A GENUINE ORIGIN AND LANGUAGE FOR THE UNIVERSAL PRINCIPLES OF ARCHITECTURE

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Prof. Dr. Taner ALTUNOK
Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Doctor Philosophy.

Assist. Prof. Dr. İpek MEMİKOĞLU
Head of Department

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Science.

Prof. Dr. A. Zeynep ONUR
Supervisor

Examination Date: 18.08.2015

Examining Committee Members

Prof. Dr. A. Zeynep ONUR	(Çankaya Univ.)
Prof. Dr. Nur ÇAĞLAR	(TOBB ETU)
Prof. Dr. Zeynep ULUDAĞ	(Gazi Univ.)
Assoc. Prof. Dr. Hakan SAĞLAM	(TOBB ETU)
Assist. Prof. Dr. Ela ALANYALI ARAL	(Çankaya Univ.)

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Name, Last Name : Aktan ACAR

Signature :

Date : 18.08.2015

ABSTRACT

A GENUINE ORIGIN AND LANGUAGE FOR THE UNIVERSAL PRINCIPLES OF ARCHITECTURE

ACAR, Aktan

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Today, architectural theories are replaced by instant discoursive positions, which are mainly overwhelmed by a crisis of meaning and legitimacy. The examination of the history of architectural theories showed that those instant positions are based on the architectural theories of the 18th century. The reverse-chronological investigation of the theories of the 18th century has revealed the emancipation of architecture from its metaphysic knowledge, which distanced the theory from its origins dissociatively, in the 17th century as the reason that crisis. That knowledge was defining the particulars of architectural theory, such as origin, meaning, character, taste, and form from antiquity to the late 17th century. The research showed that those particulars constitute the universals of architecture. Their genuine origin and language defining them were structured by Vitruvius in the 1st century BC on the basis of six essential concepts: *order, arrangement, symmetry, eurhythmy, propriety and economy.* Those concepts have been revisited and redefined in order to reflect upon the domain itself by means of its own terminology, rather than imported concepts. This reflection, considered as a further study, would proceed towards solid and valid architectural theories corresponding the crisis of meaning and legitimacy.

Keywords: Vitruvius, Architectural Theory, Language, Universals of Architecture

ÖZ

MİMARLIĞIN EVRENSEL İLKELERİNİN ÖZGÜN KÖKÜ VE DİLİ

ACAR, Aktan
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Günümüzde, mimarlık kuramlarının yerini anlık söylemsel pozisyonlar almıştır. Bu pozisyonlar, ağırlık olarak, bir anlam ve meşruiyet krizi ile karşı karşıyadır. Mimarlık kuramlarının tarihlerinin incelenmesi, bu çağdaş anlık söylem pozisyonlarının, 18. yüzyılda ortaya konan mimarlık kuramlarına dayandıklarını göstermiştir. Bu çalışma kaspamında 18. yüzyıldan geriye doğru yapılan araştırmalar, bugün yaşanan anlam ve meşruiyet krizinin arkasında, 17.yüzyıl sonunda yaşanan ve mimarlığın, antik çağlardan bu yana bilgisinin kaynağı olarak görülmüş olan, metafizikten ayrışması olduğunu ortaya çıkarmıştır. Bu ayrışma, mimarlık kuramı ile kuramın hakiki kökleri arasında, kuramın kavramsal bütünlüğünü bozan, içerik kaybına neden olan bir uzaklaşmaya neden olmuştur. Oysa o bilgi, 17.yüzyıla kadar mimarlığa dair bazı önemli tekilleri tanımlamıştır. Köken, anlam, karakter, beğeni ve biçim bu tekiller arasında sayılabilir. Bu tez, yukarıda adı geçen tekillerin mimarlığın evrensellerini oluşturduğunu, bu evrensellerin özgün köklerinin ve onları açımlayan dilin ise milattan önce 1.yüzyılda yaşamış Romalı mimar Vitruvius tarafından, *düzen, düzenleme, simetri, orantı, uygunluk* ve *ekonomi* kavramları üzerine inşa edildiğini ortaya koymaktadır. Bu çalışma kapsamında bu kavramlar, kök ve dil bağlamında, mimarlığın kendi üzerine düşünmesinin aracı olarak yeniden ele alınmış ve eleştirel bir yöntemle yeniden

tanımlanmıştır. Gelecekte, anlam ve meşruiyet krizine çare olabilecek sağlam ve geçerli mimarlık kuramlarının bu dil aracılığı ile kurulabileceği öngörülmüştür.

Anahtar Sözcükler: Vitruvius, Mimarlık Kuramı, Dil, Mimarlığın Evrenselleri

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CHAPTER 1

INTRODUCTION

Contemporary architectural theories are not subordinated to the hierarchical articulation of human learning and knowledge that were used to be classified as seven liberal and mechanical arts until the scientific and intellectual revolutions of the 17th and 18th centuries. Before that, the origin and knowledge of architecture were being derived from metaphysics, in the form of cosmology, which was covering mythology, philosophy, theology, proto-scientific observations, and experiments. At the eve of the 18th century, the former metaphysical paradigm of architectural theory has been replaced by the scientific doctrines. This change cannot be abstracted from the gradual transformation of western thought until the emergence of modern scientific thinking and the separation of arts, science, and philosophy.

According to Dalibor Vesely, the paradigm of architectural theories shifted once more from science to technology, a more powerful influence, in the 20th century. [1] Vesely underscores that new confrontation of architecture with "the possibility of design based on no more than an understanding of form, formal purpose, material, and technique". He claims that simplicity and intrinsic poverty of that design is considered to be complemented by "an unprecedented complexity of personal intentions and formalizations". It is possible to state that in order to justify and valorize those personal intentions philosophical and psychological models have been implemented, as in the case of phenomenology.

In fact, this shift initiated an important change in the contemporary understanding of theory. As Alberto Perez-Gomez indicates, today theory is considered as a rational method of production having a character of applied science or technology. [2] Nesbitt

[1] (Vesely, 2004)

[2] (Perez-Gomez, 1993, p. 3). In footnotes Perez-Gomez delivers a kind of apology by claiming that this attitude has been challenged by many schools and architects in Europe and North America, whereas underlining that his 'statement refers to the general state of architectural practice and education'. It is possible, however, to claim that a similar attitude has been influencing the Turkish architectural scene for a while. This influence is much more devastating than the European and American experience because they are also the producer of that technology, whereas in Turkey it is being presented by the fully visualised architectural magazines of the Korean Publishers.

declares this obviously by putting "theory is a discourse that describe the practice and production of architecture and identifies challenges to it."[3] To put it briefly, the contemporary concept of architectural theory refers to a technological, philosophical, or psychological model for *tékhnē*, whose utmost concern is the aspects and issues of form. It was, however, considered as a knowledge covering origin, role, duty, and meaning of architecture before the 18th century.

In her seminal work "Theorizing a New Agenda for Architecture", Nesbitt points out a crisis of meaning in the discipline based on the basic premises of Modernism, which are referred as limitations. Those limitations, writes Nesbitt, include for example functionalism, radical break with the history, and honest expression of material and structure. According to her, postmodern architectural theory has addressed that crisis.[4] Indeed, it was a crisis of meaning and legitimacy. It is, moreover, the consequence of the emancipation of architecture from cosmology and metaphysics of the antiquity during the 17th and 18th centuries. As it has been mentioned above, that cosmology and metaphysical knowledge, the theory back then, had been defining the origin, role, duty, and meaning of architecture.

Today, this crisis is much deeper and its consequences are much more devastating. Because, the preavailing diversity of the currents, debates and intentions of this era is quite of a challenge. The qualitative and quantitive transformation of the means of communication has a unique impact on the production and dissemination of the knowledge. Every single idea are published, circulated, and accessed via the internet, as a manifest, theory, or debate. It is possible to access them from all around the world simultaneously. All knowledge, relevant or irrelevant, melts into the infinite information cloud of the hypertext reality as well as the hardcopies.

In fact, all these concerns, models, and personal experiences are praised and promoted as plurality, diversity in tastes, and richness for emergence and realization of probable theories. On the other hand it is dubious if those personal interpretations

[3] (Nesbitt, 1996)
[4] Ibid. p.16

of concepts and casually attributed meanings are capable of constituting architectural theories.

This is the age of Wikipedia, as a digital summa, which structures the inner relations of knowledge body contextually. It offers a horizontal expansion of bits and bytes in which all the accumulated knowledge of human being is documented. The question is if it possible to distinguish and reach, and interrelate the relevant sources and knowledge within that information sea. Within this context, the quality and relevancy of any perspective claiming to be a theory can only be determined with respect to the nature of the relations, or distance, not only among its constituents, but also to the other theories. This distance can be critical or dissociative. The critical distance is mostly the result of a conflict or repudiation of the settled arguments and theories. It impinges on the content directly in order to build something new. The dissociative distance, which is also a temporal effect, creates loose connections between the concepts and their source or very essence. It impoverishes the knowledge, causes a loss in the content.

The dissociative distance between the source and knowledge forces the architectural thinking and practice to make semantic displacements among different meanings and content. In some cases, only certain terms or practices are influenced, as it can be seen in the case of symmetry.[5] As in the case of replacement of the cosmological or scientific doctrines with technological or psychological models, it is possible to talk displacements on a theoretical level.

The semantic displacement and dissociative distance are two important problematic issues of architectural thinking, writing, and production. This study claims that the origins, assumptions, and critics of the contemporary theories have been lost to that issue. Within the overpluralized and overdiversified context of information cloud, every single personal intention an opinion on architecture is presented itself as a milestone without any consideration about the preceding works.

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5 The contemporary definition of "symmetry" is different than what it meant before the seventeenth century, particularly in Vitruvius: "*a different notion of symmetry emerged in the seventeenth century, grounded not on proportions but on an equality relation between elements that are opposed, such as the left and right parts of a figure. Crucially, the parts are interchangeable with respect to the whole — they can be exchanged with one another while preserving the original figure*." (Brading & Castellani, 2013)

At this point, it is of importance to ask on what account the new theories arise. Again, Nesbitt urges to reply,. they are the unexamined or unexplained aspects of architecture.[6] A critical comparison of the contemporary perspectives and the 18th century theories, however, demonstrates that the prevailing discourses and currents are overspecialized investigation of isolated aspects of the latter. Within the scope of this study, it is claimed that the prevailing arguments and theoretical assumptions in architectural theory have been recompiling, revisiting, or reinventing the concerns and ideas of the theories of the 18th century. Furthermore, they have been installing a particular content repeatedly in order to cope with the same primary theoretical problem of the discipline, the crisis of meaning and legitimacy. This content had been proposed by Vitruvius, the Roman architect-engineer of the first century BC. By the end of the seventeenth century, architectural theorists cut and isolated the Vitruvian content as individual issues and aspects of architecture, such as context, social and cultural role, economy, technology, structure, construction, function, form, aesthetics, ethics, meaning, and sensorial-emotional-cognitive experience.

This dissertation claims that the above-mentioned Vitriuvian content is composed of the six concepts of order, arrangement, symmetry, eurythmy, propriety, and economy. Vitruvius presents them in *de Architectura libri decem*, Book I-Chap.II, under the title "of what parts architecture consists".[7] The scope of this study covers revisiting, comprehending and redefining those six concepts of Vitruvius, which are considered as the very essence of the architectural knowledge that was atomized and melted into the horizontally expanding information cloud of humanity after the 18th century.

In this respect, this study has been structured on the basis of a threefold aim. It is aimed to diagnose the meaning and legitimacy crisis of architecture caused by the paradigm shift, which had been prepared by the course of intellectual transformation of western thought. The presentation of the continuity of the Vitruvian content throughout the history despite the paradigm shifts is the second fold. The third fold considers providing a contemporary commentary on those six Vitruvian concepts in

[6] (Nesbitt, 1996, p. 16)
[7] (Vitruvius, On Architecture: Books I-V, 1931, p. 25)

order to break the vicious circle of overly introverted and self-repeating architectural theories since the 18th century. Therefore, it could be possible to comprehend the theoretical issues, which have been intereferenced by the dissociative distance and semantic displacements, in their appropriate positions and relations. After having demystified the meaning and legitimacy crisis of theory, it would be possible to develop further investigations of the new aspects of the theory and practice.

Vitruvian description of what architecture consists of was the product of collective human knowledge embodied in metaphysics, philosophy, science, and art. Vitruvius developed a body of knowledge of his contemporary concepts concerning their contextual distinctions and connotations. He made an all-encompassing conceptualisation and skillful synthesis of them in a communicable form for design, construction and education. Despite the fact that his historical, mythological, metaphysical, and even some archaeological references are irrelevant for today, there is still a lot to learn from Vitruvius' reasoning and method on architectural design. He described the tangible and intangible, qualitative and quantitative components of architecture and proposed an understanding on how to incorporate them.

Vitruvius presents this set in the very beginning of his text. Furthermore, in various chapters of the Ten Books, he paraphrases or quotes regarding to different issues and aspects of architecture in order to remind what architecture contains and how it should be performed:

> "*Architectura autem constat ex ordinatione, quae graece ταξις, dicitur, et ex dispositione, hanc autem Graeci διαθεσιν vocitant, et eurythmia et symmetria et decore et distributione quae graece οικονομια dicitur.*" [8]
>
> *Now architecture consists of Order, which in Greek is called taxis and of Arrangement, which the Greeks name diathesis, and of Proportion and Symmetry and Decor and Distribution which in Greek is called oeconomia.*[9]

[8] (Vitruvius, De Architectura Libri Decem, 1899),
The Fundamental Principles of Architecture: *Architecture depends on Order (in Greek ταξις), Arrangement (in Greek διαθεσιν), Eurythmy, Symmetry, Propriety, and Economy (in Greek οἰκονομία)*. (Vitruvius, The Ten Books on Architecture, 1914, p. 13)
[9] **Of What Things Architecture Consists,** (Vitruvius, On Architecture: Books I-V, 1931, p. 25)

Granger claims that the passage is an assemblage of the undistinguished terms of aesthetic criticism.[10] Kruft, by following Granger's comment, cites those concepts as "the fundamental aesthetic principles of architecture".[11] According to Kruft, those six aesthetic principles are subsidiary to Venustas. Scranton indicates that there is a common understanding about the passage that refers to those terms as the aesthetic qualities / properties of the work of art, which is the product of architecture.[12] Tatarkiewicz refers them as the "six virtues of architecture" in relation to the aesthetic theory of form.[13] Meyers states that Vitruvius's six concepts constitute "a conceptual definition of architecture that emphasizes the activities of the design process".[14] Lefas, in relatively short but comprehensive treatise on these six concepts, indicates, however, the logical order of the concepts regarding their relative importance.[15]

The Vitruvian body of architectural knowledge is a not a set of architectural assumptions superseded by the successive theories. [16] On the contrary, it was the product of cumulative knowledge that evolves in time. Since they are, however, the part and result of philosophical inquiries, due to that evolution and change in our knowledge on universe, science, and humanity, a subsequent transformation in the definitions of the Vitruvius' six concepts was inevitable. Vitruvian statement of what architecture consists melted into the vast knowledge and specialization in human productions. It was disintegrated and reduced into function based, formal, aesthetic, construction related, structure dependent, archaeological, and historical, and so on so forth, categories. Although each category refers to different aspect of one and the same architectural production, in time they were formed as distinct and contradictory architectural discurses, and theories.[17]

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[10] (Vitruvius, On Architecture: Books I-V, 1931, p. 24)
[11] (Kruft, 1994)
[12] (Scranton, 1974)
[13] (Tatarkiewicz, A History of Six Ideas: An Essay in Aesthetics, p. 222)
[14] (Meyers, p. 72)
[15] Lefas investigates each concept with reference to Vitruvius and his context. Depite his personalized way of expression, Lefas' treatise is mind opening. (Lefas, 2000)
[16] The "body" metaphor and its implications are the subject of Indra Kagis McEwen's seminal work on Vitruvius: Writing the Body of Architecture. (McEwen, Vitruvius: Writing the Body of Architecture, 2002).
[17] The history of theories and movements of architecture exceeds the scope of this study. For detailed studies on this subject see (Kruft, 1994), (Mallgrave H. F., 2006), and (Biermann, Grönert, Jobst, & Stewering, 2003).

It has been 2100 years since Vitruvius wrote *de Architecture libri decem* (Ten Books on Architecture). His text, nonetheless, is maybe the most cited common reference for architectural culture, history, theories, and education. It is the known first major and comprehensive work on architecture survived and maintained since the antiquity. *de Architecture libri decem* is the source for all the following architectural treatises until the 18th Century. Beside its contribution to the formation of architectural culture, its content about the preceding and prevalent issues of Roman Empire, and the philological and cultural importance of its language, Latin, for Europe, make it the precious reference and keystone of the western civilization.[18]

As a centre of cultural and historical attraction, The Ten Books on Architecture has initiated a mass literature of commentaries, translations, and editions. [19] This written corpus of architectural knowledge makes comparative readings and analysis of Vitruvius text possible throughout various languages and interpretations produced in different historical and theoretical contexts.[20] As a matter of fact, the intellectual platform of architectural culture for the dialogue of discourses, concepts and movements in their historical continuity has been grounded on that cumulated knowledge.

It is possible to claim that the intellectual and conceptual scope of the Vitruvius' work is beyond its content. It is a fact that the students of architecture mostly come across the written form of the concepts of order, symmetry, beauty, or utility, first

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[18] "*De architectura libri decem* / The Ten Books on Architecture" is the only survived and known text on architecture from classical antiquity. It was written by Vitruvius, a Roman citizen of the first century B.C. There is not much known about him except his service a to Julius Caesar as a military architect. During his duty in the army, he had visited the almost every part of the known-world of his era. His had a vast experience on acqueducts, bridges, military buildings, artillery and machines for siege. For the rest of his life as respected retired military architect with reasonable pansion, he compiled eveything about his field of expertise in ten volumes which were dedicated Agustus Caesar, the first emperor of Rome. (Yeğül, 1993), (Kruft, 1994)

[19] Although it is widely accepted that there are seventy-eight survived manuscript of Vitruvius, the British Museum Harley 2767, written in the era of Carolingian Dynasty and contain the entire text, is claimed as the oldest and the source of many many other one (Krinsky, Seventy-Eight Vitruvius Manuscripts, 1967). Despite the variety of compilations, translations, and editions, the highly respected and cited English versions belong to Morris Hicky Morgan, Frank Granger and as a contemporary study Ingrid D. Rowland. The former's Latin source is Valentine Rose which was "a consesus of manusript reading" (Howard A. A., 1914). The latter is based upon the Harleian 2767. Rowland's work follows the various manuscripts beside the Giacondo and Rose editions. In this study mainly these three shall be cited.

[20] Vitruvius' classical Latin itself has been subjected to number of studies, beside its translations. Frank Granger and Morris H. Morgan, as the translaters of the most respected English versions, mention the difficulty of handling such a complex text which had been written and re-written in every translation throughout the centuries. (Morgan, On the Language of Vitruvius, 1906), (Morgan, Critical and Explanatory Notes on Vitruvius, 1910), (Granger, The Emendation of Vitruvius, 1935), (Granger, Introduction, 1931), (Kruft, 21)

time in Vitruvius' text. Those concepts, however, are based on the deep and strong philosophical tradition of ancient Greeks, and grounded written culture and excessive building practice of Roman Empire. Vitruvius is of great significance for covering all those concepts in a coherent body of architectural knowledge without which "it is impossible to grasp any of the discourse on architectural theory from the Renaissance onwards – at least up until the nineteenth century".[21] That knowledge body provides a set of criteria for design and judgement of architecture as an expression of particular spatial qualities, which are more than the sum of their measurable parts.

The subsequent architectural theories have developed either a dialogue with the Vitruvian perspective or an objection to the very core of his statements on architecture. Throughout its history, some key components of his idea were obscured, whereas some others were promoted individually. In any case, it is almost impossible to cite any endeavour to understand, communicate, learn, design, and build architecture and space without citing Vitruvius' conceptualisation.

The most investigated, argued, and commented parts of Vitruvian corpus have not been those six concepts. The origin of architecture, the proportions of human body, the derivation of architectural orders from those proportional relations, and "firmitatis, utilitatis, venustatis" as the utmost concerns of the divisions of architecture have been studied profusely. [22] The proportion myth, even as independent from architecture, is a deeply examined topic.[23] The architectural orders

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[21] (Kruft, 1994)

[22] According to Granger they are "***strength, utility, and grace***", whereas Morgan refers them as "***durability, convenience, and beauty***". Tatarkiewicz draws attention to the diversity of beauty in character, which can be called as the, qualities of, sometimes aesthetic categories of, beauty. The history of philosophy and aesthetics has witnessed vairous lists. In his seminal work, Tatarkiewicz numbers some with respect to their historical context, such as ***symmetry, harmony, elegance, greatness, aptness, comeliness, subtlety and sublimity***. ***Grace*** is among them, and Tatarkiewicz mentions some arguments about the distinction between **grace which pleases heart without rules**, and **beauty which is evaluated by mind thanks to rules**. (Tatarkiewicz, A History of Six Ideas: An Essay in Aesthetics, 1980). Cicero, in De Oficiis, differentiate "the two orders of beauty" (***pulcrum*** in Latin): ***venustatis*** (loveliness as an attribute of woman) and ***dignitatem*** (dignity as an attribute of man). (Cicero, 1928, s. 133). Tatarkiewicz states that distinction persistent with certain modifications claiming that venustatis (loveliness in Cicero, comeliness in Tatarkiewicz) implies external – visual qualities, whereas dignity is understood as internal beauty. (Tatarkiewicz, A History of Six Ideas: An Essay in Aesthetics, p. 168). In this study "beauty" is preferred to meet "venustatis" in order to cover broader sense of the term. How to translate the term "firmitatis" is much more problematic. The corresponding term should imply firmness, strength, durability and solidity at the same time, even if some of them are claimed as synonyms of each other. Granger's term, strength, however, seems more comprehensive. Despite connotations of "convenience" for the term of "utilitatis", utility shall be used because of its literality.

[23] (Padovan, 1999)

built upon the proportional relations and mythological – symbolic meanings were the only topic of architectural theories for centuries, until Charles Perrault demystfied those as culture based issue of taste of an architect.[24]

Even though the triad is not considered within the scope of this study, it is of significance to comprehend its nature and position in Vitruvian content. It is possible to state that Vitruvius introduced them to the written history and the following theories of architecture in this formulation. They have become the most popular architectural phrase thanks to the tradition of "triads" in eastern and western cultures. [25] This triad offers us a particular set of criteria in order to assess and judge architectural product.[26] Those terms are, to a certain extent, the climax of abstract thinking and conceptualisation on architecture. On the other hand, they could not have been escaped the hermeneutics and have become the toolkit of different discourses arguing both their conceptual and practical hierarchy. Today, in which orders they are written or expressed impose no particular meaning. Despite that, there have been discriminative approaches, which put effort to ground architecture on either functionality and propriety, construction and material, or only visual – external beauty. In other words, there have always been discourses claiming that it is possible to make architecture, which can meet only one of those requirements, which means a functional, durable, or beautiful architecture. [27] The counterpart of those arguments is the one that defends an architecture, which meets the triad as right and whole as a trivet.

In any case, strength, utility, and beauty put forward particular qualities of architectural product. They belong to the realm of conclusive judgement. It would not be fair to state that the scope of the triad covers the relations between the

[24] From Leon Battista Alberti to Claude Perrault, the pedigree of architectural treatises and Vitruvius commentaries had bred around this topic.See (Biermann, Grönert, Jobst, & Stewering, 2003), (Kruft, 1994), (Hart & Hicks, 1998). The popularization and hegemony of architectural orders in architectural thinking, writing and building cannot be abstracted from the emergence of visual culture after the invention of movable type printing machine. See (Carpo, 2001). For the Vitruvius commentary and approach to the theory of orders see (Perrault C. , 1692), (Perrault C. , 1993).

[25] See (Capon, 1999) for his comparative analysis of philosophical and architectural triologies through the Vitruvian one: Strength-Utility-Beauty. For the Vitruvius commentary and approach to the theory of orders see (Perrault C. , 1692), (Perrault C. , 1993).

[26] (Weber, 1995)

[27] The famous formulae of Hannes Meyer, who rejects the aesthetics in any production, is worthy to recall: building= function times economy. (Meyer, 1991)

conditions that make architecture necessary and possible, and the building as an answer. Those relations, which were going to be encapsulated within "design process", and overwhelmed by academic investigations later on, are the source of culture and knowledge of architecture.

Either basic principles, or content of architecture, or the quality of architectural end product, what Vitruvius had put forward is a holistic perspective covering scattered knowledge of architecture among philosophy, arithmetic, geometry, construction, agrimensura and military engineering, etc. This passage is a naive abstraction and conceptualization of architectural knowledge in a new form of language for architecture, as a gift from Vitruvius to the humanity.

It is possible to categorize, divide, or group the terms with respect to various assumptions about the intentions of Vitruvius, or any aesthetic theory of form based on Classical Greek art and philosophy. Granger, Scranton and Kruft do so because they primarily focus on Firmitas-Utilitas-Venustas as the basic categories of architectural quality and judgement. As mentioned above, the triad, however, points out an architecture that concerns order, arrangement, symmetry, eurythmy, propriety, and economy in designing, representing, and realizing.

Actually, Vitruvius was not the first one who distinguished those terms in relation to architecture as a way of form giving, beauty production, and/or representation of reality or ideal. The expressions used to designate 'true', 'good', and particularly 'beautiful' have come along with those terms for centuries. In this respect, it is possible to claim that the metaphysical, moral, practical, and aesthetic qualities of the artistic and architectural production had been accepted as one and the same.[28] Because, they are all the result of a "particular model of the universe and cosmology". Inevitably, all inquiries of that cosmology were intermixed with the philosophies of art, and morality.[29]

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[28] (Tatarkiewicz, A History of Six Ideas: An Essay in Aesthetics, 1980, p. 123), (Kristeller, The Modern System of the Arts: A Study in the History of Aesthetics Part I, 1951).

[29] (Hofstadter & Kuhns, 1976). In Philebus Plato made Socrates say that "(T)*hen, if we are not able to hunt the good with one idea only, with three we may catch our prey; Beauty, Symmetry, Truth are the three, and these taken together we may regard as the single cause of the mixture, and the mixture as being good by reason of the infusion of them.*" (Plato, Philebus, 1892)

Hofstadter and Kuhns' brilliant summary about the relation between our understanding of the universe and human production would be helpful without going much deeper on the subject:

> *Beyond our natural desire to understand the human activity of the making and enjoyment of art, there is a profound motive and primitive need behind philosophies of art. A powerful analogy immediately comes to men when they think about themselves and the universe they inhabit: the maker of the universe and the object he makes are like the human maker and his artifact. The order and harmony of the cosmos are like the beauty of art. Somehow man participates in the ordering of the universe in his power to make and to respond to art objects. ……. The greatest philosophies of art, then, are part of broader inquiries into man and nature.*[30]

The definitions and connotations of the same concepts have changed, so did the discourses and theories, so that the quantity and quality of knowledge of humanity have expanded. Because of that common ground and the philosophical characteristics of their formation, the architectural discourses and theories do not override each other, as it can be seen in the course of Vitruvian concepts throughout the architectural and philosophical ages. They embody the *zeitgeist* in various forms of architectural space.

The significance of this study is twofold. First one is an overall issue, which is about the amount, type and environment of accessible academic sources. The number of documents, journals, books, and particularly manuscripts accessible on internet have been increasing drastically thanks to the technological advancement and inter-institutional collaborations. Institutions have been digitazing and sharing the manuscripts, copyright-free books, and other academic sources beside the e-documents by means of electronic databases. Those efforts have helped the scope, quality and the impact of the academic researches to be multiplied. In this context, the importance of conducting a new study on the Vitruviuan legacy by means of a comparative inquiry through the diverse editions, commentaries, and translations of the Ten Books on Architecture cannot be ignored.

[30] (Hofstadter & Kuhns, 1976, pp. Introduction, xiii)

The second fold is particular issue directly related with the architectural culture in Turkey. The lack of academic Vitruvian studies in Turkey is an unignorable and strong motivation to write this dissertation. The work of Vitruvius has been the focus of numerous researches in Latin philology, archaeology, history, and theories of art and architecture, etc. in different geographies all around the world, except Turkey. The Turkish literature on architecture has few studies considering text historically and/or theoretically, and even less concerning its historical continuity.

The Ten Books on Architecture was translated from the Morris Hickey Morgan version into Turkish by Suna Güven in 1993.[31] The book was published as a part of "International Sources of Architecture" program initiated by Şevki Vanlı Foundation for Architecture. Albert A. Howard, who completed the English translation after Morgan passed away, mentions that their translation was based on the second edition of Valentione Rose's Latin compilation published in 1899.[32]

There is, nevertheless, no other known Turkish edition of Vitruvius. The literature search showed that there are not any Phd Dissertation and Master Thesis focusing on the Ten Books on Architecture as the main subject.[33] There are comparative academic studies on architectural theories that mention Vitruvius' work with minor references.[34]

In 1989, Aközer bridges Vitruvius' heritage with Turkish architectural scene with her short essay.[35] According to her, Vitruvius introduced a theory that rises on a tradition of critical rationalism. That theory, Aközer continues, is realized while being constructed continuously, contrary to the idea asserting that Vitruvius had put forward unchanged truths and rules for form.[36]

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[31] (Vitruvius, Mimarlık Üzerine On Kitap, 1998).
[32] (Howard A. A., 1914). For Latin version (Vitruvius, De Architectura Libri Decem, 1899).
[33] According to search engine of the Thesis Center of the Turkish Counsil of Higher Education.
[34] (Aközer, A Framework for understanding "modernism" in architecture and architecture as a field of knowledge, 1989), (Görgül, 2000), (Tetik Kurt, 2012).
[35] (Aközer, Bilmediğimiz Vitruvius ve Eleştiri Geleneği, 1989)
[36] Aközer's promotion of the text with respect to its timeless and up-to-date message was a new hope for the academic appreaciation of Vitruvius in Turkey. On the other hand, as Güven (Güven, 2004) indicates, every reader of Vitruvius interpret and change his message while learning from him. Aközer interprets and re-constructs the text to clarify the ambiguities for good as well.

The next public appearance of Vitruvius in Turkish was in 2004. Güven narrates what the book was about and how it told its story.[37] Similar to Aközer, Güven credits the rational thought as the essence of Vitruvius efforts. According to Güven, Vitruvius' aim was not only to produce an original and applicable knowledge based on causality, but also to develop the methods to produce that knowledge. His approach still makes him up-to-date.

Considering the shortage of academic studies on Ten Books on Architecture, it is possible to state that Vitruvius' text is one of the most mistreated and underestimated theoretical work in Turkey. Its role and value have been kept within the limits of either introductory content or the literatural repertoire of architectural education. It is obvious that the architectural culture, particularly education, in Turkey is suffering from the dissociative distance between its values and the content of those values, which have been in a continuity since Vitruvius. In this respect, it is of importance to disclose the essential content of Vitruvius' works in order to be able to construct relevant theories based on accumulated architectural knowledge.

The very conceptual center of the dissertation is the Vitruvian content. It has been, however, theoretically located on the seventeenth and eighteenth centuries as the center of weight of the contemporary architectural thinking. In this respect, a diachronic progress from the times of Vitruvius to the contemporary theories would not be proper in order to achieve the objectives of the study. It is also important in terms of presenting that this research is attempt to develop a contemporary perspective for the prevailing discourse, rather than being a survey on the history of de *Architectura libri decem*. Therefore, two chronological poles of the issue, today and the Vitruvius' his own time, have been positioned on a fictional timeline. The contemporary theories have been discussed towards the back to seventeenth century, while the Vitruvian content has been followed progressively in time in order to meet at that center of weight.

The second chapter presents the discussion of the atomized and dissolved nature of the contemporary theories of architecture with respect to the replacement of their

[37] (Güven, 2004)

epistemological background, from cosmological to scientific, and then to technological or psychological models. The influence of the Age of Reason, Enlightenment, is investigated by means the written theoretical works of the key figures. The rise of the scientific methods, analytical thinking changed the way of approaching history and the authorities of the ancient past. Vitruvius and his writings could not have escaped from that demoting current.[38] The initiative questions about the definitions and the principles were followed by wholsale criticisms against the legacy of the architectural tradition since antiquity. The emergence of new spatial requirements of developing industrial societies, new functions, materials, and technologies shifted the axis of architectural judgement from the principles of the past to the requirements and possibilities of now. The concepts of Vitruvius were interrogated, and almost completely re-defined.

In fact, it is difficult task to place and present that search within the histories of architectural theories and practices. In order to allow the reader to follow the "progress", it has been, mostly, preferred an ordered and systematized chronology. Either the important figures are cited in regards to their propositions and contributions, or the periods are depicted with respect to their distinguishing formal characteristics.[39] Those methods, in general, can be described as abstractive. They endeavour to investigate each subject separately. Therefore, distinctions and oppositions are crystallized, whereas continuing characteristics, similarities, or controversries are blurred, even omitted.

Within the scope of this study, however, a reverse chronology is offered. That is to say, the theoretical assumptions and propositions of the 18th and 17th centuries has been investigated backwardly. The complex discoursive relations have been traced back to their much simpler and mostly common origins. Although few particular figures have been cited by name in order to mark the splitting moments on the lineage, the chapter has been structured thematically.

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[38] (McEwen, Vitruvius: Writing the Body of Architecture, p. 2)

[39] For the former Hanno-Walter Kruft's extensive study, Taschen's Architectural Theory, Harry Francis Mallgrave or Liane Lefevre's works can be cited. The latter can be exemplified with Nikolaus Pevsner, Sigfried Giedion, Reyner Banham, and Leonardo Benevolo. Kenneth Frampton's critical history may be considered as a combination of both. It should be kept in mind that this progressive way of writing is a Modern attitude, as it can be figured out from the referred names and works.

Two important milestone of the 17th century has been given a further attention: Claude Perrault, who had changed the course of architectural theory with his treatises and Vitruvian commentary; and Vincenzo Scamozzi, who paved way for Perrault by implementing the new epistemology of forthcoming modern scientific thinking onto architectural thinking.

The theory, history and transformation of the Vitruvian content, and particularly the six concepts, constitute the third chapter. The theoretical formation of the concepts by means of philosophical investigations before Vitruvius is presented. The content developed by Vitruvius has is introduced. The intertextual odyssey of the six concepts and Vitruvian tradition are traced throughout the Roman and Medieval Age documents. Until the Renaissance, his legacy could only be followed through the efforts of intellectuals who either summarized all the knowledge and cultural heritage of their time in encyclopaedias, or copied the manuscripts of previous masters.

Then, the rebirth of architectural treatises and invention of *de Architectura libri decem* as the textbook of building and thinking of architecture during Renaissance are examined chronologically. The popularity of Vitruvius' text is astonishing between the 14th and 17th centuries compared to the rhetorical interest of the Medieval Age. The re-discovery of the Antiquity as the source culture and civilization and the rapid dissemination of the works of the past masters by means of the printing were the seminal events of the period. The emerging bourgeoisie was creating the major demand for the accumulating intellectual capitals of Europe. It is possible to claim that Europe was under the largest scale construction process ever since the Rome's monumental re-built by Augustus. The works of the masters, like Plato, Aristotle, Plotinus, Agustinus, Cicero, and particularly Vitruvius, were copied, printed, translated and well respected. *de Architectura libri decem* was edited with commentaries, translated into Italian, German, French, and English. Following the Vitruvian tradition, new and critical architectural treatises were written, such as "Ten Books on Architecture" by Alberti and "The Four Books of Architecture" by Palladio. The chapter demonstrates and discusses those treatises and commentaries with respect to the Vitruvian tradition and particularly the six concepts.

This part is concluded with the Vitruvian content of Scamozzi and the ground breaking French translation by Claude Perrault. In this period, the six concepts of Vitruvius had been dissected into diverse architectural theories. Therefore the theoretical and historical freamwork of the dissertation is enclosed.

The last chapter summarizes the findings of the reverse-chronological investigation of the 17th and 18th century - architectural theories in relation to the Vitruvian content. The contemporary outcomes of the radical but discursive break with the intellectual background, which had happened in the 17th century, are argued with respect to the dissociative distance that break initiated between the contemporary architectural terminology and their origins in Vitruvius. It is assumed that, because of that distance, it is hardly possible to execute a sound and mutual communication among the instant discoursive positions that could evolve to solid theories. That communication issue reinforces and deepens the meaning and legitimacy crisis of theory.

In this respect, the last chapter argues the six concepts of Vitruvius, which are asserted as the genuine origin and language of the universal principles of architecture, regarding to that communication error, and consequently the crisis of meaning and legitimacy.

In order to open up new perspectives for the further studies about the crises of the contemporary theories, a new and critical interpretation for the Vitruvian concepts of order, arrangement, symmetry, eurythmy, propriety and economy is presented. Instead of concluding the dissertation, it is aimed to propose a new mind set that would be helpful in theorizing new agendas and critical positions for the 21st century.

CHAPTER 2

ARCHITECTURAL THEORY IN CRISES

The endeavours to classify the areas of human learning, which had been called knowledge for long, have always had problems in categorizing architecture. Even within the '*ARS'*, the Latin word which was used to contain all knowledge and production, it was a complicated issue to indicate a definite position in relation with other domains of knowledge. The separation process of art, science, and craft in accordance with the emergence of new fields of specialisation made the situation more complex. Whether architecture is an art or science, or a synthesis has been one of the most enduring controversries. The counter-deterministic and proliferated atmosphere of the late 20th century has made a significant contribution to that controversry. Pluralism, multi-disciplinarism, inter-disciplinarism, beside the over-specialisation of each field of academic research areas, have obscured the borders and crossings. Metaphorically, the architectural thinking, writing and production have become a form of hypertext where every single entity is a kind of folded and compressed universe of knowledge in relation to infinite number of others.

In this context, the theory seems to be replaced by instant positions. It is hard to deny that those singular positions increase the possibility of offering innovative and creative contributions to the domain of architecture, where the theory is considered as the knowledge of a valid and relevant model or method for the production. The use of computers, fabrication technologies, cognitive allegories as a medium of expression for the formal manifestation of scientific-technologic or pyschological models are the characteristics of the 20th century architectural thinking and writing tradition.[1] It is possible to expand this perspective to the humanistic attitude of phenomenological discourses, linguistic-semiotic models, biology, and mathematic based theories, and the cultural-critical approaches of the 60s and 70s.[2]

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[1] (Terzidis, 2006)

[2] For the nature of those models and their influence over the theory and practice see (Hays, 1998), (Hays, Architecture Theory since 1968, 1998), (Leach, 1997), (Nesbitt, 1996).

The search for a valid and meaningful model for the production, however, is only a symptom of a deeper crisis in architectural theory since the 18th century. It is the crisis of meaning and legitimacy. Nespitt asserts that postmodern architectural theory was addressing this crisis in the second half of the 20th century. [3] In fact, within the scope of this study it is claimed that the history of this crisis can be marked between the 17th and 18th centuries. As Vesely puts, it has began with the emancipation of architecture from the cosmology and metaphysics of the European tradition. [4] The emancipation of architecture was the result of paradigm shift that appeared as a new style of thinking [5]

> *which appeared in the fascination with encyclopedism, taxonomies, comparative studies, different kinds of measured observations, and the like. This fascination with everything supporting the desire for autonomy, certainty, and power is a key to a deeper understanding of the growing sway of modern science at the end of the eighteenth century.*

It is possible to add personal judgment and taste to the fascinations of the 18th century mentioned above. The cosmology and metaphysic background, however, was offering a self-evident identity to the architectural theory before the 18th century. The architectural theories after the 18th century do not have that identity which provides the meaning and legitimacy. For that reason, to prove the autonomy as a legitimate intellectual activity, architectural theories have been backed up with different models from legimite domains, such as science.

Since the 18th century, those methods or models important from other domains have been changing. On the other hand, the concepts and the content of architecture, on which those models applied, did not changed. In this respect, this study asserts that the contemporary architectural theories are neither new nor original. They have either revisited or reinvented the discourses and models of the 18th century.

As it has been mentioned above, today, the accumulation speed and horizontally expanding organization of the vast human knowledge has altered the nature of the

[3] (Nesbitt, 1996, p. 16)
[4] (Vesely, 2004, p. 236)
[5] Ibid., p.241

theories. The instant positions appear and melt into the information cloud. It is almost impossible, and even redundant, to trace one-to-one matching between the theories of the 18th and 20th centuries. Besides, it is not the objective of this study to depict the genealogy of the contemporary theories. Instead, it is aimed to diagnose the meaning and legitimacy crisis of the contemporary theories exactly where it has disclosed, right at the turn of the 18th century. The investigation of the domain of architecture during 17th and 18th centuries would also be helpful in demarcating the lineages, dichotomies, and original ideas.

In this respect, the following two parts cover the reverse-chronological investigation of that legitimacy and meaning crisis after the 18th century architecture. The first part, "The Legacy and Burden of the 18th Century", starts from the eve of the 19th century. It is aimed to present certain questions investigated by the architectural theories. They are the questions of origin of architecture; the question of character, which is expressed by the architectural form; the question of form; and the question taste as the source of subjective judgment. They are considered as the litmus paper for the theories. It is of significance, however, to remember that those questions have been investigated since the emergence of the Vitruvian tradition in the 1st century BC. It is aimed not only to trace the transformation of those issues in time but also to the genuine origins of the 20th century discourses founded in that Vitruvian content.

The second part, "The Ancients vs. Moderns of the 17th Century" will demonstrate causes and the particular moments of the paradigm shift, which caused that transformation. The piece by piece building of a modern humanity shall be outlined in relation to the emergence of Modern Architectural thinking. The breaking point of the European architectural tradition, which was marked by the works of Claude Perrault, shall be discussed in order to present the circumstances prepared the theories of the 18th century.

2.1 The Legacy and Burden of the 18th Century

The history of architecture cannot be marked with definite beginnings and ends. Each major transformation has been called by succeeding series of events or statements. In this respect, even though the models of architectoral history writing present the

emergence of the characteristics of architectural discourses throughout particular figures, buildings, or treatises, those cases were complementary to each other. They represent singular moments of a continuity, accumulation, interaction, and transformation of knowledge.

It is also possible to state that there have been more crossings and interactions among the various realms of knowledge, than singular cases, since they had been produced by the same polymaths. The main sources of architectural thinking and design were the scientists and Catholic clergymen, who were self-taught architects or only critics, during the 17th century. The 18th century architects, however, were mainly the trained architect pupils of the previous generation, with few exceptions such as Abbe Marc-Antoin Laugier and Abbe Carlo Lodoli.

The very basic motive of those polymaths can be put as an endeavour to formulate architecture as a liberal art with a proper knowledge. In this respect, as Laugier summerizes the whole tradition since Plato, it is not enough to know how to build only. It is of importance to learn to think upon the work. The work itself and the judgment should based on that reflection of reasoning.[6] Contrary to the self-sufficient metaphysic sources and legacy of the tradition, starting from the late 17th century, the 18th century theorists looked for rational explanations even for the allegories of the previous theories, such as the myth of primitive hut.

> *No longer connected to the cosmic and metaphysical structure of the world, architecture participated in a transformation in which the cosmic paradigm of order was gradually replaced by a historical one. As a result, the vertical articulation of the world was subordinated to a horizontal articulation. The question of origins, speculation about the role of primitive precedents, historical styles, and the realization of utopia began to dominate architectural thinking.*[7]

In fact, this relation with the past was a contradiction with the innovative correspondence to the changing functional requirements, developing construction techniques and material technology. It seems that thinking on architecture was being

[6] (Laugier, 1755), Preface.
[7] (Vesely, 2004, p. 236)

considered within the tight boundaries of ontology of the building, and particularly shelter. The legitimacy and necessity were dependent on the explanation of the universal beginning of the building, which was naturally based on rational needs. That is to say, the theory was the knowledge of the past, rather than a framework and tool for now and future.

Another important issue of that knowledge is its relation to the truly universal principles of building practice that have never been omitted or disdained. Since Vitruvius, even who had referred to the tradition before him, the climate and topography, sanitary conditions and health, appropriate use of materials and technique, economy, and the urban fabric have been considered as primary content and issues of building practice. It is possible to say that the theories of architecture considered those rational issues over the centuries in continuity in relation to the improving science and technology. In the mean time, theorists attempted to bring rational explanations to the incorporation of those rational issues into the materiality of architectural form as a creative, intuitive, and even irrational process. Architectural orders had been the *deus ex machina* for the practice until the intervention of Claude Perrault who claimed that the taste and beauty of orders were custom and culture based. The rational and measurable quality was an accessible standard for every architect who knows how to build, whereas the taste was a distinguishing quality that requires knowledge and reflection upon the work.

The second impact of Perrault was more decisive. Perrault placed the practice itself as the object of architectural thinking. The roots, motives, and even the allegories were investigated within the realm and objectives of practice. If the primitive hut is considered in this respect, it is all about the appropriation of material, structure, and construction to meet the physical and psychological needs of human kind, rather than the embodiment of a metaphysical idea. On the other hand, a knowledge without a metaphysic cosmology behind was a limbo for the theory, since that cosmology was the source of meaning and legitimacy in / for architecture. Thus, it was all about

unveiling the meaning of architecture as a legitimate domain of knowledge with respect to the changing paradigms.[8]

The dawn of the 19th century cannot be characterized with a progressively evolved particular discourse on architecture. It can be described as an atmosphere that was composed of accumlulated knowledge and experience, which were being validated in their appropriate positions and relationships. In this respect, it could be more proper to point out the certain questions in which the issues and aspects of that atmosphere were concentrated. It is possible to name four thematically formulated questions of the architectural theory at the beginning of the 19th century. They are the question of origin; of form; of character; and of taste. As a matter of fact, those questions are not only the legacy of the 18th century architectural theory, but also the burden of the contemporary discourses, since they has caused a blindness in architectural thinking and production everything except the domain itself.

Those four questions have always been under close examination of architectural theory and history. [9] Until the 19th century, the origin of architecture in relation to the primitive hut romanticism and the Solomon's Temple enthusiams had manipulated the intellectual circles. The "charactere" of a building was given a particular consideration around the mid 18th century. It refers to the expressive power, and consequenlty the expressed content of architecture. The question of taste, as the issue of subjective judgment in architecture, had been introduced by Claude Perrault as the counterpart of beauty, to which he had attributed an objective quality in architecture.

[8] The lineage of those efforts can be followed through two different directions, which characterized the basic dichotomy of architecture as science vs. art. The architecture as science basically follows the classification of knowledge after Bacon who placed architecture into the class of mixed mathematical sciences. On the basis of that classification and in a scientific determinism, measurable constituents of architecture, which contain function, structure, material and technology, has been prioritized as the rational sources and objectives of architecture. Architecture as art derives from the representational and communicative nature of architecture. This dichotomy is beyond the scope of this study. For an elaborate research see (Angelil, 1987).

[9] Victor Hugo, however, unveiled another powerful dimension of architecture, the memory, in his famous book "Notre Dame de Paris": "This will kill that". The following web site is an academic blog researching the origins of architecture with the motivation of Hugoian perspective. (Origins of Architecture: an academic blog on primitivism in 18th and 19th century texts on architecture, 2015). For a lavish study on the primitive hut in the history see (Rykwert, On Adam's House in Paradise: The Idea of the Primitive Hut in Architectural History, 1981).

Although they have a long history, it is the first time in here they have been structured and presented in relation to Vitruvian content and the contemporary architectural theory at the same time.

2.1.1 Origin

A concrete and legitimate origin can be considered as an indication of being a liberal art with self-evidence. On the other hand, it is also a reflection on the relations between human being and nature. It represents the attitude of human being towards the nature. The changing character of these relations is a quite of lesson about the attributions on architecture as a part of human learning and production, which was used to be called liberal and mechanical arts.

After having lost the mythological and metaphysical model behind the art of building, the rational explanation of the birth of architecture had become an important issue. The necessity of a shelter had been a major topic since Vitruvius. The imitiation of nature as the source of art of building was represented with a poetic image, the primitive hut. The dissolution of the origin myth in the form of primitive hut in architecture can be marked with Jean-Nicolas-Louis Durand (1760-1834).[10] Durand handles the matter with a simple and clear-cut rationality. He claims the wholeness of architectural space, which concerns the physical comfort conditions, economy, and purpose of the building.

It is possible to assert that he proposes a motivation or instinct for architecture instead of an origin. This is an abstract and conceptual perspective. It is obvious that he does not attempt to rationalize an archetypical form, proportion, or method. Besides, he stresses the dangers of transferring certain beautiful aspects of a building to another where they could be inappropriate, even ugly. This opinion could be critical denial of self-repeating typological origin in architecture, but rather more social and practical motivations such as necessities and purposes, public and private utility, happiness and the protection of individual and society.[11]

[10] (Durand, Jean-Nicolas-Louis Durand from Precis of the Lectures on Architecture, 2006)
[11] (Durand, 2004, p. 481)

Etienne-Louis Boullée (1728-1799) can be mentioned as a milestone between the Durand's understanding of origin within a conceptual framework and an idealized archetype of Marc-Antoine Laugier. Boullée proposes that[12]

> *Our earliest ancestors only built their huts after having conceived the image thereof. It is this production of mind, this creation that is constitutive of architecture, which we may consequently define as the art of producing and bringing to perfection edifices of all kinds.*

It is obvious that Boullée's statement covers neither the metaphysics of the western tradition nor the prevailing structural or functional rationalism. His perspective would be incorporated in the lectures of August Schlegel (1767-1845) at the very beginning of the 19th century. Schlegel was declaring that architecture does not have a definite model in nature, or make visible "the great eternal ideas that nature impresses on its creations", since architecture must define a human idea, which is directed to a purpose. That is to say, architecture is not an imitation of nature, but a production of human mind. Therefore, its origin is an image of an idea, rather than inspirations of nature, which was proposed by Laugier.

The previous stop of the idea of origin was Marc-Antoine Laugier (1713-1769). Until Marc-Antoine Laugier, the mtyh of primitive hut was being narrated as a scenic of an ideal archetype of shelter. The imitation of nature by mankind was the utmost concern of the narration. Laugier, however, focused on the emergence of structure and construction. The building components were investigated and redefined in consideration with the human existence and progress on earth. The description of the first primitive hut by Marc-Antoine Laugier is a poetic representation of this natural, inventive, technical and constructive character.[13]

Laugier presents his little rustic cabin as the original model of all the magnificiant architecture. He begins with the natural instinct of his wants that guides him for a safe place to settle. A green turf near to a gentle stream pleases his eyes. Following this invitation of the nature he thinks of nothing but enjoying the gifts of nature in peace. While enjoying the place, the heat of the sun forces him to find a shade. He

[12] (Boullee, 2004)
[13] (Laugier, 1755, pp. 9-12)

runs into the neighbouring wood, which would not be helpful in protecting himself from the frightful rain and moisture around. The man discovers a cave to dry himsels. But the darkness and unhealtful air that he breaths make him feel buried. He notices broken branches that can be used to build a shelter. He picks four of the strongest to place upright, which gives the idea of columns, at the corners of square. Then he puts another four, which imply the entablature, horizontally above those four. He adds inclined pieces to be covered with leaves as a kind of roof, which initiates the idea of pediment. To protect himself from cold and heat, he fills the space between the pillars. In the end, he achieves a little rustic hut, which is composed of only the parts introduced by the necessities.

Laugier explicitly points out a particular typology. He endeavours to meet the God created and exiled lonely man on earth, the forces of nature, and the rational necessities of man ignited by nature on the basis of a simple and rational architecture. There could be nothing irrational and unprecendented either in nature, or man, or architecture. It is clear that he could not have deduced that rationality to an abstract concept of structure, function, or space. He was trying to set the origin of a certain typology.

Indeed, it is impossible to comprehend these efforts, which projects towards the Primitive Hut as a structural arcetype, without reference to the works of Galileo, who investigated the mechanics and strength of materials that guided a rational and computable structural elements; the recognition and appreciation of spatial and structural quality of Gothic architecture, which had been a concern since the late 17th century; and Jean-Jacques Rousseau's perspective on the learning and development of the mankind who discovers, invents, and builds both itself and the world, with / in nature.[14]

The influence of religion over the origin myths cannot be underestimated. It is possible to follow a certain lineage of a religious archetype, the Temple of Solomon. It was the first stone temple, constructed in Jarusalem, was considered as the architectural ideal of Christianity. Juan Bautista Villapando (1552-1608), a Spanish

[14] (Rousseau, 2009)

Jesuit who presented a visionary description of the temple, is credited for its relevance for the origin search of western tradition. [15] It is possible follow the narration from the Old Testament, indeed. As a matter of fact Villapando was the first one who endeavoured to incorporate art of building within the biblical tradition. But the most important one must be Antonio Averlino, known as Il Filarete (c.1400-c.1465). Il Filarete is considered as the one who introduced the Christian stance to the story of first house, built by Adam, with the first known visual presentation.[16] It is of importance to mention that even the God inspired first primitive hut by Adam was the motivated by the necessities caused by the forces of nature over the man. It is possible to follow the formal aspects and conceptual content of those ideas until to Marc-Antoine Laguier. That is to say, From Leon Battista Alberti to Durand, the architectural practice had been concerned with respect to the physical conditions and basic needs of human. It is, however, obvious that the visual espression of the primitive hut in its symbolic value prevailed over its architectural meaning and content.

In this respect, it would be helpful to review the Vitruvian version of the origin story in order to present the conceptual lineage from Vitruvius to Durand.[17] According to Vitruvius, men were just like the animals living and feeding in the nature. They discovered the fire by chance, even though they were terrified at first. By using the signs, they communicate each other the advantage of having heat around. They uttered sounds, fixed the words, and in the end developed language for the conversation. This socialization process around the fire created community unlike the other animals. They succeeded to walk upright, which made them to look at the magnificience of the world and stars. They started to use their hands skilfully to make tools. They made shelters by digging caves, using leaves, mud, or wattles, by imitating the birds making nests. Their imitative and teachable nature helped them to observe, exercise, invent, and improve their buildings.

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[15] (Borngasser Klein, Spain, 2003)
[16] (Kruft, 1994, p. 52), (Biermann, Grönert, Jobst, & Stewering, 2003, p. 31)
[17] For this part Granger version has been paraphrased. (Vitruvius, On Architecture: Books I-V, 1931) Book II. Chap.I.

After having presented the nature and evolution of men, Vitruvius explains the various building methods according to different materials and conditions in different lands. He adds that

> *... Nature had not only equipped the human races with perceptions like other animals, but also had armed their minds with ideas and purposes, and had put the other animals under their power, then from the construction of buildings they progressed by degrees to other crafts and disciplines, and they led the way from a savage and rustic life to a peaceful civilisation. Then, however, building up themselves in spirit, and looking out and forward with larger ideas born from the variety of their crafts, they began to build, not huts, but houses, on foundations, and with brick walls, or built of stone; and with roofs of wood and tiles.*

It is astonishing to figure out that Vitruvius describes the generation and evolution of civilization in relation to architecture. Furthermore, he does not point out certain type, morphology, and structure or building method as the genuine source of architecture. In fact, he implies a social and conceptual origin based on necessities and available resources, which would sound in Durand's proposition nineteen hundred years later.[18]

> *Thus appropriateness and economy are the means that must naturally be employed in architecture, and the sources from which it must draw its principles, the only principles that should guide us in the study and practice of that art.*

The question of origin seems not occupying quite a space in the contemporary theories. On the other hand, the main content of the question is still a challenge. If it is all about imitating or encountering nature by means of technical expertise, then what makes architecture a valid liberal art and intellectual activity of learned man? It is still a matter of being legitimate.

There are two fronts encountering his question. The first one put forwards architect as a thinking, judging, producing subject. The idea of genius, creativity, personal taste and the uniqueness of the design process have been formed around that subject. The second front aligns with object, the architectural production. The uniqueness of

[18] (Durand, 2004, p. 479)

the process and form constitutes its core. However, before extracting the question of form, it is of significance to demonstrate the idea of character since it claimed the expressive nature of architecture, which can be read as form.

2.1.2 Character

In his lectures on the fine arts, August Schlegel (1767-1845) disputes over the primary contraversry of architecture. How could it be founded on purpose whereas it is an art? According to Mallgrave, Schlegel saves architecture as an art with the idea of "appearance of purposiveness".[19] This midway had been paved by, again, the French architects at the close of the 18th century. The chief aims of those French pioneers "the expression of character, the creation of atmosphere, the division of the composition into independent units" was based on expressiveness through form, rather than picturesqueness. [20] In that way, it would have been possible to defend architecture, as an art, in relation to the individual taste and influence upon the senses, despite the rationality behind the use material, structure, physical conditions, and the moral aspects. Until Schlegel, those position run on parallel but distinct courses, even though both had advocated the expressive function and qualities of architectural form, which has been called as character.

Actually, at the end of the 18th century, the idea of character seems to have two different direction. Mallgrave points out Quatremère de Quincy's rational attitude as the first direction. Mallgrave writes that the new historical and aesthetic systems of the Enlightenment, particularly Montesquieu, and Winckelmann's, and the academic notion of character had been mediated by Quatremère de Quincy. [21] In the meantime, says Mallgrave, de Quincy stripped the idea of any emotional and sentimental content away. According to Quatremère de Quincy [22]

> *Architectural character resides "in a manner of being, in a necessary conformation between physical needs and moral habits, and in that developed by the climate, ideas, customs, taste, pleasures, and the character of each people."*

[19] (Mallgrave H. F., 2006, p. 398)
[20] (Kaufmann, 1952, p. 434)
[21] (Mallgrave H. F., 2005, p. 73)
[22] Ibid. p.73

The appropriation of form with respect to the moral, cultural, and physical requirements of the context seems to be in harmony with the structural and functional rationalism of the 18th century. Carlo Lodoli had stressed the application of mathematics and physics guided by rational norms in order to achieve the indivisible form and complete expression.[23] Marc-Antoine Laugier had claimed that essential beauty of architecture is independent of the habitude of senses.[24]

For sure, these rational attitudes and the appreciation of appropriation of structural elements and function can be traced back to Charles Perrault, then Alberti, and finally Vitruvius. As it shall be discussed further in the third and forth chapters, these arguments are always in direct relationship with the classification of knowledge and the position of architecture. When Claude Perrault separated the arbitrary and positive beauty, and placed the architecture itself at the very center of the theory, which shall be presented in the next part, the building elements replaced the metaphysic elements. In Alberti and Vitruvius, however, the symbolic representation of the principles were the character itself.

The other tradition of the concept of character in architecture concerns the sensational and emotional aspects of the relations among the architect, architectural space, and user. Those aspects, mostly, were asserting the psychological interaction or influence of the forms, which recalls the anthropomorphistic tradition again. The very basic claim of this tradition is the expression or incorporation of an abstract content through the form. At the turn of the 19th century, there were two heirs to this tradition. First one claims an architectural character embodied in a symbolic language of forms, which was promoted by Claude-Nicolas Ledoux (1736-1806). The creation of an intented psychological and poetic effect upon a subject in motion was the second, which was represented by Etienne-Louis Boullée.

Claude-Nicolas Ledoux has a considerable influence over the Modern Architecture. His adherence to Rousseau's "Social Contract" and insistence on the expression of the social laws by means of architecture are of importance. The use of pure, Platonic

[23] Quoted by (Kauffman, 1964)
[24] (Laugier, 1755, p. xi)

geometric forms with symbolic value was characterizing architecture of Ledoux. It is possibe to state that, after Ledoux, the expressive power of architectural character embodied in a symbolic language, known as 'speaking architecture - *architecture parlante*', which had been foreseen and warned by Jacques-François Blondel.[25]

The play of pure geometries had already been propounded by Boullée. He did not, however, attempt to deliver a content coded in symbols. He concerned a required impact of architecture on the senses by means of geometrical composition. [26] Vesely reports that Boullée borrowed that idea from contemporary sensationalist philosophy, especially Condillac.[27] According to Boullée, the poetry of architecture, which makes it a sublime art, lies in the natural effects that are created by a specific character. The experience of architecture, as an object, by the user defines that effect. For Boullée, character is the effect of the object, which makes an impression on the perceiver. Vesely, reviews and quotes Boullée:[28]

> *But if the poetry of architecture lies in natural effects, in what does this poetry consists? He explains, "it lies in the art of creating perspectives through the effect of volumes. What causes the effects of volumes? It is their mass. And so it is the mass of these volumes that gives rise to our sensations. Without doubt. And it is the effect that they have on our senses that has enabled us to give them appropriate names and to distinguish massive forms from delicate ones, etc., etc.*

Kruft claims that for Boullée, building is in secondary position, right after the pictorial composition of solid bodies under the play of light and shadow in order to realize a certain effect. His understanding exposes itself in his ideas about the concept of proportion, as discussed by Kruft:[29] Boullée's concept of proportion refers to an effect produced by the combination of particular elements, which are regularity, symmetry, and variety. For him, the proportion is not about arithmetic relations.

It is possible to claim that Boullée's proportion is gives the architectural character. The regularity, symmetry, and variety, in this context, deserve a closer look. As

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[25] (Kruft, 1994, p. 165)
[26] Ibid. p.159
[27] (Vesely, 2004, p. 257). The following part is based on Vesely's paraphareses.
[28] Ibid. p.258
[29] (Kruft, 1994, pp. 159-160)

Boullée puts, beautiful shape is produced by regularity, symmetry is the source of order and proportion, and variety refers to the diversifying planes to the beholders eye, all of which give rise to a volumetric harmony.[30]

Mallgrave's comment on the shift about the concept of character concluded by Boullée reveals the relation between the question of character, of form, and of taste, which shall be discussed in the following parts. As a matter of fact, these relations unearth the contemporary crisis of theory regarding to contemporary understanding of from:

> *In this way the revolutionary shift from viewing character as something ordained by academic convention to viewing it as something gained by immediate sensation – a shift presaged by the theory of Le Camus – is complete. Buildings through their geometry acquire their individual nature and distinctive character.*[31]

In short, Boullée can be mention as the first and the most direct one who put that architecture, as an art, is way of expressing the feelings that comes from the sensibility. Those feelings cannot be reached by reason and argument, which belong to the realm of science.[32] In addition, Character is fostered by the good taste, which is a "delicate, aesthetic discernment", that allows the subject to be delighted in the depths of its being.[33]

Boullée had followed Jacques-François Blondel', his teacher, path. But between Boullée and Blondel, there were two important figures to be mentioned: Marie-Joseph Peyre (1730-1785), and Nicolas Le Camus de Mézières (1721-1789). In fact, the theory of Nicolas Le Camus de Mézières cannot be considered as a mere prelude for Boullée. Le Camus introduced particular issues and aspects of architectural space that would turn to be the major topics 20th century theories, including phenomenologist approaches. He elaborated the arguments of many influential

[30] (Boullee, Etienne-Louis Boullee: from Architecture, Essay on Art (c.1794), 2006)
[31] (Mallgrave H. F., 2005, p. 42)
[32] (Boullee, A Treatise on Architecture, 2004, p. 475)
[33] (Mallgrave H. F., 2005, p. 42)

figures preceded him.[34] His text presenting a room-by-room analysis of a French residence is a considerable contribution to the examination of behavioural and sensational effects of architecture.[35] His descriptions of the rooms depicts a sensory experience alongside a moving subject. He mentions not only the functional and proportional relations, but also the formal compositions and transition of spaces, which are considered in accordance with the effects of light and shadow on masses.

> *The arrangements of forms, their character, and their combination are thus an inexhaustible source of illusion. We must start from this principle whenever we intend to arouse emotion through Architecture, when we set out to address the mind and to stimulate the soul, rather than to build by piling one stone on another, indiscriminately copying arrangements and ornaments that are imposed by convention or borrowed without reflection. Effects and sensations spring from the considered intention that governs the ensemble, the proportions and the agreement of the various parts.*[36]

Marie-Joseph Peyre is considered as an important one among the most famous architects of the era. His ideas, however, could not have been referred much. Kruft cites his understanding of architectural character as follows. [37] He conceived the character as having associative and emotional effect, on the basis of pictorial composition. Peyre considered the character on realm of psychology, which can "create an impression of terror, fear, respect, gentleness, tranquillity, voluptuousness". Furthermore, the virtue of their character can make certain typologies the symbols of their functions, which would be realized by Ledoux.

In his lengthy work, Kauffman provides a comprehensive summery of Blondel's ideas. [38] He presents that, according to Blondel, every work of architecture should be shaped in order to express its purpose. The architect, however, should not rely on symbolism. His student Nicolas Ledoux, however, as it has been referred above, attempted to relize that symbolic aspect of character. The arrangement of masses,

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[34] It is possible to name Sebastian Leclerc (1637-1714), who was an important figure for the post-Renaissance France; Charles Le Brun (1619-1690), first painter to Louis XIV, whe worked on the individual expressions in painting; Charles-Etienne Briseux (1660-1754), who supported François Blondel during his partial firsthand witness about the ancients vs. moderns debate; and Edmund Burke of Ireland (1729-1797), renown philosopher, statesman and writer. (Mallgrave H. F., 2006), (Mallgrave H. F., 2005), (Kruft, 1994)
[35] (Mézières, 2006), (Mézières, 2004)
[36] Ibid., p.417
[37] (Kruft, 1994, p. 155)
[38] (Kaufmann, 1952, p. 441)

choices forms and the elegance of style should be the means through which architect speaks. Blondel makes a warning against displaying architectural character for its own sake.

Blondel's stress on the purpose of building might recall the emotionless but moral concept of character of Quatremère de Quincy. As Kauffman mentions, Blondel was still belonging to a tradition approaching architecture through anthropomorphism, in which architects were trying to instill human characteristics into the buildings.[39] It is obvious that this anthropomorphism covers not only physiognomy, but also sentimental issues.

Historians and theorists are agree on that the idea of character of a building had been introduced to the domain of architecture by Germain Boffrand (1667-1754), who applied the literary principles of Horace's art of poetry onto architecture. [40] Mallgrave reports that for Boffrand the beauty of is a prelude to the expressive function of a building, of which ornemantal vocabulary should be exploited for a mutual relationship wih the spectator.[41] Kauffman claims that Boffrand had achieved a dual meaning architecture by joining the the concept of visual unification of parts with the concept of spiritual union of those parts, which is described as character.[42] Boffrand states that the components of building, which are more than the use of materials only, are brought into life by means of the character they convey: [43]

> *Through its composition, a building expresses, as if in the theatre, that the scene is pastoral or tragic; that this is a temple or a palace, a public building destined for a particular purpose or a private house. By their planning, their structure, and their decoration, all such buildings must proclaim their purpose to the beholder.*

The investigation of the question of character extracts a certain anxiety for a legitimate identity in architecture. As it has been mentioned above in discussing the the question of origin, the problems and related terminology were the same, whereas

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[39] Ibid. p.440
[40] (Kruft, 1994, p. 144), (Mallgrave H. F., 2005, p. 39), (Kaufmann, 1952)
[41] (Mallgrave H. F., 2005, p. 39)
[42] (Kaufmann, 1952, p. 447)
[43] (Boffrand, Germain Boffrand: from Book of Architecture (1745), 2006)

the metaphysic causes of the problem had been replaced by the physical, visual, and moral issues. Because, theory had always been in continuity. The accumulated knowledge and transferred experience had been presenting certain qualities explicitly. It is possible to assert that theory was embracing the knowledge, but denying the source. This denial has been obscuring the lineage of the ideas, indeed. Leon Battisa Alberti, for instance, had mentioned the appropriate expression of the purpose of an edifice by means of the composition and relations of the lines among each other, too.[44] Moreover, he had referred to a process of design in the mind of an "ingenius artist", which corresponds to the genius of the Englightenment. And most importantly, Alberti had considered the form as separate from the matter.

In order to comprehend the nature of character and its implications, a revisit to Vitruvian origins is necessary. In his definition of disposition, Vitruvius sets all the cornerstones of the 18th century discourses:[45]

> *Arrangement, however, is the fit assemblage, the elegant effect of the work and its dimensions, along with a certain quality or character. The kinds of the arrangement (which in Greek are called ideae) are these: ichnography (plan); orthography (elevation); scenography (perspective).*

The question of effect of architecture exposed through a character has always been a topic of theory since Vitruvius. The main question, however, is how it is exposed, or better, the nature of the form that embodies and conveys that effect. The following part presents the question of form in this respect.

2.1.3 Form

The term of form itself has a long history with a great ambiguity. The diversity of the meanings of form has been elaborated with the diversity of the opposites of the term. It is of importance to be clear about which meaning, and consequently its opposite, are applied to architecture.

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[44] (Alberti, 1986)

[45] (Vitruvius, On Architecture: Books I-V, 1931, pp. 26-27). Book I.Chap.II. Arrangement is used for *Dispositio* of the Latin text. Rowland translates it as *Design*.

Tatarkiewicz presents a lavish history of form and concepts depending on the meanings attributed to it.[46] According to him, there are five different meanings of Form that are correspondend with different opposities. They have different histories and consequences in the history of art and architecture. In order to develop a comprehensive understanding of the question of form in architecture, those meanings, and their counterparts are needed to be clarified.

The first Form is defined as the arrangement of parts. It offers to unite, as a whole, the parts, elements, or components, which are the opposites. It is an abstraction, since it does not refer to a real object, which reveals the second meaning of Form. The second Form indicates something concrete that is given to the senses. Its correlative is content, which is conveyed by means of perceived form. The third meaning of Form is only the boundary or contour of an object. Its opposite is matter or material. The forth Form is an invention of Aristotle. It means the conceptual essence of an object, which is confronted with the accidental features as opposite. The fifth and last Form was introduced by Kant. It is considered as the contribution of the mind to a perceived object. What is given to the mind through experience is its opposite and correlate.[47]

Unfortunately, the understanding of Form in architecture is much more ambiguious. It is possible to point out implicit or explicit imprints of each form in various theories. They are not comprehensive enough to cover the architectural form. There has always been a combination different understanding with a varying degree of importance. Furthermore, the disputes over form cannot be abstracted from the concept of taste, and the distintictive and individual character of the buildings.[48]

As it could has been derived from the previous part, even though the content varies, the communicative or expressive function of architecture has always been a major concern for the architectural theories. The question is, however, the nature and

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[46] (Tatarkiewicz, A History of Six Ideas: An Essay in Aesthetics, 1980)

[47] In Tatarkiewicz, the opposite of the Kantian Form is not clear beacause of a typing error: "The opposite and correlate of the Kantian form is what is not produced and introduced by the mind but **is given to it from without by experience**." For a better understanding see (Deleuze, 1995).

[48] For a comparative study of theories of form in relation ot the contemporary aesthetics of architecture see (Weber, 1995)

qualities of that concrete body of expression. At this point, it is of importance to recall Dalibor Vesely's distinction between the character, as the experience of surface appearances, and the deeper reality of architectural space that is related with bienséance and convenance, of which history go back to Vitruvian concept of decorum.[49] Although they offer such an appearance, the value and power of symbolic representation by means of architectural orders cannot be underestimated. The main concern becomes the difference between the symbolic representation and realisation of a content as a form, indeed. It would be a prejudice to assume that the former has been the main case in architectural history.

It is similar for the case of basic, which are called Platonic, geometrical forms. Even the pure forms of Claude-Nicolas Ledoux or Etienne-Louis Boullée had been concerned as a medium to create a particular effect and express their character. As Boullée says, architecture was about creating an image by means of the arrangement of volumes in order to express human sensibility.[50] Kruft asserts that despite that those forms had been considered as a basis for architecture since Renaissance, they never gained a legitimite status through their symbolic value, or considered as independent from other fundamental principles of architecture.[51]

It is possible to put that despite the changing paradigms, cultural differences, and opposite theories, there is an almost universal definition of architectural form relevant through the generation of architectural theory. According to this definition, form stems from the nature of the materials employed, the disposition of the elements made of those materials, the principles and rules of arrangement of those elements in order to express an abstract content. Without exception, the firmness, the convenience, and the proportions, under different names and categories, are the essential properties of form.[52]

Particularly after Claude Perrault, the legitimacy of the previous forms do not derive from the authority of the previous masters, but rather the principle and rules that

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[49] (Vesely, 2004, p. 363)
[50] (Boullee, 2004, p. 475),
[51] (Kruft, 1994, p. 165)
[52] (Alberti, 1986), (Durand, 2004), (Boullee, 2004), (Mézières, 2006), (Blondel J.-F. , 2004), (Laugier, 1755), (Kauffman, 1964), (Wittkower, 1978), (Rykwert, 1987), (Kruft, 1994)

were invented or discovered by the ancients but improved and adjusted during the historical course of mankind. The unity of form with respect to the relations not only among the parts, but also between the parts and whole has always been one of those principles. As a matter of fact, Aristotle has been credited for the idea of whole greater than the sum of its parts. Those relations were considered mostly as having a qualitative character. August Schlegel was thinking that:[53]

> *... the architect must take into account a number of relationships. It is not enough that he assemble the parts following some mechanical rules in themselves and proportioned in relation to others, but he must view them in their living relationships.*

Those living relationships cannot be considered without reference to ideas of Nicolas Le Camus de Mézières and Étienne-Louis Boullée. As it mentioned in the previous part, they were propounding an architectural form resulting from the composition of the masses with respect to the light and shadow. The architectural character was being considered as the result of not only the measurable relations among the parts, but also immediate and apprehensible relations, which is called good proportion.[54] Sebastian Leclerc (1637-1714) had already addressed that qualitative nature of proportion by pointing out the fitness of the parts founded in the good taste of architect, which shall be discussed in the next part.[55]

The hegemony of arithmetic and geometry, which had been considered as the knowledge of those relations, was still prevailing during the 18th century.[56] The Lodolian tradition of structural and functional rationalism had been promoting the application of principles of mathematics and physics guided by the rational norms.[57]

The appropriation of form to the function was also an important issue for the architectural theory. As it has been discussed above, to be true to the purpose of the building was the utmost concern. Francesco Milizia (1725-1798) was claiming that the the form of the architectural elements were determined by their functions. There

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[53] (Schlegel, 2006, p. 398)
[54] (Mézières, 2006, p. 202)
[55] (Kruft, 1994, p. 142) Kruft quotes from Leclerc. It should be remembered that the unmeasurable proportional relationships among the parts had been the concern of philosophy since Plotinus, see (Hofstadter & Kuhns, 1976).
[56] The role and importance of that knowledge shall be discussed in the third chapter in relation to the formation of Vitruvian ideas.
[57] Ibid. p.165

were much more radical attitudes proclaiming the 20th century theorists, particularly Le Corbusier. Jean-Babtiste Le Roy (1720-1800) was asserting that "a hospital ward is truly a machine for the treatment of the sick".[58] Carlo Lodoli had conceptualized that idea as any part that does not working should be excluded. But this idea, as Rykwert puts, was already a fashionable one since Alberti:[59]

> *To every member therefore ought to be allotted its fit Place and proper Situation; not less than Dignity it requires, not greater than Conveniency demands; not in an impertinent or indecent Place, but in a Situation so proper to itself, that it could be set no where else more fitly.*[60]

To be true to the nature and function of the material and structure is of importance for the complete expression of form. That morality is generally attributed to the 19th century theorist and architect Eugéne-Emmanuel Viollet-le-Duc (1814-1879), as a Modernist attitude. It has been, however, articulated since Vincenzo Scamozzi (1548-1616), Italian architect and pupil of Palladio. The appreciation of the spatial, functional, and material quality of Gothic structures was a part of architectural criticism since François Blondel and Claude Perrault. With help of advanced calculation of load bearing elements, the contribution and promotion of the structure took a considerable step, as an organic system of forces and resistances.[61] The term of "organic" is not a mere coincidence indeed. Rykwert, Kruft and Neveu explicitly put that Carlo Lodoli was the firt one who used "organic" with an implication of "gesamkunstwerk" to describe his rational architecture covering even the last item of

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[58] (Le Roy, 2004)
[59] (Rykwert, 1987, p. 297)
[60] (Alberti, 1986, s. 13) Book I, chap.IX.
[61] Mallgrave mentiones the repairment and finishing work of the east wing of Louvre, which had became structural laboratory of Jacques-Gabriel Soufflot (1713–80): "Together with Jean-Rodolphe Perronet (1708–94), the chief engineer and director of the Ecole des Ponts et Chaussées, Soufflot carried out a series of experiments to measure the expansion of iron. Perronet's assistant, Emiliand-Marie Gauthey (1732–1808), also devised a machine to measure the compressive strength of stone. When Pierre Patte in 1770 criticized the dimensions of the slender interior supports, Perronet and Gauthey defended the design with actual structural calculations. As one historian has noted, Patte in his report employed such terms as weight and load, while Perronet defended the structure as an organic system of forces and resistances." (Mallgrave H. F., 2005, p. 18)

furniture.[62] The organic articulation of the working parts as a whole had been paving way to the late 19th and early 20th century discourses.[63]

The investigation of Form in architectural theory reveals that the first two definitions form, the arrangement of the parts and the concrete end-product as Tatarkiewicz proposed, can be considered as complementary to each other. It should be remembered that both has always been a primary issue of philosophy. Although the cosmologic causes had been left behind, the idea of a composed whole that is greater than the sum of its parts is still the very basic assumption in theory and education. As mentioned above, the paradigms determining the features of the parts and whole has changed. The metaphysic foundations were replaced by first scientific, then technological and psychological models. In spite of this, the definition has been standing still. For sure, the diversity of forms has always been questioned.

The character, in relation to purpose that has always been more than the function of the building, is one of the primary factors of the form. It recalls the second meaning of the form. If the character is considered as the content, then the correlate is the form. When the character changes, consequently form changes. This logic, however, rises another question. What about the varying forms of buildings with a similar or the same character? Furthermore, what does make a form more meaningful and legitimate than the others? One by one all the legitimate criteria of the ancients have been dispelled. Perrault dmystified the orders as culture and time based traditions; Leclerc and Le Camus abolished the commensurable proportions; and Boullée introduced the psychological experience of a moving subject through composed volumes, instead of surface appearance or image of a building. It is possible to claim that the meaning and legitimacy of form is still the utmost concern of theory.

The last of topic of this part aims to make a further explanation for those question proposed above. The question of taste as unique feature of the architect, the formulation and incorporation of the subjective judgment. In fact, the individual

[62] (Rykwert, 1987, p. 317), (Kruft, 1994, p. 197), (Neveu, 2005). Especially Neveu supports this thesis with a number of reference and citation.
[63] Although the term is acquainted with Frank Lloyd Wright and Bruno Zevi. (Wright, 1963), (Zevi, 1950)

contribution of the architect has been the major aspect of this question. After having put the definition of arrangement, Vitruvius presents its outline as follows:[64]

> *These three (plan, elevation and perspective) arise from imagination and invention. Imagination rests upon the attention directed with minute and observant fervour to the charming effect porposed. Invention, however, is the solution of obscure problems; the treatment of a new undertaking disclosed by an active intelligence. Such are the outlines of Arrangement.*

The active intelligence of Vitruvius, the experienced and ingenious artist of Alberti, or Jacques-François Blondel's artist who is the only one capable of perceiving the imperceptible nuances distincting the design of buildings, they all imply the authority of forming and expressing a content.

2.1.4 Taste

Before the establishment of Aesthetics as an indepent domain, the issue of taste had been covering the appreciation and judgement of variety of pleasures derived from indiscriminately from both mechanical and liberal arts. [65] According to Shiner, it was, however, considered as a fine power of judgment distinguished from the pleasure of sensory experience, particularly bodily ones, and the moral appreciation of utility. Whether there is an objective or inborn standard of taste, or nurtured by the society, besides pleasure itself, had been investigated by psychology, philosophy, and political science.[66]

According to Tatarkiewicz, in the 18th century, the taste was arosed as a new faculty, beside the faculty of perception and reasoning, exclusively serving for the recognition and discrimination of beauty from what is ugly.[67] He indicates that it was the result of the psychological interest of Enlightenment, which had made a shift from the analysis of being to the analysis of mind. Another important attempt was the

[64] (Vitruvius, On Architecture: Books I-V, 1931, p. 27). Book I.Chap.II.
[65] Shiner presents a comparative study of the taste, aesthetics and the invention of modern understanding of fine arts. (Shiner, 2004).
[66] Ibid.,pp.190-207
[67] (Tatarkiewicz, 1980, p. 319)

distinction of the moral sense from the sense of beauty, which would end up with the aesthetics as separate domain, in philosophical analysis.[68]

The most particular contribution of the 18th century to human knowledge, beyond argument, was made by Immanuel Kant (1724-1804). The influence of his studies can only be compared with ones of Newton in Phsyics. His ideas on the aesthetic experience and taste are of utmost concern. On the other hand, it is neither possible nor practical to discuss them in here.[69] Moreover, discourses upon the architectural taste had already been formed before the Kantian impact on philosophy and aesthetics. But in any case, what he had introduced changed the architectural aesthetics too. In this respect, that would be helpful, and homage, to cite and present particular notions of taste and implications on architecture briefly.[70]

> *Most generally speaking, for Kant aesthetic pleasure was a pleasure resulting from a correspondence between an object's shape and the human mind; when an object has this appropriate shape it will not fail to please, the aesthetic experience is an imperative even if only subjective. … There is no universal rule determining which objects will please. Each object must be appraised and tested separately.*
> …
> *Thus the aesthetic experience is marked by disinterestedness, non-conceptuality, formality, involment of the whole mind, necessity (but a subjective one) and universality (but with no rules).* [71]

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[68] (Kristeller, 1952) Kristeller also proposes an important discussion upon whether Alexander Baumgarten must be considered as the founder of Aesthetics as a discipline.

[69] Although he discussed the taste in "The Critique of Judgment" extensively, in order to develop a comprehensive understanding of his ideas it is of importance to read "The Critique of Pure Reason" and "The Critique of Practical Reason" in right order. (Kant, Arı Usun Eleştirisi, 2010), (Kant, Pratik Aklın Eleştirisi, 2014), (Kant, Yargı Yetisinin Eleştirisi, 2006). As a matter of fact, Kant's language and method promises a difficult reading experience. Ernst Cassirer's extensive study would be useful in following his life and thought. (Cassirer, 2007). See also (Deleuze, 1995). On Kant's perspective of architecture Guyer presents a comparative study covering ther ideas of Kant, Schelling, Lord Kames, and Hegel. (Guyer, 2011). Guyer, however, concludes that "Kant remained more committed to the primacy of function and thus to the Vitruvian paradigm in the philosophy of architecture", meanwhile he opened the way to the post-Vitruvian paradigm for his successors.

[70] Kant did not write particulary on the aesthetics of architecture. He divides fine arts into three, the art of speech, formative art, and the art of the play of sensations, and names architecture and sculpture under formative arts. (Kant, Yargı Yetisinin Eleştirisi, 2006, s. 192-196)

[71] (Tatarkiewicz, 1980, p. 323). There are a number of respected study investigating architecture and aesthetics with respect to the Kantian Theory. Tatarkiewicz provides the most understandable form of summery. According to Tatarkiewicz, that complicated and paradoxical form of theory "result from the nature of Kant's speculations that the theory could not be simple." For other studies see (Guyer, Beauty and Utility in Eighteenth-Century Aesthetics, 2002), (Winters, 2007).

The extraction of the comprehensive summary of Tatarkiewicz reveals another, and mostly omitted, aspect of Kantian theory, which was mentioned above in relation the the nature of Enlightenment. Kant attempted to analyze and present a critique of the mind and its faculties, instead of endeavouring to describe the features of the object of taste, or proclaiming a privileged man of taste.[72]

The transformation in the understanding of taste during the 18th century can be marked with three theoretical positions: First one were the principles and rules of the ancients. The architectural object itself was the source of the taste. It was subjected to the change based on experience and intellectual reasoning of the architect. The second position was the subjective personal judgment of educated man. It was the counter argument of the predetermined taste of the previous authorities. The last one was a total shift from the both beholder and the object, to the process. Because none of them, alone, could have handled the issue of sensory experience, the impossibility of developing universally satisfying rational system of proportions, and probality of infinite number of legitimate individual judgments. The last position, introduced by Kant, in this respect, had changed the course of taste.

He saved the criteria of architectural taste from the paradoxical dichotomy of art vs. science by overriding the hegemony of function and utility. He introduced a new way of experiencing architectural form and space. But, this new experience contributed to the dissociative distance among the architectural form, character and taste. It is also possible to assert that After Kant the search for meaning and legitimacy of the form, content, and the taste were lost in the lybrinths of Kantian tradition as autonomous fields of architectural theory.

During the 18th century, the disputes over the taste, as the power of judgment, were swinging between the qualities of the object of experience and the faculties of mind. Since the sensory experience was associated with the lower pleasures of body, an idea that can be traced back to the Socratic tradition, and the senses are identical for

[72] Another complicated aspect of Kantian Theory is about the purposiveness. Guyer investigates this issue in relation the utility and convenience, which are considered as the issues keeping architecture inbetween, first liberal and mechanical arts, then art and science. (Guyer, 2002). Mallgreave writes that Kant's ideas had been further elaborated, by particularly Schlegel, to allow back the notion of purpose into architecture. (Mallgrave H. F., 2005, p. 99)

everyone, the intellectual verification and comprehension of the impressions produced by the senses were being considered as the primary ground of the taste. Following this logic, Charles-Etienne Briseux (1660-1754) argued the impossibility of individual taste, because everyone identify the same cause and principle of beauty, which produce pleasure, through their identical senses and intellectual processes.[73]

Perez-Gomez reports, nevertheless, that the notion of taste in Briseux was distinct from the late 18th century concepts since he had suggested a genius who could override the rules.[74] Perez-Gomez indicates another important point about Briseux's thought on his contemporaries as well. Those architects were praising taste as the legitimizing force behind their work.

The idea of a genius can be followed back to Germain Boffrand. Although he mentions as "the most enlightened man". At hands of the most enlightened man, art elevates the nature to the perfection through those principles established on likes and dislikes of the enlightened men.[75] To Boffrand, "taste may be defined as a faculty that distinguishes the excellent from the good". It has many degrees from the bad to the excellent. He argued that arts are reduced to the principles by a considerable operation of human mind. It is a process reflection on the pleasing and displeasing things, which takes centuries and due to correction by experience many times. His formulation regards the development and change of the principles due to reflection and experience of that enlightened one.

The ordinary man are pleased by the tyranny of taste, fashion, which is an obstacle before the perfection of the arts. [76] Kruft claims that Boffrand had considered the predominance of fashion as a result of totally individualized concept of *bon goût*.[77] This can be interpreted as an early warning for those architects, mentioned by Briseux, who praised the taste to legitimize their work.

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[73] (Kruft, 1994, p. 147)
[74] Perez-Gomez introduces an extensive discussion on the ideas of Briseux. (Pérez-Gómez, 2002).
[75] The perfection of nature by means of art recalls the ideas of Plotinus who asserted that man elevates the capacity of nature to the level of aesthetics and beautiful since he has the skills of aesthetic appreciation and pleasure. See (Anton, 1967)
[76] (Boffrand, 2002, p. 5)
[77] (Kruft, 1994, p. 145)

Sebastian Leclerc was at the extreme edge of this argument since he considered a subjectivized taste, which produces arbitrary beauty.[78] Kruft writes that for Leclerc, sensory perception is the judge of beauty; good taste was corresponding the pleasure of the beholder on the basis of personal judgment; the finest taste creates the greatest individual pleasure; personal taste is the arbiter of what is permissible, pleasure the criterion of beauty; and finally good taste does not belong to a privileged society, it can be improved. [79]

It is of importance to remember that Sebastian Leclerc was against the science of proportion as the source of good taste. On the contrary, he understood it as "a fitness of the parts founded in the good taste of the architect."[80] This idea was opposing the institutional definition of the Academie d'Architecture agreed in 1734: [81]

> *Bon goût consists in harmony or agreement between the whole and its parts. The harmony that gives a work quality of bon goût depends on three factors, which are ordonnance, proportion, and convenance." Ordonnance is the arrangement (distribution) of the interior and exterior parts with respect to the size and the intended use of the building. Proportion is achieved by means of the appropriate dimensioning of the whole and the parts in regarding to their use and location. Through convenance, every part is placed in its due place since it corresponds to the uses.*

This definition was clearly promoting the compositional qualities. The previous agreement of Academie d'Architecture, achieved in 1712, was, however, addressing the intellectual faculties: [82]

> *Bon goût in architecture consists in that which manifests the simpler relationship in all its parts, and which, communicated more easily to the mind, satisfies it more deeply."*

The first and primary responsibility in shattering architectural theory belonged to Claude Perrault. His groundbreaking contribution to the architectural theory shall be

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[78] Arbitrary beauty, as the counterpart of postive beauty was a concept introduced by Claude Perrault. "The positive beauty can be manifested by means of "richness of materials, grandeur, opulence, and precision of workmanship," and symmetry, which refers to a more contemporary understanding than Vitruvian sense. The arbitrary beauty, however, should be considered in relation to taste, which "distinguishes the true architect from the rest." (Perrault C. , 1993, p. 53) They shall be further discussed in 2.2.2.

[79] (Kruft, 1994, pp. 142-143)

[80] Ibid.,p.142

[81] Ibid.,p.144

[82] Ibid.,p.143

presented in the next part in detail. To put it briefly, Perrault proposed that taste was culture and time based, and it would appreciate different proportional relations in different times and cultures. The Architectural orders of the ancients were based on that relative and even subjective taste. François Blondel had declared that the taste was individual and indeterminate, too. [83] Bu he could not have been critical enough to the authority of the Greek and Roman tradition, whereas Perrault was announcing the superiority of the Moderns in particularly science against the ancients.[84]

Until Claude Perrault, the legitimate and meaningful source and factors of the taste were the cosmology and the principles derived from that cosmic order by the masters of antiquity. Even under those circumstances, the personal – individual reflection of the architect on the problem had been encouraged. As it was referred at the final part of the 2.1.3, even though their knowledge about human psychology, creativity, design methods or building technologies cannot be compared to the contemporary ones, first Vitruvius, and then Alberti were very well aware of the importance of the architects attitude and taste. In this respect, the famous and long part of *De Architectura libri decem,* Book I.I, explanining the education of architect, should also be re-considered accordingly. The knowledge of the architect is the source of its taste that shall be the measure of good and bad architecture.

2.2 The Ancients vs. Moderns of the 17th Century

Vincenzo Scamozzi's great work "*L'idea della Architettura Universale*" is considered as the last of the great treatises of the Renaissance, although it was published in 1615, the early seventeenth century.[85] Payne underscores the treatise's close kinship and indebt to Alberti and tradition of Vitruvian commentaries of the sixteenth century in terms of its content and organization.[86] According to Borys, Scamozzi presented a new look to architect, as an "intellectual-hero who needs to know everything in order to design meaningful buildings."[87] Benevolo explains the

[83] (Kaufmann, 1952, p. 440)
[84] (Perrault C. , 1993)
[85] (Payne A. A., 1992).
[86] Ibid., p.323.
[87] (Borys, 1998)

the circumstances, which gave birth this new look, even though its perspective about the content of architecture was old:[88]

> *What was new was that from 1589 Galileo was at work studying the laws of mechanics, pointing his telescope towards the heavens in 1609 and publishing* ***Nuncius sidereus*** *in 1610; in the following decade Descartes in his stove-warmed room had the revelation of the new 'marvellous science', Kepler stated the laws of movement of the planets and Bacon wrote his* ***Novum Organum****.*

The intellecutal-hero-architect of Scamozzi had already been prescribed by Leon Battista Alberti. The architect must have been a man of art and method, thought and invention, rather than a technician, draughtman, or craftman.[89] As mentioned by Benevolo, Scamozzi's content was old, too. On the other hand, Scamozzi had attempted to reframe that old content with the new framework of the forthcoming age. Before discussing his perspective, it is of importance to present the intellectual milestones of the emerging new age. Because, a Frenchman, Claude Perrault, was going to follow those milestones and construct his criticism on Scamozzi's foundations in order to tear down the whole tradition of metaphysics and cosmology to which architectural theory had leaned for long.

Actually, the title of this part refers to a debate that was not initiated but almost concluded by Claude Perrault. The famous addressing of Charles Perrault, younger brother of Claude Perrault, can be considered as the official beginning of the querelle between the ancients and moderns in Academie Française in 1687.[90] The younger Perrault had attempted to demonstrate the superiority of the moderns over Antiquity in science, and attributed equality to certain extent in art, particularly literature.[91] According to Călinescu, the quarrel was old and lingering situation until "rationalism

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[88] (Benevolo, 1978). Benevolo was right about the circumstances in general, except one little detail about the publication date of *Novum Organum* by Francis Bacon. Bacon had published *Novum Organum* in 1620, five years later than Scamozzi. (Baudart, et al., 2012), (Watson, 2006).

[89] In his preface to The ten Books of Architecture. (Alberti, 1986)

[90] (Shiner, 2004, p. 121)

[91] Shiner's date indicate a later period indeed. Ibid.,p.121-2. The unofficial beginning of the debate must be older. The French translation of Vitruvius by Claude Perrault was published in 1673. His groundbreaking criticism and commentary on Vitruviuan tradition were read aloud in the Academie between 1674-1676. (Kruft, 1994, p. 136).

and the doctrine of progress won the battle against authority in philosophy and the sciences".[92]

In this context, it is of importance present the evolution of that doctrine of progress and change of paradigm in European tradition. Regarding this transformation, a clearer understanding on the break with the tradition through the works of Claude Perrault in the 17th century can be developed. Furthermore, the nature and crisis of the 18th century architectural theories, which projected to the 20th centruy discourses, based the new arguments of Perrault can be presented.

2.2.1 A New Epistemology

The 17th century was a distinguished period within the western culture. The magnificient scientific revolution initiated a paradigm shift of which foundations were settled during the Renaissance. It is accepted that the "Modern Science and Philosophy" have began within this century.[93] Nicolaus Copernicus (1473-1543), Tycho Brahe (1546-1601), Galileo Galilei (1564-1642), Johannes Kepler (1571-1630), and finally Isaac Newton (1642-1726) were the founding fathers of Modern Science.[94] This scientific revolutions, however, was a part of a paradigm shift toward which philosophical thinking had been running, though after Renaissance much faster. Ahmet Cevizci states that the 17th century philosophy can be defined as a new spirit, an understanding of philosophy, emerged during the Renaissance, settled and reinforced with Francis Bacon in England, René Descartes in France.[95]

The distinguishing features of this new philosophy shall be useful to understand the roots and causes of the ideas of Scamozzi and Perrault. Cevizci makes an extensive analysis of those features:[96]

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[92] (Călinescu, 1987). Călinescu underscores that "neither scientist nor philosophers suggested the conspicuously fallacious line of reasoning that gave the moderns the feeling that they were entitled to transfer their scientific superiority over antiquity into an artistic one".
[93] (Cevizci, 2012), (Kambouchner, 2012), (Russel, 1983).
[94] (Kambouchner, 2012), (Kuhn, Kopernik Devrimi: Batı Düşüncesinin Gelişiminde Gezegen Astronomisi, 2007), (Ronan, 2005), (Russel, 1983).
[95] (2012, p. 437)
[96] Ibid.,pp. 437-443

- First of all, human being was supposed to be subject and maker of its history. In this respect, the past and tradition were needed to be denied for the sake of the *tabula rasa*.
- This blank page had been filled with a non-academic and collective, and secular – autonomous philosophy of rational-thinking subject, human being.
- The systematic and critical rationality of the thinking subject discovered the world of phenomena which communicate through the absolute and universal language of mathematics.
- The preceeding philosophical thinking, observations and scientific experiments on this world of phenomena had led a new cosmology in which universe is "unlimited" without a center. This new model tore the whole tradition from Plato to Christian cosmology, which was a living single organism consists of parts having particular position and task in order to form the whole, apart. Consequently, the idea of nature as perfect and ordered whole was in question.
- Since the perfect and ordered whole lost its authority, it would not have been possible to claim its knowledge, that is, truth. The new cosmology and nature were supposed to be based on another kind of knowledge, that is to say, scientific knowledge.
- In this respect, knowledge was considered as different from the truth. The epistemology replaced the priority of ontology. After having executed the analysis of the ways and means of achieving the knowledge, and scientific knowledge as a particular kind, the design of the existence was to be proceeded accordingly.
- The nature constituted the realm of matter without life. It was subjected to the observation and analysis of rational human being. By means of those obervations and analysis, human being was going to reveal the knowledge of the nature.
- Knowledge is power, through which it was going to be possible control and change the nature. It was possible by means of the practical application of scientific knowledge.

It is obvious that the seventeenth century philosophy had a heavy responsibility of developing a brand new knowledge base for that new scientific universe. For sure, the features and overall results of that paradigm shift exceed the scope and objective of this study. [97] Without omitting the rest, particular points should be paraphrased in relation to the architectural thinking and writings of Scamozzi and Perrault, and the position of Vitruvian tradition.

That knowledge base of that new and scientific universe required a re-classification and organization of the ways of production and execution, which were also the incorporated form of human knowledge about nature: The definition and classification of the arts. Although it is translated as "art", that "rational and implied knowledge" of the ancients was used to refer to a content and various subjects completely different than the modern concepts of philosophy, art and science. [98]

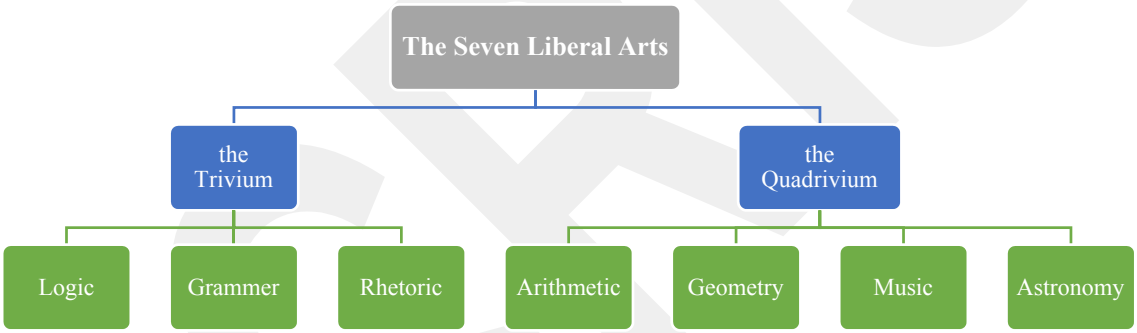

Chart 1: The Seven Liberal Arts, after Eco, Shiner, and Tatarkiewicz

The very basic distinction, more than a classification, however, was attributed to ancient Greece. The preference for intellectual abilities and activities of mind and its pleasure was a characteristic of Greek aristocratic system which claimed that the liberal arts were superior to the vulgar ones charatericized with physical effort, utility

[97] It should be kept in mind that the paradigm shift outlined by those mentioned above did not happen all of a sudden. The transformation took long. Mostly the pioneers of those change were not appreaciated, even accused, and punished because of their ideas. Galileo was successful, compared to Giordano Bruno who was sentenced to be burned at the stake by the Inquisition. For this gradual and painful transformation see (Kuhn, 2008), (Kuhn, 2007), and (Ronan, 2005).

[98] The Greek "techne" and Latin "ars" were referring to different contents and implications from the modern concept "art". For history of the concept of art and the invention of modern art and aesthetics see (Shiner, 2004) and (Tatarkiewicz, 1980)

and economical value in return.[99] The perspectives on the division and classification of human skills and faculties called as arts during Greek and Roman were diverse.[100] As a matter of fact the main division was common as seven "liberal" arts and "vulgar" or "servile" ones. The seven liberal arts were considered in two categories as *the quadrivium*, which consists of arithmetic and geometry, music and astronomy, and *the trivium*, which covers logic, grammer, and rhetoric.[101]

Umberto Eco claims that the roots of the medieval idea of art were in the Greek and late antique tradition.[102] Hugh of Saint Victor, whose work *Didascalicon* is accepted as a major guide to understaning medieval art, claims that all knowledge is contained

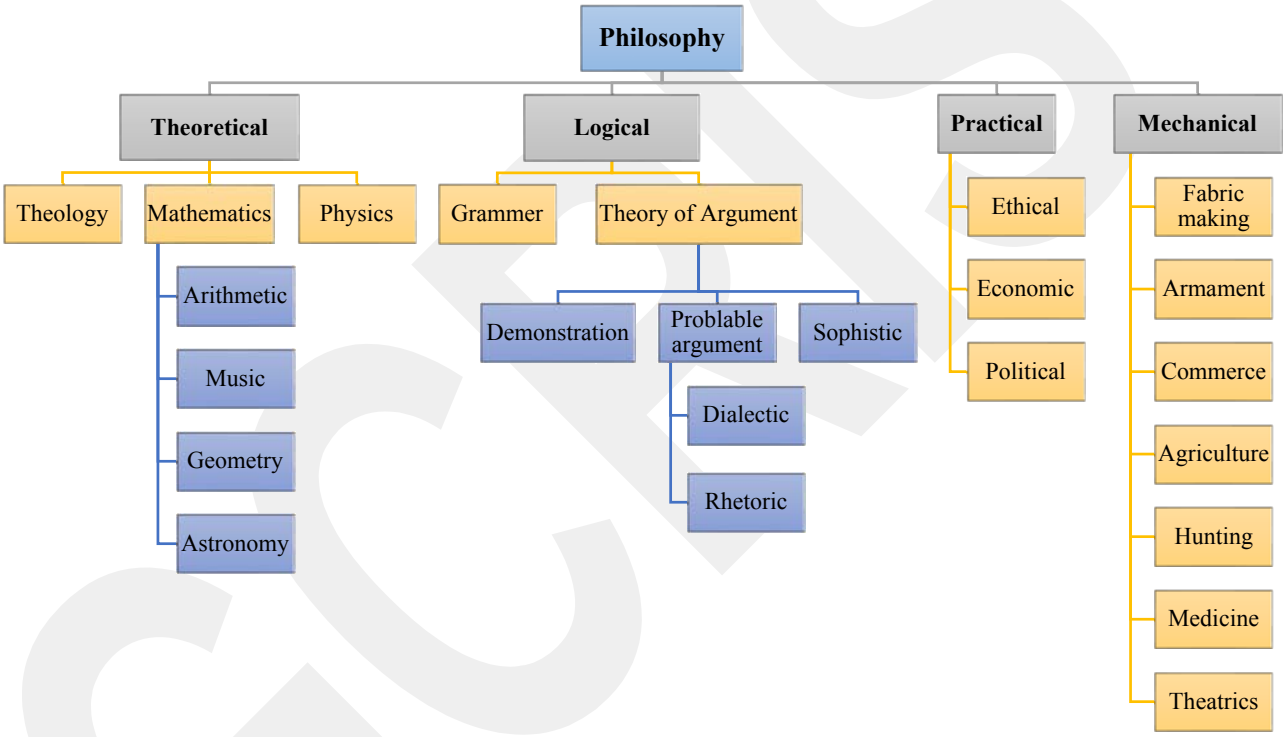

Chart 2: Classification of Knowledge, after Hugh of Saint Victor

[99] (Tatarkiewicz, 1980, p. 53), (Shiner, 2004, p. 48).

[100] For the ideas and classifications of Plato, Aristotle, Varro, Quintilian, Cicero, Galen, Plotinos, Martianus Capella, Sextus Empiricus those who formed the intellectual atmosphere until the late antique and the early Middle Ages please see (Kristeller, The Modern System of the Arts: A Study in the History of Aesthetics Part I, 1951), (Tatarkiewicz, 1980) and (Shiner, 2004).

[101] Some scholars, such as Michael Masi, credit Boethius as the one who provided the essential and standard texts for the later Middle Ages. Masi names Martianus Capella's work as well. According to Masi, "Capella provided the graphic descriptions, and iconographic tradition accompanied with a brief compendium of disciplines". (Masi, 2006)

[102] The Stoics, Marius Victorinus, Isidoros of Seville and Cassiodorus are listed in relation to that tradition (Eco, 1999, s. 149)

by the four divisons of philosophy, theoretical, practical, mechanical and logical.[103]

As it can be seen, this classification does not have a separate category for liberal arts particularly. In explaining the origins of arts, however, Hugh of Saint Victor addresses them, and the rise of arts for usage, which were to be called mechanical arts:[104]

> *Before there was **grammar**, men both wrote and spoke; before there was **dialectic**, they distinguished the true from the false by reasoning; before there was **rhetoric**, they discoursed upon civil laws; before there was **arithmetic** there was knowledge of counting; before there was an art of **music**, they sang; before there was **geometry**, they measured fields; before there was **astronomy**, they marked off periods of time from the courses of the stars. But then came the arts, which, though they took their rise in usage, nonetheless excel it.*

Hugh of Saint Victor states that art contains knowing, which considers rules and precepts, and producing or better giving shape through manipulation of a material medium, as in the case of architecture, with respect to those precepts and rules.[105] This process of making on the basis of principle is the way to restore the divine likeness that was lost:[106]

> *There are those who say that what the arts are concerned with remains forever the same. This, then, is what the arts are concerned with, this is what they intend, namely, to restore within us the divine likeness, a likeness which to us is a form but to God is his nature. The more we are conformed to the divine nature, the more do we possess Wisdom, for then there begins to shine forth again in us what has forever existed in the divine Idea or Pattern, coming and going in us but standing changeless in God.*

Jerome Taylor, in his notes to the Book Two of Didascalicon, explains that what was lost by man was the permanent "knowledge of his creator, of himself, of things created with and form himself and of things he is to make with these last". Since that

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[103] (Hugh of St. Victor, 1961).
[104] Ibid., p.60. (Kristeller, The Modern System of the Arts: A Study in the History of Aesthetics Part I, 1951, p. 507) and (Shiner, 2004, p. 57) mentions Hugh of St. Victor as the one who introduced the list of seven mechanical arts. (Tatarkiewicz, 1980, p. 14), on the other hand, adds another list by Radulfo de Campo.
[105] (Hugh of St. Victor, 1961). He makes a clear distinction between discipline, and art. Philosophy contains the both. He refers to architecture as an example of "art".
[106] Ibid., p. 61.

knowledge is permanent, with reference to Boethius, Remigius of Auxerre and Cassiodorus, the seven liberal arts shall not change or perish since the knowable will always exist even if the knowledge is lost: [107]

> *For Hugh, the ultimate concern of the arts is with the changeless archetypal patterns in the divine Wisdom, to whose likeness the arts restore man.*

Hugh of Saint Victor mentions the building of walls, which was attributed to the carftmen such as wood-workers and carpenter. They were supposed to deal with "smoothing, hewing, cutting, filing, carving, joining, and daubing in every sort of material", as type of armament, thus a mechanical art. He, however, benefits the allegorical power of building and structural parts. The importance of foundation for standing firm, building a structure in mind to be a fortress of faith, the similarity of Divine Scripture to building having foundations and structure raised upon it can be named among many others.[108]

In short, mankind is weak and needs shelter and protection within nature. Knowledge is its revelation. A building could only be achieved by means the collaboration of many arts, including theology, geometry, arithmetic, astronomy, music, and economy. The execution of the construction, nevertheless, belongs to the realm of mechanical arts since the building materials are given shape by means of "smoothing, hewing, cutting, filing, carving, joining, and daubing", which were considered as the parts of armament.

Until the Renaissance, the classification was also constituting the curriculum, which was inherited from the late antiquity and structured during the Medieval Ages, of the monastic and cathedral schools.[109] After the rise of the universities, the curriculum was extended to certain other fields such as medicine, jurisprudence and theology as distinct areas of learning. [110] Tatarkiewicz indicates, and exemplifies the arguments about intricate relationship among art, science, and craft with no agreement during

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[107] Ibid, pp. 195-196.
[108] Ibid. 139-141, Book VI, ch.IV. Hugh of Saint Victor refers to underearth structure and superstructure to explain "allegory".
[109] (Shiner, 2004, p. 57), (Kristeller, The Modern System of the Arts: A Study in the History of Aesthetics Part I, 1951, p. 507)
[110] Ibid., p. 507.

the Renaissance.[111] It is obvious that following the expansion of the knowledge and field of interests, it was a need to add, re-locate and replace them accordingly. Shiner puts that the contribution of Renaissance to the trivium and quadrivium, in brief, was the *Studia Humanitas* that covers grammer, rhetoric, poetics, history, and moral philosophy.[112]

It is of importance to mention Nicolaus Cusanus (1401-1461) in relation to the paradigmatic change in understanding universe, nature, and knowledge. Cusanus, besides many other significant statements, claims an infinite spherical universe only which could be coherent with the infinite creative power of God, infinite, unlimited and everywhere.[113] In Cusanus' centerless universe, neither earth nor sun had a privileged position just like the other moving celestial bodies. The universe is constituted by the infinite variation of the finite things. It is reflected on the mankind, who is elevated to a microsomos in which the intellectual and material dimensions of the truth are united. According to Cevizci, Cusanus was the first one who claimed that the same rules regulate the earth and sky that constitute the Nature, which is in unity in change and development. His ideas had influenced the natural philosophy of Renaissance, which looks for and investigates the main forces uniting the universe from inside in order to know, much more importantly to control, the nature.

This endeavour to know, control and change the Nature was going to be fabricated by the Renaissance intellectuals until Francis Bacon and Rene Descartes, who formulated the the epistemology of Modernity.[114] The classification of knowledge by Francis Bacon, at the turn of the seventeenth century, had paved the way to the separation of science, art, and craft.

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[111] (Tatarkiewicz, 1980, p. 59)
[112] (Shiner, 2004, p. 69)
[113] (Cevizci, 2012, pp. 392-394), (Kuhn, 2007, p. 240). The following parts about Cusanus' ideas are based Cevizci.
[114] Giordano Bruno, Tommasso Campanella, Pierre Gassendi, Agrippa von Nettesheim, Paracelsus, Galileo Galilei, Nicolas Copernicus, Tycho Brahe, Johannes Kepler are just some to mention among those Renaissance figures. (Russel, 1983), (Kuhn, 2007), (Baudart, et al., 2012), (Cevizci, 2012).

Bacon's contributions to scientific thinking and philosophy exceeds the scope of this study.[115] One of the most important part of his ideas in terms of the hypothesis of this

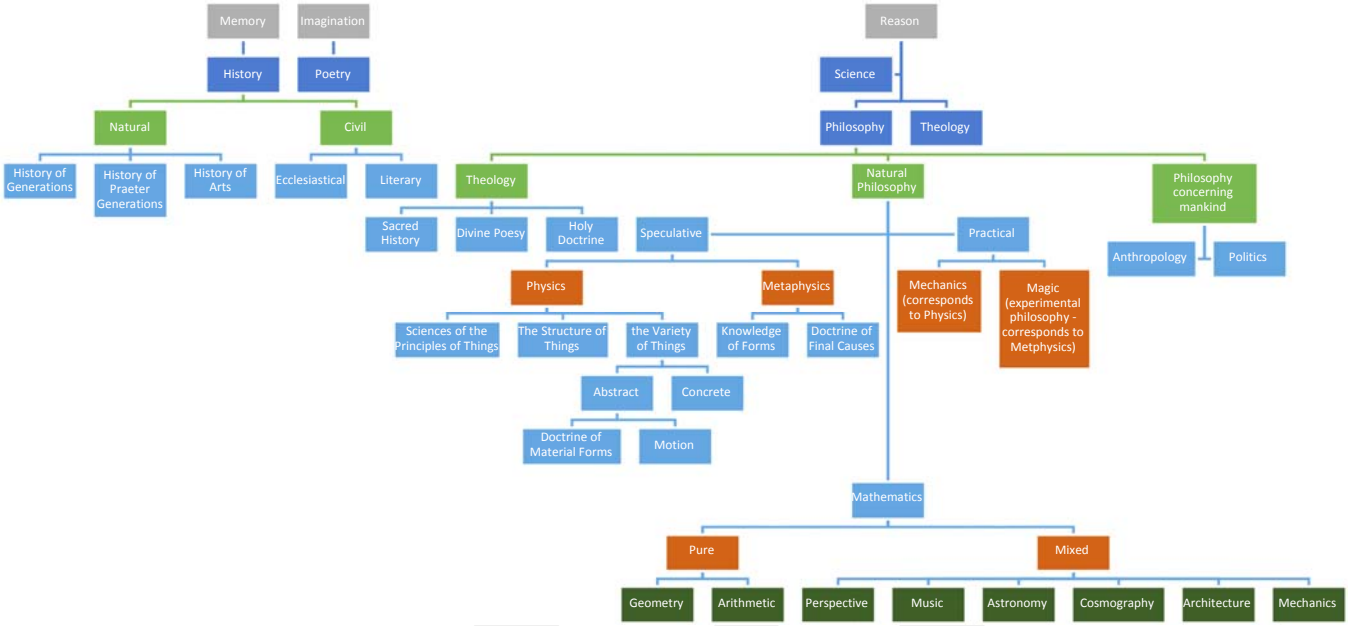

Chart 3: The Classification of Knowledge, after Francis Bacon

study is his claim about the advancement and improvement of human life by means of scientific and technical development.[116] In this respect, Bacon had initiated a classification of knowledge in order to define the limits and relations of the various fields in more secular and modern way.[117]

In his tree of knowledge, which has one trunk but many branches in relation and correspondence with each other, architecture is considered as a kind of mixed mathematics. Mathematics is a claimed as a great appendix to natural philosophy, which is a science and corresponds to reason:[118]

> *Mathematics is either pure or mixed. To the pure belong the sciences employed about quantity, wholly abstracted from matter and physical axioms. This has two parts—geometry*

[115] For a detailed analysis see (Cevizci, 2012, pp. 446-461), for a critical perspective see (Russel, 1983, pp. 522-526)
[116] (Ronan, 2005), and (Cevizci, 2012)
[117] Ibid., p. 448.
[118] (Bacon, 1900)

and arithmetic;

…

Mixed mathematics has for its subject axioms and the parts of physics, and considers quantity so far as may be assisting to illustrate, demonstrate, and actuate those; for without the help of mathematics many parts of nature could neither be sufficiently comprehended, clearly demonstrated, nor dexterously fitted for use. And of this kind are perspective, music, astronomy, cosmography, architecture, and mechanics.

The intricate and unsolved relationships among knowledge, science, art and philosophy had to wait, despite the endeavours of intellectuals of the 17th and 18th centuries. Kristeller and Shiner depict the atmosphere, efforts, institutions and disputes in detail.[119] There are particular corner stones of this history of evolution and separation of sciences and art that are of significance in terms of the scope of this study. According to Kristeller, the ground for distinction of arts and sciences was prepared with the famous *Querelle des Anciens et Modernes*:[120]

The Querelle as it went on had two important consequences which have not been sufficiently appreciated. First, the Moderns broadened the literary controversy into a systematic comparison between the achievements of antiquity and of modern times in the various fields of human endeavor, thus developing a classification of knowledge and culture that was in many respects novel, or more specific than previous systems; Secondly, a point by point examination of the claims of the ancients and moderns in the various fields led to the insight that in certain fields, where everything depends on mathematical calculation and the accumulation of knowledge, the progress of the moderns over the ancients can be clearly demonstrated, whereas in certain other fields, which depend on individual talent and on the taste of the critic, the relative merits of the ancients and moderns cannot be so clearly established but may be subject to controversy.

The stones of the querelle were paved by important figures of 17th century Italian and French intellectuals, who prepared the scene for Claude Perrault. Although Perrault has been credited for the revolution and victory of moderns over the authority Ancients, it is of significance to mention them for a better understanding of the era.

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[119] (Kristeller, The Modern System of the Arts: A Study in the History of Aesthetics Part I, 1951) and (Shiner, 2004).

[120] (Kristeller, 1951, p. 525)

2.2.2 From Authority to Theory

Although it was five years before the publication of Francis Bacon's work, Vincenzo Scamozzi's (1548-1616) placement of architecture into the class of mathematics cannot be a mere coincidence. Because, Scamozzi was regarding architecture as a universal science, which was derived from Neo-Platonic sources claiming a God-created mathematically and geometrically ordered cosmos.[121]

> *In the abstract, architecture makes use of number, size, materials, natural movements and the other parts through speculation; and it also uses discrete and continuous quantities, and proportions, and equivalences, just exactly as the Mathematician and Physicist and Metaphysicist do; indeed it so closely approaches these first, that where they end, there are the principles of Architecture fade and for this reason the Ancients … called it a Science, and put it in the class of Mathematics.*[122]

It is obvious that this 'Science' was new and different from the Medieval Master Builders 'Scientia', which was a sort of "a priori" template to be installed in order to interrelate the structural and functional parts.[123] The frame and content of the idea of science, in modern sense, was still obscure. The idea of understanding, controlling, and changing the nature to make it fit for use by means of particular methods, within the general definition of science, was, however, the primary character of the era.

As Cevizci puts, the forthcoming technical civilization was going to endeavour to overcome the nature by the help of reason and technic.[124] This understanding was going to be the foundations of the architectural theories that are based on technological innovations and advancements instead of philosophical ground theories or cosmologies.

Scamozzi's substantial distinctions from his predecessors was a turning point for architectural theory. First of all, Scamozzi makes an analytical induction of scientific character of architecture. Benevolo reminds that the induction was old, but under

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[121] (Biermann, Grönert, Jobst, & Stewering, 2003, p. 118)
[122] Quoted in (Benevolo, 1978, p. 587)
[123] See chapter II.
[124] (Cevizci, 2012, p. 481)

those circumstances mentioned above they were about to inititate a new look on the content of architecture.

Scamozzi makes an analytical investigation and categorization of Vitruvian concepts of order, arrangement, eurythmy, symmetry, appropriateness and economy

> *in a hierarchical order in which each category deals with specific moments in the process of arriving at a building: the site (distributione and dispositione); the form (ordine and dispositione)? the materials (distributione and dispositione); and, finally, the fine, or how the building appears (venusta and decoro). The hierarchical arrangement is Scamozzi's own and indicates a desire to trace the compounding effect of each category to beauty and, beyond, into seemly beauty (decoro.)* [125]

His attempt to apply Vitruvian concepts onto the real issues of construction process also reveals a significant mind shift regarding the relation between the architectural form and orders. For Scamozzi, form-giving is fundamental for architecture, and form is the way through which things reach to intellect, cause comprehension.[126] For sure, similar arguments about relations among the form, senses, and the mind had already been proposed.[127] It, nevertheless, seems that Scamozzi differentiates the architectural form from the proper composition building elements according to architectural orders.

Roland Féart de Chambray (1606-1676) was among those figures. In the Preface of *Parallele de l'architecture antique et de la moderne*, published in 1650, Chambray put that art progress towards perfection and suits the humor of ages and nations; therefore they have the right to invent and follow their genius as Ancients, since their mind is not bond and slave to that of Ancients.[128] This critique of the ancients' authorities was an important part of the approaching transformation, which was pointed out by Abraham Bosse (1602-1676) in 1664. Bosse's statements reflects Cartesian paradigm:

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[125] (Payne A. A., 1992, p. 328)
[126] Ibid., p.333
[127] See (Alberti, 1986), IX, 5.
[128] (Mallgrave H. F., 2006, p. 63)

> *The Vitruvian categories of utilitas (le commode), firmitas (le solide) and venustas (La agréable) are thus all subjected to raison. The functional aspect – without it raison is not attainable – is of paramount importance. The aesthetic principle, now only tolerated in the background as La agréable, looking through a telescope into the future – an image rich in implications. The supreme law of architecture is raison.*[129]

The foundation of The Academie Royale d'Architecture in 1671 was an important stage of that transformation. The Academie had institutionalised the systematic teaching of architecture hand in hand with the establishment and espouse of a rational and French architectural doctrine and its principles derived from the discussions upon philosophy and natural sciences.[130] The architectural theory of the Academie had seen the perfection and greatness in the imitation of Antiquity in order not only to suprass the achievements of the Ancients, but also to show the independence from the Italian classical legacy. [131]

For sure the Academie was not a solid body. The Ancients' authority and the question of surpassing them were being reflected in different ways. The lectures of François Blondel and the Vitruvius translation and commentary of Claude Perrault were two clear examples of that diversity, which turned out to be a seminal controversry.

François Blondel (1618-1686), who counted himself among the last disciples of Galileo the mathematician, was an eminent scientist, scholar and man of letters.[132] As the first director of the Academie Royale d'Architecture, Blondel's position against Claude Perrault can be described as the last stand before the ultimate divorce of architecture,

> *which was, nevertheless, a nonspecialized field of endeavor in the modern sense. It belonged to a universe of discourse that was founded on a totalistic understanding of reality, derived from myth and philosophy; its content was meaningless apart from the*

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[129] (Kruft, 1994, p. 127)
[130] Ibid. pp.128-129
[131] Ibid. p.129, (Mallgrave H. F., 2005). Kruft mentions a strick pecking order of authors who were read aloud during the sessions of the Academie: Vitruvius, Palladio, Scamozzi, Vignola, Serlio, Viola, Cataneo. Mallgrave, however, cites Palladio, Scamozzi, Vignola, Serlio and Alberti as the theorist, at least, discussed by Blondel during the first months of the Academy. See ft.11 for Prelude.
[132] (Gerbino, Francois Blondel (1618-1686): Architecture, Erudition, and Early Modem Science, 2002)

> *traditional understanding of a hierarchical and living cosmos (physis) that the Renaissance had inherited from antiquity.*[133]

It would be useful to refer Blondel's another study, *Cours de mathematique contenant divers traitez composez et enseignez a Monseigneur le Dauphin*, published in 1683, in order to understand his conception of knowledge, and the position of architecture.[134] Gerbino presents a scheme of Blondel's classification of mathematical sciences in regard to Blondel's explanations.[135] In this scheme, architecture, mechanics, music, and military art, are subordinated to Geography, which is under Mixed Mathematics, Cosmography as Blondel calls it. This classification is obviously akin to Bacon's tree of knowledge.

Although Blondel is well known with his Cours d'architecture, the collection of his lectures were published between 1675 and 1683. His less known architectural treatise, *Resolution des quatre principaux problemes d'architecture* published in 1673, however, is also of importance in terms of his scientific position. Gerbino claims that this treatise was the most prestigious and distinguished work of Blondel, who considered it as his personal contribution to modern science in the sense of progress and continual growth of knowledge.[136] The treatise deals with four problems of drafting and construction that covers "the invention and use of geometrical instruments, the construction of vaults based on complex curves, and the strength and efficiency of structures": [137]

> *It presents a specific image of architecture and seventeenth-century science … It deals with concrete problems of the kind encountered regularly in architectural practice and seeks to solve them in light both of the history of mathematics and of current research in that field. … To Blondel, as to other mathematicians of the time, the practice-oriented culture of the mason had effectively severed architecture from recent advances in the mathematical sciences. The Resolution was intended to redress this deficiency not simply by prioritizing "theory" in a conventional fashion, but by bringing*

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[133] (Perez-Gomez, 1993)
[134] (Blondel, Cours de Mathematique contenan Divers Traitez Composez et Enseignez A Monseigneur Le Dauphin, 1683)
[135] (Gerbino, 2002, p. 67) fig. 67. "*For Blondel, mixed mathematics is equivalent to Cosmography because it examines sensible quantities inherent in natural objects*."
[136] (Gerbino, 2005)
[137] Ibid., p.500

> *practitioners in line with a self-consciously modern vision of scientific progress.*

Despite his scientific perspective on progress and concerns for the solutions of practical problems, Blondel was clearly advocating a natural continuum of that totalistic understanding by refusing to separate the arts and sciences from the study of the Antiquity, since the former's discoveries were inspired by the study of the latter.[138] In any case, the Blondel's commitment to the ancient authorties was a result of his rationalist attitude, which was related with his perspective on the institutionalized architectural education, as Blunt puts:[139]

> *Blondel expounds a strictly classical and rationalist doctrine. Architecture must follow the laws of nature and reason rather than fantasy. One of the manifestations of reason is orderliness, which alone makes architecture apprehensible to the human mind. From reason certain rules can be deduced, which are of absolute validity. They apply in particular to proportions; for instance, the proportions of the five Orders are deduced from those of the human body, and must never be altered. The student can shorten the process of learning these principles by studying and imitating those works in which they have been most perfectly embodied, that is to say, in the first place the buildings of classical antiquity, and secondly those of the great masters of the Italian Renaissance. In short, the old academic doctrine: reason, rules, and the best masters.*

François Blondel, however, had a commitment to modern science, reason and innovation, and progress of architecture to surpass the achievements of the Ancients.[140] Kruft, also indicates the Blondel's perspective on varying architectural progression of the different cultures, which was applied to the evolution of the architectural order from Doric to Corinthian as well.[141]

Gerbino claims that Blondel's historical image has been overshadowed by Claude Perrault since they have been represented as the symbols of two opposite perspectives:[142] The authority and supremacy of Ancients incorporated in the

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[138] (Gerbino, Francois Blondel (1618-1686): Architecture, Erudition, and Early Modem Science, 2002, p. 7)
[139] (Blunt, 1957)
[140] Ibid. p.5, (Kruft, 1994, pp. 130-131)
[141] Ibid. p.130
[142] (Gerbino, 2002, p. 15)

Vitruvian theory of proportion, and the accumulated knowledge and technological achievements of Moderns. According to Gerbino, the dispute was not over the distinction between tradition and progress:[143]

> *Perrault rebuked Blondel not only for his veneration of the classical past, but also for adhering to philological and historical methods that he believed were no longer suited to scientific investigation or the practical arts. Perrault was fighting the manner and means of scholarship as they had been largely practiced as well as their applicability to architecture.*

The definition of architecture and the tasks of architect would be helpful in understanding the real difference, indicated by Gerbino, between Blondel and Perrault.[144] Blondel approaches architecture as the art of building. A good building should be solid, commodious, healthy, and pleasing. The selection of a proper site, sanitary conditions, as in Alberti, appropriate materials and careful workmanship for a solid and pleasing construction are of importance. The task of architect is

> *to dispose and to divide his particular spaces in such a way that the parts relate to each other with an agreeable proportion and justness, each being convenient and separated without encumbrance.*

It is obvious that Blondel was following the tradition originated in Vitruvius' text. The imitation and perfection of the nature in the form of primordial hut was the initial point of the idea of rational improvement of architecture, of which qualities and achievement in Blondel's time naturally surpassed the Antiquity.[145] Furthermore, the Ancients had mistaken and deviated, thus it was important to code, refine, improve and even develop new principles for architecture.[146] In this respect, even new forms can be invented.[147]

In brief, François Blondel was standing for the totalistic understanding of reality, to defend which he tried to apply the methods of modern science. For Blondel, architecture was a mixed mathematical science, which was characericized by

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[143] Ibid., p.15
[144] For Blondel's approach see (Blondel, François Blondel: From Architecture Course (1675), 2006)
[145] (Freigang & Kremeier, 2003)
[146] Ibid., p.260
[147] (Kruft, 1994, p. 131). Kruft mentions that this was the justification of the new and national French order.

proportion. Proportion, which is rooted in nature, is the cause of beauty in architecture.[148] Claude Perrault's attacks on the contradictions of Blondel's understanding initiated a completely new perspective for the next century. Perrault replaced the traditional cosmology behind the architectural beauty, and proposed new criteria for the judgment by putting the architectural practice itself as the subject of academic study.

Claude Perrault (1613-1688) had introduced a new kind of theory and methodology for architectural practice. According to McEwen, he attempted to propose a certain and invariable methodology, which was supposed to direct the practice, as the one developed by Descartes for the science.[149]

> *Perrault wanted to elevate the architect to the level of the scholar by making practice itself the object of study. For Blondel, in contrast, it was only by mimicking the scholar that the architect was raised to the same level*

Since the nature cannot provide the foundations of that methodology, the mankind, as thinking thing, was going to handle this job, as in the case of language.[150] By developing his theory, Perrault was supposed to changed the traditional approach to architecture which was

> *nevertheless, a nonspecialized field of endeavor in the modern sense. It belonged to a universe of discourse that was founded on a totalistic understanding of reality, derived from myth and philosophy; its content was meaningless apart from the traditional understanding of a hierarchical and living cosmos (physis) that the Renaissance had inherited from antiquity. Such theory fulfilled the important role of elucidating the orders and meanings of the cosmos that were clearly embodied in the built world.*[151]

Claude Perrault looked for the objective criteria of architectural judgment within the discipline itself. He relocated the practice itself as the object of study. [152] He

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[148] Ibid. p.132. For a detailed explanation of Blondel's understanding of proportion, architecture and other arts see (Gerbino, Francois Blondel (1618-1686): Architecture, Erudition, and Early Modem Science, 2002, pp. 202-207)
[149] (McEwen, On Claude Perrault: Modernising Vitruvius, 1998)
[150] (Perrault C. , Ordonnance for the Five Kinds of Columns after the Method of the Ancients, 1993)
[151] (Perez-Gomez, 1993)
[152] (Gerbino, 2002, p. 18)

reserved, however, metaphysics-born body of knowledge, which was embodied in the theory of proportions, as the subjective realm of architecture.

> *the commentary favors technical questions of building to topics that Perrault saw as more tangential or obtuse. Indeed, he spent as much time commenting on bricks, sand, lime, pozzolano, and masonry as he did dismissing or directly amending some of Vitruvius's more "metaphysical" or philosophical terms, particularly the six principles in Book One, Chapter One.*[153]

Claude Perrault states that the nature does not provide rules for the beauty, contrary to many ancient authority had claimed to find in nature in the form of proportion. If there had been, says Perrault, all the efforts of previous writers to find a common, unchanging and universal proportion pleasing the eye and mind would have been achieve success. But there had been nothing but inconsistencies and disagreements about the measurements and proportions of the ruins of ancients.[154]

He also denounce the similarity between the proportional relations of musical chords and the one among the building parts:[155]

> *But we cannot claim that the proportions of architecture please our sight for unknown reasons or make the impression they do of themselves in the same way that musical harmonies affect the ear without our knowing the reasons for their consonance. Harmony, consisting in the awareness gained through our ears of that whichis the result of the proportional relationship of two strings, is quite different from the knowledge gained through our eyes of that which results from the proportional relationship of the parts that make up a column.*

Perez-Gomez says that Perrault's ideas indicate distinction between the visible, or perceptual phenomena, by which the architectural beauty is defined, and the invisible content, or conceptual dimension: [156]

> *The disparity between the perceptual and conceptual dimensions could arise only after the inception of the Cartesian worldview, and many of the contradictions apparent in Perrault's work derive precisely from this new tension. Perrault could seemingly accept*

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[153] Ibid. p.25
[154] (Perrault C. , 1993)
[155] Ibid. p.49
[156] (Perez-Gomez, 1993)

> *the conventional forms of traditional architecture while rejecting numerical systems as the invisible cause of beauty.*

Perrault goes further and proposes a completely new and discrete perspective about the proportion and beauty:[157]

> *Hence, neither imitation of nature, nor reason, nor good sense in anyway constitutes the basis for the beauty people claim to see in proportion and in the orderly disposition of the parts of a column; indeed, it is impossible to find any source other than custom for the pleasure they impart. Since those who first invented these proportions had no rule other than their fancy [fantaisie] to guide them, as their fancy changed they introduced new proportions, which in turn were found pleasing.*

Perrault states that there can be positive and arbitrary beauty which can be found in architecture:[158] The positive beauty can be manifested by means of "richness of materials, grandeur, opulence, and precision of workmanship," and symmetry, which refers to a more contemporary understanding than Vitruvian sense. The arbitrary beauty, however, should be considered in relation to taste, which "distinguishes the true architect from the rest. According to Rykwert, Perrault's approach was "dangerously reductionist, if not actually destructive" since he reframed the work of architect with the realm of taste and fancy which were out of reason.[159]

Unlike the other treatise writers, Perrault makes a detailed comment on the parts of architecture:[160] First he mentions the triad, Solidity, Convenience and Beauty. They are due "ordering and disposition of all the parts", just proportion in regards to a "true decorum, and well regulated economy". As different from Vitruvius, Perrault claims that architecture has eight parts: Solidity, Convenience, Beauty, Order, Disposition, Decorum, Oeconomy.

> ***Solidity*** *depends upon the goodness of the Foundation, choice of Materials, and the right use of them; which ought to be with a due order, disposition and convenient Proportion of an Parts together, and of one in respect of another.*

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[157] (Perrault C. , 1993, pp. 52-53)
[158] Ibid., p.53
[159] (Rykwert, 1987, p. 117)
[160] (Perrault C. , An Abridgement of the Architecture of Vitruvius, 1692)

Convenience *likewise consists in the ordering and disposition, which is so good that nothing hinders the use of any part of the Edifice.*
Beauty *consists in the excellent and agreeable form, and the just proportion of all its parts.*
Order *is that which makes, that all the parts of an Edifice have a convenient bigness, whether we consider them apart or with Relation to the whole.*
Disposition *is the orderly Ranging and agreeable Union of all the parts that compose the Work; so that as Order respects the Greatness, Disposition respects Form and Situation, which are Two compriz'd under the word Quality, which Vitruvius attributes to Imposition, and opposes to Quantity, which appertains to Order.*
Proportion*, which is also call'd Eurythmy, is that which makes the Union of an parts of the Work, and which renders the Prospect agreeable, when the Height anwers the Breadth, and the Breadth the Length; every one having its just measure. It is defin'd, the Relation that all the Work has with its Parts, and which every one of them has separately to the Idea of the whole, according to the measure of any Part.*
Decorum *or Decency, is that which makes the Aspect of the Fabrick so correct, that there is nothing that is not approv'd of, and founded upon some Authority. It teaches us to have regard to three things, which are, Design, Custom and Nature.*
The Regard to Design makes us chose for Example, other Dispositions and Proportions for a Palace than for a Church.
The Respect we have to Custom, is the Reason, for Example, That the Porches and Entries of Houses are adorned, when the Inner Parts are Rich and Magnificent.
The Regard we have to the Nature of Places, make us chose different Propects for different Parts of the Fabrick, to make them the wholsomer and the more convenient.
Oeconomy *teaches the Architect to have reagard to the Expences that are to be made, and to the Quality of the Materials, near the Places where he builds, and to take his Measures rightly for the Order and Disposition; viz. to give the Fabrick a convenient Form and Magnitude.*

His approach to the method as a part of applied theory of architecture demonstrates the characteristics of his era. His theory does not contain metaphysical foundations or causes for neither origin, nor beauty nor the appearance of architecture. The positive beauty of architecture is based on certain qualities common and agreeable by all. The taste, as related to arbitrary beauty therefore proportions, is custom based.

According to Perrault, however,

> *... finding the divergences among theoretical systems and measurements of real buildings to unacceptable, Perrault set out the problem by creating a simple and universal system of architectural proportions. It was to be a system that any architect, regardless of his ability, could easily learn, memorize, and implement. Thus, the irregularities of the practice were to be controlled by prescriptive reason.*[161]

This objective reflects his scientific position that was rendered with rationality, scientific method and progress. As a matter of fact, Perrault was one of the major figures of the intellectual climate of his era, which was preceded by Galileo, Bacon and Descartes, their new scientific world. It is clear that Perrault did not appropriated a cosmology for his theory, but rather a world of quantitative empirical facts where the reason is separated from faith.[162]

> *Everyone knows that the cruel war waged on scholarship [sciences] by the barbarism of past ages spared theology alone of all the branches of learning it obliterated and that as a result what little remained of culture [litterature] took refuge, in a sense, in the monasteries. In these places, where intelligence was obliged to seek the noble substance of knowledge concerning nature and antiquity, the art of reasoning and of training the mind was practiced. Yet this art, which by nature is proper to all branches of learning [sciences], had for so long been practiced only by theologians, whose every belief is bound and captive to ancient wisdom, that the habit of utilizing the freedom needed for scrupulous investigation was lost. Several centuries passed before people in the humanities were able to reasoning anything other than a theological way. This is why, formerly, the only aim of learned inquiry was the investigation of ancient doctrine [opinions]', whereby, greater pride was taken in discovering the true connotation of the text of Aristotle than in discovering the truth of that with which the text deals.*[163]

The replacement of cosmology by building and practice as the knowledge and theory of architecture was a long process which had been concluded by Claude Perrault. After Perrault, the mainstream discussions were formed around the architecture-

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[161] (Perez-Gomez, 1993)
[162] Ibid. pp.8-10. Perez-Gomez discusses the progress of modern scientific world from Galileo to Descartes in order to provide a broader perspective of Perrault's approach.
[163] (Perrault C. , 1993, p. 57)

specific issues. It should be remembered that the architectural orders were treated as the formal language of theory. As a matter of fact, orders had never been considered as the knowledge, but rather the representation. The proportion, with respect to its mathematics, was the theory, which was considered as the law, language, and order of the Nature. As Gerbino indicates, what Perrault proposed was "the architecture may incorporate mathematics, but that did not mean that it shared the same principles with the other mathematical sciences."[164] To certain extent, it means that architecture is not a part of a universal knowledge. The principles and patterns of that knowledge cannot be deduced from the practice and theory of architecture. Architecture has its own issues, problems, and solutions. Each of those topics, however, was about to claim the object or the model of the architectural theory as a substitude for the universal knowledge or cosmology of the previous masters.

It is possible to trace the immediate echoes of this approach from the intellectuals and architects of France. Kruft writes that during Academie's assemblies, priority was given to the technical problems of buildings, the concept of distribution, as a matter of disposing the rooms, and practical question, after the death of Blondel.[165] Michel de Frémin, a treasury official, was declaring the column orders as least part of architecture with a disdainful manner towads the aesthetic categories, and promoting the functional aspects in his *Mémoirs critiques d'architecture* published in 1702.[166] Beside the rational functionalist sound, the appreciation of Gothic for structural efficiency and the use of light, following Perrault and even Blondel, were characterizing Frémin text, which was anticipating Marc-Antoin Laguier.[167]

For Frémin architecture is the art of building according to three interdependent factors, without the analysis of which architecture would be a false one. First one is *object* that is the intended function of the building. The second one is *subject*, which is process of mind. It means to imagine and dispose parts into their appropriate place to be mutually proportionate and according to the intended function in order to achieve a unity. The third is to build according to place. The architect should

[164] (Gerbino, 2002, p. 207)
[165] (Kruft, 1994, p. 138)
[166] Ibid., p.139, (Mallgrave H. F., 2005, p. 11)
[167] Ibid., p.11, (Mallgrave H. F., 2006, p. 84), (Lefaivre & Tzonis, 2004, p. 260)

compare all that imagined and arranged to the situation of land, and see the effect of the building on that location with respect to light, shadow, wind, and even relations to the nearby buildings and other physical entities that might project light, shadow or wind on the edifice.[168] In Frémin's text there is a strong stress on the fitness to location, physical conditions, purpose, qualitative proportionality and social conditions of the client as well, all of which can be traced back to Alberti and then Vitruvius.

The dominance of Italian Renaissance and French Classicism and Rationalism were the primary determinant of the architectural culture, practice and thinking for the rest of Europe. The changing intellectual and cultural atmosphere of German speaking regions and Britain were quite ahead of the architectural theories. The pattern books, translated treatises, and the enthusiastic architects who had had been France or Italy for training or diplomatic duties were sources of architectural culture. Indeed, the main transformation had to wait for the second half of the eighteenth century.[169]

[168] (Frémin, 2004)
[169] For detailed discussions see (Kruft, 1994), (Lefaivre & Tzonis, 2004), (Mallgrave H. F., 2005).

CHAPTER 3

RHETORIZING VITRUVIAN CONTENT

Vitruvius had a modest ambition of to write a treatise for Agustus Caesar. His idea was to prepare a compilation that might inform the Emperor about the completed and yet to be built works up to or during his reign.[1] It is also surprising that he did not mention his name in his texts. According to Granger, Pliny the elder's citation secured the survival of his name throughout the history.[2]

Vitruvius himself does not explain the reason behind the idea of structuring his writings in ten volumes. McEwen says that Vitruvius may have intended a ten volume works at the beginning.[3] Each book had been dedicated to different subject matter, which had been explained in the prefaces of each volume. Every book consists in chapters with different titles. As a matter of fact, the division of the work into the chapters are due to Fra Giocondo, whereas the adding paragraph numbers are due to Schneider.[4] The subsequent versions and translations continued to have titles, with different interpretations. Again, Fra Giocondo added illustrations, glossary of terms, and a table of mathematical symbols used in the text.[5]

The Ten Books was a part and a later representative of architectural treatise tradition. In the the introduction of the Book VII, Vitruvius underlines the importance of the transmission of thoughts and cumulation of knowledge in succeeding generations. He express his gratitude to the architectects, artists, and authors of the preceding works as his sources.

> *It was a wise and useful provision of the ancients to transmit their thoughts to posterity by recording them in treatises, so that they should not be lost, but, being developed in succeeding generations through publication in books, should gradually attain in later times, to the highest refinement of learning. And so the ancients*

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[1] (Vitruvius, 1931, pp. 5, Book I, Preface)
[2] (Granger, Introduction, 1931)
[3] On the other hand, the number "ten" had been an important part of Pythogorean cult and might have played a role in fixing the length of the work. See (McEwen, p. 48)
[4] (Granger, p. XXV)
[5] (Ciaponni, 1984)

> *deserve no ordinary, but unending thanks, because they did not pass on in envious silence, but took care that their ideas of every kind should be transmitted to the future in their writings*[6].

The works of those ancients, however, have not survived. Vitruvius lists them and mentions their works in the preface of the Book VII. Furthermore, he clarifies position and explains the very basic idea behind writing his treatise:

> *But for my part, Caesar, I am not bringing forward the present treatise after changing the titles of other men's books and inserting my own name, nor has it been my plan to win approbation by finding fault with the ideas of another. On the contrary, I express unlimited thanks to all the authors that have in the past, by compiling from antiquity remarkable instances of the skill shown by genius, provided us with abundant materials of different kinds. Drawing from them as it were water from springs, and converting them to our own purposes, we find our powers of writing rendered more fluent and easy, and, relying upon such authorities, we venture to produce new systems of instruction.*[7]

Rowland says that the reliability of Vitruvius as an authority has been interpreted in diametrically opposite direction.[8] The question of whether he was a skilful engineer-architect of extensive practice with lack of intellectual background and poor command of Latin, or a theorist with lack of grasp of the zeitgeist of his time and insight for the future of the architectural practice has been on the table since the times of Leon Battista Alberti.[9]

Vitruvius has been accused of being conservative against the use of new materials and construction techniques, or mere "promulgator of canonical rules and paradigmatic form."[10] This interpretation of Vitruvius and his work, however, seems missing the fact that what he presented was a part of a cumulative knowledge. The conceptual content of his work is a consequence of philosophical inquiries of

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[6] (Vitruvius, 1914, pp. Book VII, Pref.)

[7] (1914, pp. VII, Pref.,10). According to Tatarkiewicz, those ancient authorities and their works are known chiefly through Vitruvius. They consisted of primarily the descriptions of the buildings. There were, nevertheless, systematic textbooks of architects written as instructions for perfect proportions. Philon's "On the Proportions of Sacred Buildings" and Silenus' "On the Proportions of Corinthian Buildings" were among them. (Tatarkiewicz, History of Aesthetics, 2005). Rowland and Howe give a detailed explanation of those authorities and their works in regards to Vitruvus and their own historical context. (Howe, 1999).

[8] (1999, p. 15)

[9] Alberti's ciriticism of Vitruvius seems to cover both the information about the architecture of antiquity provided by Vitruvius, and the obscurity of the terminology because of the use of Latin in Vitruvius. (Alberti, 1986).

[10] (Rowland I. , 1999, pp. 14-15)

humanity before him. He had put forward a holistic perspective covering and compiling scattered knowledge of architecture among philosophy, arithmetic, geometry, construction, agrimensura, and military engineering. According to Tatarkiewicz, as man of practice having liberal education, Vitruvius is a reliable authority considering that

> *This, the only fully extant ancient work on architecture, is, however, copious, inclusive, encylopaedic and ranges over historical and aesthetic problems as well as technical questions. It is a late work, but is thereby the more informative; it is derivative and selective, but, as a result, it is all the more representative of the Hellenistic conception of art*.[11]

Another significant and distinctive characteristic of Vitruvius is his critical approach to the traditions, the rules of his ancestors. Throughout the text, Vitruvius makes a number of warnings that all the rules and canons about the symmetry of the work can require adjustments in experiencing architectural practice in order to meet the needs of function, site or the appearance of the building.[12] Rowland claims that Vitruvius' flexibility, critical but respectful approach to the ancestors' traditions, and the grasp of the importance of the experiment and direct observation off the cumulative growth of science make him a peculiar personality.[13]

Without exaggerating this skills and importance, it is possible to state that Vitruvius synthesizes his sources, experience, and prescriptions by means of the techniques and potentials of rhetorics of his time.[14] Neither his ambitions, nor methods for structuring Ten Books, however, cannot overshadow the importance of the content of the work. Despite the heavy technical details of building practice he provided, Vitruvius conceptualized the tangible and intangible, qualitative and quantitative components and processes of architecture in a transmittable and applicable knowledge body.

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[11] (Tatarkiewicz, 2005, p. 270)
[12] In VI, 2, 1 he claims that it is a part of wisdom to consider the nature of the site, question of use or beauty.
[13] (Rowland I. , 1999, pp. 17-18)
[14] Thanks to Assoc.Prof. Giorgio Gasco for for reminding the cultural atmosphere and the use of rhetoric in Agustus era during a private conversation. Vitruvius, just like his contemporaries such as Cicero, developed and structured his ideas. Rowland, inspiringly, unfolds the context and the content of that structure. See the Introduction of Rowland for her translation of Ten Books on Architecture (Rowland I. , 1999). For an elaborated study on the subject see (Meyers, 2005) who indicates that there is a close association in the Roman mind between words and physical space.

3.1 Incubating Ideas

Johnson states that Vitruvius had brought to architecture its special language.[15] According to Johnson, talking about architecture is enabled by a conceptual language that informs theory, the vocabulary of design, which were used to belong to other disciplines and usurped to create an amalgam metalanguage.[16]

This simple but efficient definition of metalanguage is applicable for the Vitruvius' "special language" of architecture that informs theory and design vocabulary. Vitruvius developed a new and synthetic language in order to communicate the practical information and codes of architectural experience and the codes and concepts of philosophy with the same vocabulary.

As different from the Johnson's amalgam metalanguage composed of usurped terms and concepts of other disciplines, Vitruviuan metalanguage does not impose or invent new meanings for those vocabulary. Vitruvius unfolds the various, even contradictory, aspects of architecture that confined to either the technical codes of building tradition, or the written codes of philosophy tradition. It is a fact that he uses another metalanguage, Rhetoric, for this operation. By using the methods of Rhetoric, he unfolds and reforms his metalanguage for architectural knowledge.

In order to comprehend the concepts of his architectural language, it would be helpful to investigate them in Classical Greek, Hellenistic, and Roman traditions of philosophy. As it shall be presented in the further parts of this study, Vitruvius had skillfuly transferred and utilized those concepts with regard to their origins, denotations and connotations. Before discussing them individually, a short introduction to Greek Cosmology and Philosophy, particularly on art, is presented.[17]

The Greeks had a philosophical language to think and talk about their art. Some of the concepts of this language were available even before the philosophers took the stage. The meanings and associations of those concepts changed, although they

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[15] (Johnson, 1993, pp. 43-44)

[16] Ibid.,p.44. Johnson refers to Roger Scruton's use of metalanguage. Scruton mentions an ideal, caricaturized, critic using a certain language that is designed purely for the interpretation, not for the composing of the primary texts. Scruton criticizes that language "which has only texts as its field of reference and untheorized ["unauthorized" in Johnson] jargon as its terms". (Scruton, 1982)

[17] This part is extracted from History of Aesthetics by Wladyslaw Tatarkiewicz. (Tatarkiewicz, 2005).

survived until today. Beauty was one of the most important and complicated concepts, because its wide range covering not only everything pleasing, attracting, arousing from admiration, sight, and hearing, but also certain qualities of human mind. From this single and wide concept, Greek philosophical tradition derived many narrower ones, which are going to be discussed further, in relation to different arts:[18]

> *Poets wrote about "charm", "which gives joy to mortals", hymns spoke of "harmony" (harmonia) of the cosmos, sculptors referred to "symmetry (symmetria), i.e., commensurateness or appropriate measure (from syn-together, and metron-measure), orators talked about eurhythmy (eurhythmia) that is, proper rhythm (from eu-well, and rhythmos-rhythm) and good proportion.*

It is possible to state that as the assumed essence and the consequence of the natural course of the universe, order and harmony met with acceptance as the primary criteria for the quality of human artifact, and so architecture over centuries. This acceptance could be called as the Great Theory of Art that was initiated and formulated by the Pythagoreans of the 6th century BC.[19] Tatarkiewicz reports that Pythagorean Philolaus had proposed that harmony fastens and unites unlike, unrelated, and unequally arranged, agreeing or disagreeing elements.[20] To Pythagoreans, world was contructed mathematically, and the harmony, which was employed for beauty, was a property of the cosmos, that is "order", based on number, measure, and proportion, which was called as symmetry as well. [21]

Greek thinking discoursed on order, symmetry, and propriety deliberately in order to construct an analogy of divine creation. The consequence of that analogy was a unity among the purpose, function and the aesthetics (in the contemporary sense) of any human product, as Masiero states.

> *When he referred to Kalós, an ancient Greek was concerning healthy, complete, ordered things, and a general situation that was formed by inner attitude as well as external appearance. All these values are always connected to order [τaξις], and symmetry.*[22]

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[18] Ibid.,p.25-6.
[19] (Tatarkiewicz, 1980, p. 125).
[20] Ibid.,p.80
[21] (Tatarkiewicz, 2005, pp. 80-81)
[22] (Masiero, 2006). Kalós is the Greek term for beauty.

Tatarkiewicz indicates that the Pythagoreans formulation was based on "observation of the harmony of sounds", which was applied to the domain of sight respectively as symmetry. The formula can be summarized as "harmony derives from order, order from proportion, proportion from measure, measure from number".[23] In Republic, Plato puts that "… beauty of style and harmony and grace and good rhythm depend on simplicity" of a "rightly and nobly ordered mind and character".[24] And the true love "is a love of beauty and order – temperate and harmonious".[25]

This basic terminology and general outline of Greek tradition of philosophy demonstrates that not only the Vitruvian terminology and content of architectural theory, but also tenets of the contemporary architectural thinking, particularly in education, share the same concepts, even with similar meanings and associations. Regarding this, the following part considers the investigation of six narrower concepts of Greek and Roman philosophical tradition that had been interpreted and utilized by Vitruvius to develop his architectural language and theory.

3.1.1 Bringing Limit to the Chaos

In Philebus, Platon proposes four classes of existence: The infinite (aperion); the finite (peras); the true being or essence, generated as the offspring of the previous two effected by the measure that is introduced by the limit; and the cause of mixture and generation.[26] Peras introduces limit and principle to the in(de)finite, by means of thinking, which eliminates the irrationality of the infinite, and limitless.[27] This is the Order [ταξις], which brings measure deriving from number, and together they instill moderation, proportion, and harmony while removing indefiniteness.[28]

In Plato, order, along with measure, proportion (symmetry), consonance, and harmony, consitute the essence of the beauty, which is a property "dependent on

[23] (Tatarkiewicz, 1980, p. 200).
[24] (Plato, Republic, 1892)
[25] (Plato, Republic, 1892, p. 89)
[26] 26-26b. (Plato, Philebus, 1892)
[27] Russ pharaprases and summerizes the introduction of law and order into universe narrated in Philebus by Plato. (Russ, 2011). (Cevizci, 2012, p. 45)
[28] (Plato, Philebus, 1892)

arrangement (disposition, harmony) between parts", and measurable proportions expressible with numbers.[29]

According to Tatarkiewicz, Aristo "gave a new shade of meaning to the older concepts of order proportion by equating them with moderation", which was a property of moral in earlier tradition. [30] The nature of the moderation can be followed from "Poetics".[31] To Aristo, a beautiful object or a living organism must have certain magnitude, besides the orderly arrangement of its parts, since the beauty depends on both. Neither very small organisms, nor vast objects can be beautiful since the "unity and sense of the whole lost for the speactator".

The concept of order had always been in close relationship with the disposition of the parts, since it describes a particular quality for the whole and the relationships among the parts. In order to understand that quality the concept of disposition (arrangement) should be discussed.

3.1.2 Disposition: Interrelations of parts

Tatarkiewicz refers to a particular skill of human being who either group or divide phenomena in order to grasp the categories or achieve greater orders.[32] He adds that European culture has been running the division of phenomena since classical times. The division of the components and their arrangement in a mutual relationship was one of the most important achievement of this tradition.

The relationship between *order* and *disposition*, or arrangement, is a symbiotic one. The orderly arrangement of the parts is the primary quality for nature and human edifices. Aristotle provides a definition for disposition (diathesis):[33]

> *'Disposition' means the arrangement of that which has parts in respect either of place or of potency or of kind; for there must be a certain position, as the word 'disposition' shows.*

[29] (Tatarkiewicz, 2005, p. 116)
[30] Ibid.,p.151.
[31] Following part is an extraction from Poetics, 1450b-1451a, (Aristotle, Poetics, 1922).
[32] (Tatarkiewicz, 1980, p. 1)
[33] 1022b, (Aristotle, 1908)

As it was mentioned in the previous part, the harmony of the order depends on the appropriate arrangement of the parts. Until Aristotle, it must have been considered that the numbers and measures, formulated in proportional relations would reveal the proper positions of the parts. Aristotle, however, claimed that[34]

> *... the structural union of the parts being such that, if any one of them is displaced or removed, the whole will be disjointed and disturbed. For a thing whose presence or absence makes no visible difference, is not an organic part of the whole.*

Following this idea, it is possible to propose that the harmony derives from order that is the result of the appropriate disposition of the parts, which correspond to each other and the whole. Before the introduction of qualitative factors for the positions of the parts, commensurable and mathematically proportional relations were satisfying the conditions of artistic and philosophical canon. The appropriateness, or suitability, "*prepon*" in Greek, "*decorum*" in Latin, seems to have corresponded the incommensurableness of the parts. Before investigating the concept of suitability, it is of impostance to present the eurythmy and symmetry.

3.1.3 Sensed Order of the Universe

Tatarkiewicz considers that the concept of eurhythmy is closer to the contemporary idea of beauty.[35] Granger, on the other hand, made use of proportion in order to correspond eurhythmy, ratio and symmetry in different parts of the Ten Books.[36] Rowland, however, prefers 'shapeliness'. It is obvious that the relation among symmetry, eurhythmy and proportion is complicated. They have been used interchangeably.

Tatarkiewicz, contrary to an all-encompassing concept of symmetry, claims that for Greeks symmetry referred to an absolute beauty, which can be comprehended by a process of reasoning, whether it is visually perceived or not:[37]

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[34] VIII.4. (Aristotle, Poetics, 1922)
[35] (Tatarkiewicz, A History of Six Ideas: An Essay in Aesthetics, p. 91)
[36] (Vitruvius, 1931) Granger refers to proportion in III, 3, 8 for *symmetrias*, in III, 3, 6 for *rationes*, in III, 1, 9 for *proportionibus*.
[37] (Tatarkiewicz, p. 91)

> *The nature of the senses, deforming what is perceived, causes symmetry not to give the impression of symmetry – it must therefore be transformed in such a manner as to yield eurhythmic impression.*

Tatarkiewicz's argument is based on the dialogue between Theaetetus and Eleatic Stranger in Sophist by Plato. While discussion about the divisions of imitative art, the Stranger puts that:[38]

> *... in works either of sculpture or of painting, which are of any magnitude, there is a certain degree of deception; for if artists were to give the true proportions of their fair works, the upper part, which is farther off, would appear to be out of proportion in comparison with the lower, which is nearer; and so they give up the truth in their images and make only the proportions which appear to be beautiful, disregarding the real ones.*

This distinction between symmetry addressing the intellect, and eurhythmy signifying well-proportioned, appropriate and convenient contextually can be traced in some other examples of the classical Greek literature as well. Xenophon of Athens, student of Socrates, mentions the difference between the absolute and well-proportioned in relation to an example of shield well-proportioned, for which euruthmos [eurhythmy] is used in the text, for the man whom it fits.[39]

Whether Romans had a Latin word for the Greek "symmetry" is a controversial issue. McEwen and Hon&Goldstein refer to Rackham's translation of Pliny the Elder to claim that there was no[40]. On the other hand, in Riley's translation there is a different statement that could make a great difference. In that version, it seems that Pliny the elder did not mention symmetria, but rather eurhythmia:[41]

> *Lysippus also executed chariots of various kinds. He is considered to have contributed very greatly to the art of statuary by expressing the details of the hair, and by making the head smaller than had been done by the ancients, and the body more graceful and less bulky, a method by which his statues were made to appear taller. The Latin language has no appropriate name for that "symmetry," which he so attentively observed in his new and hitherto untried*

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[38] (Plato, Sophist, 1931)
[39] (Xenophon, Xenophon / Memorabilia)
[40] (Hon & Goldstein, p. 99) and (McEwen, Vitruvius: Writing the Body of Architecture, p. 195).
[41] (Plinus, 1856) XXXIV, 19. P. 176

> *method of modifying the squareness observable in the ancient statues. Indeed, it was a common saying of his that other artists made men as they actually were, while he made them as they appeared to be.*

The use of symmetry in previous parts of the same chapter can also be an evidence of the existence of symmetry as a concept, even though not as a term, in Latin:[42]

> *Myron appears to have been the first to give a varied development to the art, having made a greater number of design than Polycletus; and shewn more attention to symmetry.*

In Rackham's version, the same part in Latin includes the word "symmetry", Rackham, however, translates it as "proportion".[43] Moreover, Cicero, approximately fifty years before Pliny, writes that[44]

> *For, as physical beauty with harmonious symmetry of the limbs engages the attention and delights the eye, for the very reason that all the parts combine in harmony and grace, so this propriety, which shines out in our conduct, engages the approbation of our fellow-men by the order, consistency, and self-control it imposes upon every word and deed.*

Considering the existence of "symmetry" in Pliny's text, and Cicero's statements, it is possible to express that Romans were familiar with proportional relations among the parts associated with the whole. Although witten in Greek, Heron, who lived in Roman Alexandria in the first century, made statements supporting that familiarity. Tatarkiewicz indicates that Heron was the first one who put precisely the contrast between "*symmetria* – that which is objectively (*kata ousian*) or truly (*kat' aletheian*) proportional – and *eurhythmia* – that which seems proportional to the eye (*pros ten opsin*)".[45] Therefore, it is possible to claim that Romans might not have named the abstract – objective composition of the elements as symmetry, and subjective-visual-sensual impression of that symmetrical relations as eurhythmy, even though they had the concepts.

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[42] Ibid, p.173
[43] (Pliny the Elder, 1961)
[44] "Ut enim pulchritudo corporis apta compositione membrorum movet oculos et delectat hoc ipso, quod inter se omnes partes cum quodam lepore consentiunt, sic hoc decorum, quod elucet in vita, movet adprobationem eorum, quibuscum vivitur, ordine et Constantia et moderatione dictorum omnium atque factorum." (Cicero, 1928) in Book I, XXVIII, 98.
[45] (Tatarkiewicz, 2005, p. 277)

Regarding the arguments on eurhythmy and symmetry in relation to proportion, it is possible to propose Vitruvius followed the Greek tradition that prized the both absolute, commensurable and rational symmetry, and relative and sensual eurhythmy in proportion. Contrary to that tradition, in Vitruvius they are the constituent of architecture together, rather than being antagonistic.

3.1.4 From Unit to the Whole the Role of the Numbers

It is of significance to explore the term symmetry in detail since it was reformulated in the 17th century. The common use and meaning of the term different from the use of ancient Greek philosophers and Vitruvius of Rome.

In his essay on the idea of beauty, Tatarkiewicz states that the terms symmetry and harmony were the reflection of a broader conception of beauty, which were forced into background in time.[46] According to Tatarkiewicz, the Greeks prized proportion as known, not sensed, order appealed to intellect, and made use of the term symmetry.[47]

> *Both [symmetry and eurhythmy] signified order, but symmetry denoted cosmic order, the eternal and divine order of nature while eurhythmy signified sensual, visual or acoustic order.*[48]

The term "symmetry / symmetria", according to the Stanford Encyclopedia of Philosophy, is a combination of two Greek words, "sun" that means "with" or "together" and "metron" measure in English, that is "sun-metron" that indicates 'commensurability'.[49] Howe says that "the ancient idea of symmetry", and its Latin equivalents, demands truly measurable relationships between the parts.[50] In Turkish [bakışım], it also refers to "appropriateness among the measures of two or more things with respect to position, form or specific axis."[51] According to Lefas, symmetry imposes a common measure to the elements of the work so that they can

[46] (Tatarkiewicz, 1980, p. 122)
[47] (Tatarkiewicz, 1980, p. 90)
[48] Ibid., p.91
[49] Brading and Castellani state that this is the meaning codified in Euclid's work "Elements". (Brading & Castellani, 2013)
[50] (Howe, 1999)
[51] (Güncel Türkçe Sözlük)

be compared with each other.[52] Hon and Goldstein make a contextual distinction between the usages: (1) in mathematical context, symmetry refers to two entities sharing common measure / commensurability; and (2) in relation to 'beautiful', it means well-proportioned, which indicates "a property of a unified whole respectively".[53]

Hon and Goldstein refer to Plato to emphasize their argument about the evaluative quality of symmetry "as well-proportioned conveys a sense of proper functioning, when the effort of several parts, acting together, is required. Plato, in Timaeus, mentions the symmetry between body and soul, without any indication of number and ratio:[54]

> *All that is good is fair, and the fair is not void of due measure; wherefore also the living creature that is to be fair must be symmetrical. Of symmetries we distinguish and reason about such as are small, but of the most important and the greatest we have no rational comprehension. For with respect to health and disease, virtue and vice, there is no symmetry or want of symmetry greater than that which exists between the soul itself and the body itself.*

In Laws, Plato's concern for symmetry covers "suitability" as well. In response to Athenian, Clinias uses "summetros" in order to indicate the suitable / adapted character of the land for running on foot.[55] It is of importance, at this point, to remind that Vitruvius had another term for being suitable for a particular purpose: Decor, which shall be discussed later in this chapter, too.

Considering Plato's dialogues and Hon and Goldstein's interpretations, it is possible to claim that *symmetry* includes proper, commensurable and and well-proportioned relationships between the parts in association with the whole. Therefore, proportion-as-beauty and proportion–as-ratio distinction dissolves and they merge into the concept of symmetry of ancient Greek culture.[56]

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[52] (Lefas, 2000)
[53] (Hon & Goldstein, 2008)
[54] The Greek and English texts are retrieved from TUFTS University / Perseus Digital Library: http://data.perseus.org/citations/urn:cts:greekLit:tlg0059.tlg031.perseus-grc1:87c
[55] http://data.perseus.org/citations/urn:cts:greekLit:tlg0059.tlg034.perseus-eng1:1.625
[56] For this distinction and its implications see (Cohen, 2014) and (Wittkower, 1960)

3.1.5 Being Fit: Natural, Moral, Social, and Functional

As mentioned above, the discourses on symmetry, and later eurhythmy, were covering the fitness or aptness as well. Socrates, through Xenophon and Plato, distilled being appropriate to a purpose from being reasonably and sensually proportional, thus beautiful.[57] Tatarkiewicz, with reference to Xenophon, maintains Socrates' argument was claiming as "different things have different purposes and therefore a different beauty".[58] Even though it seems contraversial with idea of beauty of order and proportion as the property of universe, what Socrates offered was a middle way between the objective beauty – καλός / beautiful - and relative beauty - ἁρμόττον / fit, which was replaced by Greeks later with Πρέπον / prepon / proper.[59]. In Hippias Major, Plato mentions the term "appropriate" that makes things beautiful.[60] In the Republic Book X, Plato explains that fulfilment as follows: [61]

> *And the excellence or beauty or truth of every structure, animate or inanimate, and of every action of man, is relative to the use for which nature or the artist has intended them.*

It would be unfair to credit only the Socratic tradition for the formation of the concepts of symmetry, eurhythmy, and proper, as another important school of philosophy, Stoics made important contribution to the geneaology of those concepts. Those contributions, beside several features of Stoic philosophy on aesthetics, found their way into the writings of Cicero, who was not a Stoic.[62]

Stoic philosophy subordinated every other thing to virtue and moral values.[63] The sensory (bodily) beauty was distinguished from mental (moral) beauty with less value, even though the Stoic definition of beauty, which depends on measure and proportion, was in line with the main stream Greek tradition.[64] The Stoics employed

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[57] See Quotations from Memorabilia of Xenophon and Sophist by Plato, ftnotes 36 and 40.
[58] (Tatarkiewicz, p. 201)
[59] Ibid.,p.201
[60] (Plato, Plato - Greater Hippias)
[61] (Plato, Republic, 1892, p. 315),
[62] (Tatarkiewicz, 2005, p. 186)
[63] (Dumont, Baudart, & Hadot, 2011), (Russel, 1983)
[64] (Tatarkiewicz, 2005, pp. 186-188)

an important concept, "*decorum*", in relation to beauty, but with a more independent character:[65]

> *In decorum the ancients saw individual beauty, adjusted to fit the specific character of each object, human being or situation, while symmetria signified an accord with the general laws of beauty. They sought symmetria primarily in nature and decorum primarily in human artefacts, which, however, included not only art but also ways of life and customs. The concept was thus not only aesthetic in character but also ethical, or, more correctly, it was originally ethical, and only later came to include beauty and art.*

At this point it is of importance to point out the difference between Platonic "*proper*" and Stoic "*decorum*". As mentioned above, Plato had not distinguished the use intended by nature or artist. It seems to be derived from the universal laws. *Decorum*, however, was a developed feature regarding to context or situation. It needs projective thinking, reflection, or better, human thought.

> *For, as in the conduct of life, so in the practice of speaking, nothing is more difficult than to maintain a propriety of character. This is called by the Greeks πό πρέπον, the becoming, but we shall call it decorum.*[66]

The ethical foundation of Stoic decorum and its implications is also rendered by Cicero in De Officiis:[67]

> *We have next to discuss the one remaining division of moral rectitude. That is the one in which we find considerateness and self-control, which give, as it were, a sort of polish to life; it embraces also temperance, complete subjection of all the passions, and moderation in all things. Under this head is further included what, in Latin, may be called decorum (propriety); for in Greek it is called πρέπον. Such is its essential nature, that it is inseparable from moral goodness; for what is proper is morally right, and what is morally right is proper. The nature of the difference between morality and propriety can be more easily felt than expressed. For whatever propriety may be, it is manifested only when there is pre-existing moral rectitude. And so, not only in this division of moral rectitude which we have now to discuss but also in the three preceding divisions, it is clearly brought out what propriety is*

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[65] Ibid, p.189-190
[66] (Cicero M. T., 1776, p. 284)
[67] (Cicero, 1928)

...
And all things just are proper; all things unjust, like all things immoral, are improper.

3.1.6 Managing the Resources

Being just and morally right as in propriety imply another significant quality ascribed to human being: temperance, as a special type of propriety distinguishes man from the rest of the animal creatures, makes him a gentleman.[68] Temperance's scope covers not only social rules and religious issues, but also economy as the administration and management of resources. The concern of economy in antiquity was demonstrated in two important works: Xenophon's "Economicus" and "Economy" that has been ascribed to Artistotle.[69]

Xenophon's "Economicus" with the subtitle of "A Discussion on Estate Management" is an important Socratic Dialoque in terms of its considerations for ordinary and minor issues of economy, science of household management, compared to the major aspects dealt in, for instance, Plato's Republic.

> *" Well then," said Socrates, " what if I prove to your satisfaction, Critobulus, to begin with, that some men spend large sums in building houses that are useless, while others build houses perfect in all respects for much less ? Will you think that I am putting before you one of the operations that constitute estate management?*[70]

Oeconomica is regarded as belonging to a pupil, or of a disciple of Aristotle, who was well aware of not only Aristotle's works but also Xenophon's Oeconomicus.[71] According to this work, the city is composed of households, land, and property as the means to a happy life. The endeavour of men to achieve this particular end associates the community, and prevents dissolution. The function of economic science is to establish and make us of the households. Therefore, the function of economy prior to politics in origin.[72]

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[68] (Cicero, 1928) I, XXVII, 96.
[69] (Xenophon, Oeconomicus, 1997), (Aristotle, The Works of Aristotle - Oeconomica Atheniesium Respublica, 1920)
[70] (Xenophon, Oeconomicus, 1997), III, 1.
[71] (Forster, 1920)
[72] (Aristotle, 1920), I, 1, 1343a

The very basic function of the "science of economy" was to administer and manage the constituents and interrelations of the community. Its scope had been considered to cover not only possessions, but also the relations of man with his wife, children, and slaves. In this respect it is possible to claim that the function of economy was to manage and regulate the qualitative and quantitative values / resources of human activities. The measures of this function were temperance and being moderate. As stated above, temperance differs man from the rest of the animal world.

3.2 The Vitruvian Tradition

In order to be able to present the value and significance of that abstraction, the definitions and scope of those principles / content should be clarified. Considering the complexity of translation issues, the corresponding terms for each are given in table 1. The Greek words had been already provided by Vitruvius. For the English ones, the first word is the Morgan version, the second is from the Granger, and Rowland version is the third. The Greek translations that were not mentioned by Vitruvius are not provided, either. The Turkish translations are after Güven. [73]

TURKISH	**ENGLISH**			**LATIN**	**GREEK**
	Morgan	**Granger**	**Rowland**		
Düzen	Order			Ordinatio	Taxis/*Ταξις*
Düzenleme	Arrangement		Design	Dispositio	Diathesis/*διαθεσιν*
Armoni	Eurythmy	Proportion	Shapliness	Eurythmia	
Bakışım	Symmetry			Symmetria	
Uygunluk	Propriety	Décor	Correctness	Decor	
Ekonomi	Economy	Distribution	Allocation	Distributio	Oikonomia/*οἰκονομία*

Table 1: Of what architecture contains according to Vitruvius

The definitions of terms given by Vitruvius had been interpereted in different ways. To compare and discuss them in an appropriate way it would be helpful to present them in relation to each other. The following tables include 1914 Morgan English

[73] There are differences in English translations regarding to their chronology and contexts. Vitruvius did not provide the Greek terms for Eurythmia, symmetria and decor. For the Latin versions see (Vitruvius, De Architectura Libri Decem, 1899), (Vitruvii, De Architectura Libri Decem, 1912), (Pollionis, 1567).

version first; then the 1931 Granger's translation, the 1999 Rowland edition in the third row, and 1998 Turkish translation by Güven in the last.

Table 2: The definition of ORDER

3.2.1 Order

> *Order gives due measure to the members of a work considered separately, and symmetrical agreement to the proportions of the whole. It is an adjustment according to quantity (in Greek ποσοτης). By this I mean the selection of modules from the members of the work itself and, starting from these individual parts of members, constructing the whole work to correspond.*

(Vitruvius, The Ten Books on Architecture, 1914, p. 13)

> *Order is the balanced adjustment of the details of the work separately, and, as to the whole, the arrangement of the proportion with a view to a symmetrical result. This is made up of Dimension, which in Greek is called posotes. Now Dimension is the taking of modules* from the parts of the work; and the suitable effect of the whole work arising from the several subdivisions of the parts. *Units of Measurement.*

(Vitruvius, On Architecture, 1931, p. 25)

> *Ordering is the proportion to scale of the work's individual components taken separately, as well as their correspondence to an overall proportional scheme of symmetry. It is achieved through quantity, which in Greek is called posotês. Quantity, in turn, is the establishment of modules taken from the elements of the work itself and the agreeable execution of the work as a whole on the basis of the elements' individual parts.*

(Vitruvius, Ten Books on Architecture, 1999, p. 24)

> *Düzen, bir yapıtın bölümlerinin herbirine gereken önemi vererek tümünün oranlarına, bakışımlı bir uyum getirir. Niceliğe göre yapılan bir ayarlamadır (Yunanca'da ποσοτης). Bununla yapıtın kendi bölümlerinden modüllerin seçilerek tümünün bunlara dayanılarak oluşturulmasını kastediyorum.*

(Vitruvius, 1998, s. 9)

Table 3: The definition of ARRANGEMENT / DISPOSITION / DESIGN

3.2.2 Arrangement

Arrangement includes the putting of things in their proper places and the elegance of effect which is due to adjustments appropriate to the character of the work. Its forms of expression (in Greek ἰδέαι) are these: groundplan, elevation, and perspective. A groundplan is made by the proper successive use of compasses and rule, through which we get outlines for the plane surfaces of buildings. An elevation is a picture of the front of a building, set upright and properly drawn in the proportions of the contemplated work. Perspective is the method of sketching a front with the sides withdrawing into the background, the lines all meeting in the centre of a circle.
All three come of reflexion and invention. Reflexion is careful and laborious thought, and watchful attention directed to the agreeable effect of one's plan. Invention, on the other hand, is the solving of intricate problems and the discovery of new principles by means of brilliancy and versatility. These are the departments belonging under Arrangement.

(Vitruvius, The Ten Books on Architecture, 1914, pp. 13-14)

Arrangement, however, is the fit assemblage of details, and, arising from this assemblage, the elegant effect of the work and its dimensions, along with a certain quality or character. The kinds of the arrangement (which in Greek are called ideae) are these: ichnography (plan); orthography (elevation); scenography (perspective). Ichnography (plan) demands the competent use of compass and rule; by these plans are laid out upon the sites provided. Orthography (elevation), however, is the vertical image of the front, and a figure slightly tinted to show the lines of the future work. Scenography (perspective) also is the shading of the front and the retreating sides, and the correspondence of all lines to the vanishing point, which is the centre of a circle.
These three (plan, elevation and perspective) arise from imagination and invention. Imagination rests upon the attention directed with minute and observant fervour to the charming effect proposed. Invention, however, is the solution of obscure problems; the treatment of a new undertaking disclosed by an active intelligence. Such are the outlines of Arrangement.

(Vitruvius, On Architecture, 1931, pp. 25-27)

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*Next, **design** is the apt placement of things, and the elegant effect obtained by their arrangement according to the nature of the work. The species of design, which are called ideai in Greek, are these: **ichnography** (plan), **orthography** (elevation), and **scenography**. **Ichnography** is the skillful use, to scale, of compass and rule, means of which the on-site layout of the design achieved. Next, **Orthography** is frontal image, one drawn to scale, rendered according to the layout for the future work. As for **scenography**, it is the shaded rendering of the front and the receing sides as the latter converge on a point.*
*These species are produced by **analysis** and **invention**. **Analysis** is devoted concern and vigilant attention to the pleasing execution of a design. Next, **invention** is the unraveling of obscure problems, arriving, through energetic flexibility, at a new set of principles. These are the terms of design.*[74]

(Vitruvius, Ten Books on Architecture, 1999, pp. 24-25)

Düzenleme, öğelerin yerli yerine konmasını ve yapıtın özelliğine göre yapılan ayarlamalar sonucunda oluşan zarif etkiyi içerir. İfade biçimleri (Yunanca'da ἰδέαι) şunlardır: Yer planı, görünüş ve perspektif. Yer planı, cetvel ile pergelin doğru ve sürekli kullanımı ile yapıların düz yüzeylerinin ana hatlarının elde edilmesiyle yapılır. Görünüş, bir binanın ön cephesinin tasarlanan yapıtın oranlarında düzgün ve dik olarak çizilen bir resmidir. Perspektif, kenarları geriye doğru uzaklaşanve tüm çizgilerin dairenin merkezinde birleşitiği bir cepheyei resmetme yöntemidir.
Her üçü de, imgelem ve buluştan kaynaklanır. İmgelem, kişinin planının etkili olmasına yönelttiği dikkatli bir düşünme ve uyanık bir gözlemdir. Buluş ise, parlak bir zekâ ve yaratıcılıkla karmaşık problemlerin çözümü ve yeni ilkelerin keşfidir. Düzenlemenin kapsamına giren bölümler bunlardır.

(Vitruvius, 1998, s. 9-10)

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[74] Bold parts belong Rowland.

Table 4: The definition of EURYTHMIA / PROPORTION / SHAPELINESS

3.2.3 Eurhythmy / Proportion / Shapeliness

Eurythmy is beauty and fitness in the adjustments of the members. This is found when the members of a work are of a height suited to their breadth, of a breadth suited to their length, and, in a word, when they all correspond synmetrically.

(Vitruvius, The Ten Books on Architecture, 1914, p. 14)

Proportion implies a graceful semblance; the suitable display of details in their context. This is attained when the details of the work are of a height suitable to their breadth, of a breadth suitable to their length; in a word, when everything has a symmetrical correspondence.

(Vitruvius, On Architecture, 1931, p. 27)

Shapeliness (eurythmia) is an attracrive appearance and a coherent aspect in the composition of the elements. It is achieved when the elements of the project are proportionate in height to width, length to breadth, and every element corresponds in its dimensions to the total measure of the whole.

(Vitruvius, Ten Books on Architecture, 1999, p. 25)

Armoni, öğelerin ayarlamalarındaki güzellik ve uygunluktur. Bu da bir yapıtın öğeleri, genişliklerine uygun bir yükseklikte, uzunluklarına uygun bir genişlikte, kısacası tümüyle bakışımlı olduğu zaman gerçekleşir.

(Vitruvius, 1998, s. 10)

Table 5: The definition of the SYMMETRY

3.2.4 Symmetry

Symmetry is a proper agreement between the members of the work itself, and relation between the different parts and the whole general scheme, in accordance with a certain part selected as standard. Thus in the human body there is a kind of symmetrical harmony between forearm, foot, palm, finger, and other small parts; and so it is with perfect buildings. In the case of temples, symmetry may be calculated from the thickness of a column, from a triglyph, or even from a module; in the ballista, from the hole or from what the Greeks call the περίτρητος, in a ship, from the space between the tholepins (διάπηγμα); and in other things, from various members.

(Vitruvius, The Ten Books on Architecture, 1914, p. 14)

Symmetry also is the appropriate harmony arising out of the details of the work itself; the correspondence of each given detail among the separate details to the form of the design as a whole. As in the human body, from cubit, foot, palm, inch and other small parts comes the symmetric quality of eurhythmy; so is it in the completed building. First, in sacred buildings, either from the thickness of columns, or a triglyph, or the module; of a balista by the perforation which the Greeks call ***peritreton****; by the space between the rowlocks in a ship which is called* ***dipechyaia****: so also the calculation of symmetries, in the case of other works, is found from the details.*

(Vitruvius, On Architecture, 1931, p. 27)

Symmetry *is the proportioned correspondence of the elements of the work itself, a response, in any given part, of the separate parts to the appearance of the entire figure as a whole. Just as in the human body there is a harmonious quality of shapeliness expressed in terms of the cubit, foot, palm, digit, and other small units, so it is in completing work of architecture. For instance, in temples, this symmetry derives from the diameter of columns, or from the triglyph, or from the lower radius of the column; in a ballista, it derives from the hole that the Greek call peritrêton, in boats from the [spacing of the] oarlock, which the Greeks call the diapegma, likewise for all the other thypes of work, the reckoning of symmetries is to be found among their compoonent parts.*

(Vitruvius, Ten Books on Architecture, 1999, p. 25)

Bakışım, bir yapıtın kendi öğeleri arasındaki doğru uyum ve ölçüt olarak seçilen bir öğeye göre, tasarım değişik öğeleri ile tümü arasındaki bağlantıdır. İnsan vücudunda, önkol, ayak, parmak ve diğer küçük uzuvlar arasında bir tür bakışımlı armoni vardır; mükemmel yapılarda da böyledir. Tapınaklarda bakışım bir sütunun kalınlığından üçüz yivden (triglif) hatta bir modülden ballistalarda Yunanlıların περίτρητος dedikleri delikten, kürek ıskarmozları (διάπηγμα) arasındaki aralıklardan; ve başka şeylerde, değişik öğelerden hesaplanabilir.

(Vitruvius, 1998, s. 10)

Table 6: The definition of DECOR / PROPRIETY / CORRECTNESS

3.2.5 Decor / Propriety / Correctness

Propriety is that perfection of style which comes when a work is authoritatively constructed on approved principles. It arises from prescription (Greek θεματισμώ), from usage, or from nature. From prescription, in the case of hypaethral edifices, open to the sky, in honour of Jupiter Lightning, the Heaven, the Sun, or the Moon: for these are gods whose semblances and manifestations we behold before our very eyes in the sky when it is cloudless and bright. The temples of Minerva, Mars, and Hercules, will be Doric, since the virile strength of these gods makes daintiness entirely inappropriate to their houses. In temples to Venus, Flora, Proserpine, Spring-Water, and the Nymphs, the Corinthian order will be found to have peculiar significance, because these are delicate divinities and so its rather slender outlines, its flowers, leaves, and ornamental volutes will lend propriety where it is due. The construction of temples of the Ionic order to Juno, Diana, Father Bacchus, and the other gods of that kind, will be in keeping with the middle position which they hold; for the building of such will be an appropriate combination of the severity of the Doric and the delicacy of the Corinthian.

Propriety arises from usage when buildings having magnificent interiors are provided with elegant entrance-courts to correspond; for there will be no propriety in the spectacle of an elegant interior approached by a low, mean entrance. Or, if dentils be carved in the cornice of the Doric entablature or triglyphs represented in the Ionic entablature over the cushion-shaped capitals of the columns, the effect will be spoilt by the transfer of the peculiarities of the one order of building to the other, the usage in each class having been fixed long ago.

Finally, propriety will be due to natural causes if, for example, in the case of all sacred precincts we select very healthy neighbourhoods with suitable springs of water in the places where the fanes are to be built, particularly in the case of those to Aesculapius and to Health, gods by whose healing powers great numbers of the sick are apparently cured. For when their diseased bodies are transferred from an unhealthy to a healthy spot, and treated with waters from health-giving springs, they will the more speedily grow well. The result will be that the divinity will stand in higher esteem and find his dignity increased, allowing to the nature of his site. There will also be natural propriety in using an

eastern light for bedrooms and libraries, a western light in winter for baths and winter apartments, and a northern light for picture galleries and other places in which a steady light is needed; for that quarter of the sky grows neither light nor dark with the course of the sun, but remains steady and unshifting all day long.

(Vitruvius, The Ten Books on Architecture, 1914, pp. 14-16)

Decor demands the faultless ensemble of a work composed, in accordance with precedent, of approved details. It obeys convention, which in Greek is called thematismos, or custom or nature. Convention is obeyed when buildings are put up in the open and hypethral to Jupiter of the Lightning, to Heaven, the Sun, the Moon ; for of these gods, both the appearance and effect we see present in the open, the world of light. To Minerva, Mars and Hercules, Doric temples will be built; for to these gods, because of their might, buildings ought to be erected without embellishments. Temples designed in the Corinthian style will seem to have details suited to Venus, Flora, Proserpine, Fountains, Nymphs; for to these goddesses, on account of their gentleness, works constructed with slighter proportions and adorned with flowers, foliage, spirals and volutes will seem to gain in a just decor. To Juno, Diana and Father Bacchus, and the other gods who are of the same likeness, if Ionic temples are erected, account will be taken oftheir middle quality; because the determinate character of their temples will avoid the severe manner of the Doric and the softer manner of the Corinthian. With reference to fashion, decor is thus expressed; when to magnificent interiors vestibules also are made harmonious and elegant. For if the interior apartments present an elegant appearance, while the approaches are low and uncomely, they will not be accompanied by fitness. Again, if, in Doric entablatures, dentils are carved on the cornices, or if with voluted capitals and Ionic entablatures, triglyphs are applied, characteristics are transferred from one style to another: the work as a whole will jar upon us, since it includes details foreign to the order. There will be a natural decor: first, if for all temples there shall be chosen the most healthy sites with suitable springs in those places in which shrines are to be set up; secondly and especially for Aesculapius and Salus; and generally for those gods by whose medical power sick persons are manifestly healed. For when sick persons are moved from a pestilent to a healthy place and the water supply is from wholesome fountains, they will more

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quickly recover. So will it happen that the divinity (from the nature of the site) will gain a greater and higher reputation and authority.

Also there will be natural seemliness if light is taken from the east for bedrooms and libraries; for baths and winter apartments, from the wintry sunset ; for picture galleries and the apartments which need a steady light, from the north, because that quarter of the heavens is neither illumined nor darkened by the sun's course but is fixed unchangeable throughout the day.

(Vitruvius, On Architecture, 1931, pp. 27,29,31)

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*Next, **correctness** (décor) is the refined appearance of a project that has been composed of proven elements and with authority. It is achieved with respect to **function**, which is called thematismos in Greek, or **tradition**, or **nature**. Correctness of funcetion occurs when temples dedicated to Jupiter the Thunderer and Heaven or the Sun and Moon are made open-air shrines, beneath their patron deity, because we see the appearance and effect of these divinities in the light of the outdoor world. Temples of Minerva, Mars, and Hercules will be Doric, because temples for these gods, on acount of their courage in battle, should be set up without a trace of embellishment. Temples done in the Corinthian style for Venus, Proserpina, or the Fountain Spirits (nymphs) are those that will seem to possess the most fitting qualities, because, given the delicacy of these goddesses, the works executed in their honor seem best to augment a suaitable quality of correctness when they are made more slender, ornamental, and are decorated with leaves and volutes. If temples are constructed in the Ionic style for Juno, Diana, Father Liber, and other gods of this type, the principle of the "mean" will apply, because their particular disposition will strike a balance between the stern lines of the Doric and the delicacy of the Corinthian.*

Correctness of tradition will be expressed if, when buildings have magnificent interiors, their vestibules have been made equally harmonious and elegant, for if interiors were outfitted elegantly, but had entrances deficient in dignity and respectability they would lack correctness. Likewise, if Doric entablatures are sculpted with dentils in the cornices, or triglygphs show up atop cushion capitals and Ionic entablatures, so that characteristics from one set of principles have been carried over into another type of work, the appearance of the result will be jarring, because the work was established according to a different sequence of conventions.

Natural correctness occurs as follows: if, from the outset, temple sites are chosen in the most healthful regions, well supplied with

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suitable sottrces of water, but especially for the building of shrines to Asclepius, Health, and those gods by whose medicines the sick seem to be healed in the greatest numbers. When patients have been transferred from a pestilent to a healthful place and are afforded the use of waters from healthful springs, they will recover more quickly, and so it will be arranged that from the very nature of the place the divinity in question will receive a greater and greater reputation along with the dignity of divine rank. Likewise, natural correctness will obtain if the light source for bedrooms and libraries comes from the east, whereas the source for baths and winter quarters comes from the west in winter, while in the case of picture galleries and whatever areas need a constant level of illumination it should come from the north, because that region of the sky is neither made bright nor dark by the course of the sun, but remains dependable and unchanging throughout the day.

(Vitruvius, Ten Books on Architecture, 1999, p. 25)

Uygunluk, bir yapıt, yetkinlikle, geçerli ilkelere göre yapıldığında beliren biçem mükemmelliğidir. Geleneklerden (Yunanca'da θεματισμώ), kullanımdan ve doğadan kaynaklanır. Geleneklerin önemi, yıldırımların Jüpiter'I, Gök, Güneş veya Ay onuruna inşa edilen üstü açık (hypaethral) yapılarda görülebilir: çünkü bunlar, gökyüzü açık ve bulutsuz olduğu zaman görünümlerini algıladığırnız tanrılardır. Minerva, Mars ve Herkül'ün tapınakları Dor biçeminde olmalıdır; çünkü bu tanrıların yiğitçe güçleri, evlerinde zerafeti tamamen uygunsuz kılar. Venüs, Flora, Proserpine, Kaynak Suyu ve Nimflerin tapınaklarında ise bu zarif tanrıçalara, ince hatları, çiçekleri, yaprakları ve sarmallı süs öğeleri ile gereken uyumu sağladığından, Korent düzeninin kullanılması özel önem taşır. Juno, Diana, Bacchus ve benzer tanrılar için İyon düzeninde yapılan tapınaklar da, bu tanrıların bulundukları orta konuma uygun olarak Dar düzeninin sertliği ile Korent düzenindeki zerafetin bileşimini yansıtırlar.

Uygunluk, görkenıli iç mêkanları bulunan binalara yaraşan zarif giriş avlularının kullanımından doğar; çünkü girişi alçak ve kötü olan görkemli yapıların görünümünde uygunluk yoktur. Aynı şekilde dış kesimleri Dor düzeninde bir saçaklığın kornişine uygulandığında veya üçüz yivler İyon düzeninde bir saçaklıkta, sütunların yastık biçimindeki başlıkları üzerine oturtulduğunda kullanımı uzun bir zamandan beri yerleşen bir düzenin özellikleri gözetilmediğinden görünüm bozulacaktır.

Son olarak, örneği tüm kutsal alanları, özellikle çok sayıda hastayı şifalı güçleriyle iyileştirdikleri varsayılan Aesculapius ve Sağlık tanrılarına ufak tapınaklann yapılabileceği yerleri uygun kaynak sulan bulunan sağlıklı yöreler arasından seçersek,

uygunluk doğal nedenlere dayanacaktır. Çünkü sağlıksız bir çevreden gelen hastalıklı vücutlar, sağlıklı bir yerin şifa veren memba suları ile yıkandıklarında hastalıklarından daha çabuk arınacaklardır. Sonuçta, tamamen yörenin özellikleri nedeniyle tanrının saygınlığı artacak ve daha itibarlı bir konuına ulaşacaktır. Yatak odalarında ve kütüphanelerde doğu ışığı, kışın hamamlar ve kış odaları için batı ışığı, resim galerileriyle düzenli ışık gereken yerlerde de kuzey ışığının - çünkü gün boyunca gökyüzünün bu kesimi güneşin yönünden etkilenmediğinden fazla aydınlık veya karanlık olmaz – kullanılmasında doğal bir uygunluk vardır.

(Vitruvius, 1998, s. 10-11)

Table 7: The definition of ECONOMY / DISTRIBUTION / ALLOCATION

3.2.6 Economy / Distribution / Allocation

Economy denotes the proper management of materials and of site, as well as a thrifty balancing of cost and common sense in the construction of works. This will be observed if, in the first place, the architect does not demand things which cannot be found or made ready without great expense. For example: it is not everywhere that there is plenty of pitsand, rubble, fir, clear fir, and marble, since they are produced in different places and to assemble them is diflScult and costly. Where there is no pitsand, we must use the kinds washed up by rivers or by the sea; the lack of fir and clear fir may be evaded by using cypress, poplar, elm, or pine; and other problems we must solve in similar ways.
A second stage in Economy is reached when we have to plan the different kinds of dwellings suitable for ordinary householders, for great wealth, or for the high position of the statesman. A house in town obviously calls for one form of construction; that into which stream the products of country estates requires another; this will not be the same in the case of money-lenders and still different for the opulent and luxurious; for the powers under whose deliberations the commonwealth is guided dwellings are to be provided according to their special needs: and, in a word, the proper form of economy must be observed in building houses for each and every class.

(Vitruvius, The Ten Books on Architecture, 1914, p. 16)

Distribution or Economy, however, is the suitable disposal of supplies and the site, and the thrifty ' and wise control of expense in the works. This will be guarded if, in the first place, the architect does not require what can only be supplied and prepared at great cost. For it is not everywhere that there is a supply of quarry sand or hewn stone, or fir or deal or marble. Different things are found in different places, the transport of them may be difficult. and costly. Now where there is no quarry sand we must use washed river or sea sand; the need for fir or deal will be met by using cypress, poplar, elm, pine; other difficulties will be solved in a like fashion.
The second stage in Economy comes, when buildings are variously disposed for the use of owners or with a view to the display of wealth or lofty enough to suit the most dignified

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eloquence. For manifestly houses should be arranged in one way in towns; in another way for persons whose income arises from country estates; not the same for financiers; in another way for the wealthy men of taste; for the powerful, however, by whose ideas the state is governed, there must be special adjustment to their habits. And generally the distribution of buildings is to be adapted to the vocations of their owners.

(Vitruvius, On Architecture, 1931, pp. 31-33)

Allocation is the efficient management of resources and site and the frugal, principled supervision of working expenses. This will be observed if from the outset the architect forbears to require things that cannot be found at all or only procured at great expense. After all, not every place has an abundant supply of pit sand or rubble or fir, or deal planks, or marble. Different resources occur in different places, and their transport elsewhere is difficult and expensive. Where there is no pit sant, river sand or washed seashore sand should be used instead; if there is a shortage of fir or of deal planks, use cypress, poplar, elm, or pitch pine. Other problems should be resolved in a similar fashion.
The other level of ***allocation*** *obtains when buildings are designed differently according to the habits of the heads of families, or the amount of money available, or to suit their prestige as public speakers. Urban dwellings ought to be set up in one way, and rustic holdings, where harvests must be gathered, in another; the homes of moneylanders, certainly otherwise, and still otherwise the homes of those who are fortunate and sophisticated. For those powerful men by whose counsel the republic is governed, dwellings should be designed to accommodate their activities, and in every case the allocation of buildings should be appropriate to every different type of person.*

(Vitruvius, Ten Books on Architecture, 1999, pp. 25-26)

Ekonomi, malzemelerin ve arazinin doğru kullanımının yanında, yapım işlerinde maliyetin ölçülü ve akıllıca olmasını içerir. Bu da, her şeyden önce, mimarın büyük harcamalara malolmadan bulunamayacak veya yapılamayacak şeyleri istenekten kaçınması ile gerçekleşebilir. Örneğin, her yerde bol miktarda ocak kumu, moloz taşı, köknar, çam ve mermer yoktur; bu hepsini değişik yerlerden getirtmek zor ve masraflı bir iştir. Ocak kumu olmayan yerlerde derelerin veya denizin getirdiği kum türlerinden yararlanmanız gerekir; köknar ağacının eksikliği, selvi, kavak, karaağaç veya çam kullanarak giderilebilir; diğer sorunları da benzer biçimde çözmeliyiz.

Sıradan konut sahipleri, varlıklılar veya yüksek rütbeli devlet adamlarına uygun farklı konut türlerinin tasarımını yapmamız gerektiğinde ekonominin ikinci evresine ulaşılır. Kent içinde bir konut kesinlikle belli bir yapı türü gerektirirken, ürünlerin depolandığı kırsal malikanelerde daha farklı bir yapını uygulanacaktır; bu, tefeciler için ayrı, zenginler ve lüks yaşayanlar için yine farklı olacaktır; kararlan ile ulusu yönlendiren güçlerin konutları da onların özel gereksinimlerine göre yapılmalıdır. Kısacası, sınıfların her biri için konutlar yapılırken uygun olan ekonomi türü izlenmelidir.

(Vitruvius, 1998, s. 11)

3.3 An Intertextual Odyssey

It is possible to trace the footprints of *de Architectura Libri Decem* during the Medieval Ages by means of the manuscript copying tradition of the monasteries. The partial or full handwritten copies were available in various places of Europe before the first printed copy in 1486. [75] It was, however, general opinion that Vitruvius were almost unknown before the discovery of manuscripts containing a full text copy of *de Architectura Libri Decem* in the library of St. Gall Monastery in 1416. *Poggio Bracciolini* (1380 – 1459), one of the early humanist appointed by the papacy for collecting manuscripts, and *Cencio da Rustici* (1390–1445), papal secretary, were credited for this discovery. [76] The translations of many other manuscripts and letters in Latin has showed that the Vitruvian texts had been copied and circulated among the different monasteries, royal courts, and personal collections for centuries. [77] *de Architectura Libri Decem* had been passed to the next generations almost without a rupture by means of copied manuscripts, letters, summa and encylopedia tradition of the Medieval Times.

The following part is a brief history of Vitruvian citations, quotations, and paraphrases until the early Renaissance. In fact, they present a history of textual interactions and narration rather than an architectural history. Those manuscripts including direct or indirect reference to Vitruvius are a part of "documenting" tradition. Furthermore, Vitruvian texts have been an important topic for many other academic research fields including the Latin studies, Greek and Roman archaeology, studies on proportion in the history of architecture. The extensive literature, however, exceeds the scope of this study. In this respect, the following references are considered as the brief timeline of the intertextual journey of Vitruvius throughout the renowned Roman and Christian authors, historians, statesman, and literati.

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[75] (Krinsky, Seventy-Eight Vitruvius Manuscripts, 1967),

[76] (Krinsky, 1967, p. 36), (Burckhardt, 1928), (Scaglia, 1979) and (Clarke, 2002). Clarke names Bartolomeo Aragazzi beside the other two.

[77] A few examples of the cities – countries given in Krinsky: GERMANY: Hildesheim, Worms, Köln. Italy: Verona, Ambrosiana, Milano, Venice, Florance, Naples, Pavia, Siena. FRANCE: Paris, Rouen, Mazarine, Rosny. BRITAIN: Canterbury. Winchester. BELGIUM: Ghent. POLAND: Trzemeszno, Wroclaw. (Krinsky, Seventy-Eight Vitruvius Manuscripts, 1967). There were more than one copy in different libraries in some cities.

3.3.1 Vitruvius in Roman and Medieval Documents

Recordings of Vitruvius' name or his works can be traced back until the first century BC. The first known reference was by Roman soldier, author and natural philosopher *Pliny the Elder* (23-79 AD). Pliny the Elder writes that Vitruvius had brought statues made of porphyrite to Rome. [78] Considering the similarities between the Vitruvian text and the Pliny's writings, it is possible to claim that latter would have read the former's books.[79]

Sextus Julius Frontinus (c. 40–103 AD), Roman senator and contemporary of Pliny the Elder, cites Vitruvius in his treatise **De Aquaeductu Urbis Romae** in which the aqueducts of Rome is told. Frontinus refers Vitruvius about the dimensions, origins, and meanings of particular measuring units used in the Roman irrigation system.[80]

The next appearance of Vitruvius in Roman documents was in the third century. **Compendium** (**De Diversis Fabricis Architectonicae**) by *Cetius Faventinus* is an abridgement of *de Architectura Libri Decem*. [81] Plommer, in his study that includes the Compendium as well, mentions *Faventinus* and *Palladius* (4th century AD), who is recongized with his writings on agriculture, in relation to their additions and

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[78] (Plinus, 1856). Pliny the Elder calles him as Vitrasius Pollio in his great work Natural History, Book XXXVI. The related part (Part 11) is titled as "The Marbles of Alexandria. Vitruvius is mentioned as a Stewart in Egypt for the Emperor Claudius. The reign of the Emperor Claudius (10 BC – 54 AD) was between 41 – 54 AD. In this case it was hardly possible that Vitruvius had served to Claudius.

[79] "*Hence it is, that the Greeks have built their public edifices and the palaces of their kings of brick; the wall at Athens, for example, which faces Mount Hymettus; the Temples of Jupiter and Hercules at Patrae, although the columns and architraves in the interior are of stone; the palace of King Attains at Tralles; the palace of Croesus at Sardes, now converted into an asylum" foraged persons; and that of King Mausolus at Halicarnassus; edifices, all of them, still in existence. Mursena and Varro, in their ædileship, had a fine fresco painting, on the plaster of a wall at Lacedsemon, cut away from the bricks, and transported in wooden frames to Home, for the purpose of adorning the Comitium*." Ibid, B.XXXV C.49 p. 291;

"*Therefore in some cities we may see both public works and private houses and even palaces built of brick: and first, the wall at Athens which looks to Mount Hymettus and Pentelicus; also at Patrae, brick cellae in the temple of Jupiter and Hercules, while round the temple there are entablatures and columns of stone; in Italy at Arezzo there is an old brick wall excellently built. At Tralles there is a palace built for the Attalid kings, which now is always given for a house to him who is the Priest of the City. Also at Lacedaemon the bricks were cut through from certain walls, the paintings were removed and enclosed in wooden frames, and brought into the Comitium as an ornament for the aedileship of Varro and Murena*". (Vitruvius, 1931, pp. 118-119)

[80] (Frontinus S. J., 2014), (Plommer, 1973, p. 1), (McEwen, Vitruvius: Writing the Body of Architecture, 2002)

[81] (Vitruvius, De Architectura Libri Decem, 1899). This is the Latin edition by Valentinus Rose compiled from the available manuscripts. This edition includes the Compendium of Cetius Faventinus. For the English translation an comparison between Faventinus and Palladius see (Plommer, 1973). Faventinus says that the erudite copiousness of Vitruvius and other authors, who left a length of work with an extraordinary knowledge on the art of architecture, may frighten the ordinary readers. Therefore he decides to prepare his short study, which adapted to the daily language, in order to be used for practical needs.

subtractions from Vitruvius.[82] *Faventinus* gives a brief about the parts of architecture with extracted definitions from Vitruvius:[83]

> *For architecture comprises eight parts - order, disposition, beauty, measurement, distribution, building, siting and mechanical engineering. The Greeks taught that the study of architecture embraced five of these. For they called order* ***taxis****, disposition* ***diathesis****, beauty and elegance* ***eurhythmia****, the measurement of units* ***symmetria*** *and distribution* ***oeconomia****.*

Sidonius Apollinaris (c.430-489 AD), Gallo-Roman poet, diplomat, bishop, and man of letters, refers to Vitruvius and his skills as an example of praiseworthiness in his letters.[84] *Cassiodorus Senator* (c.485- c.585 AD), Roman writer and statesman, is considered as acquainted with Vitruvius works.[85]

Isidore of Sevilla (c.560-636 AD), bishop of Sevilla, wrote the first known encyclopeida of the Middle Ages. **Etymologies**, or **Origins** that

> *contains a compendium of much of the essential learning of the ancient Greco-Roman and early Christian worlds. ... It was arguably the most influential book, after the Bible, in the learned world of the Latin West for nearly a thousand years.*[86]

Krinsky claims that Isidore of Sevilla had drawn upon Faventus' book, and derived additional Vitruvian material from Pliny the Elder's text. [87] Kruft, on the other hand, compares the Vitruvian content in Etymologies and de Architectura in order to show that even though Isidore of Sevilla had referred Vitruvian concepts, they do not correspond to the definitions given by Vitruvius.[88]

Sevilla states that there three stages in the building: siting (dispositio), which is "the marking out of the building site or seat and of the foundations"; construction, which means binding together to build the sides and top; and decoration (venustate) that is

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[82] (Plommer, 1973, p. 2). Krinsky claims that the Vitruvian content of the Palladius' text was derived from Faventinus and Pliny the Elder (Krinsky, Seventy-Eight Vitruvius Manuscripts, 1967).
[83] Ibid., p.41. The definitions appearantly follows Vitruvius.
[84] (Apollinaris, 1915) Book IV. 3., Book VIII. 6.
[85] (Kruft, 1994, p. 30).
[86] (Seville, 2006), Introduction, p.3
[87] (Krinsky, 1967, p. 39), (Lefaivre & Tzonis, 2004). Krinsky also indicates that numberous mansucripts of the medieval times includes agrimensorial content of which ideas can be traced back to Vitruvius.
[88] (Kruft, 1994, pp. 30-31).

anything added to building as ornaments and embellishment. [89] The definitions and following explanations do not prove that Isidore of Sevilla had read Vitruvian texts. It is not the objective of this study to present that the Medieval scholars' knowledge and authority on Vitruvian content, either. On the other hand, it is obvious that the author made an extraordinary effort to compile and present all the accumulated knowledge and information of the humanity, not only for scholarly reasons, but also for practical use.[90] It is possible to claim that by the help of this kind of efforts of the Middle Ages' scholars Vitruvius and his works, beside the many other works of the Ancients, survived.

Kruft, however, indicates that references to the Vitruvian content were on a rhetorical context during the Antiquity, in which de Architectura was disseminated is still unknown. [91] In fact, there is an increasing academic curiosity and appreciation of the Medieval Times. [92] Many European universities have been digitizing, translating, and publishing the documents of the Middles Ages.[93] Therefore, the odyssey of Vitruviuan content has been identified more and more. At least, it is possible to compare various documents in order to specify the transference of the building, construction, and architecture related topics and descriptions in relation to Vitruvius' writings.

This re-discovery of the antiquity is not a Vitruvius specific situation. Even though it is not called Dark Ages any more, the cultural and social context of Europe were suffering from the political and economic collapse after the fall of Roman Empire.

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[89] (Kruft, 1994, p. 30), for English translation of the original text see (Seville, 2006) XIX.ix-xi. In fact, the translation of "de venustate" as "decoration" is a controversial issue because of the complex differences amongs its meaning throughout the history. Granger, Morgan and Rowland correspond "venustatis" differently. Morgan translates as beauty, whereas Granger prefers grace, and Rowland uses attractiveness. For a history of the concept of "beauty" and related terms see (Tatarkiewicz, A History of Six Ideas: An Essay in Aesthetics, 1980). For the concept of "decorum" in relation to decoration see (Payne A. A., 1999) and (Payne A. A., 1992)

[90] For example the description of pavement construction in relation to the terminology and and origins of terms in XIX.x.25.

[91] (Kruft, 1994, p. 30)

[92] Beside many other, Umberto Eco has a particular importance in this respect. As a Middle Ages specialist, Eco has not only made a great contribution with his academic research, but also his fame helped a lot for the popularisation of the findings. Today, it is widely known that great encyclopedic works had been written; notation and acoustical studies had been developed; sailing and maritime techniques had been advanced. For a detailed comparative study of the various civilizations during the Medieval Times see (Eco, Ortaçağa Giriş, 2012).

[93] British Library, Virtual Manuscript Library of Switzerland, The European Library, European Cultural Heritage Online, The Perseus Digital Library and MIT Classics are just few to be named. Project Gutenberg and Internet Archive are also of significance as non-profit and copyright free digital libraries.

On the other hand, neither the decline nor the re-construction of the civilization was all of a sudden. The influence of the Middle East and Eastern cultures cannot be denied. But, it is possible to claim that the survival of the written culture of the Ancient Greece and Roman Empire was a long and painful process until Europe re-settled.[94] Moreover, it is highly possible that the kings and emperors of the restored European civilizations might have realized that their legacy could not be claimed only by the blessing of Pope or the invented family trees. The Carolingian Renaissance or the cultural achievements of the Otto Dynasty are claimed as presenting that the intellectual development was an essential aspect of the social, political and economic reconstruction.[95]

The library of *Charlemagne* (Karolus Magnus) of the Carolingians, who reigned between 800 and 814 as the first Holy Roman Emperor, was worthy to mention in this respect. Schutz states that Charlemagne had asked to gather books from many lands for the cour library that was going to be an important collection and the model for the succeeding ones. It included[96]

> *rare works by early Christian authors as well as the pagan authors of antiquity. These included Lucan, Terence, Claudian, Juvenal, Horace, Cicero and Sallust dealing with such areas as histories of the Roman Republic and the Empire and Latin epic and lyric poetry.*

Alcuin of York (735-804 AD), *Einhard* (c.775-840 AD), and *Hrabanus Maurus* (780-856 AD), who were associated with this courtly initiation, are considered as being familiar with Vitruvius and his writings.[97] Einhard mentions a Vitruvian content in relation to a philological issue in one of his letters.[98] According to Kruft, it cannot be

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[94] Despite that his Renaissance image has been criticized, (Burckhardt, 1928) is still one of the most important source particularly for the emergence of Italian Renaissance.

[95] For the concept of Carolingian Renaissance see (Trompf, 1973); for the cultural history of Carolingian era see (Schutz, 2004). Schutz underlines that in their "*architectural and artistic intentions the Carolingians were never free of their need to demonstrate their legitimate continuity with Christian Rome and continuing legitimacy through the church*".

[96] (Schutz, 2004, p. 156)

[97] (Krinsky, 1967, p. 36), (Kruft, 1994, p. 31). For their role in formulation and promotion of Carolingian political and theological intentions see (Schutz, 2004, p. 156). Schutz writes that according to a catalog prepared in 821/22 collection included a copy of Vitruvius. Ibid p.160.

[98] (Pevsner, 1942), (Scaglia, 1979, p. 15), and (Kruft, 1994, p. 31)

proved that Einhard had got an architectural aid from Vitruvius for his basilicas in Steinbach and Seligenstadt.[99]

Scaglia, moreover, indicates that the translation problem mentioned by Einhard in his letter implies two important issues:[100] The Vitruvian terminology was unknown. Because, the building technology upon which that terminology based on was lost.

Hrabanus Maurus is considered as being familiar with Vitruvius works.[101] On the other hand, the related parts in Maurus' **De Universo Libri XXII,** XXI.II. show that it is much probable that his source was Isidore of Seville, not Vitruvius himself. [102]

It is obvious that that scripture culture of early Middle Ages and the following manuscript tradition kept the authors and scholars of the Medieval Times informed about Vitruvius and his work.[103] De Architectura Libri Decem, however, is not considered as a handbook or manual for building construction, as Vitruvius had intented. Kruft, however, mentions the case of St. Michael's in Hildesheim as a possibly unique case of use of Vitruvius for building construction in the 11th century.[104] Conant argues a similar idea and claims that the Cluny III, in the 12th century, "had an inheritance from the Roman architectural tradition which we know in Vitruvius".[105]

The intellectual atmosphere of the 12th century was rich for the sake of Vitruvius. *Peter the Deacon* (c.1107-1140) was the librarian and keeper of the abbey of Monte Cassino. He produced a passage about the proportions of human body extracted from

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[99] Ibid. p.31
[100] (Scaglia, 1979, p. 23)
[101] (Krinsky, 1967, p. 36) Krinsky claims that Hrabanus' quotes directly from Vitruvius.
[102] In Maurus: "*Ædificiorum partes sunt tres: dispositio, constructio, venustas. Dispositio es areæ vel soli et fundamentorum discriptio.*" (Maurus, 2014)
In Isidore of Seville: "*Aedificiorum partes sunt tres: dispositio, constructio, venustas. Dispositio est areae vel solii et fundamentorum descriptio.*" (Seville, 2006, p. 377) XIX.ix-xi.
[103] Hermann the Paralytic of Reichenau, Hugo of St. Victor, Gervase of Melkley, Vincent of Beauvais, William of Malmesbury, Theoderich of St. Trond, Petrus Diaconus are a few to be named (Krinsky, 1967, p. 37), (Lefaivre & Tzonis, 2004).
[104] (Kruft, 1994, p. 31). Bernward of Hildesheim was the first abbot of St.Michael's. He was assumed as having a copy of Vitruvius. If he played an important role in planning, design and construction of the church, the Vitruvian content might have been utilized.
[105] (Conant, 1968). He proposes geometrical and dimensional analysis in order to prove that the cathedral was built upon the Roman tradition exposed by Vitruvius.

a copy of de Architecture Libri Decem.[106] He had copied *Frontinus*' De Aquaeductu Urbis Romae, as well.[107]

Hildegard von Bingen (1098-1179) was an important female philosopher, writer and composer in the 12th century. Kruft claims that she had a knowledge of Vitruvius considering her representation of man, which is a microcosm and reflection of macrocosm, with respect to the proportional relations of the bodily parts.[108]

Vincent de Beauvais (c.1190-1264), the author of the most important encyclopedia of the Medieval Ages, quotes directly from Vitruvius, without referring him, in his **Speculum Doctrinale, Book X.**[109] In X.XVII, there are also parts having similarities with Isidore of Sevilla's Vitruvian content. [110]

One of the most important heritage of the high Middle Ages is the lodge-book of Villard de Honnecourt. His sketches and notes can be considered as the only survived Medieval study that was produced with an architectural content since Vitruvius. Honnecourt had recorded the lodge tradition of Gothic. Furthermore, his lodge-book cannot be considered as mere pattern book since he had sketched his architectural ideas too.[111] Kruft claims that Honnecourt's salutation implies a Vitruvian understanding about the education of the architect regarding to the French translation of Lassus: [112]

> *For this book will greatly aid you in learning the principle of masonary and construction work. It will also teach you how to render something accurately and how to do line drawing, according to the rules and precepts of geometry*.

The English translation of from Lassus by Robert Willis quotes the same part as follows: [113]

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[106] (Kruft, 1994, p. 31)
[107] (Frontinus, 2004, p. 37)
[108] (Kruft, 1994, p. 35)
[109] (Beauvais, 1494) Book X, i62, C.XIIII
[110] (Beauvais, 1494), Book X, i62, C.XVII
[111] (Willis, Facsimile of the Sketch-Book of Vilars de Honecort, 1859). Preface. The name is given as Wilars de Honecorts in this English version. For a French edition see (Honnecourt, 1927)
[112] (Kruft, 1994, p. 37)
[113] (Willis, Facsimile of the Sketch-Book of Vilars de Honecort, 1859)

> *For in this book may be found good help to the knowledge of the great powers of masonry, and of devices in carpentry. It also shews the power of the art of delineation, the outlines being regulated and taught in accordance with geometry.*

Considering the both translations, it is hardly possible to figure out that if de Honnecort knew Vitruvius or he might have read de Architectura libri decem. The ideas relating drawing to geometry cannot be attributed only to Vitruvius, either.

Although Villard de Honnecourt is not a key figure in Vitruvian tradition, for the tansformation of the master mason to a recognized professional, an architect, his significance cannot be underestimated. The area of specialization of the profession was being subjected to question. This transformation is a topic of some other studies.[114] It, however, indicates something important for the scope of this dissertation. The content of the manuscripts was being concerned for the applicability or utility of the knowledge they contained, rather than for belonging to the ancient authorities, or part of cosmological / theological body of knowledge, or only being in Latin. In the case of Vitruvius, there was change from being the articles of Middle Ages' encyclopedies as the summeries of cosmological knowledge, or the prior source of Proportion Mysticism, to be a handbook of practical knowledge. [115]

As a matter of fact, the completion of this transformation had to wait for the Italian humanists of the 14th and 15th century. It is known that Francesco Petrarca (1304-1374), the father of Humanism, had his own copy of de Architectura libri decem.[116] Moreover there had been other copies with Petrarca's annotation circulating among the other renowned humanists including *Giovanni Boccaccio* (1313-1375). [117] Boccacio mentions Vitruvius couple of times in **Genealogie Deorum Gentilium**. [118]

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[114] As a lavish compilation see (Kostof, 1977).
[115] (Eco, Ortaçağ Estetiğinde Sanat ve Güzellik, 1999).
[116] (Kruft, p. 39). Kruft claims that there are marginal assumptions such as Petrarch might have consulted Vitruvius for the rebuilding of Pope's Palace in Avignon.
[117] (Ciaponni, 1984), (Krinsky, Seventy-Eight Vitruvius Manuscripts, 1967, p. 53)
[118] To compare Bocaccio and Vitruvius:
Boccaccio Book II – Chapter XXX. / **Vitruvius** VIII, 3, 21.
Boccaccio Book IV – Chapter LIV. / **Vitruvius** I, 6, 4.
Boccaccio Book VII – Chapter I. / **Vitruvius** VIII, 4.
Boccaccio Book XII – Chapter LXX. / **Vitruvius** II, 1, 1.
Boccaccio Book XII – Chapter LXX. / **Vitruvius** II, 1, 1. (origins of the house)

Except one quotation about the origins of house, the rest refers Vitruvian content with regard to mythology.

The first and only known written record about the use of Vitruvius as a technical handbook for construction is from the 15th century. Antonio Becadelli (1394-1471) says that the King Alfonso V of Aragon had called de Architectura libri decem for the renovation or reconstruction of Castelnouvo in Naples in 1442/43 in his **The Sayings and Deeds of King Alfonso** (De dictis et factis Alphonsi regis). [119]

It is a fact that there is little reference about the use of Vitruvian texts as a theoretical or practical source for architecture during the Middle Ages. The contemporary studies and researches has, however, presented that there was a certain body of knowledge about architectural theory and practice in continuity.[120] It is obvious that this knowledge is not in direct relationship with the Vitruviuan tradition.

The very basic of that knowledge is "proportion". The role and the importance of "proportion" in the history of philosophy, then theology and later on aesthetics, cannot be denied. The relation of beautiful, good and true to the numbers has been one of the core issues of the philosophy since Pythagoras. It is possible to say that the tradition continued in the Christian Theology by means of St. Augustine and Boethius, and reinforced by Thomas Aquinas.[121] Despite its importance and singularity, as a locus of both medieval and contemporary texts, proportion cannot be deduced into an arithmetical or geometrical relations. It should be considered as the realisation of a broader architectural knowledge. As Simson states, in medieval terms, the alternative "practical or esthetic" does not make sense.[122]

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[119] (Beccadelli, 1538)."*Cum inclytam illam arcem Neapolitanam instaurare instituisset. Vitruvius librum, qui de architectura inseribitur, asserri ad fe iussit. Allatus est, quandoquidem in promptu erat Vitruvius meus ille quidem, fine ornatu aliquo, fine asseribus: quem rex fimul atq; inspexi non decere hunc potissium librum, qui nos quomodo contegamur, tam belle doceat, defectum incedere, e umq, mihi per quam polite ac fubito cooperiri mandauit.*"
(Kruft, 1994, p. 39), (Burckhardt, p. 226), and (Clarke, p. 324) in which he reference is different. She does not mention Becadelli.

[120] (Padovan, 1999), (Kruft, 1994), (Rykwert, On the Oral Transmission of Architectural Theory, 1984), (Ackerman J. S., 1949), and (Frankl, 1945). Despite its ambitious explanations historical references Frankl's explicit genealogy from Plato to the Gothic Masons needs a critical distance.

[121] (Masiero, p. 64), (Padovan, 1999, pp. 110, 176), (Eco, 1999, s. 53), (Tatarkiewicz, 1980, p. 151)

[122] (Simson, 1952)

Rykwert, on the other hand, points out a double, even contradictory, discourse considering that united practice-aesthetic concerns of medieval builders, between the year 1000 and the year 1500. According to Rykwert,

> *The first part of this discourse might usefully be called 'Vitruvian': it was public, literary and used in talking about building by the lords and clergy and literati; the second was a private and even secret 'Euclidian' discourse. It was carried on, compass in hand, by masons and carpenters and other building workers as well as jewellers ... These two discourses were no more in conflict than the master-builders were in conflict with their employers. In fact it is easy enough to imagine a master-mason practising one kind of discourse at dinner with a bishop and the other in the lodge on the cathedral site.*[123]

Although it might be difficult to find the evidences of those dinner talks, it is possible to trace their implications in talking about the real construction issues, rather than the buildings themselves. As Padovan and Ackerman mention, analysis of the Gothic monuments in order to overlap the proportions described in the ancients' texts and the on-site measurements would be either insufficient or confusing.[124] There are, however, textual remains, which demonstrate the mind set of actors of the building activity. According to Ackerman, the annals of the building of Milan Cathedral is such "a wealth of material which is almost unique in mediaeval architectural studies".[125]

The annals reveal the nature of the Gothic thinking and building from which trying to abstract some Vitruvian principles would be a pointless effort. The annals demonstrate that there is a particular content of architecture concerned by the Gothic '*scientia*' and '*ars*'. Those terms shoud be defined and understood in their context. Ackerman presents *scientia* as a set of geometrical and arithmetical formulae about interrelationships of the parts and the whole, whereas *ars* indicates the builders'

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[123] (Rykwert, On the Oral Transmission of Architectural Theory, 1984)

[124] (Ackerman J. S., p. 85), (Padovan, pp. 185, 189) refers two distinguished figures on opposite sides of the argument: On one side there is Otto von Simson who studied the underlying mathemtacial principles of Gothic through the writings of Agustinus and Boetihus. John James is on the other, a man of work who lost the sight of cathedral while exhausting himself for accurate measurements of almost every single stone.

[125] (pp. Ibid, 85). Ackerman indicates that the usual records of construction activities of the period mostly includes the issues of material supply, finance, and employment. The problems of the pogram of the construction and building process made way for an exceptional source about the Gothic theory and practice of architecture.

technical know-how about constructing a cathedral. [126] The scientia is a sort of "a priori" template to be installed in order to interrelate the structural and functional parts. Ars is a way of "doing" of which knowledge was accumulated by means of experience.

The conferences gathered to discuss and get and agreement about the problems of the construction provide a unique perspective of the context. First of all, it is obvious that the medieval builders had to deal with real issues and problems of construction. The particularity of the period was that how they had handled those problems. In order to explain their approach, it would be useful to present a partial conversation from the annals. The following example was held in 1392 between a foreign expert and Milanese masters in order to discuss the suggestions of the architect. The selected dialogs are after Ackerman.[127]

> ***[1] Dubium:*** *Whether the portions of the rear as well as the sides and interior-namely, both the crossing and the other, lesser, piers-have sufficient strength?*
> ***Responsio:*** *It was considered, replied, and stated upon their soul and conscience, that in aforesaid [portions] the strength, both of the whole and separate [parts] is sufficient to support even more [weight].*
> ***[3] D:*** *Whether this church, not counting within the measurement the tower which is to be built, ought to rise according to the square or the triangle?*
> ***R:*** *It was stated that it should rise up to a triangle or to the triangular figure, and not farther.*

The first question concerns the capacity of the structural system that was supposed to be the main factor of the height of cathedral, especially the tower. The third question, however, aims at fixing the method of determining the height of the church. Interestingly, there is no turn back to the first question in order to clarify the relation between the structural system and the triangual figure or triangle as a method of fixing the height.

The search for sound and appropriate relationships among the parts, and between the parts and the whole building was a common issue for the medieval builders and the

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[126] (Ackerman J. S., 1949)
[127] Ibid.,p.91

Vitruviuan tradition. As it might be followed from the conversation, the master builders of the cathedral seems preferring an abstract method to determine the dimensions of the building parts by using a square or triangle.[128] Vitruvius, on the other hand, was suggesting to derive the dimensions of the parts in relation to the whole with respect to symmetry and eurhythmy. Furthermore, neither foreign experts, architects and engineers from northern and western Europe, nor the local masters seem make use of Vitruvian discourse to defence their methods.

Another passage, as a response to another foreign expert criticizing the decisions and applications of the local masters, from a conference held in 1400 demonstrates the background of their defence clearly. To quote from Ackerman:[129]

> *Moreover, he says that four towers were begun to support the crossing-tower of said church, and there are no piers nor any foundation capable of sustaining said towers, and if the church were to be made with said towers in this position it would infallibly fall. Concerning the claims, however, which were made by certain ignorant people, surely through passion, that pointed vaults are stronger and exert less thrust than round, and moreover concerning other matters, proposals were made in a fashion more willful than sound; and what is worse, it was objected that the science of geometry should not have a place in these mattters, since science is one thing and art another. Said master Jean says that art without science is nothing (ars sine scientia nihil est), and that whether the vaults are pointed or round, they are worthless unless they have a good foundation, and nevertheless, no matter how pointed they are, they have a very great thrust and weight.*
> *Whereupon they [the Masters] say that the towers which they wanted to make are for many reasons and causes [desirable]. Namely, in the first place, to integrate aforesaid church and transept so that they correspond to a rectangle according to the demands of geometry, but beyond this, for the strength and beauty of the crossing-tower. To be sure, as if as a model for this, the Lord God is seated in Paradise in the center of the throne, and around the throne are the four Evangelists according to the Apocalypse, and these are the reasons why they were begun. And although two*

[128] It is of importance to remind that for the medieval builders it was a preferable method to use a square or triangle of which base line is equal to the width of the building. For the case of Milan Cathedral, according to the records, an equilateral triangle was offered. In that case the height of the building was incommensurable for the Milanese builders. As Ackerman quotes from the annals, a mathematician was called to calculate the height. A square with equal sides would have been easier for sure. For the calculation of proportional relations based on those abstract geometrical figures see (Frankl, 1945), (Ackerman J. S., 1949), (Padovan, 1999).
[129] (Ackerman J. S., pp. 100-101)

piers of each sacristy are not founded, but begin at ground level, the church is truly strong never-theless for these reasons, that there are projections upon which the said piers stand, and the said projections are of large stones and joined with iron dowels as was said above with other statements, and that the weight on these three (sic) towers falls evenly on their square, and they will be built properly and strong, and what is vertical cannot fall; therefore they say that they are strong in themselves, and for that reason will give strength to the crossing-tower, which is enclosed in the center of those towers. Therefore said church is truly strong.

...

Whereupon they [the masters] say and reply in the same statement, that where it says that the science of geometry should not have a place in these [matters], the above-mentioned say: if he [Mignot] invokes, as it were, the rules of geometry, Aristotle says that the movement of man in space which we call locomotion is either straight or circular or a mixture of the two. Likewise the same [writer] says elsewhere that every body is perfected in three [ways], and the movement of this very church rises ad triangulum as has been determined by other engineers. So they say that all [the measurements] are in a straight line, or an arch, therefore it is concluded that what has been done, has been done according to geometry and to practice, and even he [Mignot] has said that science without art is nothing; concerning art, however, replies have been made already in other statements.

The argument of the expert, which claims the deficiencies of the foundations and the weakness of the piers, is encountered with irrelevant use of Biblical references and quotations from Aristotle. The suggestion of the former was the use of an abstract geometry to develop proportional relations among the parts in association with the whole, whereas the latter was already confident because *scientia* is one thing, [their] *ars* another that was proved by the grace of God.

Those conversations seem in contradiction to Rykwert's double discourse perspective mentioned above. It is hardly possible to trace any Vitruvian content concerning either technical or theoretical issues. The theory of the both (northern architects and Milaenese masters) part considers the geometrical relations in accordance with Euclidian tradition. The post-rationalisation of the Milanese masters, who were pro-*ars*, were derived from irrelevant philosophical – biblical

references, whereas the others', who were pro-*scientia*, argument was based on their practical experience.[130]

As mentioned at the beginning of this section, Vitruvius was known by the literati of late Roman times, Hellenistic era, and the Middle Ages. His texts were referred, paraphrased and quoted mostly for textual reasons. It is possible to state that relevant parts of **de Arcitectura libri decem** were assimilated into the tradition of comprehensive compilation and summary of all the information and knowledge of humanity. An architectural handbook, a manual for construction had become a source for encyclopedic entries and Latin philology for a long time.

Intertextual odyssey of the Ten Books secured not only its survival, but also the authority of Vitruvius as an ancient master builder. Otherwise, the recognition and mass dissemination of the "manuscripts discovered in 1416" might have been evaluated as a lucky coincindence in the history.

3.3.2 Rebirth of Architectural Treatises in Renaissance

Vitruvius names his sources with a great respect. Unfortunately those works, which were mainly the architects' own explanations of the "symmetry" of their buildings, could not have survived. But the survived body of texts of the Classical, Imperial and Hellenistic era, which covers a wide range of works from Xenophon to Agustinus, shows that even before the Renaissance there had been a text-based culture that was mediated by the diverse forms and structures of language.

Masiero, however, proposes the otherwise by claiming that it was needed to wait Humanism, which recognized the authority of the documents and subsequent commentaries, to discover the hegemony of written word.[131] In any case, the Renaissance produced a textual body of translated and commented works, almost simultaneously. As Payne puts, this translation mobilization of Humanists not only set off a dialogue across different disciplines but also created textual associations, which produced the language of all subsequent discourses.[132] As a matter of fact,

[130] (Ackerman J. S., pp. 94, 99)
[131] (Masiero, 2006)
[132] (1999, p. 53)

their influence is much further than the language. It is possible to state that these body of translated and commented texts determined the content and form of the subsequent architectural thinking and writing.

> *Medieval craftsmen, like their ancient predecessors, had made wide use of pattern books in the generation of design. Renaissance classicism subjected these patterns to a set of increasingly demanding rules, both for the form of individual elements and for the sequence of their combination; the most obvious of these rules was the insistence on proportion, abetted by contemporary innovations in the practice of arithmetic. Whereas fifteenth-century art and architecture largely generated their own rules for form and proportion, Raphael and his contemporaries refined their perception of classicism by direct reference to ancient precedent, through the study of archaeological remains and the analysis of ancient theoretical texts. Pattern books were replaced by treatises, in which the basic units of art (membra) were subject to a critical study and emendation analogous to the operations of humanistic philology, and the syntax of their arrangement (ordines) became a rigorous grammar subject to verification by calculation.*
> *That intertwining of art and learning for which we so admire the Renaissance stems in great measure from the fact that its art, speaking, and writing subscribe to a single aesthetic, this itself rooted in Greco-Roman antiquity. The analytical vocabulary for art and rhetoric is one entity: not that the classical strain in Western culture is logocentric, for by a reciprocal action words themselves function as visual entities, as Frances Yates's work on the "classical art of memory" has revealed to illuminating effect.'l Rather, the Horatian dictum ut pictura poesis cuts both ways, especially if one translates the phrase so as to take its parallel construc-tion into account: "what goes for painting goes for poetry," and what goes for these arts had originally gone for rhetoric, the sovereign art form in the ancient word. Humanist classicism revived the ancient world's preoccupation with rhetoric and with style." Thus Raphael practiced a literary art because he practiced art; his learned friend Angelo Colocci, of whom more shall be said presently, perceived measure equally in the spatial length of the Roman foot and the temporal length of the iambic foot, and was expert about both.*[133]

After the long and mystified odyssey of Vitruvian citations and pharaphareses during the Middle Ages, a prominent humanist, Leon Battista Alberti (1404-1472) wrote his treatise *De ra aedificatoria*. Alberti's treatise was a proclaimation of the new era for

[133] (Rowland I. D., 1994)

architectural practice of thinking, building and writing. Alberti's conscientious efforts to develop an architectural treatise with a critical approach to his predecessors was a corner stone for architectural theory, and history since he also proposed a new method of looking back at architecture in time.

According to Masiero, *De ra aedificatoria* was the first philological study on Vitruvius' text, and therefore, the very first treatise on modern architecture.[134] Masiero goes further and claims that Alberti had invented a new grammer for architecture.[135]

Tatarkiewicz claims much more importance for Alberti's treatises as a turning point in the history of art. Tatarkiewicz puts forward six major aspects of transition traced in Alberti's works:[136] First of all, Alberti separated art from religion which leads him towards naturalism, instead of symbolic and transcendental understanding of art. The second aspect is Alberti's emphasis on the empirical of beauty which is based on experience. Discovery and intuition arised from experience against pure and absolute reasoning for beauty constitute the third aspect. The forth aspect is a bold one that claims that alberti was the first one who placed great emphasis on the link between beauty and art, which had been separted and theorized independently especialy by the efforts of Thomas Aquinas of the thirteenth century. Alberti's endeavour to elevate the artist to the level of intellectual workers was another important distinguishing aspect. His turn towards classicism was a significant break with the prevailing Gothic trend, as the sixth aspect.

The relation between Alberti and Vitruvius has been investigated extensively.[137] The title of the book and the structure should not persuade the reader for an obvious connection between them. A critical reading of *De ra aedificatoria* would demonstrate that Alberti had attempted to develop a new systematic understanding of

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[134] Ibid, p.82
[135] Ibid, 86.
[136] (Tatarkiewicz, 2005, p. 81)
[137] (Eck, 1998) Caroline van Eck compares three different approaches considering the structure of *De ra aedificatoria* in relation to Vitruvius' text. The first group defenses that Alberti's work was based on de Architecture of Vitruvius. The second approach proposes that Alberti had structured his work on the basis of model taken from Rhetorics. The third one offers a kind of ahistorical and neo-structuralist reading of De ra aedificatoria in order to reveal its structure through limited number of axioms. (Kruft, 1994) can be mentioned as a representative of the first group.

architectural thinking and production within the philosophical tradition and architectural grammer of his predeccessors.

At the beginning of the Book VI-Chap.I, Alberti explains his motifs to write his work. The works of many ancient authors had defeated by time, and the rest of the knowledge and works of antiques was likely to be lost completely. He appointed himself to examine those noble and uselful matters useful to mankind. What he did was to research, measure, and draw everything in order to be a master of inventions used in ancient edifices. In the end, as he put forward, he reduced what he collected and rehersed into a just method, wrote in an accurate style, and clearly explained those dispersed, unequal matters that was remote from the use and knowledge of mankind.[138]

The summery of his conception of architecture is presented in Book I-Chap.IX as follows:

> *For all Building in general, if you consider it well, owes it's Birth to Necessity, was nursed by Convenience, and embellished by Use. Pleasure was the last Thing consulted in it, which is never truly obtained by Things that are immoderate.*

It is possible to differentiate two main aspects of Alberti's work. The concrete, common and known to all side of architecture that is referred above with three terms as necessity, convenience and use. Even though they are non-measurable, time and context dependent variables, it is fact that they constitute the objective side of architecture. They belong to the realm of real forms and building.

The other side is the abstract – conceptual. It can be traced from Alberti's own words in Book IX-Chap.5 :

> *But there is still something else besides, which arises from the Conjuction and Connection of these other Parts, and gives the Beauty and Grace to the Whole: Which we call Congruity, which we may consider as the Original of all that is graceful and handsome. The Business of Office of Congruity is to put together Members differing each other in their Natures, in such a Manner, that they may conspire to form a beautiful Whole: So that whenever*

[138] (Alberti, 1986)

> *such a composition offers itself to the Mind, either by the Conveyance of the Sight, Hearing, or any of the other Senses, we immediately precieve this Congruity. ... nor does this Congruity arise so much from the body in which it is found, or any of its Members, as from itself, and from Nature, so that its true Seat is in the Mind and in Reason.*

It is possible to put that the concept of congruity is a quality attributed by the Mind of the beholder. In the same chapter Alberti writes that the judgment about beauty proceeds from a secret argument and discourse implemented in the Mind. Alberti implies a subjective beauty instead of a universal absolute beauty arised from the commensurability and proportionality of the building and its parts.

According to Alberti, design is a process that is initiated in the mind of designer. The 'buildings ideas' of the architect are reduced into related and composed lines. Just like a body, every part of the whole finds its proper place and situation in a balance between its dignity and convenience. In every edifice, whole and parts correspond to each other according to the needs and use, which creates a unique harmony for each edifice. This harmony of all the parts, which fit to their place in proportion and connection so that nothing can be added, diminished or altered without destroying the whole, is called beauty.

It is clear that the 'justness of the proportion' does not arise only the arithmetical and geometrical rules. Alberti inexhaustibly recalls 'convenience' in relation to necessities and use of the edifice. In every phase of design process, from the location of the building – region-, to the openings –apertures- Alberti pharaphares the 'convenience', which implies the Latin concept of '*decorum*' found in Cicero and Vitruvius later.

Alberti summerizes the content of architecture in three principles:[139] Number, Finishing, and Collocation. The ancients had observed particular numbers in Nature, of which arithmetical and geometrical relations provide the rules of proportions. Finishing is the mutual correspondence of the lines of the composition. The

[139] (Alberti, s. 196)

proportions are measured by means of those lines. Mitrović refers to Alberti's *De statua* to explain number (dimensio) and finishing (finitio):

> *Dimensio, Alberti explained, is the definite determination of relationships between sizes, whereas finitio determines the disposition of lines, angles, expanding and retracting sections of the body-that is, stipulates the external boundaries and lines. Dimensio determines proportions of the parts of the body that tend to be equal for all individuals of a certain kind, while finitio pertains to those properties of the shape that are characteristics or an individual.*[140]

Tatarkiewicz, however, writes that though they seem similar, the meanings are distinct in his treatise on sculpture. He mentions the same characteristics of dimensio and finito as universal and particular as well. Alberti's definitions for these terms in *De re aedificatoria*, nonetheless, indicates the same principles, the rules of proportion derived from nature (number) and the proportional relationship of the elements in a certain composition (finishing).

According to Kruft, the Vitruvian concepts of symmetry and eurythmy can be put as the equivalents of the principle of finishing.[141] Collocation is related to the situation of the several parts. Alberti puts that it is easier and better to figure it out when it is ill-done, than to set some rules beforehand. Because, collocation refers to a judgment innate in the mind.

Another important issue argued by Alberti is the dimensions and dispositions of the parts of the columns. This is of significance since it implies the forthcoming change in its description of the concept of symmetry which is usually attributed to Claude Perrault in the seventeenth century. Alberti stresses the importance of exact correspondence as to number, size, quality, form, appearance, color, and position in left and right, high and low, just like twins.[142]

It is a fact that Alberti's treatise incorporates the intellectual achievements of humanism. His use of "I language" distinguishes the birth of not only "modern individual" but also architect as an autonomous professional. Besides, despite the

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[140] (Mitrović, Leon Battista Alberti and the Homogeneity of Space, 2004)
[141] (Kruft, 1994, p. 46)
[142] (Alberti, s. 201)

long and strong lineage of Christian thelogy before him, the Platonic and Aristotelian foundations of his ideas are obvious. It is surprising to find out that he refers even neither St. Agustine nor St. Thomas Aquinas about matters related with the philosophy of art. His explanation of his design process from ideas of the building to the model of the work is of significance as one of the earliest example of modern individual conscious about his own cognitive processes.[143]

The second important treatise, *Libro architettonico*, in the timeline of architectural theory and practice during the Renaissance belongs the Antonio Averlino, called himself Il Filarete (c.1400-c.1465). Unlike Leon Battista Alberti, a prominent humanist, Il Filarete was a self-educated artist, who wrote in vernacular Italian in the form of dialogue, and added number of illustrations.[144] As can be followed from Saalman and Mallgrave, the untitled treatise of Filarete had to wait five hundred years to be published.[145]

Il Filarete endevaours to persuade the reader about the superiority of the knowledge and practice of ancients in architecture over the 'modern' buildings, in his case prevalining Gothic architecture.[146] Despite his alliance with Alberti against 'modern', according to Kruft, Filarete followed "a Christianized Greek antiquity", whereas Alberti took a pro-Roman position.[147] Filarete's version of the "primitive hut" is the very first shelter of Adam after they were expelled from the Paradise.[148] This shift seems parallel to the author's preference of vernacular Italian instead of Latin. His anti-intellectual position may have needed extra fortification along with the dedication to possible, powerful, future clients from Sforza or Medici families.

Like Alberti, Filarete says that man becomes clever when it comes to deal with needs and necessities, as in the case of constructing a shelter which is the first thing man

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[143] (Alberti, s. 207)
[144] (Biermann, Grönert, Jobst, & Stewering, 2003), (Kruft, 1994)
[145] (Saalman, 1959) reports that there is a incomplete German version prepared in the late nineteenth century, and a definitive English translation was being prepared. (Mallgrave H. F., 2006) cites, propably that English version, edited and translated by John R. Spencer and published New Haven: Yale University Press, 1965, whereas a 1972-edition is mentioned in (Biermann, Grönert, Jobst, & Stewering, 2003).
[146] (Saalman, p. 90); (Mallgrave H. F., p. 36)
[147] (Saalman, p. 90); (Kruft, p. 55)
[148] Ibid, 53; (Biermann, Grönert, Jobst, & Stewering, p. 31)

should take care of after food.[149] Filareti does not break the tradition and states that the well-proportined human body, of which members are organized according to their qualities, is considered as the measure of everything.[150]

Another important figure of the era was Francesco di Giorgio Martini (1439-1501), a skilled military engineer who made an effort for a translation of Vitruvius.[151] Di Giorgio Martini's treatise was a practically oriented handful manual for construction, which was reproduced in hundreds of manuscript copies.[152] Betts claims that it was believed that di Giorgio had surpassed even Alberti considering his reputation during the Renaissance.[153] According to Kruft, Martini states that architecture consist of ideas of mind that must be translated into drawings.[154] The roots of this idea can be found in his perspective about the senses as source of all knowledge, and primacy of sight among them.[155]

Merril states that di Giorgio Martini's architecture is a scientific discipline 'rooted in arithmetic and geometry, and realized with drawing (disegno), creativity (ingegno) and invention (invenzione)', and 'develops around the core concepts of ordination (order), dispositio (arrangement), eurythmia (proportion), décor (decorum), and symmetria (symmetry)'.[156] Betts underscores the Vitruvian content of di Giorgio Martini, appeared within the first version of his treatise, as follows:[157]

> *Book V, on temples, begins with an introduction to the art of architecture. For the most part this is a paraphrase of Vitruvius on the education of the architect and the nature of architecture. The architect must be practico e sciente because his profession demands fabrica e raciocinazio. He must be a natural genius and learned in many disciplines, including drawing, history, music, arithmetic, etc. Architecture itself is described in the strictly Vitruvian terms of ordenazione, disposizione, simmetria, icnographia, ortografia, scenografia, and so forth.*

[149] (Filarete, 2006) in (Mallgrave H. F., 2006).
[150] (Filarete, p. 38)
[151] See (Biermann, Grönert, Jobst, & Stewering, p. 31), (Clarke, 2002, p. 331), (Kruft, 1994)
[152] (Merrill, 2013)
[153] (Betts, 1971). Betts provides also the content of di Giorgio's books in accordance with his references.
[154] (Kruft, p. 58)
[155] (Carpo, 2001)
[156] (Merrill, p. 4)
[157] (Betts, p. 13). Undercores belong to Betts. "Icnografia" has been used as it is in the text.

The arithmetic and geometry rooted architectural theory of di Giorgio Martini proposes a method for composition and construction based on the human body, modularity and standardization.[158] His analysis of the proportions derived from the human body claims excessive analogies between body and building parts.[159] Masiero interprets those anologies as an aesthetics recomposing human being, architecture and universe by means of the human body figure.[160]

Betts put forwards that[161]

> *Francesco di Giorgio uses the human analogy in two ways. First, it is a source of general rules of symmetry and proportionality. Vitruvius used it in this same way, so Francesco di Giorgio must have understood the human analogy as the basic principle of ancient architecture and thus the essential link between the ancients and the moderns. Second, he develops the theory as a prescription for formal and functional composition.*

Francesco di Giorgio Martini put an effort to correspond the needs of practice while promoting the profession by means of textual theory. In this respect, the illustrations had a key role, which was derived from his opinion about the function of the senses, and particularly vision. His contribution to the role of architectural drawing as an essential part of design is of great significance.

Betts and Merrils's claims about the development of Francesco di Giorgio Martini's architectural theory around Vitruvian concepts of order, arrangement, symmetry, eurythmy, aptness and economy are not supported with any further proof. Betts indicates that the third version of his treatise is much more improved, most probably, after having got to know the treatises of Alberti and Filarete.[162] Furthermore, Betts himself does not refer to those Vitruvian concepts while providing the content of the the later versions.

It is obvious that Leon Battista Alberti, di Giorgio Martini and Il Filarete awakened the Renaissance interest on architectural thinking on architectural practice. It is

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[158] (Millon, 1958)
[159] (Biermann, Grönert, Jobst, & Stewering, p. 41)
[160] (Masiero, p. 84)
[161] (Betts, p. 55)
[162] Ibid, p.100

possible to put that they represent two faces of that reborn tradition of thinking and writing on architecture: Alberti, as an intellectual admirer of Roman culture, produced a structured text in Latin, addressed literati and humanist, without any illustration.[163] Alberti's work had been published in 1485-6. Filarete and di Giorgio Martini, on the other hand, used a narrative form of literature written in vernacular Italian and used illustrations.

De re Aedificatoria can be considered as the beginning of literary analysis of architecture, whereas Filarete gave way for a tradition of visual guide / dictionary of architecture by means of *Libro architettonico*.

> *Alberti constructed - with the exception that we have already seen—a discourse that was normative, Scholastic, and aniconic. The scion of another medieval tradition, Filarete entrusted his treatise to an illuminated codex, a deluxe manuscript that was intended for a different audience and different forms of circulation and diffusion than was Alberti's.*[164]

Although all of the succeeding treatises had been illustrated, the echoes of these two approaches have continued. In this respect, it would be helpful to distinguish the followers of these approaches. But before going further it would be useful to present the translations and editions of Vitruvius text which had an enormous influence over the both tradition.

3.4 Vitruvius, Remastered[165]

As it can be followed from the preceeding parts, the Virtruvius and his work De Architectura was known in the Medieval Ages. The text had survived by means of either manuscripts by chance containing the De Architecture, or quoted / borrowed / pharaphrased lines. Becadelli's notes on the recalled Vitruvius' text as a technical manual for the renovation of the castel is, nevertheless, reminds the double discourse mentioned by Rykwert: Vitruviuan discourse, which was public, literary, and running

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[163] (Kruft, p. 50) underscores the first Italian translation as the first illustrated edition, produced in Florence in 1550. In (Biermann, Grönert, Jobst, & Stewering, 2003) second translation in 1565 is cited.
[164] (Carpo, 2001)
[165] Vitruvian studies have been almost autonomous field of research in not only architectural history but also philology. Beside published editions and translations, unfinished and/or unpublished ones have been mentioned in different academic studies. In order to narrow the scope of the study only the published and academically accepted versions are cited in this dissertation.

among the employers; Euclidian discourse, which was private, even secret, working in the construction site.[166]

The annals of the Milan Cathedral reveals how the Euclidian discourse had been working on site. For the use of Vitruvian discourse it was necessary to wait until firstly the Italian Renaissance that encountered barbaric and "modern" Gothic architecture with classical Greek and Roman way of building, and secondly Alberti's structured literary analysis and synthesis of that content.

Giovanni Sulpicio (Sulpitius) is mentioned as the editor of first printed version of *De Architectura libri decem* in c.1486.[167] Fra Giovanni Giocondo undertook a great work of editing Vitruvius, which was published in 1511.[168] Giocondo's edition was containing 136 woodcuts, which was added four more in 1513 edition, explanations, a table of mathematical symbols, and a glossary for Vitruvius' terms in order to make the text readable and understandable according to Ciaponni:[169]

> *Giocondo could combine his experience as a field archaeologist and practising architect with a quite sophisticated philological method. Neither Alberti, more philosophically than philologically minded, nor Sulpicius, a grammarian with purely archaeological and literary interests, could bring to the text of Vitruvius all Giocondo's expertise.*

The first Italian translation of Vitruvius with a commentary was published in 1521. Cesare Cesariano's translation with long commentaries introduced the Vitruviuan theory of Architecture to layman.[170] According to Kruft, by means of Cesariano's northern Italy based career, which determined the character of the illustrations, and an extensive commentary, a direct link had been achieved between current practice and Vitruvian tradition.[171]

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[166] See footnote 109 above.
[167] (Biermann, Grönert, Jobst, & Stewering, 2003), (Vitruvius, On Architecture: Books I-V, 1931), (Kruft, p. 66) writes that this edition was unacceptably corrupt, and the 1496 edition of this version was including 5 basic illustrations. (Ciaponni, 1984) indicates that Sulpicuis was a grammarian. He intented to utilize the practical / technical side of the text in relation to a theatre building, which was desired by some literati of Rome.
[168] (Biermann, Grönert, Jobst, & Stewering, p. 60), (On Architecture: Books I-V, 1931, p. xxxiii), (Kruft, p. 67).
[169] (1984, p. 74). Ciaponni makes a delibetare examination of Giocondo's work. The philological comparison with the translations of Krohn and Rose is useful.
[170] (Biermann, Grönert, Jobst, & Stewering, p. 66)
[171] (Kruft, p. 68)

The most relevant and, most respected, study on the the Cesariano's Como Vitruvius belongs to Carol Herselle Krinsky.[172] After having described the genealogy of the Vitruvius' manuscripts and preceeding editions of De Architecture, Krinsky explains the approach of Cesariano, who did not cite or borrow from any of texts by Alberti, Flarete and Francesco di Giorgio whether acknowledged or not.[173]:

> *Instead of writing an independent treatise using Vitruvius or other, ancient writers as points of departure, as fellow artists Ghiberti, Alberti, and Francesco di Giorgio had done, Cesariano felt that his task was to interpret and clarify the source of inspiration itself. His book includes the first complete commentary on the contents of Vitruvius' Ten Books done by a scholarly professional artist and architect, as well as the first known printed translation.*

In 1524, Francesco Lutio of Castel Durante (Durantino) made a new translation, which was mostly borrowed from Cesariano's text and Giocondo's illustrations.[174] After the Italian translations, first different version, *Medidas de Romano*, outside Italy, appeared in Spanish, as a summary in dialoge form, by Diego de Sagrado in 1526.[175] Biermann and et.al. put that the treatise, which was a typical of the period, presents a dialogue about kind of nationalized orders of the columns with an anthropomorphic approach, and proportions.[176] The next Spanish translation was made by Miguel de Urrea, and published in 1582. Urrea's translation contains chapter titles and relatively poor illustrations compared to Cesariano's version.[177]

The next vulgar Italian translation of the five book by Giovanni Battista Caporali was published in 1536. Dinsmoor claims that Caporali's translation was an independent one containing seventy-eight illustrations of Cesariano, some of which were reduced and varied.

Another cornerstone of the Vitruvian tradition in the Renaissance was the annotations of Philandrier on Vitruvius, published in 1544. Mitchell and Marmor

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[172] (Krinsky, Cesare Cesariano and the Como Vitruvius Edition of 1521, 1965)
[173] Ibid. p.57, 62
[174] (Kruft, p. 69), (Ackerman J. , 1983), (Krinsky, 1965, p. 84) Krinsky, however, claims that the text was not new at all, with some spelling corrections.
[175] (Carpo, 2001, p. 111), (Dinsmoor, 1942)
[176] (Borngasser Klein, Spain, 2003), (Kruft, p. 219). The exaggrated anthropomorphic approach of Sagredo is not less than Francesco di Giorgio.
[177] (Vitruvio, 1582)

writes that Philandrier's work was the first commentary, which was made on critical passages of Vitruvius, printed separately from *De Architectura*.[178] Philandrier, as a man of letters and commentator of the classical texts, preferred a Latin text with original but didactic illustrations for his annotations.[179] Because for Philandrier

> *verbal discourse did not demand either supplements or substitutes. Architectural objects and archaeological remains were better described by words than by the artist's pen or the sculptor's chisel.*[180]

The Martin Vitruvius, the French translation of the ten books was, published in Paris, in 1547. Jean Martin, who had translated Sebastiano Serlio's Book I, II and V into French, was of great significance. He played a key role in the reception of Italian Renaissance and Classical culture in France.[181] Carpo explains the difficulty and importance of the work as follows:[182]

> *Toward the end of the 1540s, the notion of vernacularization was the center of an ideological and theological debate. The translation of the Scriptures into modern languages was promoted by some and opposed by others—an antagonism soon to have radical consequences. But in a sense the entire project of the diffusion of Renaissance classicism in France was also part of a translational phenomenon. Metaphorically, this meant the translation of ancient architectural models into modern compositions based on the example of antiquity but transfigured by the rules of a new language (in the same way, many humanists considered translation a form of literary imitation). Literally, this meant the translation into French of the foundational texts of classical architectural theory. The technical lexicon of Renaissance architecture comprised a polyglot vocabulary of Greek, Latin, neo-Latin, and Italian terms that in many cases were without a French equivalent.*

Martin Vitruvius was based on Fra Giocondo's edition and Cesariano's translation, and Serlio's treatise, despite the new and original illustrations of Jean Goujon, a

[178] (Mitchell & Marmor, 1996)
[179] (Dinsmoor, p. 72), (Carpo, 2001, p. 57)
[180] Ibid. p.57.
[181] (Freigang & Kremeier, 2003)
[182] (Carpo, 2001, pp. 71-72)

practising artist-architect, with whom Martin made a contribution by developing a French terminology of architecture.[183]

The German translation of Vitruvius followed the Martin Vitruvius. In 1548, Walter Ryff (Rivius), a doctor and mathematician, published *Vitruvius Teutsch*, after having presented a Latin version and and a compendium on the teaching of architecture in 1543. Henry Wotton in the preface of The Elements of Architecture issues a commendation for Ryff's work as the most elaborate translation in any vulgar speech of the world.[184]

The *Vitruvius Teutsch* indicates a noticeable change in the course of architectural history in German-speaking regions of Europe, which were a significant part of the continent. Considering the population it had reached, the Giocondo and Cesariano origins of the *Vitruvius Teutsch* somehow lost their importance compared to the contributions it made. Biermann et.al. claim that Ryff's annotated translation had made the "bible" of post-medieval architecture by introducing Renaissance to the German-speaking master builders who had no command of Latin.[185]

The last known Italian translation of Vitruvius in the sixteenth century belongs to Giovanni Battista Bertano (Bertoni). In 1558 Bertano published *Gli oscuri et dicili passi dell'opera ionica di Vitruvio*. Kruft mentions that Bertano's main preoccupation was to clarify 'obscure and difficult' passages of Vitruvius' text.[186] Payne, however, indicates that Bertano had treated the Ionic order in isolation from the rest of *De Architectura*.[187]

There are two seminal commentaries on Vitruvius in Renaissance. Before Daniele Barbaro's 'ultimate translation and commentary' was published in 1556, the fundamental reference for the Vitruvian studies was Guillaume Philanderier's "*In*

[183] (Freigang & Kremeier, p. 203), (Kruft, p. 70)
[184] (Wotton, 1651)
[185] (Evers & Zimmer, 2003)
[186] (Kruft, p. 72)
[187] (Payne A. A., 1992)

decem libros M. Vitruvii Pollionis de Architectura Annotationes" in Latin, published in 1544 in Rome.[188]

Mitchell and Marmor mention the philological character of Guillaume Philanderier's commentary on passages selected, and issued separately from the main text.[189] According to Carpo, Philandrier took an ideological stance against the established trend of illustration, even though he had embraced the product of that trend, "visualisation of the five architectural orders".[190] The popularity and influence of the "Digression" he inserted into the 1552 version of his commentary has gone beyond the overall effect of his work. In this part, Philandrier presents the architectural orders with reference to his on-site investigations and interpretations.[191]

One of the most important translation of Vitruvius with a commenary was made by Daniele Barbaro, and published in Venice, in 1556. According to Kruft, with Barbaro's ambitious work, in collaboration with Palladio, was a new phase in exploration of Vitruvius.[192] Daniele Barbaro was a foremost humanist of his time, patron of arts, mentor of Palladio, politician, and Patriarch of Aquileia. Mitrovic states that it was Rudolf Wittkower's seminal work "Architectural Principles in the Age of Humanism" that has redrawn Barbaro's commentary on De architectura into circle of academic attraction, despite the small number of published works disproportionate to the attention given to the commentary.[193] According to Kruft, Barbaro's translation and commentrary was the most thoughtful and careful one of the whole sixteenth century.[194] Kruft underscores that the later editions of Barbaro's work with new insights had become the preferred texts to understand Vitruvius.[195] Mitrović supports this opinion and claims that Barbaro's commentary was the

[188] (Lemerle, 1998)
[189] (Mitchell & Marmor, 1996, p. 155)
[190] (Carpo, 2001, p. 58)
[191] For Philandrier's interpretation and differecences from Serlio see (Lemerle, 1998) and (Carpo, 2001).
[192] (Kruft, p. 72)
[193] (Mitrović, The Theory of Proportions in Daniele Barbaro's Commentary on Vitruvius De Architectura, 1996) Mitrović's unpublished dissertation is a cautious work containing number of archieval information and theoretical insight about Barbaro and Vitruvius.
[194] (Kruft, p. 86)
[195] Ibid., p .86

ultimate one in Renaissance, since, with reference to Manfredo Tafuri, "it was the first based on the full understanding of Latin text".[196]

Barbaro's translation and the commentary dominated the Vitruviuan tradition in architectural printing, and consequently theory of the 16th and 17th centuries. The next turn in the course of Vitruviuan body of knowledge was going to be driven by Claude Perrault and his seminal French translation and commentary in 1673.[197] Perrault's theory and practice importance cannot be limited with his unorthodox interpretation of the architectural orders and commentary on Vitruvius. He is of great significance as an intellectual who embraced the new epistemology of scientific revolution and rationalist thinking in order to develop a new architectural theory and practice.

As a matter of fact, from the second half of the fifteenth century on, the architectural treatises cannot be investigated independent from the achievements of scientific developments, and consequently, the new epistemology. Although it would not be accurete to claim that their ideas had become the mainstream or the canon, the works of Copernicus, Erasmus of Rotterdam or Thomas More were finding echo among the intellectuals. In this respect, the following chapter shall examine the succeeding architectural treatises and the Vitruvian tradition in relation to the consequences of the scientific developments and the new classification of knowledge and production.

Alberto Perez-Gomez, in his Introduction to the Claude Perrault's seminal work *Ordonnance for the Five Kinds of Columns after the Method of the Ancients*, demonstrates the totalistic nature of the architecture and the task of the architect predeceding Claude Perrault:[198]

> *Unlike that of his medieval predecessor, the Renaissance architect's task was the conception of the lineamenti, or overall geometric figure, of the architectural work. Architecture thereby became endowed with a specific theory, which was, nevertheless, a*

[196] (Mitrović, Palladio's Theory of the Classical Orders in the First Book of I Quattro Libri Dell'Architettura, 1999)
[197] For detailed information about the publications see the list of (Isard, 2014) about the publications sequence of architecture books in Italy between 1400-1615, "Editions of Vitruvius Pollio's De Architectura in the Collection of the Canadian Centre for Architecture" by (Gordon, 2010), and (Granger, Introduction, 1931).
[198] (Perez-Gomez, 1993)

> *nonspecialized field of endeavor in the modern sense. It belonged to a universe of discourse that was founded on a totalistic understanding of reality, derived from myth and philosophy; its content was meaningless apart from the traditional understanding of a hierarchical and living cosmos (physis) that the Renaissance had inherited from antiquity.*

Perrault published Ordonnance in 1683, ten years after his translation of *De architectura*, right after fifty-eight years after the publication of Vincenzo Scamozzi's great work "*L'idea della Architettura Universale*". It is a fact that, two centuries between the *De re aedificatioria* and *Ordonnance*, the western culture had gone through a spectacular transformation. This transformation had particular turning points that could be marked by the invention of printing technology, scientific revolution, and the re-classification of knowledge, and consequently science and art. The works of Sebastiano Serlio, Andrea Palladio, Vincenzo Scamozzi and Claude Perrault can be called as the litmus papers indicating the turning points of that transformation particularly in architecture.

3.5 Visual Canon vs. Theory

Gutenberg's invention, the printing machine with metal moveable types, was the dawn of not only a new age in scientific and technological development but also a new way of thinking and cognition. The question was not only the possibility of mass production of written material, but also the visual illustrations.

> *The mechanical reproduction of images was to have important and long-lasting consequences for the transmission of scientific knowledge, and even more for technical subjects and for the visual arts. Architecture was no exception. Renaissance architectural design is based on the imitation, with varying degrees of creative license, of a certain number of ancient models. In order to imitate the visible form of an architectural model, one must have seen it. And in order to see a building, from antiquity until the diffusion of the woodcut, there was but one way: one had to see that building in person. Buildings could not travel, so people had to. A new availability of trustworthy, portable, and inexpensive printed images of architecture greatly facilitated the imitative task of Renaissance architects.*[199]

[199] (Carpo, 2001, p. 6)

Those printed images united and embodied the oral tradition of construction site and intellectual legacy of written culture. They were, however, marking a particular dichotomy in the development of architectural theories: the visualisation and consodilation of the Architectural Orders, as the canon, against the rhetorized body of architectural knowledge.

The rise and popularity of the visually enriched treatises cannot be explained as a mere result of the invention of printing technology in the fifteenth century.[200] The illustrated architectural books bridged the gap between the written and oral traditions of architecture. As matter of fact, words in Latin was for the intellectuals, whereas illustrated vulgar Italian texts were meant for clients and master builders. It is possible to claim that those illustrated books had developed a common language among clients, master builders, and intellectuals of Renaissance.

Sebastiano Serlio, an artist and architect, was an important figure in this process. He acted like keystone between the practical needs clients and builders, and architectural principles derived from abstract and obscure narration of Vitruvius and the examination of the ruins of classical antiquity, particulary in Rome.

Serlio's ouvre complete was supposed to have seven books. Each book had different topic. The first published book, which also presented the overall scope of the treatise, was printed as the Book Forth in 1537. In the introduction of the Book IV, he writes that he did not only address "those of deeper conceit" but also "each indifferent man of wit" who is "more or less addicted to" architecture and "might conceive" the rules of architecture.[201] Kruft underlines Serlio's distance against theory and philosophy of his subject in developing his "pictorial compendium of architecture" with "succinct and comprehensible language" that would provide "direct aid at the drawing

[200] For the relation between printing technology, witirng and the content of architectural theory in Renaissance see (Carpo, 2001).

[201] (Serlio, 1611). Dinsmoor's translation is as follows: "Benevolent reader, I have prepared some rules of architecture, thinking that not only the more intelligent would comprehend them, but that also those who are less ingenious could understand, according as they are more or less inclined to such an art. These rules are divided into seven books, as hereunders hall be set down..." (Dinsmoor, p. 66) A useful comparison with the structure and intentions of Alberti is made by (Hart & Hicks, Introduction, 1996)

board".[202] With this approach, Serlio was the one who had systematized the theory of five orders for the first time.[203] Carpo describes Serlio's system as follows:[204]

> *The architectural orders were not of course a modern invention, but Serlio transformed an inheritance of diverse structural and decorative elements into a highly formalized language subject to the same rules (grammatical, syntactical, rhetorical, semantic) as linguistic discourse. Serlio's orders supplied the basic structural grammar for Renaissance and modern methods of architectural composition. They provided an articulate repertoire (paradigmatic and syntagmatic) of standardized and repeatable architectural components that could be combined in accordance with strict rules and that functioned as semantic signs. The Serlian orders are architectural microdesigns, ready for use but with some assembly required. The user must select, combine, and construct the parts. The scale of the Project is just about the only variable not dictated by the system.*

Sebastiano Serlio's works were translated into French, Dutch, Flemish, English, and German almost immediately.[205] This "prompt" response can be read as the acceptance for the catalogued and classified illustrations as a source of architectural information.

> *As a result of his [Serlio] illustrated books, discussions on archaeological questions and current building projects, which until then had been the preserve of exclusive circles of Roman architects and clients, became a topic of public interest.*[206]

Serlio's publications, which were between 1537-1575 with a number of reprinting and translations, played a primary role during the second half of the sixteenth century. On the other hand, there is another unique figure in architectural history whose treatise's impact can be compared with influence of Serlio's books in time and space: Andrea Palladio and his exceptional work *Quattro Libri dell'Architettura* - The Four Books of Architecture, which was published in 1570.

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[202] (Kruft, p. 73)
[203] Ibid. p.75
[204] (Carpo, 2001, p. 49)
[205] (Dinsmoor, p. 74), ff.92: "The first and second books were republished in Italian at Venice about 1551, and in 1560, a s well as in the collected quarto editions of 1566, 1584, 1600, 1618, and 1619, and in the Italian-Latin folios of 1568/69 and 1663. A Flemish translation appeared at Antwerp in 1553; Dutch translations at Amsterdam in 1606, 1616; a German translation at Basle in 1608; and an English translation at London in 1611."
[206] (Biermann, Grönert, Jobst, & Stewering, p. 78)

The Four Books of Architecture is among the most influential, if not the most, architectural books of all time.[207] The first book contains the building materials, parts, and construction techniques. As a matter of fact only a small portion of the First Book, between the chapters of XIV and XVIII, covers the the canon of architectural orders. Those chapters, beside the Second Book in which Palladio's own designs illustrates the topic of private houses, nonetheless, have been the most referred and investigated parts of *Quattro Libri dell'Architettura*. The Book Three focuses on the public works and buildings. The forth book is about the temples. Palladio himself writes that he had searched, inspected and measured reliques of the Roman edifices minutely with utmost diligence in order to first comprehend and then reduce what he got into design.[208]

Palladio's illustrations of his designs are of great significance since they demonstrate a mind shift. Instead of the pictorial depiction of the ancient masters or their contemporary imitations, architect represents his architectural authority by embodying his ideas in buildings. Howard mentions the revisions of the early drafts during the preparation of the treatise, beside the differences between the illustrations and actual buildings, which makes it difficult to consider the book as a guide to Palladio's buildings. According to Howard[209]

> *... the real value of the Quattro Libri is as a reflection of Palladio as a critic of his own work. Neither graphic nor written descriptions can be taken literally. Yet when compared with the actual buildings they throw light on Palladio's search for a complete architectural system. For the sake of the books' internal stylistic consistency and didactic function, external conditions were eliminated whenever these led to compromise solutions. Thus Palladio's own specific experiences were translated into a series of ideal models for more general application. He obviously saw his treatise as a work of art in its own right, and it was perhaps his greatest single achievement.*

As it can be followed, the visual material has become either a structuring part of the architectural text, or the printed by itself within the second half of the Cinquecento.

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[207] (Howard D. , 1980), (Mitrović, 1999)
[208] (Palladio, 1965), Preface of the First Book.
[209] (1980, pp. 227-228)

In this period it is possible to mention three different attittudes. The first attitude produced a visual documentary of architectural orders alongside the prevailing building practice. Antonio Labacco[210], Hans Vredeman Vries[211], and Antonio Rusconi[212] were the authors of such treatises.

The second one, which can be exemplified by the works of Sebastiano Serlio, Hans Blum[213], Iacomo Barozzi da Vignola[214], and Jean Bullant[215], and John Shute[216]. They utilized the illustrations in order to complement the text. Daniele Barbaro, Guillaume Philanderier, Pietro Cataneo, and Philibert de L'orme and Vincent Scamozzi were the followers of the third approach, which had addressed a higher intellectual level with the content and form of the treatise. Their treatises contained a small number of illustrations, if not at all.

The role and importance of the visual material cannot be separated from the content they illustrate. Furthermore, the historical and theoretical interest for those illustrations is directly related with the "promoted" content of those treatises. It is a fact that the "measurable" content and forms of the architectural production have been the most popular topic since the Antiquity. The symmetry and proportions of the building parts, which were systematized as the Theory of Orders, have been placed at the very visual center of the architecture as the incorporation of the observable and measurable cosmological order.

Vaughan Hart lists a number of conditions characterizing the atmosphere of the early Italian Renaissance. According to Hart, they encouraged the promotion and popularisation of the *all'antica architecture* and its Orders:[217] First of all, the search

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[210] (Libro d'Antonio Labacco appartenente a l'architettvra nel qval si figvrano alcvne notabili antiqvita di Roma, 1570)
[211] (Architectura Oder Baunung der Antiquen aufs dem Vitruvianus, 1581)
[212] (Della Architettura, 1590). (Kruft, p. 72) indicates that Rusconi hade produced an exemptional document by excluding the textual body of Vitruvius' De Architecture. The texts were paraphrase of Vitruvius and added by the publisher.
[213] (Qvinqve colvmnarvm exacta descriptio atque deliniatio, cum symmetrica earum distributione, 1550)
[214] (Regola Delli Cinqve Ordini D'Architettura, 1563), for English translation see (The Five Orders of Architecture, 1889).
[215] (Reigle generalle d'architectvre des cinq manieres de colonnes : à sçauoir, tuscane, dorique, ionique, corinthe, & cõposite : & enrichi de plusieurs autres, à exemple de l'antique, 1568)
[216] (The First and Chief Grounds of Architecture, 1563)
[217] (Hart & Hicks, Paper Palaces : the Rise of the Renaissance Architectural Treatise, 1998), in Introduction by Hart.

for a national identity was an important quest among Italian humanists. The Gothic, called modern back then, culture of the north had to be encountered with Italian identity. The reinterpretation of Platonic concepts, especially bodily proportions and harmony which was assimilated through the "Vitruvius Man", contributed to architecture on its path to be a Christian enterprise. In spite of the Euclidian secrets of Gothic building practice, the rules of the Orders offered an accessible set of principles that can be observed, measured, and most importantly applied by a diverse body of people, including not only papal and ducal patrons, but also the secular grades of the society like middle-ranking merchants, or even the poors. The printing technology made those easy-to-use design patterns accessible even from the remote lands in Europe, in their own languages.

On the other hand, the authors of those architectural treatises had lavished the "content" and "meaning" of architecture. Alongside the proportions of human body, Vitruvius explains the historical and symbolic meaning of Caryatids in relation to their function, in I,I,4. Beside the intangible issues and aspects of architecture and building practice, which might be categorized under the "decorum / appropriateness" in general, public concerns, technological and construction related issues were discoursed. Alberti, Filarete, di Giorgio Martini and the following authors of the Renaissance, underline the importance of the hygiene in relation to the selection of site, organization of streets, building orientation, climate- light control, materials, and construction techniques. Financial concerns, agriculture, irrigation, defence, and transportation were not of lesser importance for those authors, either.

That visual – practical content, particularly the architectural orders in relation to the divine harmony of universe (macrocosmos) incorporated in the human body (microcosmos), and the origin mythes constitute the main body of contemporary literature on architectural history and theory. The initiation and transformation of those contents between the fifteenth and seventeenth centuries present a multi-layered situation. On the first layer, there were the "Paper Palaces", as Hart puts, "illustrated in these treatises, behind the façades of which "lies the enduring need to forge links with the origins of European civilisation through the medium of

architecture."[218] The second layer consists of the endeavours of Italian humanist to elevate architecture to the level of liberal arts by means of the writing down the theory and knowledge of the art of building. There lies the dissociative distance between the form and content of architecture on the third level.

It is a fact that even before the invention of mass printing technologies, the visual power and influence of the "form" over the abstract and conceptual content of architecture was exhausting. The lineage of Vitruvian translations, commentaries, and other architectural treatises during the Renaissance demonstrate that the Vitruvian conceptualization of architectural content with reference to philosophical investigations of classical antiquity was anything but a part of architectural theory for a long time. The six concepts of Vitruvius had to serve only as constituents of architectural rhetoric of which main objective was the theory of proportions, and eventually Architectural Orders.

3.6 The Invention of Different Architectures

The discoveries and philosophical investigations of Renaissance settled a new and productive ground for the achievements of forthcoming Enlightenment. The amount of information about the material things was increasing parallel to the knowledge, and specialization. In this respect, it was compulsory to re-explore and organize the geographies of that knowledge, the scientific and philosophical fields of operation. The science, art and craft were about to be separated as distinct fields of human knowledge and production.

Nicolaus Cusa and Giordano Bruno introduced the possibility of infinite universe, where neither earth nor sun has a privileged place. The Idea of perfect and ordered universe was in question. The discoveries of Copernicus, Galilei, Brahe, and Kepler initiated a great mind shift. The technical achievements alongside with the rise of scientific thought introduced a new approach to the nature. The universe, nature, speaks with the absolute language of mathematics, the knowledge produced on it through the scientific methods could make it possible to comprehend, control, and change it. The mankind was going to encounter its weakness and desperateness with

[218] (Hart & Hicks, 1998, p. 29)

its reason and technique and scientific methods. The history and the achievements of the mankind indicate a progress in every aspect of human existence on earth.

According to the new classification of knowledge and human production, architecture is a kind of mixed mathematics, a practical science. It is practical, useful, and pleasure giving at the same time. Building elements are subjected to crafting, whereas because of the issue of proportionality requires mathematics and geometry. It should be not only useful but also beautiful. The beauty of proportions and architectural orders were also in question, thanks to Claude Perrault.

Briefly, the local benchmarks of the period were the denial of the ancient authority, replacement of cosmology by scientific methods and technical expertise of the professional, and the rejection of proportion, which covers a symmetry and eurythmy as well, as the basis of beauty. Perrault insisted that the judgement and taste raised by proportions, and the beauty of orders derived form them, could only be custom based. When the cultural preferences change, the orders, and subsequently taste changes. That is why during all these ages there has been no agreement or consensus over the orders. It is obvious that he had developed an awareness on a kind of Gestalt of the forms that can be perceived, measured, and judged by means of association and comparison.[219] He, nevertheless, tried to develop a universal system of proportions in order to prevent the irregularities in practice, through standardization and technical expertise.

Perez-Gomez puts forward that it was Jean-Nicolas-Louis Durand who "championed and radicalized" that scientific perspective, which was not neither fully grasped nor accepted until then.[220] In fact, it was the nineteenth century theorists and architects who popularized and championed the foundation stones of Modern Architecture that had been paved during the Renaissance and Enlightenment. The idea of being "true to the material" had been spoken by Scamozzi, but Eugène Emmanuel Viollet-le-Duc has been credited for. The ideas of organic architecture and total work of art were framed by Lodoli, but Frank Lloyd Wright and Bruno Zevi were renown as the

[219] (Perrault C. , 1993, p. 160)
[220] (Perez-Gomez, 1993)

spokesmen. It is possible to name other examples. These connections, however, indicate a continuity, a progress, as it was prescribed and aimed at by the intellectual such as Bacon and Perrault.

There was, on the other hand, a price which had to be paid in return. The rejection of the foundations created a crisis of meaning. The lack of framework or background pushed the theoreticians towards investigation of consitutent parts. Depending on the subject matters of the period, either particular elements or topics were put forward or analogies were developed. The promotion of structural rationalism or functionalism; utilization of new and advanced material and construction technologies; linguistic, psychoanalytic, informatics analogies can be mentiones in this respect. Despite that they had demystified the cosmology behind the architecture proposed by Vitruvius, Claude Perrault and his followers did not reject his legacy about the content and language developed on that metaphysics. Order, disposition, proportion, (decorum) appropriateness, and economy have been at the core of the theory, and much more, in education.

The contribution of Gestalt Psyhcology has been all about the disposition of the elements with respect to a kind of order towards which human perception and cognition have a tendency. The very basic essence of the ethical discussions have been founded on the idea of being apt to purpose, custom, rights, etc. The contemporary researches investigating the probable, possible and computable relations among the elements through the manipulation of their way of coming together, with respect to mathematics, or formal features. They examine the dispositions and proportionality of the elements in terms of their form, value or function. The concern of sustainability is the projection of appropriateness and economy with respect to the expanding knowledge.

In this context, every technological innovation, scientific theory, political argument, or philosophical discourse is welcomed and celebrated as the revelation of architecture from the pit of meaninglessness. It should be, however, figured out that every single attempt to “develop a new theory” is just like trying to construct different sentences by using the same consituent in order to express the content.

CHAPTER 4

CONCLUSION

4.1 Dissociated Identity of Contemporary Theory

The the emancipation of architecture from cosmology and metaphysics of the antiquity caused a significant crisis in architecture in the late 17th century. It was a crisis of meaning and legitimacy, because that cosmology and metaphysical knowledge, the theory back then, had been defining identity of architecture, as a legitimate knowledge and liberal art.

Claude Perrault diclosed the crisis by stating that the taste and beauty of orders were custom and culture based. He set the new rules for the game of architecture. Every architect who knows how to build can master the rational and measurable quality. The taste, nevertheless, was a distinguishing quality that requires knowledge and reflection upon the work. This was a statement putting architectural practice under the magnifying glass of the architectural theory. Therefore, the building itself displaced the Vitruvian set of concepts as the content of architecture.

This break with the cultural and intellectual background issued very basic questions concerning the origin and meaning of this art, what to be expressed as a content, the forms of representation, and taste of/for architecture. In order to comply with this new task, the theorists substituted technological, scientific, psychological, or cognitive models for the previous metaphysic theory. Those new models, however, applied onto the old concepts and terminology. That is to say, the tools of the new model were implemented in order to describe and explain the conceptual content and the terminology of the previous model that remained same. The exploration of that content demonstrated that it contains the same not only terminology but also the concepts with Vitruvian tradition. Actually, that Vitruvian content was the architectural interpretation of Greek and Roman philosophy.

The endeavours to prove the significance and the legitimacy of architecture by means of the prevailing and fashionable models continued until the second half of the 20th

century.[1] The linguistic, semiotic, biologic, informatic, and computational models have been considered in order to explain and re-construct the architectural –physical and conceptual – language.[2] Moreover, the over-plural, multi- and inter-disciplinar, but over-specialised domain of architectural research and practice, have obscured the borders and crossings between not only models and architecture, but also the models themselves. Metaphorically, this is a new kind of knowledge body, in the form of hypertext. In this new context, every single entity is a kind of folded and compressed universe of knowledge in relation to infinite number of others. It offers a horizontal expansion of every bits and bytes of the accumulated knowledge.

In this vast information cloud, there are only instant positions, instead of solid theories. Every distinct position, however, communicates through the same conceptual content and terminology. It is composed of proportion, order, character, style, form, aesthetics, taste, function, program, economy, whole, parts, and relations, etc,. Unfortunately, the radical but discursive break with the intellectual background, and the cloud context of this era initiated a dissociative distance between those concepts and their genuine origins. This dissociative distance diminishes the connections between the concepts and their source or very essence. It forces to invent new and temporal meanings for each instant position. In this context, it is almost impossibe to develop a healthy and sustainable communication.

In the final analysis, all these theoretical positions are uttering something, which is mostly a method for the production, but implying another in order to prove that they are occupying with meaningful and legitimate architecture. This is the vicious circle of overly introverted and self-repeating architectural theories since the 18th century.

Regarding this communication error, the language and content of architecture was explored with respect the philosophical origins and the Vitruvian interpretation in the third chapter. It was the second fold of the study to present the continuity of the

[1] For the psychoanalytical search of meaning by means of literature, see (Bachelard, 2013). Norberg-Schulz had made a considerable contribution this search, (Norberg-Schulz, Meaning in Western Architecture, 1975), and (Norberg-Schulz, Genius Loci: Towards A Phenomenology of Architecture, 1979).

[2] Besides many treatise and theory books, there are comprehensive antologies and compilations that present the ethos of the period clearly, see (Hays, Oppositions Reader: Selected Readings from A Journal for Ideas and Criticism in Architecture 1973-1984, 1998), (Hays, Architecture Theory since 1968, 1998), (Leach, 1997), and (Nesbitt, 1996).

Vitruvian content and its roots throughout the history despite the paradigm shifts. Actually, it was aimed to show that the dissociation of the Vitruvian content, of which objective was the unity of conceptual knowledge and practice, to distinct and even autonomus domains within architecture deepened the meaning crisis.

For the sake of the objectives of this dissertation, it is of importance to answer three critical and interdependent questions: Is it necessary to set a universal language for architecture to fix that communication error, which also might be an opportunity for innovative and creative propositions for the theoretical and practical issues? Could that Vitruvian content, formulated in six concepts, make any help in setting that universal language for architecture? Could that Vitruvian language be useful in dealing with the crisis of meaning and legitimacy?

The history tells that progress and transformation can only be possible by means of accumulated and recorded knowledge. The investigation of the issues of origin, character, form, and taste through the western architectural tradition in the second chapter, and the odyssey of the Vitruvius in the third chapter demonstrated an astonishing continuity and accumulation of knowledge, and criticism. It is a consequence of written culture and documentation.

Even within this very well documented and connected culture, it is impossible to catch up with the infinite number of new ideas flashing from every single point of cloud environment. A number of possibility is being missed or wasted because either their message or the means could not have been verified. Regarding this, it is of importance to have an agreement upon, at least, particular universal principles. This agreement, however, should not impose a particular definition. It should provide a background and accumulated content that would give birth to new ideas.

The Vitruvian content, which was structured and formulated within the concepts of order, arrangement, eurythmy, symmetry, propriety, economy, proposes a historical, cultural, and intellectual frame for this universal language. Firstly, without interruption, as it was presented in the third chapter, those concepts have been at very core of the theories since Alberti. It is possible to claim that, almost all the theories have considered at least one of those concepts as either foundation or objective, if not

both. Although the those concepts had derived from the ancient Greek cosmology, the greatest success of Vitruvius was to structure them as the tools and frame for the reflection on architecture itself. These frame and tool were independent from the architect's ideology, expectations of the client, cultural determinants, and the methods and tools of construction.

It is not known whether he was provided a pension from the Emperor, but his legacy has survived for centuries. His concepts determined the language of architectural thinking, education, and design. It is possible to assert that, just like the synaptic connections, all the architectural content have been communicated either through, or towards, or from them. Thus, those six concepts and their content can be proposed as the components of the basic and universal language of architecture. A language is a living thing, subject to change and evolution. It is a fact that until a new terminology and concepts are developed, this language will be in use. The syntax and semantic relations, however, would be under close investigation in accordance with the changing methods of production besides the models imported from other disciplines.

The third question is the most critical one. It it would be helpful to separate it as the question of meaning and question of legitimacy. The second part of the question can be traced back to the division of the arts, which were covering all the knowledge and production of humankind. The very first division, which was discussed the second chapter, placed architecture in to the realm of vulgar arts because of the function it serves and the payment in return. During the following centuries, theorists endeavoured to prove that architecture derived from the cosmos, represented and even embodied it as the evidence of divine knowledge behind. It was considered that a theory was the knowledge of art, which concerned a metaphysics providing an origin and meaning. Architecture would be liberal art with a legitimate theory by means of that metaphysics. Perrault had released architecture from the chains of cosmos, but new models employed, first as the knowledge, then for the production. The terminology, structure, concepts, and methods of those models were implemented to explain and realize architecture. The theory of architecture had to speak the language of another domain. With replacement of scientific models with

the technological methods of building, and fabrication, as the most popular contemporary term, the technical language of those methods invaded the field.

The first and most important criteria of legitimacy, however, is to have an autonomous language that would construct the conceptual structure of the domain. It should be a language capable of corresponding the theoretical and practical aspects, of communicating the other fields of knowedge, and of adapting itself to the changing context. Regarding this, it possible to consider the Vitruvian concepts, along with the terminology they contain, as a promising offer.

The question of meaning has always been a complicated issue for architectural theory. Is it about the meaning architecture express, represents, or realizes? Or, the meaning of architecture itself? The meaning architecture carries was discussed under the topic of character, the abstract content of building. It covers a range of topics from the realization or repesentation of the cosmos to the expression of the laws of social coexistence. They are, however, time and place dependent contents. They demonstrates the ethos of their age.

The meaning of architecture, on the other hand, can only be explored through the reflection upon itself. It can be defined as an endeavor to distill, refine, and expand the knowledge of the domain. It is of significance not to employ allegories, analogies, symbols, temporary representations, or invented or imported terminologies. By this way, theory can monitor, criticize, and change itself. Such a critical reflection could be started with the exploration of Vitruvian concepts that would provide not only the object, but also the language of the criticism itself.

In this respect, those six concepts of order, arrangement, eurythmy, symmetry, propriety, and economy should be revisited and interpreted with respect to the objectives and scope of the dissertation. The following part's objective is to present them in order to set up a new critical language for architecture, which would be operational in developing further theories. The constituents of this language can composed in different ways to investigate the unexplored territories of the discipline.

4.2 A Genuine and Universal Language for Architecture

> *Architecture depends on Order (in Greek ταξις), Arrangement (in Greek διαθεσιν), Eurythmy, Symmetry, Propriety, and Economy (in Greek οἰκονομία).*[3]

There are different opinions about the logical order, hierarchy, and categories of those concepts. Guyer considers two basic values of architecture as beauty, to which order, eurythmy, and symmetry make contribution, and utility in relation to arrangement, and propriety.[4] Granger, and after him Kruft refer them in relation aesthetic criticism and place under the category of *Venustas*.[5] According to Scranton, there is a common understanding concerning them as the aesthetic qualities / properties of the work of art, which is the product of architecture.[6] For Tatarkiewicz, they are the "six virtues of architecture" in relation to the aesthetic theory of form.[7] Meyer states that Vitruvius's six concepts constitute "a conceptual definition of architecture that emphasizes the activities of the design process".[8] According to Lefas, there is logical order of the concepts regarding their relative importance.[9]

Even if there is a hierarchy, it may not be, however, revealed in their ordering. In VI.2.1. Vitruvius explains his design method with respect to his concepts. First of all the standard of symmetry is determined. Following this standard, the proportionate dimensions of the whole building are calculated. And then the wisdom or skill of the architect takes command to have regard to other issues. At this point, Morgan and Granger propose different translations. Morgan claims that it is the wisdom of architect to consider the "nature of the site, or question of use or beauty, and modify the plan".[10] In Granger, however, the nature of the site is regarded either for use or beauty.[11] Regarding to the site, or beauty, or the use, architect make adjustments and modify the plan through subtractions or additions in the symmetry of design without

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[3] (Vitruvius, The Ten Books on Architecture, 1914)
[4] (Guyer, 2011)
[5] (Vitruvius, On Architecture: Books I-V, 1931, p. 24) , (Kruft, 1994)
[6] (Scranton, 1974)
[7] (Tatarkiewicz, A History of Six Ideas: An Essay in Aesthetics, p. 222)
[8] (Meyers, p. 72)
[9] Lefas investigates each concept with reference to Vitruvius and his context. Depite his personalized way of expression, Lefas' treatise is mind opening. (Lefas, 2000)
[10] (Vitruvius, 1914, p. 174)
[11] (Vitruvius, 1934). Rowland's translation follows the same structure. (Vitruvius, 1999)

loosing the principles in plan, and missing the intended effect on the elevation. During these adjustments and modifications, the false impressions of eye should be considered to suit the nature of the site. For a desirable result, the mere science or rule is not enough. The skill of the architect does matter. For Vitruvius, architect is different than the layman. In VI.8., he proposes that

> *In fact, all kinds of men, and not merely architects, can recognize a good piece of work, but between laymen and the latter there is this difference, that the layman cannot tell what it is to be like without seeing it finished, whereas the architect, as soon as he has formed the conception, and before he begins the work, has a definite idea of the beauty, the convenience, and the propriety that will distinguish it.*[12]

In his description of design process, Vitruvius does not mention "order", "arrangement", and "economy". He cites symmetry, eurythmy, as the adjustment of the proportions, regarding to conventions, customs, or nature, which are called as propriety. Following those evidences, with regard to the quotation above, it is possible to develop certain arguments:

- Symmetry and eurythmy correspond to measurable relations among the parts, and between the parts and the whole.
- The propriety determines the adjustments in symmetry without disturbing the eurythmy.
- Symmetrical relations are generative, but the proportional relations of eurythmy requires the good taste and skill of the architect.
- The explanations of Vitruvius disprove the categorizations considering the concepts separately. On the contrary, they constitute a whole.

Within this whole, order and arrangement refer to two different aspect of the elements of composition. Order is about the articulation of the elements with respect to their quantitative aspects. Arrangement, however, considers the qualitative aspects of the parts.

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[12] (Vitruvius, 1914, p. 192)

In his treatise, Lefas makes a linguistic, semantic, and grammatical analyses of the words consists of the definitions of the concepts.[13]As Lefas indicates, the structure of the definition, and the grammatical form of the words clearly complete the literal translation of the definition of order. Order is achieved through the quantity or magnitudes. In his commentary, Thomas Howe suggests a similar interpretation, except he reduced it to a geometry based modular layout.[14]

Arrangement, or disposition (diathesis in Greek) is explained in detail, in contrast to "order". As mentioned above, it refers to the qualitative aspects of the elements. For a better explanation, the kinds, forms, or means of the arrangement, given in I.2., would be useful:[15]

> *The kinds of the arrangement (which in Greek are called ideae) are these: ichnography (plan); orthography (elevation); scenography (perspective). Ichnography (plan) demands the competent use of compass and rule; by these plans are laid out upon the sites provided. Orthography (elevation), however, is the vertical image of the front, and a figure slightly tinted to show the lines of the future work. Scenography (perspective) also is the shading of the front and the retreating sides, and the correspondence of all lines to the vanishing point, which is the centre of a circle.*

For arrangement, Lefas and Howe suggest choosing and placing the architectural elements with respect to their appropriate positions.[16] For Howe, those appropriate positions are determined by the layout of order. On the other hand, the use of compass and ruler, and the necessity of using geometry and aritmetics to develop plan lay out, elevation and perspective suggest the commensurable aspects besides the placements of architectural elements. Moreover, in his definition, Vitruvius refers to an "adjustment" (dimensions in Granger), which recalls his explanation of design process cited above.

In the first part the definition, in I.2., Vitruvius points out an elegant effect achieved by the adjustments [of the dimensions] appropriate to the character of the building. The character of the building is culture and custom based. It is related both with the

[13] (Lefas, 2000)
[14] (Howe, 1999)
[15] (Vitruvius, 1931)
[16] (Lefas, 2000, s. 189), (Howe, 1999, s. 149)

social status of the client, available sources, and physical context, Therefore, arrangement is also related with dimensions with regard to the requirements of the propriety.

As it was demonstrated above, order and arrangement refer to the composition of the elements regarding their measurable and unmeasurable aspects, which are determined by standard of symmetry, eurythmy, propriety, and economy. On the basis of this overall perspective and relations, it is possible to revisit each concept separately. To develop a better understanding it would be helpful to start with symmetry.

The origins and the history of the concept has already been discussed in 3.1.4 of this study. Following that discussion, it was claimeed that *symmetry* includes proper, commensurable and and well-proportioned relationships between the parts in association with the whole. Therefore, proportion-as-beauty and proportion–as-ratio distinction dissolves and they merge into the concept of symmetry of ancient Greek culture.

The Vitruvian definition can be found in 3.2.4. Symmetry is a modulation system, which is based on the dimension of a particular element. Starting from this single dimension, the dimensions of the other elements, their spacings, their compositions, and the dimensions of the whole are proportionaly generated. It can be derived from geometric relations, or aritmethical calculations. In the end, a mutual correspondence is achieved between not only the parts, but also the parts and the whole.

The symmetry with reference to the proportions was one of the most unfortunate concepts of the architecture. Its influence upon the architectural theory and practice after Vitruvius was devastating. Particularly after the invention of the printing machine, the theory of anthropomorphized architectural orders based on the mythology and metaphysics had dominated the field for long. Le Corbusier's modular was a unique contribution to the idea of symmetry.[17]

[17] (Le Corbusier, 1968)

The contemporary researches and applications of parametric design and generative algorithms are enhanced and computationalized version of the very basic idea of symmetry. It should bear in mind that symmetry is not about geometrical compositions or mathematicized design process. It is only about the proportional relations, which cannot be fully comprehended without Eurythmy.

The good-rhythm of the proportional relations has always been a controverial term in architectural theory. The difference between proportionality of the absolute, commensurable and rational symmetry, which addresses the reason, and relative and sensual eurhythmy to the eye were argued in 3.1.3 of this dissertation. Contrary to that tradition, in Vitruvius, which was presented in the 3.2.3, they are the constituent of architecture together, rather than being antagonistic. Moreover, eurythmy does not address good taste, or imply a "pleasing appearance based on irrational, aesthetic-intuitive reasons, without a geometric and divisible component.[18] It signifies well-proportioned symmetry that is appropriate and convenient contextually.

Vitruvius' explanations about the proportions of the courtyards can be used in order to clarify the concept of eurythmy. In VI.3. Vitruvius puts that that small atriums cannot have the same symmetry that is applied to the larger oners. For instance, if the symmetry of larger is used in the smaller, all the details will look huge. Therefore, it is important determine the dimensions with respect to the use and effect. It is obvious that, dimensioning and modulation, that is symmetry, should have respect for propreity. Eurythmy, thus, can be defined as the calculated adjustments, in accordance with the previously determined symmetry, in order to correspond the propriety. Actually, the achieved proportions in relation to the certain characters and building must have established a visual memory, that is to say a visual custom or tradition, in the form of architectural orders.

When it comes to the concept of propriety, décor(um), correctness, aptness, or apropriateness, the context of the discussion expands suddenly form the symmetry of the elements, to the social, cultural, pyhsical, functional and representational qualities of architecture. As it was argued in 3.1.5 of this dissertation, the concept of

[18] This how Howe explains eurythmy. (Howe, 1999, s. 150)

propriety or decorum originally has a moral content that was applied to art later on. It derived from the laws of universe where all the parts in proper place and use in a correspondence with the other parts and the whole. This was the moral law, too. If it is proper, it is moral, and vice versa.

This moral content, however, is not limited with customs of social life, or the religious issues, or the requirements of the social hierarchy. It is also about the approved technical principles previous architects. It arises from functional requirements, and the usage, too. The physical conditions of the site, including topography, climate, light and shadow, surrounding natural factors such as water resources or hazardous areas. In the final analysis, decorum implies the context, program, and the content in contemporary sense.

This moral content, however, implies an orthadoxy to a certain extent. On the other hand, again, it is decorum that keeps the critical attitude towards the internal consistency of not only representation, but also *tékhnē*. The story of Caryatids, narrated by in Vitruviua I.1., is about the importance of the true relationship between the content and the representation. Vitruvius warns the architect about not using particular forms or symbols if their true content and significance are not understood.

Similarly, in IV.2., Vitruvius indicates the relation between the imitation and the true origins of construction materials and techniques. He explains the principles and the origins of the architectural elements, particulary ornaments, of different orders. He repeatedly puts that stone and marble constructions of the upper parts of the buildings had followed the methods developed for timber. After having described the order of the work and arrangement of the elements imitating the timber work, he states that[19]

> *Thus what cannot be happen in reality cannot (they thought) be correctly treated in the imitation. For, by an exact fitness deduced from the real laws of nature, they adapted everything to the perfection of their work, approved what they could show by argument to follow the method of reality.*

[19] (Vitruvius, On Architecture: Books I-V, 1931, p. 218)

This critical perspective is not limited with the appearance of things. While explaining the principle of planning of theaters in V.6, he underlines that in some cases proclaimed dimensions following the principles of the authorities cannot answer to all the proposed effects. In that case, through his versatile mind and technical skill, architect makes necessary adjustments regarding to the site, scale of the building. It is always possible to change the proportions for the sake of convenience.

Economy or distribution can be descibed as an umbrella concept. The function of economy is to manage and regulate the qualitative and quantitative values and resources of human activities. The measure of the economy is temperance. As stated above, in 3.1.6, temperance differs man from the rest of the animal world. It should be considered in relation to the concept of propriety.

4.3 From tékhnē to Architecture

The six concepts of architecture are based on the deep and strong philosophical tradition of ancient Greeks, and grounded written culture and excessive building practice of Roman Empire. Vitruvius is of great significance for covering all those concepts in a coherent body of architectural knowledge. As Lefas briefly put[20]

> *Vitruvius created a properly constituted, clearly articulated system of values that needed to be present in a technical work for it to cross the borders from handicraft, from **tékhnē** in the ancient sense of the word, to become **Architecture**.*

It would not be fair to expect Vitruvius to have technical expertise, sensitivities, and the knowledge in contemporary sense. His methods were sure limited to his knowledge. Nevertheless, he made skillful generalisations that could not deduced to the limitations of his era. This study, however, do not assert that the six concepts of Vitruvius constitute "the" or "a" theory of architecture.

This research is an attempt to conduct an analytical excavation of the history of architectural thinking and writing. The sifting and refinement of the findings out of that archaeology of the theories have revealed the continuity and essentiality of the

[20] (Lefas, 2000, s. 195). Bold parts are italic in the original text.

six concepts of Vitruvius throughout the history of architectural theories. The reverse-chronological investigation of them in relation to their historical and theoretical context demonstrated that architectural discourses and theories have always been formulated and communicated through those concepts, or derivations. It is possible to define them as the genuine origin of the language of architectural knowledge.

Because of their archetypical character, those Vitruvian concepts have always constitutive roles in the formation and expression of the architectural theories. The ordering or importance of the concepts can change, their content can change, but they still determine the quality and form of the communication in architectural thinking, architectural education, and production, despite the diversity of cultural differences, and theoretical positions.

Vitruvian content and these six concepts should be re-visisted, re-considered, and translated, especially to Turkish, with a critical and contemporary approach. In order to overcome the contemporary crises of architectural theory, it is vital to reflect upon the domain by means of its own sources, terminology, and knowledge. The imported analogies, and models could only end up with the re-compilation of the issues and problems by means of diverse terminology. When the dissocative distance is closed between the concepts and their origins in thinking, writing, communicating, and learning architectural design, the communication error among the instant theoretical positions would be fixed. Although, the richness of the chaos cannot be denied, for the emergence and survival of new theories, a common language and basic level of understanding is compulsory.

The history of humanity has shown that ground breaking theories emerge out of paradigm shifts. In order to correspond the devastating changes of those shifts, it is of importance to understand the nature and associations of the prevailing structure and its principles. Such an understanding can only be developed through a reflection upon the domain. The Vitruvian concepts, as the genuine origin and language of architectural knowledge for two thousands years, offer a set of tools and a method for that reflection.

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