumulation of architecture. The aim of this research is not to conduct a periodical reading from a historical perspective by carrying out buildings as formed objects.[297] Rather, the study traces how techné discourse produces a powerful effect around objects by circulated statements and how it works through exclusiveness, repetitions, appearances and disappearances, and regularities in creating unity. In this sense, the following part attempts to analyze techné discourse.

4.1.1 "The Formation of Objects"

Discourse has been elaborated from various perspectives by different theoreticians across various areas.[298] There have been diverse approaches to treating discourse from different frameworks. One of the two dominant approaches is linked to a perspective that elaborates discourse as a "purely linguistic matter," while an alternative theoretical perspective defines it as a "complex group of relations, irreducible to a mere linguistic concern."[299]

[297] The presence of architectural texts cannot be ignored regarding this accumulation and discursive knowledge of the discipline. The 1980s in Turkey, in this sense, was a significant time period, as practitioners, theoreticians, and historians thought, wrote, and acted critically by questioning the previous era, its situated concepts, tools, technologies, materials, and modes of making. The multiplicity of different voices on various subjects is the dominant characteristic of the era.

[298] Michel Foucault. *The Archaeology of Knowledge*, New York: Tavistock Publications Limited, 1972. Ian Parker & Erica Burman. (eds.) *Discourse Analytic Research*, London: Taylor and Francis, 1993. Deborah Schiffrin. *Approaches to Discourse*, Cambridge: Blackwell Publishing, 1994. Necdet Teymur. *Environmental Discourse*, London: Question Press, 1982. Sarah Williams Goldhagen. "Something to Talk About: Modernism, Discourse, Style", *Journal of the Society of Architectural Historians*, 64 (2), 2005, pp.144-167

[299] Op.cit Basa, 2009, pp.271-279

> Meanings are embodied in technical processes, in institutions, in patterns for general behavior, informs for transmission and diffusion, and in pedagogical forms.[300]

Certain approaches looked for answers as to how meanings are constructed in the late 1960s and the 1970s. Within different definitions and conceptualizations, Michel Foucault's definition of "social and material existence of knowledge, without regard for their truth" was an inspiring and guiding one on both structural context and methodological grounds.[301] The term discourse is conceptualized as a particular notion based on the "social dialogue of all speech and writing" and a standpoint through relations. The analytical approach adopted by Foucault to discourse still offers a prominent method in terms of the search for the dynamic nature of techné and the complexity of practical knowledge of architecture.[302] The method validates inquiries in which a group of statements, concepts, enunciations, spoken or unspoken, written or unwritten, all formations of discourse, are circulating. As Diana Macdonell asserts, Foucault developed a different strategy to help understanding "what has made possible knowledges" that reflected the essence of things.[303] Instead of writing a history of ideas on madness and treatments, as Macdonell explains, Foucault investigates how past thoughts and discoveries, including errors towards the present truth of psychiatry, were embodied.[304] Dismantling knowledge arises out

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[300] Michel Foucault. "History of Systems of Thought*", Language, Counter-Memory, Practice*. (trans by Donald Bouchard and Sherry Simon), Oxford: Blackwell, 1971, p.200

[301] Ibid. Foucault.

[302] There are also critical interpretations to Foucault's approach. See, e.g. Derek Hook. "The 'Disorders of Discourse', *Theoria*, 2001, pp.41-68. David Shumway, Ellen Messer Davidow. "Disciplinarity: An Introduction", *Poetics Today*, vol.12, no:2, 1992, pp.200-210

[303] Diana Macdonell. *Theories of Discourse: An Introduction*, Oxford UK, Cambridge USA: Blackwell, 1986, p.83

[304] Ibid.

of things and reflects their essential reality, a sequence of meanings, technical, institutional processes, and mechanisms in which discourses are embodied. Thus, it offers a path for understanding techné and how technical and practical meanings are produced in architecture.

The multiple layers of architectural components and communicative patterns can be investigated in texts. However, discursive knowledge is not reducible to mere language, but is highly linguistic on the other hand.[305] Based on the Foucauldian framework, one can assert that discourse consists of a system of statements that conduct complex relationships. These relationships between different constituents either reinforce or control the discursive object. Due to its being a system of statements "which form an object, a field theoretically,"[306] discourse analysis is selected as an auxiliary method to understand and untie the complex formations.

> I would like to show that 'discourses', ... are not ... a mere intersection of things and words: an obscure web of things, and a manifest, visible, colored chain of words; ... discourse is not a slender surface of contact, or confrontation, between a reality and a language, the intrication of a lexicon and an experience; I would like to show ... that in analyzing discourses themselves, one sees the loosening of the embrace, apparently so tight, of words and things, and the emergence of a group of rules proper to discursive practice.[307]

Within the multiple ways of understanding and analyzing discourse, this thesis suggests revealing new meanings and readings by identifying complex relationships. It questions how techné constructs its historical and discursive formation in

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[305] Basa. Op.cit. 2000

[306] Op.cit

[307] Ibid Foucault. p.48-49

architecture. As a requirement of discourse analysis, the discursive objects of techné and their mechanisms in architecture will be identified.

> In the system of formation….it is not the objects that remain constant, nor the domain that they form; it is not even their point of emergence or their mode of characterization; but the relation between the surfaces on which they appear, on which they can be delimited, on which they can be analyzed and specified.[308]

The preferential characteristic to underline in the analytical approach is the "formation of discursive objects" that are appeared as figures 'evoked in words and images' and stand in the discursive field of architecture. Considering the entirety of techné in light of Foucault's definition of the 'formation of the objects', it is possible to define 'series of objects' that constitutes 'formal construction' and 'rhetorical practices'. Thus, the objects of techné are specified in two 'enunciative modalities': *material, technique-technology, actors, applications-productions* (the material triad of techné: actors-tools-actions), and also *concepts, phrases, definitions-classifications* (the linguistic units of discourse). (Figure 4.4) These two groups designate the 'discursive structures' by material and linguistic units that transform technopoietic investigation into discursive formation; they together regulate the objects of techné discourse and create the discursive web.

4.1.2 Knowledge Excavation towards the Status of Techné Discourse in 1980s Turkey

Concerning the relationship of techné with material/structural/ontological construction, the discourse analysis is formulated on two media: knowledge

[308] Op.cit Foucault. 1972, p.47

excavation through statements in articles; and through statements in advertisements. Scholarly-produced statements in articles are the ultimate linguistic sources for analysis and searching for practical knowledge of architecture in theoretical and ontological forms. The study defines images as powerful archival sources as words creating their own representative and discursive mechanisms with their circulating statements. Advertisements, in this sense, are the sources of visual and textual manifestations yet, more significantly, have discursive potential due to being statements of the invisibles, or 'others' that are unheard or unknown actors, techniques-technologies, and materials. (Figure 4.2) An analytical approach towards the system of statements in different media intends to make them visible in architecture. The statements were not randomly or holistically selected rather circulating ones as the ever-practicing figures in material, techniques/technologies, applications/productions of a powerful formation of techné are considered.

Figure 4.2. Certain statements in advertisements (produced by the author)

Architectural discourses are often fed by representations in the written tools of culture as well as from the academic and professional publications of historians, theoreticians, practitioners, and critics. The discursive objects of techné have been handled with historical, social, and cultural backgrounds in advertisements and

articles as they have a polyphonic relationship both with the words and images and with the multiple actors, including practitioners, suppliers, writers, techniques, etc in the specified years. The essence of advertisements comprises provocative statements, symbolic meanings providing intriguing textual and visual languages, and an inner reference mechanism that triggers intertextual readings between them. They also constitute 'discursive structures' to explore, which are rich in context with a 'multiplicity' of silent actors (i.e. model-makers, craftmakers, material suppliers) involved in architectural practice and 'complexity' of their multiple relations with various materials, activities, techniques, and technologies. Thus, words and images together 'build' rich and complex structures. (Figure 4.3)

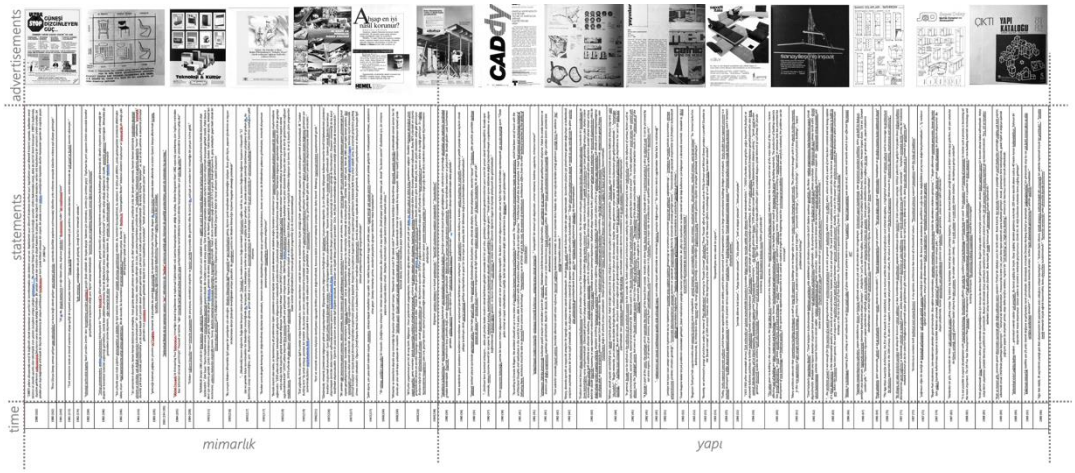

Figure 4.3. Knowledge excavation by discourse analysis through statements in articles and advertisements (produced by the author)[309]

The research intends to situate different contributions to the ontological body of the discursive framework. Statements in advertisements and articles are different in their communicative systems, but they together present the practical and theoretical climate in architecture and facilitate discursive mechanisms in both *Mimarlık* and *Yapı*. The related statements from the extensive number of articles and

[309] See Appendix. B.

advertisements have been collected from over 164 issues of these journals. (Appendix B) From the collection of the statements in the original texts, the discursive objects of techné are archaeologically excavated, dismantled, and presented. (Figure 4.5- 4.8) The research produces its unique knowledge through its archival collection and in the way of making the discursive objects visible.

Two compelling factors occur from the analysis process; the first is the difficulty in determining the scope of performing the analysis due to the constant alterations within its broad framework of techné in changing technologies, paradigms, and contexts in the field. The other factor is based on the translation problem[310] between two languages that emerged in the analytical process since the meanings are constructed within their specific language and cultural and social contexts. These problems necessitate developing relevant research strategies that transform problems into methodological solutions.

Furthermore, there are many concepts, paradigms, theories in change and evolution in the field of architecture that make comprehension and analysis of techné discourse difficult. In Forty's *Words and Buildings*, architecture is explained in reference to Roland Barthes's three-part system that "constituted out of the building, its image

[310] Since the research frames the context of Turkey for the discourse of techné, there occurs a translation problem in the analysis of written documents. In the framework of this research, which is narrowed to the context of Turkey, the words necessarily take their meanings from the particular language that they are used in. Indicating the significance of the words within their original language, Forty asserts that "it would be unwise to assume that the word Form in German will mean quite the same thing as "form" in English- yet as the English use of the word concerning architecture owes a great deal to its translation from German, it would at the same time be a mistake to overlook its German sense." To transform this problem into a methodological strategy, it is possible to support the same claim for translating Turkish into English. As this dissertation is written in English, the terms with which it deals exist in Turkish. The selected sources are analyzed, and phrases, concepts, materials, techniques- technologies, and actors are translated. This approach occurs as an internal part of the process, and generative doing; as a necessity regarding the translation problem, as mentioned above. Through the act of translation itself, words, themes, concepts, categorizations, and definitions with materials, techniques, and technologies were re-generated within a new context, new meanings, and new networks of relations. In another sense, this thesis will trace the "words the architecture talks about it, and architects use to design with it." Thus, the contingency of the research method by the thesis plays a role in the construction of its methodology, proposing a trans-operational practice from its philosophical presence to architectural inferences in academia, practice, and theory.

(photography or drawing), and its accompanying critical discourse (whether presented by the architect, client or critic)."[311] However, indicating the power of language that is "not simply gets in the way of architecture but is "a system of its own on a par with that buildings," Forty offers as the forth-part the verbal component that constitutes a significant and sometimes major component of architects' production and the architecture system. Discourse, therefore, forms its particular objects through verbal and non-verbal representations by constructing a formation. It consists of all that is expressed, represented, or meant around these objects. However, in Foucauldian thought, the discourse has a unity that does not necessarily suggest a uniform discursive field. Yet, it is a field of variety and conflicting elements that offers "a complex structured whole."[312] The unity of discourse does not bear the uniqueness or specialness of objects; however, various objects form their own mechanisms within the network of institutional, academic, and social relations. Within the changing nature of the discipline and the scope of the research, it is possible to follow repetitions and reformations in educational, theoretical, or practical fields and the interrelations between them.

To solve the translation problem, the linguistic and material units are specified as concepts, techniques, materials, phrases, and definitions-classifications from the original statements. They are embraced by the 'modes of translating operations'; "(quantitative statements into qualitative formulations and vice versa (the establishment of relations between purely perceptual measurements and descriptions) and by the means used to increase the approximation to refine their exactitude."[313]

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[311] Op.cit.Forty, p.13

[312] Op.cit.Teymur, 1982.

[313] Op.cit. Foucault, 1972, p.59

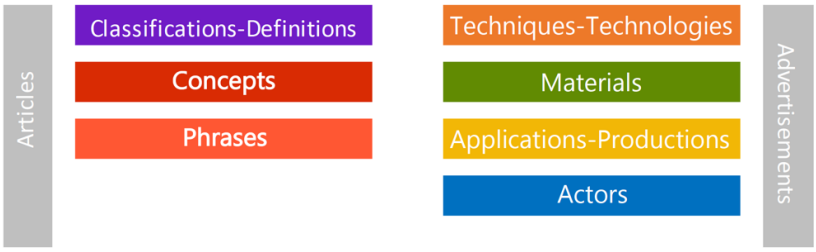

Figure 4.4. The objects of techné as a discursive formation (produced by the author)

The linguistic units provide the development of an understanding through 'thinking' mechanisms and how they work. Definitions- classifications, concepts, and phrases are specified as linguistic units which denominates materials, techniques, technologies. It is possible to linguistically differentiate them from each other. Definitions are different from classifications due to being clear statements in their original languages. Classifications form categorizations. A direct translation of the original statements into definitions is avoided because of the aforementioned translation problem. Instead, as a methodological strategy, classifications-definitions are embraced as groups of words and divided into concepts and phrases that are the knowledge units procured by the original statements. Phrases are smaller figures forming a unit and groups of words that together define a conceptual unit; they hold "the verbal, material, and conceptual agenda of architecture with the semantic pre-structuring" and: "concepts, established under the authority of a discourse, arrange and pattern the related field."[314] Inspite of being significant linguistic figures in a discursive formation, interpretations are not included in the analysis. A concept can be applied to multiple planes with the aid of interpretation. The discursive nature of interpretations provides the mastery of discourse. However, the research limits the linguistic framework because of possible discrepancies in

[314] Op.cit. Basa, 2009 pp.276

direct translation. Furthermore, the study argues that classifications accommodate a level of interpretation.

The material units suggest a comprehension through ‘making’ and how it works with their knowledge. The statements are regulated techniques-technologies, materials, applications-productions, and actors in a variety of forms, and they together form the discourse. Techniques and technologies carry out similar particular indications specifically in articles. Appearing mostly in advertisements and interpreted or criticized in articles, they together demonstrate the artistic, mechanical, and scientific procedures of the work. Since the producers and manufacturers mostly provide the application of particular materials, techniques or technologies, they are grouped as one in this research. Materials have dominancy in specifications of technique, technology, and applications. It is also pertinent to mention common usages in definitions, as in the example of ‘mosaic’, which is given as both material and technique. Actors are determined as private individuals, suppliers, firms/companies, and industries. The analysis, therefore, provides the possibility to evaluate their discursive effects within architecture regardless of any hierarchical structure between them.

Figure 4.5. Excavated classification-definitions from the original statements (produced by the author)[315]

[315] The tables have been produced by the author from the archival research. The tables are alphabetically ordered. Classifications and definitions are both linguistic mechanisms however, although discursively they are not the same. Due to the translation problem however, classifications and definitions are evaluated as a whole. As it is possible to find the references of material mechanisms (material, technique-technology, actors) in the linguistic ones (classifications-definitions, concepts and phrases), the color codes are deliberatively used to make them stand out.

Even within the collection of each discursive structure, it is possible to carry out conceptual readings (e.g. identity is equated with religious elements or locality is declared as internal) or periodical readings (e.g. where building technology is affiliated with the heating problem). It can be claimed from the archival excavation presented in the tables here that analogies (e.g.between construction and medicine or between "delicate architecture" as "tower" and "minaret"), identifications ("façade is technical product" or "mosaic is technique"), functional associations (e.g. "glass panels serve as walls"), comparative groupings ("technician architects, competing architects, artist architects, nameless master, Turkish firms, Western firms or Islamic architecture, commercial architecture, prestige architecture") and vogue interpretations (exp."characterless commercial architecture", "dead styles" etc.) form the discourse of making in the field of architecture. It is also possible to see the circular repetitions such as the use of 'new' (new-rural, new-vernacular, new-technique..etc.), 'technical' (technical data, technical research, technical index, technical structure, technical improvement, technical efficiency, etc.), or 'high/higher' (higher quality, higher technology, high-rise building etc.).

Figure 4.6. Excavated concepts from the original statements (produced by the author)

Figure 4.7. Excavated phrases from the original statements (produced by the author)

The grouping of definitions- classifications, phrases, and concepts both interoperate and conflict with practices. To exemplify, the phrases ‘technologic hegemony,’ ‘technology obstacle,’ and ‘heating problem’ find a place in the construction of ‘sun-houses’ or gain visibility in the advertisements of ‘solar energy companies.’ The phrase ‘climbing form system’ is pre-structured in the conceptual agenda of architecture as ‘tower architecture’. Furthermore, the ‘ranges of archers’ or ‘diameters of cranes’ in tunnel formwork technology occupy and formulate the ‘working order, the ‘dimensions of spaces’, ‘angles’, and ‘heights’ of the buildings. The discourse of techné has a broad and rich formation in respect to verification, qualification, deduction, interpretation, and judgment with definitions-classifications, phrases, and concepts.

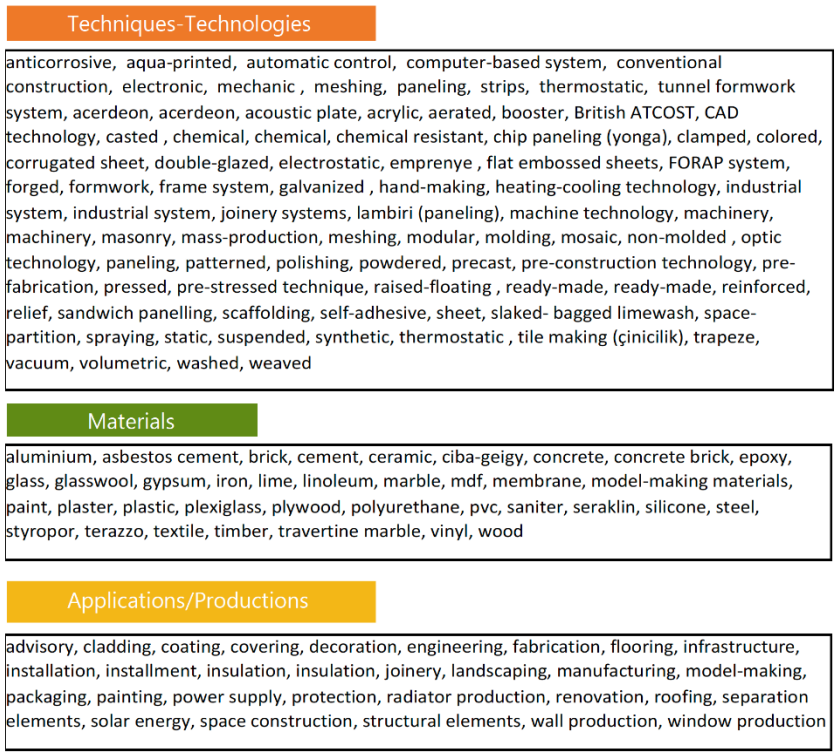

Figure 4.8. Excavated techniques-technologies, materials, applications-productions from the original statements (produced by the author)

The circular repetitions of a certain visual and textual language through images as well as statements are also visible in the analytical approach towards advertisements. Even if there is no textual statement in some of the advertisements, the statement of the image itself has gained discursive dominancy due to its power in representational language in circular visibility. (Figure 4.9) Advertisements as the manifestations of everyday discourse not only dominate techné discourse but also provide incorporation between linguistic and visual spheres of influence of the discourse. Although different actors are visible, the textual and visual statements share commonalities in some examples. (Figure 4.10)

Figure 4.9. Certain circulated repetitions in visual and textual statements (produced by the author)

Advertisements can be interpreted as quasi-scientific publications in consumerist tendencies in which certain geographic, technical, and architectural design images are imposed and sustained. However, every actor, either private, firm, company, or industry, in every conceivable context, talks, publishes and writes about "technique, technology, beauty, and aesthetics". The actor-tool relationship appears within multiple varieties of statements in advertisements.

Figure 4.10. Circulated images and statements of model-makers (produced by the author)[316]

[316] Circulated images with statements that together form techne discourse.

4.1.3 From Discursive Objects to Relations

A discursive formation is enabled by a group of internal relations that are "established between institutions, economic and social processes", including "behavioral patterns, systems of norms, types of classification, modes of characterization", not presented in the object yet deployed when the object is being analyzed.[317] Such an analytical approach towards these relations, links between institutions, actors, practices, theories, concepts helps to understand the theoretical and practical formation of knowledge of making and techné discourse.

> The archaeology of knowledge…the episteme is defined as the ensemble of relations that can be discovered, for a given period, between the sciences and the network of connections that can be found between knowledge, when one analyses them at the level of discursive regularities.[318]

Discourse defines a heterogeneous field that includes regularities and errors.[319] The relations internally form a network in a discursive formation which some changes, such as appearances, disappearances, placement or replacement, strengthen or weaken the effect. The whole creates and establishes discursive unity, which is essential in discursive formation. In Foucauldian thought, investigating history means understanding the current and/or present while not making assumptions about progress or regression; it is not a question of relating how an ideal present arises or can emerge to a single historical truth or direction. Instead, the primary approach is to use history and theory to identify the present to instrumentalize it. Thus, discourse analysis offers a research method for determining written, spoken, and drawn

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[317] Op.cit. Foucault, p.47

[318] Ibid. p.191

[319] Op.cit. Macdonell.

language in its social context to develop a comprehension of how language is used, how it forms its discursive objects, and how they work in architecture.

In parallel with the thesis's claim, analyzing the thesis' own ‘ensemble of (invisible) relations’ is essential for discursive practice. Putting discursive objects in a web of relationships provides knowledge generation by practice in comprehension the changing effect between objects, nonapparent connections. Hence, the transformation of a technopoietic investigation can turn into an act of unique knowledge generation. It is reflective practice, from the selection of tools to defined operations, revelation, and the integration of determinate-indeterminate knowledge that occur from interrelations.

4.1.4 Knowledge Generation through Operational Relationalities

This section demonstrates a set of operations through generative mapping and constructs a web of relationships by assembling the discursive objects of techné in social network formations. These networks are regulated by linguistic and material units, which are discursively regulated by statements, and generatively processed on defined relationalities, operated by data-driven mapping tools. Hence, the thesis provides a generative doing through knowledge generation as discursive practice.

The research has ensured its methodological ground by the collection of data, and analytical and generative processes towards the system of statements where the theoretical and practical formation of objects are regulated. The collected data were gathered, ordered, and investigated through archival excavation and discourse analysis. The linguistic and material units are transferred into the web of relationships. Utilizing maps and using ‘social network theory’ introduced by Durkheim, Tönnies Simmel, and further Latour and the ‘communicative societal systems of architecture’ defined by Schumacher, the study actuates a technopoietic investigation into an act. (Figure 4.11)

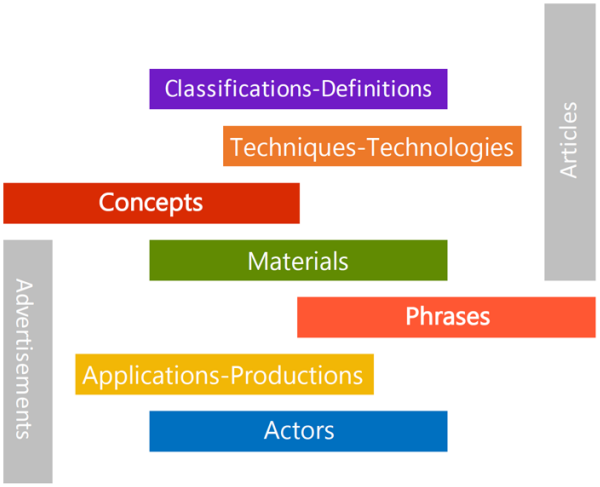

Figure 4.11. The relational readings of the discursive objects (produced by the author)

The social network theory (social/communication network analysis) chases the web of social relationships that surround actors and structural components of discourse, which has been one of the prominent research traditions in the study of knowledge creation, diffusion, and utilization in a specific area.[320] The first appearance was observed in the theories and research of Emile Durkheim and Ferdinand Tönnies in the late 1890s, and in the further studies of Georg Simmel in the 1900s. Tönnies' arguments originated from the interaction of German *Gemeinschaft* (community), *Gesellschaft* (society) and the interactions between social ties that link individuals sharing common values or beliefs or impersonal, formal, and instrumental social links. Based on a method of research for identifying the relational structure in a system and analyzing relational data about communication flows, it includes interpersonal, inter-material, or inter-conceptual relationships as the constituents of analysis. The distinctive emphasis for this method specifies the network analysis as a material-semiotic method based upon communication links, rather than on isolated individuals or things; thus, it enables the researcher to "explore the influence" of

[320] William N.Dunn. "Social Network Theory", *Knowledge,* Vol. 4, Issue 3, 1983, pp.453-461

other components.[321] By the 1970s, its usage had gained momentum in many fields, including, but not limited to, sociology, economics, anthropology, geography, political sciences, literature, sociolinguistics, and technology. Beginning in the late 1990s, social network theory has been developed and applied with new methodologies, emerging digital accumulation, and online platforms.[322]

Social networks are generally emergent, generative, self-organizing, and complex systems. The discursive structure appears from the interaction of relationships between discursive objects. In this sense, the theory is embedded in the analysis method, namely on collected data and its relational interpretation. Since the whole system of the knowledge of techné with discursive mechanisms consists of a series of objects (concepts, phrases, classifications, materials, techniques, technologies, actors), it is not possible to develop an idea about the whole without examining each object and their interaction. The method allows for making a contextual exploration with various constituents together; thus, the research elaborates on how to represent

[321] Everett M.Rogers. D.Lawrence Kincaid. *Communication Networks: A New Paradigm for Research*, New York: Free Press, 1981, p.xiv

[322] The actor-network theory, a specialized field of study in social network theories, as a material-semiotic method uses the simplest features of networks and adds actors (human) and actants (non-human objects) to a relational system. Latour explains that thinking in a web puts an end to the dominance of distance or proximity rather the relations of close elements are broken and resolved with an infinite distance. To avoid homogeneity of modernism in which the hierarchy moves from larger parts to smaller with a centric approach or the postmodernist approaches where there is no local hierarchy of homogeneity, Latour indicates the necessity of determining language that can be a valid model with a holistic perspective. When the connection of distant elements is reconstructed, they can be close again on a distinctive feature or relation. Law states that like other material-semiotic approaches, the actor-network theory describes the material and discursive heterogeneous relationships that sort, produce, and reconstruct all kinds. It is indicated that this method better captures the openness, ambivalence, changeability, and diversity of the most interesting works of material semiotics. Believing in the generative potential of heterogenous relations in specific contexts, he explains that "if the whole world is relational, so are texts, and they tell particular stories about particular relationships from where they came from". In this thesis, the social network has been applied to generative mapping as a tool in constructing the visible and the invisible. See. Bruno Latour. *Reassembling the Social: An Introduction to Actor Network Theory.* Oxford: Oxford University Press, 2005. and John Law. *Actor Network Theory and Material Semiotics in The New Blackwell Companion to Social Theory* (B.S. Turner (ed.), Chichester: Wiley-Blackwell, 2007.

the constructive and generative capacity of practical knowledge both in the research progress of the study and in the broad nature of techné.

> The term architecture is usually assumed to denote either a certain class of artefacts – the class of all (fine) buildings- or an academic domain of knowledge concerned with this class of artefacts or, finally, a professional activity directed towards the production of such artefacts. However, architecture as a system of communications is neither a mere collection of artefacts, nor a mere form of knowledge, nor merely a particular professional practice. Rather it encompasses all three categories: artefacts, knowledge, and practices – all understood as communications that connect to each other in an ongoing, recursive network.[323]

Architecture encompasses a network in which the total theoretical sphere defines "architecture as a system of communications." Patrik Schumacher's interpretation is leading the study's own research process by a practice in which the objects of techné begin first to relate, and then they begin to communicate. As a unifying system, techné discourse in architecture expands its operational and theoretical capacities that make communication possible between its categories, artefacts, knowledge, and practices. Including all its constitutions and a communication system, it has diverse modes of production regarding its multi-layered nature.

Enabling a web of communication, this study demonstrates a set of relationships as a part of the proposed research by practice. Generative mapping is a tool in transformation of discursive formation into communication in which a set of relations are defined and operated as a form of discursive practice to explore knowledge generation. In this sense, the collected data is operated in various maps

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[323] Patrik Schumacher, *The Autopoiesis of Architecture: A New Framework for Architecture*, Wiley, 2011, Vol. I., p.1

of relationships. (Appendix C) The data-driven maps consist of 1730 lines of code and employ the ‘complexity’ of excavated data.

4.1.4.1 Multi-scalar Relations

The utilized objects of techné are assembled on multi-scalar relations. The generative progress is operated through indirect links as well as defined ones and the organic behavior of clusters that hold commonalities and distinctions between them. It regulates ‘clustering as a spatio-relational act’ because floating nodes gain a place in space when connected with other discursive objects. Each connection is the representation of a discursive relation.

Obtained from the statements, *actors, materials, techniques-technologies and applications-productions* are defined as nodes. The interconnections between nodes create edges that are acquired from the discourse analysis on circulating statements in both articles and advertisements. Node sizes change according to the number of connections, which reflects the change in discursive effect. The nodes find their spaces according to relativity of connections. Since there is no center, the discursive objects of techné are in an unbounded map of relations. Hence, the relative relationality between objects becomes constitutive and generative, instead of manifesting distinctive presences.

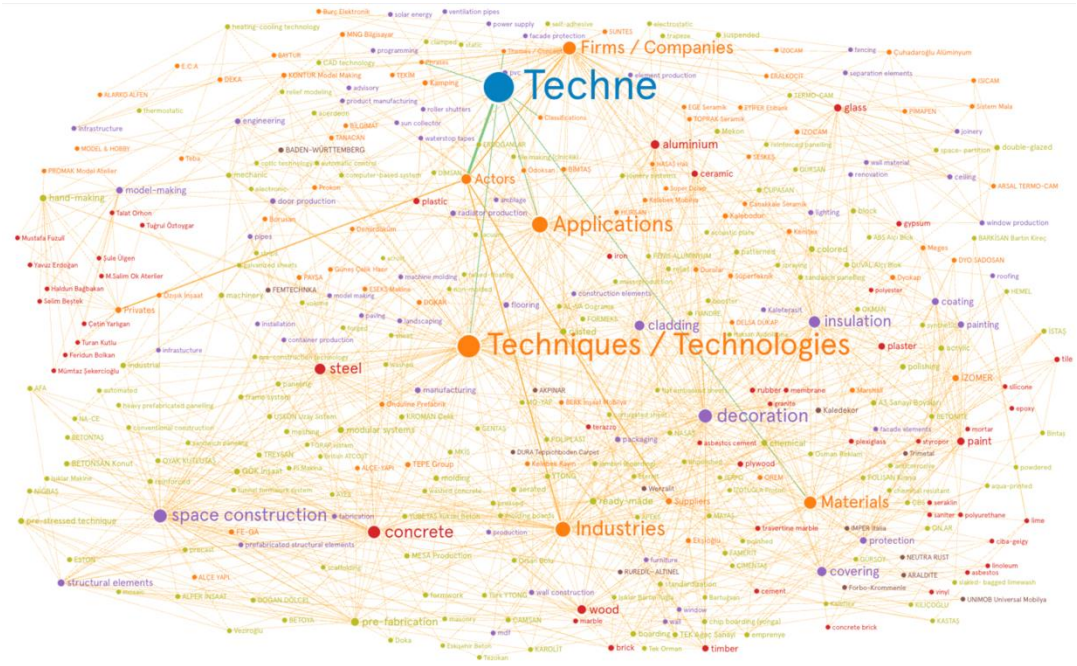


Figure 4.12. Map of multi-scalar relations between discursive objects of techné (produced by the author) [324]

The complex network of practical knowledge is not only the documentation of actors, techniques-technologies, materials, productions, and applications: it is also a discursively operated map that generatively acts through relativity and relationality. (Figure 4.12) The map organizes itself on defined relations and an algorithmic simulation. It is possible to read the whole structure as well as fragmental parts. Clustering enables the examination of discursive structures and structural properties. (Figure 4.13) In the course of established cluster relations, it can be understood that the discourse of techné is dominated by one or more domains such as insulation, decoration, brick, marble, hand-making..etc. through their numbers of relations, frameworks, images, modes of expression and techniques.

[324] For the details of the map, see Appendix. C.

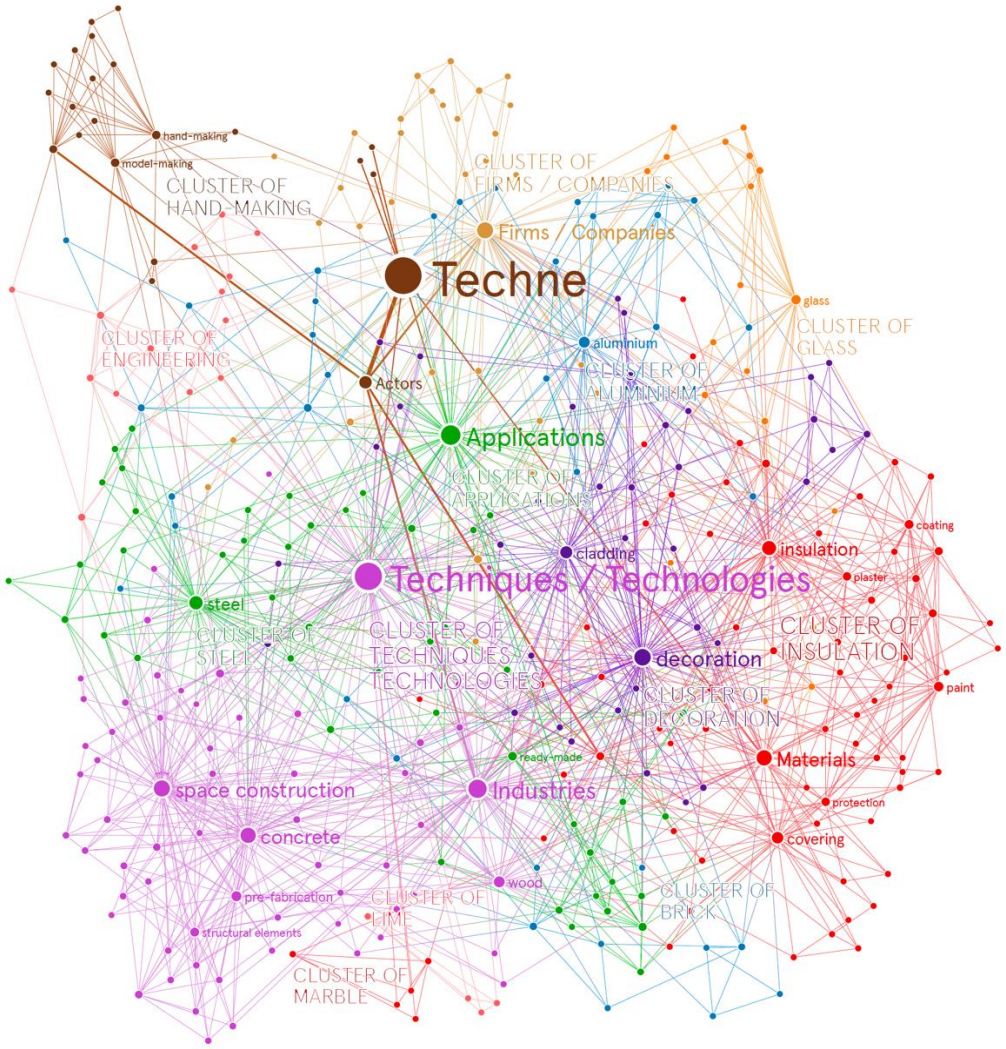


Figure 4.13. Clusters of relations between discursive objects of techné (produced by the author)

Fragmental analyses allow for isolating any node as a part of the whole (Figure 4.14) The commonalities in the shared connections become visible on the map of relations. To exemplify, the cluster of aluminum is connected with the cluster of plastic on shared applications/productions. The connection of 'plastic' creates a relative relationality between the product of a private actor (accordion door production of a private individual actor) and the product of a different actor: a firm (on container

production)[325] (Figure 4.16) Some of the clusters are generated according to their interconnections such as ‘decoration’ and ‘insulation’. Furthermore, the cluster of ‘decoration’ as the generated sub-heading of application, shares commonalities with the cluster of decoration through the connections that are generated upon ‘material’, ‘technique’, ‘industry’, ‘firm’, ‘material’, ‘technique’, ‘industry’ and ‘technology’ (‘concrete, modular systems, YTONG, TEPE Group, brick, pressed, aerated, ÇAMSAN and prefabrication’). (Figure 4.15)

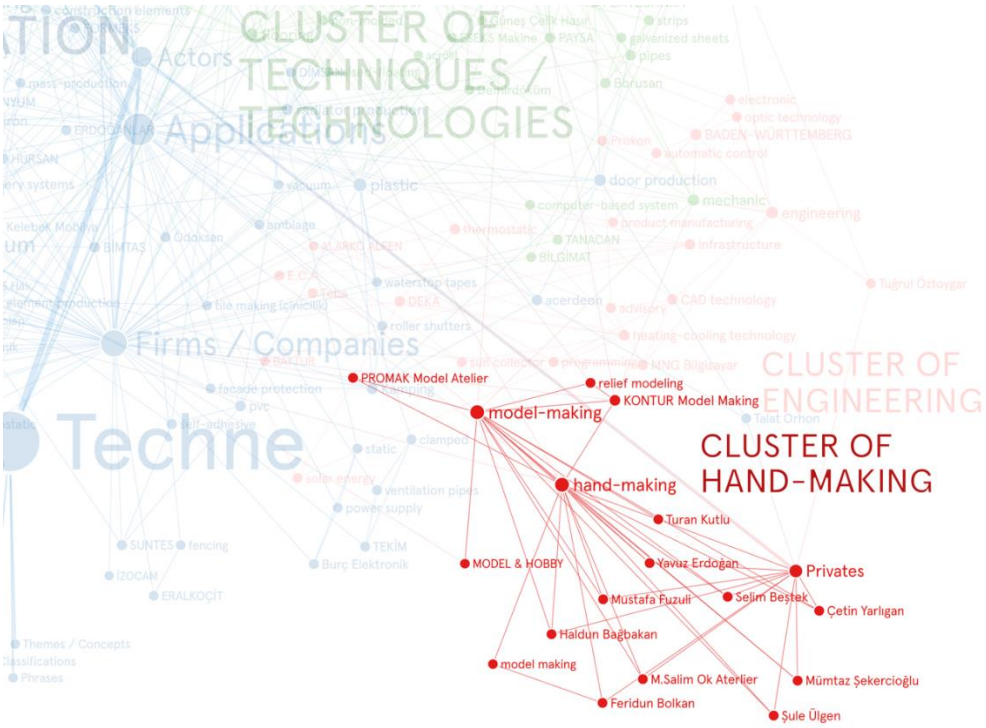


Figure 4.14. The constituents of the cluster of hand-making technique (produced by the author)

[325] The maps make the interconnection between Talat Orhon and PAYSA visible. This specific knowledge is generated from the operated mapping.

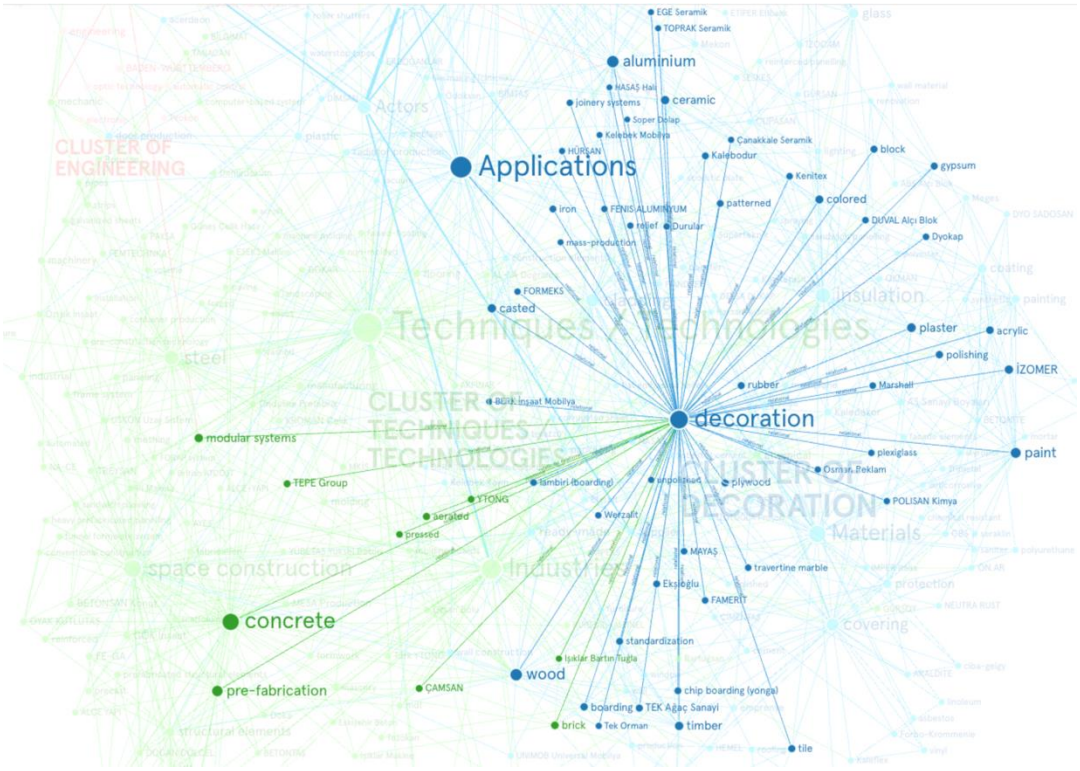


Figure 4.15. The constituents of the cluster of decoration (produced by the author)

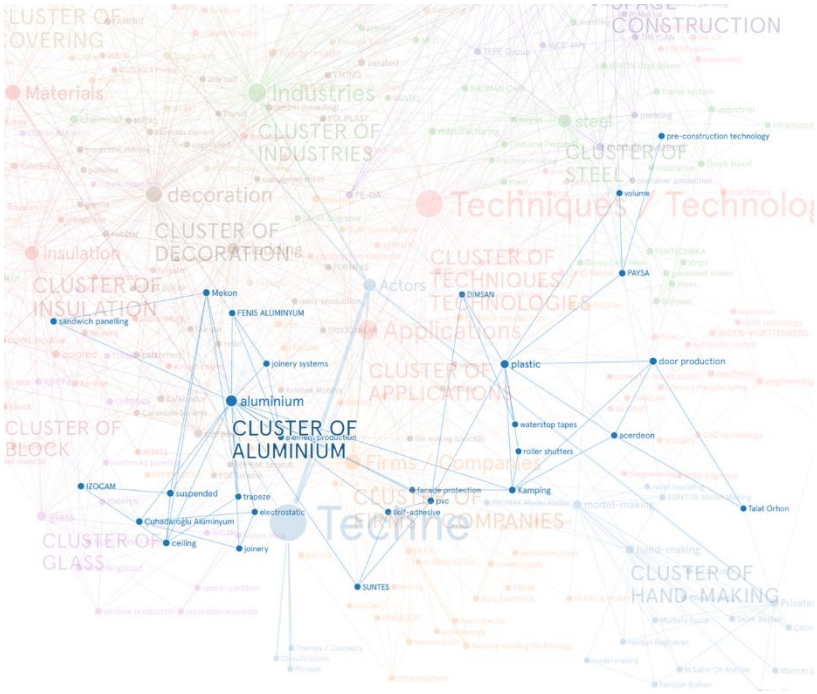


Figure 4.16. Discursively regulated relationship of aluminum with plastic (produced by the author)

The objects of techné that are generatively clustered create a unique assembly by recontextualizing under a common name, which becomes discursively classified, linguistically, and visually coded. In the presented analysis, there is no question of discriminating the types of relations to raise the status of one at the expense of others. There is a danger of claiming the determinant primacy of one particular type of relation as the discursive field comprises all activities, practices, concepts, techniques, and actors that operate the system of statements which constructs the practical and theoretical structures of techné discourse in architecture as a disciplinary unity. However, the generative mapping makes visible the greater sizes and the numbers of connections. Therefore, the discursive power is displayed when some of them strengthen and weaken the objects of that field.

4.1.4.2 Inter-material Readings

The second operation makes inter-material relations and readings possible. Different to the previous one, changing the tool enables the addition of the original statements and images as supplemental layers. Inter-material relations reveal the internal mechanism of techné discourse established through repetitive regularities in different linguistic and material units despite changing expressions. The maps generate circular repetitions, dominance, succession, and regressions in multiple forms: concepts, technologies, actors, etc., so that the discursive power between them becomes visible. Despite the ‘change and transformations’, the discursive unity helps to shape the objects of that field.

> The network that encompasses all the categories of architecture as stated can be referred as a total theoretical sphere to define architecture; "architecture as a system of communications.[326]

Discourse is a powerful agency in understanding and evaluating communicative systems of architecture. Conducting a relational operation provides in-depth visualizations for multi-dimensional data and multiple readings. On the two enunciative modalities, as previously defined, the objects of techné are operated in a way that crisscrosses relationality. This relational operation not only documents architectural knowledge of making but also generates inter-material relations (between statements of articles and statements of advertisements, materials, and concepts, actors and phrases, techniques and materials, theory and practice, the linguistic and the material structures, texts and images etc.) and puts them in a flow of relationality. (Figure 4.17)

Inter-material relations ensure to increase in layers in number and discursive complexity. From the maps it is possible to follow and evaluate change and transformation, correlations, contradictions, correspondences, or circular causalities of the original statements, visuals, concepts, techniques-technologies, definitions of actors, and material information from the maps. (Figure 4.18)

[326] Op.cit. Schumacher, p.1

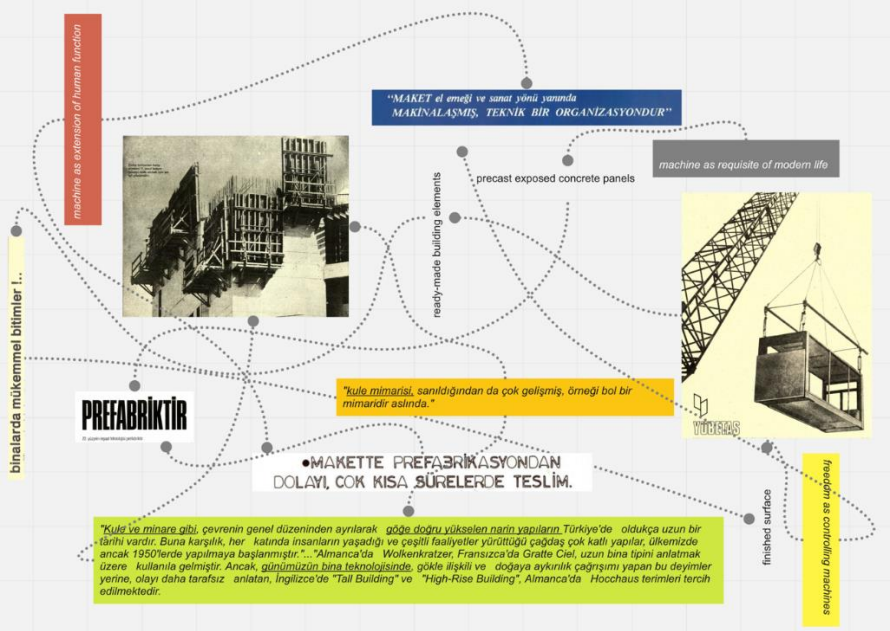


Figure 4.17. Inter-material readings. (produced by the author)

In this set of operations, the established relationships are constantly reproduced without hierarchy, center, defined boundaries, or distinction between primary, secondary, front, and back. The method is simultaneous between the objects of techné discourse, mapping the semantic relationships between the material and linguistic structures so as to understand how these operate discursive mechanisms. In this operation, definitions-classification, materials, concepts, techniques, and technologies share the relational domain and equal status as well as actors. In other words, through inter-material readings on the multiplicity of relations, the discursive objects are positioned equally. Generating the relative relations between different objects, the thesis textually, methodologically and graphically operates the process in which multiple results and scalar readings of practical knowledge are possible. Inter-material relations propose multiple readings and present a generative capacity toward the whole rather than a singular object. The inter-material readings of the analysis on different layers motivate a particular act of making.

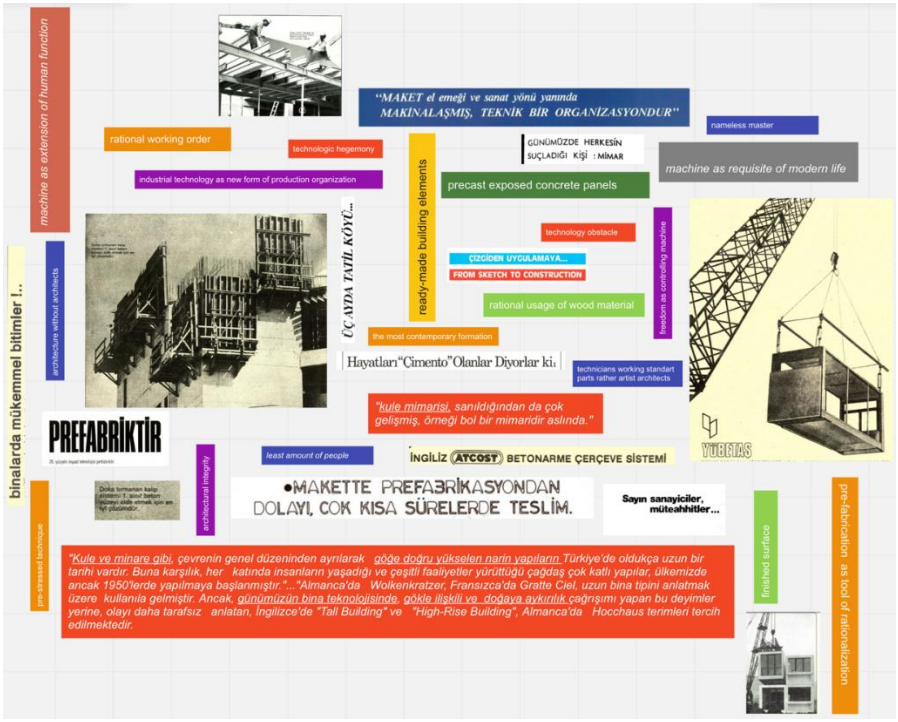


Figure 4.18. Inter-material readings of 'prefabrication' and 'rationality' (produced by the author)

One of the results of this network is the 'change and transformation' rules for discursive unity that maps make visible. The repetitive regularities are fragments of unity mobilized in different linguistic and material units.[327] The prefabrication entities succeed one another on the circulation rule of fixed statements and images. Visibility in different forms is the unapparent synchrony of discursive formation. The same notion is repeated without invariably changing, but it works in statements or groups of statements that are widely separated. To exemplify, 'prefabrication' plays the same role in 'model making' and 'building construction'. Objects in work follow the same rules of formation and play the same role. (Figure 4.18) Hence,

[327] Tool change brings different materials together. The maps make the discursive dominancy of prefabrication visible due to the exploration of the circular causality of the concept of 'rationality' in various forms. Furthermore, the phrase 'rational' repeats itself in the definition of 'working order', 'usage of wood material', or 'tool for prefabrication.' Hence, both prefabrication and rationality create their discursive regularity in practical knowledge. 'Tower' architecture emerges with and is occupied by the term 'minaret' in the original statement, which creates a powerful discursive influence in architecture.

discourse produces ‘the order of succession’. As discursive formations are articulated in series in different forms, their intersection by mapping as the research by practice renders the unity of discourse and hence enables its analysis. Therefore, in the same order in which they are represented, described, explained, and elaborated into concepts, a succession of activities (model-making technique and building construction technology) can become an object of discourse that provides an opportunity to make theoretical and practical acceptance in the principle of its articulation.[328] It is important to understand how techné discourse created such a body of rules that it enabled the reorganization of a whole domain of objects, the use of a wide range of recording and notation methods, the abandonment of craft knowledge, and the resolution of ‘old’ practical knowledge problems.[329]

[328] The prefix of ‘high-‘ that ‘tower’ implies, without differentiating, it appears as a grand conception with the equation of the architectural symbolism of religion. Under the conception of ‘rationality’ and consequent conception of ‘meaning’, all ‘new-‘ and ‘high,’ techniques, technologies, materials, and applications gain a discursive status by the operated mechanisms and production of places of grand ideologies in societies.

[329] Prefabrication, with the circulated concepts learned systems of modularity and standardization appeared as an acceptable notion with an agreed vocabulary of parts and syntax of relationships. A prefabricated system consists of a series of organized components in a hierarchy, in which each component is both clearly defined and becomes a part of a more comprehensive entity. This entity, as the prefabricated building, was a whole consisting of parts whose relationships to each other and the whole were governed by defined rules of combination. Unlike the discursive status of details of the previous era, meaning was derived from the whole (end product) itself on its bare, repetitive, meaning character.

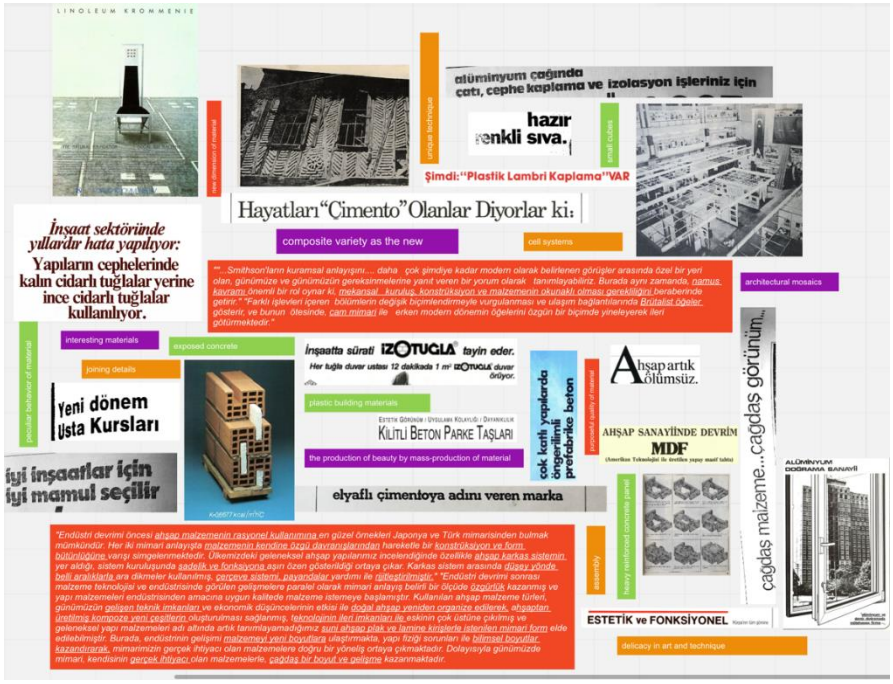


Figure 4.19. Inter-material readings of 'material' (produced by the author)

This set of mapping operations indicates if there is a correlation between different discursive forms and what its forms, limits, code, and possibilities consist of. Discourses move to the rhythm of practices due to their mobility and regularity. Some rules of formation are more specific and derive from others. There is a relationship between linguistic and material attribution: the latter derives from the former. The order of succession cannot be determined without this derivation. It defined the diachronic process.[330] (Figure 4.19)

[330] In opposition to rationality, the conception of 'honesty' and the 'honor of the material' as "pure readability" has gained operational effectivity in terms of 'locality', 'the use of the material as it is' or the definition of the 'cultural'. However, 'material' and 'technology' have an iterative impedance in texts with the prefixes of 'old' and 'new'. The 'old materials' have gained a 'new' status through additions. Therefore, 'brick with styropor addition, fiber cement, embossed or rolled sheet, washed concrete, acrylic or synthetic paint, colored aluminum, cast iron, epoxy plaster' are 'old materials with new techniques' whereas 'composite variety' is defined as the 'new'. Although material and technology are classified on distinctions in textual formations such as "craft, tradition, past, old, technique" and "contemporary, present, future, new", they coexist in the practical formations.

Figure 4.20. Inter-material readings of 'digitalization' (produced by the author)

The emergence of a discursive formation is accompanied by a great renewal of objects, forms of expression, concepts and strategies that are not general or universal but established without much apparent alteration. Determining the particular concept or object if it instantly manifests its presence is not possible. The rule for the emergence of a formulation is an appearance of a new word.[331] The appearances of new possibilities are not specified with the insertion of a new sentence in articles or

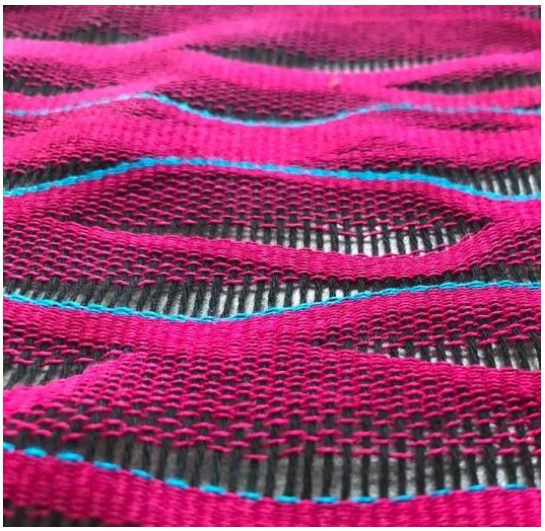
[331] Digitalization as a mode of 'discursive appropriation' gains visibility. As a form by which the survival of certain relations is secured within the discourse of making, 'machine' and related 'automated' is a potential tool whose utility gains the dominancy in texts and visuals with the changing definition of the 'architect' with the 'work' and the 'environment' of the architect. Whole sets of production mechanisms are established under 'international standardization', 'correctness', 'project management', 'professionalization of building' to maintain the discursive appropriation in change. There occur contradictions specifically between the definition of the 'work' and the 'role' of the architect. 'Autoarchitect' or 'architect computer' appears as the mode of appropriation of labor.

advertisements, unexpected, surprising, or unpredictable, or stylistically divergent. However, the appearance of the new possibility is announced at the beginning of a new episode with the entry of a new speaker.[332] (Figure 4.20)

4.2 A Technopoietic Act: Weaving a Web of Relations

Discourse comprises the 'systems of statements' through which techné discourse defines and actuates theoretical and practical formations. It is not a "scientific ideology" agreed upon by the scientific community rather societal. Techné discourse is a determinate articulated system of instruments, concepts and modes of theoretical labor whose unity is in its variety and change in expressions. The material and semantic mechanisms are established through the repetition of definitions and classifications in spite of the changing expressions. Weaving a web of relationships as a technopoietic act through the structural characteristics formed by complex discursive system.

[332] About the actors, the industries, firms, companies, and individual actors are actively visible. The most observable collocutor is the contractor, specifically in images and statements of the advertisements. When the construction practices and digitalization were dominant, 'the practitioner architect', 'technician', 'nameless architect', 'old masters', 'autoarchitect' and 'computer-architect' in the use, detailing, and applying new technologies procured powerful appearances more machinery techniques and technologies involved in the production, individual or a group of actors with their model-making productions faded in advertisements mostly with the promotion of their hand-made productions, craftsman techniques. The knowledge of making is conceptualized as a social product that progressed with different contributions and multiple voices.



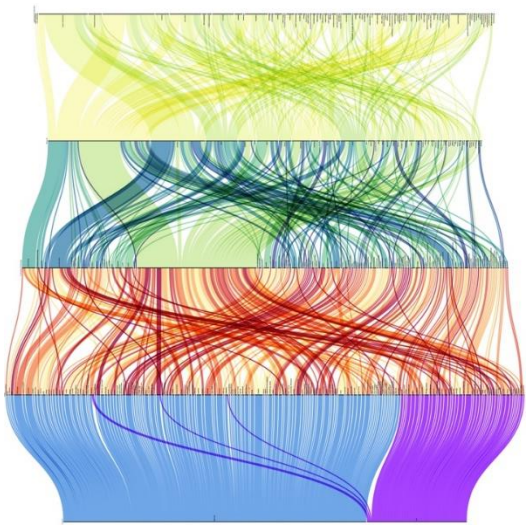


Figure 4.21. (left) Weaving act [333]

Figure 4.22. (right) The collected data was digitally crafted as a weaving operation (produced by the author).[334]

The analysis of bilateral relations opens up in several directions that will be explored with broader complexity. The third operation creates a web of bilateral relations in which interlacing threads methodologically and graphically weave the objects. The transformation of a single knot into a complex web of woven relationships is unique for that set of relations. The analysis of the operated dyadic rationality individualizes and describes bilateral structures of structural properties. Based on the specificity of lateral knots, it is possible to compare, match and oppose them to one another in their simultaneity. The maps of bilateral relations present double-faced simultaneous expressions reflecting and defining one another. Therefore, they perform through serving each other as a mirror whose meanings are complementary in a reflexion; the expression of the linguistic and material characteristic they share. 'Relief

[333] Kaz Madigan. "Weaving with a Wave Stick", https://handwovenmagazine.com/weaving-with-a-wave-stick/ last accessed 08.27.2022

[334] The first row at the bottom presents the journals-actors relationship, the second upper the actors-techniques/technologies-materials relationship, the third shows techniques- technologies-materials relationship, and the fourth the materials-applications/productions relationship.

technique', for instance, is used by model-makers and painting firms. Similarly, 'machine technology' is common among private actors and companies. The 'patterned' technique connects both plaster and ceramic. The woven nature of 'ready-made' holds both the materials timber, concrete, and plaster and 'space construction', 'furniture' and 'wall production' applications.

Operating numbers of registers, generative practice is in the plurality. Weaving registers as a digital craft that crosses gaps and interstices. Thus, the map creates its own domain where unities are juxtaposed, separated, fixed, confronted, and accentuated gaps between them. Maps are to establish dyadic comparison and to describe in correlation. Bilateral relations put lateral rapprochement into operation in several possibilities. It outlines particular configurations.

It is possible to define the generation notion in multiple layers. However, the two of them have a significant place: first, relationality (between the defined objects) gives the results, and second, perpetual back and forth (between the creation of maps-recording findings-filtering data). The former holds the possibility of multiple alternative readings of the same data within various relationships. The latter allows experiencing multiple acts between intentions and factual results. All the relationships between the collected data are weaved in the map and shown as Figure 4.22. Due to the necessity of balancing complexity and visibility, the operations of filtering, grouping, and reorganizing data are applied in Figure 4.23, Figure 4.24 and Figure 4.25 as interdiscursive configurations. Decreasing the level of complexity by filtering data achieves increasing visibility. In the generative progress, it is not possible to define how many networks there are in advance; only the analysis can determine whether there are any and which networks can be described. The maps are hinged on the attribution of exchanges, influences, transmitted knowledge, and discursive communications. This set of operation map the objects where the projection of one upon another might take place.

From the map of Figure 4.23 the commonalities between journal-actor, actor-technique/technology, technique/technology-material, and material-application/production can be traced. The ones that have more connections are located at the bottom.

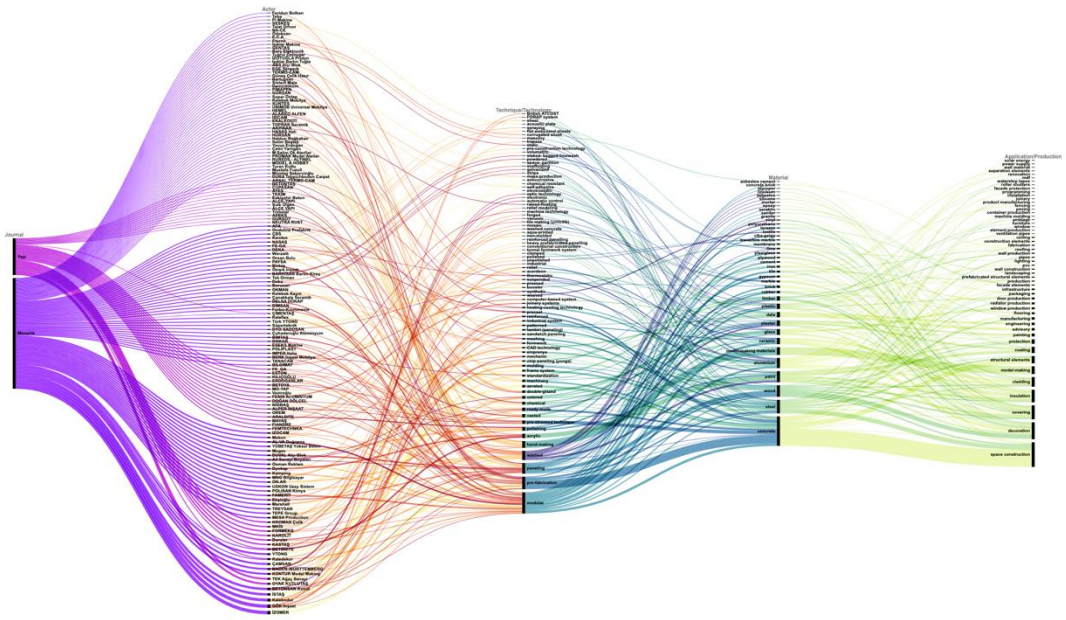


Figure 4.23. The collected data was digitally crafted as the web of discursive relations by weaving operation (produced by the author)[335].

All the actors, from industries to private model makers, are presented in the list of actors. (Appendix D) It is interesting to find hand-making technique near the bottom, which has one of the most connections, therefore discursive effect within other techniques of making. In Figure 4.24, the actors are grouped into private, supplier, firm-company and industry, and the parameters for the relational locations are changed for different readings. The relationality between actors and materials becomes visible. It can be understood that materials such as plaster, wood and steel

[335] The lateral relations follow the order of journals, actors, techniques- technologies, materials, applications-productions. See the details in Appendix D.

are used by different actors. In Figure 4.25 in addition to the change in dyadic relationality, the data are filtered and regrouped by the author, which results in an increase in visibility but a decrease in complexity.

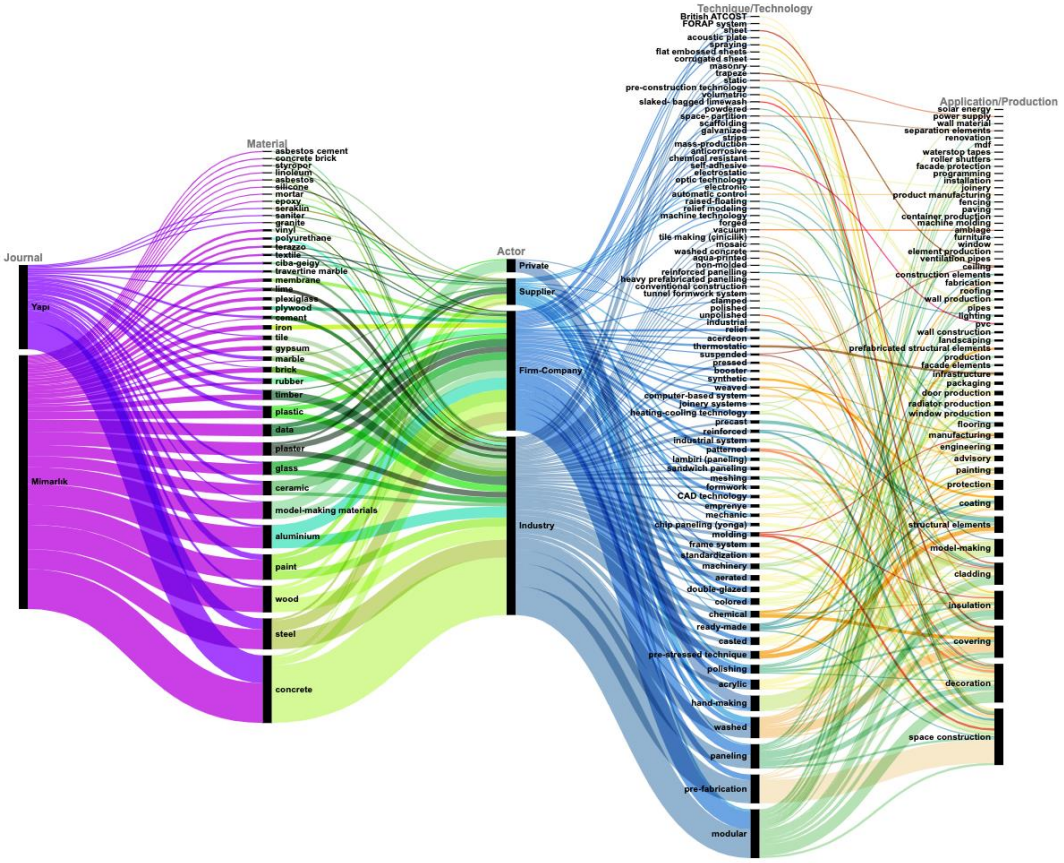


Figure 4.24. Weaved relationships and the change in complexities (produced by the author)[336]

The particular status of techné in the specified time is revisited within the textual and visual archival material, and the intertwined objects are brought together. The aim of the research is not to document all the actors, materials, techniques-technologies,

[336] The lateral relationships follow in order of journal, material, actor, technique-technology and application-production.

etc., in practical knowledge, but the objects in relative relationality with the existence of forms of techné. A simple algorithm is used to specify the relations between objects and create data-driven maps to present the web. The generative act allows the knowledge generation and the transformation of single knots of focus into a complex web of woven relationships. Individual knots are connected to each other through threads that are pre-defined in terms of relationship types between knots. The results of the analytic method, which is discourse analysis, can be integrated into the construction of knots and threads to create generative systems and interpretable graphs. The threads are interconnected through shared characteristics to form relations between knots that occupy positions within the system. Thus, the pattern of weaved relations generates a particular structure for multiple readings. The study of mapping for related discreet objects of techné, is applied to collected data to infer relationships between key concepts, phrases, classifications, actors, materials, and techniques- technologies. Foucault claims that discourse may be identified by a set of rules constructed as a practice. They systematically form for the discourse "groups of objects, enunciations, concepts or theoretical choices"[337] for the discourse. The potential use of 'weaving' and its instances are intended to serve for theoretical, analytical, and practical purposes.

[337] Op.cit. Macdonell. p.95

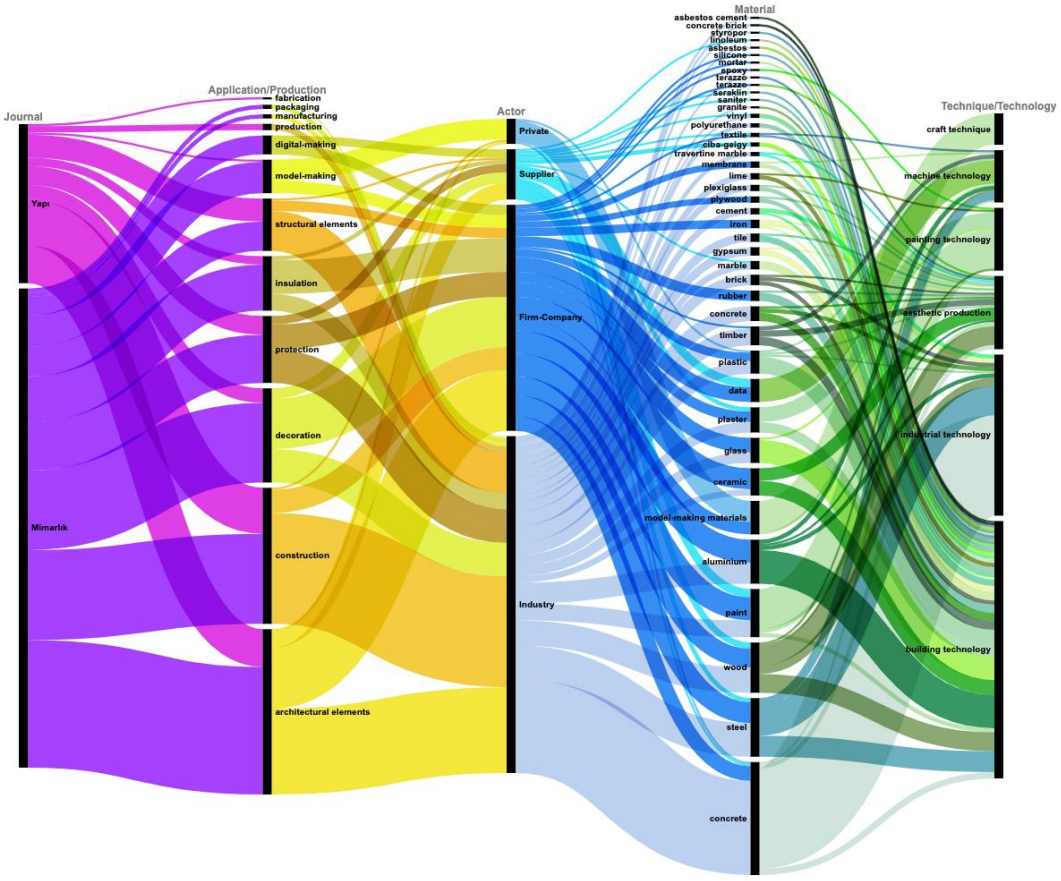


Figure 4.25. Change in lateral relations and complexities (produced by the author)[338].

Analytical ones include knowledge excavation by the 'formation of discursive objects of techné', tracing them into circulating statements, and the creation of unique collections and their analyses. Digitally crafted communicative webs of networks are theoretically positioned on the analysis method and established as a scientific methodology. It is significant to note that the researcher defines a set of rules and methods that defines webs of relations. The theory is embedded in the

[338] The lateral relationships follow in order of application-production, actor, material, and technique-technology

method, namely constructed data, contextualized readings, and critical interpretation.

Practical ones include knowledge generation by assembled relations on defined operations in the creation of maps. The maps produced unexpected occasions that arose from ‘generative practice.’ Knowledge formation is based on relations and interconnections that are not premeditated.

The emergent complexity is beyond the representational capacity of a single map. The change of the working medium as the author's tool is the enabler of generation and a part of conscious doing, allowing different relational possibilities. Thus, instead of totalizing, reducing, or alleging to be a single mode of presentation, the explorative, generative, and projective approach was adopted in this project. Operational relationalities comprised a series of mappings of a material-linguistic matrix that enabled discursive and pervasive coding of mapping practices. Weaving is used as a knowledge generation tool: it enables the research to remain open to differentiate multiple interpretations.

The theoretical and methodological wealth of the analysis on the web consists of characterizing structures, patterns, node positions, clusters and reading them in multiple contexts. The techniques in structuring and mapping generated unique knowledge and created a foundation for (in)visible complexities of a web of relations for critical readings.

All these interpretations can be specified and multiplied from the inter-material readings of discursive relations. However, the aim of the thesis is not to make a reading of the period or write the history of building practices at this specific time. Relationality between discursive objects is defined, followed, and evaluated on commonalities, distinctions, regularities, repetitions, appearances, disappearances, and visibilities and invisibilities. Qualitative and quantitative descriptions, experimental verifications, reasoning by analogies, statistical calculations, and

interpretations are multiple forms of statements that are determined in the techné discourse of the late twentieth century in Turkey. All these circular causalities between materials, concepts, techniques, phrases, images, and texts are described as a "field of concomitance" in Foucault's definition, including statements that concern and pertain to different domains of objects "but are active among the statements because they serve as a general principle and premises accepted by reasoning, or because they serve as models that can be transferred to other contents".[339] Thus, overall, the objects of techné formed a discourse where the linguistic and materialistic mechanisms work together in relativity and they together define the status of techné discourse in a particular context. The status does not mean pre-establish, impose, presume, or any universal criteria of judgement; it is the total of the conclusions of the discursive analysis of the generated knowledge from the collection of research and their relationality.

Using the vocabulary of discourse analysis, network, and theory of communication systems of architecture by executing discursive relationalities and digitally crafted weaving operations, the status of techné discourse has been elaborated as the answer to the question of what kind of dialogue is techné discourse is in architecture for the specified context and to the problematic of how to search the generative capacity of practical knowledge. Each investigation will locate the objects, themes, and concept meanings within a larger historical framework, an inquiry, theoretical discussion, including the multiplicity of voices: architects, historians, philosophers, critics, and multiple other actors. Tracing various and repetitive definitions, approaches, theoretical and practical formations of systems of statements, material and linguistic mechanisms, the research is transformed into an act of knowledge generation and operation.

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[339] Op.cit. Foucault, 1972, p.58

If the term architecture exists with practice and knowledge, they can be read together as the products of communication. The transformation of the problematic entity and definition of architecture as a mere construction activity can be possible when the building process and work are involved in semantic production. "Architecture derives its meaning from the circumstances of its creation; and this implies that what is external to architecture what can be broadly its set of functions, is of vital importance".[340] The readings of architecture's generative capacity charged with producing meaning can make architecture a communicative medium between external functions and internal mechanisms. Therefore, it is possible to depart from the meaning specific to a particular type or style yet, semantic construction is devoted by its own constructive and generative *being* and devoted to common social, cultural, and historical *belongings.* Every age of science and technology has its own rhetoric communication both internally within its own disciplinarity, and with the external worlds.

[340] Alan Colquhoun. "Postmodernism and Structuralisms", *Modernity and The Classical Tradition*, Cambridge: MIT Press, 1989, p.254

CHAPTER 5

CONCLUSION

The contextual framework of this dissertation presents an inquiry into the generative capacity through the intersection of theory, practice and research of architecture. Deciphering the bipartite subsistence of architecture between knowledge and practice of architecture, techné has been introduced as a unified concept of knowledge production by practice, learning by making, and generative doing. Rooted in ancient philosophy and embedded with the *logos* of making, rational and reasonable knowledge, craft making, techné proposes a bridge between art and science and related systems of thought and production. Revealing itself from an affiliation of art and science, architecture, by its unique entirety in-between, both experiences internal operationality and challenges with external commonalities. To the problematic of the seemingly dichotomous affinity of architecture towards the art and science, this thesis defines architecture as a technopoietic being by conceptualizing the immanent nature of practice and knowledge of architecture, which challenges and negotiates between its own internal mechanisms, external functions and structures. The technopoiesis of architecture, as claimed, works in totality while enabling the possibility for a common ground for conflicts, distinctive becomings, as well as a common act that is operational for alternatives.

The thesis recalls techné from ancient philosophy, extending through future prescience, and introduces as a united being in multiple *becomings* of architecture, both the generation and formation of knowledge by practice. The unifying role lies in its philosophical reminiscent in directing experiential processes of *knowing-how*. Not only in the simultaneous subject-object formation in the design process, but

techné is also a prominent concept directing the ontological formation of architecture by disciplinarily constructed thinking and making systems in productions of norms and forms and their relationships. Furthermore, the apparent discursive power of techné became most evident with the establishment of learning by making tradition and the construction of studio culture in architectural education. In terms of contemporary architectural research tendencies towards multiple dimensions of tectonics, material research, and applications, techné preserves its discursive significance in the present era, manifesting itself as the 'new tectonism'. Therefore, the thesis claims that techné is an embracive concept and a discursive formation in architecture. The thesis grounded its theoretical basis on techné discourse within the conceptual framework of architectural making concerning the practice and knowledge of architecture while operating a discursive practice through a methodological action of its own, which is structured as a generative doing. For that purpose, then, here techné is redefined as an 'act' of knowing, learning by making, and 'knowledge' of practice, and utilized as a 'tool' for investigation and generative doing. The thesis's contribution can be explained by its *theoretical* (grounding), *methodological* (tools), and *practical* (doing) levels.

Considering the theoretical framework that the thesis has supposed, techné demonstrates an emancipatory action based on a "knowing act" resulting in an indeterminate (learning by making) and determinate (disciplinary operationality) knowledge production by practice. Techné, from its very first emergence as 'the *logos* of making,' is a prominent notion in questioning and tracing the possibilities of 'alternative ways of thinking and making' in both the discipline of architecture and different related fields. Within the framed problematic, the thesis claims that the discipline has been challenged by the declaration of 'the death of architecture' and 'the crisis' in the changing perception of making, the loss of the authorial status, and the profession itself. Since the concept of *techné* denotes not only the techniques of making but, more importantly, the significance of making by building knowledge, it is an expedient agent for generating alternative design solutions to the problematic

of architectural production, criticizing current contemporary approaches, often resulting in technique lack of meaning as mere construction activity in production of limitless and endless urban space, and the non-instrumentalization of the tools and technologies. *From the perspective of architectural and urban practices,* the remembrance of ethical and moral issues of architectural making that thesis has reminded us of techné with 'the production of reasonable knowledge by practice', 'creative thinking as the kind of work and labor' including 'desire for good work for functioning to society', 'internalization of tools and detailing' and 'working for public goods' carry the reminiscent of emancipation against the capitalist construction demand and the 'globalized' authorial status of the architect. *From the perspective of internalization of tools, techniques and technologies,* techné as the thesis claims, can be a critical agency against the non-instrumentalized use of technology and the transforming practices and knowledge production systems of architecture by 'changing' ideology, moral, disciplinary, and creative becoming that can be performed by machines, programs, codes, or any human actor with the 'digitalized' status of the architect in the projections of post-Anthropocene. *From the perspective of architectural research,* the thesis presented that *techné* discourse is one of the effective discourses in architecture in multiplicity, complexity, variety of circulated statements, operated norms, and forms in theoretical, practical, and educational spheres of architecture. *Techné,* as a disciplinary agency for critical research, allows for working in the intersection of theory and practice. It offers a common ground for invisible relations, personal reflections, and distinctive and instinctive voices. As the thesis demonstrated, the redefinition of *techné* as a discursive formation in architecture potentially situates architecture within a wider apprehension of practical knowledge.

The methodological framework has transformed the theoretical inquiry into the thesis's own practice through conceptualizing technopoiesis and utilizing analytical and generative tools. Preserving a critical distance from the human- and techno-centric conceptions, this thesis nourishes the technopoietic allegation with an

interwoven conceptualization, both by reserving the personal intervention and knowledge generation (as the indispensable interpretive, critical tools in the novelty of creativity as a part of the societal system of thought) and also by applying an analytical approach utilized with technological tools (as the support of innovation and novelty of disciplinarity). It is not just an analysis of existing knowledge but a knowledge production practice on the discursively regulated, generatively progressed and digitally driven maps. The change of the working medium as the 'tools' of the author enables both generation within the research process and a conscious decision that allows different possibilities.

The practical framework of the research has actualized a generative doing by a discursive practice. As a practical contribution, generative doing is transformed from being the object of inquiry into a research approach. For the problematic of the bilateral phenomenon of architecture defined by the technopoiesis of architecture, this thesis claims that for the self-demarcation of both knowledge and practice, normative disciplinary analysis is not the only possible way to research and discuss its discursive mechanisms and structures. The thesis formulates an architectural-notational system for searching for and practicing unique knowledge. For an emancipatory dissolution of the disciplinary boundaries, a generative research process is practiced. Therefore, generative knowledge production as a discursive practice becomes an integral part of the research process. Digitally woven maps enable and give a central role to autonomy and generation in investigating architecture, instead of being a part of a pre-established system of thinking and making meaning. The method for the analysis of architecture itself can be a generative doing that enables the peculiar communicative pattern of appeared-disappeared, visible-invisible techniques, technologies, materials, and actors. Thus, the analysis system with new construction in various maps is a generative act on networks that makes multiple readings possible on relative relationality. Operational relationality is a practice of knowledge production and a tactic used to explore the potentials of such a system that can create space for imagining alternatives from an

architectural perspective. The weaving operation, formed by a tactile contact and as a digital craft, defines the thesis' own act that is grounded on data-driven mapping and inter-material readings of relative relationality. Therefore, the thesis transformed an inquiry into an act of knowledge production and its discursive practice as an operation.

Architecture has had a unified being between external and internal forces from the beginning. It creates its communicative system with its extensive connections towards particular theories and histories due to its broad scope and unstable disciplinarity between art and science. Every particular history and theory is embodied within context-specific thinking and doing practices. Thus, it is significant for architecture to establish its specificity through the specific tools, materials, actors, techniques, technologies, thinking, making, and relational structures between them. Architecture can equip itself more precisely in the whole field of knowledge by comprehending the existing knowledge production practices and a generative being within its mechanism and interactions from different areas. The creatively agentic and critically operational account of techné that this thesis proposed is used as a method to assess material, technical-technological aspects and actors with the dissolution of relative relationality and restructuring in another contextualization. The theoretical and methodological discussions have opened a potential area in which to search for an account of knowledge of making towards the objects of techné discourse in the form of singular modes, either within their particular web of relations or in the form of multiple modes within relative constellations in a particular context.

The research has shown that a technopoietic investigation through the knowledge of making has extended the capacities of intellectual tools and enabled new semantic constructions for the world of making through relative and reflective projections. The hermeneutical framework between thinking and making that has been presented in this thesis initiates a trajectory for other tactile contacts in which the same methodology in different patterns can be implemented with various archives,

different periods, different tools or specific materials, particular contexts, and specialized techniques. Digitally crafted maps represent the social construct within an architectural and temporal framework that activates further investigations for further studies.

The personal-technological interface enables the exploration of the discursive structures and mechanisms in-between the predictable and unpredictable, rational and generative, determinate, indeterminate qualities, and production processes. They challenge conflicts, dichotomies, and boundaries to reconcile notational intents and meet with reflective faculties and technological affiliations. Therefore, the thesis defines techné as a discursive formation in architecture while asserting that architectural making with all its components is a discursive construction that suggests premises for comprehending how meanings and objects are constructed relative to a greater web of relationships within a societal communicative system.

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APPENDICES

Appendix A. Architectural Journals in Turkey

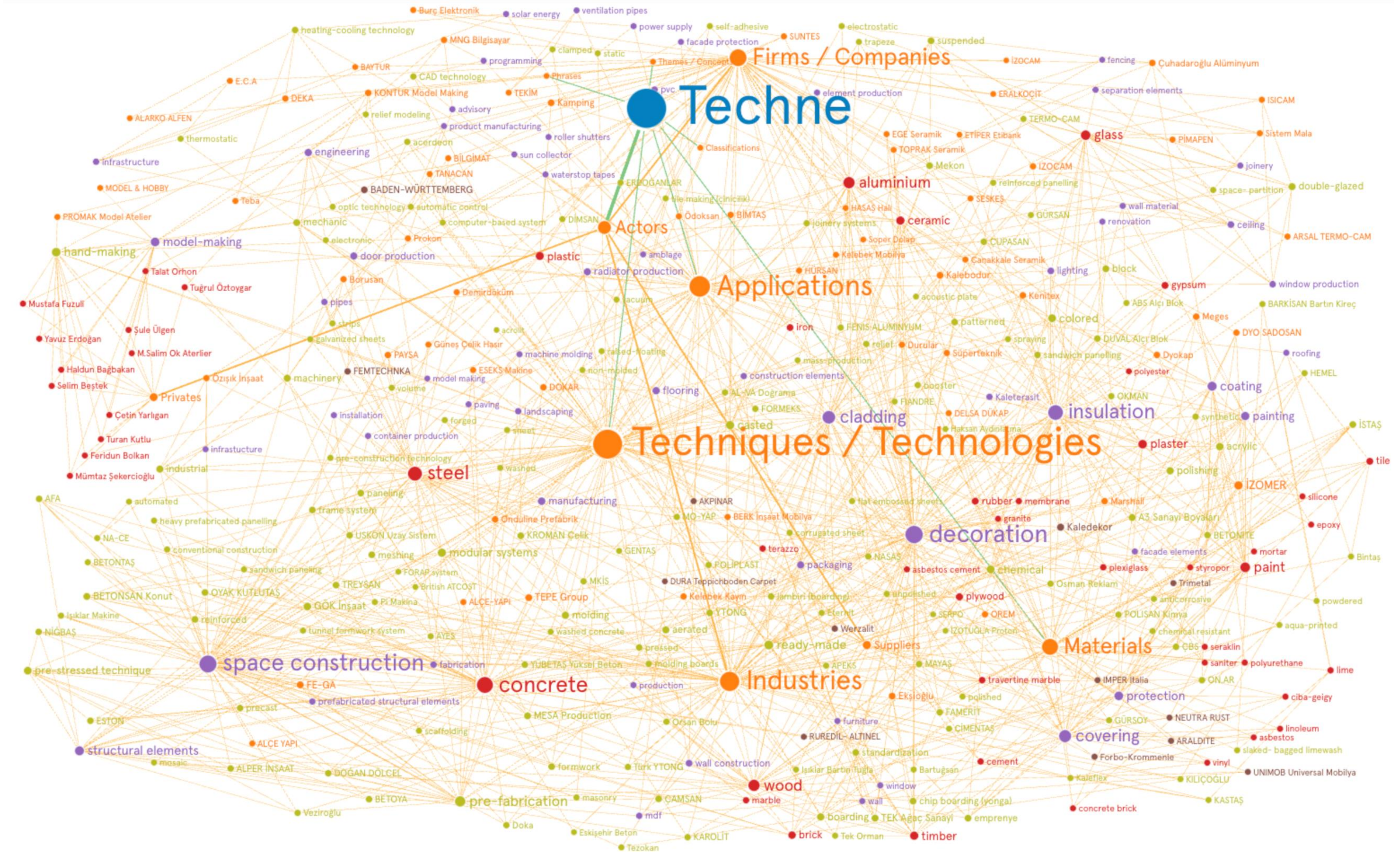
Journal	Publication Years
Arkitekt	1931-1980
Mimarlık ve Sanat	1961-1963
Akademi-Mimarlık ve Sanat	1964-1975
Mimarlık	1963-ongoing
Yapı (Mimarlık Tasarım Kültür Sanat)	1973-ongoing
Çevre	1979-1981
Mimar	1980-1984
Dizayn Konstrüksiyon	1985-2009
Tasarım	1989-ongoing
Arredamento	1989-ongoing
Ege Mimarlık	1991-ongoing
XXI	2000-ongoing
Betonart	2004-ongoing
Serbest Mimar	2009-ongoing

Appendix B. Statements in the Original Text

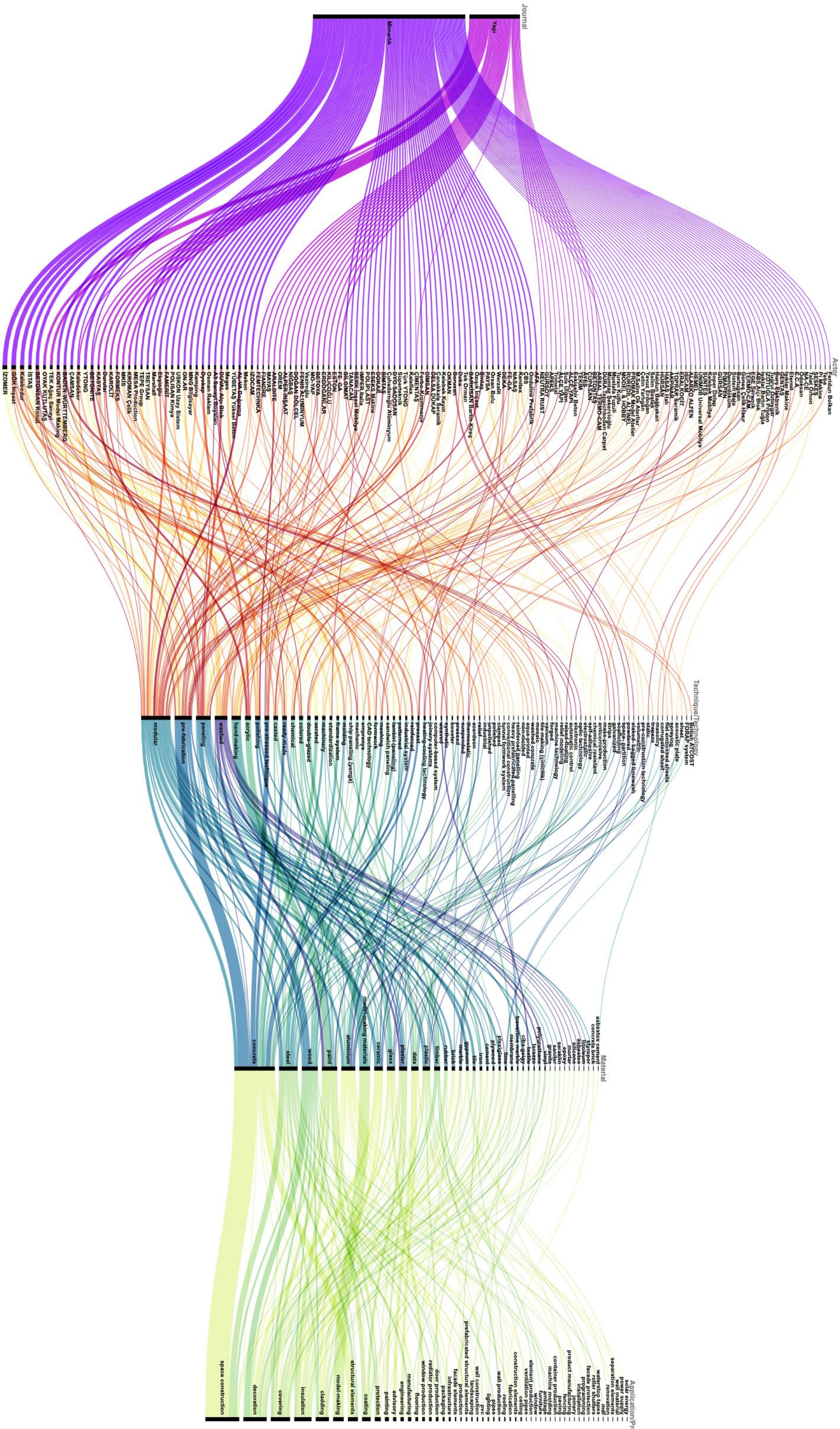
Journal	Time	Statements in the Original Text
Mimarlık	1980 (162)	*"1980'li yılların dünyasında enerji ile bağlantılı olarak tanımlanan ve yenileri de tanımlanmakta olan binlerce sorun var. Kapitalizmin uzun dönemli krizlerinin tarihsel seyri, kapitalizmin uzun dönemli krizlerini aşmada, kullanılan enerji türünce ve onunla uyumlu olan teknolojide evre yaratıcı buluşların ortaya çıktığını gösteriyor."..."Bu ortamda Türkiye'nin karşı karşıya bulunduğu sorunlar silsilesi bakımından enerji, daha da özel bir önem kazanıyor: 1980'in başlarında, dışsatım gelirlerinin sadecenpetrol faturasının yarısı düzeyinde kaldığı belirtiliyor. Bir yandan yüksek kar marjları ve düşük kapasite ile çalışan ve dışa bağımlı olarak kendisine verilen rolü kabullenmiş bir sanayinin üretim sorunları, bir yandan yine dışa bağımlılığı arttıracak bir biçimde belirlenmiş bir ulaşım politikasıyla kentlerarası ve kent içinde kitlesel olmayan bir ulaşım; bir yanda ısınma imkanı olmadığından kapatılan okullar-hastaneler-işyerleri ile soğukta geçen bir 1980 kışı"*
	1980 (162)	*"İkinci Dünya Savaşı sonrası gelişen yapı teknolojileri ve buna bağlı olarak gelişen yeni mimari akımlar, yapılarda (özellikle yapıların ısıtılmasında) tüketilen erke miktarını sanayide tüketilen miktara eşit düzeye getirmiştir"*
	1981 (169)	*"20.yy da, ütopik mimarinin en ağır basan yönü, kuşkusuz tekniktir." Buckminister Fuller-"air-conditioned kent"*
	1981 (172)	*"Türk mimarisinin tarihi ve önemli eserlerine ahşap işçiliği de kıymetli parçalar katmıştır". "Ahşap işçiliği binaların inşaatında çok yardımcı olmakla beraber, onların bitiminde de çok güzel ve faydalı kısımlar eklemiştir."*
	1982 (176)	*"kule mimarisi, sanıldığından da çok gelişmiş, örneği bol bir mimaridir aslında."*
	1982 (184)	*"teknoloji tarihindeki kopma 'basit yeniden üretim' den 'genişletilmiş yeniden üretime'e geçişle ifade edilebilir. Bir başka deyişle 'tüketim için üretimden, üretim için üretime geçiş'. Toplumun bu yeni yapısının üretim alanındaki kendini gerçekleştirme araçlarının aldığı yeni 'biçim' sanayi teknolojisidir. "üretimin bu yeni örgütleniş biçiminin cansız öğesi sanayi teknolojisi"*
	1982 (186)	*"Üslup çözümlemeleri, mekan çözümlemeleri (dolayısıyla bir "Tasarım Mantığı"nı dilsel açıdan kavrayabilme), gerçek (otantik) ve yapma biçimlerin sentaks/anlam farklılıktan gibi konularda dil, idealist eleştirinin sahip olmadığı bir disiplin ve kavramsal tutarlılık sağlamlığı getirebiliyor, üstelik hem dilbilimin yöntemini, hem de ifade/analiz aracı olarak çizim dilini kullanarak" o Her dilin sahip olduğu değişmez bir özellik, sentaktik yapısının tutarlılığıdır. Mimarlıkta da geleneklerin üretim biçimlerin, -eğer mimarlık bir dilse- bu sağlamlığa sahip olması beklenir. Bu sentaks ise, tektonik yapıda ve onun oluşturduğu mekanda aranabilir*
	1982 (186)	*"Son yıllarda sayısı hızla çoğalan göstergebilim ve dilbilim ile ilgili metinler neredeyse sözlükle okumayı gerektirecek nitelikte. Bu metinleri kavrayabilmek, bu alanların -ki daha çok dilbilim, çünkü göstergebilim terimlerini dilbilimden ödünç alıyor- özgül kavramlarına sahip olmayı gerektiriyor. Biz de burada, bu kavramların en temel olanlarını tanıtmaya çalıştık. Bunlar, R. Barthes'in "Göstergebilim İlkeleri" kitabının iskeletini oluşturuyor ve Saussure'de de olduğu gibi ikili karşıtlıkları içinde ele alınıyor."*
	1983 (193)	*" bir zamanların duvarları, hemen hemen bütünüyle el emeğine, insan gücüne dayanan yöntem ve tekniklerle, en ilkel malzemelerle yapılırken, şimdilerde artık, bir duvarın yapımında, hemen hemen bütünüyle makinelere dayanan yöntem ve teknikler, çok değişik malzemeler kullanılmaktadır" Bir zamanlar insanlar, moloz taşlan elleriyle üst üste, yan yana koyarlarken şimdilerde artık, "prefabrike" malzemeler en gelişmiş ayatlarla "monte" edilmekte, "pnömatik" duvarlar çok kısa bir sürede şişirilebilmekte ya da büyük büyük cam panolar duvar görevini görmek üzere, çok kısa bir sürede yerlerine oturtulabilmektedir. Bu arada, birleşme "detaylan", ısı, ses ya da su yalıtımı ve ekonomik çıkmazlar gibisinden nice somnlann üstesinden gelmekte de büyük bir aşama kaydedilmiş durumdadır". "teknik sorunları sanatsal olarak çözme" önerisi*
	1983 (195)	*"geleneğe bakmak çağdaş bir yönelim mi?"Çağdaş mimarlık 18.yüzyıldan bu yana Batı mimarlığı ile eşanlamlı kullanılmıştır Türkiye'de. Bugün de, İslam kültür alanında kalan ülkelerde ve bütün Üçüncü Dünya ülkelerinde kuramı, kuralları, teknolojisi, öğretimi ve bütün kabullenilmiş imgeleriyle çağdaş mimarlık Batı ürünüdür.*
	1983 (194-195)	*"Geleneksel Batıda da bir zamanlar sanatın "ars", teknolojinin de "techne" anlamına geldiği gibi, İslamiyet de güzelliği yaratıcılıktan, sanatı da üretimden hiç ayırmaz."*
	1984 (205)	"Michel Foucault ile Antropolog Paul Rabinow'un mimarlığın siyasal örgütlenme ve toplumsal ilişkilerindeki rolü üzerine konuşmalarının yer aldığı bu söyleşi, Skyline Dergisinin Mart 1982 sayısında yayınlanmış olan İngilizce metinden bazı bölümleri alınarak çevrilmiştir" Foucault ve techne. "eğer mimarlık tarihi genel techne tarihi içine yerleştirilebilirse temel bilimlerle toplum bilimler karşılaşmasından çok daha ilgi çekici bir yönlendirici kavrama sahip olur"
	1984 (208)	"Eskiden tuğlanın boyutları nasıl mimarlık zanaatının bir parçasıysa, entelektüel eleştiriler ve kentin tahribi karşısında dile getirilen öfke ile üzüntü de, yaklaşık on seneden beri mimarlığın bir parçası haline geldi."
	1985(211)	*"MİMARLIK Dergisi 1985 yılında bir bina tanıtımı, yapı eleştirisi bölümü başlatma kararı aldı"Bu sütunun uzun vadedeki amacı, sağlıklı ve canlı bir mimarlık düşünce ve tartışma ortamının oluşturulmasına katkıda bulunmak diye özetlenebilir." Zeki Sayar: Yayına başlarken evvela mimarlarımızı tanıtmak gayesindeydik. Bir müddet sonra da yavaş yavaş Türk mimarlarının yapmakta oldukları eserlere ve bunları eleştirmek konusuna gelmek istedik. Fakat bunu o devir için mahzurlu gördük. Çünkü mimarlarımız çok genç idi. Maksat da gerek halkımıza, gerekse de devlete mimarlığı tanıtmak idi. Bu itibarla genç neslin eserlerini bir süre eleştirmemeyi doğru bulduk. Fakat bunun dışında, Arkitekt'leri incelerseniz, yabancı mimarları eleştirdik kısmen. Sonra, devletin mimarlık konularındaki ilgisizliğini, bilgisizliğini eleştirdik. Fakat o devrin üzerinden aşağı yukarı 50-5 5 yıl geçti. Şimdi görüyorum ki, genç arkadaşlar gayet haklı olarak bir mimari eleştiri devrinin gelmiş olduğunun idrakindeler ve bu eleştirinin başlaması gerekiyor. MİMARLIK Dergisi'nin böyle bir karar almasını isabetli buluyorum*
	1985(216)	*"Bu sunuşta Modern Mimarlıkla iigili yaygın bir yanılgıdan söz edeceğim. Modem Mimarlıkla ilgili bu şematik ve aşırı basitleştirici görüş, biçimin içerik tarafından belirlendiğini söylüyor. Buna göre biçim, yapının işlevlerinin ve taşıyıcı strüktürünün dürüst ifadesiyle kendiliğinden ortaya çıkacaktır. Bu yanılgının uzantısı ise Modem Mimarlığın biçimsel kaygılan olmadığı şeklindedir"*
	1985(217)	*"... [Modernlik] insanın değerinin Doğa'daki herşeyin üstüne çıkışıdır. Teknoloji, bu modern insanın Doğa üzerindeki hakimiyetini sağlar; tarih ise, bu insanın Doğa'dan bağımsız hayatının hikayesidir."12 İşte en genelde böyle tanımlanabilen bir Modernliğin mimarlığında da, herşeyden önce, teknolojiye ve tarihe karşı sorumlu ve çağdaş bir tavır gerekiyor. Bu yazıda aralarındaki polemiği özetlemeye çalıştığımız iki grubun da , bu beklentiye cevap veremediğine; yeni - Rasyonalistler sorumluluk uğruna, geriye dönük ve nostaljik kalırken, postmodernistlerin de hem teknolojiyi hem tarihi en yeni yöntemlerle ve sorumsuzca kullanıp kültürel tüketime sunduğuna şahit oluyoruz.*
	1985(217)	*"Bundan sonra dergide herhangi bir değerlendirme ölçütüne tabi olmadan, tasarının önceden düşünülmüş çehresine uyup uymadığına bakılmaksızın, öncesi ve sonrası ile ilintilendirme çabasına girilmeksiniz, mimarlık dünyamızın panoramasından mozayiklerin sunulması amaçlanıyor"*
	1985(219)	*"Burada önemli olan nokta, iyi tanımlanmış alt problemlere ilişkin çözümlerin orijinal ilişkiler sistemi içinde denenmesi ve böylece doğru kararların alınabilmesi için tasarımcı ve bilgisayann problemi çözecek bir sistem oluşturmalarını sağlamaktır."1950 yıllarında bilgisayar teknolojisindeki gelişmeleı bilgisayarların mühendislik problemlerinin çözümünde yaygın olarak kullanılmalanna olanak vermiştir"Mimarlıkta bilgisayar uygulamaları yaklaşık 20 yıllık bir geçmişe sahip olduğu halde bugünkü gelişme düzeyinde Bilgisayar Yardımıyla Mimari Tasarım (BYMT) (Computer Aided Architectural Design CAAD) teknikleri mimari tasarımın oldukça iyi tanımlanmış problemlerine başarılı olarak uygulanabilmektedir" 1970'li yılların başında bina tanımına yönelik yeni yaklaşımlar ortaya konuldu. 1960'larda mekan planlaması problemlerinde kullanılan ve kat plan düzeninin iki boyutlu tam sayılı bir dizi ile gösterilmesini sağlayan modüler tanım, 1970'li yıllarda da plan düzeni üreten birçok algoritmada kullanıldı. Yapma formu oluşturan boşluk ve dolululklara ilişkin fiziksel, geometrik ve topolojik özelliklerin bilgisayar için tanımı, iki ve üç boyutlu çizim programlan kadar ürünün değerlendirilmesi amacıyla geliştirilen programlar için de önem kazanmaktaydı*
	1985(219)	*"Eski çağlarda, henüz yapımla ilgili kuramlar ortaya konmamışken; tasarımcı kararlarının -ortak bir malzeme ve konstrüksiyon biçim sözlüğü içinde- gerçekleşmesinde yapımcı ya da ustalara güvenmek durumundaydı. İlk "London Building Acts" bu ortak anlayışı yansıtan bir örnektir. Bu duruma son veren nedenler bilimsel kuramdaki son gelişmeler ve yapımın profesyonelleşmesi olmuştur Profesyonelin geçen yüzyıla dayanan kendini beğenmiş görüntüsü son zamanlarda fazlaca eleştirilmektedir.Belki günümüzdeki krizin sonucunde elde edilecek mesleki alçak gönüllülük ve otomasyonun oranının artışı, gelecekte Bath gibi daha insancıl çevrelerin oluşturulmasına olanak verecektir."*
	1986(221)	*"Kent ve mimarlık sorununu köylünün kentleşmesi olgusuyla birlikte yeniden değerlendirmek, kanımca bütün evrensel mimarlık sorunlarından daha önemli. Mimariyi, toplumsal istekten soyutlamamak gerek."*
	1987(226)	*"Günümüzde, mimarlık çizimlerinde bilgisayar giderek yaygınlaşmaktadır. Bilgisayarla çizim, bilgisayarın belleğinde bir 'kütüphane' oluşturmaya dayalıdır. Şu an ülkemizde, bilgisayar kullanan mimarlar kendi kütüphanelerinin çizimlerini kendileri oluşturmak durumundadır. Oysa ölçekli çizilmiş teknik fişlerdeki resimler, anında bilgisayarın hafızasına yüklenebilmektedir. Tasarım sırasında projeye bu resimler monte edilmektedir. Giderek teknik fişlerini tasarımcıya ulaştırmayan üreticiler daha tasarım safhasında pazarlama şanslarını kaybedebileceklerdir.Fişler, üreticiler ve Mimarlık Dergisi yayın kurulunun oluşturacağı bir komitenin işbirliği ile hazırlanacaktır. Dosyanın sistematiği de bu kurul tarafından oluşturulacaktır. Fişlerin ön yüzü tanıtım ve nitelikle ilgili bilgilere ayrılacak, arka yüzleri ise ölçekli detay çizimlerini içerecektir. Ürün, tek föyde tanımlanabileceği gibi üreticinin istediği adette föyde de tanımlanabilir."*
	1987(227)	*"Bir yandan ağır betonarme panel sistemler, iskelet sistemler, hücre sistemler gibi prefabrikasyon teknolojileri konut üretiminde yer alırken, öte yandan tünel kalıp gibi ileri çelik kalıp teknolojisine dayanan yapım yöntemleriyle konut inşaatı gerçekleştirilmektedir. Genellikle bu teknolojilerin kökeni dış kaynaklıdır. Çok az değişikliklerle veya aynen bu teknolojiler ülkemizde de kullanılmışlardır. Özellikle, hem 2487 sayılı, hem de 2985 sayılı toplu konut yasaları, ileri teknolojileri zorunlu kılan önemli etkenlerdir. Bu yasalarla ilgili uygulama yönetmelikleri incelendiğinde, kitlesel ve kısa sürede bir defada çok sayıda konut üretiminin teşvik edildiği görülmektedir.Uygun teknoloji seçimi konusunda bilimsel kuruluşlar ve büyük inşaat firmaları tarafından araştırmalar yürütülmeye başlandı. Araştırma sonuçlarının bugünden yarına uygulamaya geçirilmesini beklemek belki biraz erken olabilir ama, bu anlamda girişimlere geçilmiş olması sevindirici olmaktadır. Olgunun felsefi boyutu henüz kullanıcı ve kullanıcıların işverenleri tarafından özümlenmemiştir. Ancak bu alanda az sayıda da olsa bazı girişimlerle, özümleme çalışmalarının ve dolayısıyla konuyla ilgili bilimsel yaklaşımların gereği vurgulanmaktadır"*
	1987(227)	*"Şehir dışına, yan yana dizili evlerden oluşan, monoton, oldukça büyük mahalleler inşa edilir. Her millet bunu kendine özgü bir şekilde yapar, inşaat tekniği çok sayıda üretim yapacak şekilde geliştirilir. Fonksiyonalist mimari, endüstrinin eline geçer. Sanatçı mimarlar yerine, standart parçalarla uğraşan teknikerler masa başındadırlar"*
	1988(230)	*" Bir mimar, çizdiğini inşa eden bir insandır. Çizdiğini inşa etmeyen bir mimarı ben tasavvur edemiyorum. Ben çizerdim ve inşa ederdim. Şimdi projeyi çizip bırakan mimar çok. Ancak "bu benim eserim" diyebilmek için, bir mimarın yapısının inşasında katkısı olmalı. Detayları incelemeden inşaatı kontrol etmeden mimarlık olmaz.""*
	1988(230)	*"Mimarlar ve mimarların dışında olup mimarlığa ilgi duyanlar yıllardır sürekli tartışır; "Mimarlık bir sanat mıdır? Bir teknik midir?" Deneyimlerimle katıldığım değerlendirme: Mimarlık, sanatla tekniğin arakesidinde zaman zaman her iki alanda yer alan tarih boyu ışıldayan bir meslektir. Teknikte uyum, ölçüler nispet ve güzellik, sanatta teknik ve incelik". "iç düzenlemede mimar bir mücadele ile karşı karşıyadır. Mimar müellif olmanın handikaplarının rehaveti içinde kalacak olursa, sanırım mücadeleyi peşin kaybedecektir. "*
	1989(233)	*"80'li yıllar yaşamımıza yeni bir de araç kattı: Bilgisayar. Onun çeşitlenerek yaygınlaşması, mimarların uğraş alanı içine giren pek çok işin daha iyi, daha çabuk ve daha kolay yapılmasını sağlıyor. Özellikle bilgisayar desteğiyle çizim yapan aygıtlar, genç mimarları teknik ressamlığa mahkûm olmaktan kurtaracak, onların asıl görev alanları olan düşünme, tasarlama, yaratma konularında daha etken duruma gelmelerini sağlayacak. Bunu 80'li yıllardaki en olumlu gelişmelerden birinin en azından başlangıcı olarak nitelendirmek olası" Türkiye 80'li yıllarda gerek yapı gereci, gerek yapım teknolojisi açısından önceki dönemlere göre hem daha çok, hem de çeşitli olanaklara sahip gibi görünüyor. Bunların büyük bir bölümünü kendi üretiyor, ancak dışarıdan aldıkları da var. Biçimlenme açısından 1970'leri çoğulcu olarak nitelendirmek olasıydı. 80'li yıllarda ise karşıt anlayışların arasının daha da açıldığı gözleniyor. En çağdaş biçimlendirme kaygılarının yanı sıra, geçmişe özenen seçmeci yinelemeciliğin örnekleri de boy gösteriyorlar. Kentleri saran anonim mimarlık yapıtları ise kendilerine özgü çoğu kez de akılcı nedenlere dayanmayan biçimlenmelerini sürdürüyorlar. "*
	1989(238)	*Bilgisayar, yaratıcı mimarın en büyük yardımcısıdır:", "AutoCAD uluslararası endüstri standardıdır " "AutoArchitect"*
YAPI	1980 (34)	*"Tekniklerin iyileştirilmesi ve yeni tasarımların yetkinleştirilmesi bulunacak yeni teknolojilere ve makinelere bağlıdır. İnsanlığın evriminde birçok örneğini gördüğümüz gibi, makinelerin oluşturduğu aksaklıklar yine makineler tarafından ortadan kaldırılabilir. Özgürlük makinelere karşı çıkmakla değil, onları denetlemekle gerçekleşebilir. Makineler her zaman insan işlevlerinin uzantılarıdır. İnsanlar tarafından tasarlanır ve çalıştırılırlar. Burada gözden uzak tutulmaması gereken, çağdaş yaşamın zorunlu öğeleri olan makinelerle çağdaş insanın bağlantılarıdır". ...."Günümüz teknikleri dünün tekniklerinden daha güçlüdür."*
	1980 (34)	*"Farklı nedenlerle güzel sanatların kendilerini tanımlaması ve toplumsal işlevini belirlemesi iyice zorlaşmıştır. Eski gelenekleri ortadan kalkmış ve kendini yanlış anlaşılmış bir orijinallik anlayışıyla yenilik peşinde koşan kişilerin elinde çöküşe bırakmıştır.Artık yeni'yi üretmek gittikçe zorlaşmakta ve geçici bir üne erişen bir sanatçı bile bir bilinmeze doğru yuvarlanmaktan kurtulamamaktadır."*
	1980 (35)	*"Gelenek tarihsel sürecin içerisinde geçmişten gelen, fakat hala geçerli olan, hatta güncel olan diyebileceğimiz faaliyetleri, sonuç olarak da olayları, töresel alışkanlıkları, nesneleri kapsar" "Fonksiyon, işlev gerçekte genellikle aşılması istenen bir düzeyi yani tarımsal düzen yaşamını belgeliyorsa da ilgili toplumu endüstri düzenine geçirirken 'sil baştan' hareketine hiç de gerek yok".*
	1980 (37)	*"...Smithson'ların kuramsal anlayışını.... daha çok şimdiye kadar modern olarak belirlenen görüşler arasında özel bir yeri olan, günümüze ve günümüzün gereksinmelerine yanıt veren bir yorum olarak tanımlayabiliriz. Burada aynı zamanda, namus kavramı önemli bir rol oynar ki, mekansal kuruluş, konstrüksiyon ve malzemenin okunaklı olması gerekliliğini beraberinde getirir." "Farklı işlevleri içeren bölümlerin değişik biçimlendirmeyle vurgulanması ve ulaşım bağlantılarında Brütalist öğeler gösterir, ve bunun ötesinde, cam mimari ile erken modern dönemin öğelerini özgün bir biçimde yineleyerek ileri götürmektedir."*
	1980 (38)	*"Ancak mimarinin bütünlüğü üzerine bir kuram mimari olgusunun hakkını verebilir ve tüm gerçekliğini kavrayabilir. Bu bütün mimari olgusunun parçası olan ve hiçbir biçimde birbirinden ayrılamayacak çok sayıda karşıtlığı içerir.""Önde gelen mimar ve inşaat mühendislerinin özelliği, belki tek tek yapılarının değil, tüm eserlerlerinin bu dengeyi az veya çok göstermesidir."*
	1981 (41)	*"According to Ernesto N.Rogers, the architect should set up a new state of equillibrium between beauty and function for each work. The new architectural interpretation made my generation, which had been out of touch with the architectural thoughts and realizations in the world for 5-6 years, able to confront with the problems without sticking up to certain dogmas." "Architecture should also be progressive. It must lead science and technology instead of following them. Architects should be able to demand from sciences and technology". "Interpretation as in all fields of art is the root, the essence of architecture. Architecture differs from the other technical branches by the ability of interpretation".*
	1981 (41)	*"anlaşılmayan modern mimarlık...anlayışsız mimarlık kullanıcısı ... anlaşma aracı olarak mimarlık..." "anlaşılabilir bir mimari için düşünceler...mimar mimarisi, katılımcı uygulama, mimarsız mimari"*
	1981 (41)	*"otomasyon, fabrika üretiminde kullanılan çeşitli araçları ve teknikleri içeren bir sistemdir. Makinaların birbirlerine kesintisiz bağlanmaları, seri işlemlerin en az insan kullanarak gerçekleşmesini oluşturur. Fakat bu arada tasarımın ve üretimin çok doğru programının yapılması gerekmektedir. Başka bir deyişle, bu dönem, üreticiye ve ürün tasarımcısına büyük sorumluluk yükler. Bir yandan insan gereksinimlerinin karmaşıklığı, diğer yandan üretim sistemlerinin denetlenmesi sorunudur bu."*
	1982 (42)	*"Tüm sektörler arasında inşaat sektörü, öncelikle ülkemizin sürekli artan nüfusuna 'barınak' sağlama bakımından önemlidir. Bu önem zincirinin ikinci halkası da, artan nüfusla birlikte arttığı gözlenen işsizliğe karşı bu sektörün 'ilaç' niteliği taşımakta olmasıdır."*
	1982 (42)	*"Kerpiç, duvarda ayrıcalık ve taşıyıcılık amaçları ile toprağın yapı malzemesi olarak kullanılmasıdır. Ancak kerpiç, sıvalı olarak kullanılan türden bir yapı malzemesidir. Sorunların çözümü için yönelinmesi gereken doğrultuya ve kullanılacak araçların seçiminde sadece bir örnek teşkil etmektedir. Aynı düşünce ve davranış sistematiği ile yapının tüm öğelerine çözüm yolları bulunabilecektir." "Doğal yöresel kaynaklarımıza dayalı ve kendi öz yapı tekniğimizin bu güne uzantısı olan yöntemlerle gerçekleştirilecek binalar, yeni bir yerleşme modeli oluşturmak olanağını da kazandırmaktadır."*
	1982 (43)	*"Endüstri devrimi öncesi ahşap malzemenin rasyonel kullanımına en güzel örnekleri Japonya ve Türk mimarisinden bulmak mümkündür. Her iki mimari anlayışta malzemenin kendine özgü davranışlarından hareketle bir konstrüksiyon ve form bütünlüğüne varışı simgelenmektedir. Ülkemizdeki geleneksel ahşap yapılarımız incelendiğinde özellikle ahşap karkas sistemin yer aldığı, sistem kuruluşunda sadelik ve fonksiyona aşırı özen gösterildiği ortaya çıkar. Karkas sistem arasında düşey yönde belli aralıklarla ara dikmeler kullanılmış, çerçeve sistemi, payandalar yardımı ile rijitleştirilmiştir." "Endüstri devrimi sonrası malzeme teknolojisi ve endüstrisinde görülen gelişmelere paralel olarak mimari anlayış belirli bir ölçüde özgürlük kazanmış ve yapı malzemeleri endüstrisinden amacına uygun kalitede malzeme istemeye başlamıştır. Kullanılan ahşap malzeme türleri, günümüzün gelişen teknik imkanları ve ekonomik düşüncelerinin etkisi ile doğal ahşap yeniden organize edilerek, ahşaptan üretilmiş kompoze yeni çeşitlerin oluşturulması sağlanmış, teknolojinin ileri imkanları ile eskinin çok üstüne çıkılmış ve geleneksel yapı malzemeleri adı altında artık tanımlayamadığımız suni ahşap plak ve lamine kirişlerle istenilen mimari form elde edilebilmiştir. Burada, endüstrinin gelişimi malzemeyi yeni boyutlara ulaştırmakta, yapı fiziği sorunları ile bilimsel boyutlar kazandırarak, mimarimizin gerçek ihtiyacı olan malzemelere doğru bir yöneliş ortaya çıkmaktadır. Dolayısıyla günümüzde mimari, kendisinin gerçek ihtiyacı olan malzemelerle, çağdaş bir boyut ve gelişme kazanmaktadır.*
	1982 (44)	*"Mimari, ancak yapıda varolabildiği için, teknik araçlarla gerçekleşir. Fakat tekniğin yalnızca bir araç olduğunu sananlar sonuçlarını görmezlikten gelmektedirler. Teknik yapı, yapı ve mimarisinin durumu hakkında dolaysız bilgi verir, yani 'okunabilir'" "Bugün mimarida, yeni olmasa da özellikle belirgin biçimde, endüstriyel üretime benzer bir durum söz konusudur. Araçlar, amaç, gereksinme veya maddi ve manevi kullanımlara göre geliştirilmemektedir."...."mimarlığın özerkliği.. "..."...kişiliksiz ticari mimarlık" "Bu yeni bilinmedik...dünyanın düzenini sağlamak için gereksindiğimiz örtü sistemi öncelikle, belirli bir el becerisi ve kişisel ve dış deneylerin geliştirilmesi ile oluşmakta ve her yeni işte daha iyisi yapılmaktadır. ben mimarların neden hep çırak olarak kalıp, yeni konulan sorunların derinine inmediklerini ve en son modaları izlediklerini anlayamıyorum."*
	1982 (45)	*"In general, facade can be defined as the reflection of an aesthetic essence to the outside. As Turkish traditional architecture was evolving this reflection developed its own individuality under the influence of various factors such as natural environment, social strcuture, material and traditional life. Materials used in the facade harmony of traditional Turkish architecture have generally been stone and wood". "In certain applications wood carcass was coated with plaster using the 'bağdağdi' system, but even so the facade's modular system did not lose its effect of reflection to the outside." "The integration of the facade construction with the material and better results in the rational use of the material mixed with technical data should be sought for in contemporary Turkish architecture".*
	1982 (45)	*"A facade is part of the cover, the envelope which seperates the interior of the house from outside. Facades also show taste, bauty and aestheticism. A facade which is a technical product is also an object in use: it can be perceived by our sense organs...In all works of art tensions, arising from contradictions, unity and variations in its rhythym, play a major role. In architecture such qualities cannot possibly be achieved by decoration only".*
	1982 (45)	"...malzemenin seri olarak üretilmesiyle güzelin elde edileceği inancı son onyılda inşaat sektöründe ve mimaride korkunç sonuçlar doğurmuştur." "bir üretimin teknik uygulamadan 'daha fazla ne olabileceği'"
	1983 (51)	*"şimdiye tek kişisel olan sanayi-üniversite ilişkilerinin bu tür toplantılarla kurumlar arası sağlam ilişkilere dönüşeceği ve sorunların çözümünde bilinçli bir yaklaşım sağlayabileceği"..."firmaların da maddi katkıda bulunmaları, eleman yetiştirilmesine yardımcı olmaları gerektiği"..."üniversite laboratuvarlarının sanayiye açılması ve yapılacak araştırmalarda firma ile üniversite arasında gizliliğin önemi"..."üniversitelerde yapılacak araştırmalar için firmaların kullanılacak aletleri üniversitelere bağışlaması"..."malzeme standardizasyonu geliştirilmesinde üniversitelerle ve üreticilerle işbirliğinin arttırılması"...*
	1983 (52)	

Appendix B. Statements in the Original Text (Continued)

Journal	Time	Statements in the Original Text
		"İnsan bugüne kadar birçok problemin üstesinden gelmiştir, fakat makinaların yaptığını insanlar yapamamaktadırlar. Bir çiftçi için biçerdöver ne kadar önemli ise bir bilgi kullanıcısı için bilgisayar o derecede önemlidir. Denebilir ki, BİLGİ KUVVETTİR-BİLGİSAYAR BU KUVVETİN KUVVETLENDİRİCİSİDİR."
	1983 (52)	"Bugünün Türkiyesi'nde uygulanmakta olan mimarlık türlerini şöyle sıralayabiliriz. -prestij mimarisi, -yeni-vernaküler mimari, -resmi mimari, -marjinal mimari, -dinsel mimari, -tarihsel mimari, -yeni-kırsal mimari" "bu 'mimari türleri'nin belirlenmesinde, bu mimarilerin kime hizmet ettiği, hangi süreçlerle üretildiği, mimari etkinliğin örgütlenme biçimi, üretimde gözetilen ölçütler ve amaçlar gözönünde tutulmuştur."
	1983 (52)	"Recently, we witnessed a group of architects under the name of 'Post-Modernism' returning to 'Facade Concept' (fcacadism)! These 'Facade' efforts of architects such as Philip Johnson and Michael Graves produce a parallel Situation to the 'facade concept' of 19th century! However, since the beginning of the 20th century as the result of the massive efforts morphology of such dead styles have been avoided".
	1983 (53)	"Rasyonelleşme aracı olarak ön-yapım"...
	1984 (55)	"Today, insitu exposed concrete surfaces which have more application fields are widely used in places concerned with transportation such as large constructional buildings bridges and products. Insitu double layer exposed concrete is a method developed to differ decorative exposed concrete in order to present various application simplicities to the building technique. Precast exposed concrete panels and finished surface ready-made building elements used in between structural systems".
	1984 (55)	"yerinde dökme brüt beton"..."ahşap benzeri yüzeyler"..."düz yüzeyler"..."yivli ve dalgalı yüzeyler"..."dokusal yüzeyler"
	1984 (56)	"1923-1950 yılları arasındaki devreyi Türk mühendisi ve işçisinin müteahhitlik hizmetleri açısından bilgiyi arttırma, tecrübe sahibi olma dönemi olarak nitelendirebiliriz."..."1950'li yıllardan sonra girişilen yoğun bayındırlık faaliyeti ve ekonomik kalkınma politikası ile birlikte müteahhitlik hizmeti sunmaya başlamayan Türk firmaları bu sektör içinde yer almaya başladığını görmekteyiz. 30 yıl önce yalnız yabancı miteahhitlik firmalarınca gerçekleştirilmekte olan baraj, santral, fabrika binaları, yol ve köprü inşaatları, havaalanları yapımı yerini Türk firmalarına devretmiştir."....dış ülkelerde gösterilen başarı "1978 yılından sonraki dönem Türk hükümetlerinin dikkatini çekmiş;"..."gerek yasal açıdan gerekse ekonomik açıdan bu sektörü teşvik edici kolaylıklar, firmalarımızın yurt dışına açılmasını özendirmiş"..."Eğer Türk miteahhitleri yurt dışında yüklendikleri işleri sorumluluk duygusu içinde bitirerek iyi sicil almayı ön planda tutarlarsa, batılı firmaların korkulu rüyası haline geleceklerdir."
	1985 (60)	"The value given to building in the social structure, the large labor force employed in the building sector, the rapid development of building materials industry make the building sector one of the major block of the economy. Factors affecting cost of building are labor, materials and technology used. Various technological and administrative problems of the building materials result in increases in the price of building materials. The production of building materials has foreign dependency. In rural areas wooden frame, and black techniques, in urban areas concrete systems are applied in traditional terms. Construction of buildings according to maximum profit in minimum lime has prevented the development of new technology and hindered quality. If the system to be applied and materials to be used are studied at lenght at the beginning and the technological possibilities available are carefully evaluated, the problems can be minimized".
	1985 (61)	"Many architects advocate that conventional building techniques as well as long-life expensive buildings are no longer able to meets today's rapidly changing spatial needs. This preference brought with it the plastic building materials. In this new application of light weight and flexible buildings, architects, engineers, jeodesists and mathematicians work together"... "pneumatic buildings",,,"suspended buildings"..."steel structured plastic buildings"..."paysa prefabricated buildings"
	1985 (62)	"Tünel kalıplarla tasarlama ilkeleri"..."Tünel kalıpların kullanılmasında beklenen yararların elde edilebilmesi için binaların tasarımında belirli ilkelere uyulması gereklidir. Bu ilkeler; -mekan organizasyonu kalıp boyutlarına uygun olarak düşünülmelidir. Binadaki ana taşıyıcı duvarları oluşturan tünel duvarlarının eşit açıklıklarla yerleştirilmesi sağlanmalıdır.- Bu duvarların arasının hiç değilse bir yönde açık olması zorunludur. -Mekanların dik açılı olması tercih edilir.-Girinti çıkıntı bulunmaması sistemin rasyonel kullanımına olanak sağlar. -mekan yüksekliklerinin eşit olması zorunludur. -taşıyıcı duvarların binanın dar kenarına paralel doğrultuda yerleştirilmesi uygun olur. -Tasarlamada ankraj aralıkları göz önüne alınmalıdır.-Vinçlerin aksiyon çapı göz önüne alınmalı ve rasyonel çalışma düzeni kurulmasına önem verilmelidir.".
	1985 (63)	"....the aesthetic power is not enough for the success of a work being produced in architectural practice as in arts in general. Autheticity which means to reflect when, where and why a work of art has been created and not being captive of a false determinism, is the indespansable quality of the works of art and architecture. However, this is not yet enough. The work which has a completely authentic content also has to have an aesthetic stimulation capacity to fullfil its aim. When this balance has been gained, the work acquires the qualities of a real work of art and becomes a genuine 'cultural document'. Actually, it is not in the power of the architects to control the direction in which architecture develops or the rise ot the fall of Post-Modernism. Tis phenomenon is a question evolving from the cultural balance of the society."
	1986 (66)	"Mosaic is a technique creating floor, ceiling or wall surfaces built up from small cubes of glass marble or pottery laid in cement to a pattern"..."great improvement was seen in art, ceramic and textile which in turn effected the mosaic art"
	1986 (67)	"Yapımda standartlaştırma eylemleri, yapım etkinliklerine düzen ve kolaylık sağlamak amacıyla çok eski devirlerden beri süregelmiştir. Geleneksel yapım biçimlerinde, yapı ürünlerinin standart özellikleri, daha çok belli bir buluşun, yeniliğin veya davranışın, toplumda onanarak izlenmeye başlamasıyla ortaya çıkmıştır."...Moğollar'ın 'yurt'u, eski Roma tuğlası, Amerikan ahşap konut strüktürü (balloon frame), Kızılderili çadırı, Horasan örgüsü duvar, Türk evi, Osmanlı camileri gibi."..."Standartlaştırma olgusunun yapım eylemlerine sağladığı yarar ve kolaylıklar, günümüzde tartışma kabul etmez bir geçektir. Gerek yapım etkinliklerine düzen sağlayıcı bir araç ve gerekse de, yapım endüstrisi olanaklarından en etkin biçimde yararlanma yolu olarak standartlaştırma olgusu, zamanımızda büyük bir önem taşımaktadır".
	1986 (69)	"Proje yönetimi, işleri zamanında, planlı ve en az maliyetle bitirmenin sanatı olarak tanımlanabilir."..."kişisel bilgisayarlarla proje yönetimi"..."her şeyi doğru olarak ve sektirmeden hesaplayan ve en doğru çözümü bulan elektronik beyin"
	1986 (70)	"The Aga Khan Award for Architecture, the first of the Awards to be established, seeks to nurture within the architectural profession and related disciplines, a highlighted awareness of Islamic culture and to encourage an architecture for Muslims appropriate to the 20th century. Its aim is to support, encourage and promote Islamic culture, the values it embodies and the forms of expression that ensure its authenticity, identity, creativeness and continuity".
	1987 (71)	"Re-dizayn, var olan ürünlerin yeniden ele alınıp bir kısmının tekrar edilmesi ve bazı kısımlarında düzeltmeler yapılarak kullanıcıya daha kaliteli bir ürün sunulmasını amaçlar. Kaliteyi yükseltici bu gelişim herşeyden önce değişen kullanıcı davranışlarına uyum sağlama ve kullanımda rahatlık ve kolaylık getirme, yanlış kullanım durumlarını düzeltme ve yükü hafifletme, ayrıca teknik etkinliği artırma gibi özellikler üzerinedir."..."araçlara otomatik özellik verme, bir makinenin mekanik kolunun ya da bir sekreter koltuğunun ergonomik açıdan geliştirilmesi gibi mekanik, elektrikli veya elektronik her türlü araçta, daha az enerji ile, daha kısa sürede, daha çok iş üretmek için geliştirme gibi"
	1987 (72)	"Architecture contains both technical and natural factors. In my opinion, architecture has more of a theoretical nature... "Theoretical sciences support innovations with the help of traditions".
	1987 (72)	"çağımızın diğer bir özelliği de teknolojik gelişmelerin çok süratle günlük yaşama aktarıldığı bir dönem olmasıdır. Bir konut içinde arzulanan bu yeniliklerin çoğu kez bazı değişikliklere yol açması doğal karşılanmaktadır."..."iç mekanın öğeleri olan mobilyaların, ortaya çıktığı dönemlerin kültür ve beğenilerini ve teknolojilerini yansıttıkları bir gerçektir.
	1987 (74)	"Bugün Post-modernizm, late-modernizm akımları güncel konulardır. Bazı eğitim kurumlarından, yarışmacı mimarlara, uygulamacılara kadar bu akımların etkilerini görüyoruz."..." Bugün ülkemizde yuvarlak pencereler, kemer biçimler öyle yoğun biçimde kullanılmaya başlandı ki özellikle Akdemiz yöresinde 'taklit mimari' diyebileceğimiz bir mimari ortaya çıktı."..."...geçmişin formları, bu eski motifler, dokular ancak yaratıcı düşünceye bir plarform oluştururlar. Bu oluşan platformda, bunlar yorumlanır, yeni problemlerin çözümü için kullanılır hale getirilirler, yoksa aynen taklit edilmezler."
	1987 (82)	"Günlerden bir gün, insanlardan bir insan, eski ustaların en eskisi çıkmış ortaya. Taş üstüne taş koymaya, temel atıp duvar çatmaya başlamış... Zamanın durmak bilmeyen yüreği binlerce yılı birbiri ardına aşıp giderken, adı sanı unutulsa da hüneri, ustalığı, emeği günümüze kadar ulaşmış bu adsız ustanın. Ve ustalar ustaları izlemiş... İşte o eski ustalar ve o eski evler üstüne sözümüz... Ne kalmışsa geriye onlardan"
	1988 (85)	"It is not possible to expect development with imported technology. Development efforts can only be justified if local technology and know-how are used. The education and training of manpower to realise such a process is becoming all the more important. The 5th Five Year Development Plan foresees the development of high quality and standardised, economic building materials. Universities are in a position to direct research in new building materials technology and building techniques The university-industry cooperation should be encouraged."
	1988 (85)	"Artık günümüzde üslup kavramını daha geniş anlamda düşündüğümüz için konuyu bu derece basit görmüyoruz. Bugün üslup sadece mimariyle sınırlı kalmayan, aksine bütün sanatları içeren bir kavram olarak kabul edilmektedir. Hatta üslup bizim yaşamımız içindeki davranış şekillerini de içermektedir. Bunun da ötesinde üslup yardımıyla sanatların ortak yönlerinin anlatımı yanında, tek tek sanatçıların davranış biçimleri de açıklanabilmektedir. Tarz, stil ve karakter kelimeleri üslup kavramına yakın ifadelerdir. Buna karşılık moda kelimesi pek istenmeyerek üslupla ilişkilendirilir."
	1989 (89)	"Kule ve minare gibi, çevrenin genel düzeninden ayrılarak göğe doğru yükselen narin yapıların Türkiye'de oldukça uzun bir tarihi vardır. Buna karşılık, her katında insanların yaşadığı ve çeşitli faaliyetler yürüttüğü çağdaş çok katlı yapılar, ülkemizde ancak 1950'lerde yapılmaya başlanmıştır."..."Almanca'da Wolkenkratzer, Fransızca'da Gratte Ciel, uzun bina tipini anlatmak üzere kullanıla gelmiştir. Ancak, günümüzün bina teknolojisinde, gökle ilişkili ve doğaya aykırılık çağrışımı yapan bu deyimler yerine, olayı daha tarafsız anlatan, İngilizce'de "Tall Building" ve "High-Rise Building", Almanca'da Hocchaus terimleri tercih edilmektedir.
	1989 (90)	"Geleneksel evleri çağdaş bulma nedeni ... geleneksel evlerde odalar çok amaçlıdır. Bu bence çağdaş bir biçim. Oysa 'çağdaş' denilen günümüz evlerinde 100 metre karelik alanın sadece 40 metre karesi kullanılabiliyor. Salonun bir köşesine bir masa atıyorsunuz. Günün sadece iki saatini o mekanda geçiriyorsunuz. Günde bir, iki defa kullanılan mekanlar bana çağdaş gelmiyor"
	1989 (92)	"Çağımızın mimarlığı özellikle son 25 yıldır önemli değişme ve gelişmelere tanık olmaktadır. Günümüzde mimarlık Christian Norberg Schulz'un deyimiyle 'çoğulcu(pluralist)' bir görünümde olup bu ise çok farklı mimari akım ve dilin varlığını sürdürmesi demektir"."...günümüzdeki mimarlık akımları, tarihin hiçbir döneminde görülmemiş bir şekilde çeşitlilik sunmaktadır."
	1989 (96)	"Ağa Han ödülü, ilk seçimlerini yaptığı gün Batı ekonomisinin bir pazarlama aracı olduğunu ortaya koymuştur."..."Kırktan fazla ülkenin, kimlik arayışını, kültürlerindeki din unsuruyla bir pakette toplamak büyük bir politikadır."..."Sanatta kimlik mimaride büyük ağırlık kazanmakta, bunu yöresellikte bulabilmektedir". "Kuramlar evrenseldir ama yöresellik dışarda üretilemez".


Techne
Firms / Companies
Actors
Applications
Techniques / Technologies
Materials
Industries
Suppliers
Privates
Kamping
Themes / Concepts
Classifications
Phrases
Burç Elektronik
solar energy
ventilation pipes
heating-cooling technology
power supply
self-adhesive
electrostatic
MNG Bilgisayar
facade protection
SUNTES
trapeze
suspended
programming
clamped
static
BAYTUR
CAD technology
E.C.A
DEKA
KONTUR Model Making
TEKİM
pvc
element production
ERALKOÇİT
separation elements
ISICAM
Çuhadaroğlu Alüminyum
fencing
IZOCAM
ALARKO-ALFEN
relief modeling
advisory
product manufacturing
TERMO-CAM
thermostatic
acerdeon
roller shutters
EGE Seramik
ETİPER Etibank
glass
PİMAPEN
Sistem Mala
infrastructure
engineering
BİLGİMAT
sun collector
TOPRAK Seramik
Mekon
IZOCAM
joinery
TANACAN
waterstop tapes
MODEL & HOBBY
BADEN-WÜRTTEMBERG
ERDOĞANLAR
aluminium
reinforced panelling
space- partition
double-glazed
Teba
optic technology
automatic control
tile-making (ciniciliki)
HASAŞ Hali
SEKEŞ
wall material
PROMAK Model Atelier
mechanic
computer-based system
DİMSAN
Ödoksan
BİMTAŞ
joinery systems
ceramic
GÜRSAN
renovation
ceiling
model-making
electronic
Prokon
Soper Delap
CUPASAN
ARSAL TERMO-CAM
hand-making
door production
plastic
amblage
Kelebek Mobilya
Çanakkale Seramik
lighting
block
Talat Orhon
radiator production
HÜRSAN
Kalebodur
gypsum
window production
Borusan
Tuğrul Öztoygar
Demirdöküm
acoustic plate
Kenitex
ABS Alçı Blok
BARKİSAN Bartın Kireç
Mustafa Fuzuli
pipes
vacuum
Meges
strips
iron
FENİS ALUMİNYUM
patterned
colored
Şule Ülgen
acrylic
Yavuz Erdoğan
galvanized sheets
Güneş Çelik Hasır
relief
Durlar
Süperteknik
spraying
DUVAL Alçı Blok
DYO SADOSAN
M.Salim Ok Aterlier
PAYSA
machine molding
raised-floating
mass-production
sandwich panelling
Dyokap
roofing
Haldun Bağbakan
FEMTECHNKA
ESEKS Makine
non-molded
construction elements
polyester
HEMEL
Selim Beştek
Özışık İnşaat
machinery
model making
volume
DOKAR
flooring
booster
coating
Kaleterasit
OKMAN
Çetin Yarlıgan
paving
landscaping
FORMEKS
cladding
DELSA DUKAP
insulation
painting
installation
forged
Haksan Aydınlatma
synthetic
İSTAŞ
Turan Kutlu
sheet
container production
plaster
Feridun Bolkan
infrastucture
pre-construction technology
acrylic
tile
Mümtaz Şekercioğlu
industrial
steel
washed
polishing
IZOMER
paneling
AFA
automated
manufacturing
AKPINAR
flat embossed sheets
rubber
membrane
Marshall
silicone
heavy prefabricated panelling
frame system
Onduline Prefabrik
MO-YAP
BERK İnşaat Mobilya
granite
A3 Sanayi Boyaları
epoxy
NA-CE
USKON Uzay Sistem
KROMAN Çelik
corrugated sheet
decoration
Kaledekor
BETONTE
conventional construction
meshing
modular systems
GENTAŞ
terrazzo
facade elements
mortar
Bintaş
BETONTAŞ
sandwich panelling
FORAP system
FOLİPLAST
packaging
NASAŞ
asbestos cement
chemical
plexiglass
styropor
paint
TREYSAN
British ATCOST
MKİS
DURA Teppichboden Carpet
Osman Reklam
Trimetal
BETONSAN Konut
OYAK KUTLUTAŞ
Pi Makina
ALÇE-YAPI
TEPE Group
Kelebek Kayın
plywood
antiCorrosive
powdered
GÖK İnşaat
molding
YTONG
Eternit
SCAPO
ÖREM
POLİSAN Kimya
Işıklar Makine
reinforced
tunnel formwork system
washed concrete
aerated
Werzalit
İZOTUĞLA Protein
chemical resistant
aqua-printed
NİGBAŞ
AYES
pressed
ready-made
CBS
seraklin
space construction
fabrication
YÜBETAŞ Yüksel Beton
molding boards
APEKS
MAYAŞ
saniter
polyurethane
lime
pre-stressed technique
FE-GA
concrete
production
travertine marble
İMPER Italia
ON AR
Ekşioğlu
protection
ciba-geigy
prefabricated structural elements
precast
polished
FAMERİT
ESTON
MESA Production
furniture
GÜRSOY
NEUTRA RUST
linoleum
scaffolding
Orsan Boru
CİMENTAŞ
RÜREDİL- ALTINEL
covering
ARALDİTE
asbestos
ALÇE YAPI
standardization
slaked- bagged limewash
structural elements
mosaic
Forbo-Krommenie
vinyl
ALPER İNŞAAT
formwork
Türk YTONG
wall construction
Işıklar Bartın Fuğla
Bartuğsan
cement
UNIMOB Universal Mobilya
DOĞAN DÖLCEL
window
Kalteks
KILIÇOĞLU
wood
BETOYA
masonry
ÇAMSAN
marble
wall
chip boarding (yonga)
KASTAŞ
pre-fabrication
Veziroğlu
mdf
boarding
TEK Ağaç Sanayi
emprenye
concrete brick
Doka
Eskişehir Beton
brick
Tek Orman
timber
KAROLİT
Tezokan

Appendix D. Weaving a Web of Relations



CURRICULUM VITAE

Surname, Name: Uz Baki, Melek Pınar

EDUCATION

Degree	Institution	Year of Graduation
Ph.D.	METU Department of Architecture	2016-2022 (4.00)
M.Arch	METU Department of Architecture	2013-2016 (4.00)
B.Arch	METU Department of Architecture	2009-2013 (the fifth best degree 3.45)

HONORS & AWARDS

2018 Graduate Performance Award, METU, Graduate School of Natural & Applied Sciences
2013-2018 The First Best Degree, METU, The Highest GPA
2011-2012 Academic Performance Scholarship, METU, Listed in the top 10% success performance our of the university
2009 Undergraduate Performance Award/ The First Best Degree, METU, Department of City & Regional Planning
2009-2013 High-Honor Degree
2009-2012 Honor Degree

PROFESSIONAL EXPERIENCE

Administrative

2022-present 75. Board Membership, Architects' Association 1927
2021-2022 74. Board Membership, Architects' Association 1927
Academic
2020-present Part-Time Instructor
Bilkent University, Fine Arts & Architecture Faculty, Architecture
2019-present Full-Time Instructor
Başkent University, Fine Arts, Design & Architecture Faculty, Architecture
2015-2019 Research/Teaching Assistant
Başkent University, Fine Arts, Design & Architecture Faculty, Architecture
2013-2015 Research/Teaching Assistant
Middle East Technical University, Architecture Faculty, Architecture

PUBLICATIONS

-Uz, M.P. "Authenticity in House Museums: A Tool for the Reinterpretation of Architectural Space", under the supervision of Prof. Dr. Ayşen Savaş, Middle East Technical University, Department of Architecture, M.Arch Thesis, Ankara, 2016.

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-Uz Baki, M.P (2022) "A Critical Investigation into Technopoiesis of Architecture", *Innovation in Practice, in Theory: Tracing the Project of Architecture and Its Agency (eds. by* , Barioglio C., Campobenedetto D., Dutto A.A., Federighi V., Quaglio C., Todella E.), USA: Applied Research + Design Publishing, 2022, pp. 39-43. *ISBN-978-1-954081-55-0*

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-Koçyiğit Ayhan E.S., Uz Baki, M.P, Ateş B. (2020) "İki Savaş Arası Kaunas: Modern Mimarlığın Yerel İfadesi", Serbest Mimar Journal of Architecture, vol.35, 2020, pp.96-104

-Ateş B., Uz Baki, M.P, Koçyiğit Ayhan E.S. (2019) "Kaunas-Kačerginė'de Bir Yaz Okulu: Gelecek İçin Modernizm", XXI Journal of Architecture, pp.8-10

-Uz Baki, M.P, Ateş B. (2019) "Yıkarak Kentleşme: Yıkma Odaklı Müdahaleler Üzerine Yeniden Düşünmek", Mimarlık, N:415, Eylül-Ekim 2020, pp.49-54

Conference/Symposium Papers

-Caner Yüksel, Ç, Uz Baki, M.P, Çelikcan Yozcu E.C, Biçer N.B. (2021) "Pandemi Sürecinde Mimarlık Eğitimine Hazırlık: Çevrimiçi Mekan Oyunları", 4th International Symposium on Art and Design Education Symposium, Baskent University, Ankara, Turkey, 06 April 2021, pp.497-505 (full-paper is presented and published)

-Uz Baki, M.P, Basa İ. (2020) "Printing (and) Architecture: A Technopoietic System for Making", MSTAS 2020 Digital Design National Conference, Karadeniz Technical University, Trabzon, Turkey, 24 October 2020. (full-paper is presented and published)

-Uz Baki, M.P (2019) "Architecture as (A)Part of Capitalism", The 4th International Conference on Urban Studies, Institute of Urban Studies, Ankara, Turkey, 16-18 October 2019. (full-paper is published)

-Uz Baki, M.P (2019) "A Critical Investigation Into *Techno-Poiesis* of Architecture", Innovation in Practice: PhD Research Marathon, Politecnico di Torino, Turin, Italy, 13-14 September 2019.
-Uz Baki, M.P, Ateş B. (2019) "Beden-Kent Ankara: Yıkarak Kentleşme Üzerine Eleştirel Bir İnceleme" (Body-Urban Ankara: A Critical Investigation into Urbanization by Destruction), (published in proceeding book)
-Uz M.P. (2015), "Urban (R)evolution in Times of Turmoil: The Case of Çukurambar Region", Design in Times of Turmoil: Displacement, Replacement, Emplacement International Symposium Book (organized by 4T Design & Design History Society, İzmir Yaşar University), pp.126- 144 (full-text is published)
-Uz M.P. (2015), "Mekanın Tözü: Özgünü Deneyimlemek, Mekanı Özgünleştirmek", Türkiye'de Müzecilik: Yeni Kavramlar ve Yeni Uygulamalar Symposium Book, pp.386-400 (full-text is published)

Editorial Works

-B-STUDYO Başkent University Department of Architecture, Graduation Book 2013-2017, 2018 (eds. Özlem Altun, Farzad Golghasami, Melek Pınar Uz)
-BELLEK Başkent University Faculty Bulletin, no:6,7,8, 2017 & 2018
-Studio Booklet Başkent University Architecture Studios for İstanbul Studio-X Exhibition, 2015.
-STUDIO-LOG Arch 401-402 Architectural Design Studio Book 2012-2013. (eds. Ayşen Savaş, Agnes van der Meij, Seray Türkay, Melek Pınar Uz)

ACADEMIC ACTIVITIES

Jury Membership

2022, "New Media", Photography & Architectural Drawing Competition organized by Architecture Association 1927 (Mimarlar Derneği 1927), Ankara
2020, "New Normals (Yeni Normaller)" Photography & Architectural Drawing Competition organized by Architecture Association 1927 (Mimarlar Derneği 1927), Ankara

Research Projects

-"*Ankara'da İz Bırakan Mimarlar*" supported by Vehbi Koç Ankara Research Center (VEKAM)

Open Talks/Invited Lectures

PERSONAL ACTIVITIES

Music Performances

2009-2013 Amateur Pianist
Individual Piano Recitals in Contemporary Culture Center, English Culture Association & American Culture Association, Ankara

Art Exhibitions

2009, The Forth Charcoal Drawing Exhibition, METU Library Furuzen Olşen Art & Exhibition Gallery (participation with drawings)
2008, The Third Charcoal Drawing Exhibition, METU Library Furuzen Olşen Art & Exhibition Gallery (participation with drawings)
2005, Oil Painting Exhibition, Kavaklıdere Art Gallery (participation with drawings)