The Construction of Architecture: Notes for an Entrance Exam for a Professor at FAUUSP

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To confront with the adverse conditions of the world, human being built the first tools and because of that his contact with the world became mediated and he distanced himself from the environment around him. In order to avoid the feeling of loneliness he turned to sorcery, so that the myth emerged; he found explanations for phenomena among the gods. Man realized that even being part of the world he set himself apart from it when started to think, by doing an activity that distinguish himself from the others. The search for the thinks that he couldn't see led him into thinking about water, earth, air and fire; elements that were inert and couldn't reflect upon themselves. He built tools for survival and had to find concepts for his understanding. He practiced science to build models that simulated the world. To measure the height of the pyramids of Egypt, Thales of Miletus built a simulacra with a measuring stick and measured his shadow, then repeated the operation with the shadow of the pyramid and used the rule of proportionality to determine its actual height, from then he created a rule which became the new universal parameter concerning relative experimental conditions. The Wise creates science, they establish universal laws that don't explain the universe, on the contrary, raise more doubts over it, but by these approximations, between the rules related to the conditions of their making and the field experiment. A open slit is set up through which man can access the world, and if not controls it or incorporates it, at least establishing a communication channel.

The Greeks were not wise, but friendly. Facing the helplessness of finding themselves disconnected with the environment, and intending to be masters of the world, they sought not only transcendence but also invented palpable organisms to connect them to the surroundings. Man saw a model for experimenting in the world and from it he drew out rules that express truths, wisdom and knowledge, those which justify a supported concept. So man fabricated concepts.

He became a friend of the concepts, thereby a friend of his own creation. In a world of equals friendship eased the strangeness of the world, other man's friends became friends of their creations and the creations of others. Man also became a philosopher.

Surrounded by magic, dominated by the charm of the gods, the world's organizers, man also produced artifacts to communicate with the epiphany world. He created forms from pervasive feelings and dispersed sensations; specific forms that not only expressed their fears, desires, needs and oddities, but also that carried feelings of their peers.

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The magic moved the loose prey from the fields into the domains of their caves and also brought the objects of their whishes or uncontrollable desires, human being also created forms that induced the remaining others to share their anxieties. By making forms, man organized the emotions of the world and spread emotions and sensations that initially seemed too intimate to himself.

By organizing emotions, this led the way to organizing the space around him, undifferentiated, extensive and unlimited space begins to be redesigned with his footprints, his marks, his smells and man began to see himself as the master, if not of the world, at least of the small area of which he appropriated. He completed the cycle of his access to the world, creating models for simulating the behavior; fabricated concepts to make appropriation of knowledge his companion, he founded philosophy, and finally produced forms that aggregated sensations, emotions and feelings. He reproduced under his rule the trilogy, which allowed him some contact between the lonely and helpless being and the world through science, philosophy and art. Finally he also organized the time and space. The weather through the Homeric dithyrambs with words obeying the pace of the story and the undifferentiated time became to be marked. The heroic, magical or transcendent feats of his adventures passed to the domain of equals ceasing to be individual appropriation in order to be distributed for all of the species. He organized the space so that the unlimited breadth of the world would stay guarded in its size, creating architecture.

For the abbot Laugier, Adam's hut in paradise marks the origin of architecture, "The rustic little cabin just described is the model on which all magnificence of architecture is imagined." (Essai sur l'Architecture, 1753). The construction of the small hut that protects man from the weather, adverse weather conditions, animals and enemies will just be incorporated into architectural work after the experience and human inventiveness articulate the elements of nature in an original, efficient and resourceful manner.

For the abbot of the eighteenth century, the origin of spatial organization is in construction that, once it has served the demands of comfort, safety and health, will incorporate the constructed object, the tectonic, the art of ingenuity in the articulation of elements representing the essence of architecture. Architecture is put under the optics of the human need for protection against the hostile environment in which man entered without conditions for survival, but for his manufacturing capability, imagination and the possibility of producing a parallel universe to the real world. The cabin of Adam in paradise is the model that would inspire modern architecture, towards which the structural characteristics are the essence and the raison d'être of the shape. The path to aestheticism finds shelter in structural joints that dominate gravity.

Vitruvius, in 27 BC attributed to fire on the origin of architecture:

Men, according to the primitive way of life, born as beasts in the forests, caves and woods, spending life feeding on products of the field. During this time, in one place, trees agitated and overwhelmed by storms and winds, repeatedly rubbing branches against one another, caused the fire; frightened by the impetus of such calls, those who were close to this place put to flee. Later, when this phenomenon was appeased, realizing the great advantage of having their bodies near the heat of the fire, gathering wood and keeping it lit, they called others, and giving them understanding by signs, discovered the advantages which could therein be withdrawn. It was from those meetings that men produced sounds that were fed by their breath/blows, setting up the words that which might arise in everyday use, from where he began to speak randomly as a result of expressing things more often from day to day.Having therefore thus born, due to the discovery of fire, the meeting, the gathering, and society among men ... (Vitruvius, Book 2 Chapter 1 pg. 112/113)

Fire has been responsible for the union of men, and architecture was born from this socialization around a limited space. For the Roman thinker, architecture only makes sense to be in a city, it takes its purpose, its form and content, and to this city it refers when shows itself to the world through the facades, and how the city comes together when distributing the ambiance under its roof.

In the text above, Vitruvius alludes to the architect Dinocrates in the episode in the city of Alexandria, where for him architecture is more than an object, it is the magic tool of reconciliation that alters the solitary condition of the individual placing him in the center of the city, of a union between equals, managing the most radical transformations that the ancients could carry; fire turns cold into hot, damp into dry, darkness into light, undifferentiated space into a marked, safe and palpable territory. This is also the fundamental role of architecture, not just a need for security or comfort, but the creation of collective urban space that defines the architectural condition as set forth by Vitruvius.

The Italian architect Vittorio Gregotti (1927) challenges the affirmative of Abbot Laugier by stating that architecture began when a man buried a stone in the ground. That became a marked territory and differentiated part of the undefined space. For him, Architecture is the definition of a place. In Laugier's view, the origin of Architecture is in construction, for Gregotti it's in the differentiation of the place; they have the figure of the individual in common as manager of the space, that is constructed or marked. Although in the view of Vitruvius, the city is the manager of Architecture. It is in the collective that art is born and is appreciated collectively. For a man of the city of Rome, their land is the mother of all arts; that city is the manager, promoter and founder of architecture. While the Illuminists abbot focuses on tectonics, the Italians work witharqué, the establishment, the foundation.

Tectonics

The English historian and theorist Kenneth Frampton published an extensive book on architecture tectonics (Studies in tectonic culture: the poetic of construction in nineteenth and twentieth century architecture MIT Press, Cambridge, Mass. 1995), in which he investigates the origin of architecture as construction. The word tectonics is of Greek origin, related to the art of joinery fittings and connections between parts of a constructed object. His book had great impact in the architectural environment and an article published shortly after had further impact as he urged for architecture to return to rationality through the recovery of constructive characteristics, as a structural element not only of the building but also together as a set of aesthetic that the architectural project involves. At a time when postmodern architects sought cultural, formal and aesthetic values to reorganize saturated modern architecture, Frampton urged the principles of the modern movement to restore the constructive rationality as the basis for project practicing.

In the first congress of CIAM (International Congress for Modern Architecture, 1928), the search for constructive rationality was present as one of the pillars of the movement that wanted to revolutionize the academic and retrograde way of conceiving the project. The election of concrete material as the protagonist of the new language pressed the architects into a search for constructive rationality, in the sense of economy of means and the search for an aesthetic that reflected the brute reality of the new industrial times to the detriment of ornaments, decoration and historical references. The principle of condemnation of ornaments (Adolf Loos, 1908) was radicalized in the exhibition from the insides of the building. Columns, pillars and beams designed with the aesthetic base of constructive logic of the industrial era. Workers express their work in the forms and details of the project and no longer have conjured moldings, cornices or undefined scraped masses as the skeleton of the works.

Tectonic architecture is one that expresses the structural basis of the construction and relocates in partnership with the construction, expressing this physical structure where you find the aesthetic principles of the work. The modern movement was placed from the beginning as opposition to the social reality that the industrial revolution imposed on Europe. Against exploratory structure of asset imposed by the industries on the working class through unsanitary conditions and exploitation. The living conditions of large cities suffered profound degradation with the clustering of these workers into inappropriate centers around the emerging industries. Against this social structure, architecture showed the possibilities of reorganizing society from rational, fair and clear bases.

At that moment, an identification of the concepts of structure occurred from a constructive and societal structuring point of view. To restructure the world from an aesthetic point of view so that the productive characteristics would not be masked or disguised from it but rather it would create conditions for a new validation and so it would be the architecture, as a total work of art, which would play a role in the enlightening and teaching of aesthetic possibilities that in the end is the validation of a social structure, technique and experiential that was sought. Tectonic architecture was strongly founded on the practice of polytechnic schools.

A polytechnic school emerged in 1794 in Paris as L'école centrale des travaux publiques and became Polytechnique in 1893. It emerged to fulfill the need of the French revolutionaries to provide better living conditions for its citizens; its purpose was the training of men to build cities as well as citizenship. Polytechnics have generated some schools of architecture in parallel to the schools of Fine Arts that held much of the prevalence of teaching this art. In 1671, Louis XIV was worried about keeping the traditional lineage of French architecture, and so he established the Royal Academy of Architecture grounded in the doctrines of Vitruvius' Ten Books on Architecture. Claude Perrault (1613-88) headed the investigation into the origin of beauty in architecture and in 1673 published the first version of the Latin text. According to him, mathematical ratio, the establishment of criteria, and "fantasy" generate the beauty of monuments. Despite being hotly contested in the Cours d'archtecture by François Blondel (1618-86), the text of Perrault scandalized the creeds of the French cultural scene to bring to the field the clash of theoretical possibilities with beauty instead of consolidating the tradition of the Academy and even more radically, rationalized knowledge of architectural science enabling any citizen to understand the mechanisms of beauty. Despite the conservatism of pro-ancient positions, it enabled the establishment of the Jean Nicolas Louis Durand academy (1760-1835) to systematize the knowledge of styles, procedures and applications published in 1800 in "Recueil et parallèle des edifies e tout genre anciens and modernes," subsequently completed in the "Précis d'architecture des leçons," (1802-5).

The economy of production is for him an essential component of architecture. In looking for efficacy, Durand created a method of design that mounts a square plot as the basis for placement of walls and pieces of support that can join themselves to ordered combinations. The axial dimension of the key space may vary depending on the program, but the plot always determines the base building system that can be composed of walls, arches, skeletal structure and courtyards. Organized in horizontal or vertical construction groups, it becomes easy to design for any program. Economy and rationality democratize the possibilities of professional practice and the constructive aspects supported by rationality overlapping the symbolic aspects that still remain as characterizes of social utility. Architecture is basically thought of being the construction of public buildings, and social appeal is present in the unit; magnitude, topography and geographical location in the city, along with style, importance and other symbolic values of power.

The role performed by fine art academies should not be underestimated by the anachronistic vision of contemporaneity. While democratizing the professional possibility of the architect, it also introduces constructive aspects in the engine of architectural design. These are projects of buildings as monuments, and the representation of the state is giving it social authenticity. What differs the school of fine arts from the polytechnic school is that the latter is directed towards the city, the building is only one of the elements of the structured set of social cluster responsible for economic, technological and temporal sustainability of the new man that emerged from the revolutions that were undertaken in the Western world of that time. If the architecture academy generates a model structure, to polytechnic is the city structure that reflects the will of the city in the structure of the building, a project not as a symbolic object, but a social project that structures the city and society. Design in polytechnic loses the aura of authenticity and uniqueness to gain a new dimension of new social structure design. Structure, understood as everything that can be grouped, would validate not only the building but the "project" itself, is a new structure that can be seen; the aesthetic element in nature that is not only supporting the significant symbolic elements, but is itself significant, is the structure of the building and the other elements of the building who will obey their rules.

Sealing, equipment, supply systems will have the tectonic logic that is the coercion logic of structure over any other part of the building. Arqués are partly abdicated to enhance the tectonic.

Around the 1970's, criticism of modern architecture emerged from the outer sphere in contrast to traditional architecture from the inner sphere by questioning its content, its procedures and methods that under such a view led the modern architecture to a standstill in the inventive aspect and the rhetoric of consolidated forms. This critique that itself began in the penultimate CIAM congress materialized in the tenth congress with the formation of Team 10, led by the couple Peter and Alison Smithson, Bakema, Candillis, and Woods, among others. This critique turns our eyes to the simple people of the streets, to urban life like the Italian urban designers of the current neo-realists had been practicing in the popular residential development projects. This criticism engendered not only the British protest movements called brutalists, like the Dutch and Nordic structuralists, but also foreshadowed Pop Art.

The internal criticisms of the modern movement had some repercussion on the architectural environment but were not enough to shake the solidified foundations of structured forms from years of professional practice. The architects of Team 10 were more a posture, a set of intentions for a concrete work to show. Some groups took their inspiration to create alternatives with higher plastic content like Archigram, the fanciful architecture of Yona Friedman, Peter Cook, and the multifaceted structures of the great inspiring of the hippie culture of the 70's, Buckminster Fuller. These project practicing postures, even if they broke the pillars of the modern movement, especially the five points advocated by Le Corbusier, remained faithful to the prominence of the structure as expressive and structuring force of trend, with the clarity of the architectural body elements, the rational conceptional rigor, the emulative character of architectural form to the surrounding social-environmental structure.

The "postmodern" movement has especially spread in the last quarter of the twentieth century. The book "Complexity and Contradiction in Architecture" by Robert Venturi (1966), denies to architecture the ability to establish an overall summary capable of putting together all of the disparate elements of the moments we live. The contradiction is not just something to be endured but to be sought because it is the root of the spirit of our time. The fundamental difference of this previous movement is that this did not get inside the modern movement but would propose to return discarded as ornament, the heavy use of the symbolic, the dissociated form of structural or utilitarian function. This movement became known as post-modern, a generic name that is added to the writings of Peter Eisenman, Aldo Rossi, Paolo Portoghesi, the architectural work of Robert Stern and Michael Graves, and as whole title brings together incongruous concepts and ideas.

Against this movement Kenneth Frampton called for a return to the tectonic as a critical recovery tool of the modern movement through a rationality revisited and relativized by new materials and new techniques. The post-modern movement had great backlash and was short-lived. Its reaction caused solid and structural changes that revitalized the rational use of the structure such as plastic, constructive and provocative expression of other attributes of the architectural design. There is therefore a new tectonic in modern architecture, particularly in Sao Paulo architecture where numerous young architects recovered an original language of the revisited movement through a revised and updated critical perspective giving new oxygen to the modern movement.

The privilege of the structure on the other elements of design, such as functionality, aesthetic expression, environmental comfort, and tactility among others, does not reach the point of submitting these elements to the role of collaborator of the structural dictates. The structure seeks the limits of its expression, if the structural language escapes the commonplace and goes looking for new possibilities to combat gravity, then the constraints that this prevalence produces will be stimuli for new functional, tactile propositions, etc.

Once the pursuit of expansion is established in architectural design language, the search will not end in one of the parts or aspects but will integrate itself into all architectural elements. The difficulty will be to know to contain these limits to where the architectural object does not decharacterize, does not lose its primary function or totally miss the identifiable codes precluding their use.

Recent experience shows that this quest for innovation to amplify the semantic universe of architecture greatly expanded the understanding and apprehension of the architectural object that was made feasible. Although sometimes the pursuit of compelling form has committed even the simplest structural rationality, architectural objects have been constituted in major urban events, as an expressive object and as an event that expands its physical and utilitarian dimensions by reclassifying the site. Criticism has arisen supported by bias against formalism, meaning the use of form devoid of structural or functional content. This criticism however does not subsist to possible articulations around themes borrowed from other areas of knowledge such as Ecology, Philosophy or programmatic procedures involving new technologies. Nevertheless, if some argument subsists as a formulator of architectural standards which can be structural, formal or aesthetic, it will be the tectonic aspect to ultimately support the standards of design acceptability in the universe of innovation and formal incitement of language.

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