

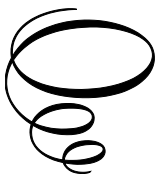
Tectonic Affects in Contemporary Architecture

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By

Yonca Hurol

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to Emine Sait

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PREFACE

The story of this book goes back to 1984, when I became a research assistant on the subject of structural systems in the Middle East Technical University, Department of Architecture. One of the professors in the recruitment committee – I think it was Professor Kadriye Seyithanoğlu – approached me and said:

We decided to ask you to conduct research in the direction of relating the realms of architectural design and structural systems. You are good both in design and the mathematical issues about structures.

I was assisting professors both in design studios and in theory courses about structures. Then one of my architect relatives, who later became a well-known Cypriot architect – Ahmet Vural Behaeddin – told me that:

Structural systems are the area of structural engineers. You are an architect. You should study how structures effect architecture.

Therefore, I started my academic life with the mission of connecting knowledge about the structural systems to knowledge about architectural design. However, there was no academic literature relating these two realms to each other. Because of this, I first focused on structures as a technical issue and this was the main reason behind my research on a certain type of high-rise building structure as a master's thesis. However, I faced many problems with this thesis, because at that time interdisciplinary research was not on the agenda. The literature on structural systems was on the mathematical aspects of structural systems and theories of architecture were on qualitative features of architecture. These architectural features included structural systems; however, the technical dimension of structural systems was seemingly ignored. There was also very little literature available on the structural systems of high-rise buildings from an architectural point of view.

I was aware at that time that the most important common feature of architectural design and structural systems was the form of buildings, elements etc. I started preparing my PhD thesis on the form of a certain type of high-rise building structure. When I got my PhD degree in 1992 the effect of form on the wind performance of high-rise buildings was not known as it is known today. There were mostly rectangular high-rise buildings with

tapered forms. I saw the project of the Bank of China, which at that time was a high-rise building with a very radical form and I thought that it was not a project possible to realize. However, it was built within a few years.

While continuing my studies on structural systems, their examples and structural systems of student projects, I also started reading philosophy and attending some philosophy classes. I started with epistemology, then aesthetics, then ontology, then politics, then ethics and finally poetics. My philosophy readings have been ongoing since 1992. I learned a lot from philosophy and tried to relate the architectural features of buildings to their structural features with the help of philosophy. I compared the types of knowledge in architecture and structural engineering. I discovered that the first one is ontological and artistic, whilst the second is epistemological and analytical. I studied the political dimension of earthquakes. I recognized the problem of technology as meaninglessness with the help of ontology. I studied the ethics behind building codes, which sometimes restricts architectural design in various different ways. When I started reading poetics, I understood that secularity of the modern world causes the exclusion of certain poetic dimensions from architecture. Most of these excluded poetic dimensions are about the immanent characteristics of the material world including architecture.

At that time, I started focusing more on the theories of tectonics and the history of these theories. Again, I came face to face with the issue of separation of the artistic from the analytical, because some theoreticians supported the technical dimension of tectonics, whilst others supported its artistic dimension. It was mainly the contemporary theoreticians who supported the artistic dimension of tectonics in order to avoid the problem of technology which causes meaninglessness. I found out that the problem of technology is actually due to the ruthless applications of the commercial approach which causes meaningless architecture.

I taught at least fifteen hours weekly during my thirty-five years of academic life. Parallel to the readings of philosophy and research, I changed the character of the structure courses that I taught at the Eastern Mediterranean University. Previously they were mathematical courses. In 2006, I changed them into tectonics courses, which combine the technical knowledge about structural systems, the mathematical knowledge about them and the tectonic qualities of their good architectural examples. Taking place in the design studios and helping students of architecture and interior architecture to design the structural systems of their design projects contributed considerably to build up an architectural approach, bit by bit, to structural design in

architecture. In 2016, I published the intellectual material related to my undergraduate courses about structural systems as a book called: “The Tectonics of Structural Systems – An Architectural Approach” with Taylor and Francis – Routledge.

My students contributed a lot to my knowledge about the tectonics of structural systems by bringing new developments to my attention, asking questions about the structural systems of their design projects, asking detailed questions about building technologies and bringing architecturally valuable examples of various structural systems to the class. My students were like my agents of research and they seriously contributed to the accumulation of my knowledge in the long term. My post-graduate students also contributed to my knowledge about tectonics. I supervised five completed PhD dissertations and twelve master’s theses. These theses were either about tectonics or related subjects to tectonics. These theses also allowed me to delve into the details of the tectonics of certain structural systems.

However, the technical dimension of “The Tectonics of Structural Systems – An Architectural Approach” was dominant in comparison to the aesthetic dimension. This was because of the character of my courses. After this book, I started to think about how I could reflect the harmonious character of tectonics with its technical and artistic dimensions in the successful cases of architecture to another theory. The balance and harmony of architectural aesthetics, technical knowledge and philosophy in the theories of Gevork Hartoonian greatly inspired me. This book was planned with that intention. It took four years to complete. 13.1.2022, Monarga, Cyprus

ACKNOWLEDGEMENTS

I would like to acknowledge the people who contributed to the preparation of this book in various ways. I would like to firstly name Dr. Ceren Boğaç as a main contributor. She discussed many parts of my book with me, helped me find references with regard to certain subjects and showed me some good examples of architecture which displayed certain characteristics.

CHAPTER 1

INTRODUCTION

The essence of technology is nothing technological.¹

This chapter begins with some examples of the tectonic use of building technology in architecture and provides explanations about the concepts of affect and tectonic affect as an introduction to the subject. It then explores the common issue of the lack of meaning in the modern built environment. The problem of separating building technology from meaning/aesthetics/art in the theories of tectonics/architecture is then presented as the research problem which defines the originality as well as the objective of this book in exploring the tectonic affects of contemporary architecture.

The relationship between contemporary architecture and building technology can operate in very different ways. Architects either use building materials, systems and construction methods in an aesthetically expressive way, or they try to integrate and absorb building technology into the architecture. If building technology is used in an expressive way, then structural, mechanical and electrical systems, information technology, façade systems, details and/or building materials play determining roles on the architectural qualities of those buildings. Renzo Piano and Richard Rogers' Pompidou Centre is an example of the expressive role of building technology in architecture and Le Corbusier's Ronchamp Chapel is an example of the building systems, which are hidden/absorbed within the materiality of the building.

Structural, mechanical and electrical systems' expressive characteristics in the Pompidou Centre are demonstrated in Figure 1.1. The structural system of the Pompidou Center is not a common one and the details of the structure were also designed for aesthetic purposes. Especially the gerberettes, which provide the joint details between columns and cables in the structure, play

¹ Heidegger, Martin. "The Question Concerning Technology" In *The Question Concerning Technology and Other Essays*. Trans: William Lovitt (NY: Garland Publishing, 1977 [1954] a), pp. 3-35.

a significant role in the expressive character of the structure. The expression of the mechanical system on the façades of the building and at the street level also has an aesthetic character. Pipes with different colours contribute to some of the façades of the building.



Figure 1.1. Pompidou Centre, Paris, (1971-1977)²

When building technology and systems melt into architecture, the technological elements do not command direct attention, or they can be concealed. Le Corbusier was inspired by crabs' shells whilst designing the roof of the Ronchamp Chapel.³ However, the structural system of the roof is not a typical thin shell. It contains two layers of 6 cm thick curved reinforced concrete surfaces, which have reinforced concrete ribs. It is not possible to imagine or see this configuration externally. The same is true for the vertical structural elements of the chapel. There are some vertical linear

² Figure 1.1 was drawn with the help of following source: (accessed on 14.1.2022) <https://blog.artspers.com/en/a-closer-look/five-facts-about-the-construction-of-the-pompidou-centre/>

³ Searching for the photos, plans and sections of the Ronchamp Chapel on the Internet might help in understanding the explanations about this building.

supports (columns or tie-beams) in the walls, but these are not visible as they are embedded in the walls. The structure of the thicker wall is not traditional stone masonry. The structure and its elements are all integrated and none of them have an aesthetically expressive character.

The use of building technology in an aesthetically expressive way can be seen throughout history. Gothic cathedrals are examples of the use of building technology in an aesthetic way in architecture. For example, Cologne Cathedral has a very ambitious structure with high spaces surrounded with masonry stone walls, and a large area of openings within these walls, with the large vaults over these walls and the flying buttresses which balance the horizontal forces created by the vaults.⁴ The whole structure is very architectural.

The expressive or integrated/absorbed uses of building technology in architecture are related to tectonics, because they demonstrate two different ways of using building technology to contribute to the artistic/aesthetic/meaningful characteristics of architecture. Tectonics relates building technology to aesthetics/meaning.

The building materials and structural systems themselves also have various tectonic meanings. Similarly, certain forms, which can be used in architecture, have meanings too. There are different approaches to the meaning of things/objects, which include building materials and the structural systems of buildings. The meaning of things/objects can be seen as belonging to things,⁵ or it can be given to things/objects by humans,⁶ or it can be sacred.⁷ It is accepted in this book that any meaning concerning the materiality of buildings depends on the meanings which belong to things. This approach helps in connecting materiality directly with meaning. We

⁴ Searching for photos of Cologne Cathedral on the Internet might help in understanding the explanations about this building.

⁵ If meaning belongs to things, this means that meaning is “immanent” to those things. Eagleton, Terry. *The Meaning of Life* (UK: Oxford University Press, 2007); Deleuze, Gilles. *Pure Immanence – Essays on a Life* (NY: Zone Books, 2001 [1995]).

⁶ If meaning is given to things/objects by humans, this means that there is a nihilist approach to meaning and this approach sometimes results in meaninglessness. Dreyfus, Hubert and Kelly, Sean Dorrance. *All Things Shining: Reading the Western Classics to find Meaning in a Secular Age* (Simon & Schuster, 2011).

⁷ If the meaning of things is sacred, this means that meaning is “transcendental” to things. Gilles Deleuze also believed that immanence contradicts the transcendental, and these are not necessarily religious. Deleuze. *Pure Immanence*.

can compare the meaning of timber or stone surfaces. Timber is usually recognized by the warm feeling it offers. It is also known as *playful* because it is easy to cut it into pieces and join these pieces together. Stone is known as a rough, cold and heavy material. There can be variations of the meaning of materials depending on their familiarity and the way they exist in different cultures. Recognition of the meanings of the configurations/forms of structural systems can also be seen as natural, if these meanings are outcomes of the rules of nature such as the rules about gravity. We may find an arch form to be meaningful for stone, because due to gravity it is the most appropriate form of stone, which works only with compression. Such characteristics of structures are capable of developing feelings in people.

The forms of the moon and the sun give pleasure to people, because these forms belong to the sky and they have been familiar to people for millennia. The forms of space objects are round and there is a phenomenology of roundness.⁸ Therefore, round objects give pleasure to people. However, the circular symbolism of the dome is beyond immanent tectonic meaning and it has a transcendental character. The forms of trees and rhizomes are also familiar to people, but since they belong to the earth, their meaning is different than the forms which belong to the sky.

On Tectonics, Affects and Tectonic Affects

Tectonics –or architectonics–, which is the architectural/artistic aesthetic/meaningful use of building technology and all other physical issues related to architecture, such as topography, climate, light, etc., has always been a considerable dimension of architecture. The focus of this book is on the tectonics of building materials, structural systems and construction methods. It does not cover tectonics relating to other physical issues of architecture.

Since architectural meaning can be personal or cultural, it is preferred to use the concept of *affect* in this book. The concept of *affect*, which plays a determining role in the aesthetics of Deleuze and Guattari,⁹ can be described as the feeling created by the characteristics of physical things or objects. The philosopher Baruch Spinoza categorized affects according to the

⁸ Heidegger. “The Question Concerning Technology.”

⁹ Deleuze, Gilles and Guattari, Felix. *A Thousand Plateaus, Capitalism and Schizophrenia*. 5th edition. Trans: Brian Massumi (London: Continuum, 2004 [1980]); Deleuze, Gilles and Guattari, Felix. *Anti-Oedipus – Introduction to Schizoanalysis*. Trans: Eugene Holland (Routledge, 2002 [1972]).

feelings they cause and according to him *affects* of pleasure and pain are capable of covering all other feelings. This book uses this categorization and not that of Gilles Deleuze and Felix Guattari in respect of affects of pleasure, pain and desire, since the issue of desire can be viewed together with that of pleasure.¹⁰

Affects are practical and they are psycho-physiological constructs. This makes them different from the other physical effects. Tectonic affects are those caused by the tectonic characteristics of architecture. The concept of affect takes place within the category of aesthetics together with the concepts of composition principles, poetics, symbolism, representation, etc. However, the concept of affect differs from concepts of symbolism and representation, because affects are immanent to the object/thing/matter/experience, whilst symbolism and representation have a transcendental character. Affects also differ from the composition principles, which are rather abstract.¹¹

Affects usually cause unconscious emotions due to psychological human inclinations such as the inclination to freedom, inclination to sex, inclination to power, etc.¹² The emotions due to tectonic affects can be felt by anybody. Architects should be more aware of tectonic affects influencing design. Their degree of consciousness of these affects also depends on their intellectual level.

Affects can be incidental, integral or protagonist. Incidental affects are related to the activity of the person rather than the architecture or space. However, the integral and protagonist affects are related to the environment and architecture. People recognize the lack of good integral affects, such as not feeling at home in a house. However, protagonist affects occur in architecture. There might be pleasure or pain due to integral and protagonist affects. Affects can also cause arousal or motivation. Motivation can sometimes be so strong that the affect might cause or invite the immediate action of a person. For example, if the person feels that s/he is in danger due

¹⁰ Spinoza, Baruch. *The Ethics* (Indiana: Hackett Publishing, 1992 [1677]); Deleuze and Guattari. *A Thousand Plateaus*; Baker, Uls. *From Opinions to Images: Essays towards a Sociology of Affects*. Eds. Aras Ozgun and Andreas Treske (Amsterdam, Institute of Network Cultures No. 37, 2020).

¹¹ O'Sullivan, Simon. "The Aesthetics of Affect – Thinking Art beyond Representation." *Angelaki – The Journal of the Theoretical Humanities* Vol. 6 No. 3 (2001), 125-135.

¹² Kant, Immanuel. *Lectures on Anthropology* (Cambridge University Press, 2012 [1798]).

to certain spatial signals (affects), s/he would be inclined to leave that place as soon as possible.¹³

Affects may transform into meanings, if they are cognized. Feeling pleasure or pain due to tectonic affects depends on certain complicated factors, such as self-identity or the general mood of the person, culture and context. If a person sees a place as an extension of her/his self, then the place becomes meaningful for her/him. A place may also exclude a person's identity. The strength of an affect and its relation to the person's identity are the main factors which determine the cognition of that affect. Table 1.1 presents the relationship between affect, cognition and meaning.

Table 1.1. Level and types of architectural affects (by the author)

Affect	→ Cognition	→ *Place identity in relation to self identity
*Pain	*Integral or Protagonist affects	-space as extension of the self
*Pleasure	*Arousal or Motivational levels	-space excluding the self
		*Meaning leading action

The most important characteristic of affects, including tectonic affects, is that they combine the analytical (material) and the meaningful (spiritual) within their practicality. They have analytical features because they are related to building technologies. They are also meaningful/artistic because they are architectural. Figure 1.2 demonstrates the position of tectonic affects, which originate from the physical world, in respect of the analytical and the meaningful.

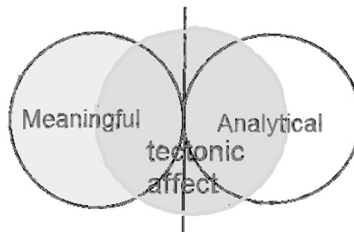


Figure 1.2. Ontology of tectonic affects in relation to the analytical and the meaningful (by the author)

¹³ O'Sullivan. "The Aesthetics of Affect..." 125-135; Scannel, Leila and Gifford, Robert. "Defining Place Attachment: A tripartite organizing Framework." *Journal of Environmental Psychology* 30 (2010), 1-10; Flores, Maria. Accessed on 24.3.2019. <https://mariafloresarch.com/Affect-in-Architecture>; Mackie, Stephen. *Psychospace*. Master's Thesis. Dundee University. 2010. (accessed on 24.3.2019). <https://issuu.com/stephenmackie/docs/psychospace/48>

The structural system and mechanical systems of the Pompidou Centre combine engineering knowledge with architectural qualities. Similarly, the Ronchamp Chapel is an outcome of various technical/technological decisions, which makes an architectural idea real. These two buildings are capable of conveying tectonic affects in people. They also reflect the importance of tectonic meaning/affects for architecture. However, there is still a problem of meaninglessness in contemporary architecture.

The Problem of Meaninglessness in Contemporary Architecture

Achieving meaning/aesthetics and having meaningful/aesthetical tectonic affects are the features of good examples of architecture and there is a considerable number of good examples of meaningful/aesthetic modern architecture. However, the rate of successful modern buildings is considerably lower than successful traditional buildings. Many cities contain unsuccessful and meaningless contemporary buildings. This is felt even when one looks down on cities through an aeroplane window. A comparison of traditional and modern architecture may explain some of the reasons for this. The increasing population in cities, which resulted in an increase in the number of new buildings, might have decreased the importance of many buildings, especially housing. The need for much faster design and construction processes – with the understanding of “time is money” – might have decreased the care given to the design and construction of many buildings. The individualistic approach to architectural design, rather than following the rules of a tradition, might have affected some buildings negatively too.

Changes in the understanding of the economy within the capitalist world might have forced many construction companies to achieve more financial interest within a shorter time due to the need for growth. This might have caused a change in the hierarchy of architectural values by giving a higher position to economy and technical/technological issues in comparison to the subjective values in architecture. Considerations of economy do not necessarily cause ignorance in other dimensions of architecture. There are many good examples of economic architecture. Still, modern cities are full of mechanically designed buildings which have serious architectural issues such as functional problems, climatic problems, meaninglessness, etc. These are the buildings which were produced with the sole consideration of economic gain on the part of the builders. Unlike simple carelessness, this problem is new and did not exist within traditional architecture.

One source of the mechanical use of building technology to achieve economy, goes back to the end of the First World War, during which the governments of the countries involved in this war had to build the maximum amount of housing blocks for homeless victims of war using the minimum resources.¹⁴ There are good and bad architectural examples of these attempts by governments because the problem was not the consideration of economy. The problem was the mechanical character of certain buildings, which were designed only to minimize the cost. Consideration of cost alone during architectural design is an extreme approach which totally ignores the aesthetic/artistic values of architecture. Later this mechanical approach was used by many investors to enlarge their capital by ignoring the architectural needs of the users and the environment.

Martin Heidegger criticized the modern world through criticizing modern technology, science and art. His main critiques towards technology were based on the concepts of *enframing* (das gestell) and *standing reserve*. According to him, the things/beings in this world are *enframed* (the way they exist in the world is defined in a certain way and everybody sees and understands them like that), and they are seen as a *standing reserve* (their essence is reduced to make them solely exist for their future economic potential).¹⁵ These concepts are also useful to explain the problems with a commercial approach to architecture. For example, users of buildings can be enframed as customers and construction workers can be seen as a standing reserve by a construction firm. Enframing things/objects and

¹⁴ Peter Oberlander and Eva Newburn's biographical work concerning the architect Catherine Bauer's personal and professional life (between the 1930's and 1960's) presents the economic difficulties faced within the housing sector. Nevertheless, the architects struggled to achieve a high architectural quality. Oberlander, Peter and Newburn, Eva. *Houser – The Life and Work of Catherine Bauer* (Vancouver: UBC Press, 1999).

¹⁵ Martin Heidegger believed that there were relations between current metaphysics and such problems of the modern world. Parallel criticisms of Jacques Ellul should also be mentioned here together with Martin Heidegger. Heidegger. "The Question Concerning Technology"; Heidegger. "The Age of World Picture." In *The Question Concerning Technology and Other Essays*. Trans: William Lovitt (NY: Garland Publishing, 1977 [1954] c), 115-154; Heidegger, Martin. "Science and Reflection." In *The Question Concerning Technology and Other Essays*. Trans: William Lovitt (NY: Garland Publishing, 1977 [1954] c), 155-182; Ellul, Jacques. *The Technological Society*. Trans: J. Wilkinson (NY: Alfred A. Knopf, Inc. and Random House Inc., 1964); Ellul, Jacques. *What I Believe*. Trans: G. W. Bromiley (Michigan: Eerdmans Pub. Co., 1989).

seeing them as a standing reserve are amongst the major reasons behind the meaninglessness of the built environment.

The meaninglessness of many modern buildings has also been identified by some theoreticians of architecture. In 1972 the demolition of the 33 blocks of 11-storey-high Pruitt-Igoe public housing, which was built for underprivileged people by the government, was identified by Charles Jencks as the death of Modern architecture because of the problem of meaninglessness, which he claims is common in Modernist architecture.¹⁶ Chad Friedrichs made a documentary film about the destruction of the Pruitt-Igoe in 2011 and interviewed the previous users of these buildings. He mentioned the inadequacy of governmental efforts to provide liveable environments for low-income individuals. These high-rise apartment blocks were not appropriate for the underprivileged because these people could not afford the maintenance of elevators and other service systems. The lack of maintenance made life very difficult for the Pruitt-Igoe residents. This caused changes in the profile of users, which resulted in vandalism and violence. In turn these buildings had to be demolished.

John Habraken also wrote about monotonous and repetitive urban housing as well as office buildings which caused meaninglessness in the environment. He identified the reasons for this problem as a preference of supplier-driven models rather than user-driven models and the narrow scope for personalized appropriation as well as being closed to the negotiation of individual choices.¹⁷

When building technology is used in a mechanical and rigid way and the complex requirements of architecture are ignored, buildings do not possess the required architectural character. The order of such buildings is too repetitive and there is no variety. Such buildings were designed without care and only to minimize the cost. The number of floors and the type of foundation systems are chosen accordingly. The floor height and span length are designed to be the most economical. The spaces are as small as possible. The stairs are not comfortable. The residents cannot identify their flats from the outside. The buildings are too close to each other. Human considerations are either totally ignored or considerably reduced in the design of such buildings.

¹⁶ Jencks, Charles. *The Language of Post-Modern Architecture* (Rizzoli, 1977).

¹⁷ Habraken, John. *The Structure of the Ordinary* (The MIT Press, 2000).

Mechanical and rigid approaches to architecture caused a trauma in architecture and this resulted in the separation of meaning/aesthetics from the analytical (including the technical and technological) in the minds of contemporary architects and theoreticians of architecture.¹⁸ Figure 1.3 demonstrates the lack of relationship between the analytical, which covers sciences, such as the engineering sciences and economy, and the meaningful, which covers the narratives on arts and humanities. This is the origin of the problem, which has also caused the separation of the technical/technological from the subjective dimension within tectonic/architectural theories.

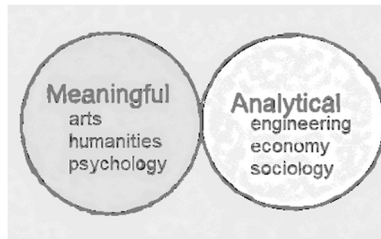


Figure 1.3. Separation of the analytical and meaningful in architecture
(by the author)

The mechanical approach is usually the result of a positivistic approach to the world. The two major characteristics of the mechanical affects are the presence of a one-dimensional approach to the world and ignorance of the holistic essence of beings/contexts/things/objects. The mechanical approach signals serious poetic problems. Domination is formed over the objects/things/animals/plants/people in such a way that means and ends become the same for the sake of economy. Therefore, the poetic and meaningful affects are reduced to the affects of domination within this mechanical approach.

The mechanical and rigid use of the technical/technological dimension¹⁹ in architecture is rejected by all theories of architecture and the philosophies

¹⁸ Manuel Delanda wrote that it is not easy to relate the analytical to the artistic. Delanda, Manuel. *Intensive Science and Virtual Philosophy*. 9th Edition (NY: Bloomsbury Academic, 2013 [2002]).

¹⁹ The mechanical and rigid use of the technical/technological dimension in architecture corresponds to the philosophical concept of the “instrumental approach.” The philosopher Martin Heidegger believed that there were relations between current metaphysics and the instrumental approach which effected the use

which consider the built environment. However, still, many theoreticians of tectonics feel that they have to adopt a position to support either the objective dimension of building technology or the subjective dimension of meaning/aesthetics in architecture.

On Problems of Tectonics Theory

Although building technology adopts such a critical position in architecture, most theories of architecture, including most theories of tectonics have at least one of the following problems:

- separating the *objective* technological/technical dimension from the subjective dimension in architecture,²⁰
- reducing the role of either building technology or the subjective dimension in architecture and permitting one of them to dominate the other,
- suggesting some technical judgemental values which considerably devalue the tectonic possibilities.

This indicates some ideological and/or axiological problems in the way that most of these theories place building technology within architecture.

Separation of the objective technical/technological dimension from the subjective dimension²¹ in some theories of tectonics: The Ancient Greek

of technology. Heidegger. "The Question Concerning Technology"; Heidegger. "The Age of World Picture"; Heidegger. "Science and Reflection."

²⁰ Manuel Delanda's explanations about the difficulties in relating the analytical to the artistic, explain the separation of building technology from the subjective dimension in architecture. Delanda. *Intensive Science and Virtual Philosophy*.

²¹ The concept of a subjective dimension corresponds to aesthetics, art, meaning, poetics and affect. The subjective dimension is about human feelings, such as like and dislike. Although aesthetics is a branch of philosophy, which is concerned with the value of art, it covers most of these concepts in practice. The concept of art might go beyond the concept of aesthetics, because it is free from the philosophical approaches and theories. Some architects, such as Adolf Loos, believe that architecture cannot be an art, because it has to fulfil a function in life. The concepts of affect, meaning and poetics are more applicable to architecture, because they are more practical and they occur within everyday life. Peter Zumthor preferred to use the concept of "beauty" to replace the concepts of aesthetics and art. Zumthor, Peter. *Thinking Architecture* (Las Muller Publishers, 1997).

concept of *techne*,²² which forms the etymological root of the concept of tectonics, combined pure knowledge (theory/science – *episteme*) and practice (knowledge of how to do things – craft/art) simultaneously. However, this concept later changed and was separated from the pure knowledge, and started to represent only practice/skills and lost its importance. Theory became more important than practice and mind started to dominate over labour.

The early Roman architect Vitruvius separated the themes of: *firmitas*, *utilitas* and *venustas* but expected them to co-exist to achieve quality in architecture. He gave value to subjectivity through the concept of *venustas* (beauty), and gave value to the technical/technological issues through *firmitas*.²³

*Techne*²⁴ is a concept which has seriously influenced contemporary architectural and tectonic theories and reflected the anxiety about the problem of meaninglessness due to the misuse of an economic/engineering approach in architecture. Modern architectural theories have tried to increase the value of the subjective dimension in architecture especially after experiencing the International Style of the 1920s, because of the dominance of the technical/technological dimension over the subjective dimension within this style. Because of these affects, the concept of tectonics, which has the concept of *techne* in its etymological origin, is usually accepted with its oldest meaning and seen as related to the subjective dimension in architecture. However, most modern subjective conceptions such as aesthetics and art differ considerably from the subjective dimension within the old conceptions of *techne*. This is because modern concepts of aesthetics and art exclude crafts, do not include personal emotions in

²² Stanford Encyclopedia of Philosophy explains that within approximately 600 years (between BC 400 and AD 200) the concept of *techne* was radically transformed. At the beginning the issues about *episteme* (pure knowledge) and craft/art (experience-based practice) were used interchangeably. However, later, the concept of *techne* lost its importance and *episteme*, which has an intellectual virtue because of its connections with reason, became more important. Stanford Encyclopedia of Philosophy. *Episteme and Techne* (accessed on 19.8.18) <http://plato.stanford.edu/entries/episteme-techne/>

²³ Vitruvius, Marcus Pollio. *The Ten Books on Architecture (De Architectura)* Trans: Morris Hicky Morgan. (Harvard University Press, 1914 [within BC100]).

²⁴ The Ancient Greek concept *techne* was used to mean crafts including their artistic dimension. Porphyrios, Demetri. “From Techne to Tectonics.” In *What is Architecture?* Ed. Andrew Ballantyne (London: Routledge, 2002).

aesthetic judgement and are disinterested in functionality, morality, etc.²⁵ The old concept of *techne* is more about crafts, personal emotions and morality. These modern theories replaced the craft dimension in the old concept of *techne* with aesthetics/art and placed less importance on building technology. Aesthetics/art is the dominant subjective issue in most of the contemporary architectural theories.²⁶ Use of the concept of affect in relation to architecture is rather new and related to Deleuzian philosophy.

This problem of the separation of the technical/technological dimension of architecture from its subjective dimension also exists in some modern tectonic theories. For example, Karl Botticher used two separate concepts: the *kernform* (structure) from the *kunstform* (art through the structural member and detailing).²⁷ Similarly, Eduard Sekler believed that it is better to achieve the aesthetic dimension in tectonics through the interplay of the elements/components of structure and construction.²⁸ Both of these theories separate the subjective dimension from the technological dimension and give priority to building technology. Gevork Hartoonian criticized the separation of the technical/technological dimension from the subjective

²⁵ Immanuel Kant's "Critique of Judgement" forms the origin of most of these changes from the ancient concepts of art. George Dickie and Edward Bullough presented the major characteristics of the modern concepts of aesthetics. Kant, Immanuel. *Critique of Judgement*. Trans. J.C. Meredith (Oxford University Press, 1969 [1790]); Dickie, George. "The Myth of the Aesthetic Attitude." *American Philosophy Quarterly* Vol.1 No.1 (1964), 56-65; Bullough, Edward. "Physical Distance as a Factor in Art and Aesthetic Principle." *British Journal of Psychology* Vol. 5 No. 2 (1912), 87-117.

²⁶ Theories of Robert Venturi, Norberg Schulz and Kenneth Frampton can be shown as examples for this. Venturi, Robert. *Complexity and Contradiction in Architecture* (NY: The Museum of Modern Art Press, 1966); Schulz, Norberg. *Meaning in Western Architecture* (NY: Rizzoli, 1974); Schulz, Norberg. *Genius Loci, Towards a Phenomenology of Architecture* (NY: Rizzoli, 1980); Frampton, Brian Kenneth. *Studies in Tectonic Culture – The Poetics of Construction in Nineteenth and Twentieth Century Architecture* (Cambridge: The MIT Press, 1995); Frampton, Brian Kenneth. "Rappel a l'Ordre: The Case for the Tectonic." In *Labour, Work and Architecture* Ed. K. Frampton (London: Phaidon Press, 2002), 91-103.

²⁷ Botticher, Karl Gottlieb Wilhelm. "The Principles of the Hellenic and Germanic Ways of Building with regard to their Application to our Present Way of Building." In *In What Style Should We Build?* Eds. Julia Bloomfield, Kurt Forster and Thomas Reese (USA: The Getty Center Publication Programs, 1992 [1828]).

²⁸ Sekler, Eduard. "Structure, Construction, Tectonics." In *Structure in Art and Science*. Ed. Gyrogy Kepes. 1965, 89-95 (accessed on 18.8.18) https://610f13.files.wordpress.com/2013/10/sekler_structure-construction-tectonics.pdf

dimension in architecture and said that such values co-exist simultaneously in architecture, because architecture is a part of life.²⁹ David Leatherbarrow and Mohsen Mostafavi were invited to carry out a research study by the Architectural Association, Harvard University and the University of Pennsylvania, on the lack of representation if building technology is used in an expressive way and the lack of considerations in building technologies if the building has nostalgic or representative characteristics.³⁰

The reduction of the role of either the building technology or the subjective dimension in architecture within some theories of tectonics: Separation of the technical/technological dimension from the subjective dimension in architecture usually results in a reduction of the role of one of them. Karl Botticher and Eduard Sekler gave priority to building technology rather than the artistic/aesthetic dimension of architecture.³¹ Anne Beim also worked on the technological dimension in industrial architecture and suggested a consumer oriented economic rationale, which opens the doors to a higher aesthetic quality in industrial architecture.³² Yonca Hurol highlighted the tectonics of structural systems and gave priority to building technology.³³

Kenneth Frampton defined tectonics as the poetic way of construction and as an aesthetic category. Although he suggested evaluation of the tectonic quality according to the relationship between representation and building technology, his works do give a secondary place to building technology or to the technical.³⁴ The theoreticians who considered the technological and the subjective dimensions of architecture together and simultaneously are Marco Frascari and Gevork Hartoonian. Frascari argued about the architectural quality of details³⁵ and Hartoonian exemplified his tectonic theory by discussing certain architectural cases by relating their architectural qualities

²⁹ Hartoonian, Gevork. *Ontology of Construction – On Nihilism of Technology and Theories of Modern Architecture* (USA: Cambridge University Press, 1994).

³⁰ Leatherbarrow, David and Mostafavi, Mohsen. *Surface Architecture* (The MIT Press, 2005).

³¹ Botticher. “The Principles of the Hellenic and Germanic Ways of Building...”; Sekler. “Structure, Construction, Tectonics.”

³² Beim, Anne. “Tectonic Thinking in Contemporary Industrialized Architecture.” *Journal of Façade Design and Engineering* No.1 (2013), 85-95.

³³ Hurol. *The Tectonics of Structural Systems*.

³⁴ Frampton. *Studies in Tectonic Culture*; Frampton. “Rappel a l’Ordre...”

³⁵ Frascari, Marco, “The Tell-the-tale Detail” In *The Building of Architecture*. 1984 (accessed on 19.8.18) <https://uwaterloo.ca/rome-program/sites/ca.rome-program/files/uploads/files/frascari-m-the-tell-the-tale-detail-3-a.pdf>