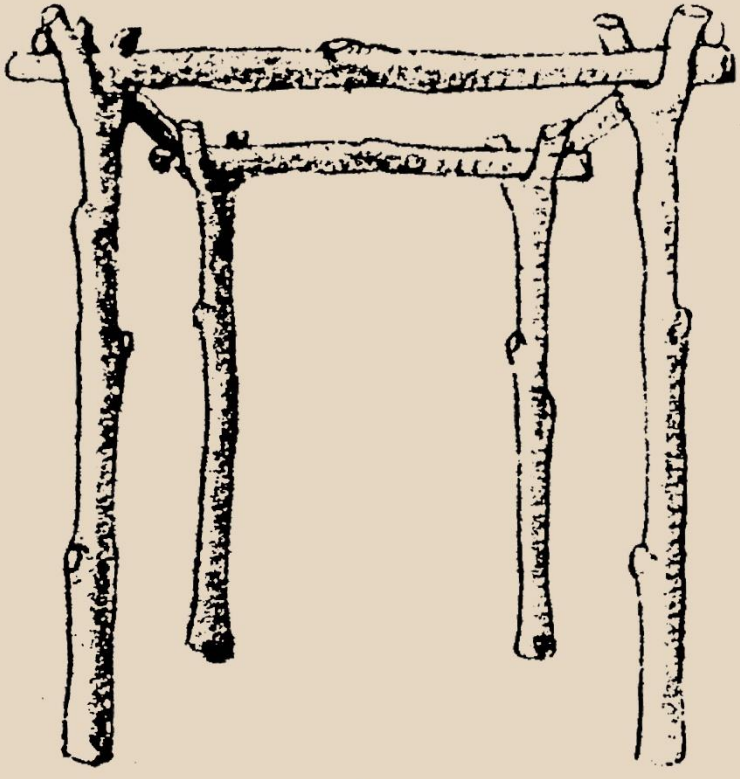
AN INTRODUCTION TO THEORY OF ARCHITECTURE



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AN INTRODUCTION TO THEORY OF ARCHITECTURE

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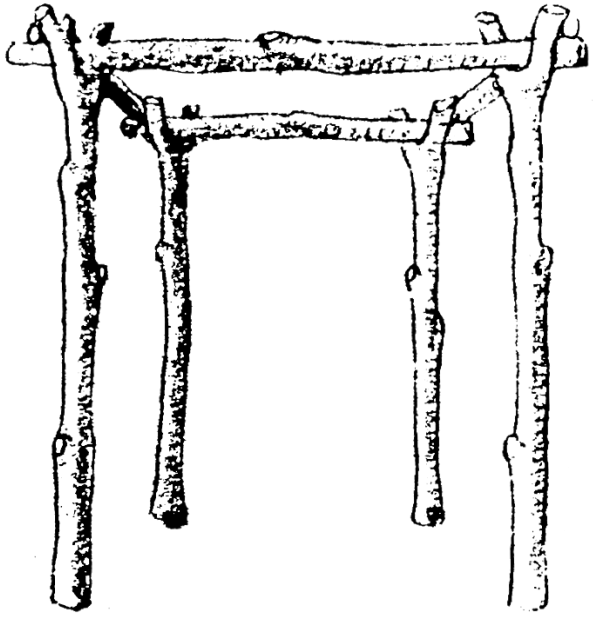

A CATEGORIC STRUCTURE

FOR THEORY OF ACHITECTURE

ABSTRACT

The theory of architecture being devoid of any integrative systematic basis is away from being objective, reliable and scientific. However the continuous contributions to the theoretical accumulation developed over a period of six centuries has constituted invaluable resources of architecture. Almost all of the efforts aiming to conceive the theory of architecture in its totality ended up with the application of some conceptual issues on the literal or physical products of architecture. The present work investigates the theory of architecture through the written material of the theory, thus excludes building from its scope. Confining itself to the analysis of the literature of architecture gives the priority of the evolution of architectural throught as opposed to building activity.

The conceptual model is comprised of seven categorical concepts applied in a chronological order. The model integrates the total contributions to the architectural literature through these categorical concepts. The categorical concepts scan the total possible types of contributions from the most abstract to the most concrete. The iconic contributions are regarded to be the most concrete whereas the isomorphic ones are through to be the most abstract. These two extremes of the conceptual scale is bridged by the types of contributions conceptually defined to be pragmatic, canonic, analogic, utopic and descriptive.

The total spectrum of the literal contributions to architecture were investigated in a historical perspective. By doing so, a general framework to enable one to conceive the totality of the contributions is hoped to be achieved. The model after being applied to the historical development will then be applied to the present situation of theory of architecture and this will have proved the valididity of the hypothesised structure of the theory. It will also point out the possible directions of change and development.

ÖZET

MİMARLIK KURAMI İÇİN KATEGORİK BİR YAPI ÖNERİSİ

Mimarlık kuramının bütünleştirici bir sistematik yapıdan yoksunluğu bu kuramı nesnel, güvenilir ve bilimsel olmaktan uzak tutmuştur. Oysa yapılan sürekli katkılarla altı yüzyıla varan bir süreçte gelişen kuramsal birikim mimarlık uğraşısının en değerli kaynağını oluşturmuştur. Mimarlık kuramını bütünselliği içinde ele alma çabaları sürekli olarak belirli kavramsal kaynakların mimarlık ürünlerine uygulanması doğrultusunda olagelmiştir. Bu çalışma mimarlık kuramını bu kuramı oluşturan yazılı kaynaklardan izlemekte, mimarlığın en önemli ürünü olan "yapıyı kapsam dışı tutmaktadır. Salt kuramsal birikimin incelenmesini amaçlayan bu tutum doğrudan mimarlık düşüncesinin evrimini incelemeye öncelik tanımaktadır.

Mimarlık kuramının öncül yapıtlarının bir sınıflandırma ve zamansal dizenlenmesi ile düzenlenmesi olan kavramsal model kuramın yazınsal kaynaklarını yedi sınıflandırma kavramı çerçevesinde bütünleştirmektedir. Somuttan soyuta bir kavramlar yelpazesi içinde biçimlenen model iconic katkıları somut, simgesel katkıları en soyut düzeyde ele almaktadır. Bu iki uç kolaycı, kuralcı ve benzeşimci, ütopik ve betimleyici olmak üzere beş ara kavram ile bağlanmakta ve kullanılan model bir çözümsel bütünlüğe kavuşmaktadır.

Mimarlık kuramına yapılmış katkılar tarih derinliğinde incelenmekte ve bu kuramın bütününü kavramayı sağlayacak bir bütünsel çerçeve oluşturmaktadır. Tarih sürecinde değerlendirilen model bugünkü ortama uygulanmakta ve günümüz yazınındaki geçerliliği kanıtlanmakta ve kuramsal değişim ve gelişimin olası yönleri belirtilmektedir.

UNE PROPOSITION DE STRUCTURATION DES CATEGORIES CONCEPTUELLES POUR LA THEORIE DE L'ARCHITECTURE

Le fait que la théorie de l'architecture soit restée d'une structure systématique unificatrica l'a tenue à l'écart de l'objectivité, de la fiabilité et de la scientificité. Pourtant, l'accumulation théorique qui s'est développée au cours de six siècles et avec l'apport des contributions continues, constitue la source la plus précieuse de l'activité architecturale. Les efforts déployés en vue d'examiner la théorie de l'architecture dans son unicité se sont toujours déroulés dans l'unique direction d'adapter certaines références conceptuelles aux productions architecturales propres. La présente étude examine la théorie de l'architecture à travers les documents écrits qui la constituent, en prenant soin de tenir l'"objet bâti" en dehors de cet examen. Cette approche qui vise uniquement à l'étude de l'oeuvre théorique, accorde donc la priorité à l'examen de l'évolution de la pensée architecturale.

Le modéle conceptuel adopté rassemble les sources écrites de la théorie en sept catégories taxinomiques, en vue de constituer une remise en ordre de la théorie de l'architecture par la classification et interpretation chronologique de ses constituants primaires. Ces catégories sont développées dans un ordre qui va du plus concret à l'abstraction conceptuelle. Dans cet ordre d'idées, la modèle interprete les approches iconiques comme niveau le plus concret; tandis que l'abstraction par isomorphismes est corsidérée comme l'achèvement le plus abstrait. Les théories intermediaires entre ces deux niveaux extrêmes sont classifiées en cinq autres categories nommées consécutivement pragmatique, canonique, analogique, utopique et descriptive, et le modèle aboutit ainsi à une intégrité analytique.

Les contributions "littéraires" faites à la théorie de l'architecture sont étudiées dans une optique historique en vue d'obtenir un cadre englobant permettant de concevoir la théorie en question dans sa totalité. Le modèle ainsi évalué dans un processus historique est par la suite discuté dans un contexte et sous un jour actuels: Sa valeur d'application aux textes modernes est par conséquant démontrée. Finalement on procède à la determination des orientations possibles de changement et d'évolution théoriques.

ZUSAMMENFASSUNG

EIN VORSCHLAG FÜR EINE KATEGORISCHE STRUKTUR FÜR DIE ARCHITEKTURTHEORIE

Die Architekturtheorie ist unobjektiv, unsicher und unwissenschaftlich geworden, weil sie bis jetzt keine einhietliche Struktur besitzt. Dagegen sind die durch dauernd erhaltene Beiträge während einer Zeitspanne von fast sechs Jahrhunderten entwickelten theoretischen Wissensanhäufungen die wertwollsten Quellen des Strebens im Bereich der Archikektur. Die Bestrebungen zur Auffassung der Architekturtheorie in ihre Totalität sind nichts anderes als die Anwendung der besstimmten Begriffsquellen bei Architekturprodukten.

Diese Arbeit verfolgt die Architekturtheorie an Hand der schriftlichen Quellen und lässt das unwesentliche Produkt der Architektur, nämlich "den Bau" ausserhalb der Arbeitshematik. Eine solche Arbeitstendenz schenkt wegen der Untersuchung der theoretischen Daten die Priorität der Forschung der Evolution im Bereich der architektonischen Denkweise.

Das durch Klassifizierung der bahnbrechenden Bauten der Architekturtheorie und durch ihru zeitliche Anordnung entstehende Modell integriert die shriftlichen Quellen im Rahmen der sieben Begriffe. Das Modell, welches die Begrif en in einem Spektrum vom Abstraken bis zum Reelen darstellt, hält die ikonischen Beiträge für den Pol des Reelen und dagegen die isomorphen Beiträge für den Pol des Abstraken. Im vorgeschlagenen Modell werden diese beiden Pole durch Theorien wie pragmatische, analogische, utopische und deskriptivische zu einer Einheit zusammengeschlossen.

In der Arbeit wurden vor allem die bisher zur Architekturtheorie geleisteten Beiträge in einer geschichtlichen Perspektive eingehend untersucht. Ausserdem wurde versucht, einen einheitlichen Rahmen aufzustellen, um die Totalität der Theorie zu begriffen.

Das vorgeschlagene Modell wurde zunächst an Hand der geschichtlichen Entwicklung überprüft und anschliessend auf die heutigen Zustände angewandt. Schliesslich wurden die Möglichkeiten der theorethischen Entwicklung di und Änderung mit der Anwendbarkeit des Modells bei den heutigen Zuständen festgestellt.

SOMMARIO

In mancanza di una base sistematicamente integrativa la teoria dell'architettura rimane lontano dall'essere obiettivo, attendibile scientifico. Non ostante cio, le continue contribuzioni a l'accumulazione teorica sviluppata in un periodo di sei secoli à costituito una risorsa di grande valore per l'architettura. Quasi tuttu gli sforzi orientati a concepire la teoria dell'architettura in tutta la sua totalità finirono con l'applicazione di discorsi concettuali sui prodotti letterari e fisici dell'architettura. La presente opera indaga la teoria dell'architettura attraverso il materiale scritto della teoria quindi escludendo la fabrica dal suo campo di interesse. Confinandosi a l'analisi della letteratura della architettura, la priorità e data all'evoluzione del pensiero architettonico opposto all'attività costruttiva.

Il modello concettuale e composto di sette concetti categorici sviluppate in un ordine cronologico, Il modello integra la totalità delle contribuzioni alla letteratura architettonica attraverso questi concetti categorici, I concetti categorici scrutano la totalità dei tipi possibili di contribuzuoni dal piu astratto al piu concreto. Le contribucioni iconiche sono considerate come le piu concrete mentre le isomorfiche sono considerate le piu astratte. Queste due estremità della scala concettuale sono legate dai tipi di contribucioni definite concettualmente come pragmatici, canonici, analogici, utopici e descrittive.

La totalità dello spettro delle contribucioni letterari alla architettura sono state ricercate in una perspettiva storica. Facendo in questo modo, si spera di avere stabilito un parametro generale che possa dare luogo alla possibilità di concepire la totalità delle contribuzioni. Il modello, dopo essere stato applicato alla situazione presente della teoria dell'architettura e quindi avra provato la validità della struttura ipotizzata della teoria, Infine, potra anche orientare sulle direzioni di sviluppo ed alterazioni da prendere.

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Теория архитектуры лишена соединяющей и систематической базы. Поэтому теория эта не яв- ляется объективной, прочной и научной. Благода- ря непрерывным вкладам, теоретическая аккумуля- ция получила развитие течение шести столетий. Вклады бесценные истоки для теории архитектуры. Однако почти все усилия представлять архитектуру в своей целостности кончились применением некото- рых схематических вопросов о буквальных или физи- ческих продуктов архитектуры.

Настоящая работа - изучение теории архитек туры по документам. Однако работа исключает "структуру". Ограничиваясь анализом литературы, исследование в первой очереди посвящено эволюции архитектурной мысли, а не "строительной деятель- ности".

Схематическая модель распределена на семь категорических концепций в категорическом поряд ке. Эта модель соединяет все вклады в архитектур- ную литературу с помощью этих категорических кон- цепций. Концепции содержат все возможные вклады с самого абстрактного до самого конкретного. Ико- нические вклады считаются самыми конкретными, а изоморфические - самыми абстрактными. Между этих крайностей спектра находятся другие - так называе мые "прагматические", "канонические", "аналогич- ные", "утолические" и описательные" - вклады.

Спектр буквальных вкладов в архитектуру под- анализирован по историческому перспективу. Таким путем, мы надеемся достигать полное понятие этих контрибуций. Эта модель была применена к истори- ческому развитию, а потом к настоящей позиции теории архитектуры. При помощи этого метода не только проверяется теория, а также указывается направление будущих исследований.

PREFACE

Since the revival of the first theoretical work of architecture, De architettura of Vitruvius, a period exceeding five centuries has passed. During this period theory of architecture has developed and expanded greatly. Having no unanimously agreed generic structure for a scientific inference has always made this theory vulnerable against rejections and refusals while making it open to speculations. The normative theory of architecture, by definition, did not have any axiomatic or any other comparible bases. Therefore it did not indicate a consistently constructed developmental growth. In the end, architectural theory presented a great accumulation of knowledge and discrete contributions divided into schools and approaches without intentions of being either in consensus or in contradiction with the preceeding heritage or with one another. The theory did not demand any scientific or objective proof whatsoever of the contributions. The theory, at the present, hands over to us a compound of unintegrated accumulations formed by independent works, which make it totally impossible to comprehend the theory in its entirety.

The schools, courses, lines of thought and approaches of various aspects of architecture formed only little openings into the theoretical accumulation. In fact, the views through these have been endangered by offering merely a tunnel vision into a complex phenomenon Efforts aimed at integrating architecture into a whole, conceived architecture as identical to building and engaged themselves, only tangentially, with the theoretical heritage of it. Even though, concepts like "space" and "structure" were rich enough to integrate, they were not, therefore intended for the software (i.e. theoretical premises) but for the hardware (i.e. buildings).

It was not earlier than the spread of structuralism and systems theory that some attempts at meaningful overviews of architectural theory emerged. However, none of these or any other contributions intended to integrate the theory, in the sense of attempting to integrate the works of architecture along with the limited concepts that shaped them.

The evolution of architecture must not be conceived independently of the evolution of its own theory. This evolution can best be followed through architecture's own literature. By this statement, the importance of many other factors of societal life are not underrated, but so far as theory is concerned the literature on its own is apparently, a vast area. In an area of work as wide and complex as this, it is not unfair to make categorical decisions to limit oneself in order to structure the analysis.

The present work surveys the development of architectural theory through its notable books. The analysis is guided by some seven categoric concepts scanning the wide spectrum of contributions. Each category specifies the most important aspect of an analysed contribution. The analytical categories are iconic on the most concrete end of the scale, whereas the category isomorphic constitutes the most abstract. The bridging concepts are pragmatic, canonic, analogic, utopic and descriptive. There are no distinct lines set for seperating one category exclusively from the others. The particular interpretation of each contribution is the author's personal judgement rationalised through the argument presented in the text. The emphasis throughout the work is put more particularly upon the specific contributions rather than the contributers. In doing so, the aim has been incorporating the changes occuring within one's lifetime in the analysis.

The method is structuralist in its essence but it may not deserve a philosophical qualifications as such. Humbly, it can be called integrative as the author endeavours to put together the retrospect and circumspect of architectural design theory by pointing out the major points of emphasis in the course of its development. The study follows a chronological order of the evolution and developments according to the utilised conceptual categories which are mapped for the convenience of illustration.

In order to achieve a consistent depth throughout the text, elaborations and detailed discussions have been refrained from. The major emphasis is placed on the structure of the theory, as opposed to the profound academic discussions on the analyses of various contributions. Nevertheless, the author has made use of several occasions to present his thoughts and research through various opportunities of his other academic involvements.

An overview of the theory of architecture, disclosing the evolution of this theory from "normative" to "symbolic" through descriptive efforts has been presented previously by the author as a process of evolution.[1] This was a preliminary exposition of the present structure, although in a different philosophical context.

The nature of urban utopias of the recent past was conceived under the title of "Conceptual Architecture as Utopia, Prediction or a Way of Reacting Against the Status quo".[2] In order to avoid a duplication of the ideas, this aspect of utopianism is not elaborated in section 3.5. "Utopianism Goes On" of the present work.

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[1] S.ÖZKAN, Mimarlıkta Kuramsal Çalışmaların Evrimi, Mimarlık Bilimi Kavram ve Sorunları, M. Pultar, ed., Ankara: Ç.M.B.D., 1978 (1977), pp.38-47.

[2] idem., Utopia, Kestirim ya da Status quo'ya Tepki Aracı Olarak Kavramsal Mimarlık, 2000 Yılına Doğru Sanatlar Sempozyumu, Istanbul: D.G.S.A., 1978(1977).

With a similar aim in mind, the author's area of specialisation, "Design Methods", has constituted a minute part in this text. In his academic life over a decade, design methods have been a consistent area of concentration. A conceptual framework for design methods was the subject of another dissertation.[3] The structure of design methods were displayed in the form of a series of course notes and seminar proceedings.[4] Simultaneously with the course notes a commentary survey of the sources was published.[5] An overview of design methods along with their implications upon architectural education was presented in a seminar on architectural sciences.[6]

A contribution on the theories of space in architecture was presented in the latest symposium of Design Research Society.[7] The ideas defended there, are not repeated in the section 2.4. "Theories of Space" despite the fact that they contain particular relevance to shed light onto the subject. Similarly, the point of view supported by the author on utopianism like that of Paolo Soleri was put forth boldly in "Some Thoughts on Paolo Soleri and his Visionary Architecture."[8] The consideration of all these is likely to provide a wider idea of author's attitude in the theory of design and architecture.

Even if we could include all of the points above, the present study would not achieve a completion of its own. There are numerous deficiencies of the present study, most of which arise from the limiting factors placed in order to facilitate the analysis. These are due to the utilised model throughout. Some others stem from the confinement imposed in order to make the study explicitly clear. Whatever the reasons may be, the imposed limitations are aspects to be incorporated into the model in future extentions.

Relationships between architectural theory and other societal developments are almost non-existant in the analysis. The confinement of the subject exclusively to

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[3] idem., "A General Conceptual Framework for Methodology for Design" (unpublished Diploma Dissertation submitted to Architectural Association School of Architecture), London, 1971.

[4] idem., Lecture Abstracts, Seminar Proceedings and Bibliography of the Methodology of Design Course, Ankara: M.E.T.U. Course Outline Series No.1, 1972.

[5] idem., Design Methods in Retrospect: A Commentary Bibliography, METU Faculty of Architecture Bulletin, v.1, n.2, February 1972, pp.154-168.

[6] idem., Tasarım Yöntemleri ve Eğitimi, Mimarlık Bülteni, n.2, January 1977 (1976), pp. 43-47.

[7] idem. The Concept of Multidimensional Space and its Application to Design Process through an Irreversible Model, Interrelations among Theory, Research and Practice, Architectural Design, Istanbul: ITU, 1978, pp.3.7-3-16.

[8] S. ÖZKAN, Paolo Soleri, Görüntüsel Kentler Üzerine Düşünceler, Mimarlık, v.9, n.108, October, 1972, pp. 50-52.

architectural theory is the major issue causing this deficiency. This was purposely made for the convenience and clarity of the analysis.

Exclusion of the history of the built world enabled the work to focus on the issues that are considered to be theoretically relevant and important. Since buildings consist of a vast collection, any selection from that would raise many other problems and overcoming these is not the author's intent. Apparently, the aim, being to study and structure the theoretical inputs, would be endangered by lengthy analyses of a selected piece -- if not masterpieces -- of architecture.

Even in this limiting understanding, there are aspects lacking in the present study. The influences on architectural theory or on common contemporary thought of other fields of science and philosophy have not been incorporated profoundly enough to provide a thorough picture of the process. Just as a study of expressionism devoid of the philosophical inputs from Kierkegaard and Nietzsche, or of baroque and post-baroque devoid of Newton and Kepler, the studies of systems analysis without regarding the technical contributions of the National Aeronautics and Space Adminstration and philosophical input from Ashby or Bertalanffy are bound to be incomplete from this point of view the present work is incomplete. However the main endeavour of the author being not to produce a complete view of architectural theory, this incompleteness does not hinder the aim of the work. Meanwhile it points out the prospective areas of concentration to widen up the scope of the present framework.

The final deficiency of this study is the lack of inclusion of many eminent theorists of the past and the present. The theoretical works concerning certain periods and movements of architecture were not particularly dealt with, unless they indicate an important theoretical stand point of view. This was mainly done to evaluate the theory of each and every period from the original contemporary sources. With this decision the author not only acquired a concise and original content of the work but also avoided the vast historic surveys and many speculations made for the movements. The theorists whose works do not appear in the present text have been excluded either due to ignorance or to unavailability of the material in the work conditions under which this study has been conducted.

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PART I

THE HYPOTHESIS AND THE METHOD

ARGUMENT

An investigation of the development of the theory of architecture requires a series of analytical categories. The categories structured into an integrative whole must at the same time allow detailed analyses of the contribution under their own context. Thus, analysis of architectural theory can be handled in two different ways:

a) With reference to the concrete issues belonging to the historical pattern of development of the knowledge within the field;

b) With reference to the abstract issues belonging to the formal or descriptive fields of knowledge other than architecture and design.

Taking the concrete issues into consideration simplifies the analysis as these have developed in an historical evolution where one approach usually forms a basis for the succeeding one. The dissimilarities and heterogenous characteristics of this evolution do not create much trouble as they have evolved within a consistency in the process. However, it is the speculative nature of this knowledge that creates

most of the problems and inconsistencies under the realm of these concrete issues. As a reaction to the speculative nature of the traditional theory of architecture, this path of development diverges into two. Unfortunately, there is a meagre interaction between these two main streams. These can be outlined as:

i) Authentic theory of architecture and design.

ii) Borrowed theories for architecture and design.

The latter, in many cases, denying completely the relevance of the traditional authentic theory has resulted in theoretical sources that are almost wholly divorced from their practice. Meanwhile, the former has been acting in a wholehearted mistrust for the newly emerging approaches in theory. In making use of the vocabulary of the philosophical classification of sciences, a parallel can be drawn between normative theories in science and authentic -- or classical -- theory of design. Similarly, a parallel between descriptive theories. and the borrowed theories for design can be made. Chronologically, if we take fourteenth and fifteenth

centuries as the emergence of classical design theory, the emergence of descriptive theories of design is as late as the 1960's. The momentum that the latter type of approaches has acquired in the succeeding years is devastating.

The knowledge that has accumulated under "theory of architecture" and "theory of design" neither has a systematic basis so as to be classified easily under the categorisations generated by philosophy of science, nor does it have an independent scientific backbone of its own. Among numerous reasons affecting this, the complexity of subjects and contradictory issues referring to similar phenomena form the essential dilemma.

In architectural theory, the hard facts of the physical existence of a building (i.e. engineering, technology, materials, etc.) and the soft nature of aesthetic and experiential value judgements complicate the situation right at the point of its genesis. This complex state of theory is further muddled by various societal forces that apparently affect architectural theory since man, society and the built-environment are, obviously, inseparable entities.

Any analysis must, therefore, sustain the complexity of the subject, while it tends to reduce the theoretical issues into more explicitly analytic compounds. Herbert Searles proposed three basic categories to classify all theories ranging between logic and ethics.[9] Logic and mathematics constitute the first group of sciences which are conceived as formal and abstract sciences. These are basicly syntactic structures and sets of relationships. They are, however, devoid of any content being totally abstract in content. They gain their content mainly through their use in the group of descriptive sciences. These latter sciences (physics, chemistry, biology, etc.) use formal sciences as their languages. Sciences which contain irreducible complexities of human and social aspects form the group of normative sciences. Under this scope psychology, sociology, aesthetics, ethics, etc. may be accomodated.

Any involvement with any of these sciences becomes more scientific or objective as it explains its subject content with the issues accomodated under formal sciences. In other words the "scientific" content of a theory is in close relation with its reference to the formal and abstract scientific content.

[9] H.L.SEARLES, Logic and Scientific Method, New York: The Roland Press, 1956, p.205. classified sciences as follows: I. Formal and Abstract Sciences, (a) Mathematics, (b) Logic; II. Concrete or Descriptive Sciences, 1. Physical Sciences, (a) Physics, (b) Chemistry, etc. 2. Life Sciences, (a) Biology, (b) Zoology, etc. 3. Psycho-physical Sciences, (a) Psychology, (b) Psycho-physics, etc. 4. Social Sciences, (a) Sociology, (b) Ethnology, (c) History, etc. III. Normative Sciences, (a) Aesthetics, (b) Ethics.

The inescapable dominance of science and scientific method in the present day has urged almost all fields of sciences to acquire more scientifically acknowledged content at the level of the language that thay utilise in the context above. At least, they endeavoured to achieve a scientific character so far as their methodologies are concerned. As a natural consequence a process of exchange of theoretical resources has become wide spread. The sciences, classified under the lower categories of the scale put forth by Searles, have started to borrow the theoretical resources of the ones at the higher ranks in the scale. The aim of this theory borrowing is, essentially, to enable their own fields to acquire a larger objectively accepted theoretical base.

In the theory of architecture and design, this process has occured either in the form of pockets, or different lines of development. As one mainstream sought for objectivity and the need for objectively explainable expressions for the phenomenon, the rest survived upon the premises of the old heritage: the normative theory of architecture.[10] The former, as it gained momentum after the 1960's became more and more divorced from the latter, and consequently, from architecture's own theoretical heritage and the actual substance of architecture, namely building.

At present, as summarised above one observes two different divergent lines of development in architectural theory. One line of development is endeavouring to have a more scientifically correct, consistent and objective theory while the other is striving to be more contentful within the premises of the existing traditional theory. While these two lines of development reach a certain maturation -- almost independently--, the more they diverge. They become more and more separated from each other. The bridges among these two lines seem to have been destroyed, as one develops stronger, there grows a disbelief in the other line in time.

One common approach that can be observed in both traditional and recent architectural theory is semantic inference made with reference to many aspects of architecture and design. This inference is, in most cases facilitated by semantic polarities such as rational-irrational, functional-expressionist, self conscious-unself conscious, etc. These, refer of course, to differing aspects of the architectural involvement. Buildings, form, design approach, technology are among the aspects referred to the polar concepts. These exist along a semantic scale according to which various architectural aspects are assessed and communicated. Many of these semantic attributions basing their arguments on personal judgements are criticised

[10] In this theory the main body of knowledge is formed by subjective judgements and practical expressions concerning various aspects of architecture and building practice.

as being speculative, especially when the actual situations generating those judgements evolve and change. Eventhough the semantic categorisations refer to differing aspects of architecture, however, majority of them reflect themselves upon the outcome: form.

In the process of form generation we see concepts like functional, constructive, and technical categories to be taken into account. An investigation interested in the content of the selected of the expressions deals with concepts like formalist, Beaux-Arts, classical, fascist, academic, etc. approaches as semantic attributes. When the stress of the analysis is put onto the changing aspect of physical form, expressionist, futurist, revolutionist, organic, etc. can be classed for the analysis of form. The philosophical context of formmaking may bring forth concepts like anarchist, adhocist, pragmatic, etc. whereas striking issues of form are likely to confine the semantic vocabulary as revivalist, minimalist, mobile, mega, etc.

The polarities mentioned above do play an important role in semantic categorisations, because they seem to cover a total range of continuity referring to the particular conceptual continium. Jencks in Architecture 2000[11] integrated all these disparate and dually existing categories into a "structural diagram,"[12] (Cf. Figure 1) and then, into an "evolutionary tree."[13] His structuralist attitude to classify various attitudes toward design and architecture has brought forth a new integrated medium for different aspects of architecture, but it has not resolved the essential problem of subjectivity and speculation that has trapped architectural theory within a vicious circle.[14] It seems obvious that for a more contentful analysis of architectural theory that is objectively valid and relevant within the context of scientific philosophy, more reliable theoretical grounds of science and scientific thinking must be utilised.

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[11] C.JENCKS, Architecture 2000, Predictions and Methods, London: Studio Vista, 1971.

[12] ibid. p.40, Jencks, integrating attitudes in a semantic scale of extremes, structures these traditions in a three directional coordinates. His method enriched with semantic attributions displays an important approach to bring together the seemingly disjointed traditions in architecture. The weakness of the method arises from the categoric semantic classes defining each major tradition of extremes.

[13] ibid. p.48 f.

[14] Here we must mention all the theoretical efforts that tend to bring some "objective" explanations to the personal or speculative-- judgements. Statistics with numerous methods and computations techniques provides potentials to structure the individual judgements under some objective reference. For this, the evolving field of architectural psychology can be given as an example. In fact, it is not easy to claim acceptable objectivity for speculative knowledge on the basis of its methodological reference. Subjectivity remains the same in essence.

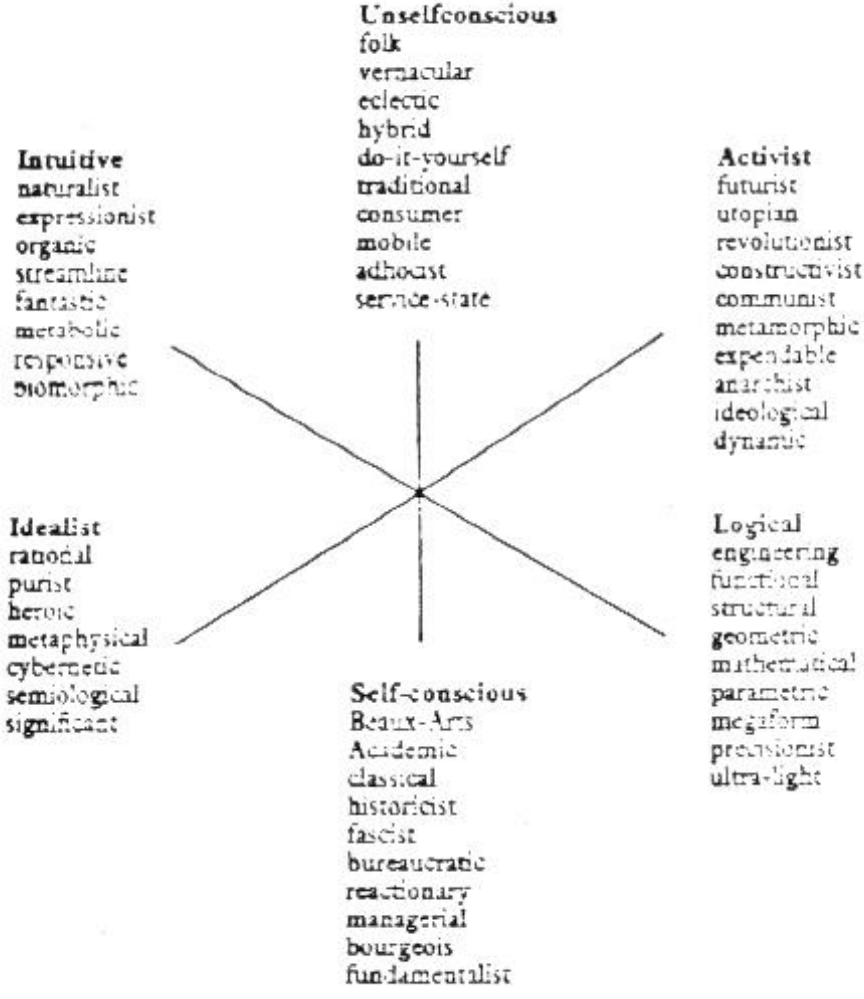

Figure 1. A structural diagram devised by C. Jencks, op-cit. p. To classify various traditions in architecture from the beginning decades of the present century.

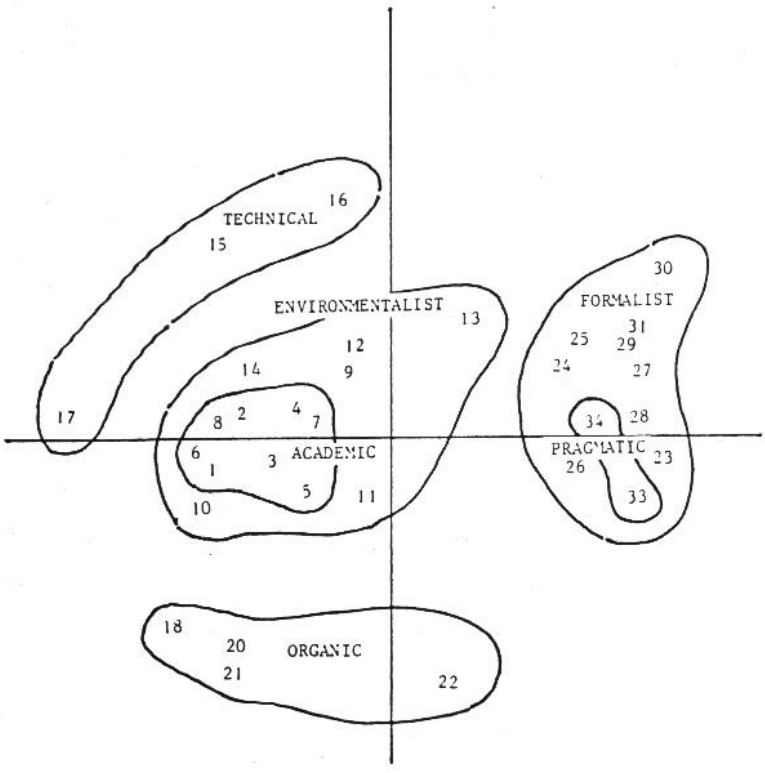

Figure 2. Scaling of 34 architects. 1 Kahn, 2 Venturi, 3 Moore, 4 Giurgola, 5 Belluschi, 6 Cambridge Seven, 7 Sert, 8 Esherick, 9 Kallmann, 10 Barnes, 11 Johansen, 12 Breuer, 13 Neutra, 14 Nowicki, 15 Eames, 16 Wachsmann, 17 Fuller, 18 Kiesler, 19 Soleri, 20 Greene, 21 Goff, 22 Wright, 23 Lundy, 24 Gropius, 25 Stubbins, 26 Rudolph, 27 Saarinen, 28 Johnson, 29 Pei, 30 Mies, 31 SOM, Yamasaki, 33 Stone, 34 Harrison. from: P. TABOR, Analysing Communication Patterns, The Architecture of Form, L. March (Ed.), Cambridge: Cambridge U. Press, 1976, p. 350. scales 34 eminent architects of the recent decades in reference to his two scales and six categories. He acts in a similar line with Jencks. Even though Tabor's method seems more sophisticated than Jencks it is not easy to agree to the accuracy of his semantic categories applied in this particular case of illustration. Tabor's categoric jargon remains too fine and subtle to handle a complex problem as such. Above clustering of the categories made by the present author after the table by Tabor. ibid. p. 341.

When we deal with the philosophical content of the various fields of sciences, there is not one commonly agreed mode of inference which can be named "theory." Especially as one descends in the taxonomy of Searles, the theoretical contents of some descriptive and of all the normative sciences are disputed as to whether the inferences as such can be called "theory" or not. Involving ourselves with lengthy discussion on the various approaches in the fields of philosophy of science is purposely kept outside the scope of the present work. This was not done with a disbelief in the value of these arguments, but, rather since reserving oneself for one line of thought is bound to be a deficiency for an integrative approach striving to bring together numerous dissimilar contributions to theory of design.

Under the realm of this work, theory should be conceived as the body of knowledge that has been developed for purposes of promoting some practical or philosophical use in architecture. This generality does not, however, bring much operational convenience. For more specific conceptions of theory of architecture and design, the following descriptions can be utilised:

a) Programme

b) Paradigm

c) Model

d) Doctrine

Each one of these concepts for structuring a particular theory related to man-built environment and architecture, consequently accomodates certain aspects of theoretical inference in architecture. The concept of "model" is selected to be the most appropriate for the purposes defended in the present work. Thus, an amalgamation of Ackoff's[15] and Broadbent's[16] theoretical categorisations for models, with the introduction of some new categories necessitated by the nature of this study, is utilised to structure and analyse the past, present and probably the future theory of architecture and design.

Searles' philosophy of science puts forth categories of formal, abstract, descriptive, concrete, and normative which are quite likely to assist the present study as it analyses various attitudes in design theory in their philosophical content. This may also help to identify problem areas in the theoretical context. But, under no

[15] R.L.ACKOFF, Scientific Method: Optimizing Applied Research Decisions, New York: Wiley, 1962.

[16] G.H. BROADBENT, Design in Architecture, London: Wiley, 1973,

circumstances it can completely explain the theory of architecture and design contentfully.

To make a contentful analysis, it will be beneficial to consider architectural theory as a collection of models. "Scientific models are utilised to accumulate and relate knowledge we have about different aspects of reality."[17] Ackoff groups under the three main headings of iconic, analogue and symbolic models. As it is inherent in their names, iconic models represent a reality, whereas analogue models make analogies with other relevant phenomena, and finally, symbolic models represent the subject symbolically. In the construction of a model the crucial issue is to decide upon the properties to be emphasised in the analysis, as opposed to the aspects to be neglected, where both sets take part under the same phenomenon. In his important contribution to architectural theory, Broadbent utilises similar categories for various aspects of architecture and related theory.[18] He classifies architecture and design -- or "ways of generating three dimensional form"--[19] as "pragmatic, iconic, analogic and canonic," in a chronological order of application.[20]

Both Ackoff's and Broadbent's taxonomies of models in general and in architecture, respectively, are invaluable within the context that they have been utilised; however, they cannot form a sufficiently strong basis on their own independently, for a generalistic study like the present one. Broadbent's analysis for architecture virtually excludes the symbolic and descriptive works done in the theory of architecture, which -- especially in recent decades -- form an unnegligibly important current in theory of architecture. The present work bases its analysis on the above categories used originally by Ackoff and Broadbent for different contexts but in a sort of formal identity. For the convenience of analysis, the symbolic category of Ackoff's models,[21] is incorporated and the descriptive and utopic categories are added as well for a fuller understanding of the subject matter. The categories according to which the developments in theory of design and architecture will be analysed in this work are as thus follows: Iconic, Pragmatic, Canonic, Analogic, Utopic, Descriptive and Isomorphic (Symbolic).

[17] R.L.ACKOFF, op. cit. pp.208 ff.
[18] G.H. BROADBENT, op. cit. pp.25-54.
[19] ibid. p.25.
[20] ibid. pp. 25-54. (Author's italics.)
[21] R.L.ACKOFF, op. cit.

THE UTILISED THEORETICAL CATEGORIES

ICONIC THEORIES

The iconic contributions to architectural theory are the ones that primarily represent what they implicitly manifest. Actually, iconic representation is the basic primeval form of expressing ideas and achievements without transfering the ideas into any form of an abstract language. In iconic models a house represents a "house" and a building a "building". The message which may be conceived as the theoretical content is simply the image along with its related facts and expressions conveyed through that image.

The trials and errors assimilated within one form of building in vernacular architecture, for example, becomes an iconic model for those who build and survive under similar conditions. Thus, the practical reality of a building contains communicative issues that naturally belong to the "theory". The total set of messages assimilated and dissipated in the form of style all belong to the iconic category of theories.

In the iconic category, theory and practice dialogue is at the same level in hierarchy as regards the abstract and concrete nature of the theory-practice duality. As a matter of fact what happens to be in practice is at the same time a representation of an inherent theory and these two are identical.

Iconic theories, do not reflect themselves in any abstract language. So, the facts and messages are derived from the icons themselves. Taking the historical path of development of architectural theory and practice, the iconic mode of expression remains as the most vital vein of the process. This is partly due to the significance of concrete realities in relating oneself to, but mainly to the indisputable strength of a representation as a real-life situation. Apparently, interpretations of iconic representations are variable. Even though, the sender (i.e. iconic image) remains the same, the receiver always goes through a process of change and development. Therefore this most contentful and richest form of architectural representation contains very little as far as its abstract theoretical aspects are concerned. The basic dichotomy of content and meaning is valid for iconic theories. In other words, these extremely meaningful theoretical representations per se do not have much content to offer any so as to be applicable in another medium of existence.

PRAGMATIC THEORIES

The pragmatic nature of every theoretical contribution to architecture is implicitly inherent. Regardless of whether we classify architecture under the class of arts or sciences, architecture is definitely an "applied" one. Consequently there can be little or no theoretical involvement with architecture deficient in its pragmatic aspects. However, there are not many contributions worthy of our attention that have been produced for pragmatic purposes. The governing dichotomy of "meaning" and "content" noted above has not encouraged the contributers to deal exclusively with pragmatic issues of architecture.[22] Actually, the pragmatic facts of architecture have become relevant only when a real or quasi-agreement at the level of the theory has been attained. In that case the pragmatic work has mainly aimed at the reinforcement or applicability of the theory perse.

The pragmatic works of the theory of architecture have two major common characteristics: They either represent the commonly agreed status quo of the theory and aim at an application of this theory, or they promote the issues related to the hard facts of engineering, physics, etc. and usually do not go much beyond that level. In both cases, however pragmatic theories are unquestionably useful for the layman. The problems generated by pragmatic theories is that they reduce the progressive content of the theory when their application is prolonged in practice.

The major drawback of the pragmatic works becomes apparent when they fall behind the natural development of the theory. This is a phenomenon frequently observed in history. Pragmatic contributions usually work on an accepted (at times dogmatic) theoretical premise and apparently they are bound to take it as being stagnant in applying it. In consequence, when a pragmatic contribution acquires a momentum in its application, it becomes extremely hard to transform even into a better one. In many circumstances we see pragmatic theories as being a mere representation of the status quo.

CANONIC THEORIES

Canonical design is one of the most conformant theoretical approaches in the total history of design theory. The common theoretical premises in the retrospect of design have always based themselves onto the relevant canons of their own age.

[22] The concepts "content" and "meaning" are utilised here within the framework of K. BOULDING, General System Theory, Skeleton of Science, Management Science, vol. II, pp.197-208, 1956, where he proposes an optimality for the content and meaning of a theory. He criticises the fact that increase in the meaning ends up with a decrease in the content and vice versa.

Design theory apart from sustaining these common canons, has also been given the task of generating new canons for changing situations. A blindfolded conformity to the canons has usually served the reinforcement of the status quo. This phenomenon mentioned above for pragmatic theories, is valid for canonic theories too, but with the difference that canonical design is only one of the means utilised by pragmatic theories. Canons for design, though always containing a particular meaning, lose that meaning as the time passes and the medium evolves into a different one. The past and present of architecture are full of practices recycling the obsolete canons of design in completely irrelevant and meaningless contexts.

In the emergence of design theory the only service that canonic theories could offer was to make the available and the possible canons explicit for design. Therefore at the beginning almost all the works of design theory were comprised of those that belonged to the canonical category. Apparently, this used to be what a lay-designer anticipated of a work of theory, namely to provide canons which he could apply. The canons gain their ultimate importance when the medium of the practice is preoccupied exclusively with style; because, under many circumstances canons for design offer abstract bases for the styles to be produced.

The canonical theories usually concentrate on the proof of the universality and irrefutable relevance of the purported canons, regardless of time and place. Therefore, they soon become outmoded but the styles generated through canons may, at times, live longer than the canons themselves. This is mainly due to the fact that the canons are disciplining issues in design, whereas, the styles constitute concrete images, therefore acquire more comprehensible content. Canonical theories form a basic and influential line in design theory, merely because, they are contributions facilitating an immediate abstraction of the built form and put them into a conveniently communicable medium.

ANALOGIC THEORIES

The category of analogic theories is constituted of those which make use of the similarities between two phenomena where the knowns of one context are utilised to explain the unknowns of the other. Even at times when there cannot be an absolute relevance of the principal analogies, still the method is full of inspiration. Many of the substantial findings in history stem from analogic patterns of thought, the value of analogy to generate new ideas is unquestionably great.

One basic rule of analogic inference is the truth content of the main field from which the knowns are derived. In this respect, there must be an indisputable

agreement in the facts or models represented in the area where the analogy is referred to.

Analogic theorisation in architecture has been present from the beginning. The most important generic mode of analogy, is most probably, the one utilised during The Age of Humanism when a human being was accepted to be the ultimate and faultless creature, and a reflection of God. Therefore all references made to were held to be valid without any reservation. This mode of inquiry of making analogies between some cherished facts, phenomena or beings has existed in architectural thought with changing references as to what has been analogised. For instance, the "human figure" accepted as the reflection of the God in the Renaissance. Later in the present century God was replaced with Nature and its laws, principles, facts and forms in one mode of thinking were taken for granted as being valid for all the similar phenomena.

As an important outcome of this logic analogies between the laws and forms of nature and those of architecture enlarged the frame of reference in architecture. Inescapably, this analogy brought forth all the limitations and drawbacks of what has been analogised along with it in return.

Apart from the direct, and mainly observational analogies between architecture, building, design, and other beings, there are also indirect analogies usually at the level of theory. This line has gained a considerable importance especially in recent decades. As the theoretical content of some new sciences developed to cope with the problems of increasing complexity, they became a great source of inspiration for architectural theory. This was mainly because architectural theory suffered for centuries from its incompetency to deal with the excessively complex problems under its realm. Consequently, a dialogue between various fields of scientific inquiry and architecture has started at the level of their theories, even at times when the contents of the two different areas were completely dissimilar.

Under the group of analogic theories of design we shall investigate two types of contributions. In the first group, there are all those analogic inferences made directly between some phenomena and architecture will be examined under the analogic category. In the second group there are the theoretical analogies between different fields of science and architecture; these latter are going to be dealt with under the isomorphic category of theories.

UTOPIC THEORIES

Utopic Theories are composed of both written material and pictorial images referring to the architecture or environment of different circumstances. Basically, utopic theories usually do not justify their praxis under the realities of their own time, but in some unknown future. In most cases they claim themselves as being conjectures for the future. This is partly due to the fact that there is either something lacking in the present conditions to make the idea happen or to the fact that the utopic ideas are merely exercises in imagination. Apart from these, they may be reacting against the common ideas and practice maintained by the status quo.

In architectural terminology, there are instances when anything that is unrealiseable is called utopic. This obviously introduces some sort of an ambiguity in the terminology used. In this work we shall deal as utopic with the contributions that project from the present state of architecture into a different one in the future; also, we shall consider the works that envisage architecture in different societal, economic, cultural or technological context; finally, the criticism of the present state of architecture and referring to a "better" state as the one idealised will be elaborated.

Since the utopic ideas give credits to imagination and creativity, they have been present in the theoretical scene from the earliest stages of architectural theory. Being utopic in theory, does not limit the theory contentwise. This is because, utopianism is not a contentwise quality but it mainly refers to the context.

Therefore a utopic theoretical contribution in essence can be iconic, canonic, analogic, pragmatic, descriptive or even isomorphic in content. Since the utopic nature of a theory has mainly to do with the handling of reality, it is the message that must be considered for the evaluation of a utopic work.

DESCRIPTIVE THEORIES

The category of descriptive theories accomodates those which intend to explain various issues and processes in architecture and design. The languages utilised for these explanations may vary depending mainly on the intended purposes. These languages and methods range from the most speculative subjective ones to the most possibly objective ones. Therefore, the descriptive category here --purposely-- does not differentiate the methods and modes of description; rather the aim of these modes are taken into account. In this case the aim is to describe.

The contributions listed under the descriptive category are primarily the positivist attempts to search for a valid reasoning disclosing various issues affecting a phenomenon. Many of the works contributing towards a more objectively communicable architectural theory start with a fairly objective description of the phenomenon of architecture or design.

Concerning the conceptual tools, methods and languages the descriptive theories rely very much on the theoretical content developed in other fields of science. For that reason, the descriptive group of efforts for architectural theorisation are the ones that contain a considerable inter-disciplinary knowledge. Therefore, at times when the theory of architecture and design goes through crises, it is in the descriptive area where possible solutions are expected. Especially in recent decades, the descriptive theories have developed so well that they even generated independent theoretical grounds of their own; namely the architectural sciences.

ISOMORPHIC THEORIES

Isomorphic theories mainly form a sub-group of the descriptive theories. By isomorphic theories the language of a theoretical inference is implied. In particular, they are the abstract symbolic languages that represent various aspects of a phenomenon under the realm of architecture or theory of design. This class of theoretical contributions may as well be regarded as derivatives of the previous category of descriptive theories. The underlying reason for identifying a separate category for isomorphic theories is that they mainly refer to the abstract languages of logic and mathematics upon which almost all positive sciences base their foundations. Thus, almost all efforts for a more scientific theory of design referring to the point of genesis of positive sciences can be accomodated under this category. As opposed to the previous categories conceiving content in the most general understanding and implications of their title the isomorphic category has been limited to the formal, abstract and symbolic content of their language. In line with the devastating advancements made in areas such as computation methods, data processing, symbolic logic, etc. the isomorphic theories of architecture and design have made a considerable development in acquiring an independent content of its own.

SUMMARY AND EXAMPLES

The categories above do not conceive theoretical issues under the contributors but under contributions. So, various different works of the same contributor may oblige

us to comprehend them under different frames of reference in our conceptual modelling. This approach enables us to deal with the ideas in their context rather than the personalities and the other insignificant facts.

To illustrate this view we may give the following examples. Le Corbusier's contributions in his Le Modulor[23] can be classified as being canonic while his Vers une Architecture[24] and Urbanisme[25] can be considered as analogic and utopic contributions respectively. Moreover, his buildings may be regarded as some iconic elements of the theory. Similarly, as we classify wright as an analogic theorist for his Organic Architecture,[26] he is definitely utopic in his Broadacre City and A Mile High Tower projects; there is no need to mention the iconic character of his buildings which generated a movement of its own. As concerns Venturi, while we consider his Complexity and Contradiction in Architecture[27] as a descriptive work of theory, his architecture may be conceived as being pragmatic. In a similar way, Cook's megastructural proposals are utopic but his books Architecture Action and Plan[28] and Experimental Architecture[29] belong to the class of descriptive works of our taxonomy.

To take up further examples, we can list the majority of Japanese conceptual architecture of post 1960's as analogic from the point of view of their "metabolic" content. But, so far as the technology, scale and social structure are concerned the mega-proposals of Tange, Isozaki, Kurukawa, Kikutake, et al. can be grouped under the utopic category of our classification. Applying the same logic, Alexander's works belong to the descriptive and symbolic categories with his Notes on the Synthesis of Form[30] but his Houses Generated by Patterns[31] and Pattern

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[23] LE CORBUSIER, Le Modulor, Boulogne, 1950 (1948); idem. The Modulor, London: Faber and Faber, 1967 (1948).

[24] idem. Vers une Architecture, Paris: Editions Cres, 1923; idem. Towards a New Architecture, London: The Architectural Press, 1976(1927-1923).

[25] idem. Urbanisme, Paris: Editions Cres, 1924; idem. The City of Tomorrow, London: The Architectural Press, 1977 (1929).

[26] F.L.WRIGHT, An Organic Architecture, The Architecture of Democracy, Cambridge, Mass.: MIT Press, 1971(1939).

[27] R. VENTURI, Complexity and Contradiction in Architecture, New York: Museum of Modern Art, 1966.

[28] P.COOK, Architecture: Action and Plan, London: Studio Vista, 1967.

[29] idem. Experimental Architecture, London: Studio Vista, 1970.

[30] C.ALEXANDER, Notes on the Synthesis of Form, Cambridge, Mass.: Harvard U.Press, 1968(1964).

[31] idem. Houses Generated by Patterns, Berkeley: Center for Environmental Structure, 1968.

Language[32] are mainly toward a representations of pragmatic models. Similarly his practice also lies in the pragmatic division of our categories.

As we have noted above, applying analytical categories so as to confine them to the scope of one distinct contribution prevents us from dealing with the idolisation and all the related paraphenelia of personalities. Meanwhile, the proposed separate lines of development enable us to deal with contributions having similar abstract content.

It is quite true that the seven categories listed here can be increased in number and made more specific and contentful, but for the purposes aimed here a general conceptual categorisation will be sufficient at the detail and scope that a survey, as such, requires.

[32] idem. et al. Pattern Language, London: Oxford U.Press, 1977.

PART II

THE SURVEY

THE AGE OF HUMANISM

The Age of Humanism is taken here as the period when the humanistic thought of early Renaissance originated and survived as the mainstream of philosophy until radical changes occured with developments in science, technology and thinking. Thus, our interpretation of the Age of Humanism spans the period between the early fifteenth to the early eighteenth century.

The architectural theory of the Age of Humanism has three major aspects when considered under the categoric taxanomy of the present study. It has qualities that can be referred to as analogic, canonic and utopic as described above.

The analogic works constitute an important part, as the philosophical premises of the age consider the "human being" as a perfection of Nature, to the extent that they conceive human being as the reflection of the ultimate, i.e. God. With this point of departure, all the principles related to the majority of arts and architecture were derived from the human being, particularly from the human figure. This approach was taken so far that even the basic shapes of Pytagoreo- Platonic references in philosophy are reinforced with an analogy that refers to human body to prove their validity. Geometric derivations from the basic shapes like the square and the circle were also fitted into some real or forced relationships in the dimensional analysis of the human body. In this analogic logic, three types of analogic proofs constituted the bases of the geometric background of the anthropophile Renaissance theory. In the first of these types the basic shape was rationalised through Vitruvian figures. For example, having a square at the base via a Vitruvian figure all the derivative proportions from the square were accepted without any further proof to possess the same "human" reference implicitly.[33] (Cf. Figures 3 and 4)

[33] vide. The Virtuvian figures utilised to illustrate the geometric relationship between the basic shapes and human body: Fig.3 et.seq. and Fig.7 by, Fra Giocondo, Figs.3 to 7 are reproduced from R. WITTKOWER, Architectural Principles in the Age of Humanism, New York: Norton, 1971(1962). pp. 173 5ff, Figs. 2a, 2b, 2c, 3 and 4.

The second type of the analogic inferences in this Age were the ones made at a purely theoretical level. The theory of music was frequently utilised to initiate some theoretical backbone for architecture. In this process, the key concept that facilitated the theoretical interaction between the two fields was "harmony." Harmony was unanimously agreed to be indisputable for a perfection of products of both of the areas regardless of their basic dissimilarities in content.

Figure 3 and 4. Vitruvian figures from Fra Giocondo's edition of: M. VITRUVIUS, de Architettura, (Venice, 1511)

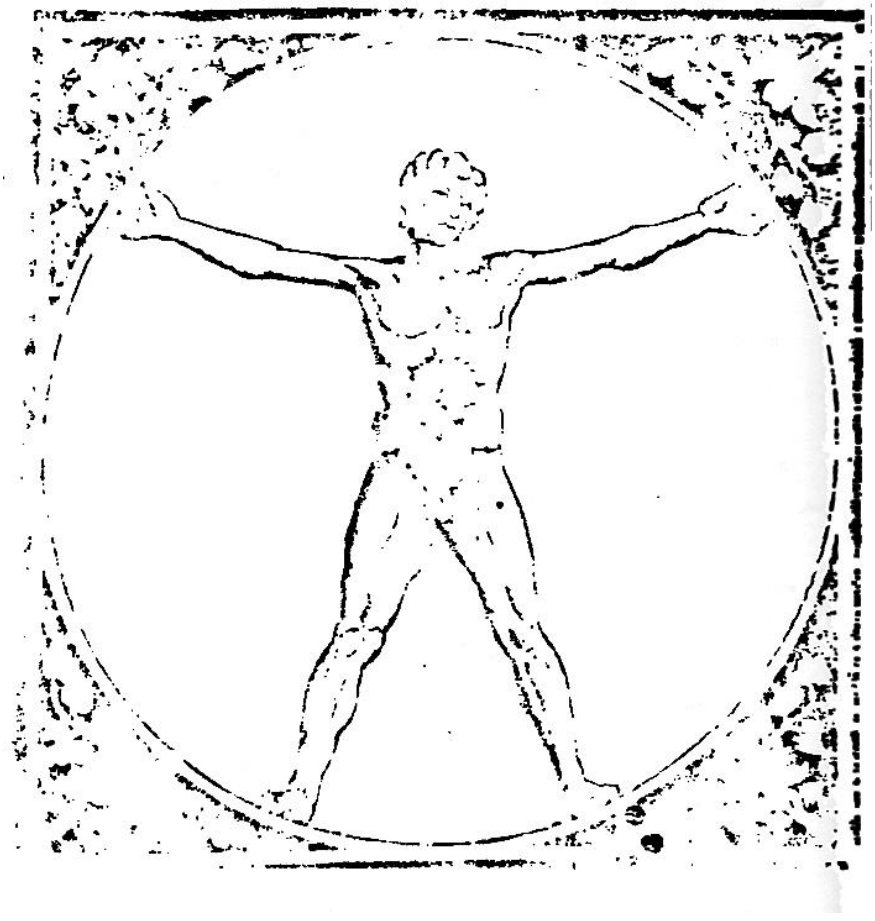

Figure 4.

At that time architecture was, in the core, accepted to be a visual music, only an audial art. The theoretical contributions of the sixteenth century to music by Fogliano,[34] Zarlino,[35] and the others[36] found their counterparts in the theory of architecture where they were elaborated around the theme of "harmonic proportion." (Cf. Figures 5 to 7)

[34] L.FOGLIANO, Musica theorica, Venice: 1529.

[35] G.ZARLINO, Le Istitutioni harmoniche, Venice: 1558.

[36] vide. R.WITTKOWER, op. cit. 1962, pp.132-142.

The canonic aspects of the Renaissance theory of architecture lie in the revival of the norms of ancient Greeks as opposed to the prevalent Gothic of the time. With the Renaissance we experience the introduction of some quasi-cyclic periods of styles and canons coming into existence at irregular intervals with differing reasoning and rationale behind them, and also under different social and economic circumstances. For example, the canons of the Italian Renaissance were generated through blindfolded obedience to the works of the ancient Greeks regardless of time, place and changes in the particular societal structure of Italy from the sixteenth century onwards. Consequently, all the basics of the architecture of those that lived ten centuries, or more, ago were taken for granted to be valid.

The utopic aspects of the Renaissance theory of architecture have been developed mainly in a series of proposals for certain urban settings either aiming at the solution of some current problems or advising a future state of being. Under this category there are numerous proposals presented either verbally or graphically for the solution of the problems concerning towns.

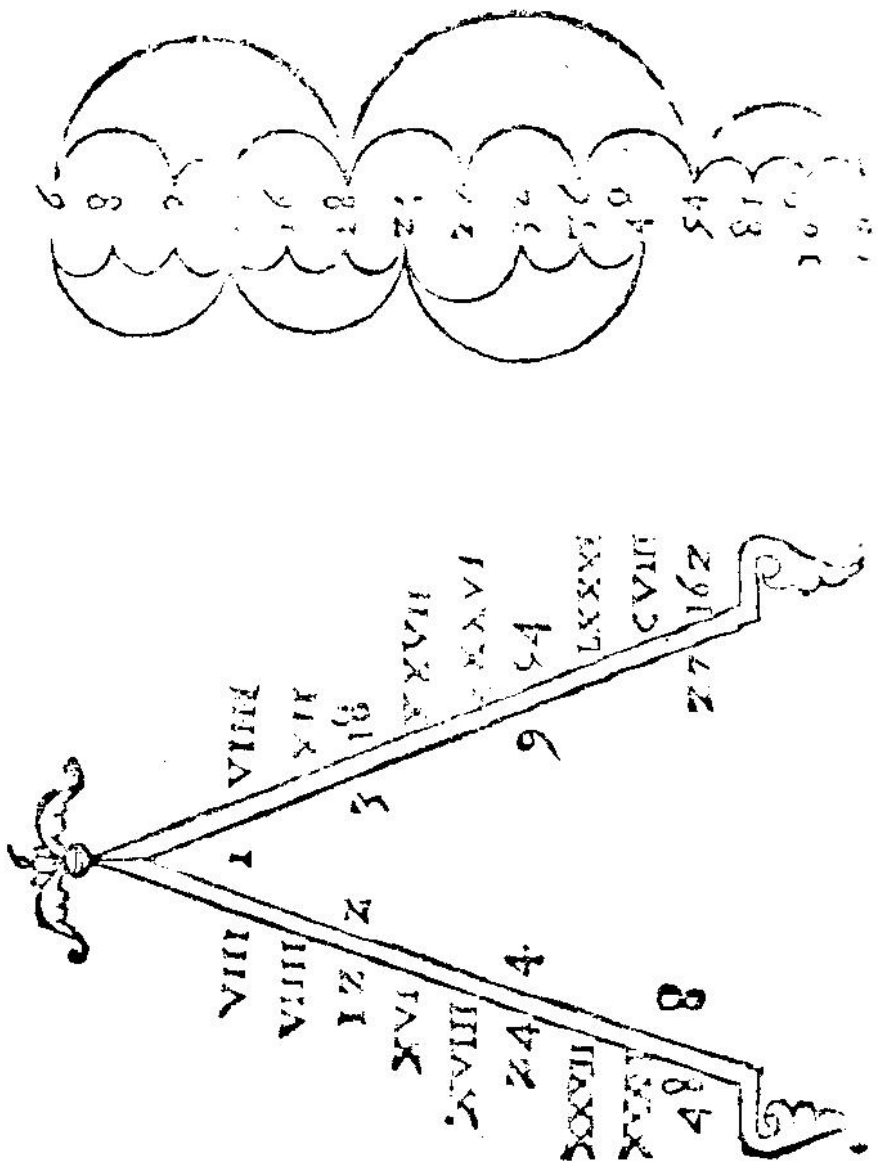

Figure 5. Harmonic proportional series made by F. GIORGI; De Harmonia Mundi, 1525, after the three harmonic ratios.

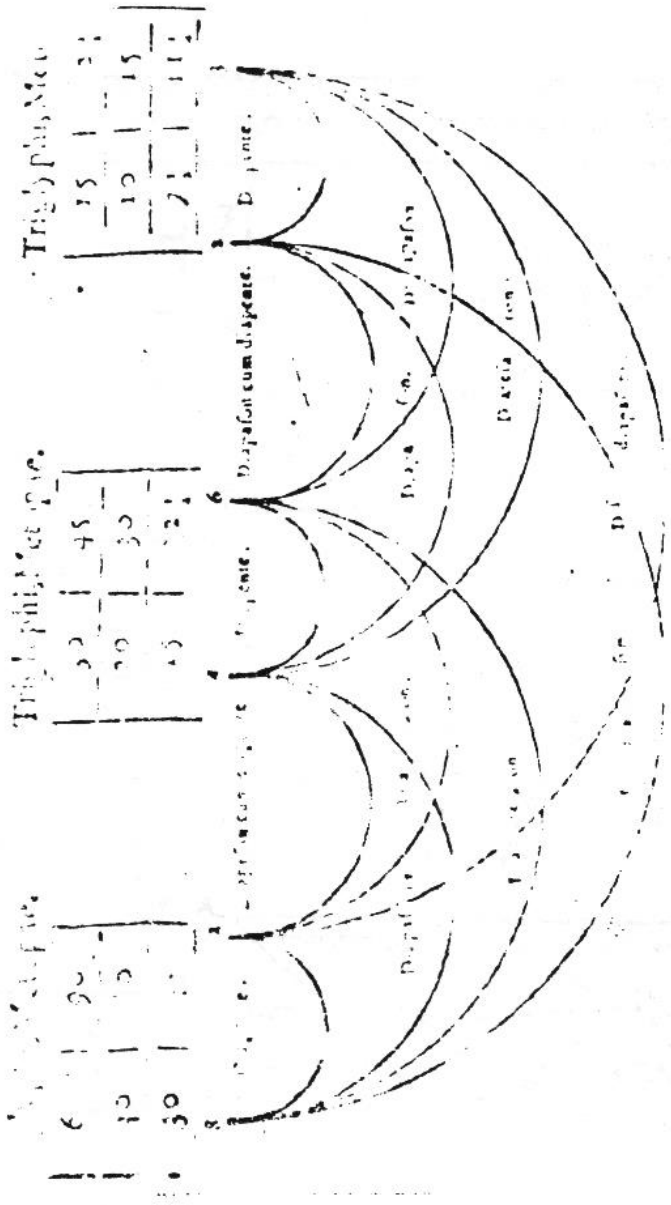

Figure 6. A diagram on harmonic proportioning from H. PRADO and G. B. VILLALPANDO, In Ezechielem Explanationes, 1596-1604.

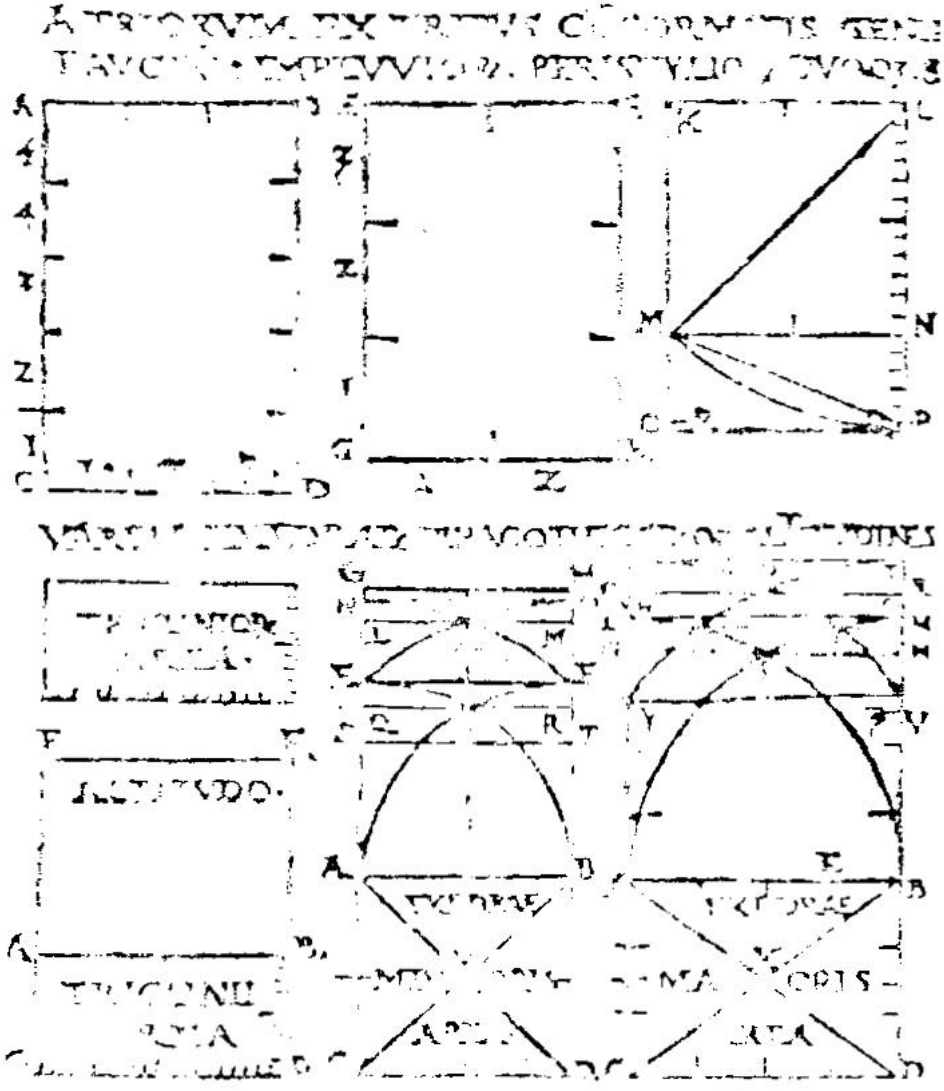

Figure 7. A page illustrating various principles of proportioning from Cesarino's edition of M. VITRUVIUS, de Architetura, (Como, 1521).

MARKUS VITRUVIUS POLLIO

Vitruvius lived and produced his work at the time of Ceasar and Augustus, i.e. First Century B.C. There is not much evidence to convey an idea as to what extent it was effective to the building practice of its time. It is for sure that De architettura[37] is a remarkable collection of information ranging from the soft issues of aesthetics and theory to the hard facts of materials, methods and engineering related to architecture. While considering De architettura as the first known theoretical work on architecture, we must not underrate its importance as being a resumé of whatever had been accumulated until then in the field of architectural theory.

Concerning the analytical categories of the present work De architettura conforms in least three important aspects of architectural theory. For the useful knowledge it conveys on the hardware and engineering principles we may assert that it is a pragmatic work of theory. To take its preoccupation with the five classical orders and other related Greek canons into account stresses the canonic quality of the work. Thirdly it contains issues that are strictly descriptive. Especially, the generalised theoretical discourses on building types and various aspects of architecture emphasise its descriptive content.

Vitruvius, offering almost an exhaustive content of the architecture of ancient Greece and Rome, produced a work which found a chance for revival as a handbook and a major theoretical source fourteen centuries later. It was once again considered as the point of genesis of architectural theory even then. The fact that it bridges the hard facts of engineering and physics to the soft values of aesthetics, music, drama, etc. illustrates the interdisciplinary nature of architectural theory from the beginning. The Vitruvian interest in music and harmonics later became with Alberti an important issue for architectural thought.

Although speculations have been made about the actual effectiveness of Vitruvius in his own lifetime and succeeding periods, it is for sure that it survived through a long period of oblivion, until it was brought back into light in the Age of

[37] There are numerous manucripts of De architettura dating from the period spanning from the eight to the fifteenth centuries. There are also quite a few contemporary translations of the work into English taking different manuscripts as originals. For the present purposes we consulted the following translations comparatively: M.VITRUVIUS (P.), The Ten Books on Architecture, tr.M.H. Morgan, New York: Dover, 1960 (1914); M. VITRUVIUS (P.), On Architecture, tr. F.Granger, London: William Heinemann, 1955 (1931). So far as the terminology is concerned, Granger seems to be more strict and loyal to the original, whereas Morgan interprets the terms to increase the value of the terms for a more contemporary benefit. A comparative reading offers a specific insight for an English language reader without much divergence from the original intentions.

Humanism. In the process of humanistic revival of the classical works De architettura found for itself a new context and content so as to be in use again.

De architettura, being the most original and contentful Roman work on architecture and building science, was followed by two succeding works in the same vein. Faventinus and Palladius[38] are authors of two Roman manuals that followed Vitruvius. Faventinus' book is a somewhat abbreviated version of the Vitruvian material but there are some additions and changes to the substance of Vitruvius.[39] These are apparently minor things that do not effect the main Vitruvian original. On the other hand "Palladius, whose work breathe the spirit of the Roman landed aristocracy as it existed under the later Empire, derived all his Vitruvian material not directly from De architettura but from Faventinus."[40]

As Vitruvius' work was brought back to daylight with the architectural theory of the Renaissance,[41] it became much more than a manual which it was intended to be; it constituted an école. The prominent architectural theorists like Serlio, Vignola, Shute, Palladio, Wotton, Goujon, De Bosse, Le Clerc, Perrault, Jones, Wren, et alia of the sixteenth to the nineteenth centuries followed his line and contributed to his mission.

ANTONIO FILARETE DI AVERLINO

Filarete's Treatise on Architecture is the next and a substantial statement in the grounds of architectural theory. It contains many issues that are still valid and relevant to the problems of our times. Filarete's work can basically be categorised under canonical works and his canons (harmonies) do not possess the complexities like the musical harmonies of square-root proportions of Alberti, a contemporary of his, or like the golden section of Pacioli. The most frequently occuring proportions of Filarete are 1:1, 2:3 which often are accompanied by 3:4 and 1:4.[42]

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[38] M. C.FAVENTINI, De Diversis Fabricis Architectonicae, in H.PLOMMER, ed. Vitruvius and later Roman Building Manuals, Cambridge: University Press, 1973.

[39] H. PLOMMER, ibid. p.111.

[40] ibid. p.1.

[41] "Manuscripts of (De architettura) Libri decem were constantly recopied during the Middle Ages and about 1415 whole text was thoroughly revised after Poggio's famous visit to the library of St. Gall J. RYKWERT, Editor's Foreword, Ten Books on Architecture by Leone Battista Alberti, London: Alec Tiranti, 1955, p.v.

[42] J.R.SPENCER, Filarete's Treatise on Architecture, New Haven: Yale U. Press, 1965, p.xxii.

For Filarete "materials, techniques, planning (are the) rudiments, the basic skills of architecture, which must be learned in the same way as literary skills are learned before one can begin to write."[43]

> The plans in Filarete's treatise are each based on a simple, arbitrarily chosen geometric shape. The architect then places all the parts of the building into this abstract matrix... The geometric shape suggests and is controlled by a simple series of arithmetic proportions that govern the parts and the whole.[44]

In his treatise Filarete unintentionally initiated the Renaissance (Florentine, good) as superceeding Gothic (Lombard, bad). While he centered his argument around the city of Sforzinda, he at the same time pioneered in utopianism which has been a strongly maintained line of thought ever since Filarete.

Filarete's theory, despite the fact that he cites Vitruvius, is not derived from him. The importance of the relationship between the whole and the parts, and the emphasis on the proportions and analogies between human body and architecture are among the most original aspects of his treatise.[45] And, these later constituted the basis of architectural theory in the Age of Humanism.

As regards the origins of architecture Filarete goes to the basic necessities of shelter for human beings. While he illustrates Adam's need for a place to protect himself as he was driven out of

Paradise, he refers to the major pragmatic aspects of building.[46] (Cf. Figures 8 and 9) Filarete's point of departure from the essentials as opposed to the formwise dogmas is probably the soundest beginning of architectural theory. This attitude, unfortunately, was not shared by others until a similar understanding was defended by Laugier as late as mid 18th century under the concept of "beauté primitif."[47]

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[43] ibid. p.xxi.

[44] ibid.

[45] E.KAUFMANN, Architecture in the Age of Reason, New York: Dover, 1955, p.89; A.FILARE TO, Trattato di Architettura Florence, 1461-64, a facsimile of which is reproduce as vol.2 of J.R.SPENCER, op. cit.

[46] vide. fig.14.

[47] vide. Ch.3.4.4.

FRANCESCO COLONNA

Colonna, in his fantastic novel Hypnerotomachia Poliphili, revealed the whole body of compositional principles of Renaissance.[48] Colonna “asks for harmony of the structure with the 'universe'."[49] He claims that a building is "either complete in itself, or it forms a subordinate part of the 'universe'.[50] He also "means that the parts are to be subordinated to the main feature, which he called principe; and further, the parts must conform."[51] For him the most important is "the harmonisation and integration of the parts."[52]

Colonna's statements on wholes and parts and on integration, are still almost universally valid for the architectural context of the present. The validity of his statement as such is not over-shadowed at all by his more speculative canonical advices on proportion, symmetry and beauty which may or may not be so valid as his ingenious remarks on integration.

[48] E.KAUFMANN, op. cit. pp. 89-92 where he refers to F.COLONNA, Hypnerotomachia Poliphili, 1499.
[49] E.KAUFMANN, ibid. p.90.
[50] ibid.
[51] ibid.
[52] ibid.

Figure 8. FILARETE, (A.P.), op. cit. Book 1, fol. 4v."... when Adam was driven out of Paradise, it was raining. Since he had nothing else at hand to cover (himself), he put his hands over his head to protect himself from the rain".

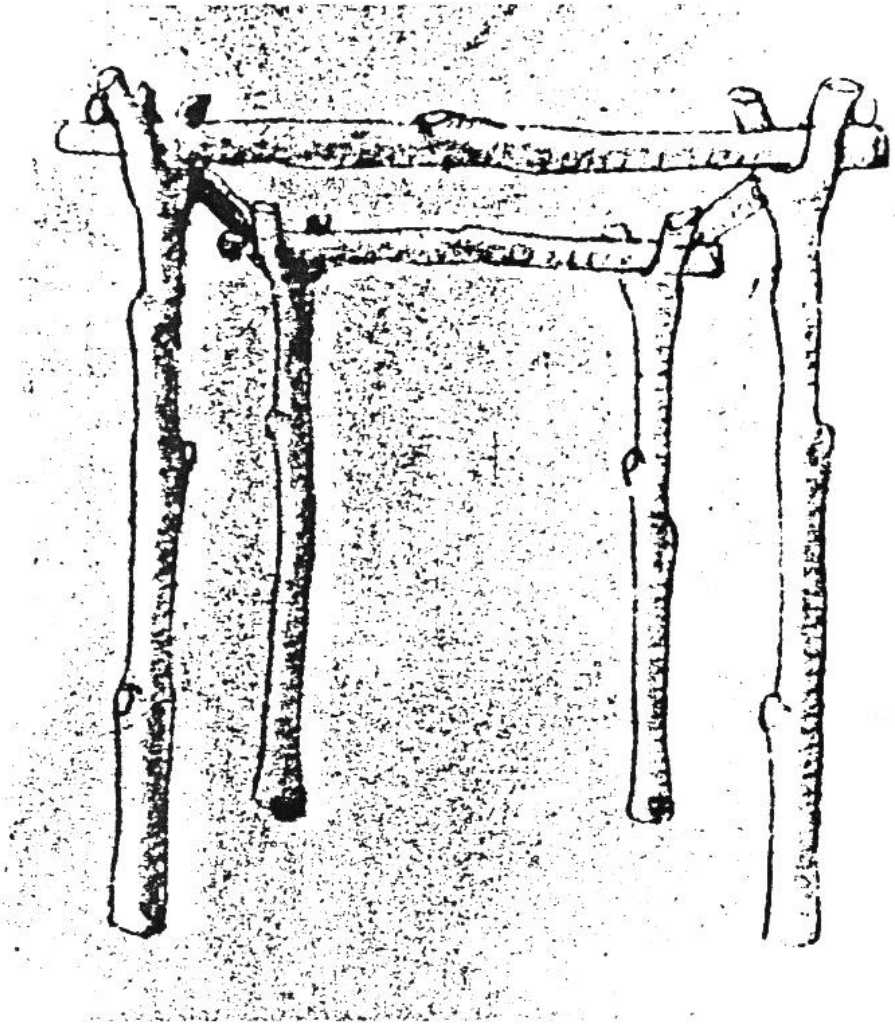

Figure 9. (A.P.) FILARETE, op. cit., Book VIII, p.54v, "He trimmed off all the others and the two left made a fork. When four were made in this form and driven into the earth, he put other pieces of wood across them..."

LEONE BATTISTA ALBERTI

As opposed to Colonna's harmonisation of the whole and parts, Alberti believes in the priority of the whole. He concludes: "Beauty to be such a consent and agreement of the parts of a whole, ... by this she obtains her beauty, dignity and value".[53] Alberti's De re aedificatoria[54] is one of the most prominent sources of architecture which contains issues that are still relevant and applicable in the present day philosophy of architecture.

Alberti's analogic statements between music and proportion via numbers,[55] despite the fact that they seem to be rather dogmatic, open a completely new field of interaction among different forms of expression. The analogy between music and architecture survived through ages as a strongly maintained line of thought where music in its most abstract terms provided conceptual instruments for a better comprehension and better communication of spatial experiences. This analogy utilised by Alberti found many contemporary followers; at an extreme of this belief Madame de Stael concluded: "Architecture is frozen music."

The Aristotelian idea of beauty as an idealism that "nothing can be, added or subtracted" is shared by Alberti who agrees to the judgement in a similar understanding. He states: "... Beauty to be a harmony of all the parts, in whatsoever subject it appears, fitted together with such a proportion and connection, that nothing could be added, diminished or altered, but for the worse.[56]

SEBASTIANO SERLIO

Tutte l'Opere d'Architettura [57] of Serlio, a stage designer and an architect, does not disclose any originality unknown since then. When compared with the preceding masterpieces by Vitruvius and Alberti, his work falls far behind theirs as concerns of its philosophical content. Meanwhile, "his originality lies in the manner in which he reveals what has been known, for the better advantage of the man who must use this knowledge in practical manner."[58] Serlio's contribution to the theory of

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[53] L.B. ALBERTI, Ten Books on Architecture, London: Alec Tiranti Ltd., 1955 (1726), p.195.

[54] L.B. ALBERTI, De re aedificatoria, Florance, 1485.

[55] L.B. ALBERTI, op. cit. 1955, p.196ff.

[56] L.B. ALBERTI, op. cit. 1955, p.113.

[57] S. SERLIO, Tutte l'Opere d'Architettura et Prospetiva, Venice: G. de 'Franceschi, 1616 (Facsimile edition: Ridgewood: Gregg Press, 1964.)

[58] A.E. SANTANIELLO, Introduction, The Book of Architecture by Sebastiano Serlio, London 1611, A.E. Santaniello, ed., New York: Benjamin Blom Inc., 1970, p.9.

perspective developed by Vitruvius, then Alberti, is probably his most important contribution to the theory of architecture. For the definite and concrete issues covered in the book on eurythmy, descriptive geometry, proportion, etc., Serlio can best be considered as a contributer to the pragmatic aspects related to architectural design.[59] (Cf. Figures 10 and 11)

ANDREA PALLADIO

Palladio's contribution to the architectural thought of the Western World is one of the most influential in history. He reinforced his buildings with a literal contribution and drawings compiled as I Quattro Libri dell'Architettura.

Palladianism spreaded far beyond the territories of Italy and revived frequently in the course of history. "He is the only architect after whom an architectural idiom is named: Palladianism. Nobody speaks of Brunolleschism, Bramantism, or in more recent examples of Wright-ism or Le Corbusier-ism. 'Miesian' would be a possible term."[60] Palladio was after immutable canons, valid rules and even absolute standards.[61]

> Palladianism is the conviction, first of all, that a universally applicable vocabulary of architectural forms is both desirable and possible, secondly, that such a vocabulary had been developed by the ancient Romans..., and thirdly, that a careful study and judicious use of forms will result in Beauty. This beauty accoding to the Palladians, is therefore not only derived from ideal forms and their harmony, it is also rooted in historical correctness; and it includes the most practical, reasonable solution of the specific problem on hard.[62]

[59] S. SERLIO, op. cit.

[60] A.K.PLACZEK, Introduction to Dover Edition, Andrea Palladio, The Four Books of Architecture, New York: Dover, 1965, pp.v-vii.

[61] İbid. p. v.

[62] İbid. p. vf.

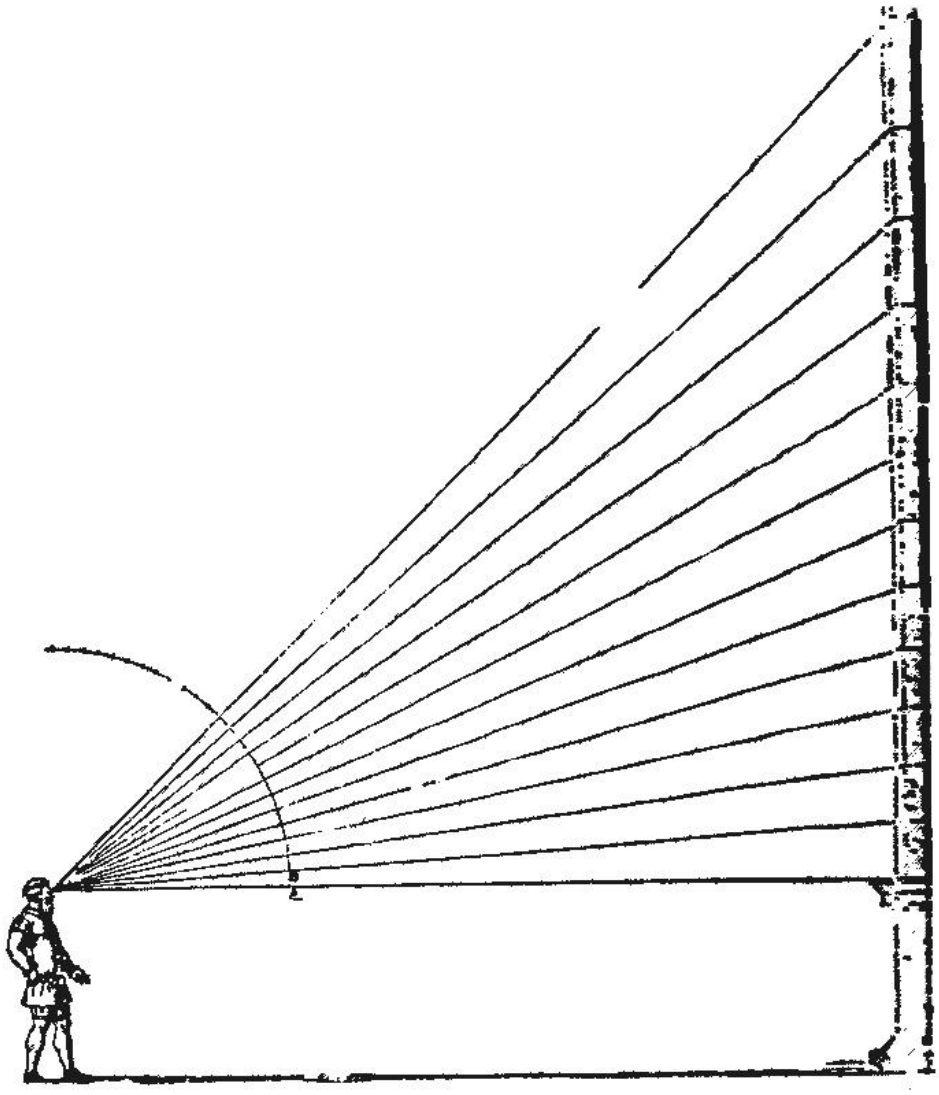

Figure 10. S. SERLY, op. cit. 1611, The First Books, p. fol. 5v, and S. SERLIO, op. cit. 1619, Book I, p. 9r. Relationship between the equal angles of view and height.

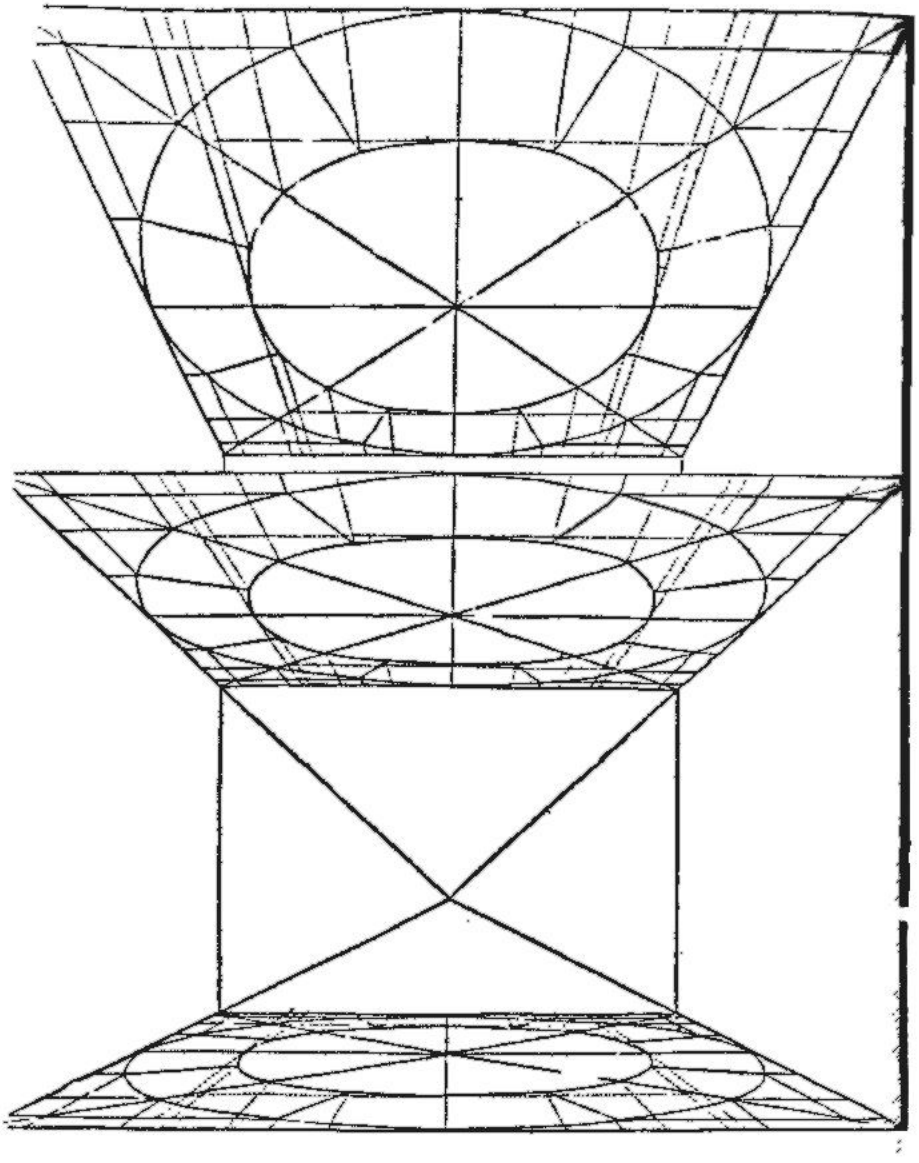

Figure 11. S. SERLY, op. cit. 1611, The Second Books, p. fol. 7v. and S. SERLIO, op. cit. 1619, Book II, p. 26r, Perspective, relation- ship of three horizontal planes from a fixed eye-level.

Palladio's impact on architectural theory and practice is mainly rooted in the realisation of his theory in a series of buildings conveying his message to the succeeding generations of architects and builders. The unification of theory and practice in the concreteness of buildings assisted Palladianism to flourish in other countries like France, the Netherlands, Germany; and above all it was most intensely practiced in England with the Inigo Jones' introduction of him. Palladio in his Four Books carries the influence of the teachings of his fifteenth predecessor Alberti. He blended the basics formed by Alberti with a vast study and survey of Roman architecture, and of course, with his own thoughts. It is noteworty to state the importance of his book in the spread of Palladianism. I Quattro Libri dell' Architettura was published as The Four Books of Architecture in England in 1715. It was not until then that Palladianism became the ruling architectural style there, despite the fact that Palladio had followers in England much earlier than this date, primarily Inigo Jones who had relations with Scamozzi, a pupil of Palladio.

Palladio's book on architecture must be evaluated with a due consideration of his time. In 1570 when his books were published almost all of the great men of the Renaissance were dead. And, the whirlwind of energy and enthusiasm of almost every field of art was over. Palladio had the chance of synthesising all this accumulation. The aspects which make his work outstanding among all are that he was more orderly in his method than Serlio, more comprehensive than Vignola.[63] Blomfield was probably right when he stated: "After the giants came the school-master to put everything in order."[64] Especially in consideration of the apparent simplicity of the content of I Quattro Libri dell'Architettura.

The amalgamated canonic-analogic theoretical frame of reference of the Renaissance developed by Alberti, Giorgi, Barbaro, Villalpando and the others was taken up by Vignola more ambitiously. Vignola in his introduction to Regole dell i cinque ordini[65] took a strong position for the defence of the necessity for a more systematised theory for architecture. Similar to the prevalent belief among the Renaissance theorists he proposed the theory of music as the source for harmonic proportioning.[66]

[63] R.T.BLOMFIELD, Seven Architects, New York: Books for Libraries Press, 1969 (1939), p.25.
[64] ibid.
[65] G.B. da VIGNOLA, Regole delle cinque ordini, 1562.
[66] R.WITTOWER, op.cit. 1971(1962), pp.123 f.

PHILIBERT DE L'ORME

The Oeuvres[67] of L'Orme is the French counterpart of the Four Books of Palladio. Similar to all of the Renaissance and post-Renaissance materials L'Orme also bases his work on the original Vitruvian content. When compared with Palladio's, the Architecture of L'Orme weighs almost equal in its coverage, but not equally influential at the global context. The principles set forth by Palladio formed a basis for a unanimously acknowledged theory of architecture for a considerable time while L'Orme found an audience almost exclusively in France. The first nine books of L'Orme deal with the classical principles.[68] The tenth and eleventh books bring everything up to date to 17th century. In the last two books he discusses "the new inventions for good building."[69] (Cf. Figures 12 to 15)

VINCENZO SCAMOZZI AND GUARINO GUARINI

Scamozzi's L'idea dell'Architettura[70] dates back to 1615. Although, it is one of the lengthiest treatises produced since then, it does not contain much more than what Vitruvius had stated before. Scamozzi, who also edited Serlio's work before, compiles the available knowledge on architecture and makes it more accessible and up to date. In interpreting the Vitruvian content he also adds thoughts and remarks that belong to the Renaissance and the Baroque. With Scamozzi the reiterated notions, ideals and values initiated by Vitruvius gain a seventeenth century content.

Architettura Civile [71] of Guarini also manifests the validity of the issues, originally stated by Vitruvius, on the importance of careful proportioning. Guarini warns against blind obedience to the rules and demands that the effect on the eye should be well considered.[72] For the design of solids and voids in architecture, Guarini puts forward definite canons which make both perceptual and structural sense. His imperative is the placement of voids onto voids and mass over mass. Similar to his predecessors, Guarini provides almost exhaustive information on descriptive

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[67] P. de L'ORME, Architecture, Rouen: David Ferrand, 1643, (Facsimile edition: Ridgewcod N.J.: Gregg Press, 1964.)

[68] ibid. pp. 1-278.

[69] ibid. pp.279-331.

[70] V.SCAMOZZI, L'Idea dell'Architetture Universale, Venice, 1615.

[71] G.GUARINI, Architettura Civile, Torino: Gianfrancesco Mairesse, 1737, vol,1: Testo, vol.2: Tavole. (Facsimile Edition: London: Gregg Press, 1964.)

[72] ibid. p.6, p.157.

geometry, projections and basic forms. Even though he makes use of the classical orders, he does not seem to over-emphasize the importance of them.

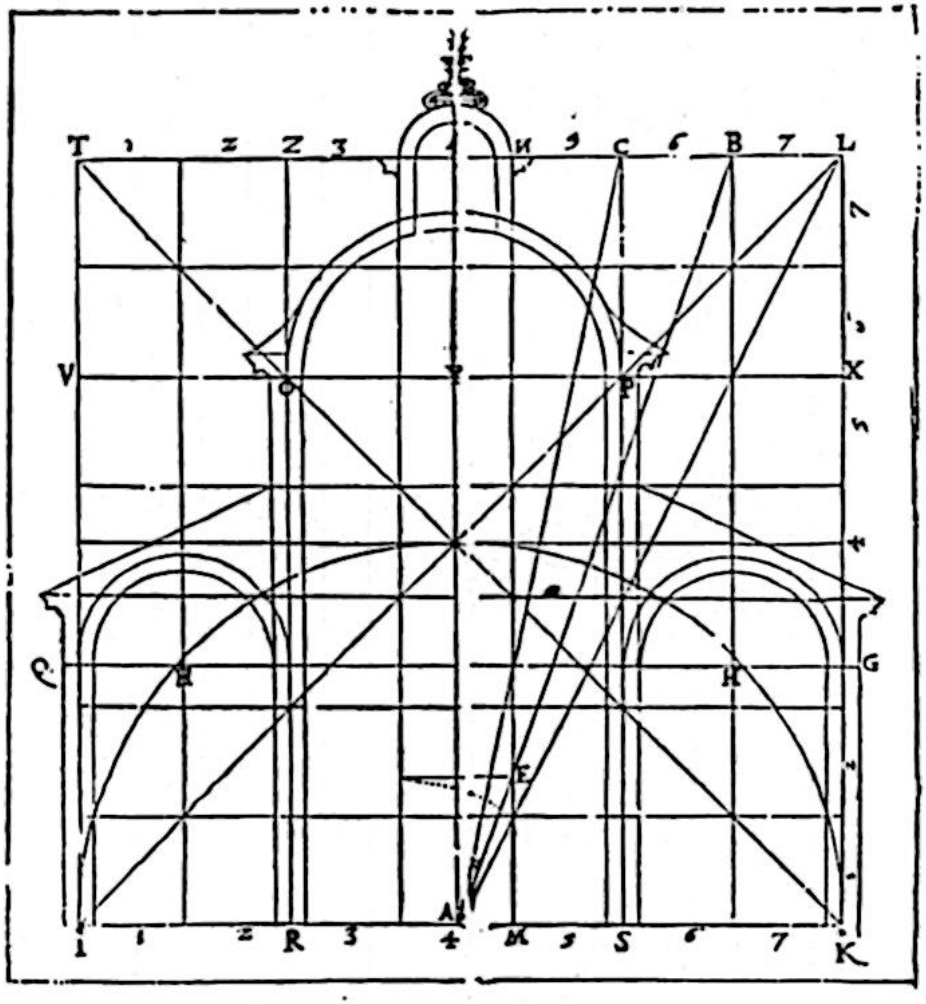

Figure 12. Proportional analysis of the section of a church. P. de L'ORME, op. cit. p. 235r.

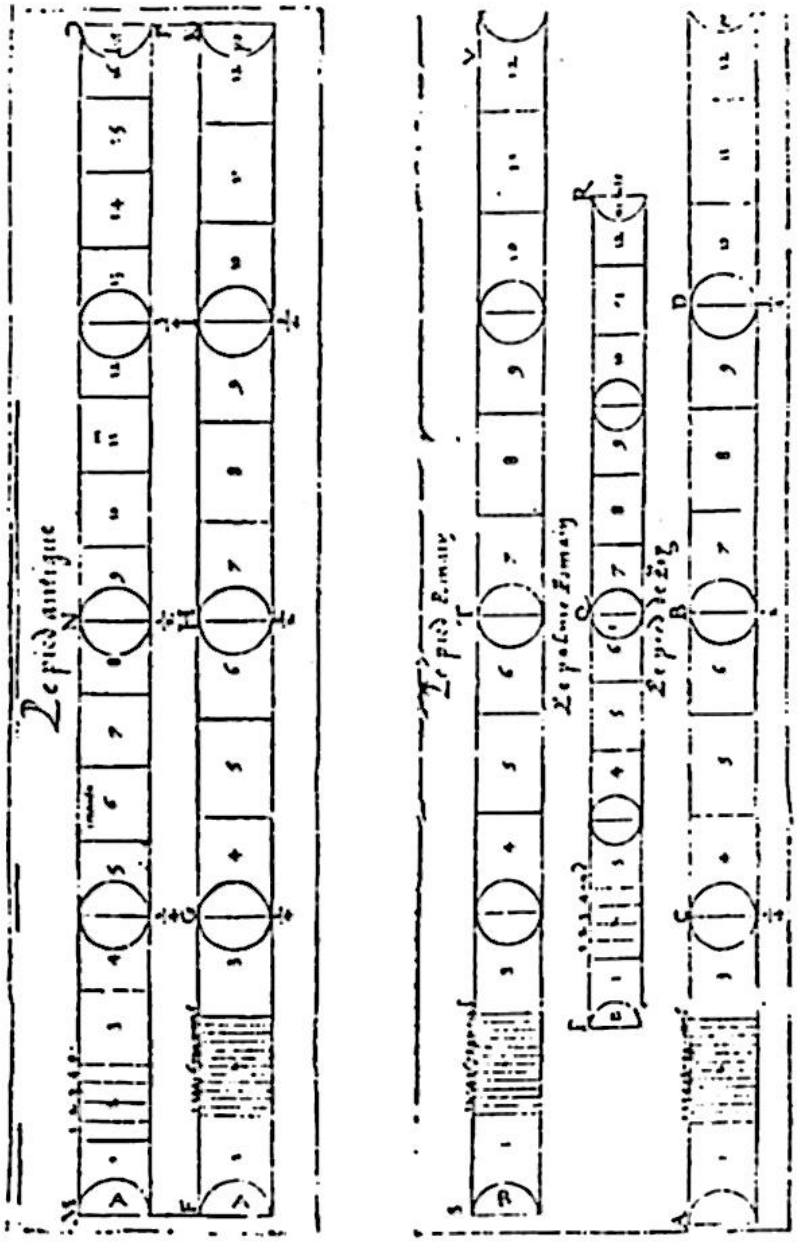

Figure 13. Proportional scales for various intercolumnation systems. by P. de L'ORME, ibid. Pp. 132r and 133r.

Figure 14. The “Good” architect by P. de L’ORME. ibid. p. 328.

Figure 15. The “Bad” architect by P. de L’ORME. ibid. p. 341.

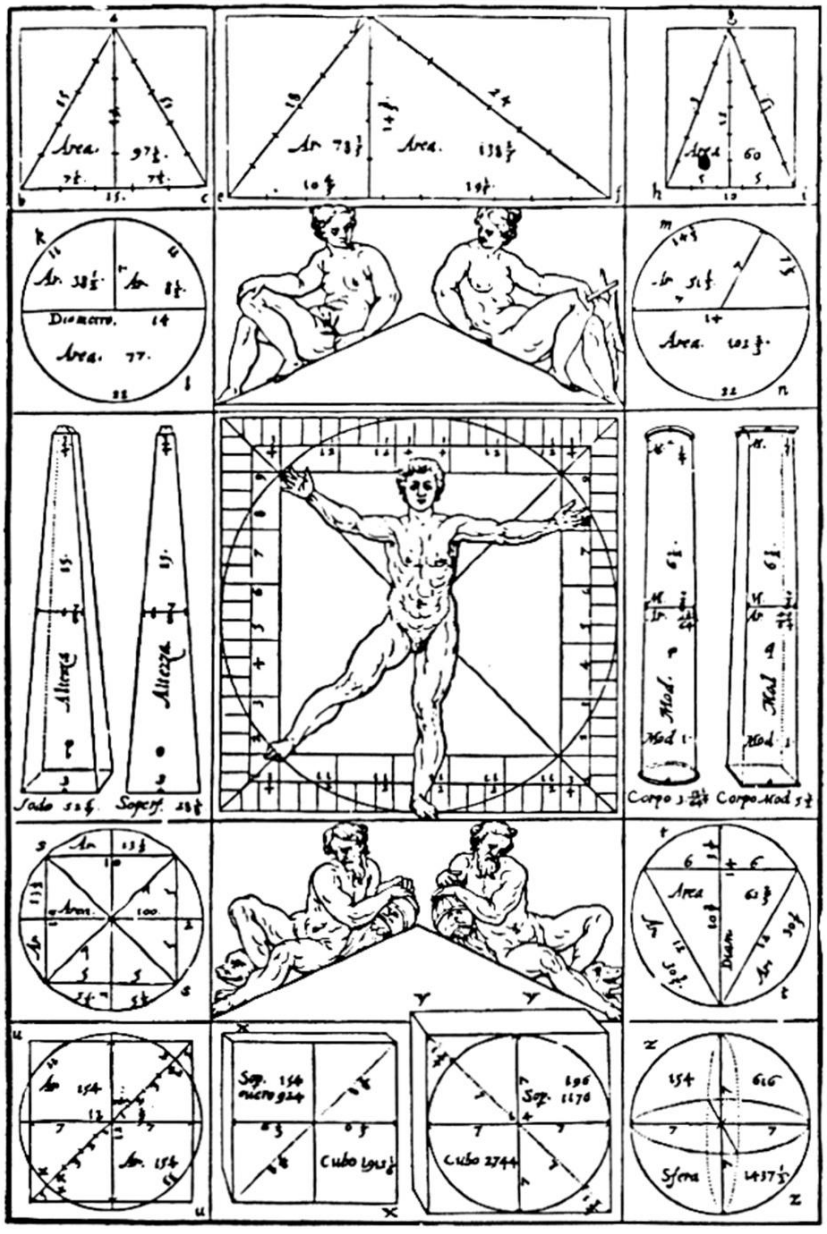

Figure 16. V. SCAMOZZI, op. cit. Part. I, Book I, p.40, An illustrated page showing various geometrical shapes and their mathematical and anthropometric connotations.

SHUTE, WARE, MORRIS AND WOTTEN

In England, basing the design of buildings onto sound and "universally" acknowledged Italian canons was initiated after Shute's visit to Italy. Shute having studied the classical Ten Books of Vitruvius and Alberti played the role of the importer of these values into the English medium.

His The First and Chief Grounds of Architecture,[73] although, not containing anything more than the preceeding Italian treatises, is worth studying so far as its impact on English architecture is concerned. The original caryatids of Shute are remarkably important as they trace some semantically relevant parallels between the classical orders and the corresponding human figures. Despite the apparent Dutch influence, Shute's caryatids were probably one of the pioneering efforts to attribute semantic qualities for architectural matter. Therefore, given the naiveté of the analogic model between the orders and human figures, we may consider Shute's book an important input to design theory. Furthermore, he is indispensable for the field as the introducer of the clasical orders and Italian theory beyond the Continent. (Cf. Figures 17 to 21)

Shute's breakthrough in English architecture, where the practice used to be in the hands of builders and surveyors, channeled the patterns of thought in England. The amateur contributions of Gerbier, Wilsford and Blome through the 17th century formed the main line of development in the architectural theory which became disseminated. In the same period Italian architectural treatises by Serlio, Vignola, Palladio and Scamozzi along with the French works by Le Muet and Freart de Chambray were made available to architects and readers in English.[74]

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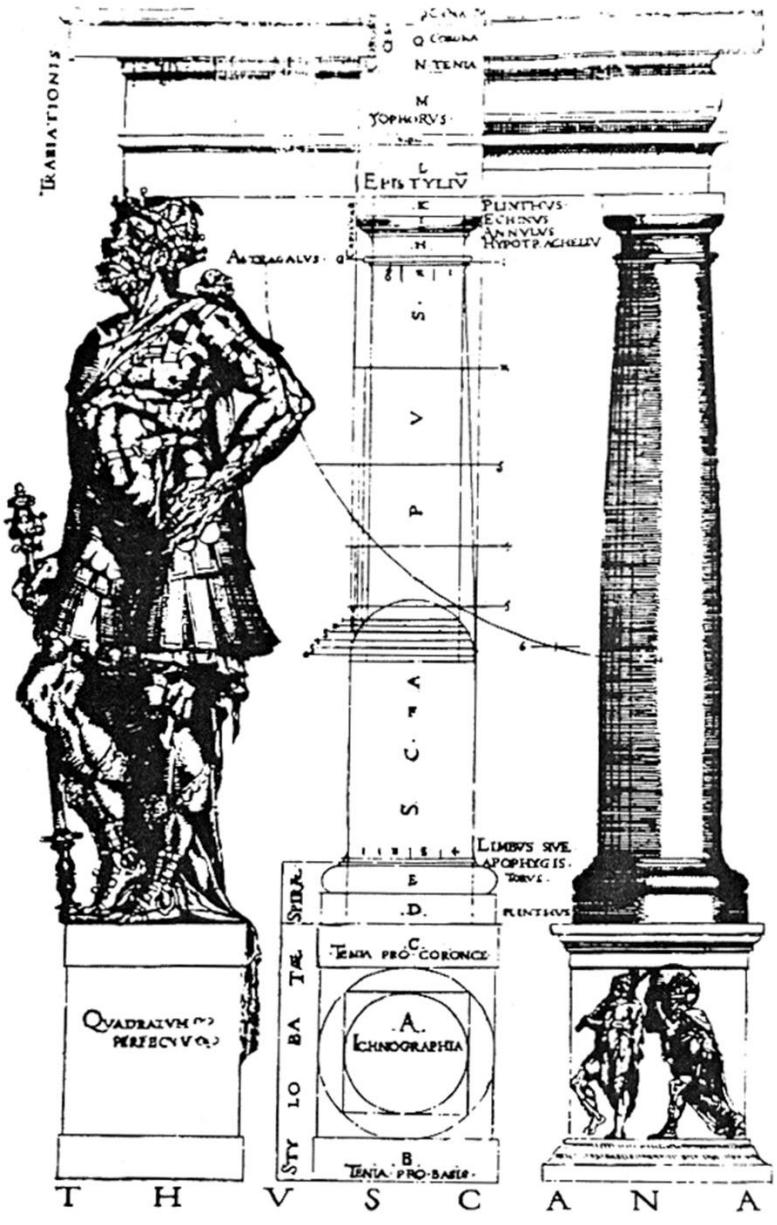
[73] J.SHUTE, The First and Chief Grounds of Architecture, London: John Shute, 1563, (Facsimile Edition, London: Gregg Press, n.d.)

[74] vide. The charts in: R. WITTKOWER, "English Neoclassicism and the Vicissitudes of Palladio's Quatro Libri", unpublished lecture given at Folger Shakespeare Library, Washington, 1970, reprinted in: idem. Palladio and Palladianism, New York: George Braziller, 1974, on the various editions of the works by Serlio, Vignola, Palladio, Scamozzi, Vitruvius, Pozzo, Alberti, Blum, Freart de Chambray, Francini, Barbet, Le Muet, Le Clerc, Perrault, Laugier, Desgodetz through 1650-1800.



Figures 17-21. Tuscan, Doric, Ionic, Corinthian and Composite orders with their respective analogic caryatids by J. SHUTE, op. cit.

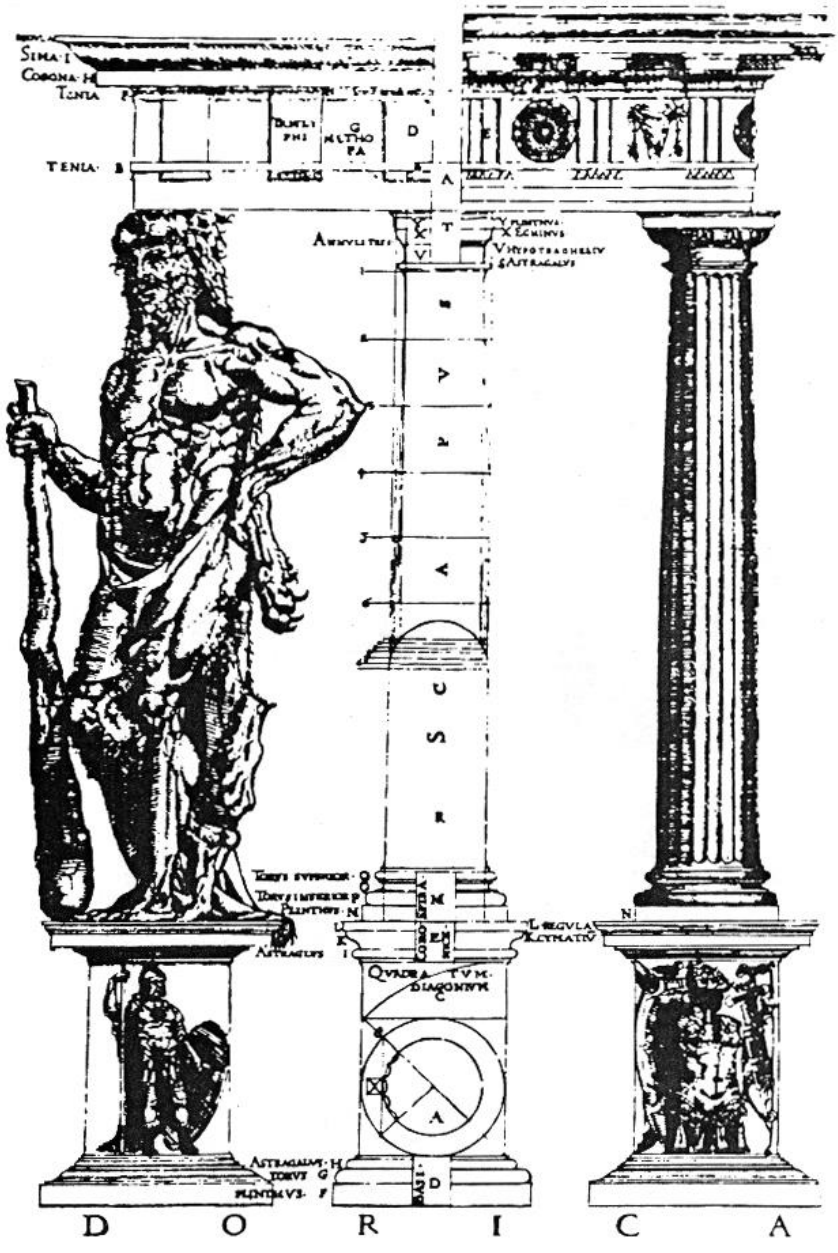
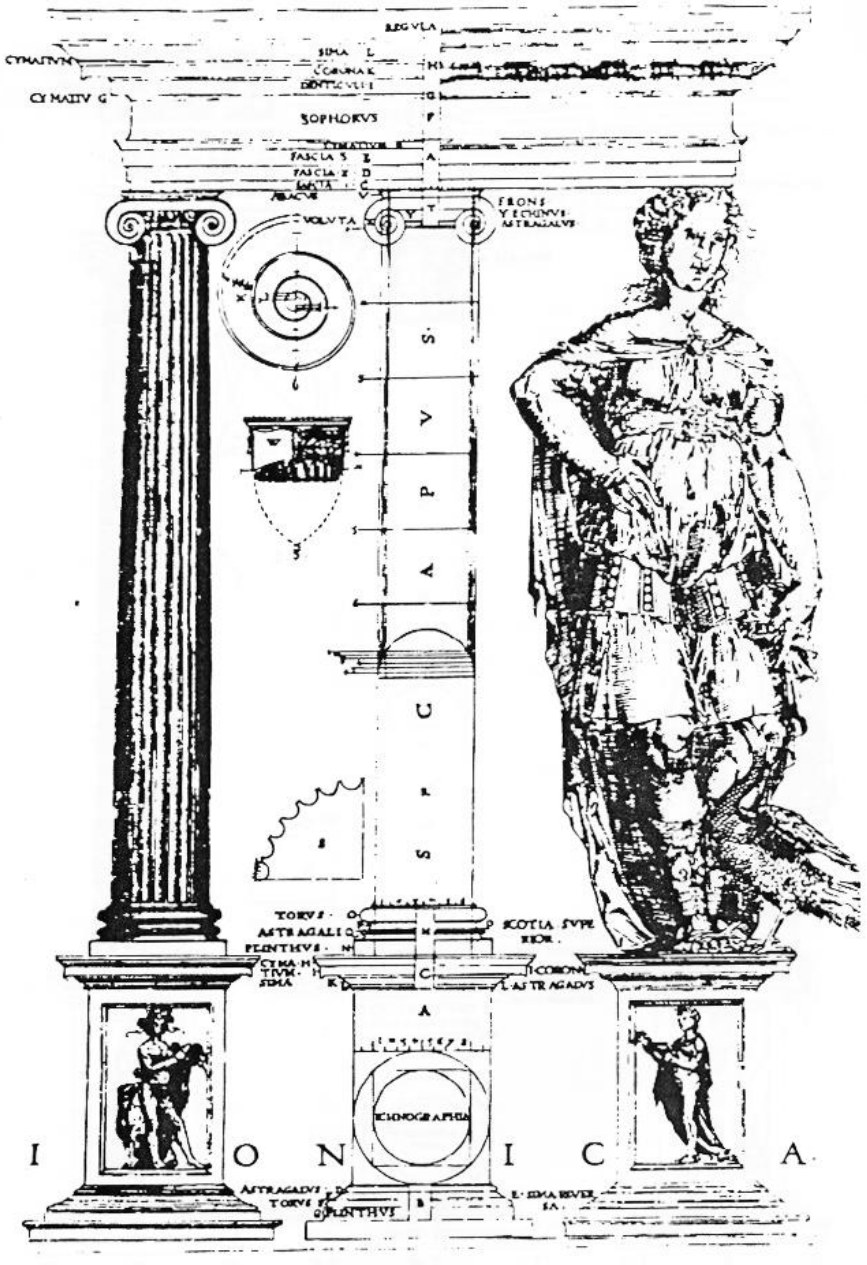


Figure 18.


REGVLA
SIMA
CORONA
DENTICVLI
SOPHORVS
FASCIA 3
FASCIA 2
FASCIA 1
ABACVS
VOLVTA
FRONS
ECHINVS
ASTRAGALVS
SCAPVS
TORVS
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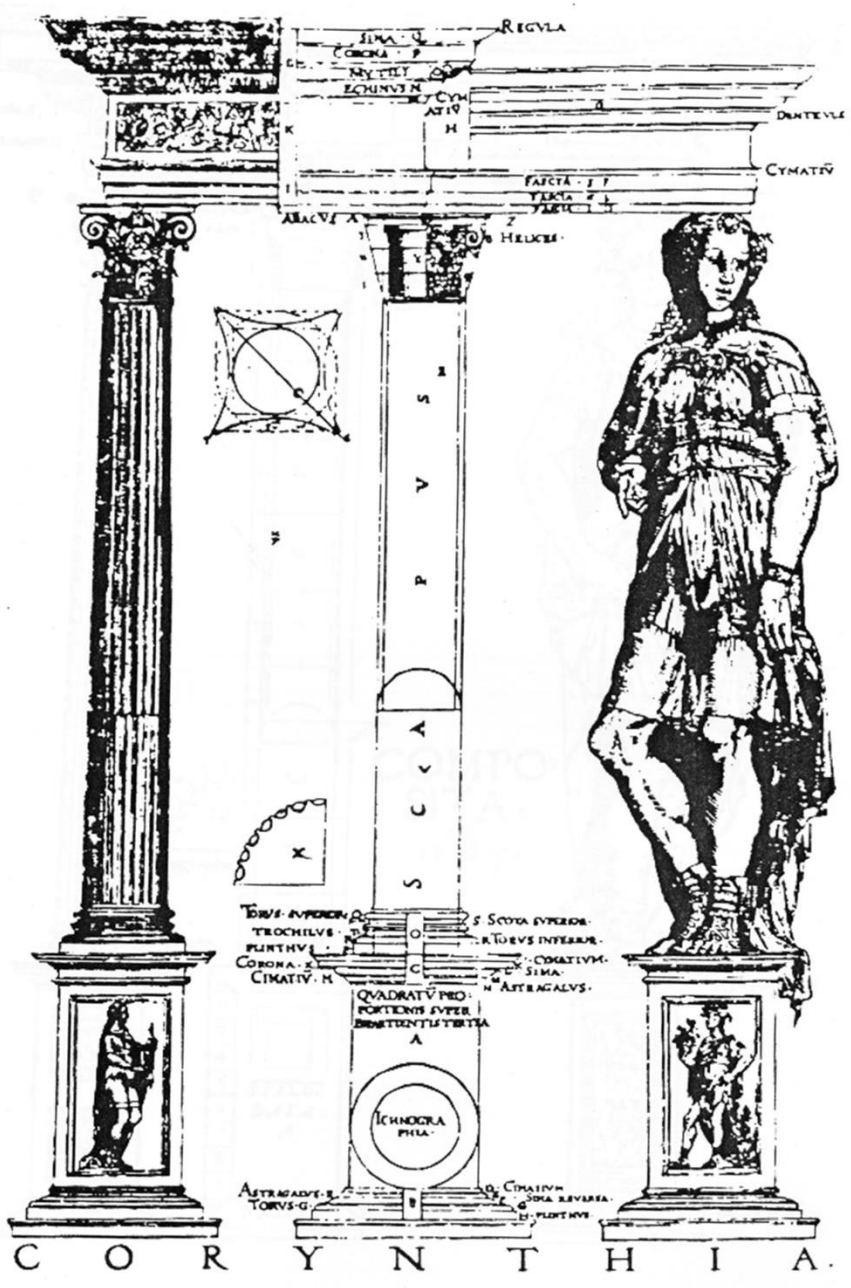
PLINTHVS
SCOTIA SVPERIOR
CYMATIVM
CORONA
ASTRAGALVS
I O N I C A

Figure 19.


REGVLA
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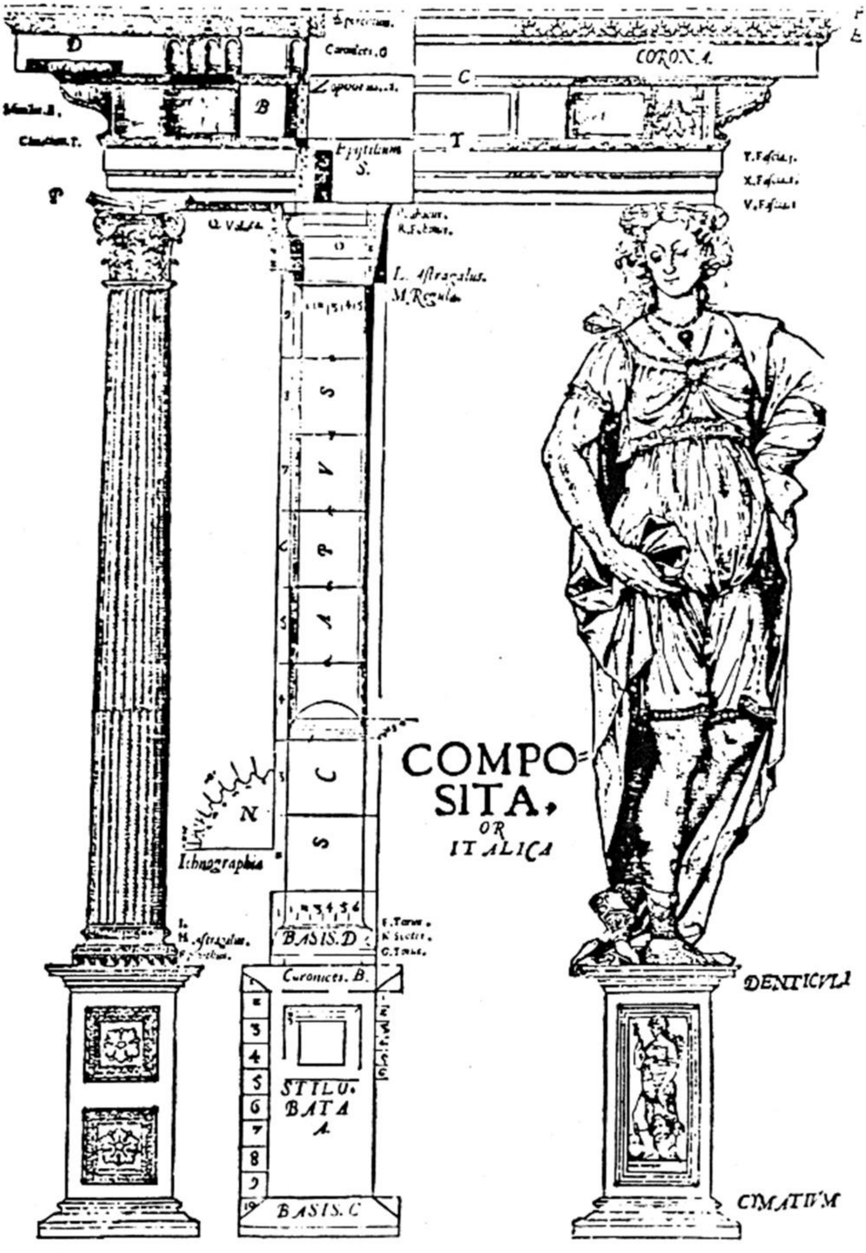
ABACVS
HELICES
SCAPVS
TORVS SVPERIOR
TROCHILVS
PLINTHVS
CORONA
CYMATIVM
QVADRATVM
ICHNOGRAPHIA
ASTRAGALVS
TORVS
CYMATIVM
PLINTHVS
CORYNTHIA

Figure 20.


CORONA
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BASIS.D
BASIS.C
STILO-
BATA
A
COMPO=
SITA,
OR
ITALICA
DENTICVLI
CIMATIVM

Figure 21.

The other important contribution to architectural theory from England was by Wotton.[75] Like Shute, Wotton was also not an architect. As a matter of fact there are not treatises worth-mentioning in seventeenth century that were produced by architects. Wotton incorporated the teachings of Bacon with whom he was in close friendship, into the concept of architect developed by Vitruvius and Alberti, i.e. "a diver into causes and into mysteries of proportion."[76]

Ware, an outstanding architectural publisher and theorist who made Palladio available in English to open a new era in architectural thought in England, deserves attention for his Complete Body of Architecture.[77] In this book Ware shares the views that are in an empathy with what was stated by Alberti almost two hundred years earlier. Nevertheless, both in Ware's eighteenth century and at the present, the side that Alberti, Ware and the others defended on the importance of whole and supplementarity of ornamentation and similar auxiliaries maintained their validity.[78]

The written work of Morris[79] has not received the due consideration which it deserved as the defender of ideas opponent to the currents of the tradition of the time. Morris claimed the necessity of absolute symmetry and exactness and he proposed ideas in the form of various building designs composed of diversified shapes integrated with basic geometric relationships. Formwise, having based some of his designs. expressly on cubes, Morris can be classified as the person who pioneered in the proposal of cubist canons for architecture.

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[75] H. WOTTON, Elements of Architecture, London: John Bill, 1629.

[76] R. WITTKOWER, op. cit. 1974, p.99.

[77] I. WARE, A Complete Body of Architecture, London: T. Osborne and J. Shipton, 1756.

[78] "...the orders of architecture, which give the greatest beauty that can be communicated to a building... are not essential parts, because very good, very elegant, edifices... may be erected wholly without them." ibid. p.94, "The student may be assured that he will never execute that design well which he contrives by piece- meal. All must be planned together, and every part regulated upon just idea of the whole. ibid. p.336.

[79] R.MORRIS' written work mainly consists of: An Essay in Reference of Ancient Architecture, London, 1728; Lectures on Architecture, London: 1734-1736, Rural Architecture, London, 1750; Architecture Improved, London, 1755.

THE AGE OF REASON

The line of development opened by the reissue and up to date consideration of De architettura of Vitruvius kept its influence in the essence of the works of Alberti, Palladio, L'Orme, Vignola, Shute, Wotton, together with many others. This had always been sustained as a line thought of classicism and gained importance at increasing rates. when a conformity of classicism was sought after. The issues that made Vitruvius valid for such a long period of time were, firstly the strictly canonic character of the qualities and attributes to form, and secondly the reality of the substantiated facts inherited from the ancient civilisations of Greece and Rome. These civilisations created the forms and orders in such a cultural and philosophical completeness that they were accepted by the values of the Age of Humanism when the forms were intended for an eternal context of survival.

The idealism of the dogmatic facts related to Greek, then to Roman canons of built form were carried throughout the ages and found valid media and followers both in their concrete, and even abstract content. This idealism has had its roots and cause-effect-cause cycles in the essential rules that evolved in the course of history and gained a content in its social, cultural and philosophical context.

Although the idealised models of architecture pioneered by Vitruvius, survived for a long past, they encountered with the other streams of development which not only opposed the idealism of form but also proposed new frameworks for the understanding of architecture. These frameworks basically surpassed the dogmatic proposals of canons and orders and various semantic attributes to these orders. The new approaches to design and theory of architecture which emerged in the late seventeenth century questioned almost all of the commonly accepted grounds forming the status quo of the theory of design.

Similar to the Renaissance, which evolved through a rediscovery of rules and values of the antiquity, the new pattern of thought developed side by side with the new scientific, philosophical and political developments in Europe. The revolutions that occured in the fields of science and technology seemed to become imperative factors requiring a redefinition for the stagnant idealised theory of architecture and design which had always aimed at the creation of architectural idols via canons and unquestionable, rules and dogmas which were unanimously agreed upon.

Despite its all positive humanist aspects, the Renaissance theory was dogmatic in essence. This dogmatic nature was primarily caused by the lack of reasoning behind the anthropophile rules proposed in the canons, analogies and even in the utopias.

The progressive theorists of the Age of Reason were in the position of drawing parallels between the theory of architecture of the time and the scientific and philosophical achievements. It was unavoidable for them to go back to the essentials that constituted phenomena; this was done by reasoning. For the first time in the theory of architecture, no short-cut conclusions asserting canons and principles were favoured. Reasoning and analytical thinking enriched and structured the vocabulary of architectural theory which used to be confined exclusively to the language of building along with the physical universe related to that.

The reflection of the methods and findings in science and philosophy onto the arts encouraged analogical patterns of interaction between various areas in theory. Admittedly, these efforts were merely indications of a radical change in the theory of arts and architecture. The positivist attempts to describe the nature and function of architecture and design did not come to fruition until recently when methods and reasoning in science developed well enough to deal with problems of complex nature.

In the architectural theory of the Age of Reason, major attempts were concentrated in a descriptive framework to define and analyse beauty as the essence to evaluate the outcome of architecture. As a matter of fact, in these contributions architecture was tangentially involved in the theory since the majority of the conclusions were mainly aimed at fine arts in general. This is particularly valid for the philosophical inputs from England by Hume, Burke, Kames, Chambers and Alison.

As far as theory is concerned the revolutionary contribution to architecture came from Italy through the teachings of Lodoli where he cultivated functionalism as the essential doctrine for design. Lodoli's functionalism was maintained by Memmo but could not find an appropriate medium to become an effective mainstream of thought earlier than the present century.

In France, Laugier set forth the ideas that questioned the relevance of the dogmatic issues of classicism. In addition to that he advocated the ideas that were bound to become generic issues in theory of architecture. J-F. Blondel, Boffrand and Laugier sowed the seeds of a revolution in architecture parallel to the various main currents of philosophy and politics of the time. This revolution was both manifested and symbolised in the utopic and analogic projects of Boullée, Ledoux, Lequeu and their followers.

Many important lines of thought of the present theory of architecture were initiated in the Age of Reason even though there were influential utopic and analogic

contributions, the most important aspect of this age was its descriptive quality in reference to our taxonomy.

In England also, the architectural theory initiated with De re aedificatoria of Alberti followed the same classical-idealist framework throughout the fifteenth, sixteenth and seventeeth centuries. One main issue that was common in almost all of the contributions of these three succeeding centuries was the artists themselves who forged their critical and theoretical language. Although some ideas and concepts were borrowed from literary historians, canons declaring absolute idealised standards were generated and sustained by the artists and architects.[80]

Wittkower summarised the main tenets of the classical doctrine, which governed the architectural theory for three hundred years, in the following four concepts:

> (F)irst, that (architectural theory) is a science, secondly, that art has to interpret an objective ideal of beauty, thirdly, that art must be concerned with human actions, and fourthly, that the purpose of art not only to give pleasure but also to teach a moral lesson.[81] ... thus a theory of beauty was necessary and the interpretation of beauty is really the problem of classical aesthetics.[82]

Acting from the definition above of beauty it was fairly natural to end up with idealised canons of built form. The variations and enrichment of the architectural elements were done on the basis of these preconceived canons. The minds that were setting, developing, prevailing and applying the theory were the same. Therefore, architectural theory of the fifteenth to the seventeenth centuries were unanimously acknowledged, elite and exclusive to the fields of arts and architecture.

With eighteenth century an important phenomenon is observed. The critical views on theory of arts, architecture and aesthetics were generated from the non-artist circles. So architecture had to interact with the theoretical inputs made available through the criticisms of philosophers, critics and writers. Consequently, the elitism and exclusiveness of architectural theory was reduced to a certain extent by utilising the knowledge generated by other fields of interest.

The origins of the French theory of eighteenth century go back to the first course in "The Theory of Architecture" initiated by Blondel at Academie d'Architecture, in 1675. This course consists of two parts, the first of which analysed "primary

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[80] R.WITTKOWER, Classical Theory and Eighteenth Century Sensibility, Lettere Italiene, XVIII, 1966, Reprinted in: idem. Palladio and Palladianism, New York: George Braziller, 1974, pp. 193-204.
[81] ibid. p.204.
[82] ibid. p.194.

elements" and "complex elements." The former was concerned with walls, orders, arcades, windows, etc. and the latter with rooms, entries, stairs, courtyards, etc. The second part deals with the general principles of proportion. There was nothing extraordinary in Blondel's course apart from being the pioneering course in an academic context in Theory of Architecture.

De Architettura still remained as the principal sourcebook of architecture until the beginning of the eighteenth century. The Vitruvian trilogy of solidity, commodity and beauty constituting the total scope of architecture did not weigh equally throughout the period of its application. For example, Blondel, the authoritative theoretician of seventeenth century, in his Cours d'Architecture[83] concentrated mainly on the "beauty" aspects of architecture and almost totally ignored the other two, i.e. commodity and solidity. Within the understanding of his time, this work turned out to be extremely preoccupied with decoration and ornamentation. In the seventeenth century one can hardly talk about any divergence from the classical ideal of beauty through the orders and excessive decoration aiming to add to that.[84]

CARLO LODOLI

The first notable impetus upon architectural theory came from the teachings of Lodoli who, unfortunately, did not expressly manifest himself in his own writings. Lodoli's thoughts reach us through the writings of Memmo, Algorotti and Milizia. Algorotti defended the side of the traditionalist and was rather critical about Lodoli's ideas, while Memmo was one-sided Lodoli partisan.[85] Lodoli diagnosed that the architecture of his contemporary was fundamentally wrong. To overcome this he declared the necessity of functionalism. "In architecture only that shall show that has a definite function, and which derives from the strictest necessity."[86]

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[83] F.BLONDEL, Cours d'Architecture, Paris, 1675.

[84] Some architectural critics of the time criticised the involvement in decoration. Architecture Moderne, Paris, 1728, in its preface "complained that the books of last sixty years had turned to nothing else but decoration,.." W.HERRMANN, Laugier, and the Eighteenth Century French Theory, London: A. Zwemmer, 1962, p.21. fn.11.

[85] After studying: A.MEMMO, Elementi dell'Architettura Lodoliana; ..., Rome, 1786; F.C.ALGOROTTI, Saggio Sopra dell'Architettura, Opere, vol. II, Leghorn 1764(1756); Lettere Sopra l'Architettura, Opere, vol. VI, Leghorn, 1765(1742-1763); along with many other contemporary works E.KAUFMANN, op. cit, 1955, p.96, believed that it is best to present Lodoli's ideas at the basis of Algorotti's writings which came out when he was alive.

[86] E.KAUFMANN, ibid.

The main currents of his time were in opposition to Lodoli. Especially, the devoted defender of classicism and ornamentalism, Algorotti to whom we mainly owe Lodoli's ideas was against him. Meanwhile, Lodoli sowed the seeds of a sound theoretical grounds of descriptive inference, but this took about two centuries to bloom.

In his teachings Lodoli defended non-comprimising functionalism. His ideas, if not actually then, philosophically foreshadowed the main currents of the functionalist ideas of the present century. There is neither an indication of the effectiveness of Lodolian functionalism in his own period nor a tolerated opening to these ideas in the classicist minds who still dreamed of "drinking from the most pure fountains of Greece."[87]

DAVID HUME, EDMUND BURKE AND WILLIAM CHAMBERS

With Hume's Treatise of Human Nature the theory of aesthetics undergoes a change from the principles of reasoning and logic to "pleasure and satisfaction to soul."[88] Later in his Of Standard of Taste, he takes his point further and states "Beauty and deformity... are not qualities in objects, but belong entirely to the sentiments... Each mind perceives different beauty.",,,[89]

Hume's contemporary Burke takes up a similar view of aesthetics. In his Enquiry into the Origin of Our Ideas of the Sublime and Beautiful he states: "beauty... is the quality of those qualities in bodies by which they cause love, or some passion similar to it."[90] Concerning the central issue of proportions that dominated the architectural theory from the beginning, Burke is revolutionary. Proportion, he states, is solely a matter of mathematical inquiry, indifferent to the mind, and without interest to the imagination. He is vociferous about the absurdity of the

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[87] ibid, quotes from: F.C.ALGOROTTI, op. cit. 1756, p.59.

[88] This development might as well be interpreted as the first interdisciplinary interaction among other fields of inquiry and architecture. The reasons for an interaction as such may be due to the boom in the fields of science, (i.e. mathematics, astronomy, physics, etc.) and their unavoidable dominance as well as the developments in the philosophy especially the impact of the empricists like Locke, Berkeley and Hume. Meanwhile architecture, divorcing itself from the monopoly of the church, can be considered as the most dominating factor affecting this interdisciplinary character.

[89] D.HUME, A Treatise of Human Nature, 1739; idem. Of Standard of Taste, 1757. Quote from R. WITTKOWER, op. cit. P.200.

[90] E. BURKE, Enquiry into the Origin of Our Ideas of the Sublime and Beautiful, 1757.

classical concept of beauty that had its roots in the idea of an all-pervading mathematical order.[91]

The most influential architect of the period between 1760-1790 was Adam, who almost monopolised the major commissions then, published his thoughts under Works of Architecture where he spoke of "permissible" architecture as being "informed and improved by correct taste." In this he was conservative and advised the works of the ancients.

In the same vein as the empirical philosophy of Locke, Berkeley and Hume, along with the contemporary theorists like Burke, Shaftesbury, Kames, Alison, etc. who all reacted against the classical doctrine on the architectural principles of aesthetics, Hogarth[92] also wrote about the importance of sense perception. He asserted that beauty had little to do with dogmatic rules and prejudices but the experience. Soon after Hogarth, Chambers published his Treatise on Civil Architecture[93] which is commonly accepted as the "most learned English treatise on architecture" of the century.[94] Owing to his training in Paris Chambers propounds the classical dogma generated by French academic theory. On the other hand, he was well aware of the developments on the philosophical spheres there, his return to classicism was different. He, at least, "rejected the analogy between proportion in visible objects and music, and replaced it by an empirical and subjective approach to proportion derived from the theory of association."[95] Meanwhile, he kept his belief in "rational, classical principles sanctioned by a long memorable tradition."[96]

In the eighteenth century architectural theory of England we may conclude that there were two main currents of thought. One of them was the classical canonic doctrine which had been followed since the Renaissance and claimed for various absolute rules in disciplining architectural products. These rules were set with or without making analogies between architecture and the other fields of aesthetic experience, e.g. music. Apart from this classical theoretical line, the other development had its basis in the philosophy of its time, i.e. empiricism. The latter approaches favoured sensibility and subjective experiences as opposed to the dogmatic rules. Throughout the eighteenth century, Neo-classicism remained as the governing style and a maintained conformity. "The man of letters channeled the

[91] R.WITTKOWER, op. cit. p.200.

[92] W.HOGARTH, Analysis of Beauty, London: Samuel Bagster, n.d. (1783)

[93] W. CHAMBERS, Treatise on Civil Architecture, London, 1759.

[94] R. WITTKOWER, op. cit. p.203.

[95] ibid.

[96] ibid.

taste of the public in other directions,"[97] and they made sublimity fashionable. It was then the appreciation of Gothic, Chinese, Egyptian and primitive styles appeared to sublime sentiments.[98] "It was these men who helped to prepare a situation in which all styles, classical and non-classical could be regarded as of equal value."[99]

The most important contribution of the eighteenth century to architectural thought in England was the introduction and development of reasoning which dominated both the clasical and non-classical camps of the theory. Finally, one other significant issue is that, so far as the principles of aesthetic judgement are concerned, some essential ideas were developed of a judgement type which were later theorised and coined as Gestalt principles of perception.

GERMAIN BOFFRAND

A dramatic impact and a change in architectural theory of the eighteenth century and its repercussions until the present occured in the later decades of the century in France. This was the visionary architecture[100] supported by a treatise[101] of Boullée and his contemporaries Ledoux, Lequeu and the work of their followers.

Before going into the discussion of the revolutionary attempts of these men, the theorists of the preceding generation as the teachers must be given a due consideration. Although Boffrand, was Boullée's second teacher, he must be mentioned earlier, since he was older and made his written statements seven years earlier in 1745. Boffrand's Livre d'Architecture [102] is the main document containing

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[97] ibid.

[98] ibid.

[99] ibid. p.204.

[100] There are numerous sources on the visionary architecture of Boullée, Ledoux, Lequeu, Desprez, and their followers. For the concerns of a unity of theory and architecture the works of E.KAUFMANN, viz. op.cit. 1952 and 1955 are the most outstanding. For a fuller documentation of the visionary projects of the movement a more recent book compiled after an exhibition by University of St. Thomas, Visionary Architects, Houston: U.of St. Thomas, 1968 is worth studying.

[101] H. ROSENAU, Boullée's Treatise on Architecture, London: Alec Tiranti, 1953.

[102] e.g. M. de FREMIN, Memoires Critiques d'Architecture, Paris: Charles Saugrain, 1702 (Facsimile edition: Farnborough: Gregg Press, 1967.) Fremin, who was not an architect but a president of a finance office can be taken as a representative of the common taste where he openly takes up a view against ornamentation and orders. "...les ornemens dans les Bâtimens n'y sont necessaire que lors qu'ils y sont naturels", p.58. "les cinq Ordres, lesquels ne sont la derniere et la moindre partie dans l'Architecture" Avertissement. Thus one may conclude that an intellectual background for a

his views on architecture and theory of design. At the time when he wrote it there was not much difference between the Roccoco and what we shall name from now on "revolutionary," yet his book discussed issues that later became the seeds of a revolutionary movement.

Boffrand's book along with J.-F. Blondel, Milizia, Laugier, LeCamus de Mezieres of the late eighteenth century foreshadowed a new concept: architecture parlante.[103] "Narrative architecture" or "architecture that speaks" aims at a semantic relevance of architectural form in correspondance with the use and function of the building. Saving architectural theory from the shallow meaning, attributes and symbolism of classicism which had been over-used within its own semantic context, this concept was definitely an important input to the theory.

Boffrand, as one of the initiators of architecture parlante, contributed to opening new horizons for the succeeding generation of architects who began to acquire a richer vocabulary for design, free from the dogmatic classical rules. “This was the new programme of the architecture parlante of an architecture which would speak to the spectator's mind rather than appeal to his eye.”[104] Despite the fact that at certain instances this new philosophy of finding expressions for buildings displayed trivial symbolism, it provoked designers to consider what an expression a building wishes to possess.

JACQUES-FRANÇOIS BLONDEL

Jacques-François Blondel was among the most open-minded teachers who questioned the rules, orders of classicism and over-ornamentation.[105] With his Cours d'Architecture Blondel takes up a view which is parallel to the functionalist theory set forth by Lodoli in Venice. But, in the eighteenth century we observe that architectural logic was defended more by the French than the Italian authors.[106]

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functionalist architecture was riper in France than Italy in the eighteenth century. G. BOFFRAND, Livre d'Architecture, Paris, 1745.

[103] For architecture parlante E. KAUFMANN, op. cit. 1952, pp. 441, 447, and idem. op. cit. 1955, pp. 102, 130, 134, 141, 150, 154. refers to the works of F.MILIZIA, Princip di Architettura Civile, 1781-1800, and N.L. de MEZIERES, Le Genie de l'Architecture ou L'Analogie de cet Art avec nos Sensations, Paris, 1980, after G. BOFFRAND, op. cit. and J.-F.BLONDEL, op. cit.

[104] E.KAUFMANN, op. cit. p.447.

[105] ibid. p.437.

[106] ibid.

Blondel advocates a rational interpretation of the Ancients. He neither denies nor overrates their relevance.

> ...(T) he mature architects should adapt their forms to the modern exigencies and the available materials. Architecture is creativeness, genius, the art of taste. This is why one breaks with the old canons. The works of the predessors have merits of their own. But the living have the right of criticism. One should not discard all the rules, but neither should one remain silent when architecture 'degenerates'.[107]

MARE-ANTOINE LAUGIER

The most important and probably the most influential references of eighteenth century French theory are the works of Marc-Antoine Laugier. His two editions of Essai sur l'Architecture[108] which were released in 1753 and 1755, and Observations sur l'Architecture[109] twelve years later, reflect one mainstream in the theory of the period. The theoretical foundations and Laugier's general ideas are closely linked with the preceeding contributions in line with the classical doctrine, especially, when Cordemoy's work is taken into account.[110] Given the fact that Laugier essentially maintained the line of classical theory, at certain points he diverges from it. Nevertheless, his written work is a contribution for the most up to date establishment of the classical normative canonic theory. This judgement does not aim to underrate his various efforts that are not only valid but also rather popular in some architectural currents of the present day.

Laugier's point of departure for architectural principles which even reflects itself in the frontispiece of Essai (Cf. Figure 22) is, probably, the same generic pattern for

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[107] E.KAUFMANN, op. cit. p. 443, quotes from J.-F. BLONDEL, Cours d'Architecture..., Paris, 1771. Livre 4, p.1 xiv; ibid. 1. pp. 132, 375; ibid. 3, pp.1 xvi, 1 xviii.

[108] Out of the two editions of Essai we could only study the latter one. M.A.P.LAUGIER, Essai sur l'Architecture, Paris: Duchesne, 1755, (Facsimile edition: Farnborough: Gregg Press, 1966), the references that are made to the 1753 edition of Essai are through: W. HERRMANN, Laugier and Eighteenth Century French Theory, London: A.Zwemmer, 1962.

[109] M.A.P.LAUGIER, Observations sur l'Architecture, La Haye: Desaint, 1765, (Facsimile edition: London: Gregg Press, 1966)

[110] The close contentwise similarities with M. de CORDEMOY, op.cit. and Essai can be considered as the latter being a continuation of the former, but Laugier is even accused of plagiarism. vide. W. HERRMANN, op. cit., p.156 fn. 34, and M. BORISSAVLIEVITCH, Les Théories de L'Architecture, Paris: Payot, 1951 (1926), p.88: Cordemoy est ennémi du modernisme, ainsi que son plagiaire, l'abbé Laugier..." But, as Laugier himself openly acknowledges the influence of Cordemoy's work upon his in Essai (1755) p.x this accusation is not fair.

those who search for the governing rules of architecture back in the vernacular mode of building. Laugier believes that the first step in architecture starts with four sticks and beams (a rustic hut) becoming a model for architecture from which many issues were derived.[111]

Laugier by taking the "rustic hut" as the generic model for architecture proposes a revolutionary leap from the Renaissance analogy which deduced all its laws and principles from "man." This contribution of Laugier should never be underrated because it clarifies many issues of architectural theory. Primarily the analogic content of Vitruvian model between a creation of the God, i.e. man, and man's own creation i.e. architecture, is replaced by a sort of point of departure to generate ideas and valid results via an archetypal solution to his necessity for shelter. Laugier takes an analytical view or the subject matter as opposed to an "unquestionable dogma" of analogy. (Cf. Figure 22)

When we compare the "rustic hut" of Laugier with Filarete's shelter with four posts we may conclude that Laugier takes up a pre-Renaissance stand on the genesis of architecture. Laugier does this with a difference in purpose that he intends to derive basic principles of architecture analytically instead of purporting to a scholastic dogma of Renaissance issued analogically. This is the prevalent belief of "man" as being a reflection of God. Any deductions from man automatically represent God in the form of a building. Therefore, we can consider Laugier as one of the pioneers among the descriptive theorists for the approaches to the problem analytically from some basic principles to shed light onto more complex architectural entities.

[111] ibid. p.9ff.

Figure 22. M.A.P. LAUGIER, op. cit. frontispiece, Beaute primitif.

For borrowing a sound theoretical foundation for architecture, Laugier goes to poetry, painting and music. There he has the works of Boileau-Desprez, de Piles and Rameau in mind.[112] Meanwhile, he asserts that it is not artistic duty to be concerned with artistic theory but it is the philosophers task to enlighten the principles and rules by reason, as the artists bring the method to perfection.[113]

ETIENNE-LOUIS BOULLÉE

The actual effects of Boullee's work onto the theory and practice of his contemporaries cannot be known accurately. Obviously, he opened up a new route of development which found followers ever since. Furthermore his approach is praised even at the present by some influential theorists.[114] The movement, having its origins in the teachings of Boffrand, Blondel and Laugier, can be considered as a sort of iconoclasm. Boullée, Ledoux, Lequeu and their followers demand radical changes from the unquestionably agreed dogmatic rules of architecture. These rules are the canons set by the Ancient Greeks and revived through the Renaissance to become the basic doctrine. The alternatives these men put forward are not any kind of revival of a period in history. As it frequently happened in the history of architecture, the opposition of Greek by Gothic or Florentine by Lombard did not

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[112] W. HERRMANN, op. cit. p.151.

[113] M.A.P. LAUGIER, Observations... op. cit. p.4: "Le Théorie des Arts n'est sont l'affairs des Artistes. Leur devoir se borne a en perfectionner les procedes. C'est aux Philosophes a porter le flambeau de la raison dans obscurité des principes et des regles. L'execution est le propre de l'Artist..."

[114] viz. Spirit in will to Express can make the great sun seem small.

The sum is
Thus the Universe

Did we need Bach
Bach is
Thus music is.

Did we need Boullee
Did we need Ledoux
Boullée is
Ledoux is
Thus Architecture is.

L.I.KAHN, U. of St. THOMAS, ed. op. cit., p.9.

attain much of their interest. On the contrary, they set forth a new perspective for architecture by changing the principles of form-making thoroughly.

In making this breakthrough, the concept of architecture parlante of their predecessors had naturally been an influential source of inspiration. This concept, as reinforced with the scientific discoveries of the preceeding century, formed the theoretical backbone of the works of the revolutionary architects.

It is not possible to speak about the ifluence of the written work of Boullée since his major contribution on architectural theory, Architecture, Essai sur L'art,[115] remained unpublished in the form of a manuscript. Despite the fact that he made a series of corrections and alterations of the manuscript aiming at a publication of the work, he could not realise it. Seemingly, he refrained from it owing to the political turmoil in France at that time. Idealogically, Boullée was more on the side of a "reformist" than a "revolutionary" as opposed to what his architecture naturally implies. Thus, he did not want to publish his treatise within his own lifetime. This, of course, does not mean that his ideas were not passed to the succeeding generations. His teaching position at the Academie d'Architecture offered him enough chances of conveying his thoughts and architecture.

The efforts of Boullée, Ledoux, Lequeu, et al. in France along with Soane in England and Lodoli in Italy form a revolutionary discontinuum in the whole process of the development of architecture.[116] These men were pioneers, ones who questioned totally the validity of reviving the old canons for new circumstances. Furthermore, they were displaying concretely how to deal with architecture in its changing context. Like the Renaissance being a revival of the Ancient Greece, the following century revived Gothic, consequently the revolutionary path opened by Boullée, et al. did not develop in the pattern that it deserved.

For the dominant forms of architecture, Boullée went back to the origin of forms in architecture from which he concluded the basic generative shapes of geometry. In order to display the forms in their essential purity, he proposed monumental scales with functions to compromise such a monumentality. However, the monumentality of his proposals exceeded by far the economic frontiers if not the structural engineering limits of the available technology of the time. Thus, it had not been

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[115] E.-L. BOULLÉE, Architecture, Essai sur l'art, H. ROSENAU, ed., Boullée's Treatise on Architecture, London: Alec Tiranti, 1953, pp.25-105.

[116] To include Carlo Lodoli with his functional theory into this set of contributions may seem incorrect. It was from the point of view of his non-confirming unorthodoxy in the mainstream of his era that Lodoli can be included in this group. There is not any trace of Lodoli in neither Boullée nor of his so far as the philosophical content of their contributions are concerned.

possible to offer Boullée the chances to make him realise his ideas in solid form and space. Consequently, these proposals have reached us as pictorial documents of his ideals and architecture.[117]

In his treatise Boullée brings forward the old discussion between. Perrault and F. Blondel on the genesis of architecture whether it should be free creation of the imagination or the main principles of it must be derived from nature. On this subject, Boullée defends a close. relationship with nature. Almost all of his projects are presented in their natural context with necessary landscape proposals relevant to the symbolic content of the buildings. The buildings are designed for subjects such as cenotaphs, cemeteries, towers, monuments, city walls, city gates, forts, palaces, etc. For each of these he utilises very limited ornamentation only at places where he wants to put a particular emphasis. The main body of his architecture is composed of cones, spheres, pyramids and basic prisms. In cases where he uses these basic forms, he gives some theosophical explanations for reasoning.[118] Boullée's manifestations of form are probably the first elements of a thorough movement towards revolutionary changes in architectural expression. He was too early to declare these radical thoughts on what architecture ought to deal with. It took more than a century for such radical approaches to attain the credits that they deserve. Apart from that, Boullée paved the way to a new tradition of visionary architecture. This tradition remained to be a conserved ideology, a form of expression and a form of reaction which gained momentum at times when

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[117] These are now preserved in Bibliothèque Nationale, (Fonds Français, No.9153). E.KAUFFMANN, op. cit., 1952, pp.460-472, idem. 1955, ills. 146-150, H.ROSENAU, ed. op. cit. figs. 10-57, U. St. THOMAS, ed. op. cit., pp.19-65.

[118] The following quotations are from E.-L. BOULLEE: op. cit., the page numbers refer to H. ROSENAU, op. cit. edition; the underlined page numbers indicate the translation from U. St. THOMAS, op. cit.:

> The egyptians had some majestic conceptions, and it is easy to understand why their pyramids have been so admired. The Architectural order in their temples offers an image of grandeur. (p.98, p.19) The undivided mass preserves the aura of immutability. (p. 82, p.20) I have given this pyramid the proportions of an equilateral triangle because it is in perfect regularity that the beauty of form lies. (p.82, p.25) From whatever side we look at this shape (sphere) no trick of perspective can alter the magnificance of its perfect form. (p.83, p.26) The shape of the sphere has even more to recommend it. Of all bodies, it offers the largest surface is flawless and endless. Besides these qualities, we must speak of a grace that owes its being to an outline that is soft and as flowing as it is possible to imagine. (p.35f, p.26)

architectural understanding diverged or divorced from the common practice of building.[119]

CLAUDE-NICHOLAS LEDOUX

The first part of Ledoux's L'architecture [120] was published in 1804, only two years before his death. This edition contains two thirds of his total preparation. It is both in verbal and graphic language. To summarise his thoughts it will be quite convenient to list a set of quotations selected by Lemagny for a short bibliography he wrote.

> The architect is the rival of nature, and out of it can form another nature. He can subject the whole world to the desire of newness that stimulates the chance movements of his imagination... Everything that is not indispensible tires the eye, disturbs thought, and adds nothing to the conception... Those who circumscibe their inspiration within the pentameter (five measures, five orders) are misled. Real harmony consists in the way one uses the notes from which it is fashioned.[121]

Ledoux's written work shared the same fate as Boullée's. It did not influence his contemporaries at the magnitude it deserved. The work even remained unnoticed in his own country until recently. It was not until the present century that both Boullée and Ledoux were given due recognition.[122]

Ledoux had some ideals in a social context when he defined the function of the architect: "Everything is within his realm -- politics, morality, legislation, worship, government.[123] Similar to Filarete, he assumed all these ideals within one architectural context, i.e. "The Ideal City." Unlike Filarete's didactic utopia, Ledoux had a real commission to design when he was named 'Inspector' at the Saltworks in Franche-Comte. He named his idealised town around the saltworks Chaux. He proposed buildings lined around in an unobstructed eliptical form having the

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[119] The architectural tradition that reacted against the status quo and common building practice became influential especially in late 1960's. These approaches will be dealt with later in Ch.2.5.

[120] Ledoux' book has two original editions. C.-N. LEDOUX, L'architecture considerée sous le rapport de l'art, des moeurs et de la legislation, Paris: the Author, 1804. The total work is published by D.RAMÉE, in 1848, this edition contains 300 engravings and an Avertissement.

[121] J.-C.LEMANGNY, Claude-Nicholas Ledoux (1736-1806), U. of St. THOMAS, ed., op. cit., p.67.

[122] vide. E.KAUFFMANN, op. cit., 1955, p.167 and p.265 fn. 418.

[123] U. of St. THOMAS, ed. op. cit. p.109.

factory in the center. "Ledoux did not want civic art to be strictly utilitarian, he did not want the city to be simply an agglomeration of houses, he wanted it to be the crown of all architectural endeavours."[124] In his Ville de Chaux we find the seeds of the nineteenth century planning ideas, especially those of Haussmann and his followers.

Ledoux produced the sketches of all of the needed types for Chaux. Both in the public buildings and private houses we see extremely elaborated examples of architecture parlante. This idea had been taken so far that a clear expression even for every professional individual, was aimed for each private house. Apart from his contribution to the planning theory of the time, his details for Chaux can be considered as an effort towards the concretisation of the architecture parlante of preceeding generation.

JEAN-JACQUES LEQUEU

Lequeu's thoughts are conveyed to us by a series of watercolour drawings with notes explaining them.[125] So, his work is more like the documents of conceptual architecture than pure theoretical contribution to theory of design. They contain invaluable information as they constitute a substantial reaction against the excesses and deficiencies of the common Baroque.

Lequeu's work suffered a similar oblivion as the works of Boullée and Ledoux as it had almost no impact on the architecture and theory of its own time. Lequeu's drawings are not negligible in the development of design theory, especially as they contain many aspects of the modern approaches in architectural theory along with some issues of the contemporary art.

Belief in the validity of architecture parlante is particularly obvious in Lequeu's architecture; he even vulgarises this concept. In addition to that, there is an excessive preoccupation in various architectural styles used for different types of buildings. One important point in these styles is that they are totally devoid of the common tastes and styles approved by the academia of the period. Lequeu collects the styles from many different localities in the world emphasizing some dominant elements and meanings. He also advocates new styles for new uses. Proposals in styles are denotive of Chinese, Indian, Turkish, Egyptian, Persian and Gothic, architecture all which are completely out of the context of the common architecture

[124] E.KAUFMANN, op. cit., 1952, p.512.

[125] U. of St. THOMAS, op. cit. pp. 130-207, contain a selective set of reproductions of Lequeu's work. vide. also: E.KAUFMANN, op. cit. 1952, pp. 538-558, for a commentary.

and the approved thoughts of the status quo. In addition to that, a building like "Cow's Stable" in the form of a cow and a sculptured "Hunting Lodge" composed of hounds and a deer are gestures that can only be tolerated by the pop-art current of the out day.

There are various elements of mysticism, surrealism, symbolism in Lequeu's conceptual architecture. These make it contextually free of time and place. Thus, the work acquires a universal and even an anachronictic quality.

The teaching of Boullée, Ledoux and Lequeu were taken up by many of their followers and amalgamated into a tradition which deserved the name "revolutionary architecture" diverging from the common conformities of the period. This movement, first accomodated within Academie d'Architecture then in Academie Royale des Beaux-Arts created an important tradition in architecture. In this movement the works of Desprez, Verly, Tardieu, Deléphine, Larseneur, Barbier, Gay, Sobre, Fontaine, et al.[126] mark the continuation of a very important mode conveying architectural messages. This mode of communication has been used frequently inarchitectural theory and practice when similar circumstances created a gap between common attitudes and progressive thought.

[126] For the works of the followers U.of St. THOMAS, op. cit. pp.208-234, has an anthology offering a concise idea of this movement was carried on.

THE NINETEENTH CENTURY

The theory of architecture of the nineteenth century evolved in parallel to the theory of aesthetics of the time. The main progress occured in the theory of proportion. Hence, the proportioning of an architectural entity seemed to be the most important factor which was worth studying. The major under-motive behind this was an implicit agreement with the classical dogma, and the theoretical efforts were towards finer analyses of those principles. Consequently, these analyses were mainly concerned with the perceptual qualities of the buildings in the third dimension i.e. the façade, along with the philosophical implications of these qualities.

It is dissappointing to observe that, in a century when dramatic changes and developments in science and technology were achieved, almost no important progress took place in the theory of architecture and design. To display the reasons of this occurance necessitates an elaborate research into the period, with a consideration of all the possible forces that might have affected the process. This is obviously beyond the scope of the present work, but we shall try to point out certain determinants that had direct or indirect effect on this stagnancy. But it is our contention that the developments in fields of science, technology and philosophy found their applications in the architecture of later periods, even when these developments happened to be relevant from the beginning. Among many reasons causing this, we can list at a glance the non-productive nature of architecture, its large scale and static character along with the fact that major changes in architecture always followed similar changes in societal structure.

In general the architectural theory of the nineteenth century can be regarded as a period of revivalism, that is full of exercises of the forms, orders and principles inherited via the tradition of the architectural profession. Whole efforts were consumed with stylistic exercises aiming at combinations of a few of them into supposedly new forms. In this stagnant period[127] the educational principles and rules of the Beaux Arts tradition that were heavily blended with classicism were almost unanimously accepted all around the western world. This gained such a momentum that no architectural school in the western world was conceivable

[127] P.COLLINS, Changing Ideals in Modern Architecture, London: Faber, 1965, places this stagnant period of "revivalism" between 1750-1920, which he says "...must be regarded,..., simply as an unhappy interlude interrupting an otherwise continuous architectural tradition, an interlude of little relevance to contemporary architecture except in so far as it nourished the seeds of rebellion which eventually directed architecture back to its proper path." p.61.

without the presence of an authentic "Parisienne" Beaux Arts professor among the faculty.[128]

The path of development that evolved through the Renaissance and flourished in the Age of Reason almost ceased and efforts in architectural theory were concentrated on finer formulations of aesthetic principles which could not supercede mere geometric dogmas. Unfortunately the whole endeavour was exclusively to display geometric relationships. All these exercises made architectural theory identical to the theory of proportion while proportions were mainly manipulated with regard to the basic concepts of equilibrium and stability as the other complementary concepts to beauty.[129]

The main body of efforts that constituted the architectural theory was not exclusively composed of those that belonged to the theory of proportion. Developments taking place in the theory of perception and in other related "soft sciences" directly influenced the theory of architecture. This was due to the fact that architectural theory then dealt only with the perceptual qualities of the built form.

Most of the noteworthy progress that took place in the architectural theory of the nineteenth century occured in the theory of aesthetics rather than architecture's own theoretical premises. If we use Collins two main divisions of architectural theory, one applying the general philosophy of art onto a particular type of art, i.e. architecture, and the other regarding the philosophy of architecture as a separate study,[130] the nineteenth century theory can be conceived mainly in the former category. Thus the contributions diverging from the classical, dogmatic and canonic or even from the italophile line belong to the general theory of aesthetics rather than the particular theory of architecture.

From the point of view of the influence of philosophy upon the theory of aesthetics - then on architecture - Kant's contributions are important and his categorisation of aesthetic qualities is noteworthy.

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[128] A.D.F.HAMLIN, Architectural Education, A Cyclopedia of Education, ed. P.Monroe, New York: MacMillan, 1911, v.1.

[129] J.GWILT, An Encyclopedia of Architecture, Historical, Theoretical and Practical, London: Longmans, Green and Co., 1891 (1842), Book III, p.339.

[130] P.COLLINS, Theory of Architecture, Encyclopedia Britannica, Chicago: E.B. Inc., 1971, vol.2, pp. 325-326 B.

KANT, FECHNER, VISCHER AND LIPPS

Kant's Critique of Judgement[131] conceives beauty under two main headings. Pulchritudo vaga is "free beauty". This is a concept where the abstract aspects of the experiences resulting in beauty are included. Pulchritudo adhaerens is "dependent beauty". In this class Kant includes more empirical issues of beauty. He accomodates architecture within the set of "dependent beauty." Kant's categories can be conceived in parallel to the objective and subjective beauties denoting the former and latter categories above respectively.

With Kant, the "empirical approach in aesthetics was temporarily overwhelmed by the powerful influence of German Idealism and the approach to beauty and art became more metaphysical and transcendental, more devoted to the search for a priori, universal principles of beauty and aesthetic value."[132]

In parallel to the studies to set the guiding principles of aesthetics rather metaphysically in a deductive logic, another line of thought developed "experimental aesthetics." The pioneering scholar of "experimental aesthetics" was G.T.Fechner who aimed at setting determinants inductively with the support of the theory of statistics. This approach is also named "laboratory" or "biometric" aesthetics. Fechner's approach found influential followers in twentieth century psychologists among whom Valentine, Bullough from England and Lalo from France. Although this movement gained power early in this century it declined after the World War II.[133]

Vischer, congruous to the available background of the theory of aesthetics, conceives art within the polarity of subjective and objective arts while he utilises a third class named "subjectivo- objective." The group of objective arts contains plastic arts, the subjective group music and the subjectivo-objective has poetry under its scope. Vischer describes architecture as a part of the objective arts under which he considers the beauties that are generated from Nature.[134]

The contributions of Vischer continued with the contributions of his son Robert Vischer to the theory of aesthetics, who formulated is the "theory of empathy

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[131] I.KANT, Critique of Judgement, 1790.

[132] T.MUNRO, Aesthetics, Encyclopedia Britannica, Chicago: E.B. Inc., 1971, vol.1, pp.221-224.

[133] In recent decades of the present century this "experimental", "laboratory" or "biometric" aesthetics have gained some influence and found many practitioners equipped with better facilities of data processing and finer statistical methods. We shall discuss them later in the section 2.5.6.

[134] M. BORISSAVLIEVITCH, op. cit., pp. 146, classifies Vischer's categories of art and he quotes: "tout art est objectif, comme l'est aussi le beau dans la nature" from: F.T.VISCHER, Aesthetik oder Wissenschaft des Schönen, 1851, Part 3. vol.1, p.175.

(Einfühlung)." In this theory he claims that an observer projects his feelings onto the object and explores its form imaginatively, deriving therefrom enjoyment similar to that of a play. With this formulation Vischer defines beauty in its experimental context and conceives it as an amalgamation of many factors affecting the situation within which an object is experienced. He particularly stresses the factors that affect one's feelings. The analogy between arts and play was noted by eminent philosophers like Schiller and Spencer.

Vischer's hypothesis, coined as "theory of empathy" was developed in detail by Lipps.[135] Lipps claims that the process of empathy is not purely subjective, but it is dependent for its satisfaction on the nature of the work of art.

The "theory of empathy" was further developed by Wölfflin[136] and Schmarsow.[137] This theory found some influential supporters among architects. Endell was one of the most prominent devotees of the "theory of empathy" of Vischer and Lipps.

The "theory of empathy" also contains the seeds of the Gestalt aesthetics, coined by Koffka, but not earlier than the substantial developments in the theory of psychology which occured via the works of Freud and Jung.[138]

Along with all the contributions generated from the fields of aesthetics and philosophy, the architectural theory of the nineteenth century is summarised with the thoughts of three eminent architect- theorists who concluded the state-of-the-art in three important countries, Semper from Germany, Viollet-le-Duc from France and Ruskin from England when the practice of ecclecticism was overwhelmingly wide-spread in all of these countries, these men emphasised different aspects of architectural theory. As Viollet-le-Duc was stressing structural integrity, Ruskin was commenting on form in the Nature and in architecture within an analogic frame of reference, meanwhile, Semper was in search of the fundamentals of architecture based on the nature of materials.

Even though they were contemporaries, it is not possible to trace the influence of one upon the other, if that had ever occured. It will be easier to discuss them independently, keeping their own philosophical background in mind.

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[135] T. Lipps' work on aesthetics is contained in two major pieces. These are: T. LIPPS, Raumäesthetik und Geometrisch-optische Tauchungen, Leipzig: J. Ambrosin B., 1897, and idem. Grundlegung der Aesthetik, Leipzig: L. Voss, 1903.

[136] H. WÖLFFLIN, Kunstgeschichtliche Grundbegriffe, Munich, 1915.

[137] A. SCHMARSOW, Grundbegriffe der Kunstwissenschaft, Ber Berlin, 1905.

[138] K. KOFFKA, Principles of Gestalt Psychology, New York: Harcourt, Brace and World, 1935.

GOTTFRIED SEMPER

Gottfried Semper's theoretical contributions stem mainly from his radical opposition to the prevalent understanding and practice of architecture in the nineteenth century. He was an advocate of cause- effect relationships in matter and form. In other words he was a devoted functionalist. Semper's approach lacks many of the spiritual issues of architecture while it is extremely strengthened with thoughts related to materials.

> Semper took matter as a point of departure for his all embracing system of man-made creations, which arrived at their final shape or design, not merely by an underlying idea, but by the generic-mechanical factors that corresponded objective analogies of cause and effect. As these factors he selected three: raw material (Rohstoff), purpose (Gebrauchs-Zweck) and technique. His reaction to the confusion in the nineteenth century is strong and unambiguous. Search for the true nature of the material, its technical procedures, and its tools, and unite that with the requirements of utility and purpose, and you will find the right form.[139]

Semper organized materials into categorical groupings in his Wissenschaft, Industrie und Kunst.[140] There, each of the basic groupings were titled as: "textile, ceramic, tectonic and streomatic" and they were further qualified into "flexible, plastic, elastic and solid" materials regarding their creation and elasticity.

JOHN RUSKIN

Ruskin[141] was one of the most prolific writers of the nineteenth century. His Seven Lamps of Architecture[142] is the major work deserving our attention. In his work he takes up a complete theoretical position on architecture. This book is a personal description of what architecture is and how it must be conceived. Ruskin puts forth

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[139] C.J.M. VAN DE VEN, "Concerning the Idea of Space: The Rise of a New Fundamental in German Architectural Theory and in the Modern Movements until 1930", Ann Arbor, Michigan: University Microfilms Int., 1977 (1974), (Ph.D. Dissertation submitted to University of Pennsylvania), P.95.

[140] G.SEMPER, Wissenschaft, Industrie und Kunst, Mains: F.Kupferberg, 1966(1852).

[141] For a selected list of Ruskin's written work vide: "Select Bibliography" appended in: J. RUSKIN, Seven Lamps of Architecture, London: Dent, 1969, pp. xiii-xv.

[142] ibid. 1969 (1849)

seven vague conceptual headings -- what he names lamps or "spirits"[143] accordingly. These are the lamps of "sacrifice, truth, power, beauty, life, memory and obedience." He praises architecture and distinguishes it accurately from building.[144] He attributes purely functional properties to building. By building he refers to the major function of "edifications" such as "church building, ship building, house building and coach building. That one edifice stands, another floats, and another is suspended on iron springs, makes no difference in the nature of the art."[145] Ruskin, confines architecture "to what art which taking up and admitting, as conditions of its working. The necessities and common uses uf the building, impresses on its form certain characters venerable or beautiful, but otherwise unnecessary."[146]

Ruskin's attitude towards architectural theory is almost in contrast to the notable approaches in France and Germany. Nevertheless, his view is extremely subjective and full of moral and perceptual qualities. The chapter where he discusses the basic theoretical issues of architecture contains a devoted analogic view to describe what "architecture" should be.[147] His analogy is not an indirect analogy like the Renaissance theorists, but a direct one between nature and architecture. Ruskin points out two distinct characters on which the value of architecture rests: "The one, the impression it receives from human power; the other, the image it bears of the natural creation."[148]

In his analogic frame of reference, he also has quite a rich list of symbolic attributes to many of the spritual values through architecture, and consequently indirectly from nature, Ruskin to indicate his devotion in his basic analogy states: "The most lovely forms and thoughts are directly taken from natural objects,"[149] and conversely also believes that "...forms which are not taken from natural objects must be ugly."[150]

Eventhough, Ruskin does not form a definite link in the chain of development of architectural theory in the continuous interaction among the fields of science,

[143] ibid. p.9.
[144] ibid. p.7.
[145] ibid.
[146] ibid. p.8.
[147] Ch. IV, The Lamp of Beauty, ibid.
[148] ibid, p. 103.
[149] ibid. p.105.
[150] ibid.

philosophy, arts and other related areas, he has contributed greatly to the field which was then conceived as the theosophy of architecture.

J. N. L. DURAND, AND JULIAN GUADET

The formalised textbooks of architectural theory utilised in the Ecole Polytechnique and Ecole des Beaux-Arts are probably most indicative of the common state of theory in France, and perhaps in the western world. Durand was probably the most influential among the theorists of the time. Durand, in his course and his Précis des Leçons d'Architecture[151] somehow systematised the total architectural principles of the movement colloquially referred to as neo-classicism. Durand has been criticised by many theorists as the man who brought the progressive and revolutionary Beaux-Arts tradition into a meaningless set of rules and a collection of unanimously -- or academically -- agreed formwise principles. These criticisms base themselves on premises that regard architectural design as a means of continuously promoting new ideas and creativity. Apparently, what Durand did in his Prêcis is totally against the governing principles of the Modern Movement, but certainly it is not wholly devoid of any value.

In Précis, Durand profusely illustrates the various ways in which the building elements can potentially be assembled. The ways of assembly of the elements that constitute the plans are named combinations horizontales and those that form elevations are called combinations verticales. Following this line he conceives urban design in analogous terms.

The limitations of this approach are obvious. However, it contains certain realities of building art which are valid especially in the present day when designers are only allowed to select from a vast repertoire of available components to assemble. Thus Durand while fitting perfectly into the Alexander's idea of Generating Systems[152] ideas, is now regarded very highly of by Computer Aided Design theorists.[153]

Julian Guadet in his Elements et Théorie de l'Architecture [154] defended a similar attitude for the formation of design solutions for architectural problems. The period spanning a century between Durand's and Guadet's syntheses amounts to a mere

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[151] J.N.L. DURAND, Prècis des Leçons d'Architecture, Paris: Ecole Polytechnique, 1802.

[152] C.ALEXANDER, Systems, Generating Systems, AD, vol. xxxviii, December 1968, pp. 605-610.

[153] W.J.MITCHELL, The Theoretical Foundations of Computer- Aided Architectural Design, Environment and Planning, vol.2, pp.131 f, 1975.

[154] J.GUADET, Elements et Théorie de l'Architecture, Paris: Librairie de la Constructuon Moderne, 1901.

cataloguing of the elements of the architecture of neo-classicism. Both of these contributions are to be regarded under the realm of the pragmatic efforts in our taxonomy.

EUGÈNE EMMANUEL VIOLLET-LE-DUC

Viollet-le-Duc is the most prolific Frenceh architect-theorist of the nineteenth century. Many of his statements on architectural theory still maintain their validity. When compared with his contemporaries, Viollet-le-Duc took up a completely different point of view to promote useful theoretical material for architecture. His theory of architecture is not void of a societal dimension which had been ignored by most of the architectural theorists until then.

In his division of societies into "sympathetic" and "political,"[155] he regards architecture as a powerful means in the latter type of civilisations. There he exemplifies this idea with role of architecture in Roman civilisation.[156] In the "sympathetic" type of civilisation race is the major binding element whereas in the "political" civilisation "arms, skill and commerce"[157] become the main factors of togetherness and these implicitly reflect themselves through architecture.

Concerning the particular theory of architecture, Viollet-le-Duc is noteworthy for this analysis of structure and architecture as one inseparable whole. The simplistic labelling of his theoretical efforts as "structural-rationalist" is accurately placing him in the scene as regards the totality of his works. His ideas are multi-faceted, having a rational understanding of the "interior-exterior" of buildings. He does not sacrifice one for the other even for the convenience of analyses.

In his Entretiens sur l'Architecture[158] we find his ideas on the structure, ornamentation, interior and exterior of a building. Then he states "...the best architecture is that whose ornament cannot be divorced from the structure."[159] Viollet-le-Duc conceived building as a whole. He wrote:

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[155] M. (E.E.) VIOLLET-LE-DUC, Entretiens sur l'Architecture, vol.1, Paris, 1863, (Facsimile edition: Farnborough: Gregg Press, 1965.) p.205.

[156] ibid. vol.1, pp.205-491.

[157] ibid. p.205.

[158] ibid.

[159] ibid. vol. II, p.208. Translation is from: E.E.VIOLLET- LE-DUC, Discourses on Architecture, Tr. B. Bucknal, vol. II, New York: Grove Press, 1959(1889), p.200.

> For there is one thing worthy of the architects best consideration, it is the perfect agreement between all parts of the building, that correspondence between the case and what it contains the frank expression outside of the arrangement within, not only in point of structure but of ornamentation, which ought to be in close alliance with it.[160]

On the basic preoccupation of the architectural theorists of the time, i.e. proportion, Viollet-le-Duc has an extremely original and contentful idea. He does not reduce proportion to simple relationships of abstract geometry but considers it as an amalgamation of some concepts. He states: "There can be no proportion without unity and there is not unity without plurality, pluralities imply not similars but differences."[161] (Cf. Figures 23 and 24)

Regarding his broad-minded and contentful analyses and his structuring of the elements of architecture into its basic constituents we can categories Viollet-le-Du as a descriptive theorist so far as our taxonomy is concerned.

[160] M. (E.E.) VIOLLET-LE-DUC, op. cit. 1863, vol. II, Pp. 208-210, Translation is from: supra. fn.29.

[161] "il n'y a pas de proportions sans unite, et il n'y a pas d'unite sans pluralite; pui dit pluralite ne dit pas semblables, mais differences" (his italics) ibid. p.409. Translation is from: supra. fn. 29.

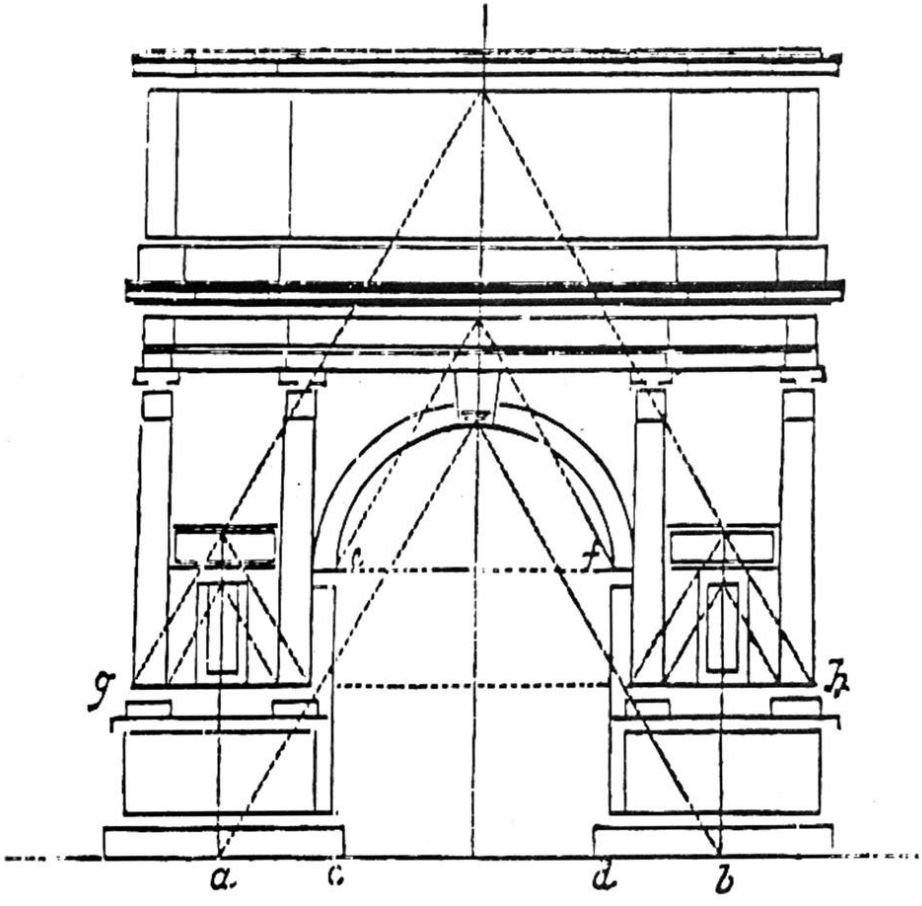

Figure 23. Proportions of the Arch of Titus, from: (E.E.) M. VIOLLETLE DUC. op. cit. 1863, vol. I, p.401.

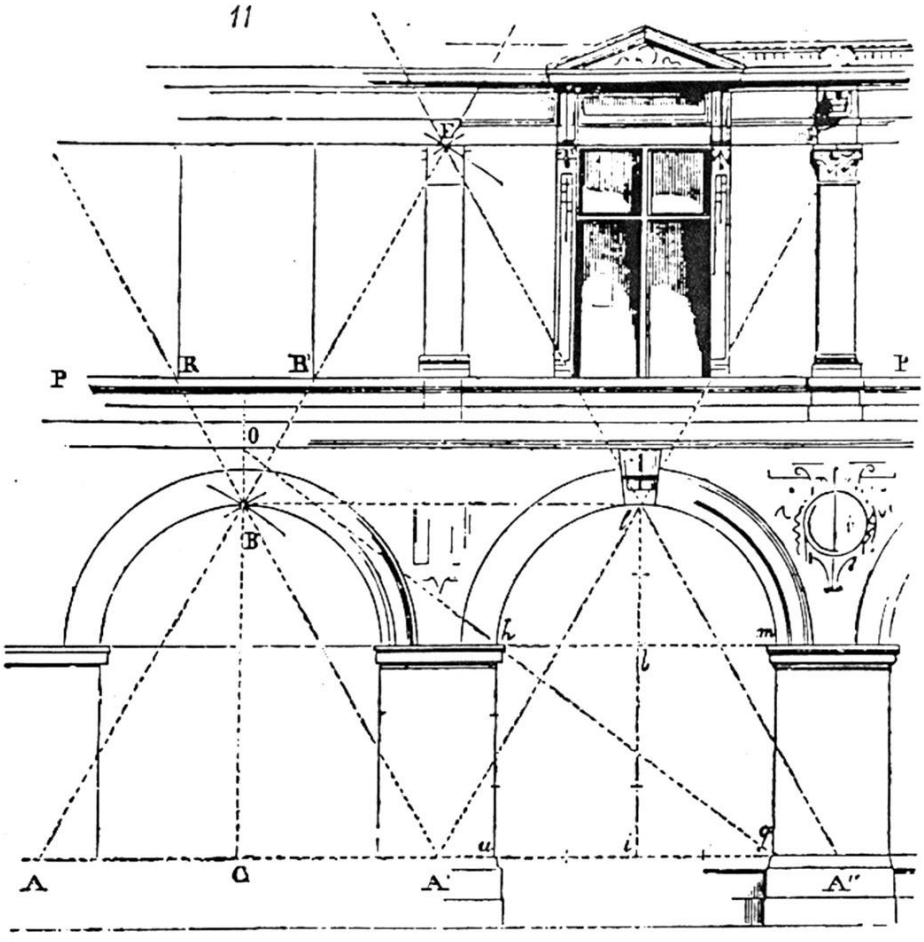

Figure 24. Method of obtaining proportions, ibid. p.411

THEOSOPHY AND THEORIES ON SPACE

The theoretical body of architecture in the beginning decades of the present century can be divided into two major approaches. The first group of efforts are essentially speculative. This class of contributions are called -- as coined by Bragdon -- theosophy of architecture. The second group shows more of an integrative nature. The efforts in this group concentrate upon one basic theme, i.e. space, and intend to integrate the theoretical material around a single, but integrative concept: space and its subsequent concepts.

As a matter of fact, both of these classes of efforts are speculative in their essence. The major differences are in the degree of the speculativeness and in the objective content of their analyses. So far as our categorisation is concerned they can be regarded as being descriptive with varying degree of subjective speculations in the method. Meanwhile, the analogic methods utilised in theosophy to prove the validity of the speculation must be noted here.

The period starting around the beginning of the present century and still continuing in fragments at present can be considered as the era when many of the theoretical works on architecture can be classified as those of the theosophy of architecture. The origin of this era is hard to detect and locate as it goes back to the ancient times so far as its abstract contents are concerned.

The theological approaches in architecture have been in existence from the beginning of the profession. Especially when science and knowledge were monopolised by the Church this was inevitable. In other words, a body of knowledge composed of individual ideas, judgements and experiences that are relevant and communicable by empathy or belief were inherent in the core of the architectural theory. This quality has remained to be so, for other theories dealing with subjects of similar degree of complexity. Thus theosophy of architecture can be taken as an important line in architectural theory but it has seldomly been put forward expressedly as such.

Until the theoretical explosion of the late 1960's,[162] theosophy survived as the unrivaled major attitude to design theory. Even the "revolution" of the post 1920's[163] had theosophy as the common method of declaration of their beliefs in essence. The contributors of the theosophy of architecture strived to be relevant and

[162] vide. Chapter 3.6.

[163] This period, we named "The Age of the Masters" will be studied in Chapter 2.5.

valid in reference to the tradition of architectural theory. Under the scope of this tradition there is a vast amount of space for: evaluation of the perceptual and even sensual experiences with buildings; setting canons of proportions along with other rules to design accordingly; and transposing the vocabulary of the other fine arts onto architecture; or even propose new vocabularies to comprehend, analyse and design.

The main pitfall of theosophy of architecture can be summarised as follows:

Regarding building as an element of fine arts and evaluating it from the points of view of aesthetics, prevents one from dealing with the other scientific and societal aspects of architecture. To be over- concerned with the perceptual or experiential aspects of buildings and developing finer and finer understanding of these qualities produces a frame of reference which evaluates the environment with few dimensions and variables.

Transposition of the vocabulary of other fields of expression on architecture, of course, widens the horizons. Nevertheless, especially when the field referred to is extremely abstract in its content, it does not bring forward pre-conditionments of its own in the new context. For transposition purposes the special vocabulary of music and painting are frequently applied to architecture. Taking this view into consideration, music with its ultimately abstract content has a lot to offer relevantly for architecture, like many other fields of human expression,[164] whereas painting, with its highly concretised outcome, may produce an enormous drawback when applied in a new analogic context. However, all of these areas referred to through analogues bring the drawbacks of their original field into architecture.

As regards to the proposition of new canons and proportions there is not much to say, since in the present day the canons and proportions are set forth to a great extent by the production (i.e. industry) and control (i.e. planning regulations) mechanisms.

Taking the concept of "space" and some relevant concepts to qualify various aspects of it, is a fairly recent contribution to architectural theory. Space as a conceptual tool used either for evaluative purposes for the present or for the analyses and evaluation of the past. The initiators of space as a basis of analysis are theorists who mainly involved themselves in the history of the subject.

[164] We see introduction of music as "musical scale" in L.B.ALBERTI, op. cit. and from then onwards analogic model between building and music has frequently been applied. Cf.

CLAUDE BRAGDON

Bragdon, who introduced the word theosophy as the basis of his book The Beautiful Necessity [165] stated:

> Theosophy, both as a philosophy, or system of thought, which discovers correlations between things apparently unrelated, and as a life, or system of training whereby it is possible to gain the power to perceive and use these correlations for worthy ends, is of great value to the creative artist, whose success depends on the extent to which he works organically, conforming to the cosmic pattern, proceeding rationally and rythmically to some predetermined end."[166]

Theosophy is the abstract language communicated mainly through empathy, and requires a similar degree of finesse and sophistication of thought to be conceived. Most of the issues, ideas and perceptions referred via theosophy are excitingly relevant in the beginning, but their content decreases in time when these rich attributes erode away and their practical content becomes less obviously possible. Thus theosophy, basically, is a metalanguage on architecture. The concepts of this metalanguage are fine perceptual experiences, and emphathically shared values.

Bragdon's theosophical view is an amalgamation of the various aspects of the classical theoretical heritage of architecture. At first he agrees with the famous statement "Architecture is frozen music".[167] He elaborates this to an extent that the original richness of the statement results in far fetched conclusions.[168] (Cf. Figures 25 and 26)

Bragdon metaphysically believes that everything -- and everyone -- has "followed the rules without knowing them." These rules, he asserts, are discoverable and can be formulated. Among the rules his views on unity and polarity are the most interesting. Unity, though it is trivial to state, is an essential quality that a work of art must possess. Polarity is the complementary contradiction. It is duality. On polarity Bragdon utilises, originally Chinese then Japanese categories Yo and In, as they have acquired more profound content than the gender in the western

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[165] C. BRAGDON, The Beautiful Necessity, New York: Alfred A.Knopf, 1939 (1910).

[166] ibid. p.29.

[167] ibid. 14ff.

[168] ibid. pp. 101-109, vide. figures: 25-26, where he applies the musical scale to various buildings of architectural importance.

philosophy. With these two categories he makes a great deal of analysis of some works of architecture.[169]

Yo designates the qualities that are masculine, simple, direct, primary, active, positive, whereas In refers to feminine, complex, indirect, derivative, passive and negative.[170] This analogy, by making use of gender as the primary semantic ditferentiation, is a continuing line in architectural theory as the meaningwise conception of buildings remain inevitable.[171]

Other adjectives that Bragdon uses, in fact he names them "laws", for architectural analysis, are "trinity, consonance, diversity in monotony, balance, rythmic change and radiation." He illustrates the existence of these laws both in masterpieces of the arts and in nature.[172] His "bodily temple" is anthropometric analysis of man in conmparison to buildings."[173] "Latent Geometry" and "The Arithmetic of Beauty" are elements in the pursuit of the governing geometrical principles of various beings and buildings."[174] These analyses are in a similar vein with the nineteenth century theorists. Whereas, his "bodily temple" is nothing but a continuation of the anthropophile renaissance idea.

[169] ibid. pp. 29-42.

[170] ibid. p.32.

[171] Cf. C.JENCKS, The Language of Post-Modern Architecture, New York: Rizzoli, 1977, pp.79ff.

[172] C. BRAGDON, op. cit. pp. 43-63.

[173] ibid. pp.64-75.

[174] ibid. pp.76-100.

Figure 25. Musical transcription for architecture, V. BRAGDON, op. cit. p.102

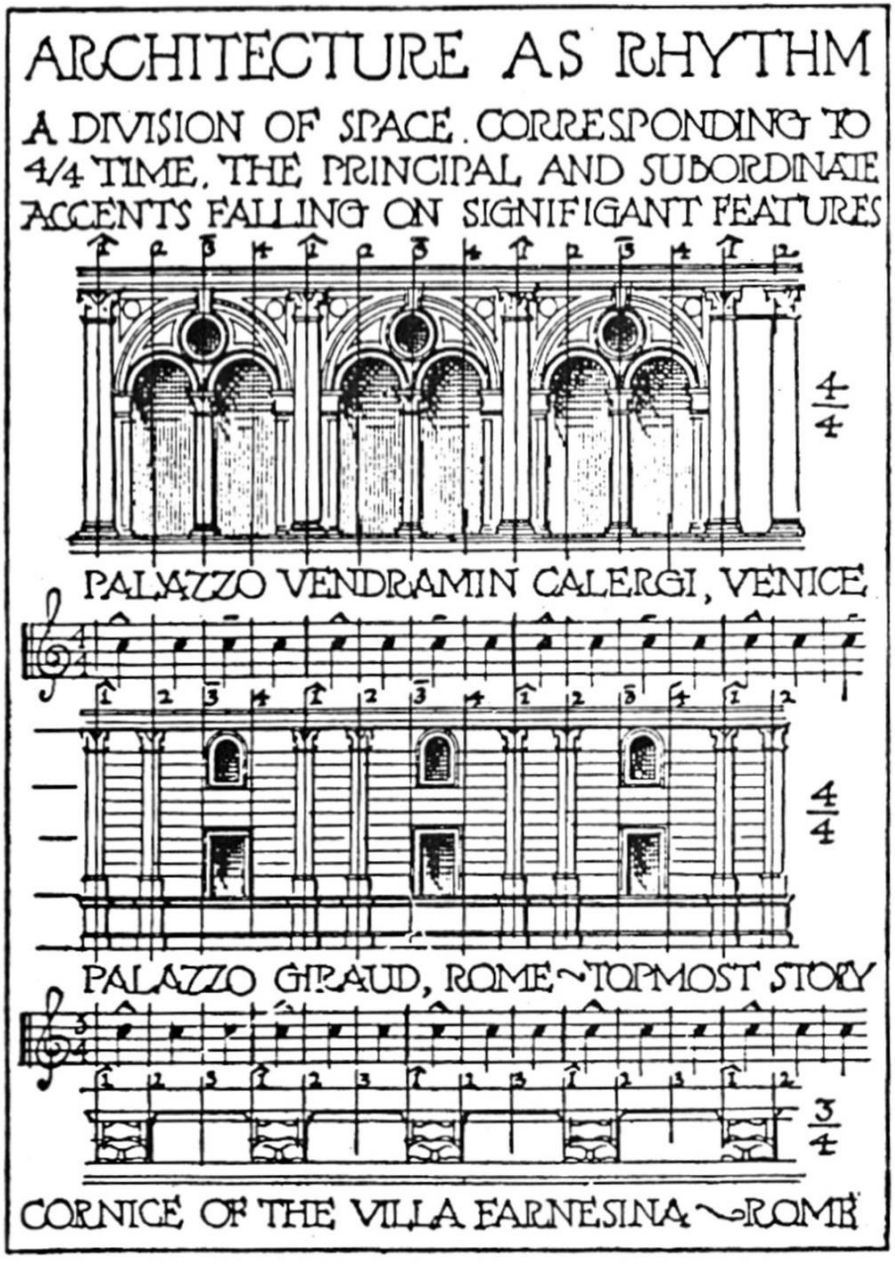

Figure 26. Musical transcription for architecture, ibid. 108.

FRANKL, GIEDION AND GOKNIL

Paul Frankl's Die Entwicklungsphasen der neueren Baukunst[175] is the first study of history where "space" as a conceptual entity is used as the key issue. Frankl applied "spatial composition" as an important category of his critical system consisting of three other major categories dealing with 1) mass and surface; 2) light, colour and other optical effects; and finally, 3) relation of design to social functions. Frankl criticises vigorously Wölflin's theories, but at the same time he contributes to what Wölflin originally professed. Concerning space, Frankl acts from the ideas brought forth by Schmarsow who "not only assigned a specific element to each of the plastic arts (to architecture, space; to sculpture corporeality, to painting light) but also arbitrarily assigned one dimension to each (respectively, depth, height and width).[176]

Space, introduced as the central issue of criticism by Schmarsow and Frankl has been taken up by many architectural theorists. Giedion, Vogt-Göknil, Brinckmann, Zevi, Zucker, Nitschke, Norberg-Schulz are among the ones who either put a particular emphasis on this concept or structured their hypotheses totally around it.[177]

Giedion in his Space, Time and Architecture,[178] placed "space" in the center of his analysis of the history of modern architecture. Later he conceived it for a wider time span to evaluate the process of evolution from the known points geneses.[179] There he presents the history of architecture as a successive development of space conceptions.

Vogt-Göknil in her theory gives some imprecise definitions to deal with space as the leading concept. Der weite Raum (extensive space), der enge Raum (limited space) and der gerichtete Raum (ordered space) become the key definitions for

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[175] P.FRANKL, Die Entwicklungsphasen der neueren Baukunst, Stuttgart: Verlag E.G.Taubner, 1914, in the present work the English translation is referred: idem. Principles of Architectural History, Cambridge Mass.: MIT Press, 1973 (1968).

[176] ibid. 1973 (1968), p.xiv: An earlier series of writings of Schmarsow were summed up in: A.SCHMARSONW, Grundbegriffe der Kunstwissenschaft, Leipzig: Verlag B.G.Taubner, 1905, "J.O'GORMAN, op. cit. p.196.

[177] vide. C.NORBERG-SCHULZ, Existence, Space and Architecture, New York: Praeger, 1971, pp.12-14.

[178] S.GIEDION, Space, Time and Architecture, London: Oxford U.Press, 1941.

[179] S.GIEDION, The Eternal Present, Beginnings of Architecture, vol.2, London: Oxford U.Press, 19..

three distinct types of space.[180] Her system was accused for "lacking a coherent system of well-defined concepts."[181]

BRUNO ZEVI

Architecture as Space[182] by Zevi is one of the most outstanding works on architecture that had a great impact on theory, education and understanding of architecture. Zevi does not diverge from the line of the traditional heritage of architectural thought. Yet, he brings forth a new interpretation by introducing some old concepts in a new context. Zevi criticises the past fragmentation of architecture into two dimensional planes where buildings are conceived in the form of planar entities such as plans, sections and elevations, and the total theoretical work which is based upon these. Consequently, the theoretical limitations of presentation techniques substitute themselves for the place architecture. Moreover, the whole theory of architecture is structured upon these planar projections. Zevi, after his criticism against the nineteenth century practice of conceiving buildings from the exterior and evaluating them in vague theosophical language, proposed on central theme for the evaluation and conception of architecture: space.

Instead of fragmenting architecture into abstract independent parts, he stresses spatial experience as the resultant of all the forces that constitute architecture. His concept of architecture as space can be credited as being a resume of the 'holistic' and gestalt approaches to architecture, because he defends the view that architecture must be conceived as an outcome of all its constituents interacting into one total experience that is "space". Therefore, it must be analysed with concepts relevant to space.[183]

Zevi finds the previously eleborated conceptual tools of architecture such as "truth, movement, force, vitality, sense of outline, harmony, grace, breadth, scale, balance, proportion, light and shade, eurhyhmics, solids and voids, symmetry, rhythm, mass, volume, emphasis, character, contrast, personality, analogy"[184] being "horrifyingly" vague to the laymen. Furthermore, he states that his "use of words like rhythm,

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[180] C.NORBERG-SCHULZ, op, cit. 1971, p. 13, refers to U.VOGT-GÖKNIL, Architectonische Grundbegiffe und Umraumerlebnis, Zurich, 1951.

[181] C.NORBERG-SCHULZ, ibid.

[182] B.ZEVI, Architecture as Space, How to Look at Architecture, New York: Horizon Press, 1957. org. idem. Saper vedere d'Architettura, Turin, 1948.

[183] ibid. pp.22f.

[184] ibid. p.21.

scale, balance, mass will continue to be vague until"[185] they were given "meaning specific to the reality which defines architecture, and that is space."[186]

By bringing the idea of space into the foreground as a "protagonist," Zevi, contextwise, reverses the architectural theory which since then was preoccupied mainly with the exteriors. Meanwhile, contentwise he cannot do much, as he modifies the available theosophical sources and structures them around the theme of space. His vocabulary is equally speculative as any theosophical judgement is naturally bound to be, nevertheless integrating the disjointed conclusions on architecture into one entity (i.e. space) an important step is taken towards a more holistic architectural evaluation in essence. Another important implication of Zevi's thoughts on evaluation and experience to design process is that the spaces must be conceived as a total experience and fragmentation of the space into its designwise constituents must be avoided. His work as a whole can be regarded under the descriptive category, for it presents a descriptive leap forward in architectural theory.

CHRISTIAN NORBERG-SCHULZ

Norberg-Schulz in the beginning is quite critical of approaches basing their analysis on the concept of space. He asserts that one must employ a narrow concept of space which denotes only the tri-dimensional organisation.[187] In his later contribution, he elaborates the concept of space and attributes a specific quality to the concept by defining it as "existential space".[188] Norberg-Schulz enriches this concept with a series of supplementary definitive qualifications. At the first level he presents the descriptive elements of the "existential space." These are: "centre and place," "direction and path," "area and domain" and "elemantary interaction." His analysis is very much preoccupied with the physical realities that form perceptual images. By basing his argument on these images, Norberg-Schulz mainly aims at producing an architectural counterpart of Lynch's The Image of the City.[189] Norberg-Schulz criticising Zevi as being "naively realistic,"[190] produces a model and a set of conclusions that can simply be conceived as "trivially concrete" collection of issues

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[185] ibid. p.23.

[186] ibid.

[187] C.NORBERG-SCHULZ, Intentions in Architecture, Cambridge Mass.: MIT Press, 1968 (1965), p.97.

[188] C.NORBERG-SCHULZ, op. cit., 1971, pp.14ff.

[189] K.LYNCH, The Image of the City, Cambridge Mass.: MIT Press, 1960.

[190] C.NORBERG-SCHULZ,

derived from simple perceptual images. Throughout the book, Norberg-Schulz endeavours to set forth the corresponding parts of the "elements" and "levels" of "existential space" in the realm of architecture, i.e. "architectural space."

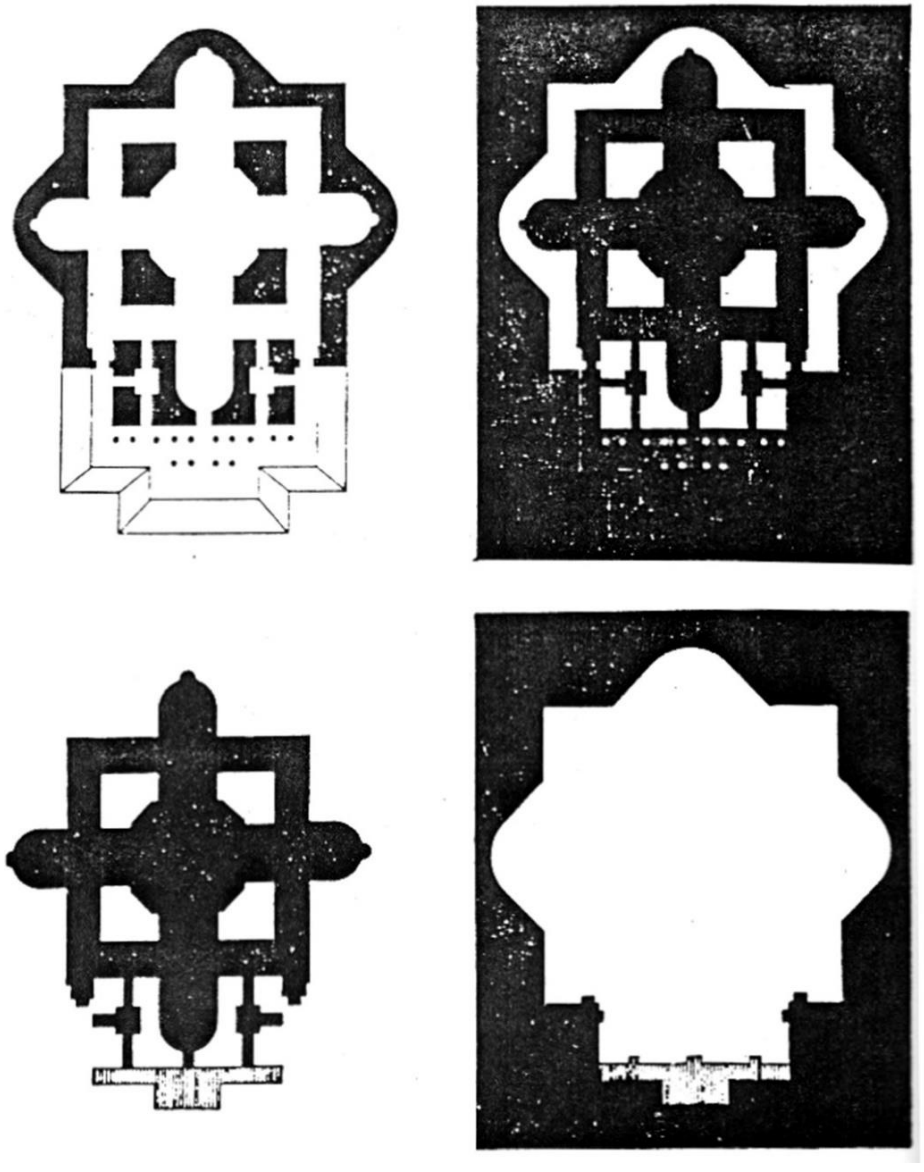

Figure 27. Spatial Interpretations of Michelangelo's San Pietro, Rome, by: B. ZEVI, op. cit. pp. 50f. A. Simplified Plan, B. Its Negative, C. And D. The internal and external spaces.

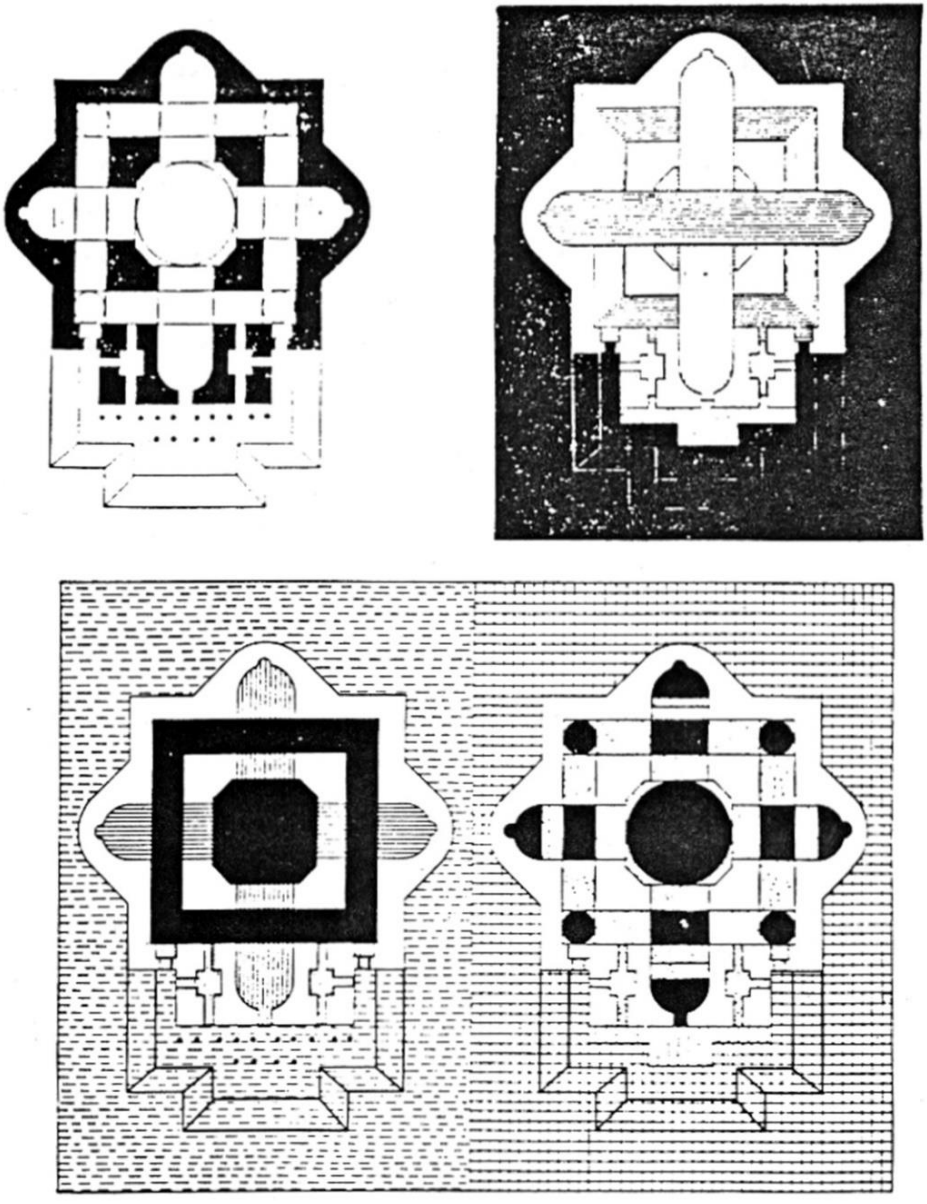

Figure 28. Spatial Interpretations of Michelangelo's San Pietro, Rome, by: B. ZEVI, op. cit. pp. 50f. E. Projection of the fundamental structure, F, G, H, Spatial interpretations.

THE AGE OF THE MASTERS

The "Age of the Masters"[191] is the era commonly refered as the "Modern Movement." The main reason behind the common reference as the "Age of Masters" is due to the fact that almost all of the theoretical backbone of the movement was generated through the publications, sayings and buildings of some eminent architects.

The popularised separation of four architect-thinkers as the first generation and a large group of practitioners as the second generation will not be wrong. Meanwhile, it will help us to summarise the movement without dealing excessively with details which may apparently go beyond the scope of this generalistic study. In the first generation we can confine ourselves to Wright, Le Corbusier, Mies van der Rohe and Gropius as the masters of the Modern Movement. A frequently used separation of "masters" and "makers" of the Modern Movement may be useful but the lengthy discussions of, who are the masters and who are the makers should not detain us here. So, Banham's separation of "masters" from the "practitioners" may well be accepted as valid.

The Modern Movement was a great leap forward towards what architecture should be in a society that survived through a radical change in all aspects. It had its precursors like Louis Sullivan in America, August Perret and Peter Behrens along with many other in Europe.

Together with all its contributions and oppositions, the Modern Movement has transformed architecture into a completely different state of being. Even though the changes in building practice, profession, styles, the role of the architect, constituted an important part of the Movement, they will not be discussed here. Instead, we shall concentrate on the change and transformation in the theory of architecture.

There has been much said and written about the origins and precedents of the Modern Movement. Many theorists made their own choice of examples that generated the Movement. Reading them independently is likely to give completely different views of the evolution. Meanwhile, a comparative reading is bound to confuse a reader who is not equipped with an insight of the subject. For instance,

[191] This term is coined by Banham as he changed the title of his book Guide to Modern Architecture. London: Architectural Press, 1962 to Age of the Masters, London: Architectural Press, 1977 (1975) in its new edition.

reading Pevsner,[192] Hitchcock,[193] Giedion[194] and Banham[195] offers an idea of the same evolution toward the known state through completely different paths documented with many dissimilar examples and different contributors.[196]

Whatever the defended retrospective development of the Movement proclaimed by different scholars might have been, there is a consensus in the outcome. And that is the reality of the Modern Movement. The Modern Movement has been excessively preoccupied with "form." Actually it is this concern that made the movement so successful. Unlike many other theoretical mainstreams of the present, the Modern Movement never divorced itself from building, then from "form." The messages constituting the substance of the theory has always been made in the form of statements in buildings. The points of view and the major statements were frequently declared as written manifestos but the synthesis never diverged from the main body of architecture, that is building. This was realized either via actual buildings or when the circumstances did not permit in the form of utopic proposals. Although the ultimate concern with building created the major strength of the movement, in consequence, it generated a whole series of interpretations of the experiences related to one particular building. This, on the one hand, created an independent artistic vocabulary of its own, but on the other hand it caused distorted points of view that have hardly been related to the original idea aimed at by the architect. In other words. expressing ideas through buildings is open to speculations.

The Modern Movement, in essence, placed "the architect" at the top of the pyramid of the decision process on the built-environment and gave much of its credit to subjectivism along with the manifestation of the self. Apparently it overpraised subjectivity at risk of creating small prophets of architecture. In return, the Modern Movement suffered excessively from a "form" bias and subjectivity as these two

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[192] N. PEVSNER, Pioneers of Modern Design, from William Morris to Walter Gropius, Harmonsworth: Penguin, 1977 (1936).

[193] H.R.HITCHCOCK, Modern Architecture: Romanticism and Reintegration, New York: Hacker Art Books, 1970 (1926).

[194] S.GIEDION, Space, Time and Architecture, London: Oxford U. Press, 1941.

[195] R. BANHAM, op. cit. 1977 (1975), 1962.

[196] vide. U.CONRADS, ed., Programmes and Manifestos on 20th Century Architecture, London: Lund Humpries, 1970. Apart from the sources noted above the following also give some important point of view of Modern Movement. C.JENCKS, Modern Movements in Architecture, Harmondsworth: Penguin, 1973; J.JOEDICKE, A History of Modern Architecture, New York: Praeger, 1959; W.PEHNT, ed., Encyclopedia of Modern Architecture, London: Thames and Hudson, 1975 (1963).

forces that helped greatly in the genesis of the movement, created a chaos of their own in long term.

What the Modern Movement achieved simply is the realisation of Michelangelo's statement declared centuries ago: "Beauty is the purgation of superfluities." The changing conditions of societal evolution demanded a different understanding of architecture than what it used to be traditionally: a new architecture that can cope with rapid urbanisation, industrialisation, high urban densities along with. many issues generated by the development of capitalism. The Modern Movement created a new rationale for built form, it also set new value judgements for the changed situation. Thus, it has been a total change in the building practice, where admittedly, an important role is given to the "architect" to perform. In this Movement, with the exception of a few theoretical works, the major written works happened to be the interpretation of buildings. Therefore, the first generation of theoretical works of the Modern Movement can be considered as being iconic since the "message" and the "knowledge" are issued through "form" and the second generation of theoretical material is mainly the interpretation of these.

In his post mortem evaluation of the Modern Movement Blake concludes in the title of his book that Form Follows Fiasco.[197] Blake conceives Modern Movement as a series of fantasies none of which seems to have worked well. The fantasies he lists are: "function, open plan, purity, technology, skyscraper, ideal city, mobility, zoning, housing, form" and finally "architecture." Almost all of the contributors of the Modern Movement were idealists so far as their approaches to architecture, architect and their outcome (i.e. form) are concerned. They were pursuing one of the above-listed concepts listed above in a belief as strong and dogmatic as a religion. It is not too early to state that the decline of modernism goes parallel to the decline of idealism in architecture.

FRANK LLOYD WRIGHT

Wright's influence on the Modern Movement is unquestionably great but his contribution to architectural theory is nothing comparible to that. Wright effected contemporary design with his prolific iconic inputs but his theoretical writings always remained as being self explanatory idealised speculations. Even though he manifested himself with ample amount of theoretical work, it is not possible to consider him as a noteworthy theorist so far as aspects other than the iconic

[197] P.BLAKE, Form Follows Fiasco, Why Modern Architecture hasn't worked, Boston: Little, Brown and Co., 1977.

category of our theoretical classification are concerned. As opposed to that of Mies or Palladio, Wright's iconic contributions do not constitute a school of their own. But, they convey messages that are particularly difficult to regenerate. The vast vocabulary of forms and multitude principles end up with imitation which is far from generating a school to follow. This is due to Wright's solution for each and every problem with a particular eccentricity and a creativity of his own. The sui generis aspects of Wright's approaches make even the most devoted his followers end up with either mere imitations or independent schools of their own.

Wright's most important theoretical contribution is some kind of an analogic-utopianism. Organic architecture is analogic in its basic principles of associating Nature and architecture in a one to one correspondence. But it is at the same time utopic as he sets forth idealised conditions for it. Wright states:

> An Organic Architecture means more or less organic society. Organic ideals of integral building reject rules imposed by exterior aesthetism of mere taste, and so would the people to whom such architecture would belong reject such external impositions upon life as were not in accord with the nature and character of the man who had found his work and the place where he could be happy and useful because of it in some scheme of liveli-hood fair to him.[198]

The idealised frame of thought of Wright intermingled with religious beliefs, mysticism and metaphysics wright presented many extreme utopic conditions within which he searched for solution for his contemporary society. The "Mile High Tower" and "Broadacre City" are his contributions to the Modern Movement where each contributor proposed a utopia of his own.

CHARLES EDOUARD JEANNERET (LE CORBUSIER)

Le Corbusier, as he is unanimously acknowledged, is the most noteworthy architect of the present century and the Modern Movement. He is equally important for the theory of architecture, as far as his contributions to this field are concerned. As we have confined the scope of this dissertation mainly to the written works of theory, his buildings, though very important, will not detain us much. Nevertheless, an analysis of Le Corbusier is bound to be deficient if we do not pay due attention to this area where he manifested himself and his theoretical outset properly. Le

[198] F.L.WRIGHT, An Organic Architecture, The Architecture of Democracy, London: Lund Humpheries, 1939, p.vii.

Corbusier pioneered in an interpretation of form in a new context and meaning being relevant to the modern age. He generated new forms and understanding which found later media of application throughout the world. In other words, he influenced the total building practice universally. We can conclusively assert that some important iconic issues of theory of architecture were created, produced and interpreted by Le Corbusier.

Even though Le Corbusier's iconic works turned out to be the most wide-spread and effective, the scope of his contributions were not composed exclusively of these. In his Vers Une Architecture,[199] Le Corbusier makes a survey into the aspects of form both restrospectively and prospectively. There he utilises an analogic frame of reference to illustrate how an object is formed by the determining forces generated from its function. He cherishes and dramatises various man-made products of architectural content. Le Corbusier makes a basic distinction between two types of aesthetics; engineer's aesthetic and that of the architect. "The Engineer, inspired by the law of Economy and governed by mathematical calculation, puts us in accord with universal law. He achieves harmony."[200] As opposed to this he finds emotions, spirit and other psychological factors in architect's creation. "Mass, surface and plan" are the three aspects that Le Corbusier wants architects to keep in mind.[201]

In his "Eyes which do not see"[202] Le Corbusier surveys the forms of automobiles, vessels and aircrafts. With this "industrio-romantic" approach he sowed the seeds of an analogic-utopic line of thinking that was advocated in the recent decades by Hans Hollein, the Archigram Group, the Metabolists, et al. With the images and ideas presented in Vers Une Architecture, Le Corbusier laid the foundation of an important tradition in Architecture. This tradition has survived to be an unorthodox reaction to the status quo.

In the chapter titled "Regulating Lines", Le Corbusier defends ideas and façade surveys that are basically in the same vein of the nineteenth century architectural theory. (Cf. Figure 29) This chapter at the same time foreshadows his later statements compiled under Le Modulor.[203]

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[199] LE CORBUSIER, Towards a New Architecture, London: The Architectural Press, 1976(1927), original: Vers Une Architecture, Paris: Editions Cres, 1923.

[200] ibid, p.7.

[201] ibid. pp. 25-62.

[202] ibid. pp.83-138.

[203] This we shall discuss later in Section. 2.5.2. and Chapter. 3.3.

Another important document of Le Corbusier contains his ideas and projections on cities and urbanism. Urbanisme [204] is a compilation of a series of essays and sketches. There he proposes some gigantic scale urban developments. By these he intends to solve some current problems rising from urbanism. Throughout the book he illustrates and compares his proposals with the examples taken from the cities of the present and the past.

With Le Modulor[205] Le Corbusier revived the old canonic tradition to derive dimensional coordination in architecture and other related activities. Owing to its canonic nature, the Modulor gives the impression of being dogmatic and metaphysical. Having the Greek auron (the golden section) further reinforces this belief and makes the Modulor a series of far-fetched conclusions on dimensions and proportions. Knowing the mysterious nature of $\sqrt{2}$, he arithmetically explains almost all of the fetishism related to the auron and the Modulor. (Cf. Figures 29-32)

Le Corbusier, by reviving a sort of religion out of a simple arithmetic relationships, paid his debt to one important line of the traditional obsessions of architecture, namely the line that has always endeavoured to devise concrete rules and regulations for making forms. It is a well acknowledged fact that the auron has the magical power inherent within its arithmetics to form a basis for a discipline as such. This is on one hand understandable, as any designer strives for having some concrete canons to discipline his thoughts and designs. On the other hand, when this discipline becomes "universally" and "unanimously" agreed, it takes over most of the "soft issues" related to the experience and content of architecture. Le Corbusier overestimates this inherent power and produces retrospective and prospective dimensional proof for architecture and form making.

Le Corbusier's admittedly rich revival of dimensional discipline for architecture brings one important line of development in architectural theory to an end.

[204] LE CORBUSIER, The City of Tomorrow and Its Planning, London: The Architectural Press, 1977 (1929), original: Urbanisme, Paris: Editons Cres, 1924.

[205] idem, The Modulor, A Harmonious Measure to the Human Scale Universally Applicable to Architecture and Mechanics, London: Faber and Faber, 1967 (1948).

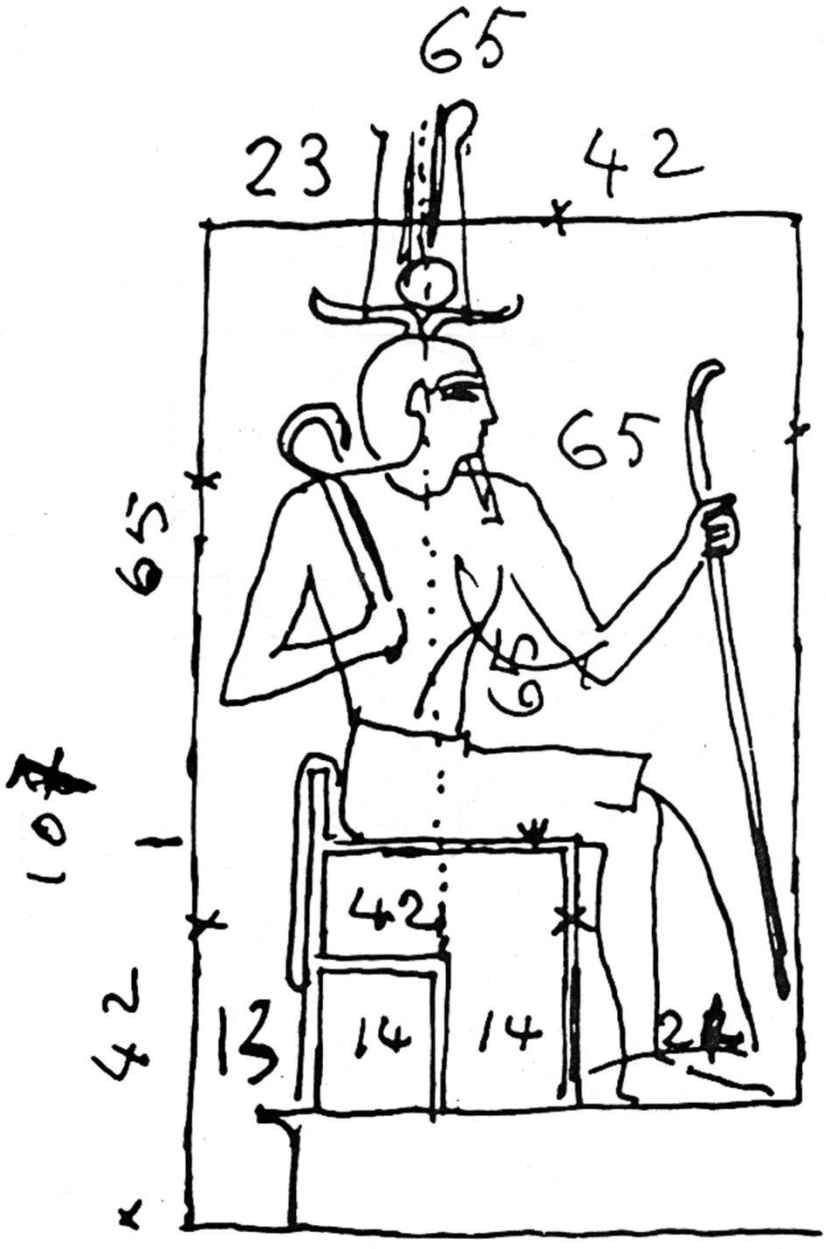

Figure 29. “A Pharoah, Rameses II confirms the existence of regulating lines.” LE CORBUSIER, op. cit. 1948, p.211.

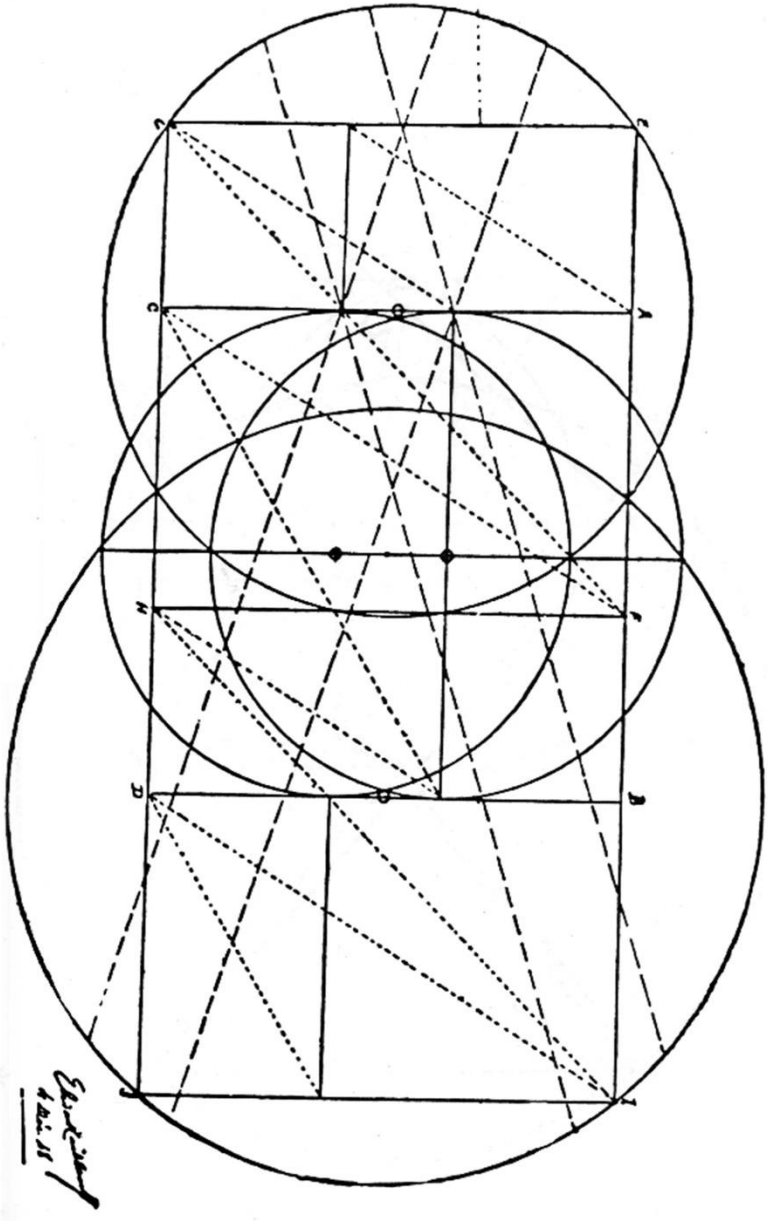

Figure 30. A drawing by Elisa Maillard consisting of "3 squares, 4 circumferences, … diagonals of compartments, some of which are squares, the others golden rectangles." ibid. p.236.

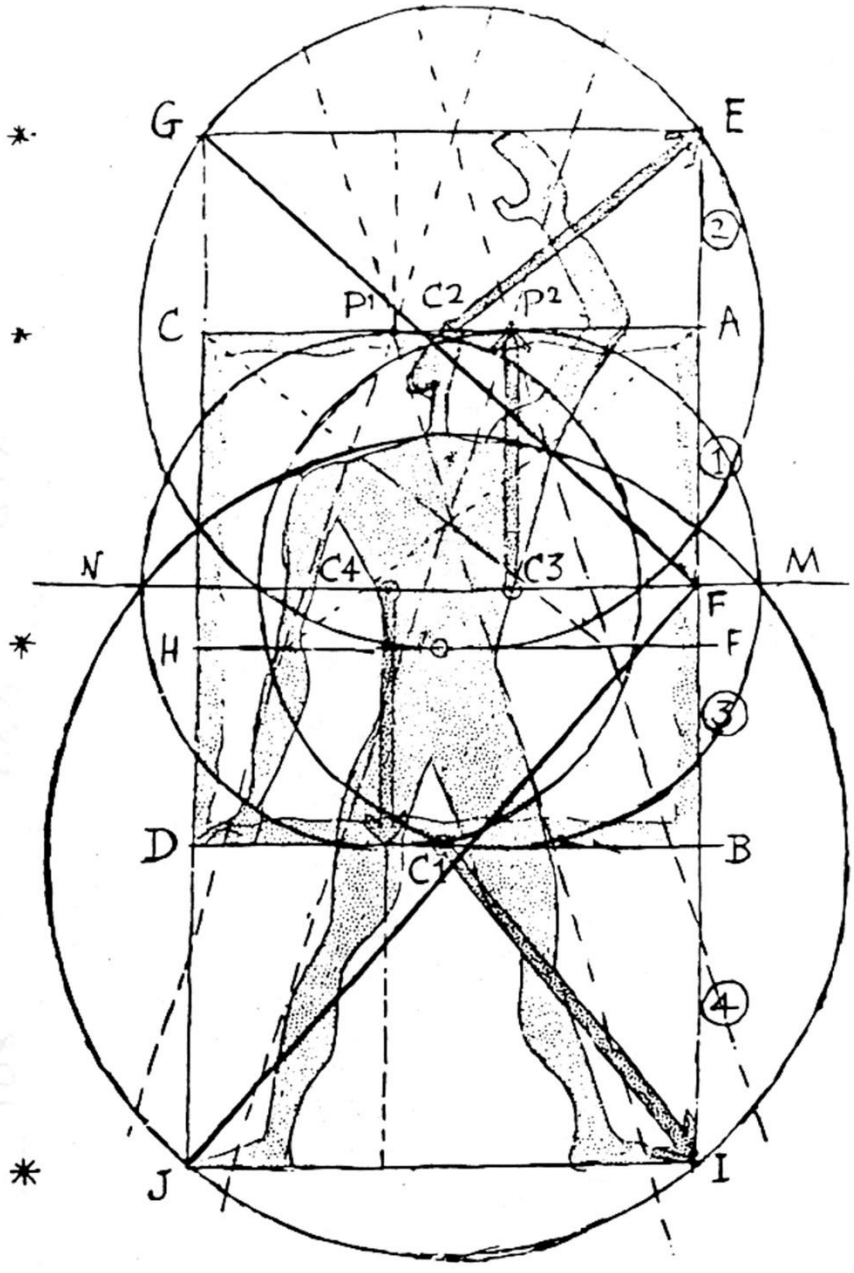

Figure 31. A human figüre fitted into Elisa Maillard's drawing. ibid. p.237.

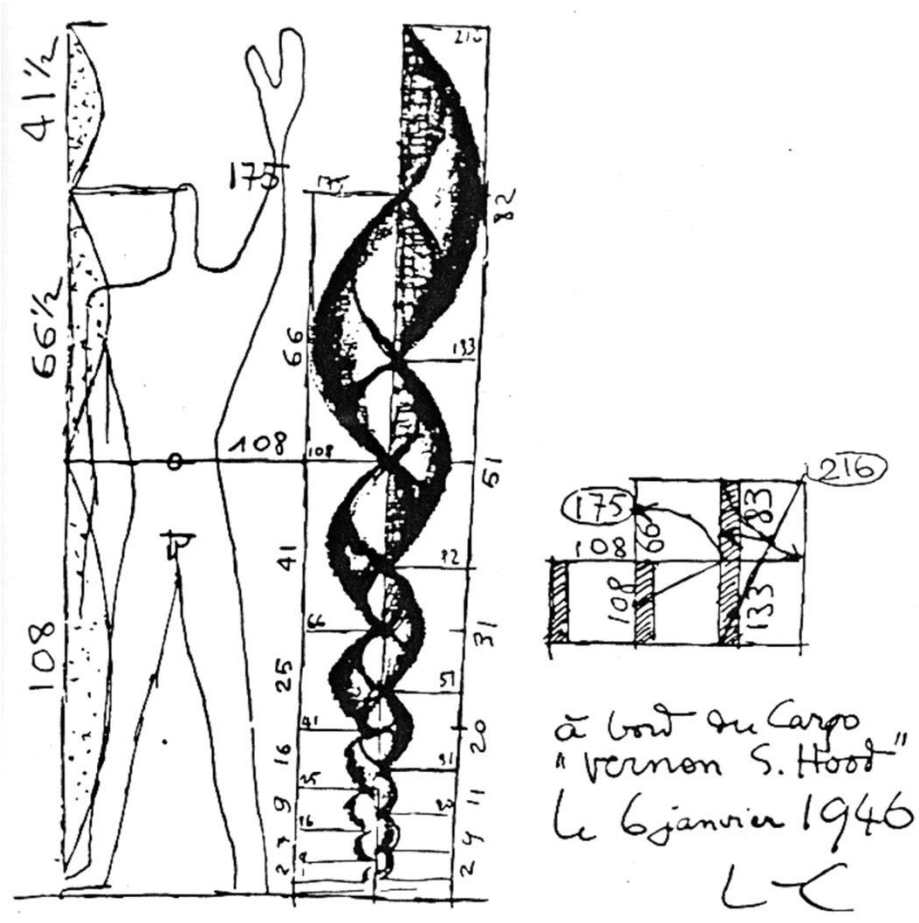

Figure 32. The modular. ibid. p.51.

There is almost no other remarkable effort for producing new orders for dimensional coordination. This is partly due to the fact that Le Corbusier elaborated the most potent mode of proportion, but mainly it was the realisation of the triviality of setting rules that generated a conformity of a dogma, a general acceptance and almost nothing more. It was still this conformity and the inherent potentials of √2 that made Le Modulor become a strong influence to occupy the architectural media for a couple of decades.

LUDWIG MIES VAN DER ROHE

It was for the first time after Palladio that a strong and wide-spread conviction in architecture was created by van der Rohe. Van der Rohe did not express himself in written form. His contribution to architectural theory is in the form of icons and canons manifested in his buildings. Thus, everything is theorised and philosophised from his outcome in the built form. Mostly, these theorisations were made in the media rather than by the author himself. The iconic work put forward by him constituted a school of its own and it has become almost universally acknowledged. This school crystallised building into skin and bones brought together with an extreme concern in detailing and proportions.

In the general context of architectural theory van der Rohe is regarded to be a reductionist. This stems from the priorities he emphasized throughout his career. Van der Rohe did not deal with architecture in its multi-fold complexity. The boundaries of architecture in Miesian context were delineated with the issues concerning structure, materials, finishes, details and proportions. The point of view that van der Rohe takes in the Modern Movement is a noncompromising finesse which idolizes industry and mass-production.

The former half of the present century was ripe for Miesian interpretation of architecture where the attained level of technology was in a close consensus with ideas purported by van der Rohe and the school generated therefrom. The readiness in the societal and economic medium gave the appropriate chances where the Miesian tradition could flourish worldwide regardless of geographical and cultural dissimilarities. Concequently, Miesian icons became the symbols of urban centers, capital and fine building technology. The problems generated from the reductionist architecture of van der Rohe and his followers all over the world can hardly be summarised here but the environmental consequences are superfluous to cite.

WALTER GROPIUS

Among the four pioneers of Modern Movement, Gropius is probably the most difficult to assess. The evolution of his career as a founder of the Bauhaus and terminating as practising architect in Massachusetts is full of fluctuations and diversions from the line of thought into which he contributed more than anybody else. It is impossible to disagree with Banham who said: "Few men have done more to create the mental and moral climate that made modern architecture possible, none has so consistently hidden his own light under a bushel of collaborators while never

escaping public notice for a minute, and none died so execrated for his alleged betrayals-"[206]

Two of the books by Gropius are worthy of mention here. The New Architecture and Bauhaus[207] contains his ideas on the changing aspects of architecture and design education. In this essay he defends rationalisation and standardization as the new imperatives for architectural design. He obviously supports these imperatives in light of the reality of economy and mechanization. Gropius sees standardization as a prerequisite of civilisation. He also claims that only standardisation can assist the realisation of homogenous urban areas similar to those we enjoyed in history. Gropius"s Scope of Total Architecture[208] is an anchology of his essays written at different times of his career. In addition to his consistent stand as a pioneer of the Modern Movement, he impinges upon some psychological issues related to architecture in this book. Even though he deals with many subjects of perceptual psychology, he insists on putting major emphasis on the architectural counterpart of the subject. In his chapter titled "Is There a Science of Design?" he states: "I consider the psychological problems, in fact, as basic and primary, whereas the technical components of design are for intellectual auxiliaries to realize the intangible though the tangible."[209]

The literal works of Gropius summarized in these two books give almost all of his theoretical status in architecture. His contributions can be accomodated as descriptive works of the theory. But still the relationship between the theoretical statements and his architectural practice remains unknown as no meaningful link can bridge one another.

THE STATE OF POST WAR ARCHITECTURE

Modernism is the most influential movement of all ages. Its influence was not only qualitatively outstanding but also devastatingly wide covering almost the totality of institutional architecture of the world. Modernism aimed at the purification of built form its non-architectural auxiliaries. It reached this aim both conceptually and practically.

Leaving aside the reductionist attitude of Miesian architecture where originality and innovation lies in the detailing, modernism in essence has always demanded

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[206] R. BANHAM, op. cit. 1977 (1962), p.3.

[207] W.GROPIUS, The New Architecture and the Bauhaus, London: Faber, 1970(1935).

[208] idem., Scope of Total Architecture, New York: Collier, 1970 (1943-1955).

[209] ibid. p.30.

originality and innovation in the total form. This demand has always been supported with the intellectual concepts stemming from the theory. Formwise, the variations and alternatives to what can be generated are virtually unlimited. This scope gets larger with the introduction of new innovations in materials, methods and technology of construction. In fact, the whole medium is like a language. However rich the repertoire of words, phrases and idioms may be, there is only one complete system of syntax to integrate this repertoire meaningfully. The richness of elements of form simply ends up with a chaos, without a meaningful structure to bring the parts together as it happened in the architecture of post 1950's.

The Modern Movement concluded its heroic epoch with a few veins of tradition labeled after the masters. What the theory of architecture had inherited from the movement were a series of new concepts for architecture and design. Most of these concepts, having been created by the masters, exerted a pressure upon the following generations to create new ones. Architects and designers felt themselves responsible to generate new and more original forms so that they could be distinguished from the crowd who were practising second-hand versions of the works of the masters as their successors.

The two, 1945-65, decades after the war is a period of ignorance and anti-intellectualism so far as the theory of architecture is concerned. With the exception of some disjointed and individual contributions, architects were extremely preoccupied with "form" and they conceived almost nothing beyond it. Obviously there were plenty of opportunities to build, consequently not much time to look back or think. The practising architects of the time intellectually fell far behind the developments that took place in other areas of interest in the world. The problems that we encounter today -- like vast urbanisation, energy shortage, third world housing -- were all conceivable then, but nobody seemed to pay the due recognition to these aspects. On the contrary, architects' intellectual universe consisted of one single aspect of architecture, form.

The theoretical contributions were limited to the aspects of form and a series of -isms all derived various issues related to form. Functionalism and brutalism were among the major movements where form and issues related to the formation of it were theorised.

Apparently the ignorance of societal dimensions and neglect of developing technology and emerging problems generated by the different levels of wealth and technology in other countries caused a growing discrepancy between the idealised and practised "form." Consequently, almost all theoretical efforts basing their arguments on the idealised aspects of form and overestimated role of the "architect"

in the practice of form divorced per se from actual practice. Meanwhile, individuals believing in the originality of "form" expressed themselves in multitudes of form. This practice ended up in a chaos due to the lack of integrative structure stemming from thought and theory.

AN OVERVIEW OF THE SURVEY

The hypothesized analytical categories of the model proposed in Chapter 1.2 have been applied in the survey a a retrospective analysis. They were regarded for distinct periods in history. Pointing out some of the outstanding contributions in the form of a chart offers a general view of the total evolution. Keeping the chronological development in mind while following the tracts indicated by the analytical categories, will enable an integrated view of the evolution of theory of architecture. (Cf. Charts 1-6)

ICONIC

In the survey, the iconic category does not seem to indicate a great influence in the development of the theory. Obviously, this is not true. We all know that the most significant input to architectural development is building, together with all the associations related to that. Therefore, the uneffectiveness of iconic contributions in the evolution of the theory arise from the purposeful limitations set forth for the analysis. In the beginning, when we constructed the model, the inputs to the theory were confined to the written works unless the built iconic element became extraordinarily effective upon the theory. Therefore the iconic contributions in the form of buildings were considered in the case of Palladio and Mies devoid of whom any architectural theory analysis is bound to be incomplete. If the present analysis were handled within a theoretical frame in reference to traditional architectural history, the iconic category and its numerous subsequent issues would have occupied almost the totality of the work. The subordination of the iconic category is a natural consequence of the utilised model.

In the process of evolution of architectural theory, it is not earlier than the modernism of the present century that the iconic aspects were boldly defended as theoretical issues. This is when the teachings of the Bauhaus and De Stijl along with many theorists the building practice demanded and generated the iconic forms for the coming eras. As already stated in the beginning the iconic form of message in architectural theory has always been existing in the process, but manifesting the icons in the form of written works has not become so effective before modernism.

PRAGMATIC

Pragmatism is the major class within which any theoretical contribution may aim at a direct use for the lay-architect. In the pragmatic category we have observed a series "truth"s taken for granted in blindfolded applications. The current value judgements of the times had always been confidently considered as being inherent in the practical advises and these practicalities have been purported by the eminant theorists.

With the exception of the practical content of Vitruvian manuals which have their pragmatic content mainly related to the hard facts of construction and engineering, Durand shold be considered as the most revolutionary in this line. Durand, confining architecture (i.e. neo- classicism) into a sets of forms and combinatory rules, opened an avenue which came to be praised in the 1960's when architectural theory suffered seriously from its contentwise reliability and relevance.

CANONIC

To discipline the formal content of architecture via the generally accepted rules and values, canons have been considered as useful throughout the development of architecture. Canons were proposed and defended as means of bridging the soft values of the theory and the hard facts of practice. While canonic approaches remained valid in the evolution of the theory, their content kept changing in reference to values of the society and architecture. The Greek canons of Renaissance left their place to the neo-classical canons which were then replaced by the canons of the industrial age. Finally the canonic contributions refined themselves into pure relationships of abstract geometry.

The development in canons apparently ranged from the concrete iconic canons of the past ages to abstract geometry. In this process the iconic and concrete content of the canons were transformed into a pragmatic content of abstract relationships. Thus losing the concrete content did not end up with a great deficiency rising from the simple abstract state of being. On the contrary, the simplicity and abstractness of the canons promoted a new meaning and quality in content that is subtle and purer.

The statement above about abstract geometric relationships, is not valid however for other canonic views of the recent times. Le Corbusier's Modulor, endeavouring to impose a doctrine of aesthetics through dimensions and other modular approaches stemming from the convenience of construction do not conform with

our conclusion of abstract geometric relations promoting the pure, subtle content of architectural experiences.

ANALOGIC

As in almost all theories with non-axiomatic bases analogy has remained as one of the most effective modes of reference throughout the development of architectural theory. The initial analogy was made between Human figure and architecture in the Renaissance theory then was replaced by a stronger and more convincing analogy between principles in nature and architecture.

In the later stages of development, the analogy did not occur to be the sole mode of influence. It is used mainly as a rationale to reinforce other categories of our analysis. In some of the twentieth century contributions, analogy has become a means to support ideas which are in essence either utopic or canonic. These analogies were basicly vehicles to reinforce the ideas demanding more convincing argument.

The other form of analogic approach made at a more abstract level between theories falls into the realm of the descriptive and isomorphic categories of the present analysis.

UTOPIC

Utopic contribution to architectural theory has remained as a maintained line of expressing ideas throughout the history. At times when the theory needed radical changes in approach and content the utopic impetus induced by the theorist appeared to be the most effective. Utopias of the Renaissance, the Age of Reason, Modernism and the 1960's are remarkable examples of how an anticipated radical change is introduced in a strong and exciting mode of presentation. The utopic view amalgamating iconic, analogic and pragmatic aspects of the theory offers a fuller view on the defended line of ideas.

DESCRIPTIVE

It was not before the Age of Reason that philosophers indicated a serious interest in architecture and architectural theorists started to become more philosophically oriented in their analysis. This, on one hand offered architectural theory a chance to present its findings in a philosophical context, on the other all the developments

in various fields of knowledge were made available for architecture through philosophy.

From the eighteenth century onward the efforts accomodated under our descriptive category constituted the backbone of architectural theory. The major contributions to architectural theory came from the fields of aesthetics and the psychology of perception.

The utilisation of the "space" concept as a basis for architectural analysis opened a new era for the descriptive efforts. By the last two decades 1960-1980, many other concepts and theoretical content of other fields were incorporated into these analyses. With all the descriptive aspects, theory was not only strengthened and diversified but also became more contentful and specific.

At the present the basic emphasis of architectural theory lies in this descriptive area where the majority of the efforts endeavour to be relevant in reference to the other contemporary fields of science and philosophy.

ISOMORPHIC

Isomorphic [210] contributions to architectural theory were introduced so late as the early 1960's. Therefore these contributions have not been dealt with in the survey. The apparent need for isomorphic developments were the increasing complexity of design situations arised when the scientific developments appeared to be able to facilitate the theoretical material to cope with the problems of a comparable complexity.

Most of the techniques accomodated under this class are borrowed techniques in the beginning, but in time, most of them evolved to acquire a specific content and meaning in reference to architecture.

The tendency to reinforce descriptive efforts with isomorphic techniques is great and the prospective developments seem to lie in this area. Isomorphic theories also seem to be the only area where architectural theory has an up-to-date interaction with the scientific findings of the relevant contemporary theories.

[210] The isomorphic category of contributions did not exist during the period covered in the survey. Here it is mentioned at an introductory context.

AN OVERVIEW

The charts 1 to 6 indicate an evolution of architectural theory until the first half of the present century mainly in the line of the descriptive efforts whereas the other contributions happen to be simultaneously existing dwelling mainly upon the traditional premises of the theory of architecture. While the pragmatic, canonic and analogic contributions maintain a constant existence in the process, utopic contributions indicate influences at particular times when the total process is under vital questioning. The isomorphic approaches branch out of the descriptive ones. Eventhough they have developed strong enough as a class of their own, the descriptive content of them remained as the most particular aspect of such inferences.

The Chart 8 displays some major architectural movements of the present century, As opposed to a concentration towards the bottom categories in the theory, the movements indicate concentration in the upper categories of the chart. Also one observes more homogenous distribution throughout the categories. This obviously, indicates the coexistence of all approaches under the realm of architectural activity, meanwhile it presents the complexity and diversity of the research situation with which we involved ourselves to structure. This chart shows us that the specific content of architecture, -i.e. not exclusively architectural theory -- accomodates itself heavily within iconic and pragmatic categories.

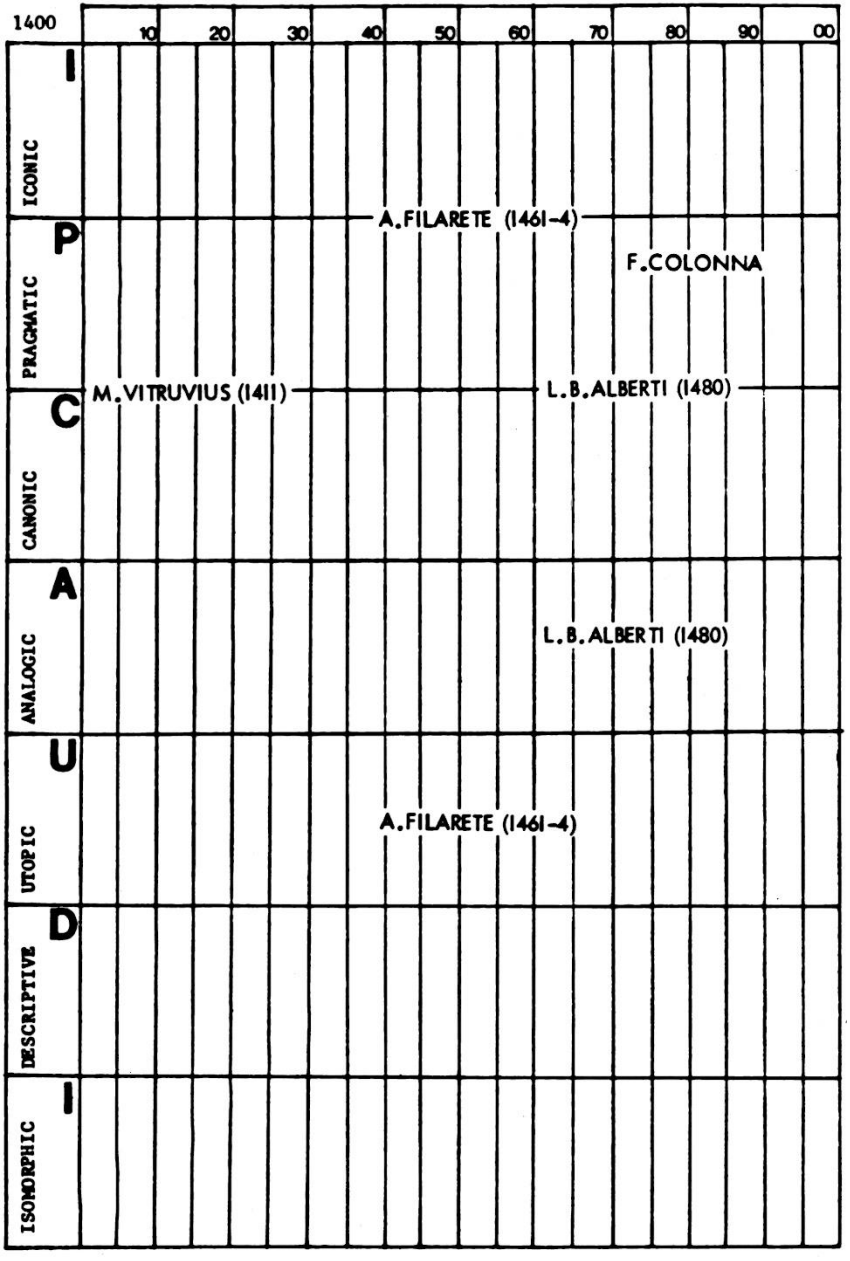


Chart 1. Categoric analysis of theoretical sources of architecture in fifteenth century.

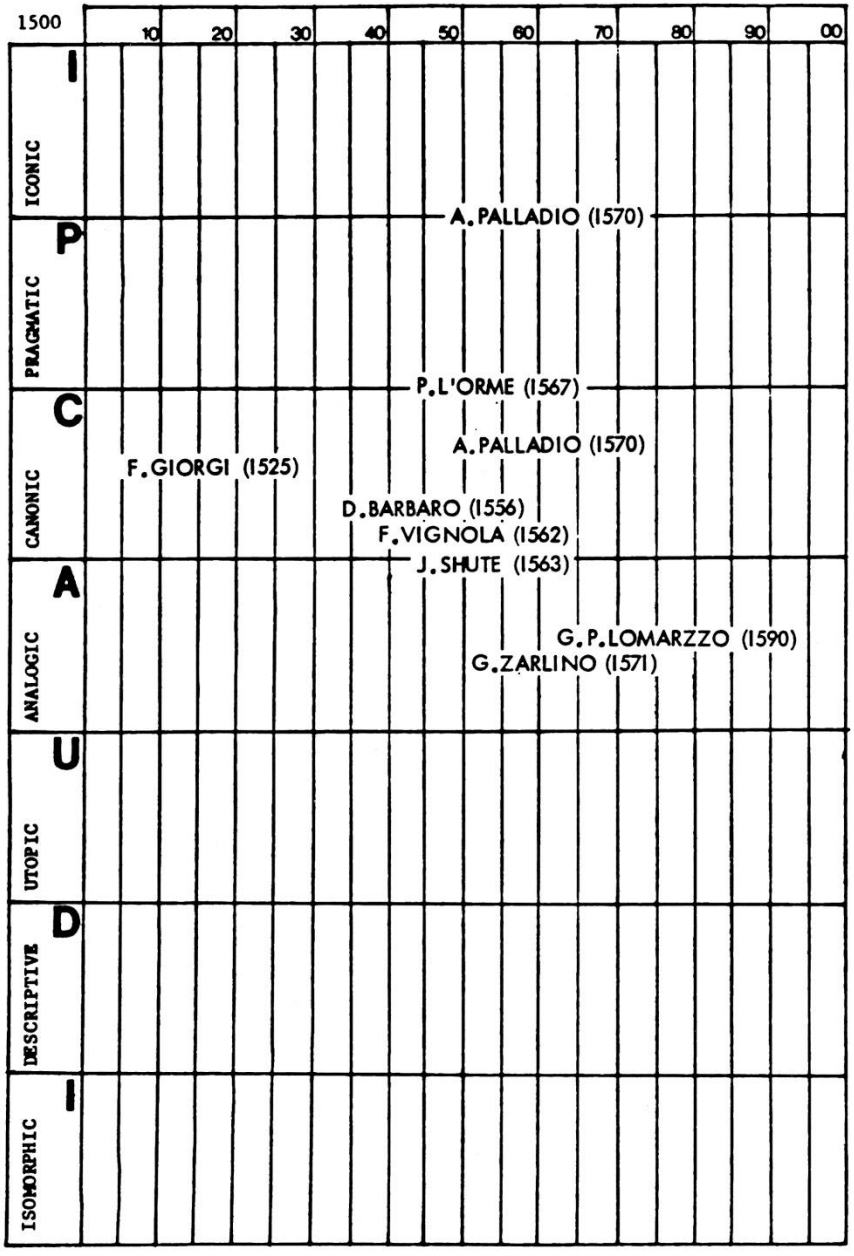


Chart 2. Categoric analysis of theoretical sources of architecture in sixteenth century.

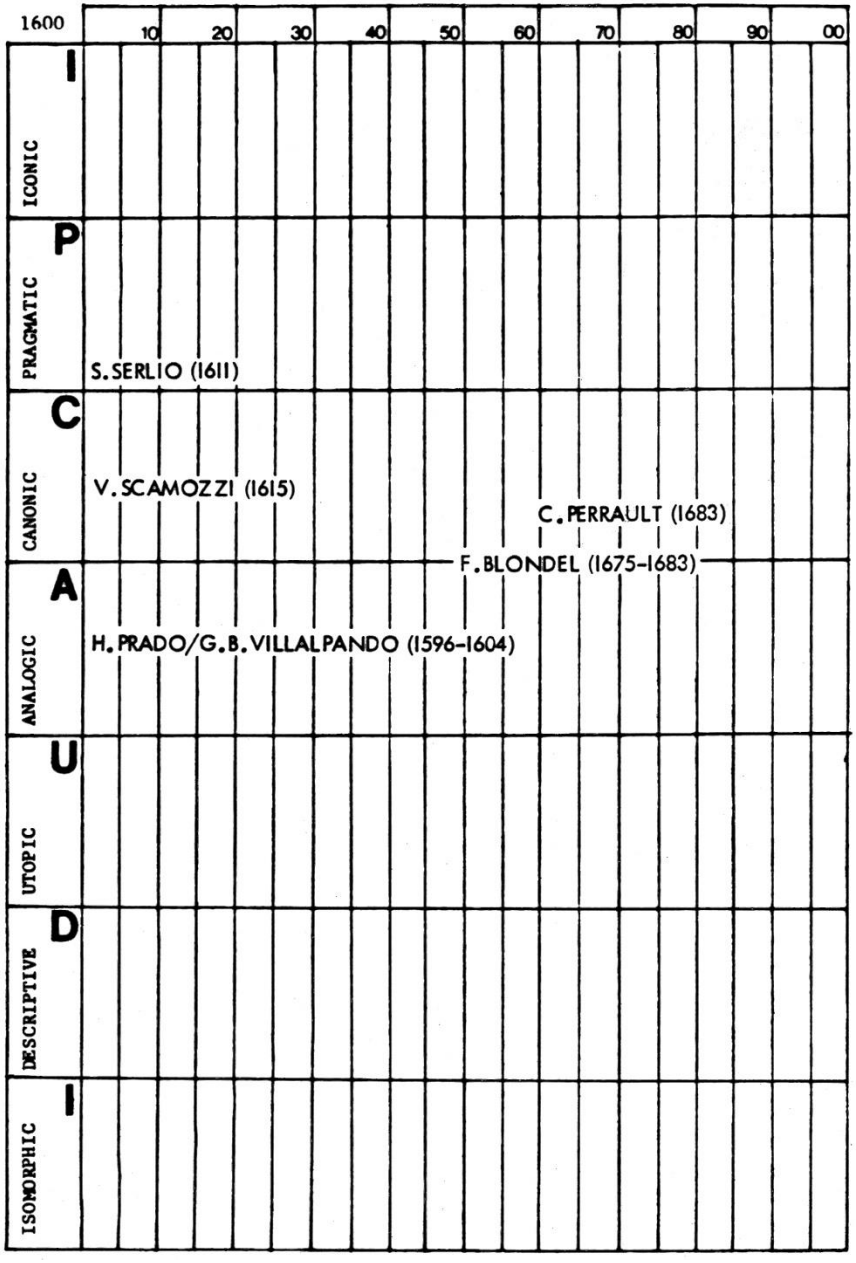


Chart 3. Categoric analysis of theoretical sources of architecture in seventeenth century.

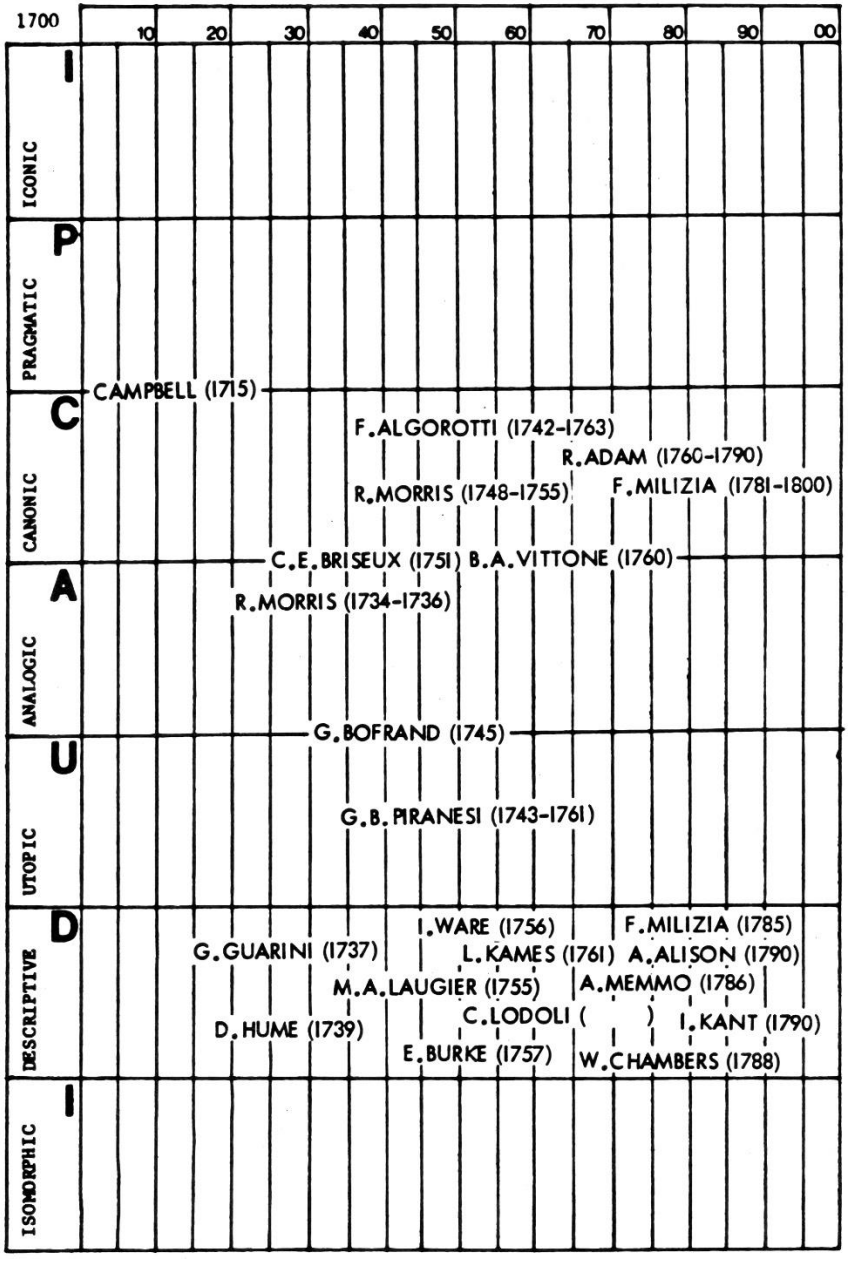


Chart 4. Categoric analysis of theoretical sources of architecture in eighteenth century.

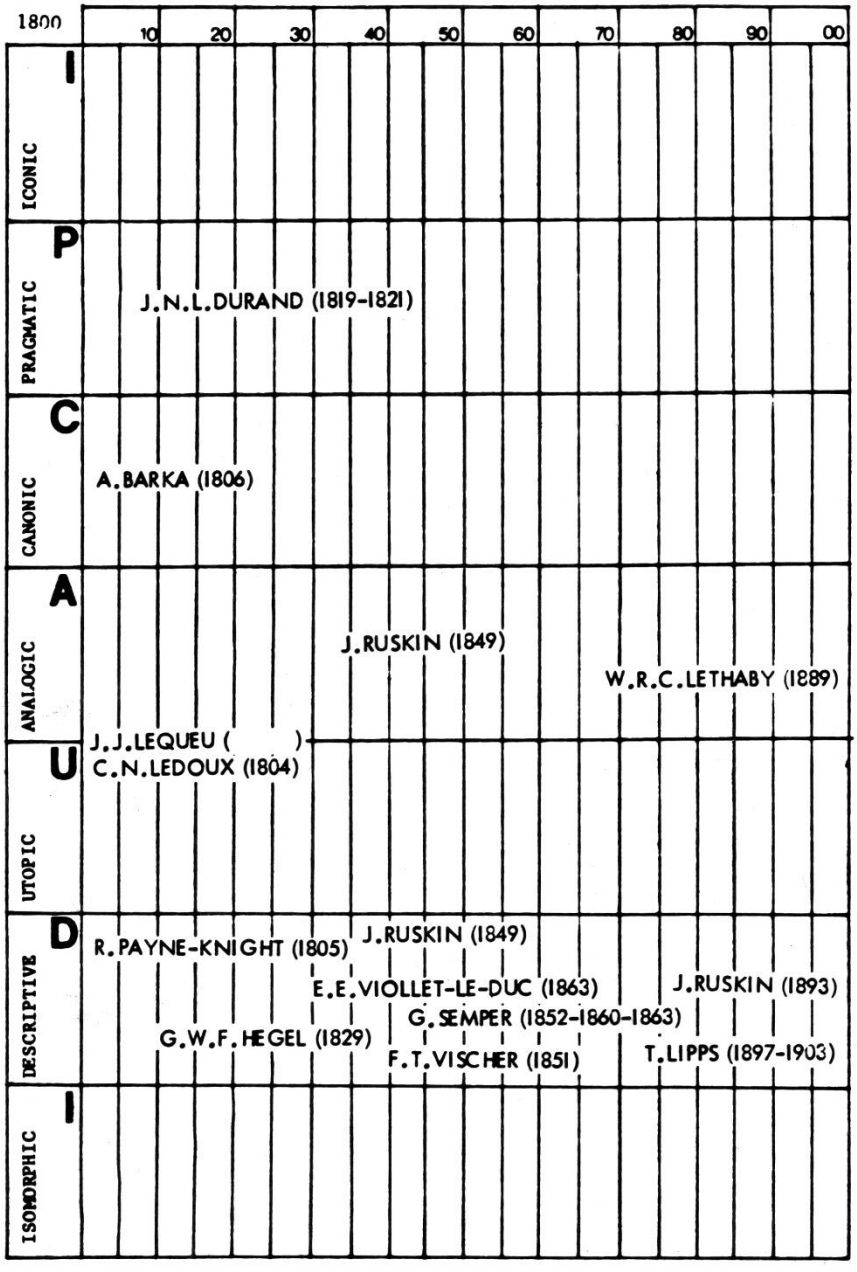
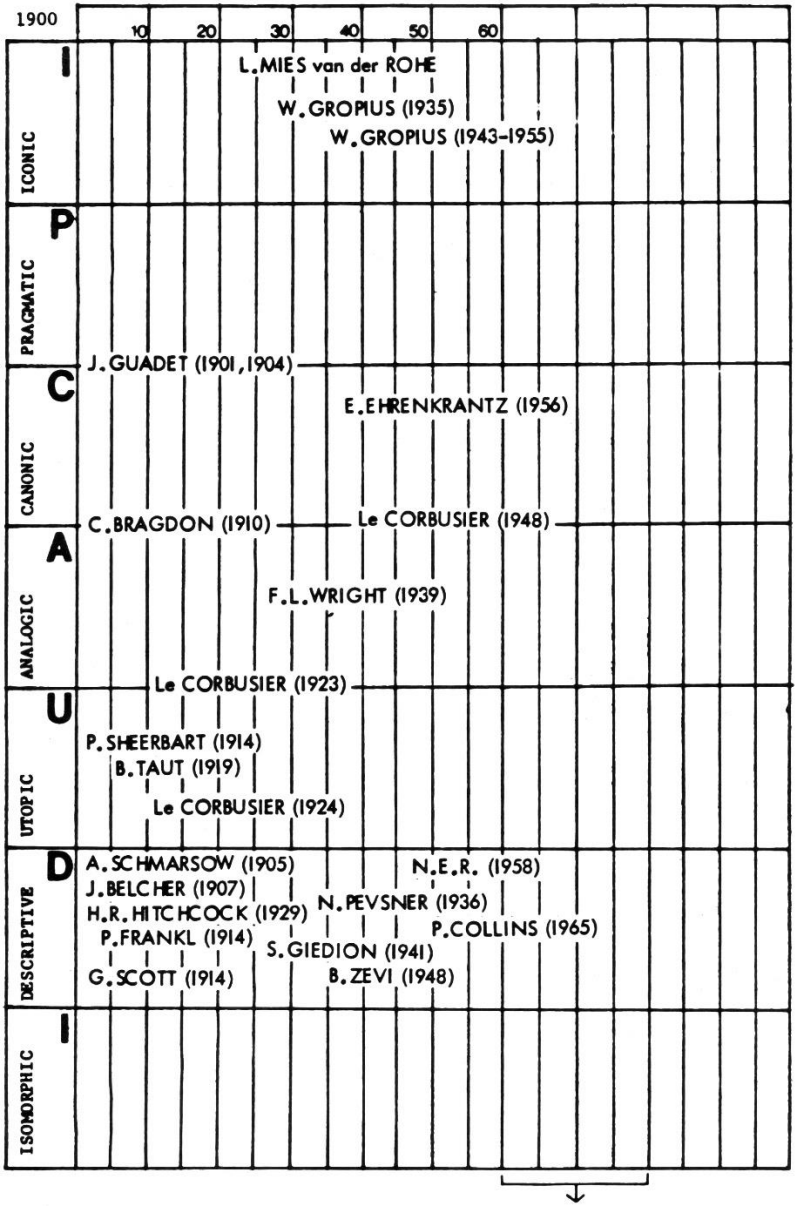


Chart 5. Categoric analysis of theoretical sources of architecture in nineteenth century.



vide. Extended Chart 8 on p.223

Chart 6. Categoric analysis of theoretical sources of architecture in twentieth century.

PART III

INTEGRATION

In this Part we shall attempt for an application of the hypothesised analytical categories to the present and the recent past of the theoretical contributions for architecture and design.

The dramatic changes that occured in the content and the context of architecture after the, 1920's set some basic concepts according to which the process of design may be disciplined. In the early 1960's some young theorists were sharing the belief that the status attained for design must form the basis of the future developments. With the achievements of modernism in mind, Christopher Alexander declared that "the work of this generation, and the succeeding generations will be the work of refinement."[211] Alexander claimed the triviality of ideas such as "newness," "greatness," etc. In the title of the article he put forward his utmost statement: "The revolution finished twenty years ago"[212]

The changing situations proved Alexander to be incorrect, actually, he himself pioneered in the redefinition of the status of theory in architecture. The reason why architectural theory has undergone radical changes are numerous. Nevertheless, two main groups of factors can be outlined as the conditions that necessitated radical changes in theory.

1. The factors that generate from the state of the present theory of architecture and design;

2. The factors that are caused by the development in other theories that influence design theory.

The state of architecture and its relevant theory with respect to the first group of factors can be summarised as follows:

The traditional theory of architecture and design proved to be inadequate as the turmoil of the heroic period of the "Age of the Masters" and modernism came to a standstill. At this instance, despite the fact that a considerable development and

[211] C.ALEXANDER, The Revolution Finished Twenty Years Ago, Architects Yearbook 9, T. Dannat, ed., London: Elek Books, 1960.
[212] ibid.

excitement took place in architecture, the outcome was definitely not a set of unanimously and indisputably agreed principles to constitute a theory.

Since previous periods encouraged subjectivism, the architectural scene of post the 1950's was chaotically full of innumerable subjective approaches. Almost all of these, resulting in expressions of form, made "form" as the ultimate aim in theoretical involvements. Consequently, anything outside "form" could not survive. Architectural theory and practice became an arena of subjective expressions each manifesting a formwise approach of its own.

This extreme preoccupation with form in return created a language of a particular kind. This language becoming extremely sophisticated and fine did not enable any communication at a common level. On the contrary, the cherished individualism and subjectivity encouraged every designer to create a language, or at least a personalised vocabulary, of his own. Hence, the chaos of forms reflected itself onto the theoretical level. Metaphysical concepts related to theosophy and mysticism were reinforced with a multitude of architects' private language.

As a product of the facts above the status of the theory happened to be fragmented, incoherent and extremely subjective. Obviously, there was neither a fact nor a principle that could be accepted as universally relevant and applicable. This, naturally, reduced the reliability of the theory into some insignificant minimum. As an outcome of its limited and sophisticated nature the theoretical resources became far from being relevant to handle complex problem situations. And finally, with the exception of some limited attempts, the societal dimensions of architecture were almost totally ignored.

As surveyed above in the preceding section with particular references, contributions to theory of architecture and design have been examined through the written works emphasizing certain aspects of the phenomenon whereas certain others were neglected. In other words, each and every contribution formed a sort of model of its own, being relevant from the point of view of the specific interests and validity of its objectives. As a matter of fact, many of the theoretical and historical analyses of the recent past took similar stand points towards architecture and displayed a picture of unstructured, complex and disjointed efforts forming mainly subjective and speculative "theory" of architecture. In certain instances this subjectivity and speculativeness has been taken out so far that they created a commonly shared suspicion as to whether architecture possessed a theory or not.

The method of analysis applied in the present work has displayed that theory of architecture, has consisted throughout history, from the point of its genesis onwards, of an extremely complex body of knowledge that cannot be classified

under a simple nomenclature or structuring. It can also be observed that many different attitudes have survived in theory and developed together in time, however, with minute interactions among them. It is definite that almost all of the contributions belonging to different categories above existed at different times in history and were amalgamated in the melting pot of the area known as "Theory of Architecture".

When we look back at the recent past and observe the present, we also see all of these different approaches in theory of architecture exist together, again, with very limited interdependence between them. Meanwhile, at the present, we can also see that these different approaches are also conceived with ideological considerations; consequently, there are numerous political, social and philosophical implications in every approach as we theorise it.

As we have briefly done in Chapter 2.6. the relevance and validity of the utilised model can only be tested on the existing situation of the present. In order to have a clearer picture of the present, it is necessary to survey this not only in the chronological order of the previous chapters but also from the point of view of the analytical set up we have refered to throughout. With this frame of reference we can observe the existence of various attitudes in architectural theory in a closely knit structure.

The chronological order of the survey displayed the existence or co-existence of the approaches as we categories them in a process of evolution. It is an observed fact that all seven categories listed in our model exist simultaneously in the theoretical scene of the present.

In the succeeding sections of this chapter, each category will be studied in reference to various movements and approaches that can be classified under our analytical categories.

THE ICONIC SCENE

The iconic frame of inference in architecture exists and is quite effective at present as it has been throughout the past. Iconic approaches were revitalised by modernism as an assimilation of numerous factors affecting an architectural piece (i.e. a building) crystallised in form. The icons of the recent years are mainly composed of those which were projected from the heritage of modernism and diverged from it as their interpretations and philosophical implications changed and gained a different content and meaning of their own.

The most important input to this area is the one propagated by van der Rohe and the Chicago School. Van der Rohe's crystallised and simplified icons manifested in buildings like the Illinois Institute of Technology Campus, the Seagram Building along with many successive designs either by him or his followers, spread throughout the world. His attitude became a sort of destination for many architects aiming to attain the goals iconised in built form by this ecole.

The development of capitalism has made land speculation inevitable. Highrise buildings and skyscrapers seemed to be the most plausible architectural solution for the problems generated from this enforced urbanism. The Miesian attitude has become an iconised cliche to tackle these problems with the least amount of difficulty and controversy. Because, what was propagated with the iconism of Lever House by Bunshaft, van der Rohe and their followers, constituted an image for what a successful firm must possess in their building. Despite its all environmental, servicing and performance deficiencies, this école provided the symbols for business firms throughout the world as to what their buildings must look like.

The Miesian architectural content acquired a respectable status as it cherished finishedness, precision, industry, etc. all being contemporary concepts in architectural media since the turn of the century. While Miesian iconism was applied throughout the world, to what extent this was the solution for the highly complex problems anticipating solutions from architecture, has reamined unresolved. This reductionism formed safe nooks for designers when the responsibility of building practice was handed over to them.

The Miesian approach, is accepted to be a rational one by most of the theorists.[213] Apparently this rationality stemmed from the simplist and indifferent nature of the icons that van der Rohe favoured. In fact, as one considers the amounts of energy bills to overcome the environmental demands of a Miesian envelope it is not easy to essert its rationality. Furthermore, the formal identity between rectilinear geometry, precision, reductionism and rationality is far from being defensible.

The Miesian tradition has its roots in the works of Steiff, Mehrtens, Brinkman, Gropius, Le Corbusier and Meyer. This tradition has matured in the works of Johnson, Skidmore, Owings, Merril, Harrison, Saarinen, Pei, Heintrich, Jacobsen,

[213] The categorisation of architectural approaches into two distinct classes of rational and irrational was one of the most favoured approaches in 1950's. This approach takes building as the ultimate expression of the architect and analyses it with a series of semantic attributions. The limitations and meaninglessness of analyses as such is obvious. L.PRAK, The Language of Architecture. The Hague: Mouton, 1968.

Eiermann, Fueg, Hallers, Zaugg and many others, along with, of course, Mies himself.[214] These contributions mainly spanned the period between 1949 and 1958. After then, this approach became a sort of style paying its credits to technical excellence and precision in architecture.

The explicit opposition to the Miesian approach is brutalism. Coined by Banham,[215] the term is accepted to have been derived from Le Corbusier's beton brut. Contrary to the Miesian école, brutalism favours roughness in textures, searches for appropriate expressions for specific uses, simply, it is less dogmatic in finding architectural expressions for functions. Among the outstanding contributors to this tradition we can list Saithsons, Aalto, Stirling, Martin, Lasdun, van Eyck, Candilis, Woods, Sert; de Carlo, van den Broek, Bakema, Kahn, Rudolph, Atelier 5., Mayekawa, Tange and many others who applied iconic principles of brutalism to their architecture.[216]

The differing interpretation of brutalist ideas in different countribute created particular formal expressions and concepts with specific reference to the countries where they originated. In other words, some of the sytheses in form have acquired contents semantically referred to a country or a region. In this context, in the recent past, Alvar Aalto from Finland, Kenzo Tange from Japan, James Stirling from England, Gio Ponti from Italy, Egon Eirmann from Germany, Ricardo Bofill from Spain, Louis Kahn from United States, Arne Jakobsen from Denmark, are among few worthy of mentioning as the originators of regionalism as considered within a semantic classification referring to an identity of geographic region and particular type of architectural expression.

Many architects of the recent past have generated and spread a series of icons that took over the institutionalised practice of architecture. Consequently, many formal expressions are seldom referred to their abstract qualities but with rather particular reference to their initial designers. Regardless of what the written media of architectural practice and most of the solutions stemmed from these references set forth in the form of buildings.

The theory of architecture has mainly confined itself to the interpretation and assessment of buildings with a speculative language of its own, and with judgements having a psycho-spatial reference and perceptual qualifications of the built form. There are also iconic inputs to design at the present originating in up-

[214] vide. J.JOEDICKE, Architecture Since 1945, London: Pall Mall Press, 1969, pp.83-107.
[215] R. BANHAM, The New Brutalism, London, 1966.
[216] vide. J.JOEDICKE, op. cit., 1969, pp. 108-137.

to-date interpretation of various determinants of form and space. Among these, the emphasis put upon form and materials plays an influential role.

Hollein's interpretation of machine aesthetics, finishing and materials of the post-industrial age, though displayed in very small scale architectural operations, had a considerable impact on the design concepts and aesthetic values of the present. Hollein also projected these small scale to gigantic gestures with collages manifesting the environment of post industrial age. In this line, the impact of Archigram to recent modes of architectural thinking is important; especially, the iconic content of their conceptual architecture has been influential as it displayed factory or petroleum refinery environments for urban settings.

Taking off from the iconic and theoretical premises advocated by Hollein, Archigram and Stirling in different contexts along with Le Corbusier's dreams in 1920's, Piano and Rogers have synthesised an industriophile, techno-romantic icon of the present decade at Centre Pompidou. From its conception in 1971 onwards, this building has propagated new and radical ideas to be put into built icons for the future.

PRAGMATISM TAKES OVER "ARCHITECTURE"

The approaches that are pragmatic in their essence form probably the most effective and globally widespread area, both in terms of the theory and practice of architecture. Among the reasons behind this fact the following can be listed briefly at the beginning:

i) The increasing lack of architectural control over building practice made self-help, autonomous and uncontrolled building types effective all over the world.

ii) Ideas were generated enabling people to participate in the formation of their built environment. The belief in the inpossibilty of controling all of the variables determining the formation of built-environment were confirmed and ideas for letting others contribute and decide within a given architectural frame of structuring were developed.

iii) The validity of the idealist mode of thinking in architecture where "architect" becomes the ultimate decision maker in all spheres of the built environment were diminished.

iv) Ideas emerged reducing architecture into cellular units or agglomerates where each one of the cells can possibly be built by a small group of individuals.

These ideas and beliefs generated a complicated and diverse set of theoretical inputs to the theory of architecture. At present, we have brought these together under the category of pragmatic contributions. For the convenience of the analysis we shall examine these efforts under headings referring to the major emphasis of the activity.

SELF-HELP ARCHITECTURE

It is a well-known phenomenon that in most of the countries of "the Third World" the political economy of housing and urbanisation has gained a momentum far beyond the threshold that can be coped with the tools of architecture. The solutions to the inescapable need for shelter and housing have been generated by the people themselves and this has been in application over a period of almost half a century.

The names given to this type of housing are various, each picking up one key aspect of this mode of building. Squatter housing, mushroom housing, shanty towns, etc. are among a few that can be mentioned. However, the most meaningful names are those that particularly refer to one specific type of housing in a specific region or a country. This type of housing is called gecekondu in Turkey, ranchos in Venezuella, barriadas in Peru, prospighika in Greece, canicos in Mozambique, favella in Brasil, bustee in India, nuola or bidon-ville in North Africa.

There has been a vast research on this type of housing regarding its social, economic, cultural, spatial etc. aspects. In the scope of the present work it is not even possible to survey even the literature on the subject. The most extreme and best recognition of self-help housing came from Turner. Turner in his two major books and many articles is important in pioneering to pay due attention for this architectural phenomenon of the present century. His controversial edition Freedom to Build[217] was later followed by a more comprehensive documentation titled: Housing by People.[218] Turner, recognising the ultimate freedom of the individuals to solve their own shelter problems neglected the authority and authoritarianism, whether this may be architectural or otherwise. He manifests his views in parallel to his subtitle: Towards Autonomy in Building Environments. The lack of authority in his argument opens an avenue for considering him as a propagator of the

[217] J.F.C.TURNER, and R. FICHTER, eds. Freedom to Build, New York: Macmillar, 1972.

[218] J.F.C.TURNER, Housing by People, Towards Autonomy in Building Environments, New York: Pantheon, 1977 (1976).

anarchist theory for architecture. Whatever these short-cut classifications might imply, the truth and validity of Turner's analysis must never be underrated.

Simply, the self-help mode of building has reduced the variables of architecture to their minimum. In this context, the determining issue is survival. Resources to solve this problem are always scarce. The outcome is the devastatingly large portion of our built environment erected without any initiative or control from architects or architecture.[219] This is an important lesson displaying many facets of a contemporary truth that no architect or theorist can neglect.

ADHOCISM

As the belief in the validity of the architect's despotic authority on the formation of the built environment diminished, the medium of architectural theory generated new ideas to fill up the vacuum caused by pushing back the decisiveness of architects and designers. Adhocism is one of the main currents to sweep the formwise idealism in architecture. Ad hoc meaning "for a specific purpose" has been in use in architectural theory as "ad hoc theory" substituting a sound and reliable theoretical basis the necessity of which has been felt throughout. Ad hoc theories are those that function as theoretical rosources for specific circumstances.

In the present decade adhocism descended from the level of theory to practice and became the theoretical rationalisation of the everpresent activity of solving one's own problems within the confines of limited resources of a restricted medium. Jencks and Silver manifested a theoretical cover for this kind of design activity for producing solutions within the limitations of real-life situations. With the exception of Peter Cook's anecdotes titled Addhox[220] transforming urban and suburban housing with ad hoc additions, Jencks and Silver's book Adhocism[221] is the pioneering and the only document on the theoretical premises of adhocism. There, Silver takes up quite an easy position in defining adhocism. He states: "Discovering adhocism is ad hoc and everyone knows all about it. 'It's what people do all the time'."[222]

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[219] C.DOXIADIS, Architecture in Transition, London: Hutchinson, 1963, p.75, states than 98% of the built environment is not designed by architects and 80% of it is not even influenced by them.

[220] P.COOK, ed. Addhox, Archigram, ed. P. Cook, New York: Praeger, 1973 (1971) pp.132f.

[221] C.JENCKS, and N.SILVER, Adhocism, The Case for Improvisation, London: Secker and Warburg, 1972.

[222] N.SILVER, ibid. p. 105.

Adhocism acts in a delicate balance. One pitfall is an extreme individualism which is likely to lead to an environmental anarchy, while promoting respectable ideals for an ultimate freedom for individuals. Adhocism does not favour any canons, icons, ideals or set frameworks to control and discipline form. The difference between chaos and freedom is left to the viewer and the context. It is proposed that the differentiation to be made of "Good" adhocism from "Bad" one.[223]

Like Self-help Architecture, adhocism is also a post-facto theoretical rationalisation. It is pragmatic because it provides individuals an authority, responsibility and freedom to solve and express. The answers to the oppositions to the societal and ideological problems which are likely to be caused by a global adhocism is not convincing enough to gain a wide recognition. Meanwhile its post facto nature makes the contributions to adhocist theory inevitable.

VERNACULARISM

The growing disbelief in the idealist tradition in architecture to cope with complicated design problems prepared a medium for learning by surveys of the existing examples of similar phenomena that evolved in time. The type of architecture called vernacular is believed to be an assimilation of all the related factors that formed "architecture." These factors consist of all those acting from social, economic, cultural and ecological spheres and are synthesised in the built form of vernacular architecture. However, this type of architecture shows only examples of domestic buildings, with some limited examples of public ones. Although, housing is only one part of built environment, it is the most vital one as it directly affects the individual.

Our attention to vernacular architecture is drawn by an exciting exhibition and a book that followed it, Architecture without Architects[224] by Rudofsky. Being full of extremely interesting and rich physical qualities of vernacular architecture,

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[223] ibid. p.116. Silver lists the following:

"BAD" ADHOCISM	"GOOD" ADHOCISM
Laissez-faire capitalism	Small political groups forming for specific purpose
Plaigiarism	T.S. Eliot a bad poet borrows, a good poet steals.. eclecticism
Pastiche	Parody
Chaos	Individual orders
Desecration	Renovation
Licence	Liberty
etc.	

[224] B. RUDOFSKY, Architecture without Architects, New York: Doubleday, 1964.

examples gathered from all around the world presented a different world of architecture to architects and laymen. Consequently, Rudofsky 's book became a standard source on vernacular architecture over a period of fifteen years. As much as one would expect from an exhibition, Rudofsky generated an interest about the vernacular mode of building. His work blended with superb photographs, opened a line which later became an important mainstream in the theory of architecture.

Vernacularism leaves the initiative of form-making in architecture to individuals whose organization for building practices is set by tradition and culture spreading over a long period of time. The rules, regulation and technical know-how of the building activity having evolved through history, formed the necessary organizations to maintain this practice.

Vernacular architecture is a deep rooted tradition. It changes only when the institutions that sustain the tradition change, become obsolete or die. Therefore, when vernacular architecture transforms, it does not suffer from purely architectural interventions, but from those at the level of societal organisation.

Vernacular architecture is essentially pragmatic. Its pragmatism is usually maintained and controlled by a set of icons of its own at the symbolic level. These icons indicate the way of coping with the problems of building. However, vernacularism, as it surveys the processes that produce vernacular architecture can be considered as being descriptive. In a similar vein with Self-help and Adhocism traditions, vernacularism is also a post facto theorisation. Here, it is not easy to delineate the boundaries between vernacular architecture as a mode of building and vernacularism as the theoretical setup to survey and produce knowledge about this process of building. The former falls into the realm of our pragmatic and the latter into descriptive category. This latter is discussed in greater detail in section 3.6.3.

DEMOCRATISATION

In some building types people continuously interact with their environment by re-designing or changing to adapt to it. Housing is the building type where this interaction is at its maximum. Since it is impossible to predetermine all these factors to design accordingly, it seems wiser to let people deal with their own environment instead. Self-help and adhocist theories provide this responsibility virtually without any limitation other that the laws of nature whereas vernacularism leaves it to the tradition and culture.

Allowing people other than professional architects to take initiatives in the design and decision processes of the built environment is a fairly new attitude in the theory

of architecture. The methods, techniques or approaches to design problems aiming at a participation of the users or other involved parties, at times quite ambitiously, are called the process of democratisation of the design process.

The pioneering contribution for the liberation of the design process from the authoritative decision initiative of an individual, i.e. "the architect," came from Friedman. Eventhough when Friedman made his programme for participation and democratisation through the computer, there were attempts in a similar vein in planning theory. Namely, planning participation and advocacy planning were among the few models aiming at letting people to take part in the decision process of urban planning. In architecture, the consistent efforts of Friedman has been one of the most influential.

After a few articles on computerised participation in the formation of habitation units and compounds, Friedman summarised his approach in Vers une Architecture Scientifique.[225] There he reduced the complex decision process of forming architectural spaces to the cultural and intellectual level of a layman. He facilitated this by defining the solutions of the problems as a process of selection among the available set of alternatives. By doing so, Friedman offered the individuals and families the opportunity to make all the decisions within the pre-set framework of the model to realise their private and familial environment.

This is made possible by a megastructure and a set of alternatives for every decision situation compatible within the given megaform. Friedman utilised graph theory to generate various modes of combinations to form a community in the given framework. The major endeavour of Friedman since 1957 is to devise "a theory which would free the client from the "patronage" of the architect." For the known detailed decision mode at the individual level, Friedman's theory may be regarded as being pragmatic, but for the unknowns, such as the makers of the superstructure, management, related societal organisation, etc. his model can be considered as a utopic contribution to design theory.[226]

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[225] Y.FRIEDMAN, Vers une Architecture Scientifique, Paris: Editions Pierre Belford, 1971; idem. Toward a Scientific Architecture, Cambridge Mass.: MIT Press, 1975.

[226] Recently under a United Nations mission to Algeria Friedman created a chance to realise his model for democratisation. There he aimed at utilising less sophisticated superstructure to accomodate the habitation units. (A personal talk with Y.FRIEDMAN, May 17, 1978, Istanbul) The following illustrate various contributions of Friedman to design theory: Y. FRIEDMAN, Une Utopie Realisée, New York: Museum of Modern Art, 1975; idem. It is Your Town - Learn How to Protect It, Strasbourg: Council of Europe, 1975.

PARTICIPATIONISM

Participation in the design process is one of the important trends developed in the present decade. Participationism is not so pretentious and radical as the previously dicussed approach, namely, democratisation.

It mainly intends to involve people in the decision process of the formation of their built environment. There are two important aspects of participationism which rationalises its existence.

The first one, arises from an insufficiency: the impossibility of determining all of the form and functionwise preferences of people, not to mention aesthetic and other preferences. Exploring their intentions and proposals, helps to gather sound information about them and their life styles. Incorporating people in the formation of their environment cancels the risk of making wrong decisions. The second aspect is mainly ideological. If it is the people who are going to use and benefit from an environment, it is their natural right to be influential on the decisions that form their environment.

Whether it stems from theoretical or from ideological grounds, participationism seems to be valid and natural from the point of view of its theoretical premises aiming to devise tools to form the built environment via collective or shared efforts of the people.

In the present decade there are plenty, of examples with the intention of participation at its core. Most of these are at their experimental stage and are far from constituting a common belief in the practical validity of the theory. Due to the lack of examples displaying the results of implementation of participationism, the theory is commonly regarded to be utopian. Whether applied as a policy or as a substitute to design decisions, participationism acts within the parameters of a controlled infra or superstructure. Briefly, it is a controlled freedom of choice among some available or potential alternatives.

Habraken in his Supports[227] and his institutionalised project Stitching Architectural Research proposes an infrastructure together with a method of construction to generate multiples of form of spaces corresponding to the preferences and changes in a family. In "supports" a certain amount of the decision making is patronised by architects of technocrats. These are the decisions concerning the technical matters.

[227] N. HABRAKEN, Supports, An Alternative to Mass Housing, London: The Architectural Press, 1972 (1961).

The final form, and the familial or individual habitation units are solved almost exclusively with a given decision initiative of the inhabitants themselves.

So far as the design theory and methodology are concerned participationism has generated plenty of new ideas. This has reached. such a level that the Design Research Society of United Kingdom devoted its 1972 Manchester conference to participation in architecture and design.[228]

To conclude we may assert that participationism is a controlled freedom of choice in the decision process of building and environment. This control is usually intended to cover the issues of inevitable technocracy. Meanwhile, the nonexistence of a definite case to prove its expedience makes participationism vulnerable to the attacks claiming that it is utopic, despite its respectable liberative and pragmatic manifestations.

GEOMETRIC MINIMALISM

Geometric approaches to architectural problems have gained a great influence in the present decade. The geometric mode of thinking in architecture by definition used to be mainly canonical throughout the history. This canonic line has been maintained to live in the recent past as an important mode of discipline for architectural structuring. The canonic aspects of the geometric tradition will be discussed in the following chapter. Here, we shall deal with other aspect of geometric approaches as we define them in "geometric minimalism."

Geometric minimalism is the tradition of reducing building design into some non-standard, unorthodox geometric shapes. The favoured shapes have mostly been various forms of polyhedra and domes. This denotes almost the total area, shapes other than the rectilinear ones. There is an infinite array of geometric relationships resulting in polyhedra and domes. The apparent richness of these forms along with some convenience of construction have activated a vast research into these geometric relationships. Therefore, eventhough the efforts, at times, seemed to be trivially pragmatic, they supported themselves with a considerable theoretical substance.

Applications of geometric minimal ideas are experienced in various different fields. Some of these fields are mainly those with requirements of light structures or small units with limited indoor space meeds. Others are the large structures interpreted to

[228] N. CROSS, Design Participation, Proceedings of the Design Research Society Conference, Manchester, London: Academy Editions, 1972.

be of a negligible architectural complexity. The following types are the architectural applications and proposals generated by geometric minimalism as the patterns of thought for solution.

a) Small, light, collapsable or demountable temporary shelters for touring, camping or post-disaster habitation.

b) Small cellular units conceived without a differentiation of Wall from ceiling.

c) Shelters built of recycled or re-used materials where the shapes given for the previous use of the materials become determining; d) Large span structures made of repetitive units, pneumatic and geodesic structures.

Whatever the use, function or circumstances may be, geometric minimalism acts from the premises of creating the most suitable geometric shapes under the limitations of a given situation.

In the minimalist geometric tradition, Fuller's consistent efforts over half a century must be given their due credit. Fuller, who is more of an inventor than a designer, worked on the development of geodesic and polyhedral structures both at the level of theory and practice. The practical aspects of his work has always been dominant, though he reinforced this practice with rich even metaphysical theorisations. His practical concerns have been directed towards a solution of an urgent problem or for the use of materials in a different context. However, throughout his efforts, Fuller remained to be the only survivor and developer of the polyhedral and geodesic tradition a tradition that consumed decades to pravail.

It is interesting to note that eventhough Fuller experimented in small scale polyhedra as well as in large scale geodesic domes, the large scale structures found media for application earlier than the others. In the successive World Fairs of the Sixties, Fuller's geodesic domes symbolised the events with their outstanding new image. These structures somehow became the symbols of the space age.

The small cellular units developed later, mainly out of the necessities generated by new ideas promoting alternative life styles, mobile shelters, temporary shelters, recycled materials and solutions for disaster housing.

Safdie, Neuman and Hecker worked in different potentials of polyhedral structures. Neuman and Hecker produced small resort units for holiday purposes while Safdie and Hecker proposed also cellular agglomerations out of polyhedral units. In all of these works and the rest of the contributions in similar vein we observe an overpowering domination of geometric relationships on total environment.

In small scale independent polyhedral units, the contributions of Critchlow and Emmerich are noteworthy. Even though the scale of the application of their work and related influence over common practice are limited, they form important constituents of the polyhedral tradition together with the contributions from California Baer and Kahn. The Dome Cookbook of Baer and the Domebook, Shelter I and Shelter II of Kahn are the most influential publications of this pragmatic tradition which circulated around a million copies worldwide.

The use of recycled materials in the construction of various forms of polyhedra and domes, apart from having experimental value, manifested environmental concerns of the individuals and groups sharing similar responsibilities. These approaches, while being idealist in rationalising the outcomes of consumerism, also brought radical -- however implicit -- criticisms to it. The examples to illustrate the recycling tradition are too many to include here, nevertheless the Drop City of Colorado is the most unforgetable example of a community whose polyhedral shelters were made out of hammered car tops gathered from junkyards. The efforts concentrated and publicised in the journal Architectural Design is probably the most influential and complete in displaying recycling in a built environment.

Geometric minimalism has interacted with a multitude of the aspects of the problems and life-styles all over the world. On one hand it has been thought to be a frame of reference to solve some urgent problems demanding instant shelters, such as natural disasters housing, shortage and resettlement, on the other, it offered possibilities for expression for the individuals in reaction to the post industrial life style in big cities. In the former cases, sound structural characteristics and other physical properties were favoured, while in the latter ones various socio-cultural changes in the western world -- as hippy-cult, pop festivals, individualism, etc. -- found a symbolic medium for expression in the un-orthodox built-form generated through polyhedra and domes. Numerous types of polyhedra and domes made of various recycled, reused or salvaged materials became symbols of the living societal change as it was manifested in built form.

INDUSTRIALISED PRODUCTS

Many objects of the present industrial societies contain architectural implications. Among these, motorcars, caravans, camping gadgetry, and capsules can be mentioned at first sight. All of these objects are produced for some specific function in the lives of contemporary people. The implicit architectural potentials of the mobile objects are influential in our lives to project their value further onto other uses than the initial intentions that shaped them.

The architectural considerations replacing these industrial products with static traditional architecture occupy the literature quite frequently. Zuk and Clark's Kinetic Architecture[229] and Cook's Experimental Architecture[230] are among the contributions to architectural media anticipating a change of direction in architecture with the influence from industrial productions and design. Greene of Archigram is one of the pioneers recognising this type of architecture. His "Living Pod" and "Drive-in Housing" constitute the initial gestures to combine architecture and mobility.[231] Similar to the theoretical rationalisation of the Third World housing mentioned above solving the drawbacks of the static architecture with mobile ones is the rationalisation of the trailer towns reality of the USA and Western Europe.

[229] W. ZUK and R. H. CLARK, Kinetic Architecture, New York: Van Nostrand Reinhold Co., 1970.

[230] P. COOK, Experimental Architecture, London: Studio Vista, 1970

[231] D. GREENE, Living-Pod, Archigram, P. Cook, ed., London: Studio Vista, pp.51 ff; and idem., Drive-in Housing, ibid., loc. cit.

NO MORE CANONS FOR DESIGN

Le Corbusier is probably the last and the most influential representative of contemporary canonic thinking in architecture. The line of thought that aims to structure "beauty" and proportion as the major factor of beauty had been maintained until the 1950's. Although Le Corbusier's Le Modulor was effective in the medium of theory it is not easy to talk positively about its practicality over on architectural practice. Actually the spread of the developments in science, technology and philosophy avoided completely the prevalance of any dogmatic thinking, no matter what the rationale behind it may be.[232]

Apart from that a blindfolded obedience to any canonic frame of reference has been against the traditional premises of architecture and design, paying excessive credit to originality and creativity. Obviously, any canons by someone else hinders these aspects of architecture. Le Corbusier's canons remained in oblivion due to the fact that he declared them for the combination of "beauty" and "function."

The industrial age developed canons of its own with different objectives to conform to. These are the issues generated from mass-production and industrialised processes which became more and more imperative in the building processes. Ehrenkrantz in his Modular Number Pattern[233] explains the potentials and rationale of some generic canons for design. Later his group SCSP acquired large publicity and a vast chance of practice for their logical methods of construction and systems building conforming the canons of industrialised mass-production processes.

Eventhough the proposals of new canons for design declined after Le Corbusier, research into new forms of ordering the built-environment gained some vitality in recent years. Contributions questioning the validity traditionalised orthogonal geometric pattern constituted new area of research in the architectural media. Among these contributions the consistent efforts of Fuller must be mentioned. Keith Critchlow in his Order in Space[234] structures the infinite array of geometric

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[232] It is interesting to note here a debate at the R. I.B.A. June 18, 1957. vide.: Report of a Debate on the Motion 'that systems of a Proportion make good design easier and bad design more difficult', R.I.B.A. Journal, December 1957, pp.456-463. Having Le Corbusier's Modulor in mind eminent architectural theorists of Britain discussed "systems of proportion. Nikolaus Pevsner introduced the subject. Fry, Brown were for the motion and Smithson and Black were against it. Among those who participated there were Wittkower and Summerson. Finally, the motion lost (48 for and 60 against) as President Cross put it to vote.

[233] E.EHRENKRANTZ, Modular Number Pattern, London: Alec Tiranti, 1956.

[234] K.CRITCHLOW, Order in Space, London: Thames and Hudson, 1970.

relationships. He does not aim explicitly at the proposals of new canons for architecture. Nevertheless, his work broadens the field of geometric relationship within which architects and designers searched for solutions. Actually, his own proposals and experiments with polyhedra convince us into quoting his efforts as a part of the new canons for design. These we can do at least implicitly.

There are numerous examples of practice with these newly acknowledged geometric relationships that we can consider as belonging the canons of geodesic structures and polyhedra. Taking actual adaptation of these ideas, we can consider them as a part of the pragmatic theories. Therefore many of the adaptation of these canons have been previously discussed in the preceeding section.

Revival of canonism in design through basic geometric relationships was initiated by Eisenman, Craves together with their group named New York 5. Their view is to promote and express the absolute dominance of geometric relationships forming buildings -- mainly houses over any other constituents of design. The deficiency of such a view is obvious, thus their efforts are bound to remain simply as gestures in architectural media.

ANALOGIC INPUTS

There are two main types of analogic inferences used in architectural theory. The group of analogies that have been present in architecture almost from the beginning are those related to built form associated or compared with other entities in the universe. The most common of these associations are the ones between human beings or living creatures and buildings and details. The second group analogies are made at a theoretical level between the theory of more concrete subjects and that of architecture. The intention in this analogic transfer is to deduce for the unknowns of architecture or design from the better knowns of a more concrete theory. The latter group of analogies will be dealt with under the "Descriptive Efforts" later sections of the this chapter since they endeavour to be more descriptive.

Among the analogic frame of reference between other entities and architecture the association made between human being and architecture has been the most influential one. It is not only the Renaissance theory of architecture that relied upon this analogy but also some theorists of the succeeding centuries maintained this line of thinking and developed it until recently. With the exception of some previously discussed fragmented contributions conforming to the Renaissance beliefs, there has not been much on this restricting source of analogy in the last twenty years.

However, in the recent past the context of analogy for architecture has been enlarged to embrace Nature in its entirety.

UTOPIANISM GOES ON

The utopic category of developments is probably the most complicated to handle, given the fact that any idea or proposal without a direct reference to reality is likely to be viewed as being utopic. The class of utopic contributions have many conceptual drawbacks to start with. In this area there is an important interaction with analogic class of theories and some with the pragmatic ones.

At present the major distinction is to be made in reference to our taxonomy. Therefore, we are in the position of classifying utopias as pragmatic, analogic and the rest. In the third group we can examine all the efforts stemming from technology, urbanism, ideology, etc. Pragmatic utopias like Friedman's have been discussed previously. The utopic-analogic scene consisting of the metabolic and "ecologic" contributions of The Metabolism Group from Japan and Soleri, respectively, were taken under the category of analogic theories since their analogic content happens to be dominating their trivial utopianism. Leaving all these aside we may confine ourselves to their utopic content. There, we observe the types of contributions discussed in the following sections.

TECHNOPHILIA

Proposals projecting recent developments in science and technology to their unknown future state and intending to define the architectural counterpart of a technology as such may be classified under the heading of technophilia. Here we observe the following classes:

a) Alternative Sites

Ideas developing proposals to cope with the scarcity of urban or other land by making use of different media to survive on constitute the first class. These include living or working areas proposed in marine, underwater, underground, aero and space settings.

b) Ideologies

Political attitudes enforcing one particular ideological preference as an objective life style and setting forth the environmental implications of this ideology constitute the second class.

In the first half of the decade of the 1960's we observe numerous indications of utopianism in architecture while in the second half, the movement was more or less exploded and spread all over the world, like an epidemic in architectural media and in schools. Utopianism found appropriate media for itself mainly in the affluent societies of the West and the East.

Among the reasons affecting the generation of utopian proposals as prospective solutions for architectural and urban problems, we can mention at a glance the non-radical and piecemealian nature of building practice, limitations over this practice reducing its meaning to almost nothing, various barriers preventing application of possibly available technological development to architecture, the problems of and the need for qualitative changes for quantitative increases in urban population and densities.

Even though the movement was unbelievably wide-spread and influential in the media, there have not been many documents in book form evaluating it as a cool medium for interpretation. The influence was mainly generated and maintained in the periodicals. To mention few of them, Architectural Design, Casabella, Design Quarterly, Domus, 1'Architecture d'Aujourd'hui, Japan Architect are among the journals that paid due consideration to utopian proposals. These journals at the same time assisted the movement to replace the effectiveness of the suppressive architectural status quo in the media. Centered around the up-to-data social, economic, cultural and technological concepts of the time, the utopianism of the sixties directed probably the most radical reaction to and criticism of the status quo of the building activity. Due to the gigantic scale of its buildings, the utopias of the recent past, similar to the ones proposed during the Age of Humanism, are mostly at the urban scale. It could not be misleading if we call them urban utopias, or "urban futures" as Banham names them.[235]

There are two conclusive books on the urban utopias of the recent past. Dahinden[236] gives more of a documentary account of the movement, whereas, Banham evaluates it to some depth. Banham's is more like a commentary, though its documentary content is even richer. The Megastructure, Urban Utopias of the Recent Past of Banham owes its quality to its time of publication, being five years later than Dahinden's Urban Structures for the Future. Dahinden classifies the efforts mainly from structural and technical points of view as the title implies as opposed to that of Banham who takes the stand point of a theorist-philosopher. So far as our method

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[235] R. BANHAM, Megastructure, Urban Futures of the Recent Past, New York: Harper and Row, .976.

[236] J.DAHINDEN, Urban Structures for the Future, New York: Praeger, 1972.

of enquiry is concerned the specific content of either of them become details. Therefore going back to our three classes of differentiation above will assist us to guide our survey.

The discrepancy between the level of contemporary technology in various fields of its application, and the technology utilised for architectural purposes became a challenge for visionary architects and theorists. Efforts demanding to bridge this discrepancy manifested themselves in the form of utopic proposals. Extensive use of sophisticated technology for more densely populated urban areas, through more intense use of energy, constitute a major group of ideas. Megastructures are the stereotypes forms that the majority of technophiliac projects favoured.

The large scale utopic proposals as monstrous pieces of architecture or urban structures have been present in the media from the Renaissance onwards. The ideas that make technological projections upon architecture and urban life are products of the last decade and a half. It was as late as the mid-1960's when megastructures gained a particular importance. 1964 was the year in which architectural media were raided with megastructural proposals. Banham qualifies it as "Megayear 1964" and as the "annus mirabilis" for the proposals as such.[237]

Hollein's memorable collage depicting an aircraft carrier in the middle of a desolate landscape formed one of the generic statements towards the technophiliac megastructures. The projects manifesting the same attitude were proposed a year earlier by members of the Archigram Group who made their first group project in 1963. Various projects published in Living Arts[238] and in their own publication Archigram[239] developed a new tradition in architecture which later deserved the name "conceptual architecture"[240] implying an architecture which remained on paper. In the latter half of the decade, the movement spread throughout the western world and Japan. The architectural media was flooded with conceptual projects developed upon the criticism of certain aspects of urban life and architecture. The central issue in all of the technophiliac projects was the necessity of the use of appropriate technology for building purposes. This apparently constituted a revolution in forms. The change in the building materials, construction processes and even in life styles manifested itself in forms and relationships foreign to architecture in its traditional context. It was particularly the form making content

[237] R. BANHAM, op. cit. p.70.

[238] vide. P.COOK, Experimental Architecture, London: Studio Vista, 1970, p.70f.

[239] Archigram started in the late 1960 as an underground magazine of architecture. Its lastest issue was the nineth released in 1970.

[240] Design Quartely, n. 78-79, 1970.

which made the technophiliac utopias wide-spread when the totality of other ideas found a limited recognition and effectiveness.

To list a few of the propagators of technophiliac tradition in the form of projects will give a more concrete image of the strength of the movement. Almost the totality of projects of Cook, Herron, Crompton Chalk and Webb produced between 1963 and 1970 can be considered under this group of contributions. All of them are members of Archigram Group. The inevitable centralisation of power and technology gave rise to accusations labelling these proposals as being fascist.[241] It is impossible to deny the validity of this judgement. The eminent architectural theorist of our time, Banham has been one of the most important promoters of this movement. His controversial article "A Home is not a House" formed one of the extreme points of reference in ultra technology.

The individual contributions of Greene differs radically from the general aura of the group. Greene eventually dreamt for an intensive use of contemporary technology not towards accumulation but for dispersal. His Living Pod (1962),[242] Rok Plug and Log Plug (1968)[243] are noteworthy proposals demanding diffusion in land as opposed to concentration as the other technophile approaches put forward. Greene's ideas are actually what the electric and electronic media of the current technology demands as opposed to concentrations of mechanical modes of energy and communications.

The Archigram Group concluded its statements in a book titled after the group.[244] Banham as a historian and theorist reported a thorough survey of the megastructures worldwide.[245] He did not evaluate the movement at a conceptual level, but, drew parallels with the examples stemming from mega ideas and found grounds for implementation. There he included large scale complexes built by Pelli, Erskine, Hodgkinson, Lasdun and many other teams of designers who designed or realised large scale building complexes.

The age of technophilia is over. Some of the defenders of the movement denied the validity of excessive technology. Some others let themselves fade into oblivion. It will be a crude conclusion to consider these proposals as conjectures for the future that totally failed within a decade. These efforts must be regarded as radical

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[241] S.MOHOLY-NAGY, Matrix of Man, New York: Praeger, 1968, p.15.

[242] vide. P.COOK, ed., Archigram, New York: Praeger, 1973, pp.52ff,

[243] ibid. 110f.

[244] ibid.

[245] R. BANHAM, op. cit.

reactions against the status quo of architectural theory and practice.[246] They usefully developed a different view to investigate architecture as an observable discrepancy between the attained level of technological development and its obvious minimal application to architecture. At the same time they raised imaginative questions as how much of the technological advancements were accessible by ordinary citizens. Whatever, the validity of their beliefs may be a thorough application of the contemporary technology onto architecture has remained radically questionable.

ALTERNATIVE SITES

The growing population of the World and increasing necessity for arable lands forced architects to dream for alternative areas for pressing urban growth. Such alternatives were sincerely believed to reduce the pressure of urbanism exerted upon the fertile lands. The achieved level of technology was thought to have been developed enough to rationalise the proposals for urban growth overwater, underwater, in-the-air, in outer space and underground. Behind all these proposals there lay the idea of liberating the land from buildings that cover it to cease its cultivable properties.

The boredom of the land based architectural development may also be mentioned among the reasons. However, these cannot go beyond being psychological variables, but their effect should never be underrated.

In the procreation of marine developments the projects proposed by Tange and his group for Tokyo Bay spreading over the sea, and the Uanabara (Floating Industrial City) of Kikutake played important roles. These proposals of 1960 were followed by Kurokawa in 1961 with a proposal for a town over a lake. Albert and Cousteau designed an "Artificial Island in the Bay of Monaco" in 1966. Fuller with Sadao developed their Triton City as an overwater community like Tigerman's Urban Matrix and Hal Moggeridge's Sea City.[247] All were proposed in 1968 when the most influential journal of the time, Architectural Design, devoted one whole issue to living underwater with the title of "Inner Space". This issue edited by Hussain, presented an alternative medium for mankind to consider to live in. Hussain later concluded the state 14 of developments in the area in his Living Underwater.[248]

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[246] Conceptual architecture as a reaction to status-quo has been discussed previously. vide, appendix c.v. and publications of the author.

[247] vide. J.DAHINDEN, op. cit., pp. 122-137.

[248] F.HUSSAIN, Living Underwater, London: Studio Vista, 1970.

The developments in air has the rationale of liberating either the urban land which has an existing structure functioning already or the agricultural land which is valuable. There are numerous alternative solutions almost all of which have some columns, pillars or feet based the ground, whereas the major development and urban structuring takes place in the air.

IDEOLOGIES

In recent theoretical efforts, ideological aspects of the phenomenon are present either implicitly or explicitly. The implicit ideological content deserves a profound research so far as its attributes and implications are concerned. Whether theoretical or practical, every work of architecture can be analysed in reference to its ideological content. This can at least be done by making semantic attributions and, apparently, the analyses are bound to deal with implicit qualities.

Ideological bias in architecture has been active in architectural media since the emergence of modernism. Ideological approaches are either expressed in the form of utopias or activist manifestos and actions. In the latter group, the content happens to be not merely architectural but mostly anti-architectural due to the fact that the political groups usually react against the commonly accepted theory and practice of architecture. Among the ideological groups of this kind the Situationists of the early and ARSE (Architecture for Revolutionary Socialist Environment) of late sixties will be omitted here despite the fact that their strife deserves a special attention elsewhere.

For the convenience of analysis here we must also leave the implicit ideological content of the works aside. Eventually, excluding the contributions as such endangers the present analysis being devoid of the controversial contributions of Turner, Ward, Jencks, Silver along with many other noteworthy ideology bound architectural theorists. This drawback we hope is hoped to be overcome by the discussions on their contributions in the section above covering adhocism and self-help. The implicit ideological content of architecture is vast, and obviously, is a subject for a wider scope of study requiring and insight in its specificity. Meanwhile, the explicit ideological approaches fall mainly into the realm of the present work.

One of the pioneering statements on the ideological aspects of design was made by Maldonado in his memorable lecture in 1958 Brussels World's Fair where he compared rare flowers as rightwing design approach to the wild flowers as left-

wing. Maldonado, having mass production, industry and "aesthetics of plenty" in mind favoured the wild and plenty as opposed to the singles of modernism.[249]

Almost simultaneously with the 1968 upheaval in Europe, there arose a parallel activist attitude in architectural media. Among many contributions with ideological content, Group Utopie distinguished itself as the most contentful, radical and even provocative. Their reaction against the symbols of modernism, self-conscious architecture, bureaucracy, conditioning of people, and capitalism were radical and clear. Apparently with these ideas Group Utopie found wide audience in the medium. However, it is not easy to make similar positive statements for their architecture which seemed to be the counterpart of their ideology. Group Utopie proposed a far fetched utopia of pneumatic architecture used to construct cities and multi-storey buildings. Even then, this could hardly be regarded as something imaginative. Absurdity was obvious and these proposals were for too distant to be plausible. The selection of pneumatic structures for their "revolutionary" architecture must have been due to Group Itopie's belief in the advancement of technology and inescapable parallelism between the most progressive industry accomodated within an idealised progressive society.[250]

While the contributions from Western Europe used utopianism as a medium to express their ideological stand point of views, under the ligic of the 1968 turmoil there existed similar contributions from the Soviet Union. In this case, interestingly enough, the contributions seemed to stem from the boredom of the post-revolutionary architecture and planning of the Soviet Union. A group of architects and planners gatheerd under the name of NER (Initials of New Unit of Settlement).[251]

The NER Group manifested a series of ideas leading to a deterministic planning approach but with a different physical structure than what the present communist towns have acquired. Cook in appraisal of NER's urban structure pointed out the similarity between their work and thost of Archigram Group and Soleri. If not so much with Archigram, one ran assert definite similarities between the urban

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[249] T.MALDONADO, New Developments in Industry and the Training of Designers, Architect's Yearbook 9, T. Dannatt, ed., London: Elek Books, 1960.

[250] For the theoretical stand point of view and Utopie's pneumatic architectural proposals cf. H.TONKA, J.-P.JUNGMANN, and J.AUBERT, L'Architecture comme Probleme Theorique, l'Architecture d'Aujour d'hui, n.139, pp.81-92, cxxxviii f, Septembre 1968; with: J.AUBERT, J.-P.JUNGMANN, A.STINCO, La Pneumatique, A.D., v.xxxviii, n.6, June 1968, pp.273-277.

[251] Cf. A.GUTNOV, et.al., The Ideal Communist City, New York: George Braziller, 1957 (c.1959); P.COOK, The NER Group, Architectural Design, v.xxxviii, n.10, pp.481 ff; with P.SOLERI, City in the Image of Man, Cambridge, Mass.: The MIT Press, 197.

structures of NER and the arcologies of Soleri. Given the fact that Soleri belonged to a right-wing ideology with his mysticism, aesthetics, life-style and implicit societal structure, the idealised communist cities of NER and the manifested left-wing ideology remains as obscure. Therefore, regarding NER's expressions as efforts demanding change in monotonous communist cities will not be misleading.

As a natural product of the inconsistencies between idealised socio- political structure and manifested architecture, the works of Utopie and NER ended up with a series of implausible utopias with no sound. reasoning for their realisation. Consequently, these utopias cast a heavy shadow over the relevance and sincerity of the ideas manifested at societal and philosophical level.

DESCRIPTIVE EFFORTS

While the theory of architecture was transforming itself into a more fragmented and speculative one, the developments in the sciences and the philosophy related to that progress devastatingly. These latter developments also generated a need for a radical change in theory of design. The peculiarities of the developments in these theories can be summarised as follows:

a) As opposed to the scientific theories bred within one specific field or mode of inquiry, a series of generalistic theories were developed. These theories, such as General System Theory, Cybernetics, Information Theory, etc. aiming at a lateral communication among theoretical premises with different subject matter, created a common vocabulary for integrating various fields of knowledge. Alternatively, their concepts or structure were appropriate to be interpreted for different fields and differing use.

b) Some specific fields were also developed greatly towards dealing with complex problems at a considerable depth and with increasing precision. Areas like statistics, system analysis, data processing and innumerable computation techniques wiped out the impossibilities of handling such problems caused by large numbers of variables and large degrees of complexity.

c) The progress in the fields of "soft" science has also constituted a great potential for change as they shed light onto some key issues in the process of design and in the experience of space and form. These developments were either generated under the realm of theories themselves or made possible, through the use of theories, methods and techniques appropriated by the modern theories.

Descriptive efforts in the recent contributions to design theory constitute an enormous part both contextually and contentwise. It is virtually impossible to incorporate all of these contributions meaningfully into the general frame of the present study. However, the possibility of structuring them to fit into the present model is likely to open an avenue for integrating them into a more comprehensible whole. A general overview of the contributions classed as descriptive displays a picture which encourages grouping them into three sets of amalgamates. It is needless to say that the boundaries between these groups can neither be strict nor definite. There always exists the reality of complex compounds with multitude of

references. The following grouping for descriptive efforts appears to suit our purposes:

a) Design Methods- The descriptive approaches that aim at shedding light onto the process of design in order to make it clearer and more communicable.

b) Building Performance Evaluation- The descriptive approaches that concentrate on the designed environment as they are built, occupied and used.

c) Vernacularism- The ideas, facts and teachings deduced from the environment that is not produced within the control of architects and designers.

d) Semiotics- Studies of the meaning in architecture and environment with general reference to linguistics and structuralism.

DESIGN METHODS

The most influential and wide-spread interest in design theory acquiring a universal recognition is constituted by contributions which emerged under the name of design methods. Design methods were initiated with intentions of creating an objective medium of inference to tackle the problems of design. The fields of industrial and engineering design were the pioneering ones forming the bases for design methods. There appeared to be a wider application of these methodologies to control the process of design in order to produce better and more objectively acknowledged solutions as the end products. In architectural design methodological approaches were initially extremely preoccupied with the minimisation of subjectivity in design process and correctness in their conclusions.

Design methods in engineering and industrial design, having more objectively quantifiable end results, developed in a different line than what appeared in design methods in architecture. Architectural design had completely different variables involved in the process than those of the other fields. Therefore, it has been impossible to handle architectural design with the methodologies developed for engineering design. Nevertheless, Asimow's Introduction to Design[252] was one of the most substantial influences for those who strived to break the design process

[252] M. ASIMOW, Introduction to Design, Englewood Cliffs, N.J.: Prentice Hall, 1962.

into more manageable sub-operations integrated through flow- charts and objective decision sequences.

Introduction to Design was mainly written with engineering design in mind. What made this book segnificantly relevant for other fields of design such as industrial design and architectural design was the broader focus of its philosophical content than what engineering design traditionally covered, and the effort of incorporating recent developments in various fields of science.

The morphology for design that Asimow utilises breaks the process into seven steps integrated through a governing flow chart. The sub-processes titled "Feasibility Study, Preliminary Design" and "Detailed Design" are the phases which contain aspects related to design. (Cf. Figure 33)[253]

In the same year of the publication of Asimow's book, the first conference on design methods congregated in London. In this conference different approaches in various fields of design methods were presented and design methods emerged to have been conceived as the common platform for a multitude of design activities. This conference covered almost the entire spectrum of contributions, sweeping an array between regional planning and industrial design, or spanning the area. from systems engineering to psychology. Therefore, this meeting did not carry more importance than manifesting the necessity of a new area of enquiry for design research.[254]

The 1962 London Conference established a basis for the organised attempts in design methods. A following meeting was held in Birmingham, in 1965, which also maintained the multi-disciplinary content of the preceeding meeting. In this symposium the issues which were to be considered at a philosophical level remained out of the general scope while the papers intended to develop more technical expertise on design methodology carried more the weight.[255]

The Birmingham Conference has little interest from the point of view of design methods for architecture. The exception to this was the paper presented by Broadbent on "Creativity." Broadbent later became the major figure in the organisation of the first conference stressing upon the design methods in "architecture." The 1967 Portsmouth Conference formed an arena where "Design Methods in Architecture" were opened particularly within the specific context of architectural design.

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[253] ibid. p. 19.

[254] J.C.JONES, and D.G.THORNLEY, eds., Conference on Design Methods, Oxford: Pergamon Press, 1962.

[255] S.A.GREGORY, ed., The Design Method, New York: Plenum Press, 1966.

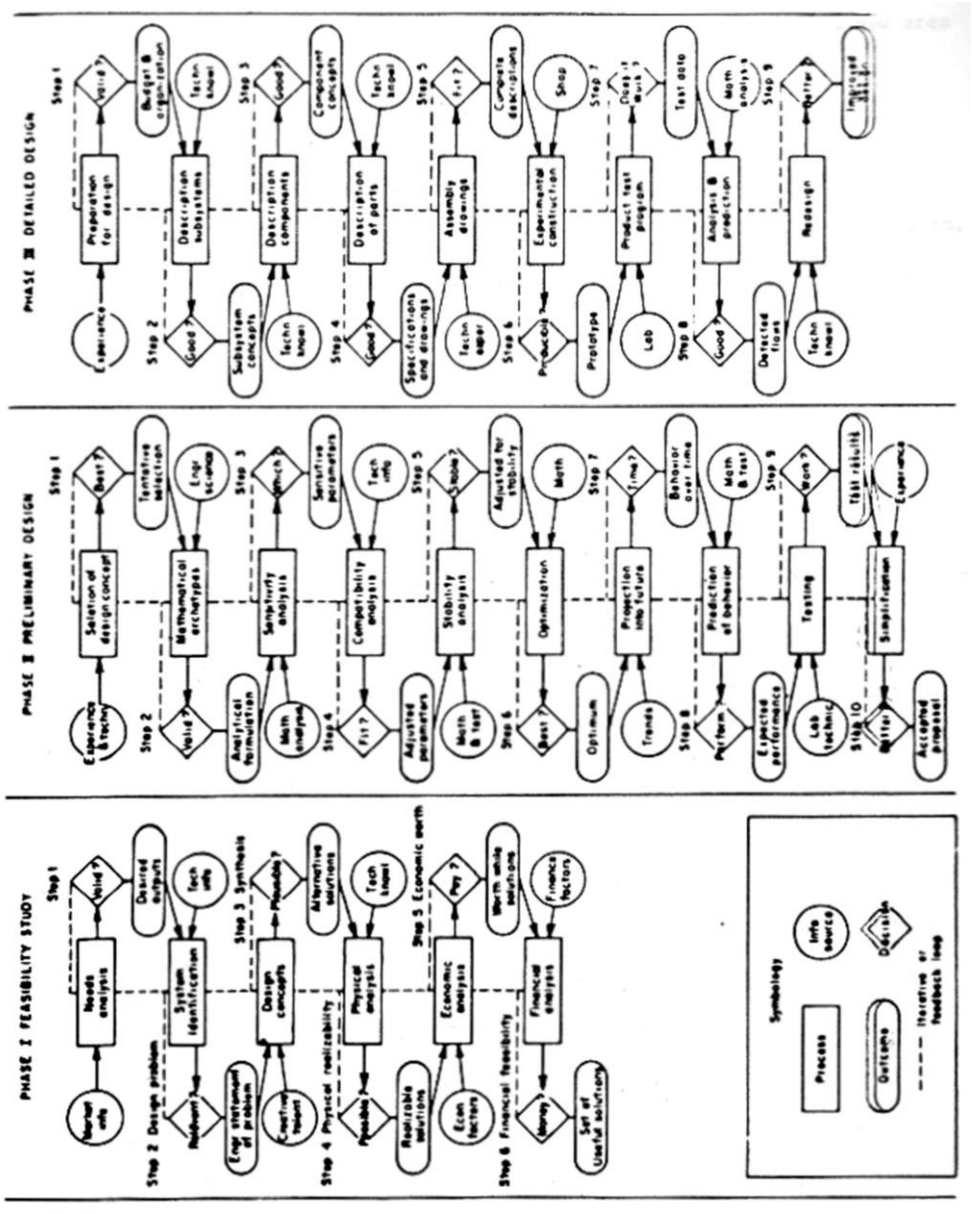

Figure 33. Morphology of Design, M. ASIMOW, op. cit. p.19.

The boundaries and limitations of this new field became apparent in this meeting. Also, the dominant directions of prospective research and development emerged to be clearly.

The major points stressed at the Portsmouth Symposium were the following:

a) New techniques to be utilised in the decision processes related to design and the computational methods to cope with them;

b) Research into psychology and behaviour systems;

c) Morphological analyses in design;

d) Building performance research;

e) Psychology of perception;

f) Design manegement;

g) Programmes and algorithms for better layout patterns in complex functional situations.

Following the Portsmouth Conference, design methods have been vastly recognised and developed. Two societies became active to maintain development and communication in the field. The Design Methods Group, in the U.S.A. and Design Research Society, in the U.K. became the organisational bodies supporting this line of interest.[256]

The fourth important organised attempt to promote design methods came from the U.S. through the Design Methods Group. The conference at Cambridge, Massachusatts in 1968 indicated the growing interest in the use of computational method for structuring various aspects of the complex problem situations computerised models for computer-aided design, analysis of problem structure, layout models, evaluation, applications of system engineering were the areas where the majority of the efforts were concentrated. The philosophical and behavioural aspects of design and architecture had a minute weight in this conference.[257]

[256] Even though the beginning years of EDRA (Environmental Design Research Association) can be added to these organisations, later this organisation became particularly occupied with social and psychological aspects of environment.

[257] G.T.MOORE, ed., Emerging Methods in Environmental Design and Planning, Cambridge, Mass: The MIT Press, 1970.

The next attempt in the field was the 1972 Manchester Conference where the subject was confined to be thematic in order to concentrate upon the controversial issue in design i.e. participation.[258]

The 1973 London Conference was titled with a generalising expression "The Design Activity", in which a vast number of papers were delivered. This meeting was only useful to document the-state-of-the-art on the subject where there were many directions the developments were being forced for progress. The succeeding conference was the second one planned to be thematic. The 1976 Portsmouth Conference was titled rarion "Changing Design" where change formed a small portion of the contributions most of which were probing into different fields of design, architecture and even poetry. The 1973 and the 1976 meetings were organised by Design Research Society whose latest conference was held in Istanbul in 1978. The Istanbul conference, eventhough aimed for having the presentation of application of methodologies became an arena of presentation of disjointed research and analyses in environment and design.[259]

At the present methodology of design has become a specialisation acknowledged world-wide in design with two noteworthy journals, two societies, many courses, chairs, departments and associations. The initial endeavour to produce better works of architecture by incorporating more serious and objective decision processes, and also by making use of the findings of other fields for science did not prove to be reasonable substitutes of the design process in architectural problems. The complex and multi-variate nature of architectural design was one sort of this failure. The traditional heritage of architectural theory which did not respond sympathetically to design methodology was the other set of factors causing the failure of design methods in reaching this predestined objective. Nevertheless, the improvements covering a period over a decade in design methods generated many conceptual tools to make the design process more communicable. Therefore methodology at least became a sound educational tool to open and externalise the traditional mystified process which conveys frustration. instead of expertise to a great percentage of trainees.

The descriptive phase of development of design methods has more or less been completed. At the present, efforts are mainly concentrated upon the application of matured techniques for the solution or structuring certain problematic situations.

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[258] N.CROSS, Design Participation, London: Academic Press, 1972.

[259] The publications on the 1973 and the 1976 Conferences have not formally appeared yet. The conference proceedings still remain as the basic references.

The exploratory descriptive nature of the fields has transformed into a symbolic one. These will be discussed in the succeeding section in their changing context.

Design methodology, after a decade of incubation as a general area has produced two conclusive books surveying the theoretical sources made available. Jones in his Design Methods[260] gives a technical account of the accumulation in the tone of a textbook. Jones surveys design methods in three distinct phases of the process: "divergence," "transformation" and "convergence." He lists 35 methods at the risk of labelling some trivial techniques or tools as useful methods. The relevance of most of the methods he displays remain to be tangential to architecture.

Broadbent's Design in Architecture[261] is not limited exclusively to methodology. Still, it contains many chapters on methods which are profound and authoritative statements of the-state-of-the-art in these areas. Broadbent is basically concerned with the relationship between architecture and human sciences at large. Broadbent's critical decision is to deal with the softer sciences as opposed to the seemingly positivist inclinations towards the harder ones. Owing to his broader focus and vision together with profound intellectualism he is not trapped within the reductionism caused by the fetishism of methods and techniques. The techniques he advocates are the ones enlarging the scope of the work in contrast to the limiting ones. Design in Architecture is the fullest account of the descriptive efforts in architectural design in relation to the developments in other involvements of the contemporary world such as arts, philosophy, mathematics, psychology, etc. After lenghty discussions on defining goals and norms in design, Broadbent comments on the possible future developments and criticises various attitudes towards it.

BUILDING PERFORMANCE EVALUATION

Traditionally the evaluation of buildings has been done through architectural criticism which acts upon the conceptual premises of its contemporary architectural theory. The new conceptual inputs to the criticism have always been significant in the theory at large. Architectural criticism mainly confines itself to the aspects of buildings which the critic and the media find worthwhile and relevant to consider. Therefore, architectural criticism has been restricted to the masterpieces displaying certain architectural eminence, thus, becoming points of reference of the development.

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[260] J.C.JONES, Design Methods, London: Wiley, 1970.

[261] G.H. BROADBENT, Design in Architecture, London: Wiley, 1973.

On the other hand, real life presents an environment composed of ordinary pieces of architecture, produced with common building technology, design concepts and according to the values of the lay- people. Consequently, the major portion of our built environment is not a subject of architectural criticism at any depth. Apparently, it does not deserve the application of any sophisticated vocabulary of architectural criticism anyway.

The approach called Building Performance: Appraisal as coined by Markus and his colleagues at the University of Strathclyde concentrates on the buildings that are not classed under significant pieces of architecture per se, but constitute an important portion of our built environment. Similar to vernacularism, Building Performance Research aims at being a feedback mechanism for the prospective activities of architects, designers and industry. It regards the built and lived-in environment as the laboratory situations for architecture in which the applied solutions can be tested. Building Performance Research evaluates buildings both in terms of physical and psychological aspects related to them.

The physical aspects are relatively easier to detect and evaluate. The light, acoustic, thermal, durability properties of a building can be conveniently quantified and analysed in comparison with data representing the appropriate, comfortable or acceptable standards of the particular activity accomodated within it.

The other physical aspects related to detailing and form-making are also unconstrained to be deduced from as the failures are much more obvious than the successes of the details to trace. Especially when they are designed to cope with the natural forces such as precipitations, gravity, wind, etc.

The aspects concerning the psychological experience of spaces or buildings can also be evaluated objectively. Even though this research is conducted usually under extremely reduced situations with equally abstracted factors of the experiences or so-called experiments, developing methods of research and corresponding development in applied psychology have generated a new field of inquiry known as "architectural psychology." Operational usefulness of the research in architectural psychology remains to be argued while the value of it is unnegligible. The impossibility of breaking down the complex experiences with space into operational simplicities constitute the essential counter argument against the research. However meaningless it may seem to try to determine the facts concerning people's reactions to space and buildings, it is too early to reach any conclusion. This field is in its embryonic stage of development and the literature has only recently been proliferated.

Building Performance Research as academic involvement has generated a vast amount of research all over the world. Some of the particular and specialised research areas in various areas of architecture found themselves an integrative field embracing them all towards the common objectives of Building Performance Appraisal.[262]

VERNACULARISM

The decade of the 1960's manifested itself as a period when the collapse and disintegration of modernism became a unanimously agreed reality. The crisis generated by the collapse of modernism which has been main school disciplining almost the totality of institutional architectural theory and practice, in consequence, created a disbelief in institutional architecture. Also, the impossibility of coping with the complex societal problems along with their shelter and building implications with the limited variables of design necessitated a search for alternative solutions in other areas of architecture.

Vernacular architecture being a meaningful synthesis containing the relevant aspects of folk, anonymous, popular, "Architecture without Architects", etc. became the most appropriate heading to integrate all the activities of building and architecture realised at non- institutional bases. The term is known to have been conceived in architectural jargon as early as 1861 when it was used in a similar context by Petit.[263] It was not until the beginning of the present decade that this term acquired a universal acceptance. As has been noted in the former sections, it is neither completely new nor foreign to architectural theorists to go into the essentials of architecture and design for coming up with ideas of putting forward vernacular architecture as a model of what the genesis of architectural theory ought to be.

One of the antecedants of vernacular architecture, as it was conceived beyond valuable, impressive or nostalgic physical structures of architectural heritage, came from an eminent theorist of our time, de Carlo. In his memorable study of Urbino he drew the attention of architects to this ignored sphere of architecture.

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[262] T.A.MARKUS, and BUILDING PERFORMANCE RESEARCH UNIT, Building Performance, New York: John Wiley, 1972.

[263] P.COLLINS, Changing Ideals in Modern Architecture, London: Faber and Faber Ltd., 1965, pp. 122f.

Eventhough, Urbino[264] concentrated particularly on the planning of the town, it incorporates a documentation of the developments in history and also contains a due consideration of the vernacular architecture of the town. The standards set by de Carlo on the calibre of academic research on the subject has then been the target of later studies in same vein.

The theoretical contributions, after Urbino, intended to define a wider scope for vernacular architecture than what the term "architecture" implies traditionally. The inputs from various sciences such as sociology, anthropology, history, archaeology and various relevant fields of positive sciences have been incorporated into this special field of architecture. Anthropology being particularly akin to this area created a new field of research which was later referred to as "architectural anthropology" as the common ground for architects and social scientists.

Thus, it is not surprising to see Rapoport's House Form and Culture[265] in a series grouped under "Cultural Geography," despite the fact that it became a standard reading for architects. Rapoport's book together with Oliver's Shelter and Society,[266] published in the same year, formed, the essential material for those interested in vernacular architecture. These two books promoted a due consideration for vernacular architecture in its most contentful conception.

Actually, Christopher Alexander early in 1964, drew attention to vernacular architecture in his Notes on the Synthesis of Form[267] by dividing design process into two distinct categories as: "selfconscious" and "unselfconscious". The latter implied mainly the vernacular design process. Alexander sees and illustrates unsef conscious design as a source for a "good fit" between the "form" and its "context". He also states that this fit is sustained through traditions of the culture as reactions to change.[268]

The division utilised here as "institutional" and "non-institutional" reflects itself in Rapoport as "highstyle" opposed to "preindustrial vernacular" or "primitive." Highstyle," basically corresponds to the "selfconscious" design of Alexander. Rapoport compares these two different attitudes in design, and investigates "vernacular" in a more traditional vocabulary of architecture, whereas, Alexander

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[264] G. de CARLO, Urbino, The History of a City and Plans for its Development, Cambridge, Mass: The MIT Press, 1970 (1966).

[265] A.RAPOPORT, House Form and Culture, Englewood Cliffs, N.J.: Prentice Hall, 1969.

[266] P.OLIVER, Shelter and Society, London: Barrie and Jenkins, 1976(1969).

[267] C.ALEXANDER, Notes on the Synthesis of Form, Cambridge, Mass.: Harvard University Press, 1964, pp.46ff.

[268] ibid. p.51.

makes a symbolic (i.e mathematical) analysis of decomposing the misfit variables of an Indian village to find out the physical counterparts to resolve the "misfits" at various levels of his structured hierarchy of decomposition. Rapoport puts his major emphasis on the socio-cultural factors and his analysis of shelter in various areas of the world is mainly in accordance with the climatic, constructional and technological aspects of shelter types produced in differing cultural contexts.

As the areas of interest of interest in conceiving vernacular shelter Oliver lists: "primitive, historical, functional, structural, technological, formal, organisational, inspirational" and "derivative" as the aspects which were expressed most frequently in the professional media. This listing, along with the contents of the books edited by Oliver himself and Rapoport's lack the analyses related to production relationships of the particular political economy of vernacular architecture. This seems to be a vacuum that needs filled, stimulating research in vernacular architecture, mainly due to the growing interest in politics and ideology which are nowardays gaining increasing effectiveness in architectural theory.

Oliver continued to contribute to the field of vernacular architecture by forming an international forum concentrating both on specific geographical regions such as Greece and Africa and on particular subjects such as symbolism.[269] By his consistent efforts vernacular architecture formed an area of growing interest in architectural theory. This interest at times generated alternative approaches to the traditional, institutionalised theory that maintained the common practice in architecture.

Another set of contributions came through the leading editorship of Kahn who published two issues of a series titled Shelter where he displayed examples of multitude of vernacular shelters from all over the world. Kahn, in a less academic approach, credited the liberty of building, freedom in forms of expression and building in ecologically

sound and least harmful ways. The examples published in Shelter and Shelter II formed an independent school of alternative architecture with rich and fresh environment quality full of inspiration for anyone.[270]

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[269] P.OLIVER, and M.O.DOUMANIS, eds., Shelter in Greece, Athens: Architecture Greece, 1975; P.OLIVER, ed., Shelter in Africa, London: Barrie and Jenkins, 1972; idem., ed., Shelter, Sign and Symbol, London: Barrie and Jenkins, 1975.

[270] L.KAHN, ed., Shelter, Bolinas, Calif.: Shelter Publications Inc., 1973: idem. Shelter II, Bolinas, Calif.: Shelter Publications Inc., 1978.

Since architecture is rooted in the realities of the built world, vernacularism as a descriptive approach has didactic qualities next to none of the other theoretical works. Due to reasons stemming from basic differentiation of the "non-institutional" modes of building design from that of the "institutional" ones, it can be conceived as a non-conformist theoretical point of view. However, vernacularism is a strong movement getting more powerful as it bases itself onto the findings in the lived-in environment. Many of the approaches discussed under pragmatic tradition owe a lot of their manifestations to the observations and teaching of vernacular architecture.

SEMIOTICS

Meaning in architectural theory has always been a vividly maintained area of concentration throughout the development of the theory. Whether it may be direct, implicative or attributed, the study of meaning in architecture deserved due attention, since, studies or speculations concerning meaning contained many of the spiritual and inspirational aspects of architecture. Therefore, meaning in architecture has traditionally been accomodated under the scope of the "theosophy of architecture."

It was not earlier than the development of the fields of structuralism and structural linguistics that studies on meaning (i.e. semantics) gained a contemporary relevance and validity. Owing to its close analogic link with linguistics, studies of architectural semiotics can as well be considered in an analogic reference point of view. However, since it mainly endeavours to disclose objectively various aspects related to meaning in architecture, it is thought to be more appropriate to consider semiotics as a part descriptive efforts of our taxonomy.

The set of architectural theorisations basing their approach onto theory of signs have the philosophical works of de Saussure,[271] Barthes,[272] at their bases. The structuralism promoted by Lévi-Strauss[273] and phenomenology of Merleau-Ponty are the inseparable philosophical reservations of architectural semiotics.

The linguistic analogies in architecture has always been a consistent line of thought for conception, criticism and evaluation. The contributions of Prak,[274] Hesselgen[275]

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[271] F.SAUSSURE, Course in General Linguistics, New York: McGraw Hill, 1959.

[272] R.BARTHES, Elements of Semiology, New York: Hill and Wang, 1977.

[273] C.LEVI-STRAUSS, Structural Anthropology. Harmondsworth: Penguin, 1972 (1963).

[274] N.L. PRAK, The Language of Architecture, The Hague: Mouton, 1968.

[275] S.HESSELGREN, The Language of Architecture, Lund: Studentlitteratur, 1969.

and Herbert[276] can be mentioned as examples in this area both endeavouring to devise more contentful "language" for architecture and respectively environmental design.

The genesis of architectural semiotics was not earlier than Choay who applied semiotic concepts into urbanism within the philosophical context of de Saussure and Barthes.[277] By doing so Choay brought a new content and aura into architectural analyses. Soon after Choay, Charles Jencks and George Baird initiated a forum around the theme Meaning in Architecture.[278] This book bringing together the ideas of eminent architectural theorists of the time including Choay, Dorfles, Broadbent, Banham, Pawley, Frampton, van Eyck, Norberg-Schulz, Rykwert, Colquhoun, Silver along with the editors Jencks and Baird constituted an important point of reference in the development of architectural theory. For a period exceeding half a decade Meaning in Architecture remained as the major source-book while architectural journals were raided with articles on architectural "semiology" as the French and the Italian theorists called the field or "semiotics" as Anglo-saxons preferred.

Prior to the appearance books on the subject, two meetings took place in Castelldefels, Spain and Milan, Italy in mid-seventies. Eventhough both of the symposia aimed for semiotics in general, they found an influential participation in architectural semiotics and thus became important points of reference.

As the field developed, stresses put upon semiotic analyses differed from one cultural realm to another. The German scholars like Bense and Niemle were mainly concerned with informational aesthetics. The Italians Aymonino, Rebecchini and Caniggia were mainly preoccupied with typological and morphological analyses, whereas Krampen restricted himself to an emprical approach of semiotic recognition of building functions.[279]

Whatever the particular point of view may be, semioric approach is a contentful alternative of any restrictive abstract involvement in architectural theory. Semiotic approaches intend to amalgamate the total forces acting upon an architectural or spatial entity and intend to analyse it as a resultant of all qualitative aspects. The social, cultural, perceptual forces might well be integrated within a semiotic

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[276] L. HERBERT, A New Language for Environmental Design, New York: New York University Press, 1972.

[277] op.cit.

[278] C.JENCKS, and G. BAIRD, eds. Meaning in Architecture, London: Barrie and Rockliff, 1969.

[279] vide. An interview with Geoffrey Broadbent, METU Journal of the Faculty of Architecture, v.6, n.1, 1980 (In Press).

analysis. However, the concrete scientific determinism endeavoured by many of the other descriptive approaches fail to be relevant for semiotic analysis, since it mainly intends to understand as opposed to explain.

ABSTRACT SYMBOLIC LANGUAGES FOR DESIGN

Approaches in favour of making abstractions of various aspects of the design process have been present in the theory of architecture and design activity from the spread of modernism onwards. These abstractions have usually been made in the form of transformations into other fields of arts. Painting, sculpture, poetry and music have been the fields which architects felt as being appropriate areas to convey architectural messages in an abstraction. Due to the normative nature of these areas themselves, the abstraction never constituted a language that could consistently generate new structures to derive from. The only abstract contributions that could form a language of their own became those which based themselves onto the most abstract, consistent and axiomatic theoretical structure. This was apparently the field of inquiry that structured the abstract human thought, namely mathematics structuring logic.

It will not be misleading nor will it be limiting if we conclude that the totality of the abstract and symbolic languages utilised under the scope of architectural theory are those that base themselves onto mathematics. These can be analysed under two different headings.

> a) The theoretical frameworks that use various methods, techniques and methods developed under the general scope of mathematics as it ends up with the necessity of the use of computers as the basic technological devices to cope with its subject matter and related operations.
>
> b) Those that relate themselves more concretely to another field of mathematics where more direct analogies and deductions can be made meaningfully.

Both of these areas can be fitted perfectly into our taxonomy by categorising them under the final heading of our classification. This is the field of symbolic efforts in architecture and design which we shall name in its more specific content and refer to as isomorphic.

COMPUTERS

The 1962 London Conference on Design Methods indicated a strong interest and great expectations from systematic approaches and use of mathematical methods for structuring design problems. Ideas promoting the utilisation of operations

research,[280] systems engineering[281] or other relevant methods incorporated in modern scientific developments necessitated the utilisation of computers as the compulsory equipment to tackle these problems.

The first important input to structure design problems with mathematical methods came from Christopher Alexander who experimented with a hierarchical decomposition to find out the probable structure of the "misfits" of a problem situation. Acting from his own theoretical premises demanding a "good fit" between the "form" and its "context," Alexander displayed his method in the decomposition of the misfits in a village.[282] He also tested the same model for the choice of a highway route location.[283] Alexander's early hierarchical decomposition model was a tree-like structuring of the variables. There he aimed at discovering the corresponding physical components at each level of this hierarchy. One handicap of this structuring seemed to be the insufficiency of a tree-like structure as it reduced the lateral interaction among the variables. The sets of variables of the same level in hierarchy were considered to be devoid of any interaction among themselves. By acting from this aspect, Alexander transformed his tree into a semi-lattice where a more complex interaction pattern was declared to be incorporated.[284] In his controversial article "A City is not a Tree" Alexander drew attention to the complex structure of the design problems while doing this he implicitly was autocriticising his previous model.

By the end of the 1960's, multiples of mathematical languages for design and other related fields of architecture developed rapidly. The majority of progress took place in the USA. The 1969 Design Methods Group Conference formed a ripe platform for the display of many innovations in computer aided design. In addition to Alexander and Manheim's HIDECS, three new programmes, namely EPS,

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[280] B.ARCHER, The Structure of Design Process, G.Broadbent and A.Ward, eds. op. cit. pp. 76-102; An Overview of the Structure of the Design Process, G.T.Moore, op. cit., pp.285-307.

[281] W.GOSLING, The Relevance of System Engineering, C.Jones and D.Thornley, eds., op. cit., pp. 23-32. J.C.JONES, A Method of Systematic Design, J.C.Jones and D.Thornley, eds., op. cit., pp.53-73.

[282] C.ALEXANDER, The Determination of Components for an Indian Village, J.C.Jones and D.Thornley, eds., op. cit. pp.83-114.

[283] C.ALEXANDER and M.L.MANHEIM, "The Use of Diagrams in Highway Route Location", Cambridge Mass.: MIT, Civil Eng. Sys. Lab. Report R62-3, 1962.

[284] C.ALEXANDER, Four Computer programmes for the Hierarchical Decomposition of Systems which have an Associated Linear Graph, Cambridge Mass.: MIT Sc. of Eng. Report R63-27, 1963.

CLUSTR and DCMPOS, were introduced by Davis and Kennedy,[285] Milne[286] and Owen[287] respectively. These can all be considered as the refinements of the Alexander-Manheim and Bernholtz-Bierstone[288] programmes. EPS is capable of operating four weights of relationships in an interaction as opposed to the binary information accomodated in HIDECS, Milne in his CLUSTR introduced a multi-layer information matrix which allows designers to supply the computer with additional information about the problem. In Owen's method the analysis of interrelations with other requirements is intended to be determined.

The following year of development indicated a greater progress in computer programmes related to various fields of architecture and design. Despite the short history these applications developed and spread devastatingly. The growth reached such a level that it cannot be accomodated meaningfully under the limiting scope of the present study. Kaiman Lee, as one of the initiator architect-computer scientist in his State of the Art of Computer Aided Environmental Design[289] presents an exhaustive list of areas in architecture where computer aid are usable:

1) Feasibility Study

2) Architectural Programming protestuacions

3) Relational Planning

4) Site Planning

5) Two Dimensional Graphics

6) Three Dimensional Graphics

7) Cost/Quality Control

8) Environmental Control

9) Circulation Analysis

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[285] C.F.DAVIS, and M.D. KENNEDY, EPS: A Computer Programme for the Evaluation of Problem Structure, G.T.Moore, ed., op. cit. pp. 121-125.

[286] M.MILNE, CLUSTR: A Structure Finding Algorithm, G.T. Moore, ed., op. cit., pp. 126-132.

[287] C.L.OWEN, DCMPOS: An Algorithm for the Decomposition of Non-directed Graphs, G.T.Moore, ed., op. cit. pp.133-146.

[288] A. BERNHOLTZ and E. BIERSTONE, Computer Augmented Design, A Case History in Architecture, Design and Planning 2, M.Krampen and P.Seitz, eds., New York: Hasting House P. Inc., 1967, pp.41-51.

[289] K.LEE, State of the Art in Computer Aided Environmental Design, Boston: E.D.R.Center, 1975, pp.28f.

10) Text Manipulation

11) Project Control

12) Office Management

13 Evaluation

The Design Office Consortium in a different classification lists again thirteen categories consisting of the following areas:[290]

1) Management and Project Control

2) Accounting and Cost Control

3) Information Handling

4) Quantities and Schedules

5) Site and Land use Studies

6) Plan Layout Analysis

7) Structural Engineering (Frames)

8) Structural Engineering (Constructional Elements)

9) Services Engineering (Pipework, Ducts and Transport)

10) Services Engineering (Heating and Cooling)

11) Services Engineering (Lighting, Sound and Electricity)

12) Graphics

13) Integrated Systems

The repertoire of these areas totals at 900 programmes related to building design. John Gero, classifies the areas of computer applications in more general and integrative framework.[291] His listing is as follows:

1) Economic Feasibility Studies for Building Development

2) Space Planning

3) Building Appraisal

[290] ANON., List of Building Applications Programs, Cambridge: Design Office Consortium, 1976.

[291] J.GERO, Computer Applications in Architecture, London: Applied Science Publishers Ltd., 1977.

4) Environmental Design and Building Services

5) Specifications

6) Data Handling and Manipulation

7) Graphics

8) The ARK 2 System

9) The OXSYS System

As it can simply be traced from these listings computers do not hinder at all the "design activity" in its traditional "creative" sense, but provide powerful tools to ease many of the non-creative and boring work stemming from various routines and management. Computers also assist architects and designers to test alternatives and give more objectively verified decisions in the process of design. Ultimately, the strife to augment designers with a series of languages enabling them to deal with excessive number of variables generated The Automated Architect.[292] "The Automated Architect" is a contemporary specialist professional, in addition to his traditional heritage, equipped with extra powers to tackle the complex problem situations of the modern life.

The wide spread argument against computer aided design as being a futile effort trying to inhibit the creativity and "power" of the traditional approach with simple and dull routines has proven to be incorrect as almost none of the programmes intended to achieve that. Instead, the programs collected under computer aided design, made extra time available for those who wanted to divorce themselves from the routines to concentrate onto design activity in its traditional context.

GEOMETRY

Geometry has always been the basic source of abstraction in architectural theory. In the Renaissance it was used as a medium to verify the analogy between man and perfection of God-through geometrical shapes credited to be perfect. In modernism geometry was utilised as a device to prove the canonic proposals. In the present context of isomorphic theories of architecture geometry plays the role of a bridge between the abstract content of modern mathematics and the concrete existence of "form".

[292] N.CROSS, The Automated Architect, London: Pion Ltd. 1976.

The contributions on geometry in architectural theory have originated mainly in England and particularly at Cambridge University. Similar to the approaches in semiotics, the involvements in geometry have basicly adopted structuralist philosophy as governing discipline. Unlike semiotics, geometrists intend to display, less vague and less speculative conclusions as the "inherent structure". Furthermore, the structures they disclose, inherit the possibilities of development and changes in content which can be utilised in different contexts.

The modern geometric approaches, unlike the previous involvements do not preoccupy themselves with the restrictive dimensional aspects of form. Concepts such as proportion and module are not among the purported concerns of this approach. Therefore, the approach has no relations whatsoever with canonism where most of geometric involvements conclude at. On the contrary these approaches confining their basic interest within relationship of elements and spaces, have acquired for themselves a remarkable isomorphic content.

The isomorphic geometric approach in architectural theory at its point of genesis goes to Alexander and his Notes on the Synthesis of Form[293] where he did not explicitly deal with geometry but he utilised relational mathematics and graph theory to exemplify his theoretical point. March and Steadman in their The Geometry of Environment[294] commenced from the premises demonstrated by Alexander. March and Steadman in this book surveyed almost the total array of mathematical possibilities of abstraction of geometric relationships.

In the chapter where they deal with "Mapping and Transformations" March and Steadman displayed the fact that the totally different architectural expressions of three selected houses of F.L.Wright did not differ much 16 as concerns the prencipal layout relationships of various functions.[295] This illustration (Cf. Figure 34) not only displayed the essential similarities among various architectural solutions but also exhibited the fact that the basic structure of a solution can well be determined at an abstract level of the relational geometry. Translations, rotations, reflections, symmetry, matrices, vectors, point sets, modular spaces, proportions, series and networks are among the various abstract concept with which March and Steadman handled the "Geometry of Environment" and devised mathematical expressions to deal with them.

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[293] C.ALEXANDER, op. cit. 1964.

[294] L.MARCH and P.STEADMAN, The Geometry of Environment, An Introduction of Spatial Organisation in Design, London: RIBA, 1971.

[295] ibid., p.27.

The geometric isomorphy in design found itself a deserved medium to flourish five years later than the Geometry of Environment when March edited The Architecture of Form.[296] this work turned out to be the-state-of-the-art piece of literature even though almost all of the contributors happened to be Englishmen only, missing prehaps the work of Hillier and Leaman. The Architecture of Form is more of a book on architectural structuralism than a book restricted to geometry, however the geometric content is heavy enough to enable us to consider it under geometry. It consists of the efforts using mathematical methods for "description, prediction and evaluation" of form whether these be abstract or architectural. (Cf. Figure 35-37)

The geometrical isomorphic approaches in theory constituted a powerful repertoire of concepts and methods for architecture which provides a direct access to the most up to date computational and representational facilities of time, which also enrich the abstract content of our understanding in architecture and design.

[296] L.MARCH, ed., The Architecture of Form, Cambridge: Cambridge University Press, 1976.

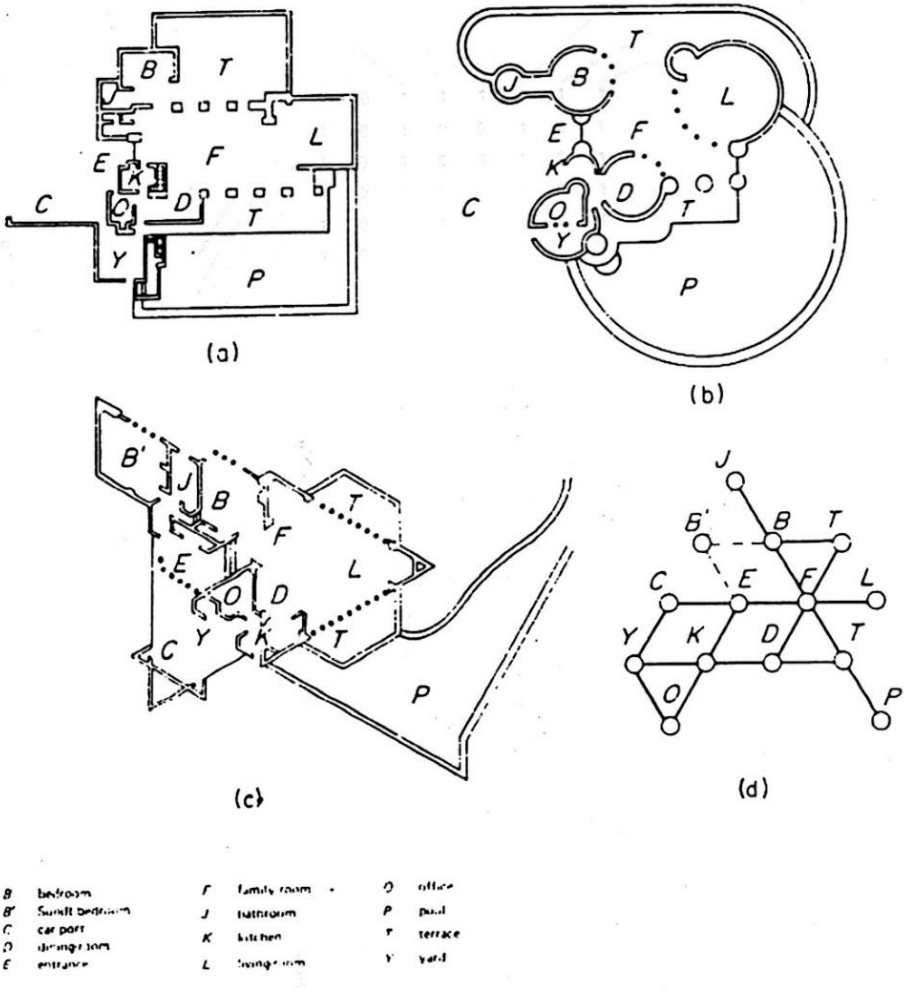

Figure 34. a. Life House, 1938. b. Relph Lester House, 1938. c. Vigo Sundt House, 1941. by: F.L. Wright, d. Graph of spree and room linkages, by: L. March and P. Steadman, op. cit. p.27f.

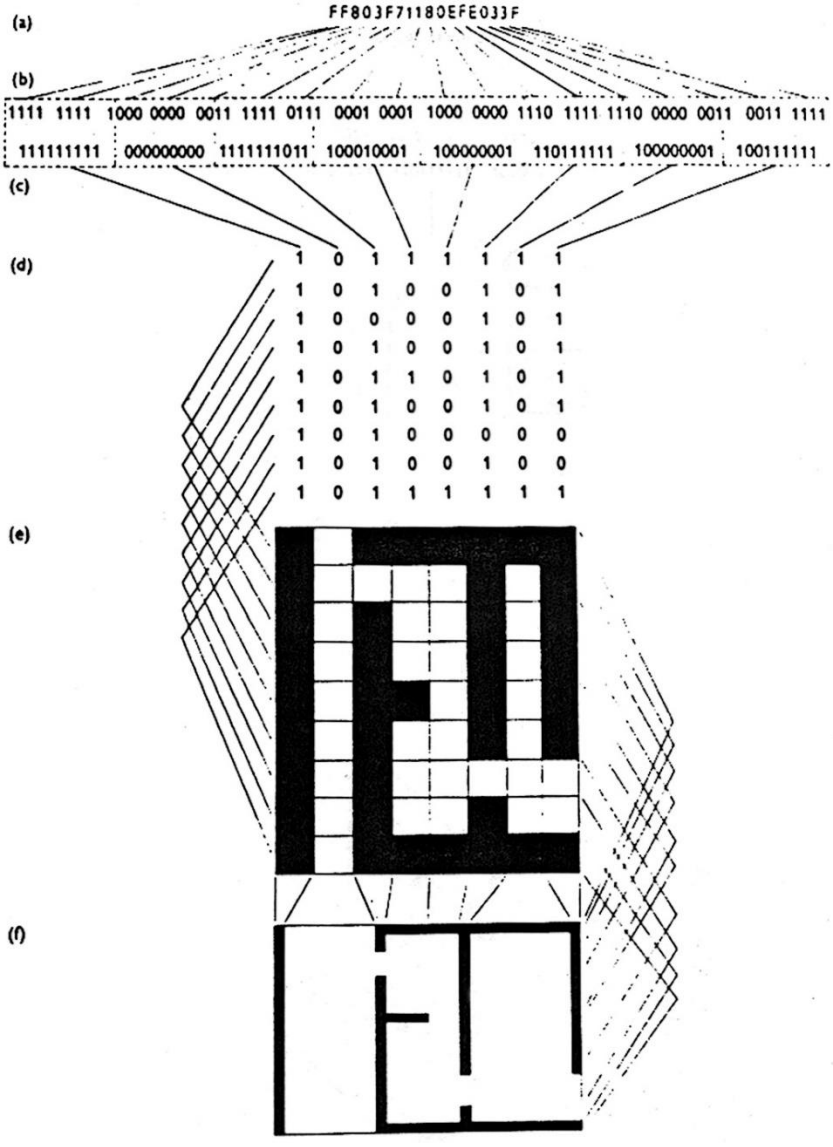

Figure 35. The hexadecimal code for Le Corbusier's "Maison Minimum". Five levels of transformation from plan to hexadecimal code illustrated. by: L. March, A. Boolean description of a class of built forms, L. March, ed. op. cit. p.60.

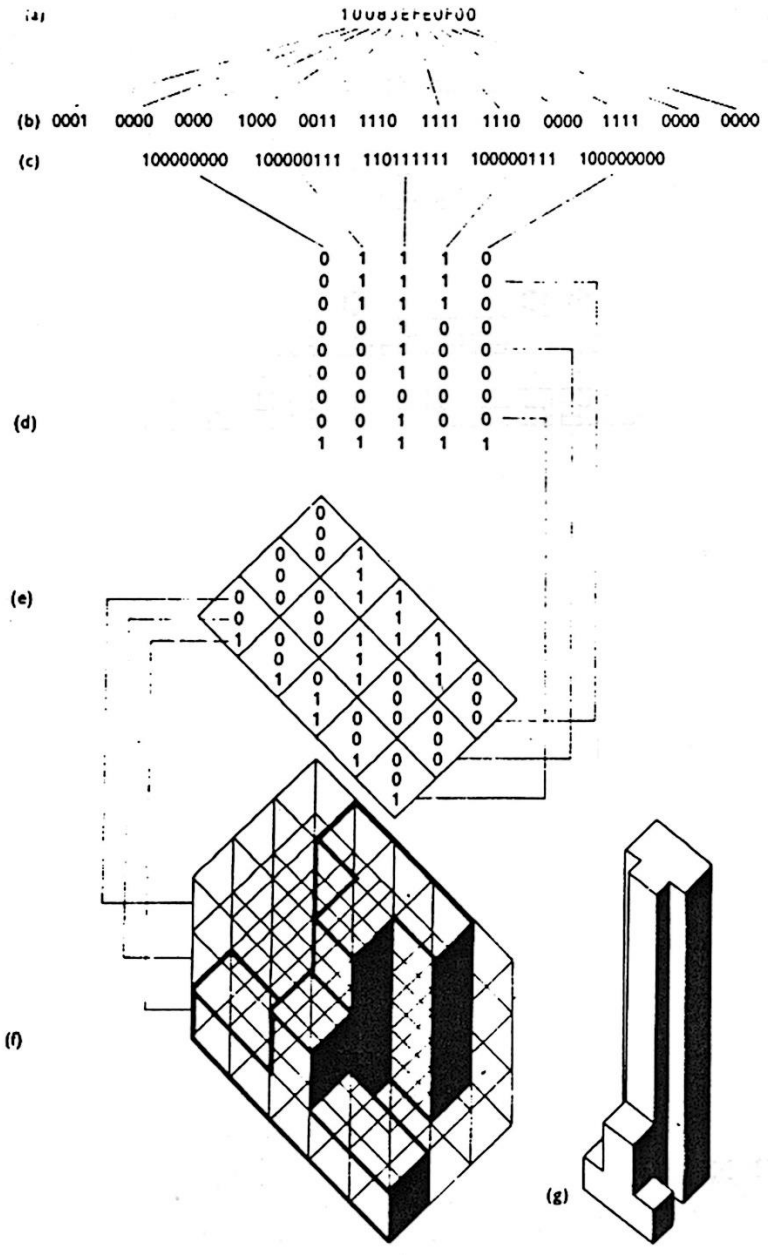

Figure 36. The hexadecimal code for Mic, van der Rohe's Seagram Building. A seven level transformation illustrated by L. MARCH, ibid, p.63.

Figure 37. Exhaustive enumeration of rectangular dissections (p 0, ..., 6) showing related groups by P. STEADMAN, Graph theoretic Representation of Architectural Arrangement, L. MARCH, ed. op. cit. pp. 112-114.

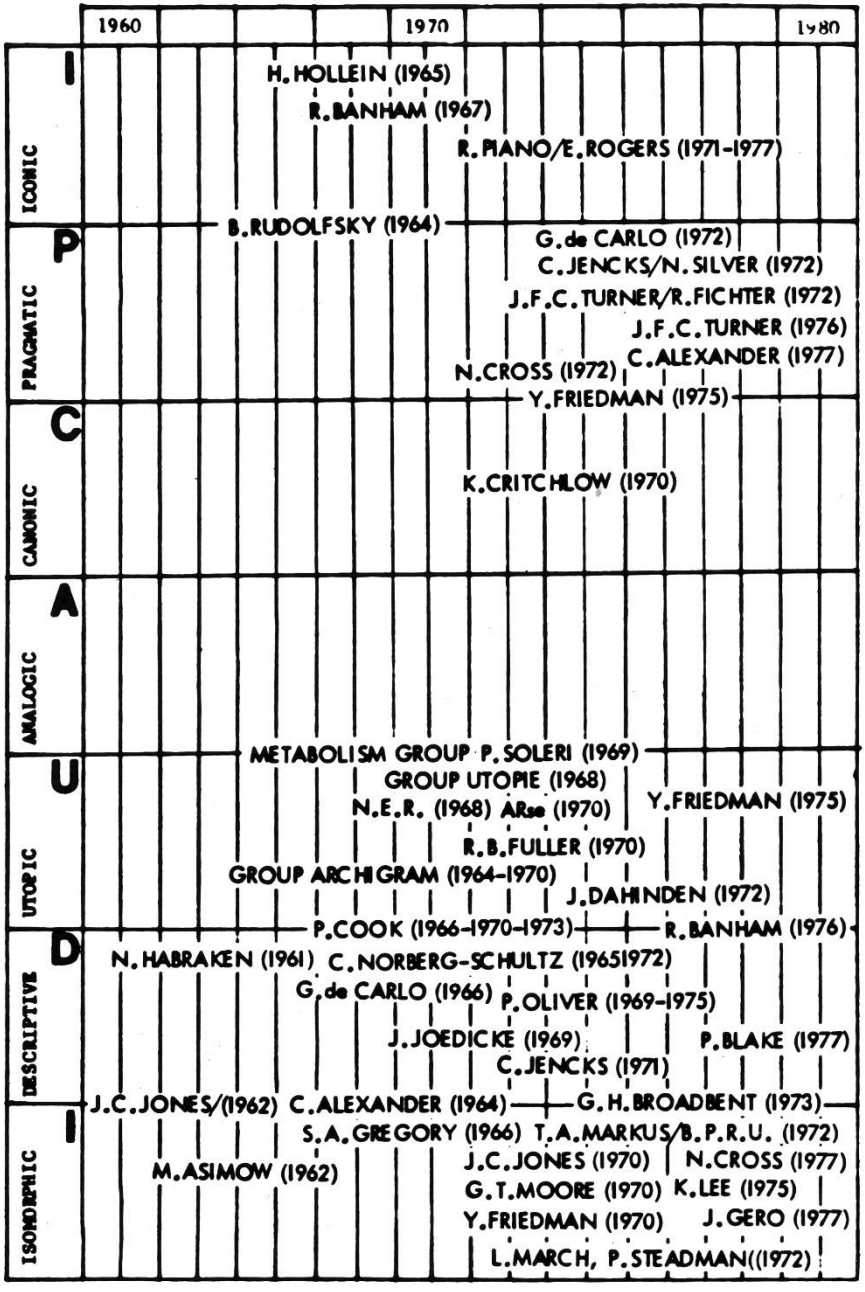

Chart 7. Categoric analysis of theoretical sources of architecture between 1960-1980

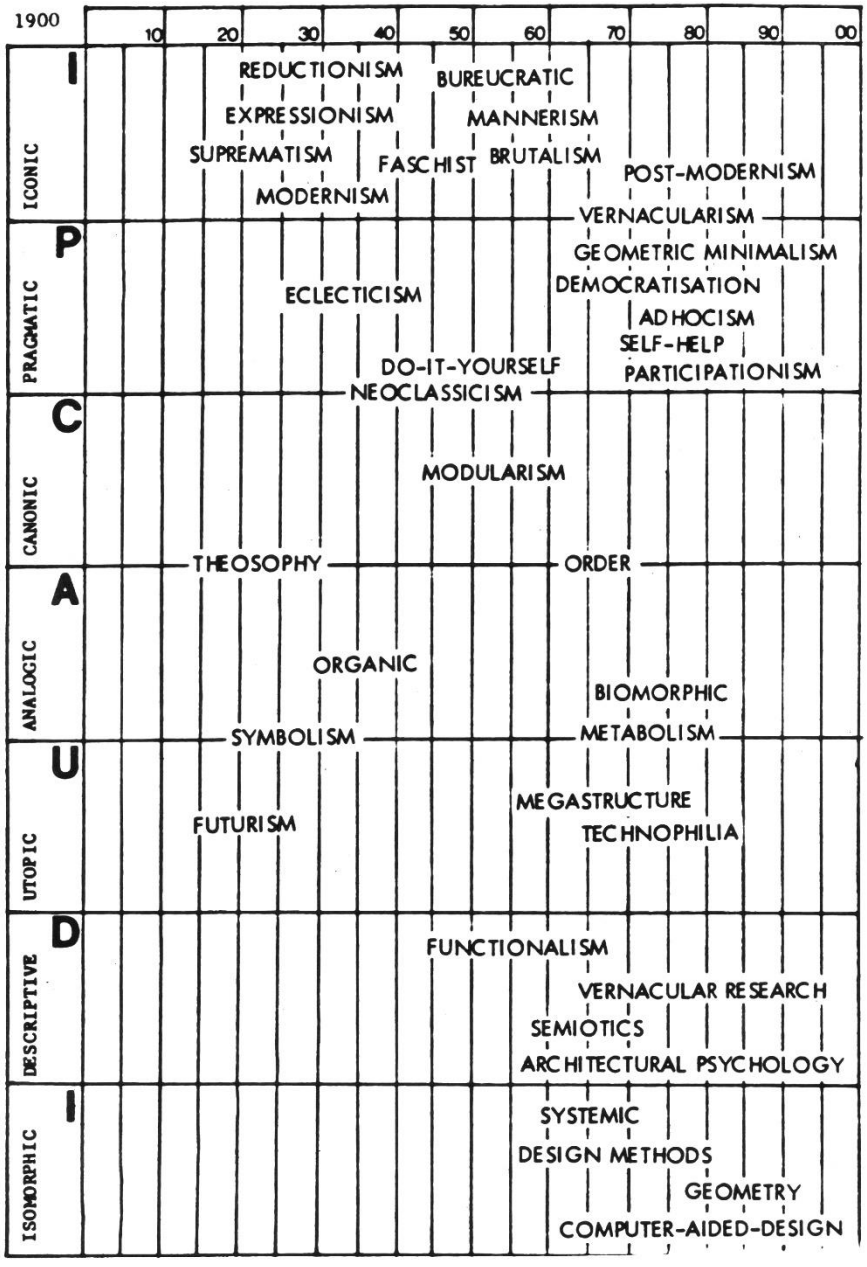

Chart 8. Categoric analysis of theoretical sources of architectural movements in twentieth century

POSTSCRIPT

It is our contention that devising a structure to integrate architectural theory is as important as to contributing to various specific areas under its scope. The specified contributions fail to be meaningful when they lack an overview of the whole development. In the present work we have tried to put forward a model of types where each type has differing degree of concrete and abstract content. The utilised method of analysis aimed to sweep the total array of theorisations spanning from the conceptual analytical category of iconic to the isomorpic. The application of the seven categories onto the retrospect and circumspect of architectural theory indicated the validity of these as powerful tools for integrating various discrete theoretical contributions under one general frame of reference. The potential of such a structured reference framework is apparent. It not only provides sounder and more objectively valid bases to derive form and to contribute to but also offers an opportunity to relate various contributions to one another.

The two surveys made covering, first the period between the fifteenth century and present century in reference to time, and then the application of the utilised categories onto the theoretical works of the recent decades in reference to category, proved the simultaneous existence of varying approaches. The development of the theoretical interest indicated to develop towards the derivation of more abstract structures governing architectural theory. The development of the theory parallel to the developments in other fields of science enriched its contents and strengthened its validity. Despite the limited scope of the survey, the descriptive and isomorphic contributions widened this scope by providing a common platform between the theory of architecture and theories in other fields of science.

As we have intended to display throughout this work, the theory of architecture is an amalgamate of many individual contributions with no objective, scientific or even unanimously agreed basis to test the truth or falsity in judgements, proposals, manifestos or any other theoretical work. A theory which can accept all kinds of speculative knowledge and personal gestures has been shown to be hard for being structured. This study presented the apparent pitfalls and bias in categorical statements and considerations. However, a structure devoid of an integrative taxonomy is unlikely hold its contents together. The categories are used to structure the disjointed pieces, they were established to sweep the total array of the contributions, in the end they formed powerful tools to comprehend the development in the past, to structure the present and even to assist to project for the future.

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