

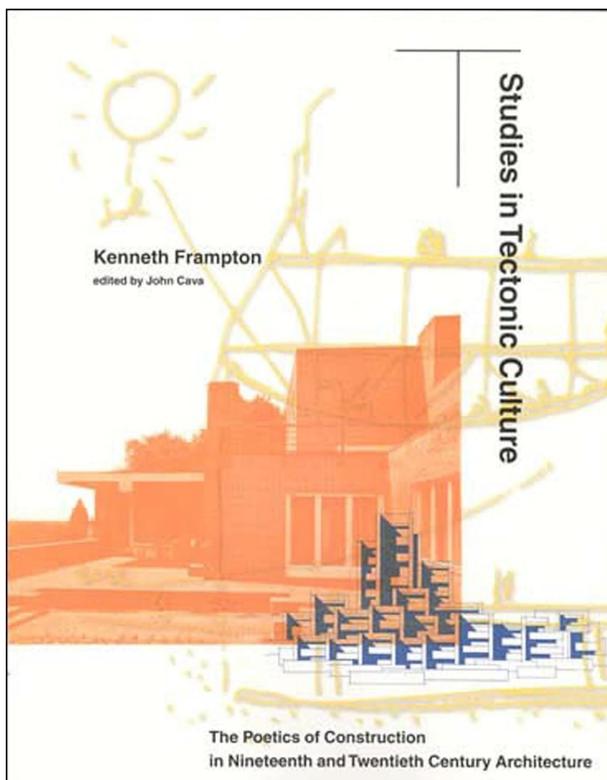
BOOK REVIEW OF KENNETH FRAMPTON: STUDIES IN TECTONIC CULTURE

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Abstract. This is a review of the book Frampton, Kenneth (1995): *Studies in Tectonic Culture. The Poetics of Construction in Nineteenth and Twentieth Century Architecture*, MIT Press, Cambridge, MA, USA.

Key words: structure, Semper, architectural theory



Harry Francis Mallgrave starts his foreword to this seminal work of Frampton saying that in the novel by Phillip Lopate "The Rug Merchant" (New York, Penguin, 1988) the lead character attempts to write a doctoral dissertation on Gottfried Semper and, failing, never recovers, in order to explain the difficulties of architectural theory. It is an

example of architecture making it into literature.

In his introduction "Reflections on the scope of tectonic" Kenneth Frampton comes back to when the scope of tectonic was born. Viollet le Duc was the first to change the view on tectonics which existed since the Greeks, introducing the logic of construction (1872: *Entretiens sur l'architecture*). But he never used the term space, as later (1894) August Schmarsow did. This is when the concept of space in architecture was born and remained since then integral part of architecture. Kenneth Frampton recognizes that the study on tectonic culture aims at mediating the priority of the space with the constructional and structural models through which it is achieved. The "tectonic and tactile" character is "scenographic and visual, although none of these attributes deny its spatiality". He identifies three vectors: "topos", "typos" and "tectonic" and emphasizes the independence of tectonics from style, but not from site and type. Looking for the etymology, this comes from "carpenter" or "builder" (Greek), which later become *architekton*.

“Tectonic comes from the art of joinings”. The word is not new by Frampton. Karl Bötticher wrote 1843-1852 three volumes on *Die Tektonik der Hellenen* (The tectonic of the Hellenes), distinguishing between *Kernform* (German for core shape) and *Kunstform* (German for artistic shape), that is, what we today call container and contents, or structural skeleton and ornamentation. In Bötticher’s work *Kernform* are the timber rafters, and the *Kunstform* “the petrified beam ends in the triglyphs and metopes of the classical entablature”. Such a discourse was taken again in the essays looking for the poetic of the material concrete, at the begin of the 20th century, when an origin in timber was looked for as well, for example at István Medgyaszay, a Hungarian architect investigated by the author of the review who managed to find an artistic language for reinforced concrete starting at timber. The theory of Bötticher was taken further by the seminal work of Gottfried Semper, who differentiated between lightweight and mass: tectonic/stereotomics (stereotomic meaning “solid” and “cut” in Greek and being thought to be load bearing masonry). “Constructive mass and tensile frame”, as Frampton calls it. Semper’s theory was supported by German language, so Frampton, where *Wand* is the wall in skeleton construction and *Mauer* the heavy wall out of artificial or natural stones one above the others. Although already possible in timber, this kind of separation became evident with reinforced concrete, which allowed three types of relationship between structure and space: structural plan (with the heavy load bearing walls separating into functional units), the free plan (where the two are distinct) and the *Raumplan* (German for space-plan/layout, where spaces are connected, in a structural frame), the latter introduced by Adolf

Loos. On a personal note of the author of the review, this is also supported by the German language, where there exist the word *Massivbau* (heavy/one piece construction) meant for materials such as brick/stone and reinforced concrete, differentiated from timber and metal (which use to be put in oeuvre as skeletons). Semper later wrote a work about materials themselves, the *Stoffwechsel* (German for material exchange) theory, where he differentiated between wood, basketwork and textiles, which are tensile, and stonework, brickwork, rammed earth and reinforced concrete, which are compressive material. However, the architects of early 20th century identified the possibility of reinforced concrete to build in skeleton form, the wattle and daub infill type of timber. Other interdependencies exist, such as Frampton notes, that masonry bonds are a form of weaving. Finally, a note is done regarding the durability of materials, such as mud falls to earth, and wood is ephemeral, while stone endures time. Aspects as topography and corporal metaphor are included. Finally, Frampton notes that Semper’s theory is rooted in the emerging science of ethnography. In fact, Ákos Moravánszky, another architecture theoretician who studied Semper and also the early reinforced concrete theory by Medgyaszay, put an accent on the ethnographic influences in Central European architecture of the early 20th century as well. The *Kernform* and *Kunstform* of Bötticher evolved at Semper into the technical and symbolic aspects of construction, which then were related by Frampton as “representational and ontological aspects of tectonic form”. In philosophy, ontology is the study of the nature of being. Today it gained use in computer science, where it is used as basis for object oriented software by formally representing the concepts within

a domain and their relationships. Frampton relates to Semper and finds that the earthwork, frame and roof are ontological and the hearth and infill wall are representational, symbolic. The ontological part is thus the one which reflects the superposition of registries (Bostenaru, 2005). Sandaker wrote an ontology of the structures space (2010), at a conference where there was a dedicated session to this work of Frampton. Hendrik Berlage differentiated also in his lecture from 1904 between constructive and nonconstructive parts of spatial enclosure. "in a 1973 essay entitled 'Structure, Construction and Tectonics', Eduard Sekler defined the tectonic as a certain expressivity arising from the statical resistance of constructional form in such a way that the resultant expression could not be accounted in terms of structure and construction alone." In connecting tectonics to ontology, which is a philosophical concept, Frampton comes to Heidegger's phenomenology work "On the origin of the work of art" (1956, in Poetry, Language, Thought) in which he reflects about the relationship between material and form, if the relationship has its origin in the character of thing of the thing or that of work of the work of art and "conceives architecture as having the capacity not only of expressing the different materials from which it is made but also revealing the different instances and modes by which the world comes into being: 'the temple-work, in setting up a world, does not cause the material to disappear, but rather causes it to come forth for the very first time [...] The rock comes to bear and rest and so first becomes rock; metals come to glitter and shimmer, colors to glow, tones to sing, the world to speak. All this comes forth as the work sets itself back into the massiveness and heaviness of stone, into

the firmness and pliancy of wood, into the hardness and luster of metal, into the lighting and darkening of color, into the clang of tine and into the naming power of world'". The tectonic expresses the different states of durability, and the way how things appear and sustain themselves. We notice at Heidegger that he also considers the sonic space, not only the tactile. Finally in his introduction Frampton turns toward the topic of tradition and innovation, also a topic relevant for materials, as some, as in case of reinforced concrete, were innovative materials but sometimes performed under extreme conditions worse than traditional ones such as wood.

The second chapter is also a general one, reflecting on Anglo-French origins of tectonic form, from the Greeks and the Gothic. Frampton starts quoting Francesco Dal CO (Figures of Architecture and Thought, 1990): "Ornament is the secret that Baukunst keeps to allow the Tekon to display the values of which he is guardian", going out from Mies, who said that architecture starts when two bricks are joint "carefully", which, according to Dal Co has to be extended over time. Frampton reviews Pugin and his addiction to the English Gothic, and the rejection of new materials at that time, although he introduced iron. Tectonically significant was the iron skeleton, "ossiferous", as Frampton names it, of Labrouste in the Bibliothèque de Ste.-Geneviève, masonry and lightweight armature, which will be continued by the representant of the tectonic Villet-le-Duc and by the reinforced concrete pioneer Auguste Perret. "Throughout the two volumes of his 'Entretiens' Viollet-le-Duc encourages the dynamic assembly of different materials, techniques, and resources, in order to evolve an effective and engaged

mode of building for the given moment". Like at Mies, the accent lays on "carefully" thus avoiding the simple juxtaposition of materials. His theories, as those of Semper, appear in Berlage's Bourse in Amsterdam. "For Viollet-le-Duc, statical logic and the rationality of the constructional procedure were inseparable." Finally, Frampton quotes passages of Viollet-le-Duc's work referring at the "truth" of the building in the material "construction is the means, architecture is the result", with which we come back to Heidegger's origin of the work of art and the truth and to today's approaches in conservation and authenticity (ex. the Nara document). "In 1890, some seventeen years before Francois Hennebique's decisive reinforced concrete patents of 1907, the engineer Paul Cottancin perfected his own reinforced masonry system known as 'ciment armé'". Cotanncin's patent become obsolete in 1914; it required permanent brick formwork, instead of the temporary timber framework of Hennebique, another connection between reinforced concrete and timber as materials. In Contancin's system wire reinforcement acted in tension and cement infill in compression independently, avoiding this way a weakness persisting till today on adherence between metal and concrete. The first architecture history to explain "the origin of the tectonic form in terms of the materials available, the structural systems employed, and the state of craft production" was of Choisy, an engineer (*L'Art de bâtir chez les Byzantines*, 1873). Although Le Corbusier for *Vers une Architecture* inspired from Choisy's isometric drawings, these represented better load bearing structure than skeletons, such as, for example, timber framework. Frampton deems Auguste Perret to be Choisy's follower, but he also

influenced the architects of the "machine age" from Le Corbusier to Louis Kahn. "Choisy seems to have anticipated reinforced concrete as the sole technique that would prove capable of overcoming the age-old schism and fusing into a single entity the two great lines of Western building culture" (which are timber construction and masonry). "space form was inseparable from the mode of construction and [...] subcomponents were presented as set pieces derived from the influences of climate, material and cross-cultural interaction".

The third chapter is also general, it refers to the rise of tectonic with the two concepts of structure versus ornament introduced by the German architects and theoreticians. "In the Hegelian system, art comprises a dichotomy consisting of the idea and its material embodiment. Subject to the changing nature of the dominant form, the history of art passes through the same three successive stages of symbolic, classical and romantic." With the discussion of the Germans Frampton comes back to the duality ontological-representational and its synonymes (ex. core form and artistic form) we saw at the begin. For example, Schinkel's "*Lehrbuch*" [German for manual] contains many examples of differently articulated structural assemblies, rendered in different materials. In the main, these sketches are ontological rather than representational in character, that is to say the tectonic system itself is emphasized rather than the cladding of its form" i. e. the core form predominates over the art form. We might add to this that in the 19th century the perception of the artistic expression of illustrations which are today regarded from a technical point of view was different. The Gothic shell inverts the core form and the art form: the latter is inside. Frampton

quotes from Schinkel's rare theory in "Das Prinzip der Kunst in der Architectur" (from Aus Schinkel's Nachlass, book II, section 208):

„1. To build (*bauen*) is to join different materials into a whole, corresponding to a definite purpose.

2. This definition, encompassing a building in both its spiritual and material aspects, clearly demonstrates that purposiveness is the fundamental principle of all building.

3. The material edifice, which now presumes a spiritual aspect, is here the subject of my consideration.

4. The purposiveness of every building can be considered under three aspects: these are:

a. Purposiveness of spatial distribution or of the plan;

b. Purposiveness of construction or of the joining together of materials appropriate to the plan.

c. Purposiveness of ornament of the decoration", influenced, according to Frampton, by Kant.

Unlike the architects of the early 20th century who looked for the best expression for a given material, Schinkel emphasized in this work the use of the best possible material, and highlighted the quality of craftsmanship how the materials are joined together. Frampton comes back to the analysis of Bötticher's work and the analysis of the ontological status of the structure and representational status of the ornament. The representational is assimilated to the Greek and the ontological to the Gothic. On a personal note of the review author the Greeks translated the timber, which is suitable to skeleton, into masonry, while the Gothic realized a skeleton structure out of masonry. A philosophical influence on Bötticher comes from Schopenhauer: "architecture could only express its

essential form and significance through the dramatic interaction of support and load (*Stütze und Last* [in German])", arguing thus for sincerity in architecture ("beauty was [...] the explanation of mechanical concepts). Not only was the core form the mechanical-statically necessary which should be expressed as such, but also the art form, ornament or cladding, had to be expressed as being a separate part. Such expression was thought for in the Secession architecture of Otto Wagner, and those influenced by his language, for example the architect from Oradea József Vágo, as the review author observed. "Structural form could only acquire symbolic status by virtue of its capacity to engender analogies between tectonic and organic form". Bötticher arguments for new materials, in this case iron, saying that stone reached its apogees in the Gothic, and iron will be more suitable to cover large openings. A new material brings "in its train a new world of art-forms". He sees that "the tectonic expressivity of such an unprecedented system will have to model its representational form on some kind of reinterpretation of the principles of Hellenic architecture. [...] anticipates the semiotic transformations of Jugendstil in its crystallizing phase, particularly [...] Otto Wagner" (The principles of the Hellenic and Germanic way of building). Semper introduced the seminal role of the "carpet wall" (*Wand* – German for wall - and *Gewand* – German for a piece of cloth), proposing instead of *utilitas*, *firmitas*, *venustas* (functional, structurally stable, beautiful) of Vitruvius the (1) hearth, (2) earthwork, (3) frame/roof and (4) enclosing membrane, giving "primacy to tensile frame and infill instead of compressive earthwork and load bearing mass", and the in the vertical succession Frampton sees that of stereotomic, topographic and ephemeral. On the note

of the review author today the New European Bauhaus brings further the German concepts from the 20th century in reinterpreting the principles of Vitruvius into beautiful, sustainable, inclusive. The inclusiveness stays for the functional, as more diverse user categories exist, the beautiful remained the same, and sustainable includes also resilience to hazards which might affect stability. "Semper assigned certain tectonic crafts to each of the four elements: textiles pertained to the art of enclosure and thus to the side walls and roof, carpentry to the basic structural frame, masonry to the earthwork, and metallurgy and ceramics to the hearth." (*Der Stil in den technischen und tektonischen Künsten, oder praktische Aesthetik*). In the *Stoffwechseltheorie* he observes the transformation through mythical of originally tensile construction into petrified compressive forms (the timber in stone at the Greeks). The nomadic textile forms were transformed into a permanent material when bricks became "dressing", which we can see also in connection to the flat and knurled of Deleuze when distinguishing between nomad and sedentary. Otto Wagner pushed Semper's theory further: "a new style must depend of necessity on a new means of construction" (Benedetto Gravagnuolo, "Gottfried Semper, architetto e teorico", 1987). Wagner was, according to Frampton, the heir of Schinkel, Bötticher and Semper. "New purposes must give birth to new methods of construction and by this reasoning also to new forms" (Otto Wagner: *Modern Architecture*, Santa Monica, Getty Centre

for the History of Art and the Humanities, 1988), so a new *Kunstform* derives from a new "*Werkform* [German for work form], as inorganically articulated structural invention" (Schwarzer "Ontology and Representation"). Otto Wagner applied Semper's theory of dressing with the tiles and nails on the Postsparkasse in Vienna, the one which inspired József Vágó's Arkadenbasar in Budapest, as observed by Ákos Moravánszky.

The chapters which follow are dedicated to the analysis of tectonics in the work of several architects: Frank Lloyd Wright where he identifies the so-called "textile" tectonic, the reinforced concrete pioneer Auguste Perret and so-called "classical Rationalism", Mies van der Rohe and the AvantGarde, Louis Kahn vis a vis of Modernism, Jorn Utzon and the tectonic metaphor in transcultural form, and finally the joints of Carlo Scarpa.

In postscriptum Frampton writes about the trajectory of tectonics in the 20th century, and then an Epilogue.

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